



2022–2023 Drilling Solutions



New Expanded Offering

www.kyocera-sgstool.com ISO 9001:2015 Certified



Drill Matrix

	ltem			Preferred Cut Type for Series \star Best \Rightarrow Better \bigcirc Good (blank) Not Recommended																		
		Material																				
DC	Low Carbon ≤20 HRc	Medium Carbon, Alloy 20 to 35 HRc	High Carbon, Alloy 35 to 45 HRc	Ferritic & Martensitic ≤ 45 HRc	Austenitic & Duplex ≤ 25 HRc	Precipitation Hardened < 45 HRc	Low Alloy, Grey, Ductile < 25 HRc	Med-High Alloy, Nodular 25 to 35 HRc	High Alloy, Nodular ≥ 35 HRc	Aluminum Alloys	Copper Alloys	Plastics, Composites	Titanium Alloys < 45 HRc	Iron, Nickel, Cobalt Alloys <45 HRc	Refractory Alloys, Mo, Ta, W < 35 HRc	High Carbon, Med Alloy 45 to 50 HRc	Tool, Mold & Die 45 to 55 HRc	Tool, Mold & Die 55 to 65 HRc				
Name / Series	Tool Type	Coolant Delivery	Page		Stee	I	St	ainle Stee	ess I	Ca	ast li	on	F	Non erro	I US		HRS	A	На	rd S	teel	
Hi-PerCarb® 142P	High Performance Drill	Internal	4	*	*	*	☆	☆	☆	☆	☆	☆	☆	*		☆	☆	☆	*	☆	☆	
Hi-PerCarb® 143M-S	High Performance Drill	Internal	24	☆			*	*	*	☆	☆	☆	0	*		*	*	*				
Hi-PerCarb® 141K	High Performance Drill	Internal	36	☆	☆	☆	0		0	*	*	*	☆	☆		0		0				
Hi-PerCarb® 131N	High Performance Drill	External	44							0			*	*	☆	0						
Series 120	High Performance Drill	External	56												*							
Hi-PerCarb® 135	High Performance Drill	External	60	*	*	*	*	☆	*	☆	☆	☆	0	0		☆	☆	☆	*	☆	☆	
Hi-PerCarb® 146U	High Performance Drill	Internal	84	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Hi-PerCarb® 136U	High Performance Drill	External	84	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	

Drill Matrix

Attributes

Material hardness and machinability affect speed, feed, and cut depths.

For dimensional and finish quality, a low TIR of the tool-holder assembly in the machine is critical: less than 0.1% drill diameter is preferred. Spot drilling is not necessary in most situations if the drilling surface is machined flat ; spot drill point angle should be greater than drill point angle. Liquid coolant (internal or external) such as oil based or synthetic is highly recommended for all drilling applications. For proper cooling, lubrication and chip evacuation, ensure the coolant is supplied throughout the entire depth of the hole. When liquid coolant cannot be applied for applications such as plastics or composites, clear the swarf with air or vacuum. Depending on material machinability, a peck cycle may be neccesary for external coolant drills beyond 2x or 3x depths.

Diameter Range inch	Diameter Range mm	Tolerance	Length	Point Angle °	Self Centering	Flute Count	Margins	Helix Angle °	Shank	Coating
0.1250 0.7500	3,00 16,00	+/+	3x, 5x, 8x, 12x	135	yes	2	4	30	Common	Ti-NAMITE®-X
0.1250 0.7500	3,00 16,00	+/+	3x, 5x	135	yes	2	2	30	Common	Ti-NAMITE®-A
0.1250 0.7500	3,00 16,00	+/+	5x	124	yes	3	3	30	Common	Ti-NAMITE®-X
0.1250 0.7500	3,00 16,00	+/+	3x, 5x	124	yes	3	3	30	Common	Ti-NAMITE®-B
0.0980 0.5000	2,70 12,00	+/-	3x	145, 90	yes	2	4	20	Common	Di-NAMITE®
0.0156 0.9219	1,25 22,00	+/+	3x, 5x	145	yes	2	4	32	Common	Ti-NAMITE®-A
0.1250 0.8125	3,00 20,50	+/+	3x, 5x	180	yes	2	4	15	Common	Ti-NAMITE®-X
0.0625 0.8125	1,50 20,50	+/+	2x	180	yes	2	4	15	Common	Ti-NAMITE®-X

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SERIES 142P



HIGH PERFORMANCE CARBIDE DRILLS

The key features designed into the Hi-PerCarb[®] Series 142P Drill allow the product to offer application benefits not only beyond that of standard carbide drills, but also other High Performance drills. Each feature of the Hi-PerCarb[®] Series 142P Drill was uniquely engineered as a solution towards addressing the issues commonly encountered during high production drilling.

4-MARGIN DESIGN

- additional margin contact improves hole straightness and roundness
- provides improved stability for difficult applications like cross holes and when exiting on an angle

B POINT

(D)

- point design stabilizes on entry for exceptional hole size and cylindricity
- low thrust force reduces machine power requirement and extends tool life
- easily resharpened

COOLANT THROUGH DESIGN

• improves coolant flow to extend tool life and aid in chip evacuation

CARBIDE AND COATING

 proprietary SGS Ti-NAMITE[®]-X coating and certified carbide provide exceptional wear resistance and toughness for demanding applications

PERFORMANCE. PRECISION. PASSION. HI-PERCARB® SERIES 142P DRILLS



PERFORMANCE.

TESTING PARAMETERS

- 3/8" Diameter
- 8XD Length of Cut
- 4140 Alloy Steel
- 3360 rpm
- 30 ipm
- 3.0" axial depth blind
- TSC Water Sol 8.9%

HOLE FINISH TEST RESULTS

The lower numerical value shown in the chart demonstrates an improved surface finish in alloy steel versus other competitors tested.



HOLE FINISH

TOOL LIFE

All tools were tested until catastrophic failure, and under these conditions, the HI-PERCARB[®] 142P produced the most holes versus the competition.

CYLINDRICITY

CMM measurements of 14 random holes per competitor indicate the 142P cylindricity is the best among those tested.



The structural design of Ti-NAMITE[®]-X is adapted to meet a diverse range of applications; everything from high- and low- alloy steels to hardened materials (up to 65 HRC core hardness). Ti-NAMITE[®]-X is suitable for operations which require high cutting speeds, high temperatures at the cutting edge, and high metal removal rates.

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Hardness (HV): 3600 Oxidation Temperature: 1150°C – 2100°F Coefficient of Friction: 0.45 Thickness: 1 – 4 Microns (based on tool diameter)

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DCON



142P 3xD FRACT

RACTIONAL & METRIC SE	RIES				Ť				Ť
High-performance point				inch & mm					EDP NO.
design stabilizes on entry for exceptional	DECIMAL DC	METRIC DC	FRACTIONAL/ Letter/wire DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	SHANK LENGTH LS	Ti-NAMITE [®] -2 (TX)
while also allowing for	0.1181	3,000 mm		6,0	62,0	20,0	15,0	36,0	66400
low thrust force and	0.1220	3,100 mm		6,0	62,0	20,0	15,0	36,0	66401
extended tool life	0.1250	3,175 mm	1/8	6,0	62,0	20,0	15,0	36,0	56400
Internal coolant hole	0.1260	3,200 mm		6,0	62,0	20,0	15,0	36,0	66402
extend tool life and aid	0.1299	3,300 mm		6,0	62,0	20,0	15,0	36,0	66403
in chip evacuation	0.1339	3,400 mm		6,0	62,0	20,0	15,0	36,0	66404
4-margin design	0.1360	3,454 mm	#29	6,0	62,0	20,0	15,0	36,0	56401
mproves hole	0.1378	3,500 mm		6,0	62,0	20,0	15,0	36,0	66405
oundness while	0.1406	3,571 mm	9/64	6,0	62,0	20,0	15,0	36,0	56402
providing improved	0.1417	3,600 mm		6,0	62,0	20,0	15,0	36,0	66406
applications like cross	0.1457	3,700 mm		6,0	62,0	20,0	15,0	36,0	66407
noles and when exiting	0.1496	3,800 mm		6,0	66,0	24,0	18,0	36,0	66408
on angle	0.1535	3,900 mm		6,0	66,0	24,0	18,0	36,0	66409
Proprietary Ti-NAMITE®-X	0.1562	3,967 mm	5/32	6,0	66,0	24,0	18,0	36,0	56403
eading and industry	0.1575	4,000 mm		6,0	66,0	24,0	18,0	36,0	66410
provides exceptional	0.1590	4,039 mm	#21	6,0	66,0	24,0	18,0	36,0	56404
vear resistance and	0.1614	4.100 mm		6.0	66.0	24.0	18.0	36.0	66411
ougnness for demanding	0.1654	4.200 mm		6.0	66.0	24.0	18.0	36.0	66412
ecommended for	0.1693	4.300 mm		6.0	66.0	24.0	18.0	36.0	66413
naterials < 50HRc	0.1719	4.366 mm	11/64	6.0	66.0	24.0	17.0	36.0	56405
475 Bhn)	0.1732	4.400 mm	, -	6.0	66.0	24.0	17.0	36.0	66414
	0.1772	4.500 mm		6.0	66.0	24.0	17.0	36.0	66415
	0.1811	4.600 mm		6.0	66.0	24.0	17.0	36.0	66416
	0.1850	4,699 mm	#13	6.0	66.0	24.0	17.0	36.0	66417
	0.1875	4.763 mm	3/16	6.0	66.0	28.0	21.0	36.0	56406
	0.1890	4.801 mm	#12	6.0	66.0	28.0	21.0	36.0	66418
	0.1929	4.900 mm		6.0	66.0	28.0	21.0	36.0	66419
	0.1969	5.000 mm		6.0	66.0	28.0	20.0	36.0	66420
	0.2008	5.100 mm		6.0	66.0	28.0	20.0	36.0	66421
	0.2031	5.159 mm	13/64	6.0	66.0	28.0	20.0	36.0	56407
	0.2047	5.200 mm		6.0	66.0	28.0	20.0	36.0	66422
	0.2087	5.300 mm		6.0	66.0	28.0	20.0	36.0	66423
	0.2126	5.400 mm		6.0	66.0	28.0	20.0	36.0	66424
	0.2165	5.500 mm		6.0	66.0	28.0	20.0	36.0	66425
	0 2188	5 558 mm	7/32	6.0	66.0	28.0	20.0	36.0	56408
	0.2205	5.600 mm	.,01	6.0	66.0	28.0	20.0	36.0	66426
	0 2244	5 700 mm		6.0	66.0	28.0	19.0	36.0	66427
	0 2283	5 800 mm		6.0	66.0	28.0	19.0	36.0	66428
	0 2323	5 900 mm		6.0	66.0	28.0	19.0	36.0	66429
	0.2344	5.954 mm	15/64	6.0	66.0	28.0	19.0	36.0	56409
	0.2362	6 000 mm	10/01	6.0	66.0	28.0	19.0	36.0	66430
	0.2002	6 100 mm		8.0	79.0	34.0	25.0	36.0	66431
	0 2441	6 200 mm		8.0	79.0	34.0	25.0	36.0	66432
	0.2441	6 300 mm		8.0	79 N	3/1 0	25,0	36.0	66/132
	0.2400	6,350 mm	1/4 F #0	8.0	79.0	34.0	20,0	36.0	56410
	0.2500	6 400 mm		8.0	79 N	3/ 0	24,0	36.0	66/12/
	0.2320	0,400 11111		0,0	19,0	54,0	24,0	30,0	00434

TOLERANCES (inch)

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≤.1181 DIAMETER
DC = +.00008/+.00047
DCON = h<sub>6</sub>
>.1181-.2362 DIAMETER
DC = +.00016/+.00063
DCON = h<sub>6</sub>
>.2362-.3937 DIAMETER
DC = +.00024/+.00083
DCON = h_6
>.3937-.7087 DIAMETER
DC = +.00028/+.00098
DCON = h_6
>.7087–1.1811 DIAMETER
DC = +.00031/+.00114
DCON = h_6
TOLERANCES (mm)
≤3 DIAMETER
DC = +0,002/+0,012
DCON = h_6
>3-6 DIAMETER
DC = +0,004/+0,016
DCON = h_6
>6–10 DIAMETER
DC = +0,006/+0,021
DCON = h_6
>10-18 DIAMETER
DC = +0,007/+0,025
DCON = h_6
>18-30 DIAMETER
DC = +0,008/+0,029
DCON = h_6
  STEELS
  STAINLESS STEELS
  CAST IRON
  NON-FERROUS
  HIGH TEMP ALLOYS
HARDENED STEELS
For patent
information visit
www.ksptpatents.com
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Fractional & Metric Series 142P 3xD

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142P 3xD FRACTIONAL & METRIC SERIES

CONTINUED

			inch & mm					EDP NO.
DECIMAL DC	METRIC DC	FRACTIONAL/ LETTER/WIRE DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	SHANK LENGTH LS	Ti-NAMITE°-X (TX)
0.2559	6,500 mm		8,0	79,0	34,0	24,0	36,0	66435
0.2570	6,528 mm	F	8,0	79,0	34,0	24,0	36,0	56411
0.2598	6,600 mm		8,0	79,0	34,0	24,0	36,0	66436
0.2638	6,700 mm		8,0	79,0	34,0	24,0	36,0	66437
0.2656	6,746 mm	17/64	8,0	79,0	34,0	24,0	36,0	56412
0.2677	6.800 mm		8.0	79.0	34.0	24.0	36.0	66438
0.2717	6.900 mm		8.0	79.0	34.0	24.0	36.0	66439
0.2756	7.000 mm		8.0	79.0	34.0	24.0	36.0	66440
0.2795	7.100 mm		8.0	79.0	41.0	30.0	36.0	66441
0.2812	7.142 mm	9/32	8.0	79.0	41.0	30.0	36.0	56413
0.2835	7 200 mm	0,02	8.0	79.0	41.0	30.0	36.0	66442
0.2000	7,200 mm		8.0	79.0	41.0	30.0	36.0	66443
0.2013	7 400 mm		8.0	79.0	41.0	30.0	36.0	66444
0.2010	7 500 mm		8.0	79 N	41.0	30.0	36.0	66445
0.2000	7 541 mm	19/6/	8.0	79.0	41 O	30.0	36.0	56414
0.2000	7 600 mm	10/04	8.0	79.0	41.0	30,0	36.0	664/6
0.2002	7 700 mm		0,0 Q ()	70.0	/10	20,0	26.0	66447
0.3031	7,700 mm		0,0	79,0	41,0	20,0	30,0	66//9
0.3071	7,000 mm		0,0 Q A	70.0	41,0	23,0	30,0	66440
0.3110	7,300 11111	F/16	0,0	79,0	41,0	20,0	26.0	56/15
0.3123	7,938 IIIII	5/10	0,0	79,0	41,0	29,0	30,0	30413
0.3100	8,000 mm		0,0	79,0	41,0	29,0	30,0	00400
0.3109	8,100 IIIII		10,0	09,0	47,0	30,0	40,0	00401
0.3228	8,200 mm		10,0	89,0	47,0	35,0	40,0	00452
0.3208	8,300 mm	01/04	10,0	89,0	47,0	35,0	40,0	00403
0.3281	8,334 mm	21/64	10,0	89,0	47,0	34,0	40,0	56416
0.3307	8,400 mm	0	10,0	89,0	47,0	34,0	40,0	66454
0.3320	8,433 mm	ŭ	10,0	89,0	47,0	34,0	40,0	56417
0.3346	8,500 mm		10,0	89,0	47,0	34,0	40,0	66455
0.3386	8,600 mm		10,0	89,0	47,0	34,0	40,0	66456
0.3425	8,700 mm		10,0	89,0	47,0	34,0	40,0	66457
0.3438	8,733 mm	11/32	10,0	89,0	47,0	34,0	40,0	56418
0.3465	8,800 mm		10,0	89,0	47,0	34,0	40,0	66458
0.3504	8,900 mm		10,0	89,0	47,0	34,0	40,0	66459
0.3543	9,000 mm		10,0	89,0	47,0	34,0	40,0	66460
0.3583	9,100 mm		10,0	89,0	47,0	33,0	40,0	66461
0.3594	9,129 mm	23/64	10,0	89,0	47,0	33,0	40,0	56419
0.3622	9,200 mm		10,0	89,0	47,0	33,0	40,0	66462
0.3661	9,300 mm		10,0	89,0	47,0	33,0	40,0	66463
0.3680	9,347 mm	U	10,0	89,0	47,0	33,0	40,0	56420
0.3701	9,400 mm		10,0	89,0	47,0	33,0	40,0	66464
0.3740	9,500 mm		10,0	89,0	47,0	33,0	40,0	66465
0.3750	9,525 mm	3/8	10,0	89,0	47,0	33,0	40,0	56421
0.3780	9,600 mm		10,0	89,0	47,0	33,0	40,0	66466
0.3819	9,700 mm		10,0	89,0	47,0	32,0	40,0	66467
0.3858	9,800 mm		10,0	89,0	47,0	32,0	40,0	66468
0.3898	9,900 mm		10,0	89,0	47,0	32,0	40,0	66469
0.3906	9,921 mm	25/64	10,0	89,0	47,0	32,0	40,0	56422
0.3937	10,000 mm		10,0	89,0	47,0	32,0	40,0	66470
0.3976	10,100 mm		12,0	102,0	55,0	40,0	45,0	66471
0.4016	10,200 mm		12,0	102,0	55,0	40,0	45,0	66472
0.4055	10,300 mm		12,0	102,0	55,0	40,0	45,0	66473
0.4062	10,317 mm	13/32	12,0	102,0	55,0	40,0	45,0	56423
0.4095	10,400 mm		12,0	102.0	55,0	39,0	45,0	66474
0.4134	10,500 mm		12,0	102,0	55,0	39,0	45,0	66475

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Series 142P 3xD



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DC

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DCON



142P 3xD FRACTI

CTIONAL & METRIC SE	RIES				Ī				Ť
h-performance point				inch & mm					EDP NO.
stabilizes on or exceptional	DECIMAL DC	METRIC DC	FRACTIONAL/ Letter/wire DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	SHANK LENGTH LS	Ti-NAMITE°-X (TX)
o allowing for	0.4173	10,600 mm		12,0	102,0	55,0	39,0	45,0	66476
force and	0.4213	10,700 mm		12,0	102,0	55,0	39,0	45,0	66477
llife	0.4219	10,716 mm	27/64	12,0	102,0	55,0	39,0	45,0	56424
nt hole	0.4252	10,800 mm		12,0	102,0	55,0	39,0	45,0	66478
nd aid	0.4291	10,900 mm		12,0	102,0	55,0	39,0	45,0	66479
	0.4331	11,000 mm		12,0	102,0	55,0	39,0	45,0	66480
	0.4370	11,100 mm		12,0	102,0	55,0	38,0	45,0	66481
	0.4375	11,113 mm	7/16	12,0	102,0	55,0	38,0	45,0	56425
	0.4409	11,200 mm		12,0	102,0	55,0	38,0	45,0	66482
d	0.4449	11,300 mm		12,0	102,0	55,0	38,0	45,0	66483
ross	0.4488	11,400 mm		12,0	102,0	55,0	38,0	45,0	66484
xiting	0.4528	11,500 mm		12,0	102,0	55,0	38,0	45,0	66485
	0.4567	11,600 mm		12,0	102,0	55,0	38,0	45,0	66486
1ITE [®] -X	0.4606	11,700 mm		12,0	102,0	55,0	37,0	45,0	66487
ubstrate	0.4646	11,800 mm		12,0	102,0	55,0	37,0	45,0	66488
al	0.4685	11,900 mm		12,0	102,0	55,0	37,0	45,0	66489
nd	0.4688	11,908 mm	15/32	12,0	102,0	55,0	37,0	45,0	56426
lanung	0.4724	12,000 mm		12,0	102,0	55,0	37,0	45,0	66490
	0.4844	12,304 mm	31/64	14,0	107,0	60,0	41,0	45,0	56427
	0.4921	12,500 mm		14,0	107,0	60,0	41,0	45,0	66491
	0.5000	12,700 mm	1/2	14,0	107,0	60,0	41,0	45,0	56428
	0.5039	12,800 mm		14,0	107,0	60,0	41,0	45,0	66492
	0.5118	13,000 mm		14,0	107,0	60,0	41,0	45,0	66493
	0.5156	13,096 mm	33/64	14,0	107,0	60,0	40,0	45,0	56429
	0.5315	13,500 mm		14,0	107,0	60,0	40,0	45,0	66494
	0.5433	13,800 mm		14,0	107,0	60,0	39,0	45,0	66495
	0.5512	14,000 mm		14,0	107,0	60,0	39,0	45,0	66496
	0.5625	14,288 mm	9/16	16,0	115,0	65,0	43,0	48,0	56430
	0.5709	14,500 mm		16,0	115,0	65,0	43,0	48,0	66497
	0.5781	14,684 mm	37/64	16,0	115,0	65,0	43,0	48,0	56431
	0.5827	14,800 mm		16,0	115,0	65,0	43,0	48,0	66498
	0.5906	15,000 mm		16,0	115,0	65,0	42,0	48,0	66499
	0.6102	15,500 mm		16,0	115,0	65,0	42,0	48,0	66500
	0.6221	15,800 mm		16,0	115,0	65,0	41,0	48,0	66501
	0.6250	15,875 mm	5/8	16,0	115,0	65,0	41,0	48,0	56432
	0.6299	16,000 mm	-, -	16,0	115,0	65,0	41,0	48,0	66502
	0.6562	16,667 mm	21/32	18,0	123,0	73,0	47,0	48,0	56433
	0.6875	17,463 mm	11/16	18,0	123,0	73,0	47,0	48,0	56434
	0.7500	19,050 mm	3/4	20,0	131,0	79,0	50,0	50,0	56435
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TOLERANCES (inch)

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≤.1181 DIAMETER
DC = +.00008/+.00047
DCON = h<sub>6</sub>
>.1181-.2362 DIAMETER
DC = +.00016/+.00063
DCON = h<sub>6</sub>
>.2362-.3937 DIAMETER
DC = +.00024/+.00083
DCON = h_6
>.3937-.7087 DIAMETER
DC = +.00028/+.00098
DCON = h_6
>.7087-1.1811 DIAMETER
DC = +.00031/+.00114
DCON = h_6
TOLERANCES (mm)
≤3 DIAMETER
DC = +0,002/+0,012
DCON = h_6
>3-6 DIAMETER
DC = +0,004/+0,016
DCON = h_6
>6–10 DIAMETER
DC = +0,006/+0,021
DCON = h<sub>6</sub>
>10-18 DIAMETER
DC = +0,007/+0,025
DCON = h_6
>18-30 DIAMETER
DC = +0,008/+0,029
DCON = h_6
  STEELS
  STAINLESS STEELS
  CAST IRON
  NON-FERROUS
  HIGH TEMP ALLOYS
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HARDENED STEELS

Fractional & Metric Series 142P 3xD

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142P 5xD

FRACTIONAL & METRIC SERIES

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TOLERANCES (inch)				inch & mm					EDP NO.	a llink norfermense neint
≤.1181 DIAMETER DC = +.00008/+.00047	DECIMAL DC	METRIC DC	FRACTIONAL/ Letter/wire DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	SHANK LENGTH LS	Ti-NAMITE [®] -X (TX)	Hign-performance point design stabilizes on entry for exceptional bala size and
DCON = h ₆	0.1181	3,000 mm		6,0	66,0	28,0	23,0	36,0	66503	cylindricity while also
>.11812362 DIAMETER	0.1220	3,100 mm		6,0	66,0	28,0	23,0	36,0	66504	allowing for low thrust
DC = +.00016/+.00063	0.1250	3,175 mm	1/8	6,0	66,0	28,0	23,0	36,0	56436	tool life
DCON = h ₆	0.1260	3,200 mm		6,0	66,0	28,0	23,0	36,0	66505	 Internal coolant hole
>.23623937 DIAMETER	0.1299	3,300 mm		6,0	66,0	28,0	23,0	36,0	66506	improves coolant flow
DC = +.00024/+.00083	0.1339	3,400 mm		6,0	66,0	28,0	23,0	36,0	66507	aid in chip evacuation
DCON = h ₆	0.1360	3,454 mm	#29	6,0	66,0	28,0	23,0	36,0	56437	 4-margin design
>.3937–.7087 DIAMETER	0.1378	3,500 mm		6,0	66,0	28,0	23,0	36,0	66508	improves hole straightness and
DC = +.00028/+.00098	0.1406	3,571 mm	9/64	6,0	66,0	28,0	23,0	36,0	56438	roundness while
DCON = h ₆	0.1417	3,600 mm		6,0	66,0	28,0	23,0	36,0	66509	providing improved
>.7087–1.1811 DIAMETER	0.1457	3,700 mm		6,0	66,0	28,0	23,0	36,0	66510	applications like cross
DC = +.00031/+.00114	0.1496	3,800 mm		6,0	74,0	36,0	29,0	36,0	66511	holes and when exiting
DCON = h ₆	0.1535	3,900 mm		6,0	74,0	36,0	29,0	36,0	66512	Proprioton/Ti NAMITE® Y
	0.1562	3,967 mm	5/32	6,0	74,0	36,0	29,0	36,0	56439	coating and industry
TOLERANCES (mm)	0.1575	4,000 mm		6,0	74,0	36,0	29,0	36,0	66513	leading carbide
	0.1590	4,039 mm	#21	6,0	74,0	36,0	29,0	36,0	56440	exceptional wear
DC = +0.002/+0.012	0.1614	4,100 mm		6,0	74,0	36,0	29,0	36,0	66514	resistance and
DCON = h ₆	0.1654	4,200 mm		6,0	74,0	36,0	29,0	36,0	66515	demanding applications
S-6 DIAMETER	0.1693	4,300 mm		6,0	74,0	36,0	29,0	36,0	66516	 Recommended for
DC = +0.004/+0.016	0.1719	4,366 mm	11/64	6,0	74,0	36,0	29,0	36,0	56441	materials ≤ 50HRc
DCON = h_6	0.1732	4,400 mm		6,0	74,0	36,0	29,0	36,0	66517	(475 Bnn)
	0.1772	4,500 mm		6,0	74,0	36,0	29,0	36,0	66518	
	0.1811	4,600 mm		6,0	74,0	36,0	29,0	36,0	66519	
DCON = h6	0.1850	4,699 mm	#13	6,0	74,0	36,0	29,0	36,0	66520	
	0.1875	4,763 mm	3/16	6,0	82,0	44,0	37,0	36,0	56442	
	0.1890	4,801 mm	#12	6,0	82,0	44,0	37,0	36,0	66521	
DCON = h ₆	0.1929	4,900 mm		6,0	82,0	44,0	37,0	36,0	66522	
	0.1969	5,000 mm		6,0	82,0	44,0	36,0	36,0	66523	
>18-30 DIAMETER	0.2008	5,100 mm	10/04	6,0	82,0	44,0	36,0	36,0	66524	
DC = +0,008/+0,029 DCON - be	0.2031	5,159 mm	13/64	6,0	82,0	44,0	36,0	36,0	56443	
50011-110	0.2047	5,200 mm		6,0	82,0	44,0	36,0	36,0	66525	
CTELC	0.2087	5,300 mm		6,0	82,0	44,0	36,0	36,0	00520	
STEELS	0.2120	5,400 mm		6,0	82,0	44,0	30,0	30,0	66527	
STAINLESS STEELS	0.2100	5,500 mm	7/00	6,0	82,0	44,0	30,0	30,0	00028	
CAST IRON	0.2100	5,558 mm	1/3Z	6,0	82,0	44,0	30,0	30,0	50444	
	0.2205	5,000 mm		6,0	82,0	44,0	30,0	30,0	00029	
NON-FERROUS	0.2244	5,/00 IIIIII		0,0	02,0	44,0	30,0	30,0	00030	
HIGH TEMP ALLOYS	0.2283	5,800 mm		6,0	82,0	44,0	35,0	30,0	00031	
HARDENED STEELS	0.2323	5,900 mm	15/64	0,0	02,0	44,0	30,0	30,0	0003Z	
TRADENED STEELS	0.2344	5,954 mm	15/04	0,0	ŏ2,0	44,0	30,U	30,U	00440	
Ferretart	0.2302	6 100 mm		0,0	02,0	44,U	30,0	30,0	00003	
information visit	0.2402	6 200 mm		0,0	91,U 01.0	52.0	44,0	30,0 26.0	66525	
www.ksptpatents.com	0.2441	0,200 mm		0,0	91,0	53,0	44,0	30,0	00030	
	0.2460	0,300 11111		0,0	ອ 1,0	JJ,U	44,0	JU,U	00030	





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142P 5xD **FRACTIONAL & METRIC SERIES**

- Ulah norfermana asint				inch & mm					EDP NO.
entry for exceptional	DECIMAL	METRIC	FRACTIONAL/ LETTER/WIRE DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	SHANK LENGTH LS	Ti-NAMITE®-X (TX)
while also allowing for	0.2500	6.350 mm	1/4 E #0	8.0	91.0	53.0	43.0	36.0	56446
low thrust force and	0.2520	6,400 mm	, -	8.0	91.0	53.0	43.0	36.0	66537
extended tool life	0.2559	6,500 mm		8.0	91.0	53.0	43.0	36.0	66538
Internal coolant hole	0.2570	6.528 mm	F	8.0	91.0	53.0	43.0	36.0	56447
extend tool life and aid	0.2598	6.600 mm		8.0	91.0	53.0	43.0	36.0	66539
in chip evacuation	0.2638	6.700 mm		8.0	91.0	53.0	43.0	36.0	66540
4-margin design	0.2656	6.746 mm	17/64	8.0	91.0	53.0	43.0	36.0	56448
straightness and	0.2677	6.800 mm		8.0	91.0	53.0	43.0	36.0	66541
roundness while	0.2717	6,900 mm		8.0	91.0	53.0	43.0	36.0	66542
stability for difficult	0.2756	7.000 mm		8.0	91.0	53.0	42.0	36.0	66543
applications like cross	0.2795	7.100 mm		8.0	91.0	53.0	42.0	36.0	66544
on angle	0.2812	7.142 mm	9/32	8.0	91.0	53.0	42.0	36.0	56449
Proprietary Ti-NAMITE®-X	0.2835	7,200 mm	-/	8.0	91.0	53.0	42.0	36.0	66545
coating and industry	0.2874	7.300 mm		8.0	91.0	53.0	42.0	36.0	66546
provides exceptional	0.2913	7,400 mm		8.0	91.0	53.0	42.0	36.0	66547
wear resistance and	0.2953	7,500 mm		8.0	91.0	53.0	42.0	36.0	66548
toughness for demanding	0.2969	7.541 mm	19/64	8.0	91.0	53.0	42.0	36.0	56450
Recommended for	0 2992	7 600 mm	10/01	8.0	91.0	53.0	42.0	36.0	66549
materials ≤ 50HRc	0.3031	7 700 mm		8.0	91.0	53.0	41.0	36.0	66550
(475 Bhn)	0.3071	7 800 mm		8.0	91.0	53.0	41.0	36.0	66551
	0.3110	7,000 mm		8.0	91.0	53.0	41.0	36.0	66552
	0.3110	7,000 mm	5/16	8.0	91.0	53.0	41,0	36.0	56451
	0.3150	8 000 mm	3/10	8.0	91 N	53.0	/10	36.0	66553
	0.3130	8 100 mm		10.0	103.0	61 0	49.0	40 0	66554
	0.3703	8 200 mm		10,0	103,0	61.0	/9.0	10,0	66555
	0.3220	8 300 mm		10,0	103,0	61.0	43,0 //9.0	40,0 /10.0	66556
	0.3200	8 33/1 mm	21/6/	10,0	103,0	61.0	43,0	40,0	56/52
	0.3201	8 /00 mm	21/04	10,0	103,0	61.0	40,0 /18 0	40,0	66557
	0.3307	8 432 mm	Ο	10,0	103,0	61.0	48 N	40.0	56/53
	0.3320	8 500 mm	u	10,0	103,0	61.0	48 N	40.0	66552
	0.3340	8 600 mm		10,0	103,0	61.0	48 N	40.0	66559
	0.3300	8 700 mm		10,0	103,0	61.0	/18 0	/0.0	66560
	0.0420	8 732 mm	11/22	10,0	103,0	61.0	40,0 /12 N	40,0	56454
	0.3430	8 800 mm	11/32	10,0	103,0	61.0	40,0 48 0	40,0 40.0	66561
	0.3403	8 900 mm		10,0	103,0	61.0	40,0 //2 0	40,0 //0.0	66562
	0.3304	0,000 mm		10,0	103,0	61.0	40,0 //0 n	40,0	66562
	0.3043	9,000 mm		10,0	103,0	61.0	40,0 /17 0	40,0	66564
	0.3003	9,100 IIIII	22/6/	10,0	103,0	61.0	47,0	40,0	56455
	0.0004	J, 1 Z J IIIII	23/04	10,0	103,0	61.0	47,0	40,0	66565
	0.3022	9,200 IIIII		10,0	103,0	61.0	47,0	40,0	00000
	0.3001	9,300 mm		10,0	103,0	01,U 61.0	47,0	40,0	00000
	0.3080	9,04/ IIIII	U	10,0	103,0	61.0	47,0	40,0	00400
	0.3701	9,400 mm		10,0	103,0	01,0	47,0	40,0	00007
	0.3740	9,500 mm	0/0	10,0	103,0	01,0	47,0	40,0	00508
	0.3750	9,525 mm	3/8	10,0	103,0	61,0	47,0	40,0	56457

OLERANCES (inch)

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.1181 DIAMETER
C = +.00008/+.00047
CON = h<sub>6</sub>
.1181-.2362 DIAMETER
C = +.00016/+.00063
CON = h<sub>6</sub>
.2362-.3937 DIAMETER
C = +.00024/+.00083
CON = h_6
.3937-.7087 DIAMETER
C = +.00028/+.00098
CON = h_6
.7087–1.1811 DIAMETER
C = +.00031/+.00114
CON = h<sub>6</sub>
OLERANCES (mm)
3 DIAMETER
C = +0,002/+0,012
CON = h<sub>6</sub>
3–6 DIAMETER
C = +0,004/+0,016
CON = h_6
6–10 DIAMETER
C = +0,006/+0,021
CON = h<sub>6</sub>
10–18 DIAMETER
C = +0,007/+0,025
CON = h_6
18–30 DIAMETER
C = +0,008/+0,029
CON = h<sub>6</sub>
STEELS
STAINLESS STEELS
CAST IRON
NON-FERROUS
HIGH TEMP ALLOYS
HARDENED STEELS
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		FRACTIONAL/	SHANK	OVERALL	FLUTE	USABLE	SHANK	EDP NO. Ti-NAMITE [®] -X
DECIMAL DC	METRIC DC	LETTER/WIRE DC	DIAMETER DCON	LENGTH OAL	LENGTH LCF	LENGTH LU	LENGTH LS	(TX)
0.3780	9,600 mm		10,0	103,0	61,0	47,0	40,0	66569
0.3819	9,700 mm		10,0	103,0	61,0	46,0	40,0	66570
0.3858	9,800 mm		10,0	103,0	61,0	46,0	40,0	66571
0.3898	9,900 mm		10,0	103,0	61,0	46,0	40,0	66572
0.3906	9,921 mm	25/64	10,0	103,0	61,0	46,0	40,0	56458
0.3937	10,000 mm		10,0	103,0	61,0	46,0	40,0	66573
0.3976	10,100 mm		12,0	118,0	71,0	56,0	45,0	66574
0.4016	10,200 mm		12,0	118,0	71,0	56,0	45,0	66575
0.4055	10,300 mm		12,0	118,0	71,0	56,0	45,0	66576
0.4062	10,317 mm	13/32	12,0	118,0	71,0	56,0	45,0	56459
0.4095	10,400 mm		12,0	118,0	71,0	55,0	45,0	66577
0.4134	10 <i>.</i> 500 mm		12.0	118.0	71.0	55.0	45.0	66578
0.4173	10,600 mm		12,0	118,0	71,0	55,0	45,0	66579
0.4213	10,700 mm		12.0	118.0	71.0	55.0	45.0	66580
0.4219	10,716 mm	27/64	12.0	118.0	71.0	55.0	45.0	56460
0.4252	10,800 mm		12.0	118.0	71.0	55.0	45.0	66581
0.4291	10,900 mm		12.0	118.0	71.0	55.0	45.0	66582
0 4331	11 000 mm		12.0	118.0	71.0	54.0	45.0	66583
0 4370	11 100 mm		12.0	118.0	71.0	54.0	45.0	66584
0.4375	11,113 mm	7/16	12.0	118.0	71.0	54.0	45.0	56461
0 4409	11 200 mm	1,10	12.0	118.0	71.0	54.0	45.0	66585
0.1100	11 300 mm		12,0	118.0	71.0	54.0	45.0	66586
0.4488	11 400 mm		12,0	118.0	71.0	54.0	45.0	66587
0.4528	11 500 mm		12,0	118.0	71.0	54.0	45.0	66588
0.4567	11,500 mm		12,0	118.0	71.0	54.0	45.0	66589
0.4507	11,000 mm		12,0	118.0	71.0	53.0	45,0 //5.0	66590
0.4646	11,700 mm		12,0	118.0	71,0	53,0	45.0	66591
0.4695	11,000 mm		12,0	118.0	71.0	53.0	45,0 //5.0	66592
0.4688	11,000 mm	15/32	12,0	112.0	71,0	53,0	45.0	56462
0.4000	12 000 mm	IJ/JZ	12,0	118.0	71,0	53,0 53,0	45,0 //5,0	66593
0.4724	12,000 mm	21/6/	14.0	12/10	71,0	58.0	45.0	56463
0.4044	12,304 mm	51/04	14,0	124,0	77,0	50,0	45,0	6650/
0.4521	12,300 mm	1/2	14,0	124,0	77,0	50,0	45,0	56464
0.5000	12,700 mm	1/2	14,0	124,0	77,0	50,0	45,0	50404
0.5055	12,000 mm		14,0	124,0	77,0	50,0	45,0	00333
0.5110	12,000 mm	22/6/	14,0	124,0	77,0	57.0	45,0	56465
0.5150	12,090 mm	33/04	14,0	124,0	77,0	57,0	40,0	50405
0.5515	12 800 mm		14,0	124,0	77,0	57,0	45,0	66509
0.0400	14 000 mm		14,0	124,0	77,0	50,0	40,0 /E 0	66500
0.0012	14,000 11111	0/16	14,0	124,0	02.0	50,0	40,0	00099
0.0020	14,200 mm	9/10	10,0	133,0	03,U 02.0	01,0	40,U	00400
0.5709	14,000 1110	27/64	10,0	100,0	03,0	01,0	40,0	56467
0.5/81	14,084 mm	37/64	10,0	133,0	ბპ,U	01,0	48,0	50467
0.002/	14,800 mm		10,0	133,0	03,U	01,0	48,U	00001
0.5300	15,000 mm		10,0	133,0	03,U	00,0	40,U	00002
0.0102	15,500 mm		10,0	133,0	83,U	00,0	48,0	00003
0.6221	15,800 mm	E /0	16,0	133,0	83,0	59,0	48,0	66604
0.0250	10,875 mm	5/8	10,0	133,0	83,0	59,0	48,0	50468
0.6299	10,000 mm	04/00	10,0	133,0	83,0	59,0	48,0	66605
0.6562	10,667 mm	21/32	18,0	143,0	93,0	68,0	48,0	56469
0.08/5	17,463 mm	11/16	18,0	143,0	93,0	b/,U	48,0	56470
0.7500	19,050 mm	3/4	20,0	153,0	101,0	72,0	50,0	564/1



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High-performance point				inch & mm					EDP NO.	TULERANCES (II	
design stabilizes on entry for exceptional hole size and cylindricity	DECIMAL DC	METRIC DC	FRACTIONAL/ Letter/wire DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	SHANK LENGTH LS	Ti-NAMITE [®] -X (TX)	≤.1181 DIAMETER DC = +.00008/+	
while also allowing for	0.1181	3,000 mm		6,0	72,0	34,0	29,0	36,0	66606	DCON = h ₆	
extended tool life	0.1220	3,100 mm		6,0	72,0	34,0	29,0	36,0	66607	>.11812362 DIA	
Internal coolant hole	0.1250	3,175 mm	1/8	6,0	72,0	34,0	29,0	36,0	56472	DC = +.00016/+	
extend tool life and aid	0.1260	3,200 mm		6,0	72,0	34,0	29,0	36,0	66608	DCON = 116	
in chip evacuation	0.1299	3,300 mm		6,0	72,0	34,0	29,0	36,0	66609	>.23623937 DIA	
4-margin design improves hole	0.1339	3,400 mm		6,0	72,0	34,0	29,0	36,0	66610	DC = +.00024/+ DCON = h ₆	
straightness and	0.1360	3,454 mm	#29	6,0	72,0	34,0	29,0	36,0	56473	> 2027 7007 DIA	
roundness while providing improved	0.1378	3,500 mm		6,0	72,0	34,0	29,0	36,0	66611	>.39377087 DIA	
stability for difficult	0.1406	3,571 mm	9/64	6,0	72,0	34,0	29,0	36,0	56474	DCON = h_6	
holes and when exiting	0.1417	3,600 mm		6,0	72,0	34,0	29,0	36,0	66612	> 7087–1 1811 DIA	
on angle	0.1457	3,700 mm		6,0	72,0	34,0	29,0	36,0	66613	DC = +.00031/+	
Proprietary Ti-NAMITE [®] -X coating and industry	0.1496	3,800 mm		6,0	81,0	43,0	37,0	36,0	66614	DCON = h ₆	
leading carbide substrate	0.1535	3,900 mm		6,0	81,0	43,0	37,0	36,0	66615		
provides exceptional wear resistance and	0.1562	3,967 mm	5/32	6,0	81,0	43,0	37,0	36,0	56475	TOLERANCES (m	
toughness for demanding	0.1575	4,000 mm		6,0	81,0	43,0	37,0	36,0	66616	≤ 3 DIAMETER	
applications Bocommonded for	0.1590	4,039 mm	#21	6,0	81,0	43,0	37,0	36,0	56476	DC = +0,002/+0	
materials ≤ 50HRc	0.1614	4,100 mm		6,0	81,0	43,0	37,0	36,0	66617	DCON = h ₆	
(475 Bhn)	0.1654	4,200 mm		6,0	81,0	43,0	37,0	36,0	66618	>3-6 DIAMETER	
	0.1693	4,300 mm		6,0	81,0	43,0	37,0	36,0	66619	DC = +0,004/+0	
	0.1719	4,366 mm	11/64	6,0	81,0	43,0	36,0	36,0	56477	DCUN = h ₆	
	0.1732	4,400 mm		6,0	81,0	43,0	36,0	36,0	66620	>6–10 DIAMETER	
	0.1772	4,500 mm		6,0	81,0	43,0	36,0	36,0	66621	DC = +0,006/+0	
	0.1811	4,600 mm		6,0	81,0	43,0	36,0	36,0	66622		
	0.1850	4,699 mm	#13	6,0	81,0	43,0	36,0	36,0	66623	>10-18 DIAMETE	
	0.1875	4,763 mm	3/16	6,0	95,0	57,0	50,0	36,0	56478	DC = +0,007/+0 DCON = h ₆	
	0.1890	4,801 mm	#12	6,0	95,0	57,0	50,0	36,0	66624	10 20 DIAMETE	
	0.1929	4,900 mm		6,0	95,0	57,0	50,0	36,0	66625	DC = +0.008/+0	
	0.1969	5,000 mm		6,0	95,0	57,0	49,0	36,0	66626	DCON = h_6	
	0.2008	5,100 mm		6,0	95,0	57,0	49,0	36,0	66627		
	0.2031	5,159 mm	13/64	6,0	95,0	57,0	49,0	36,0	56479	STEELS	
	0.2047	5,200 mm		6,0	95,0	57,0	49,0	36,0	66628		
	0.2087	5,300 mm		6,0	95,0	57,0	49,0	36,0	66629	3 TAINLESS STEE	
	0.2126	5,400 mm		6,0	95,0	57,0	49,0	36,0	66630	CAST IRON	
	0.2165	5,500 mm		6,0	95,0	57,0	49,0	36,0	66631	NON-FERROUS	
	0.2188	5,558 mm	7/32	6,0	95,0	57,0	49,0	36,0	56480	HIGH TEMP ALL	
	0.2205	5,600 mm		6,0	95,0	57,0	49,0	36,0	66632	HIGH TEMP AL	
	0.2244	5,700 mm		6,0	95,0	57,0	48,0	36,0	66633	HARDENED STE	
	0.2283	5,800 mm		6,0	95,0	57,0	48,0	36,0	66634		

continued on next page



DC =	+.00008/+.00047
DCON=	h ₆
>.1181- DC = DCON=	+.00016/+.00063 h ₆
>.2362-	- .3937 DIAMETER
DC =	+.00024/+.00083
DCON =	h ₆
>.3937-	7087 DIAMETER
DC =	+.00028/+.00098
DCON =	h ₆
>.7087-	1.1811 DIAMETER
DC =	+.00031/+.00114
DCON =	h ₆
TOLER	ANCES (mm)
\leq 3 diai	METER
dc =	+0,002/+0,012
dcon =	h ₆

METER 0,004/+0,016 6

AMETER 0,006/+0,021

6

DIAMETER 0,007/+0,025 16

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DIAMETER
0,008/+0,029
6
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Fractional & Metric

Series 142P 8xD





CONTINUED

			:					CDD NO
DECIMAL	METRIC	FRACTIONAL/ LETTER/WIRE	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	SHANK LENGTH LS	Ti-NAMITE®-X (TX)
0.2323	5.900 mm	50	6.0	95.0	57.0	48.0	36.0	66635
0.2344	5.954 mm	15/64	6.0	95.0	57.0	48.0	36.0	56481
0.2362	6.000 mm	-, -	6.0	95.0	57.0	48.0	36.0	66636
0.2402	6,100 mm		8.0	114.0	76.0	67.0	36.0	66637
0.2441	6,200 mm		8,0	114,0	76,0	67,0	36,0	66638
0.2480	6.300 mm		8.0	114.0	76.0	67.0	36.0	66639
0.2500	6,350 mm	1/4 E #0	8,0	114,0	76,0	66,0	36,0	56482
0.2520	6,400 mm		8,0	114,0	76,0	66,0	36,0	66640
0.2559	6,500 mm		8,0	114,0	76,0	66,0	36,0	66641
0.2570	6,528 mm	F	8,0	114,0	76,0	66,0	36,0	56483
0.2598	6,600 mm		8,0	114,0	76,0	66,0	36,0	66642
0.2638	6,700 mm		8,0	114,0	76,0	66,0	36,0	66643
0.2656	6,746 mm	17/64	8,0	114,0	76,0	66,0	36,0	56484
0.2677	6,800 mm		8,0	114,0	76,0	66,0	36,0	66644
0.2717	6,900 mm		8,0	114,0	76,0	66,0	36,0	66645
0.2756	7,000 mm		8,0	114,0	76,0	65,0	36,0	66646
0.2795	7,100 mm		8,0	114,0	76,0	65,0	36,0	66647
0.2812	7,142 mm	9/32	8,0	114,0	76,0	65,0	36,0	56485
0.2835	7,200 mm		8,0	114,0	76,0	65,0	36,0	66648
0.2874	7,300 mm		8,0	114,0	76,0	65,0	36,0	66649
0.2913	7,400 mm		8,0	114,0	76,0	65,0	36,0	66650
0.2953	7,500 mm		8,0	114,0	76,0	65,0	36,0	66651
0.2969	7,541 mm	19/64	8,0	114,0	76,0	65,0	36,0	56486
0.2992	7,600 mm		8,0	114,0	76,0	65,0	36,0	66652
0.3031	7,700 mm		8,0	114,0	76,0	64,0	36,0	66653
0.3071	7,800 mm		8,0	114,0	76,0	64,0	36,0	66654
0.3110	7,900 mm		8,0	114,0	76,0	64,0	36,0	66655
0.3125	7,938 mm	5/16	8,0	114,0	76,0	64,0	36,0	56487
0.3150	8,000 mm		8,0	114,0	76,0	64,0	36,0	66656
0.3189	8,100 mm		10,0	142,0	95,0	83,0	40,0	66657
0.3228	8,200 mm		10,0	142,0	95,0	83,0	40,0	66658
0.3268	8,300 mm		10,0	142,0	95,0	83,0	40,0	66659
0.3281	8,334 mm	21/64	10,0	142,0	95,0	83,0	40,0	56488
0.3307	8,400 mm		10,0	142,0	95,0	82,0	40,0	66660
0.3320	8,433 mm	Q	10,0	142,0	95,0	82,0	40,0	56489
0.3346	8,500 mm		10,0	142,0	95,0	82,0	40,0	66661
0.3386	8,600 mm		10,0	142,0	95,0	82,0	40,0	66662
0.3425	8,700 mm		10,0	142,0	95,0	82,0	40,0	66663
0.3438	8,733 mm	11/32	10,0	142,0	95,0	82,0	40,0	56490
0.3465	8,800 mm		10,0	142,0	95,0	82,0	40,0	66664
0.3504	8,900 mm		10,0	142,0	95,0	82,0	40,0	66665
0.3543	9,000 mm		10,0	142,0	95,0	82,0	40,0	66666
0.3583	9,100 mm		10,0	142,0	95,0	81,0	40,0	66667
0.3594	9,129 mm	23/64	10,0	142,0	95,0	81,0	40,0	56491



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DCON

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High performance point				inch & mm					EDP NO.	TOLERANCES (inch)
design stabilizes on entry for exceptional hole size and cylindricity	DECIMAL DC	METRIC DC	FRACTIONAL/ Letter/Wire DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	SHANK LENGTH LS	Ti-NAMITE®-X (TX)	≤.1181 DIAMETER DC = +.00008/+.000
while also allowing for	0.3622	9,200 mm		10,0	142,0	95,0	81,0	40,0	66668	DCON = h ₆
extended tool life	0.3661	9,300 mm		10,0	142,0	95,0	81,0	40,0	66669	>.11812362 DIAMET
Internal coolant hole	0.3680	9,347 mm	U	10,0	142,0	95,0	81,0	40,0	56492	DC = +.00016/+.000
extend tool life and aid	0.3701	9,400 mm		10,0	142,0	95,0	81,0	40,0	66670	DCUN = h ₆
in chip evacuation	0.3740	9,500 mm		10,0	142,0	95,0	81,0	40,0	66671	>.23623937 DIAME
4-margin design improves hole	0.3750	9,525 mm	3/8	10,0	142,0	95,0	81,0	40,0	56493	DC = +.00024/+.000
straightness and	0.3780	9,600 mm		10,0	142,0	95,0	81,0	40,0	66672	2007 7007 DIAME
roundness while providing improved	0.3819	9,700 mm		10,0	142,0	95,0	80,0	40,0	66673	>.39377087 DIAME
stability for difficult	0.3858	9,800 mm		10,0	142,0	95,0	80,0	40,0	66674	DCON = h_6
holes and when exiting	0.3898	9,900 mm		10,0	142,0	95,0	80,0	40,0	66675	> 7087_1 1811 DIAME
on angle	0.3906	9,921 mm	25/64	10,0	142,0	95,0	80,0	40,0	56494	DC = +.00031/+.001
Proprietary Ti-NAMITE [®] -X coating and industry	0.3937	10,000 mm		10,0	142,0	95,0	80,0	40,0	66676	DCON = h ₆
leading carbide substrate	0.3976	10,100 mm		12,0	162,0	114,0	99,0	45,0	66677	
provides exceptional wear resistance and	0.4016	10,200 mm		12,0	162,0	114,0	99,0	45,0	66678	TOLERANCES (mm)
toughness for demanding	0.4055	10,300 mm		12,0	162,0	114,0	99,0	45,0	66679	≤ 3 DIAMETER
Becommended for	0.4062	10,317 mm	13/32	12,0	162,0	114,0	99,0	45,0	56495	DC = +0,002/+0,012
materials ≤ 50HRc	0.4095	10,400 mm		12,0	162,0	114,0	98,0	45,0	66680	DCON = h_6
(475 Bhn)	0.4134	10,500 mm		12,0	162,0	114,0	98,0	45,0	66681	>3–6 DIAMETER
	0.4173	10,600 mm		12,0	162,0	114,0	98,0	45,0	66682	DC = +0,004/+0,010
	0.4213	10,700 mm		12,0	162,0	114,0	98,0	45,0	66683	DCUN = n_6
	0.4219	10,716 mm	27/64	12,0	162,0	114,0	98,0	45,0	56496	>6–10 DIAMETER
	0.4252	10,800 mm		12,0	162,0	114,0	98,0	45,0	66684	DC = +0,006/+0,02
	0.4291	10,900 mm		12,0	162,0	114,0	98,0	45,0	66685	
	0.4331	11,000 mm		12,0	162,0	114,0	97,0	45,0	66686	>1U-18 DIAMETER
	0.4370	11,100 mm		12,0	162,0	114,0	97,0	45,0	66687	DC = $\pm 0,007/\pm0,023$ DCON = h ₆
	0.4375	11,113 mm	7/16	12,0	162,0	114,0	97,0	45,0	56497	18_20 DIAMETER
	0.4409	11,200 mm		12,0	162,0	114,0	97,0	45,0	66688	DC = +0.008/+0.02
	0.4449	11,300 mm		12,0	162,0	114,0	97,0	45,0	66689	DCON = h_6
	0.4488	11,400 mm		12,0	162,0	114,0	97,0	45,0	66690	
	0.4528	11,500 mm		12,0	162,0	114,0	97,0	45,0	66691	STEELS
	0.4567	11,600 mm		12,0	162,0	114,0	97,0	45,0	66692	STAINI ESS STEELS
	0.4606	11,700 mm		12,0	162,0	114,0	96,0	45,0	66693	SIMILESS STEELS
	0.4646	11,800 mm		12,0	162,0	114,0	96,0	45,0	66694	CASTIRON
	0.4685	11,900 mm		12,0	162,0	114,0	96,0	45,0	66695	NON-FERROUS
	0.4688	11,908 mm	15/32	12,0	162,0	114,0	96,0	45,0	56498	HIGH TEMP ALLOYS
	0.4724	12,000 mm		12,0	162,0	114,0	96,0	45,0	66696	
	0.4844	12,304 mm	31/64	14,0	178,0	133,0	114,0	45,0	56499	HARDENED STEELS
	0.4921	12,500 mm		14,0	178,0	133,0	114,0	45,0	66697	

continued on next page

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RANCES (inch)
DIAMETER
= +.00008/+.00047
= h<sub>6</sub>
I-.2362 DIAMETER
= +.00016/+.00063
= h<sub>6</sub>
2–.3937 DIAMETER
= +.00024/+.00083
= h<sub>6</sub>
7–.7087 DIAMETER
= +.00028/+.00098
= h<sub>6</sub>
7–1.1811 DIAMETER
= +.00031/+.00114
= h<sub>6</sub>
RANCES (mm)
AMETER
= +0,002/+0,012
= h<sub>6</sub>
DIAMETER
= +0,004/+0,016
= h<sub>6</sub>
O DIAMETER
= +0,006/+0,021
= h<sub>6</sub>
18 DIAMETER
= +0,007/+0,025
= h<sub>6</sub>
30 DIAMETER
= +0,008/+0,029
= h<sub>6</sub>
TEELS
AINLESS STEELS
AST IRON
ON-FERROUS
IGH TEMP ALLOYS
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CONTINUED

inch & mm EDP NO. SHANK OVERALL FLUTE USABLE SHANK FRACTIONAL/ Ti-NAMITE[®]-X DECIMAL METRIC LETTER/WIRE DIAMETER LENGTH LENGTH LENGTH LENGTH (TX) DC DĊ DCON 0AL LCF LU LS DC 12,700 mm 178,0 133,0 45,0 56500 0.5000 1/2 14,0 114,0 0.5039 12,800 mm 14,0 178,0 133,0 114,0 45,0 66698 0.5118 13,000 mm 14,0 178,0 133,0 45,0 66699 114,0 0.5156 13,096 mm 33/64 14,0 178,0 133,0 113,0 45,0 56501 0.5315 13,500 mm 14,0 178,0 133,0 113,0 45,0 66700 0.5433 13,800 mm 14,0 178,0 133,0 113,0 45,0 66701 0.5512 14,000 mm 14,0 178,0 133,0 113,0 45,0 66702 0.5625 14,288 mm 9/16 16,0 203,0 152,0 130,0 48,0 56502 0.5709 14,500 mm 16,0 203,0 152,0 130,0 48,0 66703 0.5781 152,0 14,684 mm 37/64 16,0 203,0 130,0 48,0 56503 0.5827 14,800 mm 16,0 203,0 152,0 130,0 48,0 66704 0.5906 15,000 mm 16,0 203,0 152,0 129,0 48,0 66705 0.6102 15,500 mm 16,0 203,0 129,0 48,0 152,0 66706 0.6221 15,800 mm 16,0 203,0 152,0 128,0 48,0 66707 0.6250 15,875 mm 5/8 16,0 203,0 152,0 128,0 48,0 56504 0.6299 16,000 mm 16,0 203,0 152,0 128,0 48,0 66708 0.6562 21/32 48,0 16,667 mm 18,0 222,0 171,0 145,0 56505 0.6875 17,463 mm 11/16 222,0 171,0 56506 18,0 145,0 48,0 0.7500 19,050 mm 3/4 20,0 243,0 190,0 161,0 50,0 56507





New Expanded Tools



Metr	
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Fractional	
: 142P 12xD	
ries	

 Internal co improves extend too in chip eva • 4-margin o improves straightne roundness providing stability fo

- holes and on angle Proprietary coating an leading ca provides e wear resis toughness application
- Recommer materials (475 Bhn)

K D	
SERIES	

High-performance point	incn & mm										
design stabilizes on entry for exceptional hole size and cylindricity	DECIMAL DC	METRIC DC	FRACTIONAL/ Letter/wire DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	SHANK LENGTH LS	Ti-NAMITE®-X (TX)		
while also allowing for	0.1181	3,000 mm		6,0	87,0	49,0	44,0	36,0	<mark>66709</mark>		
extended tool life	0.1220	3,100 mm		6,0	87,0	49,0	44,0	36,0	<mark>66710</mark>		
Internal coolant hole	0.1250	3,175 mm	1/8	6,0	87,0	49,0	44,0	36,0	<mark>56508</mark>		
improves coolant flow to extend tool life and aid	0.1260	3,200 mm		6,0	87,0	49,0	44,0	36,0	<mark>66711</mark>		
in chip evacuation	0.1299	3,300 mm		6,0	87,0	49,0	44,0	36,0	<mark>66712</mark>		
4-margin design improves hole	0.1339	3,400 mm		6,0	87,0	49,0	44,0	36,0	<mark>66713</mark>		
straightness and	0.1360	3,454 mm	#29	6,0	87,0	49,0	44,0	36,0	<mark>56509</mark>		
roundness while	0.1378	3,500 mm		6,0	87,0	49,0	44,0	36,0	<mark>66714</mark>		
stability for difficult	0.1406	3,571 mm	9/64	6,0	87,0	49,0	43,0	36,0	<mark>56510</mark>		
applications like cross holes and when exiting	0.1417	3,600 mm		6,0	87,0	49,0	43,0	36,0	<mark>66715</mark>		
on angle	0.1457	3,700 mm		6,0	87,0	49,0	43,0	36,0	<mark>66716</mark>		
Proprietary Ti-NAMITE [®] -X coating and industry	0.1496	3,800 mm		6,0	100,0	62,0	56,0	36,0	<mark>66717</mark>		
leading carbide substrate	0.1535	3,900 mm		6,0	100,0	62,0	56,0	36,0	<mark>66718</mark>		
provides exceptional wear resistance and	0.1562	3,967 mm	5/32	6,0	100,0	62,0	56,0	36,0	<mark>56511</mark>		
toughness for demanding	0.1575	4,000 mm		6,0	100,0	62,0	56,0	36,0	<mark>66719</mark>		
applications	0.1590	4,039 mm	#21	6,0	100,0	62,0	56,0	36,0	<mark>56512</mark>		
materials ≤ 50HRc	0.1614	4,100 mm		6,0	100,0	62,0	56,0	36,0	<mark>66720</mark>		
(475 Bhn)	nn) 0.1654	4,200 mm		6,0	100,0	62,0	55,0	36,0	<mark>66721</mark>		
	0.1693	4,300 mm		6,0	100,0	62,0	55,0	36,0	<mark>66722</mark>		
	0.1719	4,366 mm	11/64	6,0	100,0	62,0	55,0	36,0	<mark>56513</mark>		
	0.1732	4,400 mm		6,0	100,0	62,0	55,0	36,0	<mark>66723</mark>		
	0.1772	4,500 mm		6,0	100,0	62,0	55,0	36,0	<mark>66724</mark>		
	0.1811	4,600 mm		6,0	100,0	62,0	55,0	36,0	<mark>66725</mark>		
	0.1850	4,699 mm	#13	6,0	100,0	62,0	55,0	36,0	<mark>66726</mark>		
	0.1875	4,763 mm	3/16	6,0	119,0	81,0	74,0	36,0	<mark>56514</mark>		
	0.1890	4,801 mm	#12	6,0	119,0	81,0	74,0	36,0	<mark>66727</mark>		
	0.1929	4,900 mm		6,0	119,0	81,0	74,0	36,0	<mark>66728</mark>		
	0.1969	5,000 mm		6,0	119,0	81,0	73,0	36,0	<mark>66729</mark>		
	0.2008	5,100 mm		6,0	119,0	81,0	73,0	36,0	<mark>66730</mark>		
	0.2031	5,159 mm	13/64	6,0	119,0	81,0	73,0	36,0	<mark>56515</mark>		
	0.2047	5,200 mm		6,0	119,0	81,0	73,0	36,0	<mark>66731</mark>		
	0.2087	5,300 mm		6,0	119,0	81,0	73,0	36,0	<mark>66732</mark>		
	0.2126	5,400 mm		6,0	119,0	81,0	73,0	36,0	<mark>66733</mark>		
	0.2165	5,500 mm		6,0	119,0	81,0	73,0	36,0	<mark>66734</mark>		
	0.2188	5,558 mm	7/32	6,0	119,0	81,0	73,0	36,0	<mark>56516</mark>		
	0.2205	5,600 mm		6,0	119,0	81,0	73,0	36,0	<mark>66735</mark>		
	0.2244	5,700 mm		6,0	119,0	81,0	72,0	36,0	<mark>66736</mark>		
	0.2283	5,800 mm		6,0	119,0	81,0	72,0	36,0	<mark>66737</mark>		



TOI FRANCES (inch)

I OLLINANGLS (IIICII)
<pre>≤.1181 DIAMETER DC = +.00008/+.00047 DCON = h₆</pre>
>.11812362 DIAMETER DC = +.00016/+.00063 DCON = h ₆
>.23623937 DIAMETER DC = +.00024/+.00083 DCON = h ₆
>.39377087 DIAMETER DC = +.00028/+.00098 DCON = h ₆
>.7087–1.1811 DIAMETER DC = +.00031/+.00114 DCON = h ₆
TOLERANCES (mm)
\leq 3 DIAMETER DC = +0,002/+0,012 DCON = h ₆
> 3-6 DIAMETER DC = +0,004/+0,016 DCON = h ₆
>6-10 DIAMETER DC = +0,006/+0,021 DCON = h ₆
>10-18 DIAMETER DC = +0,007/+0,025 DCON = h ₆
>18–30 DIAMETER





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			inch & mm	OVERALL	CI UTC		CHANK	EDP NO.
DECIMAL DC	METRIC DC	FRACTIONAL/ LETTER/WIRE DC	DIAMETER DCON	UVERALL LENGTH OAL	LENGTH LCF	LENGTH LU	LENGTH LS	TI-NAMITE [®] -X (TX)
0.2323	5,900 mm		6,0	119,0	81,0	72,0	36,0	<mark>66738</mark>
0.2344	5,954 mm	15/64	6,0	119,0	81,0	72,0	36,0	<mark>56517</mark>
0.2362	6,000 mm		6,0	119,0	81,0	72,0	36,0	<mark>66739</mark>
0.2402	6,100 mm		8,0	146,0	108,0	99,0	36,0	<mark>66740</mark>
0.2441	6,200 mm		8,0	146,0	108,0	99,0	36,0	<mark>66741</mark>
0.2480	6,300 mm		8,0	146,0	108,0	99,0	36,0	<mark>66742</mark>
0.2500	6,350 mm	1/4 E #0	8,0	146,0	108,0	98,0	36,0	<mark>56518</mark>
0.2520	6,400 mm		8,0	146,0	108,0	98,0	36,0	<mark>66743</mark>
0.2559	6,500 mm		8,0	146,0	108,0	98,0	36,0	<mark>66744</mark>
0.2570	6,528 mm	F	8,0	146,0	108,0	98,0	36,0	<mark>56519</mark>
0.2598	6,600 mm		8,0	146,0	108,0	98,0	36,0	<mark>66745</mark>
0.2638	6,700 mm		8,0	146,0	108,0	98,0	36,0	<mark>66746</mark>
0.2656	6,746 mm	17/64	8,0	146,0	108,0	98,0	36,0	<mark>56520</mark>
0.2677	6,800 mm		8,0	146,0	108,0	98,0	36,0	<mark>66747</mark>
0.2717	6,900 mm		8,0	146,0	108,0	98,0	36,0	<mark>66748</mark>
0.2756	7,000 mm		8,0	146,0	108,0	97,0	36,0	<mark>66749</mark>
0.2795	7,100 mm		8,0	146,0	108,0	97,0	36,0	<mark>66750</mark>
0.2812	7,142 mm	9/32	8,0	146,0	108,0	97,0	36,0	<mark>56521</mark>
0.2835	7,200 mm		8,0	146,0	108,0	97,0	36,0	<mark>66751</mark>
0.2874	7,300 mm		8,0	146,0	108,0	97,0	36,0	<mark>66752</mark>
0.2913	7,400 mm		8,0	146,0	108,0	97,0	36,0	<mark>66753</mark>
0.2953	7,500 mm		8,0	146,0	108,0	97,0	36,0	<mark>66754</mark>
0.2969	7,541 mm	19/64	8,0	146,0	108,0	97,0	36,0	<mark>56522</mark>
0.2992	7,600 mm		8,0	146,0	108,0	97,0	36,0	<mark>66755</mark>
0.3031	7,700 mm		8,0	146,0	108,0	96,0	36,0	<mark>66756</mark>
0.3071	7,800 mm		8,0	146,0	108,0	96,0	36,0	<mark>66757</mark>
0.3110	7,900 mm		8,0	146,0	108,0	96,0	36,0	<mark>66758</mark>
0.3125	7,938 mm	5/16	8,0	146,0	108,0	96,0	36,0	<mark>56523</mark>
0.3150	8,000 mm		8,0	146,0	108,0	96,0	36,0	<mark>66759</mark>
0.3189	8,100 mm		10,0	182,0	135,0	123,0	40,0	<mark>66760</mark>
0.3228	8,200 mm		10,0	182,0	135,0	123,0	40,0	<mark>66761</mark>
0.3268	8,300 mm		10,0	182,0	135,0	123,0	40,0	<mark>66762</mark>
0.3281	8,334 mm	21/64	10,0	182,0	135,0	123,0	40,0	<mark>56524</mark>
0.3307	8,400 mm		10,0	182,0	135,0	122,0	40,0	<mark>66763</mark>
0.3320	8,433 mm	Q	10,0	182,0	135,0	122,0	40,0	<mark>56525</mark>
0.3346	8,500 mm		10,0	182,0	135,0	122,0	40,0	<mark>66764</mark>
0.3386	8,600 mm		10,0	182,0	135,0	122,0	40,0	<mark>66765</mark>
0.3425	8,700 mm		10,0	182,0	135,0	122,0	40,0	<mark>66766</mark>
0.3438	8,733 mm	11/32	10,0	182,0	135,0	122,0	40,0	<mark>56526</mark>
0.3465	8,800 mm		10,0	182,0	135,0	122,0	40,0	<mark>66767</mark>
0.3504	8,900 mm		10,0	182,0	135,0	122,0	40,0	<mark>66768</mark>
0.3543	9,000 mm		10,0	182,0	135,0	122,0	40,0	<mark>66769</mark>
0.3583	9,100 mm		10,0	182,0	135,0	121,0	40,0	<mark>66770</mark>
0.3594	9,129 mm	23/64	10,0	182,0	135,0	121,0	40,0	<mark>56527</mark>

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Series 142P 12xD



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low thrust force a extended tool life Internal coolant h improves coolant extend tool life an in chip evacuation • 4-margin design improves hole straightness and



ligh-performance point				inch & mm					EDP NO.
esign stabilizes on http://www.stabilizes.com/ h	DECIMAL DC	METRIC DC	FRACTIONAL/ LETTER/WIRE DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	SHANK LENGTH LS	Ti-NAMITE°-X (TX)
ile also allowing for	0.3622	9,200 mm		10,0	182,0	135,0	121,0	40,0	<mark>66771</mark>
nded tool life	0.3661	9,300 mm		10,0	182,0	135,0	121,0	40,0	<mark>66772</mark>
al coolant hole	0.3680	9,347 mm	U	10,0	182,0	135,0	121,0	40,0	<mark>56528</mark>
s coolant flow to	0.3701	9,400 mm		10,0	182,0	135,0	121,0	40,0	<mark>66773</mark>
uation	0.3740	9,500 mm		10,0	182,0	135,0	121,0	40,0	<mark>66774</mark>
IN	0.3750	9,525 mm	3/8	10,0	182,0	135,0	121,0	40,0	<mark>56529</mark>
	0.3780	9,600 mm		10,0	182,0	135,0	121,0	40,0	<mark>66775</mark>
	0.3819	9,700 mm		10,0	182,0	135,0	120,0	40,0	<mark>66776</mark>
ult	0.3858	9,800 mm		10,0	182,0	135,0	120,0	40,0	<mark>66777</mark>
xiting	0.3898	9,900 mm		10,0	182,0	135,0	120,0	40,0	<mark>66778</mark>
	0.3906	9,921 mm	25/64	10,0	182,0	135,0	120,0	40,0	<mark>56530</mark>
MITE [®] -X	0.3937	10,000 mm		10,0	182,0	135,0	120,0	40,0	<mark>66779</mark>
ubstrate	0.3976	10,100 mm		12,0	210,0	162,0	147,0	45,0	<mark>66780</mark>
and	0.4016	10,200 mm		12,0	210,0	162,0	147,0	45,0	<mark>66781</mark>
anding	0.4055	10,300 mm		12,0	210,0	162,0	147,0	45,0	<mark>66782</mark>
r	0.4062	10,317 mm	13/32	12,0	210,0	162,0	147,0	45,0	<mark>56531</mark>
Rc	0.4095	10,400 mm		12,0	210,0	162,0	146,0	45,0	<mark>66783</mark>
	0.4134	10,500 mm		12,0	210,0	162,0	146,0	45,0	<mark>66784</mark>
	0.4173	10,600 mm		12,0	210,0	162,0	146,0	45,0	<mark>66785</mark>
	0.4213	10,700 mm		12,0	210,0	162,0	146,0	45,0	<mark>66786</mark>
	0.4219	10,716 mm	27/64	12,0	210,0	162,0	146,0	45,0	<mark>56532</mark>
	0.4252	10,800 mm		12,0	210,0	162,0	146,0	45,0	<mark>66787</mark>
	0.4291	10,900 mm		12,0	210,0	162,0	146,0	45,0	<mark>66788</mark>
	0.4331	11,000 mm		12,0	210,0	162,0	145,0	45,0	<mark>66789</mark>
	0.4370	11,100 mm		12,0	210,0	162,0	145,0	45,0	<mark>66790</mark>
	0.4375	11,113 mm	7/16	12,0	210,0	162,0	145,0	45,0	<mark>56533</mark>
	0.4409	11,200 mm		12,0	210,0	162,0	145,0	45,0	<mark>66791</mark>
	0.4449	11,300 mm		12,0	210,0	162,0	145,0	45,0	<mark>66792</mark>
	0.4488	11,400 mm		12,0	210,0	162,0	145,0	45,0	<mark>66793</mark>
	0.4528	11,500 mm		12,0	210,0	162,0	145,0	45,0	<mark>66794</mark>
	0.4567	11,600 mm		12,0	210,0	162,0	145,0	45,0	<mark>66795</mark>
	0.4606	11,700 mm		12,0	210,0	162,0	144,0	45,0	<mark>66796</mark>
	0.4646	11,800 mm		12,0	210,0	162,0	144,0	45,0	<mark>66797</mark>
	0.4685	11,900 mm		12,0	210,0	162,0	144,0	45,0	<mark>66798</mark>
	0.4688	11,908 mm	15/32	12,0	210,0	162,0	144,0	45,0	<mark>56534</mark>
	0.4724	12,000 mm		12,0	210,0	162,0	144,0	45,0	<mark>66799</mark>
	0.4844	12,304 mm	31/64	14,0	234,0	189,0	171,0	45,0	<mark>56535</mark>
	0.4921	12,500 mm		14,0	234,0	189,0	170,0	45,0	<mark>66800</mark>

TOI FRANCES (inch)

TOLEHANOLO (IIICII)
<pre>≤.1181 DIAMETER DC = +.00008/+.00047 DCON = h₆</pre>
>.11812362 DIAMETER DC = +.00016/+.00063 DCON = h ₆
>.23623937 DIAMETER DC = +.00024/+.00083 DCON = h ₆
>.39377087 DIAMETER DC = +.00028/+.00098 DCON = h ₆
>.7087-1.1811 DIAMETER DC = +.00031/+.00114 DCON = h ₆
TOLERANCES (mm)
\leq 3 DIAMETER DC = +0,002/+0,012 DCON = h ₆

>3-6 DIAMETER **DC** = +0,004/+0,016**DCON** = h_6

>6-10 DIAMETER **DC** = +0,006/+0,021

DCON = h₆ >10-18 DIAMETER

DC = +0,007/+0,025 $DCON = h_6$

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>18-30 DIAMETER
DC = +0,008/+0,029
DCON = h_6
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			inch & mm					EDP NO.
DECIMAL DC	METRIC DC	FRACTIONAL/ LETTER/WIRE DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	SHANK LENGTH LS	Ti-NAMITE®-X (TX)
0.5000	12,700 mm	1/2	14,0	234,0	189,0	170,0	45,0	<mark>56536</mark>
0.5039	12,800 mm		14,0	234,0	189,0	170,0	45,0	<mark>66801</mark>
0.5118	13,000 mm		14,0	234,0	189,0	170,0	45,0	66802
0.5156	13,096 mm	33/64	14,0	234,0	189,0	169,0	45,0	<mark>56537</mark>
0.5315	13,500 mm		14,0	234,0	189,0	169,0	45,0	66803
0.5433	13,800 mm		14,0	234,0	189,0	168,0	45,0	<mark>66804</mark>
0.5512	14,000 mm		14,0	234,0	189,0	168,0	45,0	66805
0.5625	14,288 mm	9/16	16,0	267,0	216,0	195,0	48,0	<mark>56538</mark>
0.5709	14,500 mm		16,0	267,0	216,0	194,0	48,0	<mark>66806</mark>
0.5781	14,684 mm	37/64	16,0	267,0	216,0	194,0	48,0	<mark>56539</mark>
0.5827	14,800 mm		16,0	267,0	216,0	194,0	48,0	<mark>66807</mark>
0.5906	15,000 mm		16,0	267,0	216,0	193,0	48,0	<mark>66808</mark>
0.6102	15,500 mm		16,0	267,0	216,0	193,0	48,0	<mark>66809</mark>
0.6221	15,800 mm		16,0	267,0	216,0	192,0	48,0	<mark>66810</mark>
0.6250	15,875 mm	5/8	16,0	267,0	216,0	192,0	48,0	<mark>56540</mark>
0.6299	16,000 mm		16,0	267,0	216,0	192,0	48,0	<mark>66811</mark>
0.6562	16,667 mm	21/32	18,0	292,0	241,0	216,0	48,0	<mark>56541</mark>
0.6875	17,463 mm	11/16	18,0	292,0	241,0	215,0	48,0	<mark>56542</mark>
0.7500	19,050 mm	3/4	20,0	319,0	266,0	238,0	50,0	<mark>56543</mark>

FRACTIONAL Series 142P



	Series DC • in										
	Fractional	Hardness	(sfm)		1/8	3/16	1/4	3/8	1/2	5/8	3/4
		< 175 Php	425	RPM	12988	8659	6494	4329	3247	2598	2165
			(240 510)	Fr	0.0043	0.0065	0.0086	0.0129	0.0172	0.0216	0.0259
	CAPPON STEELS	≤ 7 HRc	(340-510)	Feed (ipm)	56.0	56.0	56.0	56.0	56.0	56.0	56.0
		≤ 275 Bhn or	380	RPM	11613	7742	5806	3871	2903	2323	1935
	1018, 1040, 1080, 1090, 10L50,		(004.450)	Fr	0.0039	0.0058	0.0078	0.0116	0.0155	0.0194	0.0233
	1140, 1212, 12L15, 1525, 1536	≤ 28 HRc	(304-430)	Feed (ipm)	45.0	45.0	45.0	45.0	45.0	45.0	45.0
		< 125 Bhn	220	RPM	6723	4482	3362	2241	1681	1345	1121
		0r	(170.004)	Fr	0.0033	0.0049	0.0065	0.0098	0.0131	0.0164	0.0196
		≤ 45 HRc	(170-204)	Feed (ipm)	22.0	22.0	22.0	22.0	22.0	22.0	22.0
		< 275 Bhn	330	RPM	10085	6723	5042	3362	2521	2017	1681
		or	(264-396)	Fr	0.0033	0.0049	0.0065	0.0098	0.0131	0.0164	0.0196
D		≤ 28 HRc		Feed (ipm)	33.0	33.0	33.0	33.0	33.0	33.0	33.0
F	ALLOY STEELS	< 375 Bhn	200	RPM	6112	4075	3056	2037	1528	1222	1019
	4140, 4150, 4320, 5120,	Or	(160.240)	Fr	0.0028	0.0042	0.0056	0.0083	0.0111	0.0139	0.0167
	5150, 8630, 86L20, 50100	≤ 40 HKC	(100-240)	Feed (ipm)	17.0	17.0	17.0	17.0	17.0	17.0	17.0
		≤ 425 Bhn or	140	RPM	4278	2852	2139	1426	1070	856	713
			(110,100)	Fr	0.0020	0.0030	0.0040	0.0060	0.0079	0.0099	0.0119
		≤ 45 HRc	(112-108)	Feed (ipm)	8.5	8.5	8.5	8.5	8.5	8.5	8.5
		< 200 Bhn	145	RPM	4431	2954	2216	1477	1108	886	739
		Or	(116 174)	Fr	0.0028	0.0042	0.0056	0.0085	0.0113	0.0141	0.0169
	TOOL STEELS	≤ 13 HRc	(10-17)	Feed (ipm)	12.5	12.5	12.5	12.5	12.5	12.5	12.5
	P20, S7, T15, W2	< 375 Bhn	95	RPM	2903	1935	1452	968	726	581	484
		or ≤ 40 HRc	(76-114)	Fr	0.0013	0.0020	0.0027	0.0040	0.0054	0.0067	0.0081
				Feed (ipm)	3.9	3.9	3.9	3.9	3.9	3.9	3.9
		< 185 Bhn	305	RPM	9321	6214	4660	3107	2330	1864	1553
		≤ 185 Bill or ≤ 9 HRc	(244,266)	Fr	0.0026	0.0039	0.0051	0.0077	0.0103	0.0129	0.0154
	STAINLESS STEELS		(244-300)	Feed (ipm)	24.0	24.0	24.0	24.0	24.0	24.0	24.0
	303, 416, 420F, 430F, 440F	< 275 Bhn	195	RPM	5959	3973	2980	1986	1490	1192	993
		or	(156 224)	Fr	0.0020	0.0030	0.0040	0.0060	0.0081	0.0101	0.0121
М		≤ 28 HKC	(130-234)	Feed (ipm)	12.0	12.0	12.0	12.0	12.0	12.0	12.0
IVI		< 275 Bhn	150	RPM	4584	3056	2292	1528	1146	917	764
	CTAINI FOO OTFFI O	or	(120 100)	Fr	0.0020	0.0030	0.0040	0.0060	0.0079	0.0099	0.0119
	(DIFFICULT)	≤ 28 HRC	(120-160)	Feed (ipm)	9.1	9.1	9.1	9.1	9.1	9.1	9.1
	304, 316, 321, 13-8 PH, 15-5PH 17-4 PH Custom 450	< 375 Bhn	110	RPM	3362	2241	1681	1121	840	672	560
	13-31 H, 17-4 I H, Gustolli 430	Or	(00 122)	Fr	0.0018	0.0027	0.0036	0.0054	0.0071	0.0089	0.0107
		≤ 40 HKc	(00-132)	Feed (ipm)	6.0	6.0	6.0	6.0	6.0	6.0	6.0
		< 220 Bhp	360	RPM	11002	7334	5501	3667	2750	2200	1834
		Or	(200 422)	Fr	0.0045	0.0068	0.0091	0.0136	0.0182	0.0227	0.0273
K	CAST IRONS	≤ 19 HKc	(200-432)	Feed (ipm)	50.0	50.0	50.0	50.0	50.0	50.0	50.0
N	Gray, Malleable, Ductile	< 260 Bhp	335	RPM	10238	6825	5119	3413	2559	2048	1706
		Or	(260 402)	Fr	0.0045	0.0068	0.0091	0.0136	0.0182	0.0227	0.0273
		≤ 26 HRc	(200-402)	Feed (ipm)	46.5	46.5	46.5	46.5	46.5	46.5	46.5



FRACTIONAL Series 142P

	Series		Va					DC • in			
	Fractional	Hardness	(sfm)		1/8	3/16	1/4	3/8	1/2	5/8	3/4
		< 80 Bhn	770	RPM	23531	15687	11766	7844	5883	4706	3922
	ALUMINUM ALLOYS 2017, 2024, 356, 6061, 7075	or ≤ 47 HRb	(616 024)	Fr	0.0049	0.0073	0.0098	0.0147	0.0195	0.0244	0.0293
			(010-924)	Feed (ipm)	115.0	115.0	115.0	115.0	115.0	115.0	115.0
		< 150 Bhn	660	RPM	20170	13446	10085	6723	5042	4034	3362
		or	(500 700)	Fr	0.0050	0.0074	0.0099	0.0149	0.0198	0.0248	0.0297
N		≤8 HRb	(526-792)	Feed (ipm)	100.0	100.0	100.0	100.0	100.0	100.0	100.0
IN		< 140 Bhn	550	RPM	16808	11205	8404	5603	4202	3362	2801
	COPPER ALLOYS Alum Bronze, C110, Muntz Brass	or	(440 660)	Fr	0.0020	0.0030	0.0040	0.0060	0.0080	0.0100	0.0120
		≤ 3 HKC	(440-000)	Feed (ipm)	33.5	33.5	33.5	33.5	33.5	33.5	33.5
		≤ 200 Bhn or ≤ 23 HRc	440	RPM	13446	8964	6723	4482	3362	2689	2241
			(252 520)	Fr	0.0020	0.0030	0.0040	0.0060	0.0080	0.0100	0.0120
			(332-320)	Feed (ipm)	27.0	27.0	27.0	27.0	27.0	27.0	27.0
	HIGH TEMP ALLOYS (NICKEL , COBALT, IRON BASE) Inconel 601, 617, 625, Incoloy, Monel 400, Rene, Waspaloy	< 300 Bhn	95	RPM	2903	1935	1452	968	726	581	484
		Or	(76-114)	Fr	0.0008	0.0012	0.0016	0.0024	0.0032	0.0040	0.0048
		S 32 HHC		Feed (ipm)	2.3	2.3	2.3	2.3	2.3	2.3	2.3
		≤ 400 Bhn or	50	RPM	1528	1019	764	509	382	306	255
			(40-60)	Fr	0.0007	0.0010	0.0013	0.0020	0.0026	0.0033	0.0039
		≤ 43 HKC	(+0-00)	Feed (ipm)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
		< 275 Bhn	215	RPM	6570	4380	3285	2190	1643	1314	1095
S		Or c 20 LIDe	(172-258)	Fr	0.0018	0.0026	0.0035	0.0053	0.0070	0.0088	0.0105
		≤ 28 HKC	(172-230)	Feed (ipm)	11.5	11.5	11.5	11.5	11.5	11.5	11.5
	TITANIUM ALLOYS Pure Titanium, Ti6AI4V,	< 350 Bhn	160	RPM	4890	3260	2445	1630	1222	978	815
	Ti6Al2Sn4Zr2Mo,	Or c 20 LIDe	(128-192)	Fr	0.0016	0.0024	0.0032	0.0048	0.0064	0.0080	0.0096
	Ti-6AI4V	≤ 38 HKC	(120 132)	Feed (ipm)	7.8	7.8	7.8	7.8	7.8	7.8	7.8
		≤ 440 Bhn	85	RPM	2598	1732	1299	866	649	520	433
		Or 47 UDo	(68-102)	Fr	0.0012	0.0018	0.0024	0.0036	0.0048	0.0060	0.0072
		≤ 47 HKC	100-102)	Feed (ipm)	3.1	3.1	3.1	3.1	3.1	3.1	3.1
	TOOL STEELS	≤ 475 Bhn	85	RPM	2598	1732	1299	866	649	520	433
Η	A2, D2, H13, L2, M2,		(69 102)	Fr	0.0008	0.0013	0.0017	0.0025	0.0034	0.0042	0.0051
	P20, S7, T15, W2	≤ 50 HRc	100-1021	Feed (ipm)	2.2	2.2	2.2	2.2	2.2	2.2	2.2

Bhn (Brinell) HRc (Rockwell C) rpm = Vc x 3.82 / DC ipm = Fr x RPM HRb (Rockwell B)

reduce speed and feed for materials harder than listed refer to the SGS Tool Wizard® for complete technical information (www.kyocera-sgstool.com)

METRIC Series 142P



	Series		Ve					DC • mm				
	Metric	Hardness	(m/min)		3	6	8	10	12	14	16	
		< 175 Bhn	130	RPM	13733	6867	5150	4120	3433	2943	2575	
	CARBON STEELS 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536		(104 155)	Fr	0.104	0.207	0.276	0.345	0.414	0.483	0.552	
		≤ 7 HRc	(104-155)	Feed (mm/min)	1422	1422	1422	1422	1422	1422	1422	
		< 275 Bhn	116	RPM	12279	6140	4605	3684	3070	2631	2302	
		or ≤ 28 HRc	(02.120)	Fr	0.093	0.186	0.248	0.310	0.372	0.434	0.496	
			(93-139)	Feed (mm/min)	1143	1143	1143	1143	1143	1143	1143	
		< 125 Php	67	RPM	7109	3555	2666	2133	1777	1523	1333	
			(54.00)	Fr	0.079	0.157	0.210	0.262	0.314	0.367	0.419	
		≤ 45 HRc	(54-80)	Feed (mm/min)	559	559	559	559	559	559	559	
		< 275 Bhn	101	RPM	10664	5332	3999	3199	2666	2285	1999	
		Or	(80-121)	Fr	0.079	0.157	0.210	0.262	0.314	0.367	0.419	
Р		≤ 28 HKc		Feed (mm/min)	838	838	838	838	838	838	838	
	ALLOV STEELS	< 375 Bhn	61	RPM	6463	3231	2424	1939	1616	1385	1212	
	4140, 4150, 4320, 5120,	≤ 373 bin or ≤ 40 HRc	(40.72)	Fr	0.067	0.134	0.178	0.223	0.267	0.312	0.356	
	5150, 8630, 86L20, 50100		(49-73)	Feed (mm/min)	432	432	432	432	432	432	432	
		≤ 425 Bhn or ≤ 45 HRc	43	RPM	4524	2262	1696	1357	1131	969	848	
			(34-51)	Fr	0.048	0.095	0.127	0.159	0.191	0.223	0.255	
				Feed (mm/min)	216	216	216	216	216	216	216	
	TOOL STEELS A2, D2, H13, L2, M2, P20, S7, T15, W2	< 200 Bhn	44	RPM	4686	2343	1757	1406	1171	1004	879	
		Or 0r	(25-52)	Fr	0.068	0.136	0.181	0.226	0.271	0.316	0.361	
		≤ 13 HKC	(33-33)	Feed (mm/min)	318	318	318	318	318	318	318	
		< 375 Bhn	29	RPM	3070	1535	1151	921	767	658	576	
		Or or	(23-35)	Fr	0.032	0.065	0.086	0.108	0.129	0.151	0.172	
		≤ 40 HKC	(23-35)	Feed (mm/min)	99	99	99	99	99	99	99	
		≤ 185 Bhn	93	9856	9856	4928	3696	2957	2464	2112	1848	
		or	(74-112)	0.062	0.062	0.124	0.165	0.206	0.247	0.289	0.330	
	STAINLESS STEELS (FREE MACHINING)	5 3 HHC	()	610	610	610	610	610	610	610	610	
	303, 416, 420F, 430F, 440F	≤ 275 Bhn	59	6301	6301	3151	2363	1890	1575	1350	1181	
		Or	(48-71)	0.048	0.048	0.097	0.129	0.161	0.193	0.226	0.258	
м		5 20 mic	(10 / 1)	305	305	305	305	305	305	305	305	
		≤ 275 Bhn	46	4847	4847	2424	1818	1454	1212	1039	909	
	STAINI ESS STEELS	or ∠28 HBc	(37-55)	0.048	0.048	0.095	0.127	0.159	0.191	0.223	0.254	
	(DIFFICULT)		(231	231	231	231	231	231	231	231	
	304, 316, 321, 13-8 PH, 15-5PH, 17-4 PH, Custom 450	≤ 375 Bhn	34	3555	3555	1777	1333	1066	889	762	666	
		0r < 40 HBc	(27-40)	0.043	0.043	0.086	0.114	0.143	0.171	0.200	0.229	
		2 TV 1110	,	152	152	152	152	152	152	152	152	
		≤ 220 Bhn	110	RPM	11633	5816	4362	3490	2908	2493	2181	
		0r < 19 HRc	(88-132)	Fr	0.109	0.218	0.291	0.364	0.437	0.509	0.582	
к	CASTIRONS	2 13 1110	(Feed (mm/min)	1270	1270	1270	1270	1270	1270	1270	
	Gray, Malleable, Ductile	≤ 260 Bhn	102	RPM	10825	5413	4059	3248	2706	2320	2030	
		0r < 26 HRc	(82-123)	Fr	0.109	0.218	0.291	0.364	0.436	0.509	0.582	
		≤ 20 HKC	(02 120)	Feed (mm/min)	1181	1181	1181	1181	1181	1181	1181	



METRIC Series 142P

	Series		Va		DC • mm								
	Metric	Hardness	(m/min)		3	6	8	10	12	14	16		
		< 80 Bhn	235	RPM	24882	12441	9331	7465	6220	5332	4665		
			(100 202)	Fr	0.117	0.235	0.313	0.391	0.470	0.548	0.626		
	ALUMINUM ALLOYS	≤ 47 HKb	(100-202)	Feed (mm/min)	2921	2921	2921	2921	2921	2921	2921		
	6061, 7075	< 150 Bhn	201	RPM	21327	10664	7998	6398	5332	4570	3999		
			(161 241)	Fr	0.119	0.238	0.318	0.397	0.476	0.556	0.635		
N		≤ 88 HRb	(101-241)	Feed (mm/min)	2540	2540	2540	2540	2540	2540	2540		
N.		< 140 Bhn	168	RPM	17773	8886	6665	5332	4443 3808 0.192 0.223 851 851 3555 3047 0.193 0.225 686 686 767 658 0.076 0.089	3808	3332		
		or	(134_201)	Fr	0.048	0.096	0.128	0.160	0.192	2921 2921 4570 3999 0.556 0.635 2540 2540 3808 3332 0.223 0.255 851 851 3047 2666 0.225 0.257 686 686 658 576 0.089 0.101 58 58 346 303 0.073 0.084 25 25 1489 1303 0.196 0.224 292 292 1108 969			
	Copper Alloys	≤ 3 HKC	(134-201)	Feed (mm/min)	851	851	851	851	851				
	Muntz Brass	< 200 Bhn	134	RPM	14218	7109	5332	4265	3555	3047	2666		
		Or	Or (107, 161)	Fr	0.048	0.096	0.129	0.161	0.193	0.225	0.257		
		≤ Z3 HKC	(107-161)	Feed (mm/min)	686	686	686	686	686	686	686		
		< 300 Bhn	29	RPM	3070	1535	1151	921	767	658	576		
	HIGH TEMP ALLOYS	Or Or	(22-25)	Fr	0.019	0.038	0.051	0.063	0.076	14 16 5332 4665 0.548 0.626 2921 2921 4570 3999 0.556 0.635 2540 2540 3808 3332 0.223 0.255 851 851 3047 2666 0.225 0.257 686 686 658 576 0.089 0.101 58 58 346 303 0.073 0.084 25 25 1489 1303 0.196 0.224 292 292 1108 969 0.179 0.204 198 198 589 515 0.134 0.153 79 79 589 515 0.095 0.109			
	(Nickel , Cobalt, Iron Base)	S 27 HKC	(23-35)	Feed (mm/min)	58	58	58	58	58	58	58		
	Inconel 601, 617, 625, Incoloy,	< 400 Bhn	15	RPM	1616	808	606	485	404	346	303		
	Monel 400, Kene, Waspaloy	Or	(12-18)	Fr	0.016	0.031	0.042	0.052	0.063	0.073	0.084		
		≤ 43 HRc	(12-18)	Feed (mm/min)	25	25	25	25	25	25	25		
		≤ 275 Bhn	66	RPM	6947	3474	2605	2084	1737	1489	1303		
S		Or	(52-79)	Fr	0.042	0.084	0.112	0.140	0.168	0.196	5332 4665 0.548 0.626 2921 2921 4570 3999 0.556 0.635 2540 2540 3808 3332 0.223 0.255 851 851 3047 2666 0.225 0.257 686 686 658 576 0.089 0.101 58 58 346 303 0.073 0.084 25 25 1489 1303 0.196 0.224 292 292 1108 969 0.179 0.204 198 198 589 515 0.134 0.153 79 79 589 515 0.095 0.109		
		S 20 MMC	(32-73)	Feed (mm/min)	292	292	292	292	292	0.548 0.626 2921 2921 4570 3999 0.556 0.635 2540 2540 3808 3332 0.223 0.255 851 851 3047 2666 0.225 0.257 686 686 658 576 0.089 0.101 58 58 346 303 0.073 0.084 25 25 1489 1303 0.196 0.224 292 292 1108 969 0.179 0.204 198 198 589 515 0.134 0.153 79 79 589 515 0.095 0.109 56 56	292		
	TITANIUM ALLOYS Pure Titanium, Ti6Al4V,	≤ 350 Bhn	49	RPM	5170	2585	1939	1551	1293	1108	969		
	Ti6Al2Sn4Zr2Mo,	Or	(39-59)	Fr	0.038	0.077	0.102	0.128	0.153	0.179	0.204		
	Ti-6AI4V	≥ 30 HHC	(00 00)	Feed (mm/min)	198	198	198	198	198	198	198		
		≤ 440 Bhn	26	RPM	2747	1373	1030	824	687	589	515		
		or	(21-31)	Fr	0.029	0.057	0.076	0.096	0.115	0.134	0.153		
		≥ 4/ nnC	(21 01)	Feed (mm/min)	79	79	79	79	79	79	79		
	TOOL STEELS	≤ 475 Bhn	26	RPM	2747	1373	1030	824	687	589	515		
H	A2, D2, H13, L2, M2, P20_S7_T15_W2	or 60 HBc (21-31) —	Fr	0.020	0.041	0.054	0.068	0.081	0.095	0.109			
P20, S7, T15, W2		≤ 50 HRc	(21-31)	Feed (mm/min)	56	56	56	56	56	56	56		

(Brinell) HRc (Rockwell C) HRb (Rockwell B) rpm = (Vc x 1000) / (DC x 3.14) mm/min = Fr x RPM reduce speed and feed for materials harder than listed refer to the SGS Tool Wizard® for complete technical information (www.kyocera-sgstool.com)



HIGH PERFORMANCE CARBIDE DRILLS

The key features designed into the Hi-PerCarb[®] Series

143M-S Drill allow the product to offer application

benefits not only beyond that of standard carbide drills,

but also other High Performance drills. Each feature

of the Hi-PerCarb® Series 143M-S Drill was uniquely

engineered as a solution towards addressing the issues

commonly encountered during high production drilling.

SERIES 143M-S

ECCENTRIC 2-MARGIN DESIGN

- eccentric margin design reduces frictional heat and minimizes material adhesion to the margins without weakening the drill
- lower contact with the hole surface improves hole finish and quality, especially in gummy workpiece materials

B POINT

- point design stabilizes on contact for exceptional hole size and cylindricity
- low thrust force reduces machine power requirement and extends tool life
- computer controlled edge hone protects against chip damage

COOLANT THROUGH DESIGN

 the modified coolant hole exit increases flow for improved chip evacuation and extended tool life

D COATING AND CARBIDE

- SGS Ti-NAMITE[®]-A coating provides exceptional wear and erosion resistance when drilling heat resisting alloys like Inconel,stainless steel, and titanium
- Series 143M-S drills are manufactured from lab certified premium quality carbide

PERFORMANCE. PRECISION. PASSION. HI-PERCARB® SERIES 143M-S DRILLS



PERFORMANCE.

TESTING PARAMETERS

- 3/8" Cutting Diameter
- 316 Stainless Steel (160 Bhn)
- 1630 rpm
- 9.8 ipm
- 1.875" Axial Depth
- TSC Water Sol 8.9%

TITANIUM TESTING PARAMETERS

- 3/8" Cutting Diameter
- Ti6Al4v Titanium (38 HRc)
- 1630 rpm
- 7.8 ipm
- 1.875" Axial Depth
- TSC Water Sol 8.9%

INCONEL TESTING PARAMETERS

- 3/8" Cutting Diameter
- 718 Inconel (43Hrc)
- 710 rpm
- 2.55 ipm
- 1.125" Axial Depth
- TSC Water Sol 8.9

FINISH COMPARISON TEST RESULTS

The lower numerical value shown in the chart demonstrates the improved surface finish of holes produced by a drill with an eccentric margin like the HI-PERCARB[®] 143M-S in all materials tested versus holes made by drills with a normal margin.

FINISH COMPARISON (ALL MATERIALS)





TOOL LIFE COMPARISON TEST RESULTS

All tools were tested to failure, and under these conditions, the HI-PERCARB[®] 143M-S produced the most holes versus the competition in both materials tested.



Excellent thermal and chemical resistance allows for dry cutting and improvements in performance of carbide. The coating has a high hardness giving great protection against abrasive wear and erosion.

Hardness (HV): 3700 Oxidation Temperature: 1100°C – 2010°F Coefficient of Friction: 0.30 Thickness: 1 – 5 Microns (based on tool diameter)



OAL

LS-

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LCF





Coolant through design				inch & mm					EDP NO.
improves coolant flow to extend tool life and aid	DECIMAL DC	METRIC DC	FRACTIONAL/ Letter/wire DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	SHANK LENGTH LS	Ti-NAMITE®-A (AITiN)
Eccontric 2 margin	0.1181	3,000 mm		6,0	62,0	20,0	15,0	36,0	69120
design reduces frictional	0.1220	3,100 mm		6,0	62,0	20,0	15,0	36,0	69121
heat and minimizes	0.1250	3,175 mm	1/8	6,0	62,0	20,0	15,0	36,0	56800
the margins without	0.1260	3,200 mm		6,0	62,0	20,0	15,0	36,0	69122
weakening the drill	0.1299	3,300 mm		6,0	62,0	20,0	15,0	36,0	69123
Computer controlled	0.1339	3,400 mm		6,0	62,0	20,0	15,0	36,0	69124
edge honing protects	0.1360	3,454 mm	#29	6,0	62,0	20,0	15,0	36,0	56801
High-performance point	0.1378	3,500 mm		6,0	62,0	20,0	15,0	36,0	69125
design stabilizes on	0.1406	3,571 mm	9/64	6,0	62,0	20,0	15,0	36,0	56802
contact for exceptional	0.1417	3,600 mm		6,0	62,0	20,0	15,0	36,0	69126
allowing for low thrust	0.1457	3,700 mm		6,0	62,0	20,0	15,0	36,0	69127
force and extended	0.1496	3,800 mm		6,0	66,0	24,0	18,0	36,0	69128
	0.1535	3,900 mm		6,0	66,0	24,0	18,0	36,0	69129
coating provides	0.1562	3,967 mm	5/32	6,0	66,0	24,0	18,0	36,0	56803
exceptional wear and	0.1575	4,000 mm		6,0	66,0	24,0	18,0	36,0	69130
drilling heat resisting	0.1590	4,039 mm	#21	6,0	66,0	24,0	18,0	36,0	56804
alloys like Inconel,	0.1614	4,100 mm		6,0	66,0	24,0	18,0	36,0	69131
Stainless Steel, and	0.1654	4,200 mm		6,0	66,0	24,0	18,0	36,0	69132
Recommended for	0.1693	4,300 mm		6,0	66,0	24,0	18,0	36,0	69133
materials ≤ 50HRc	0.1719	4,366 mm	11/64	6,0	66,0	24,0	17,0	36,0	56805
(475 Bhn)	0.1732	4,400 mm		6,0	66,0	24,0	17,0	36,0	69134
	0.1772	4,500 mm		6,0	66,0	24,0	17,0	36,0	69135
	0.1811	4,600 mm		6,0	66,0	24,0	17,0	36,0	69136
	0.1850	4,699 mm	#13	6,0	66,0	24,0	17,0	36,0	69137
	0.1875	4,763 mm	3/16	6,0	66,0	28,0	21,0	36,0	56806
	0.1890	4,801 mm	#12	6,0	66,0	28,0	21,0	36,0	69138
	0.1929	4,900 mm		6,0	66,0	28,0	21,0	36,0	69139
	0.1969	5,000 mm		6,0	66,0	28,0	20,0	36,0	69140
	0.2008	5,100 mm		6,0	66,0	28,0	20,0	36,0	69141
	0.2031	5,159 mm	13/64	6,0	66,0	28,0	20,0	36,0	56807
	0.2047	5,200 mm		6,0	66,0	28,0	20,0	36,0	69142
	0.2087	5,300 mm		6,0	66,0	28,0	20,0	36,0	69143
	0.2126	5,400 mm		6,0	66,0	28,0	20,0	36,0	69144
	0.2165	5,500 mm		6,0	66,0	28,0	20,0	36,0	69145
	0.2188	5,558 mm	7/32	6,0	66,0	28,0	20,0	36,0	56808
	0.2205	5,600 mm		6,0	66,0	28,0	20,0	36,0	69146
	0.2244	5,700 mm		6,0	66,0	28,0	19,0	36,0	69147
	0.2283	5,800 mm		6,0	66,0	28,0	19,0	36,0	69148
	0.2323	5,900 mm		6,0	66,0	28,0	19,0	36,0	69149
	0.2344	5,954 mm	15/64	6,0	66,0	28,0	19,0	36,0	56809
	0.2362	6,000 mm		6,0	66,0	28,0	19,0	36,0	69150
	0.2402	6,100 mm		8,0	79,0	34,0	25,0	36,0	69151
	0.2441	6,200 mm		8,0	79,0	34,0	25,0	36,0	69152
	0.2480	6,300 mm		8,0	79,0	34,0	25,0	36,0	69153

TOLERANCES (inch)

```
≤.1181 DIAMETER
DC = +.00008/+.00047
DCON = h_6
>.1181-.2362 DIAMETER
DC = +.00016/+.00063
DCON = h_6
>.2362-.3937 DIAMETER
DC = +.00024/+.00083
DCON = h_6
>.3937-.7087 DIAMETER
DC = +.00028/+.00098
DCON = h_6
>.7087-1.1811 DIAMETER
DC = +.00031/+.00114
DCON = h_6
TOLERANCES (mm)
≤3 DIAMETER
DC = +0,002/+0,012
DCON = h_6
>3–6 DIAMETER
DC = +0,004/+0,016
DCON = h_6
>6–10 DIAMETER
DC = +0,006/+0,021
DCON = h_6
>10-18 DIAMETER
DC = +0,007/+0,025
DCON = h_6
>18-30 DIAMETER
DC = +0,008/+0,029
DCON = h_6
   STEELS
   STAINLESS STEELS
   CAST IRON
  HIGH TEMP ALLOYS
For patent
information visit
www.ksptpatents.com
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CONTINUED

								FNAG
		ED A OTIONIAL /	inch & mm	0.055 0.11				EDP NO.
DECIMAL DC	METRIC DC	FRACTIONAL/ LETTER/WIRE DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	SHANK LENGTH LS	Ti-NAMITE°-A (AITiN)
0.2500	6,350 mm	1/4 E #0	8,0	79,0	34,0	24,0	36,0	56810
0.2520	6,400 mm		8,0	79,0	34,0	24,0	36,0	69154
0.2559	6 <i>.</i> 500 mm		8.0	79.0	34.0	24.0	36.0	69155
0.2570	6.528 mm	F	8.0	79.0	34.0	24.0	36.0	56811
0.2598	6 600 mm		8.0	79.0	34.0	24.0	36.0	69156
0.2638	6 700 mm		8.0	79.0	34.0	24.0	36.0	69157
0.2656	6 7/6 mm	17/6/	8.0	79.0	3/1.0	2/1.0	36.0	56812
0.2000	6 800 mm	17/04	0,0 8 0	70.0	2/1 0	24,0	36.0	60152
0.2077	6,000 mm		0,0 8 0	70.0	2/1.0	24,0	36,0	60150
0.2717	7,000 mm		0,0	70.0	24.0	24,0	26.0	60160
0.2705	7,000 mm		0,0	79,0	34,0	24,0	30,0	09100
0.2790	7,100 1111	0/00	0,0	79,0	41,0	30,0	30,0	09101
0.2012	7,142 mm	9/32	8,0	79,0	41,0	30,0	30,0	50813
0.2835	7,200 mm		8,U	79,0	41,0	30,0	30,0	09162
0.28/4	7,300 mm		8,0	/9,0	41,0	30,0	36,0	69163
0.2913	7,400 mm		8,0	79,0	41,0	30,0	36,0	69164
0.2953	7,500 mm		8,0	79,0	41,0	30,0	36,0	69165
0.2969	7,541 mm	19/64	8,0	79,0	41,0	30,0	36,0	56814
0.2992	7,600 mm		8,0	79,0	41,0	30,0	36,0	69166
0.3031	7,700 mm		8,0	79,0	41,0	29,0	36,0	69167
0.3071	7,800 mm		8,0	79,0	41,0	29,0	36,0	69168
0.3110	7,900 mm		8,0	79,0	41,0	29,0	36,0	69169
0.3125	7,938 mm	5/16	8,0	79,0	41,0	29,0	36,0	56815
0.3150	8,000 mm		8,0	79,0	41,0	29,0	36,0	69170
0.3189	8,100 mm		10,0	89,0	47,0	35,0	40,0	69171
0.3228	8,200 mm		10,0	89,0	47,0	35,0	40,0	69172
0.3268	8,300 mm		10,0	89,0	47,0	35,0	40,0	69173
0.3281	8.334 mm	21/64	10.0	89.0	47.0	34.0	40.0	56816
0.3307	8.400 mm	, • ·	10.0	89.0	47.0	34.0	40.0	69174
0.3320	8 433 mm	0	10.0	89.0	47.0	34.0	40.0	56817
0.3346	8 500 mm	4	10.0	89.0	47.0	34.0	40.0	69175
0.3386	8 600 mm		10,0	89.0	47.0	34.0	40.0	69176
0.3300	9 700 mm		10,0	00,0 00 0	47,0 17.0	24.0	40,0	60177
0.0420	0,700 mm	11/22	10,0	00,0	47,0	24,0	40,0	56010
0.3430	0,755 IIIII 0.00 mm	11/32	10,0	00,00	47,0	2/ 0	40,0	60170
0.3403	0,000 mm		10,0	03,0	47,0	34,0	40,0	031/0 60170
0.3504	0,900 mm		10,0	09,0	47,0	34,0	40,0	09179
0.3543	9,000 mm		10,0	89,0	47,0	34,0	40,0	69180
0.3583	9,100 mm	00/04	10,0	89,0	47,0	33,0	40,0	69181
0.3594	9,129 mm	23/64	10,0	89,0	47,0	33,0	40,0	56819
0.3622	9,200 mm		10,0	89,0	47,0	33,0	40,0	69182
0.3661	9,300 mm		10,0	89,0	47,0	33,0	40,0	69183
0.3680	9,347 mm	U	10,0	89,0	47,0	33,0	40,0	56820
0.3701	9,400 mm		10,0	89,0	47,0	33,0	40,0	69184
0.3740	9,500 mm		10,0	89,0	47,0	33,0	40,0	69185
0.3750	9,525 mm	3/8	10,0	89,0	47,0	33,0	40,0	56821
0.3780	9,600 mm		10,0	89,0	47,0	33,0	40,0	69186
0.3819	9,700 mm		10,0	89,0	47,0	32,0	40,0	69187
0.3858	9,800 mm		10,0	89,0	47,0	32,0	40,0	69188
0.3898	9,900 mm		10,0	89,0	47,0	32,0	40,0	69189
0.3906	9,921 mm	25/64	10.0	89.0	47.0	32.0	40.0	56822
0.3937	10,000 mm	20,01	10.0	89.0	47.0	32.0	40.0	69190
0.3976	10 100 mm		12.0	102.0	55.0	40.0	45.0	69191
0 4016	10,100 mm		12,0	102,0	55.0	40.0	45.0	69192
0.7010	10,200 11111		12,0	102,0	55,0	-0,0	-1,0	00102



OAL





• Coolant through design improves coolant flow to extend tool life and aid	DECIMAL	METRIC	FRACTIONAL/ LETTER/WIRE	SHANK DIAMETER	OVERALL LENGTH		USABLE LENGTH	SHANK LENGTH	EDP NO. Ti-NAMITE [®] -A (AITiN)
in chip evacuation	0 4055	10.300 mm	50	12.0	102.0	55.0	40.0	45.0	69193
Eccentric 2-margin design reduces frictional	0 4062	10,317 mm	13/32	12.0	102,0	55.0	40.0	45.0	56823
heat and minimizes	0 4095	10,400 mm	10,02	12.0	102,0	55.0	39.0	45.0	69194
material adhesion to	0 4134	10,500 mm		12.0	102,0	55.0	39.0	45.0	69195
weakening the drill	0.4173	10.600 mm		12.0	102.0	55.0	39.0	45.0	69196
Computer controlled	0.4213	10,700 mm		12.0	102.0	55.0	39.0	45.0	69197
edge honing protects	0.4219	10.716 mm	27/64	12.0	102.0	55.0	39.0	45.0	56824
High performance point	0.4252	10.800 mm	,•.	12.0	102.0	55.0	39.0	45.0	69198
design stabilizes on	0.4291	10.900 mm		12.0	102.0	55.0	39.0	45.0	69199
contact for exceptional	0.4331	11.000 mm		12.0	102.0	55.0	39.0	45.0	69200
allowing for low thrust	0.4370	11.100 mm		12.0	102.0	55.0	38.0	45.0	69201
force and extended	0.4375	11.113 mm	7/16	12.0	102.0	55.0	38.0	45.0	56825
tool life	0.4409	11.200 mm	, -	12.0	102.0	55.0	38.0	45.0	69202
SGS II-NAMITE [®] -A coating provides	0.4449	11.300 mm		12.0	102.0	55.0	38.0	45.0	69203
exceptional wear and	0.4488	11.400 mm		12.0	102.0	55.0	38.0	45.0	69204
erosion resistance when	0.4528	11,500 mm		12,0	102,0	55,0	38,0	45,0	69205
alloys like Inconel,	0.4567	11,600 mm		12,0	102,0	55,0	38,0	45,0	69206
Stainless Steel, and	0.4606	11,700 mm		12,0	102,0	55,0	37,0	45,0	69207
Itanium Alloys Passemmended for	0.4646	11,800 mm		12,0	102,0	55,0	37,0	45,0	69208
 Reconfinenced for materials ≤ 50HRc 	0.4685	11,900 mm		12,0	102,0	55,0	37,0	45,0	69209
(475 Bhn)	0.4688	11,908 mm	15/32	12,0	102,0	55,0	37,0	45,0	56826
	0.4724	12,000 mm		12,0	102,0	55,0	37,0	45,0	69210
	0.4844	12,304 mm	31/64	14,0	107,0	60,0	41,0	45,0	56827
	0.4921	12,500 mm		14,0	107,0	60,0	41,0	45,0	69211
	0.5000	12,700 mm	1/2	14,0	107,0	60,0	41,0	45,0	56828
	0.5039	12,800 mm		14,0	107,0	60,0	41,0	45,0	69212
	0.5118	13,000 mm		14,0	107,0	60,0	41,0	45,0	69213
	0.5156	13,096 mm	33/64	14,0	107,0	60,0	40,0	45,0	56829
	0.5315	13,500 mm		14,0	107,0	60,0	40,0	45,0	69214
	0.5433	13,800 mm		14,0	107,0	60,0	39,0	45,0	69215
	0.5512	14,000 mm		14,0	107,0	60,0	39,0	45,0	69216
	0.5625	14,288 mm	9/16	16,0	115,0	65,0	43,0	48,0	56830
	0.5709	14,500 mm		16,0	115,0	65,0	43,0	48,0	69217
	0.5781	14,684 mm	37/64	16,0	115,0	65,0	43,0	48,0	56831
	0.5827	14,800 mm		16,0	115,0	65,0	43,0	48,0	69218
	0.5906	15,000 mm		16,0	115,0	65,0	42,0	48,0	69219
	0.6102	15,500 mm		16,0	115,0	65,0	42,0	48,0	69220
	0.6221	15,800 mm		16,0	115,0	65,0	41,0	48,0	69221
	0.6250	15,875 mm	5/8	16,0	115,0	65,0	41,0	48,0	56832
	0.6299	16,000 mm		16,0	115,0	65,0	41,0	48,0	69222
	0.6562	16,667 mm	21/32	18,0	123,0	73,0	47,0	48,0	56833
	0.6875	17,463 mm	11/16	18,0	123,0	73,0	47,0	48,0	56834
	0.7500	19,050 mm	3/4	20,0	131,0	79,0	50,0	50,0	56835

TOLERANCES (inch)

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≤.1181 DIAMETER
DC = +.00008/+.00047
DCON = h_6
>.1181-.2362 DIAMETER
DC = +.00016/+.00063
DCON = h_6
>.2362-.3937 DIAMETER
DC = +.00024/+.00083
DCON = h_6
>.3937-.7087 DIAMETER
DC = +.00028/+.00098
DCON = h_6
>.7087–1.1811 DIAMETER
DC = +.00031/+.00114
DCON = h_6
TOLERANCES (mm)
≤3 DIAMETER
DC = +0,002/+0,012
DCON = h_6
>3-6 DIAMETER
DC = +0,004/+0,016
DCON = h_6
>6-10 DIAMETER
DC = +0,006/+0,021
DCON = h_6
>10-18 DIAMETER
DC = +0,007/+0,025
DCON = h_6
>18-30 DIAMETER
DC = +0,008/+0,029
DCON = h_6
  STEELS
  STAINLESS STEELS
  CAST IRON
  HIGH TEMP ALLOYS
For patent
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Fractional & Metric

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· Coolant through design

improves coolant flow

to extend tool life and

aid in chip evacuation

Eccentric 2-margin

minimizes material

without weakening

Computer controlled

edge honing protects

against chip damage

· High-performance point

design stabilizes on

contact for excep-

tional hole size and

low thrust force and

extended tool life

 SGS Ti-NAMITE[®]-A coating provides

erosion resistance

when drilling heat

resisting alloys like

and Titanium Allovs

Recommended for

(475 Bhn)

materials \leq 50HRc

Inconel, Stainless Steel

exceptional wear and

cylindricity allowing for

the drill

adhesion to the margins

design reduces frictional heat and





TOLERANCES (inch) EDP NO. inch & mm FRACTIONAL/ Ti-NAMITE®-A SHANK OVERALL FLUTE USABLE SHANK ≤.1181 DIAMETER DECIMAL METRIC LETTER/WIRE DIAMETER ENGTH LENGTH LENGTH LENGTH (AITiN) **DC** = +.00008/+.00047 DC DC DC DCON 0AL LCF LU LS DCON = h₆ 0.1181 3,000 mm 66,0 28,0 23,0 36,0 69223 6,0 >.1181-.2362 DIAMETER 0.1220 3,100 mm 6,0 66,0 28,0 23,0 36,0 69224 **DC** = +.00016/+.00063 0.1250 3,175 mm 66,0 28,0 23,0 36,0 56836 1/8 6,0 $DCON = h_6$ 0.1260 3,200 mm 6,0 66,0 28,0 23,0 36,0 69225 0.1299 3,300 mm 6,0 66,0 28,0 23,0 36,0 69226 >.2362-.3937 DIAMETER 0.1339 3,400 mm 6,0 66,0 28,0 23,0 36,0 69227 **DC** = +.00024/+.00083 6,0 28,0 23,0 36,0 56837 DCON = he 0.1360 3,454 mm #29 66,0 0.1378 3,500 mm 6,0 66,0 28,0 23,0 36,0 69228 >.3937-.7087 DIAMETER 0.1406 9/64 66,0 28,0 23,0 36,0 56838 3,571 mm 6,0 **DC** = +.00028/+.00098 3,600 mm 0.1417 6.0 66.0 28.0 23.0 36.0 69229 DCON = h₆ 0.1457 6,0 66,0 28,0 23,0 36,0 69230 3,700 mm >.7087-1.1811 DIAMETER 0.1496 3,800 mm 6,0 74,0 36,0 29,0 36,0 69231 **DC** = +.00031/+.00114 0.1535 3,900 mm 6,0 74,0 36,0 29,0 36,0 69232 $DCON = h_6$ 6,0 0.1562 3,967 mm 5/32 74,0 36,0 29,0 36,0 56839 0.1575 4,000 mm 6,0 74,0 36,0 29,0 36,0 69233 TOLERANCES (mm) 0.1590 4,039 mm #21 29,0 56840 6,0 74,0 36,0 36,0 **≤3** DIAMETER 0.1614 4,100 mm 6,0 74,0 36,0 29,0 36,0 69234 **DC** = +0,002/+0,012 0.1654 74,0 36,0 29,0 36,0 69235 4,200 mm 6,0 DCON = h₆ 0.1693 4,300 mm 6.0 74.0 36.0 29.0 36.0 69236 >3-6 DIAMETER 0.1719 4.366 mm 11/64 6.0 74.0 36.0 29.0 36.0 56841 **DC** = +0,004/+0,016 36,0 29,0 69237 0.1732 4,400 mm 6,0 74.0 36.0 DCON = h₆ 0.1772 4,500 mm 6,0 74,0 36,0 29,0 36,0 69238 >6-10 DIAMETER 0.1811 4,600 mm 6,0 74,0 36,0 29,0 36,0 69239 **DC** = +0,006/+0,021 0.1850 4,699 mm #13 6.0 74.0 36.0 29.0 36.0 69240 DCON = h₆ 82,0 37,0 0.1875 4,763 mm 3/16 6,0 44,0 36,0 56842 >10-18 DIAMETER 0.1890 4,801 mm #12 6,0 82,0 44,0 37,0 36,0 69241 **DC** = +0.007/+0.0250.1929 4,900 mm 6,0 82,0 44,0 37,0 36,0 69242 DCON = h₆ 0.1969 82,0 36,0 69243 5,000 mm 6,0 44,0 36,0 0.2008 5,100 mm 6,0 82,0 44,0 36,0 36,0 69244 >18-30 DIAMETER 0.2031 5,159 mm 13/64 6,0 82,0 44,0 36,0 36,0 56843 DC = +0,008/+0,029 69245 0.2047 5,200 mm 6.0 82.0 44.0 36,0 36,0 DCON = h₆ 0.2087 5,300 mm 6,0 82,0 44,0 36,0 36,0 69246 0.2126 5,400 mm 6,0 82,0 44,0 36,0 36,0 69247 STEELS 0.2165 5.500 mm 6.0 82.0 44.0 36.0 36.0 69248 STAINLESS STEELS 0.2188 5,558 mm 7/32 6.0 82.0 44.0 36,0 36,0 56844 0.2205 5,600 mm 6,0 82,0 44,0 36,0 36,0 69249 CAST IRON 0.2244 82,0 44,0 35,0 69250 5,700 mm 6,0 36,0 HIGH TEMP ALLOYS 0.2283 82,0 44.0 35,0 36,0 69251 5,800 mm 6,0 0.2323 5,900 mm 6,0 82,0 44,0 35,0 36,0 69252 0.2344 5,954 mm 15/64 6,0 82,0 44,0 35,0 36,0 56845

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Coolant through design				inch & mm					EDP NO.
improves coolant flow to extend tool life and aid in chip evacuation	DECIMAL DC	METRIC DC	FRACTIONAL/ Letter/wire DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE Length Lu	SHANK LENGTH LS	Ti-NAMITE®-A (AITIN)
Eccentric 2-margin	0.2500	6,350 mm	1/4 E #0	8,0	91,0	53,0	43,0	36,0	56846
design reduces frictional	0.2520	6,400 mm		8,0	91,0	53,0	43,0	36,0	69257
neat and minimizes	0.2559	6,500 mm		8,0	91,0	53,0	43,0	36,0	69258
he margins without	0.2570	6,528 mm	F	8,0	91,0	53,0	43,0	36,0	56847
reakening the drill	0.2598	6,600 mm		8,0	91,0	53,0	43,0	36,0	69259
Computer controlled	0.2638	6,700 mm		8,0	91,0	53,0	43,0	36,0	69260
age noning protects	0.2656	6,746 mm	17/64	8,0	91,0	53,0	43,0	36,0	56848
igh-performance point	0.2677	6,800 mm		8,0	91,0	53,0	43,0	36,0	69261
sign stabilizes on	0.2717	6,900 mm		8,0	91,0	53,0	43,0	36,0	69262
ntact for exceptional	0.2756	7,000 mm		8,0	91,0	53,0	42,0	36,0	69263
lowing for low thrust	0.2795	7,100 mm		8,0	91,0	53,0	42,0	36,0	69264
rce and extended	0.2812	7,142 mm	9/32	8,0	91,0	53,0	42,0	36,0	56849
GS Ti-NAMITF®-Δ	0.2835	7,200 mm		8,0	91,0	53,0	42,0	36,0	69265
pating provides	0.2874	7,300 mm		8,0	91,0	53,0	42,0	36,0	69266
ceptional wear and	0.2913	7,400 mm		8,0	91,0	53,0	42,0	36,0	69267
Illing heat resisting	0.2953	7,500 mm		8,0	91,0	53,0	42,0	36,0	69268
loys like Inconel,	0.2969	7,541 mm	19/64	8,0	91,0	53,0	42,0	36,0	56850
ainless Steel, and	0.2992	7,600 mm		8,0	91,0	53,0	42,0	36,0	69269
commended for	0.3031	7,700 mm		8,0	91,0	53,0	41,0	36,0	69270
aterials ≤ 50HRc	0.3071	7,800 mm		8,0	91,0	53,0	41,0	36,0	69271
75 Bhn)	0.3110	7,900 mm		8,0	91,0	53,0	41,0	36,0	69272
	0.3125	7,938 mm	5/16	8,0	91,0	53,0	41,0	36,0	56851
	0.3150	8,000 mm		8,0	91,0	53,0	41,0	36,0	69273
	0.3189	8,100 mm		10,0	103,0	61,0	49,0	40,0	69274
	0.3228	8,200 mm		10,0	103,0	61,0	49,0	40,0	69275
	0.3268	8,300 mm		10,0	103,0	61,0	49,0	40,0	69276
	0.3281	8,334 mm	21/64	10,0	103,0	61,0	48,0	40,0	56852
	0.3307	8,400 mm		10,0	103,0	61,0	48,0	40,0	69277
	0.3320	8,433 mm	Q	10,0	103,0	61,0	48,0	40,0	56853
	0.3346	8,500 mm		10,0	103,0	61,0	48,0	40,0	69278
	0.3386	8,600 mm		10,0	103,0	61,0	48,0	40,0	69279
	0.3425	8,700 mm		10,0	103,0	61,0	48,0	40,0	69280
	0.3438	8,733 mm	11/32	10,0	103,0	61,0	48,0	40,0	56854
	0.3465	8,800 mm		10,0	103,0	61,0	48,0	40,0	69281
	0.3504	8,900 mm		10,0	103,0	61,0	48,0	40,0	69282
	0.3543	9,000 mm		10,0	103,0	61,0	48,0	40,0	69283
	0.3583	9,100 mm		10,0	103,0	61,0	47,0	40,0	69284
	0.3594	9,129 mm	23/64	10,0	103,0	61,0	47,0	40,0	56855
	0.3622	9,200 mm		10,0	103,0	61,0	47,0	40,0	69285
	0.3661	9,300 mm		10,0	103,0	61,0	47,0	40,0	69286
	0.3680	9,347 mm	U	10,0	103,0	61,0	47,0	40,0	56856
	0.3701	9,400 mm		10,0	103,0	61,0	47,0	40,0	69287
	0.3740	9,500 mm		10,0	103,0	61,0	47,0	40,0	69288
	0.3750	9,525 mm	3/8	10,0	103,0	61,0	47,0	40,0	56857

RANCES (inch)

DIAMETER = +.00008/+.00047 = h₆ I-.2362 DIAMETER = +.00016/+.00063 = h₆ 2–.3937 DIAMETER = +.00024/+.00083 = h₆ 7–.7087 DIAMETER = +.00028/+.00098 = h₆ 7–1.1811 DIAMETER = +.00031/+.00114 = h₆ RANCES (mm) AMETER = +0,002/+0,012 = h₆ DIAMETER = +0,004/+0,016 = h₆ **O** DIAMETER = +0,006/+0,021 = h₆ 18 DIAMETER = +0,007/+0,025 = h₆ **30** DIAMETER = +0,008/+0,029 = h₆ TEELS AINLESS STEELS AST IRON

IGH TEMP ALLOYS

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• Reco mate (475





CONTINUED

								FNAG
			inch & mm	0.055				EDP NO.
DECIMAL DC	METRIC DC	FRACTIONAL/ LETTER/WIRE DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	SHANK LENGTH LS	Ti-NAMITE®-A (AITiN)
0.3780	9,600 mm		10,0	103,0	61,0	47,0	40,0	69289
0.3819	9,700 mm		10,0	103,0	61,0	46,0	40,0	69290
0.3858	9,800 mm		10,0	103,0	61,0	46,0	40,0	69291
0.3898	9,900 mm		10,0	103,0	61,0	46,0	40,0	69292
0.3906	9.921 mm	25/64	10.0	103.0	61.0	46.0	40.0	56858
0.3937	10.000 mm	,	10.0	103.0	61.0	46.0	40.0	69293
0.3976	10,100 mm		12.0	118.0	71.0	56.0	45.0	69294
0.4016	10 200 mm		12,0	118.0	71.0	56.0	45.0	69295
0.4010	10,200 mm		12,0	118.0	71,0	56.0	45,0	69296
0.4055	10,300 mm	12/22	12,0	110,0	71,0	56,0	45.0	56850
0.4002	10,317 mm	15/52	12,0	110,0	71,0	55,0	45,0	60207
0.4055	10,400 mm		12,0	110,0	71,0	55,0	45,0	60209
0.4134	10,500 mm		12,0	110,0	71,0	55,0	45,0	03230
0.4173	10,000 11111		12,0	110,0	71,0	55,0	45,0	69299
0.4213	10,700 mm	27/04	12,0	110,0	71,0	55,U	45,0	09300
0.4219	10,716 mm	27/64	12,0	118,0	71,0	55,0	45,0	56860
0.4252	10,800 mm		12,0	118,0	/1,0	55,0	45,0	69301
0.4291	10,900 mm		12,0	118,0	/1,0	55,0	45,0	69302
0.4331	11,000 mm		12,0	118,0	71,0	54,0	45,0	69303
0.4370	11,100 mm		12,0	118,0	71,0	54,0	45,0	69304
0.4375	11,113 mm	7/16	12,0	118,0	71,0	54,0	45,0	56861
0.4409	11,200 mm		12,0	118,0	71,0	54,0	45,0	69305
0.4449	11,300 mm		12,0	118,0	71,0	54,0	45,0	69306
0.4488	11,400 mm		12,0	118,0	71,0	54,0	45,0	69307
0.4528	11,500 mm		12,0	118,0	71,0	54,0	45,0	69308
0.4567	11,600 mm		12,0	118,0	71,0	54,0	45,0	69309
0.4606	11,700 mm		12,0	118,0	71,0	53,0	45,0	69310
0.4646	11,800 mm		12,0	118,0	71,0	53,0	45,0	69311
0.4685	11,900 mm		12,0	118,0	71,0	53,0	45,0	69312
0.4688	11 <i>.</i> 908 mm	15/32	12.0	118.0	71.0	53.0	45.0	56862
0.4724	12.000 mm	-, -	12.0	118.0	71.0	53.0	45.0	69313
0.4844	12.304 mm	31/64	14.0	124.0	77.0	58.0	45.0	56863
0 4921	12 500 mm	0.,0.	14.0	124.0	77.0	58.0	45.0	69314
0.5000	12,700 mm	1/2	14.0	124.0	77 0	58.0	45.0	56864
0.5039	12 800 mm	1/2	14.0	124.0	77 0	58.0	45 O	69315
0.5055	13 000 mm		14.0	12/10	77.0	58.0	45,0 45,0	69316
0.5110	13,000 mm	33/6/	14,0	124,0	77.0	57.0	-15,0 //5.0	56865
0.5150	13,030 IIIII	55/04	14,0	124,0	77,0	57,0	45,0	60217
0.0010	12,000 mm		14,0	124,0	77,0	57,0	40,0	60210
0.0400	14,000 mm		14,0	124,0	77,0	50,0	40,0 45.0	60210
0.0012	14,000 mm	0/10	14,0	124,0	11,0	30,0	40,0	03213
0.5025	14,288 mm	9/10	10,0	133,0	ბ <i>პ</i> ,Ս	01,0	48,0	00000
0.5709	14,500 mm	07/04	16,0	133,0	83,0	61,0	48,0	69320
0.5/81	14,684 mm	37/64	16,0	133,0	83,0	61,0	48,0	56867
0.5827	14,800 mm		16,0	133,0	83,0	61,0	48,0	69321
0.5906	15,000 mm		16,0	133,0	83,0	60,0	48,0	69322
0.6102	15,500 mm		16,0	133,0	83,0	60,0	48,0	69323
0.6221	15,800 mm		16,0	133,0	83,0	59,0	48,0	69324
0.6250	15,875 mm	5/8	16,0	133,0	83,0	59,0	48,0	56868
0.6299	16,000 mm		16,0	133,0	83,0	59,0	48,0	69325
0.6562	16,667 mm	21/32	18,0	143,0	93,0	68,0	48,0	56869
0.6875	17,463 mm	11/16	18,0	143,0	93,0	67,0	48,0	56870
0.7500	19,050 mm	3/4	20,0	153,0	101,0	72,0	50,0	56871

FRACTIONAL Series 143M-S



	Series		Vc	_				DC • in			
	Fractional	Hardness	(sfm)		1/8	3/16	1/4	3/8	1/2	5/8	3/4
		< 175 Bhn	425	RPM	12988	8659	6494	4329	3247	2598	2165
		or	(240 510)	Fr	0.0039	0.0059	0.0079	0.0118	0.0157	0.0196	0.0236
		≤ / HKc	(340-510)	Feed (ipm)	51.0	51.0	51.0	51.0	51.0	51.0	51.0
	CARBON STEELS	< 275 Bhn	380	RPM	11613	7742	5806	3871	2903	2323	1935
	1018, 1040, 1080, 1090, 10L50,	or	(204 450)	Fr	0.0035	0.0053	0.0071	0.0106	0.0141	0.0177	0.0212
	1140, 1212, 12L15, 1525, 1536	≤ 28 HRc	(304-456)	Feed (ipm)	41.0	41.0	41.0	41.0	41.0	41.0	41.0
		< 125 Bhn	220	RPM	6723	4482	3362	2241	1681	1345	1121
		Or Or	(176.064)	Fr	0.0030	0.0045	0.0059	0.0089	0.0119	0.0149	0.0178
		≤ 45 HKC	(170-204)	Feed (ipm)	20.0	20.0	20.0	20.0	20.0	20.0	20.0
		< 275 Bhn	330	RPM	10085	6723	5042	3362	2521	2017	1681
		Or	(264,206)	Fr	0.0030	0.0045	0.0059	0.0089	0.0119	0.0149	0.0178
D		≤ 28 HRc	(204-390)	Feed (ipm)	30.0	30.0	30.0	30.0	30.0	30.0	30.0
٢	ALLOY STEELS	< 375 Bhn	200	RPM	6112	4075	3056	2037	1528	1222	1019
	4140, 4150, 4320, 5120,	or	(100.040)	Fr	0.0025	0.0038	0.0051	0.0076	0.0101	0.0127	0.0152
	5150, 8630, 86L20, 50100	≤ 40 HKc	(100-240)	Feed (ipm)	15.5	15.5	15.5	15.5	15.5	15.5	15.5
		< 425 Bhn	140	RPM	4278	2852	2139	1426	1070	856	713
		0r	(110 100)	Fr	0.0018	0.0027	0.0036	0.0054	0.0072	0.0090	0.0108
		≤ 45 HKC	(112-100)	Feed (ipm)	7.7	7.7	7.7	7.7	7.7	7.7	7.7
		< 200 Bhn	145	RPM	4431	2954	2216	1477	1108	886	739
		or	(116 174)	Fr	0.0026	0.0039	0.0052	0.0078	0.0104	0.0130	0.0156
	TOOL STEELS	≤ 13 HKC	(116-174)	Feed (ipm)	11.5	11.5	11.5	11.5	11.5	11.5	11.5
	P20, S7, T15, W2	< 375 Bhn	95	RPM	2903	1935	1452	968	726	581	484
		or	(76 114)	Fr	0.0012	0.0018	0.0024	0.0036	0.0048	0.0060	0.0072
		≤ 40 HKC	(70-114)	Feed (ipm)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
		< 185 Bhn	325	RPM	9932	6621	4966	3311	2483	1986	1655
		or	(260,200)	Fr	0.0030	0.0045	0.0060	0.0091	0.0121	0.0151	0.0181
	STAINLESS STEELS	≤ 9 HKC	(200-330)	Feed (ipm)	30.0	30.0	30.0	30.0	30.0	30.0	30.0
	303, 416, 420F, 430F, 440F	< 275 Bhn	210	RPM	6418	4278	3209	2139	1604	1284	1070
		Or	(168-252)	Fr	0.0023	0.0035	0.0047	0.0070	0.0093	0.0117	0.0140
м		≤ 28 HKC	(100-232)	Feed (ipm)	15.0	15.0	15.0	15.0	15.0	15.0	15.0
191		≤ 275 Bhn	160	RPM	4890	3260	2445	1630	1222	978	815
	CTAINI ECC CTEELC	Or	(128-192)	Fr	0.0023	0.0035	0.0047	0.0070	0.0093	0.0117	0.0140
	(DIFFICULT)	≤ 28 HKC	(120-132)	Feed (ipm)	11.4	11.4	11.4	11.4	11.4	11.4	11.4
	304, 316, 321, 13-8 PH, 15-5PH, 17-4 PH, Custom 450	≤ 375 Bhn	115	RPM	3514	2343	1757	1171	879	703	586
		≤ 375 Bhn or(92-138)	Fr	0.0021	0.0031	0.0042	0.0062	0.0083	0.0104	0.0125	
		≤ 4U HKC	(32-130)	Feed (ipm)	7.3	7.3	7.3	7.3	7.3	7.3	7.3



FRACTIONAL Series 143M-S

	Series 143M-S		Vo					DC • in			
	Fractional	Hardness	(sfm)		1/8	3/16	1/4	3/8	1/2	5/8	3/4
		< 220 Bhn	360	RPM	11002	7334	5501	3667	2750	2200	1834
		Or Or	(200 122)	Fr	0.0045	0.0068	0.0091	0.0136	0.0182	0.0227	0.0273
~	CAST IRONS	≤ 19 HRC	(200-432)	Feed (ipm)	50.0	50.0	50.0	50.0	50.0	50.0	50.0
ĸ	Gray, Malleable, Ductile	< 260 Bhn	335	RPM	10238	6825	5119	3413	2559	2048	1706
		or	(260 102)	Fr	0.0045	0.0068	0.0091	0.0136	0.0182	0.0227	0.0273
		≤ 26 HRC	(200-402)	Feed (ipm)	46.5	46.5	46.5	46.5	46.5	46.5	46.5
		< 300 Bhn	130	RPM	3973	2649	1986	1324	993	795	662
	HIGH TEMP ALLOYS		(104 156)	Fr	0.0014	0.0022	0.0029	0.0043	0.0057	0.0072	0.0086
	(NICKEL, COBALT, IRON BASE) Inconel 601, 617, 625, Incoloy, Monel 400, Rene, Waspaloy	≤ 32 HKC	104-130)	Feed (ipm)	5.7	5.7	5.7	5.7	5.7	5.7	5.7
		≤ 400 Bhn	70	RPM	2139	1426	1070	713	535	428	357
		or	(56 94)	Fr	0.0012	0.0018	0.0024	0.0036	0.0049	0.0061	0.0073
		≤ 43 HRc	(56-84)	Feed (ipm)	2.6	2.6	2.6	2.6	2.6	2.6	2.6
		< 275 Bhn	215	RPM	6570	4380	3285	2190	1643	1314	1095
S		Or Or	(172_258)	Fr	0.0018	0.0026	0.0035	0.0053	0.0070	0.0088	0.0105
		≤ 28 HKC	(172-230)	Feed (ipm)	11.5	11.5	11.5	11.5	11.5	11.5	11.5
	TITANIUM ALLOYS Pure Titanium, Ti6AI4V.	< 350 Bhn	160	RPM	4890	3260	2445	1630	1222	978	815
	Ti6Al2Sn4Zr2Mo,	Or Or	(128-192)	Fr	0.0016	0.0024	0.0032	0.0048	0.0064	0.0080	0.0096
	Ti-6Al4V	≤ 38 HRC	(120-132)	Feed (ipm)	7.8	7.8	7.8	7.8	7.8	7.8	7.8
		≤ 440 Bhn	85	RPM	2598	1732	1299	866	649	520	433
		≤ 440 BNN Or(69, 102)	Fr	0.0012	0.0018	0.0024	0.0036	0.0048	0.0060	0.0072	
		≤ 4/ HKC	(00-102)	Feed (ipm)	3.1	3.1	3.1	3.1	3.1	3.1	3.1

Bhn (Brinell) HRc (Rockwell C) rpm = Vc x 3.82 / DC ipm = Fr x RPM HRb (Rockwell B)

reduce speed and feed for materials harder than listed refer to the SGS Tool Wizard® for complete technical information (www.kyocera-sgstool.com)

METRIC Series 143M-S



Series 143M-S Metric			Ve		DC • mm								
	Metric	Hardness	(m/min)		3	6	8	10	12	14	16		
		< 175 Bhn	130	RPM	13733	6867	5150	4120	3433	2943	2575		
		or	(104 155)	Fr	0.094	0.189	0.252	0.314	0.377	0.440	0.503		
		≤ / HRc	(104-155)	Feed (mm/min)	1295	1295	1295	1295	1295	1295	1295		
	CARBON STEELS	< 275 Bhn	116	RPM	12279	6140	4605	3684	3070	2631	2302		
	1018, 1040, 1080, 1090, 10L50,	Or	(02 120)	Fr	0.085	0.170	0.226	0.283	0.339	0.396	0.452		
	1140, 1212, 12L15, 1525, 1536	≤ 28 HRc	(92-129)	Feed (mm/min)	1041	1041	1041	1041	1041	1041	1041		
		< 125 Bhn	67	RPM	7109	3555	2666	2133	1777	1523	1333		
			(54.90)	Fr	0.071	0.143	0.191	0.238	0.286	0.333	0.381		
		≤ 45 HKC	(34-00)	Feed (mm/min)	508	508	508	508	508	508	508		
		< 275 Bhn	101	RPM	10664	5332	3999	3199	2666	2285	1999		
		Or Or	(20,121)	Fr	0.071	0.143	0.191	0.238	0.286	0.333	0.381		
D		≤ 28 HKC	(00-121)	Feed (mm/min)	762	762	762	762	762	762	762		
1	ALLOY STEELS	< 375 Bhn	61	RPM	6463	3231	2424	1939	1616	1385	1212		
	4140, 4150, 4320, 5120,	Or or	(10.73)	Fr	0.061	0.122	0.162	0.203	0.244	0.284	0.325		
	5150, 8630, 86L20, 50100	≤ 40 HKC	(43-73)	Feed (mm/min)	394	394	394	394	394	394	394		
		≤ 425 Bhn or ≤ 45 HRc	43	RPM	4524	2262	1696	1357	1131	969	848		
			(34-51)	Fr	0.043	0.086	0.115	0.144	0.173	0.202	0.231		
				Feed (mm/min)	196	196	196	196	196	196	196		
		< 200 Bhn	44	RPM	4686	2343	1757	1406	1171	1004	879		
			(35-53)	Fr	0.062	0.125	0.166	0.208	0.249	0.291	0.332		
	TOOL STEELS	≤ 13 HKC		Feed (mm/min)	292	292	292	292	292	292	292		
	P20, S7, T15, W2	< 375 Bhn	29	RPM	3070	1535	1151	921	767	658	576		
		Or or	(23-35)	Fr	0.029	0.058	0.077	0.097	0.116	0.135	0.154		
		≤ 40 HKC	(23-33)	Feed (mm/min)	89	89	89	89	89	89	89		
		≤ 185 Bhn	99	RPM	10502	5251	3938	3151	2626	2250	1969		
		Or	(79-119)	Fr	0.073	0.145	0.193	0.242	0.290	0.339	0.387		
	STAINLESS STEELS	S 9 ⊓∩C	(75 115)	Feed (mm/min)	762	762	762	762	762	762	762		
	303, 416, 420F, 430F, 440F	< 275 Bhn	64	RPM	6786	3393	2545	2036	1696	1454	1272		
			(51-77)	Fr	0.056	0.112	0.150	0.187	0.225	0.262	0.299		
м		S 20 MMC	(31-77)	Feed (mm/min)	381	381	381	381	381	381	381		
		≤ 275 Bhn	49	RPM	5170	2585	1939	1551	1293	1108	969		
	CTAINI ECO OTEELO	Or	(39-59)	Fr	0.056	0.112	0.149	0.187	0.224	0.261	0.299		
	(DIFFICULT)	S 20 MMC	(00 00)	Feed (mm/min)	290	290	290	290	290	290	290		
	304, 316, 321, 13-8 PH, 15-5PH, 17-4 PH. Custom 450	≤ 375 Bhn	35	RPM	3716	1858	1394	1115	929	796	697		
	,,	0r	(28-12)	Fr	0.050	0.100	0.133	0.166	0.200	0.233	0.266		
		≤ 40 HKC	(20-42)	Feed (mm/min)	185	185	185	185	185	185	185		



METRIC Series 143M-S

	Series		Vc –		DC • mm							
	Metric	Hardness	(m/min)		3	6	8	10	12	14	16	
		< 220 Bhn	110	RPM	11633	5816	4362	3490	2908	2493	2181	
			(00 100)	Fr	0.109	0.218	0.291	0.364	0.437	0.509	0.582	
v	CAST IRONS	≤ 19 HRC	(00-132)	Feed (mm/min)	1270	1270	1270	1270	1270	1270	1270	
ĸ	Gray, Malleable, Ductile	< 260 Bhn	102	RPM	10825	5413	4059	3248	2706	14 16 2493 2181 0.509 0.582 1270 1270 2320 2030 0.509 0.582 1181 1181 900 788 0.161 0.184 145 145 485 424 0.136 0.156 66 66 1489 1303 0.196 0.224 292 292 1108 969 0.179 0.204 198 198 589 515 0.134 0.153		
			(02 122)	Fr	0.109	0.218	0.291	0.364	0.436	0.509	0.582	
		≤ 26 HRc	(02 120)	Feed (mm/min)	1181	1181	1181	1181	1181	1181	1181	
		< 300 Bhn	40	RPM	4201	2100	1575	1260	1050	900	788	
	HIGH TEMP ALLOYS		(22,10)	Fr	0.034	0.069	0.092	0.115	0.138	0.161	0.184	
	(Nickel , Cobalt, Iron Base) Inconel 601, 617, 625, Incoloy,		(32-40)	Feed (mm/min)	145	145	145	145	145	145	145	
		≤ 400 Bhn	21	RPM	2262	1131	848	679	565	485	424	
	Monel 400, Rene, Waspaloy		(17-26)	Fr	0.029	0.058	0.078	0.097	0.117	2493 2181 0.509 0.582 1270 1270 2320 2030 0.509 0.582 1181 1181 900 788 0.161 0.184 145 145 485 424 0.136 0.156 66 66 1489 1303 0.196 0.224 292 292 1108 969 0.179 0.204 198 198 589 515		
		≤ 43 HKC	(17-26)	Feed (mm/min)	66	66	66	66	66	66	66	
		< 275 Bhn	66	RPM	6947	3474	2605	2084	1737	1489	1303	
S		0r	(52-70)	Fr	0.042	0.084	0.112	0.140	0.168	14 16 2493 2181 0.509 0.582 1270 1270 2320 2030 0.509 0.582 1181 1181 900 788 0.161 0.184 145 145 485 424 0.136 0.156 66 66 1489 1303 0.196 0.224 292 292 1108 969 0.179 0.204 198 198 589 515 0.134 0.153 79 79	0.224	
		S 20 MMC	(32-73)	Feed (mm/min)	292	292	292	292	292	292	292	
	TITANIUM ALLOYS Pure Titanium, Ti6AI4V,	< 350 Bhn	49	RPM	5170	2585	1939	1551	1293	1108	969	
	Ti6Al2Sn4Zr2Mo,		(39-59)	Fr	0.038	0.077	0.102	0.128	0.153	0.179	0.204	
	Ti-6AI4V	≤ 38 HKC	(55-55)	Feed (mm/min)	198	198	198	198	198	198	198	
		≤ 440 Bhn	26	RPM	2747	1373	1030	824	687	589	515	
		Or 47 HPo	(21-31)	Fr	0.029	0.057	0.076	0.096	0.115	0.134	0.153	
		> 4/ ⊓nC	(21-01)	Feed (mm/min)	79	79	79	79	79	79	79	

Bhn (Brinell) HRc (Rockwell C) HRb (Rockwell B) rpm = (Vc x 1000) / (DC x 3.14) mm/min = Fr x RPM reduce speed and feed for materials harder than listed refer to the SGS Tool Wizard[®] for complete technical information (www.kyocera-sgstool.com)





HIGH PERFORMANCE CARBIDE DRILLS

The key features designed into the Hi-PerCarb[®] Series 141K Drill allow the product to offer application benefits not only beyond that of standard carbide drills, but also other High Performance drills. Each feature of the Hi-PerCarb[®] Series 141K Drill was uniquely engineered as a solution towards addressing the issues commonly encountered during high production drilling.

SERIES 141K

A) 3-MARGIN DESIGN

В

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- improved hole stability over two-flute designs
 superior surface finish, roundness, and hole
- cylindricity • unsurpassed hole size control

SELF-STABILIZING POINT AND OPEN FLUTE STRUCTURE

- pyramid design stabilizes the drill on contact with the workpiece
- engineered flute shape efficiently transports chip volume without sacrificing strength

COOLANT THROUGH DESIGN

 puts coolant as close to cut as possible for consistent chip flushing, maximum cooling, and highest productivity

D EDGE AND CORNER PROTECTION

- corner chamfers provide strength and reduce breakout when drilling through holes in cast iron
- automated edge treatment process extends tool life by eliminating microscopic imperfections in the cutting edges

APPLICATION SPECIFIC COATING AND PREMIUM CARBIDE

 Ti-NAMITE[®]-M is a state-of-the-art nanocomposite surface coating that maximizes wear resistance in abrasive cast irons

• 141K drills are manufactured from premium certified carbide to further ensure the highest level of quality, performance, and longevity

MINIMAL MARGIN DESIGN

 a narrow margin reduces frictional heat generated by excessive contact with the workpiece, and the parallel design helps to maintain a consistent contact width as the margins wear

PERFORMANCE. PRECISION. PASSION. HI-PERCARB® SERIES 141K CAST IRON DRILLS


PERFORMANCE.



www.kyocera-sgstool.com



PRECISION.

SERIES 141K Hole Size Comparison vs. Competition in Class 40 Cast Iron



PASSION.

Lab Results Indicate the Hi-Per Carb[®] Series 141K Drill outperforms the competition in measured hole quality at a variety of speed and feed rates.



Features of Ti-NAMITE[®]-M include high wear resistance, reduced friction, and excellent prevention of cutting edge build up. This coating allows superior material removal rates and tool life when used in high performance operations in Cast Iron and Steel and with difficult to machine materials like Titanium.

Hardness (HV): 3600 Oxidation Temperature: 1150°C / 2100°F Coefficient of Friction: 0.45 Thickness: 1–4 Microns (based on tool diameter)



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141K 5xD

(3

Flutes





IULERANCES (Inch)				inch & mm					EDP NO.	• 3-margin design
≤. 1181 DIAMETER DC = +.00008/+.00047	DECIMAL DC	METRIC DC	FRACTIONAL/ Letter/Wire DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	SHANK Length Ls	Ti-NAMITE [®] -M (TM)	improves hole stability and size control while
DCON = h ₆	0.1181	3,000 mm		6,0	66,0	28,0	23,0	36,0	65160	finish, roundness and
>.1181–.2362 DIAMETER	0.1220	3,100 mm		6,0	66,0	28,0	23,0	36,0	65161	cylindricity
DC = +.00016/+.00063	0.1250	3,175 mm	1/8	6,0	66,0	28,0	23,0	36,0	55160	 Self-stabilizing pyramid point design stabilizes
	0.1260	3,200 mm		6,0	66,0	28,0	23,0	36,0	65162	the drill on contact with
>.23623937 DIAMETER	0.1299	3,300 mm		6,0	66,0	28,0	23,0	36,0	65163	Open flute structure
DC = +.00024/+.00083 DCON = he	0.1339	3,400 mm		6,0	66,0	28,0	23,0	36,0	65164	efficiently transports
2927_ 7087 DIAMETER	0.1360	3,454 mm	#29	6,0	66,0	28,0	23,0	36,0	55161	chips while maintaining strength at high
DC = +.00028/+.00098	0.1378	3,500 mm		6,0	66,0	28,0	23,0	36,0	65165	feed rates
DCON = h ₆	0.1406	3,571 mm	9/64	6,0	66,0	28,0	23,0	36,0	55162	 Sculpted gash allows chips to easily flow
>.7087–1.1811 DIAMETER	0.1417	3,600 mm		6,0	66,0	28,0	23,0	36,0	65166	away from the drill
DC = +.00031/+.00114	0.1457	3,700 mm		6,0	66,0	28,0	23,0	36,0	65167	center
DCON = h ₆	0.1496	3,800 mm		6,0	74,0	36,0	29,0	36,0	65168	 Recommended for materials ≤ 43 HRc
	0.1535	3,900 mm		6,0	74,0	36,0	29,0	36,0	65169	(≤ 400 Bhn)
TOLERANCES (mm)	0.1562	3,967 mm	5/32	6,0	74,0	36,0	29,0	36,0	55163	
≤ 3 DIAMETER	0.1575	4,000 mm		6,0	74,0	36,0	29,0	36,0	65170	
DC = +0,002/+0,012	0.1590	4,039 mm	#21	6,0	74,0	36,0	29,0	36,0	55164	
DCON = h ₆	0.1614	4,100 mm		6,0	74,0	36,0	29,0	36,0	65171	
> 3—6 DIAMETER	0.1654	4,200 mm		6,0	74,0	36,0	29,0	36,0	65172	
DC = +0,004/+0,016	0.1693	4,300 mm		6,0	74,0	36,0	29,0	36,0	65173	
DCON = n ₆	0.1719	4,366 mm	11/64	6,0	74,0	36,0	29,0	36,0	55165	
>6–10 DIAMETER	0.1732	4,400 mm		6,0	74,0	36,0	29,0	36,0	65174	
DC = +0,006/+0,021 DCON = bo	0.1772	4,500 mm		6,0	74,0	36,0	29,0	36,0	65175	
	0.1811	4,600 mm		6,0	74,0	36,0	29,0	36,0	65176	
>1U-18 DIAMETER	0.1850	4,699 mm	#13	6,0	74,0	36,0	29,0	36,0	65177	
DCON = h ₆	0.1875	4,763 mm	3/16	6,0	82,0	44,0	37,0	36,0	55166	
	0.1890	4,801 mm	#12	6,0	82,0	44,0	37,0	36,0	65178	
DC = $+0.008/+0.029$	0.1929	4,900 mm		6,0	82,0	44,0	37,0	36,0	65179	
DCON = h ₆	0.1969	5,000 mm		6,0	82,0	44,0	36,0	36,0	65180	
	0.2008	5,100 mm		6,0	82,0	44,0	36,0	36,0	65181	
CAST IRON	0.2031	5,159 mm	13/64	6,0	82,0	44,0	36,0	36,0	55167	
	0.2047	5,200 mm		6,0	82,0	44,0	36,0	36,0	65182	
For natent	0.2087	5,300 mm		6,0	82,0	44,0	36,0	36,0	65183	
information visit	0.2126	5,400 mm		6,0	82,0	44,0	36,0	36,0	65184	
www.ksptpatents.com	0.2165	5,500 mm		6,0	82,0	44,0	36,0	36,0	65185	
	0.2188	5,558 mm	7/32	6,0	82,0	44,0	36,0	36,0	55168	
	0.2205	5,600 mm		6,0	82,0	44,0	36,0	36,0	65186	



LS-

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OAL

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LCF





3-margin design				inch & mm					EDP NO.
improves hole stability and size control while	DECIMAL DC	METRIC DC	FRACTIONAL/ Letter/Wire DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	SHANK LENGTH LS	Ti-NAMITE®-M (TM)
finish, roundness and	0.2244	5,700 mm		6,0	82,0	44,0	35,0	36,0	65187
cylindricity	0.2283	5,800 mm		6,0	82,0	44,0	35,0	36,0	65188
Self-stabilizing pyramid	0.2323	5,900 mm		6,0	82,0	44,0	35,0	36,0	65189
the drill on contact with	0.2344	5,954 mm	15/64	6,0	82,0	44,0	35,0	36,0	55169
ne workpiece	0.2362	6,000 mm		6,0	82,0	44,0	35,0	36,0	65190
efficiently transports	0.2402	6,100 mm		8,0	91,0	53,0	44,0	36,0	65191
chips while maintaining	0.2441	6,200 mm		8,0	91,0	53,0	44,0	36,0	65192
eed rates	0.2480	6,300 mm		8,0	91,0	53,0	44,0	36,0	65193
Sculpted gash allows	0.2500	6,350 mm	1/4 E #0	8,0	91,0	53,0	43,0	36,0	55170
from the drill center	0.2520	6,400 mm		8,0	91,0	53,0	43,0	36,0	65194
Recommended for	0.2559	6,500 mm		8,0	91,0	53,0	43,0	36,0	65195
materials ≤ 43 HRc (≤ 400 Bhn)	0.2570	6,528 mm	F	8,0	91,0	53,0	43,0	36,0	55171
	0.2598	6,600 mm		8,0	91,0	53,0	43,0	36,0	65196
	0.2638	6,700 mm		8,0	91,0	53,0	43,0	36,0	65197
	0.2656	6,746 mm	17/64	8,0	91,0	53,0	43,0	36,0	55172
	0.2677	6,800 mm		8,0	91,0	53,0	43,0	36,0	65198
	0.2717	6,900 mm		8,0	91,0	53,0	43,0	36,0	65199
	0.2756	7,000 mm		8,0	91,0	53,0	42,0	36,0	65200
	0.2795	7,100 mm		8,0	91,0	53,0	42,0	36,0	65201
	0.2812	7,142 mm	9/32	8,0	91,0	53,0	42,0	36,0	55173
	0.2835	7,200 mm		8,0	91,0	53,0	42,0	36,0	65202
	0.2874	7,300 mm		8,0	91,0	53,0	42,0	36,0	65203
	0.2913	7,400 mm		8,0	91,0	53,0	42,0	36,0	65204
	0.2953	7,500 mm		8,0	91,0	53,0	42,0	36,0	65205
	0.2969	7,541 mm	19/64	8,0	91,0	53,0	42,0	36,0	55174
	0.2992	7,600 mm		8,0	91,0	53,0	42,0	36,0	65206
	0.3031	7,700 mm		8,0	91,0	53,0	41,0	36,0	65207
	0.3071	7,800 mm		8,0	91,0	53,0	41,0	36,0	65208
	0.3110	7,900 mm		8,0	91,0	53,0	41,0	36,0	65209
	0.3125	7,938 mm	5/16	8,0	91,0	53,0	41,0	36,0	55175
	0.3150	8,000 mm		8,0	91,0	53,0	41,0	36,0	65210
	0.3189	8,100 mm		10,0	103,0	61,0	49,0	40,0	65211
	0.3228	8,200 mm		10,0	103,0	61,0	49,0	40,0	65212
	0.3268	8,300 mm		10,0	103,0	61,0	49,0	40,0	65213
	0.3281	8,334 mm	21/64	10,0	103,0	61,0	48,0	40,0	55176
	0.3307	8,400 mm		10,0	103,0	61,0	48,0	40,0	65214

DC

1

ES (inch)

DCON

ł

ETER 008/+.00047 DIAMETER 016/+.00063 **7 DIAMETER** 024/+.00083 7 DIAMETER 028/+.00098 1 DIAMETER 031/+.00114 ES (mm) 02/+0,012 TER 04/+0,016 IETER 06/+0,021 METER 07/+0,025 visit atents.com

continued on next page

55177

65215

40,0

40,0

• 3-margin design improves hole stability

Self-stabilizing pyramid

Open flute structure

Sculpted gash allows

• Recommended for

0.3320

0.3346

8,433 mm

8,500 mm

0

10,0

10,0

103,0

103,0

61,0

61,0

48,0

48,0





CONTINUED

' 10									
	METRIC	FRACTIONAL/ LETTER/WIRE	SHANK DIAMETER	OVERALL LENGTH		USABLE LENGTH	SHANK LENGTH	EDP NO. Ti-NAMITE [®] -M (TM)	
0.3386	8.600 mm	DC	10.0	103.0	61.0	48.0	40.0	65216	
0.3425	8.700 mm		10.0	103.0	61.0	48.0	40.0	65217	
0.3438	8,733 mm	11/32	10,0	103,0	61,0	48,0	40,0	55178	
0.3465	8,800 mm	, -	10,0	103,0	61,0	48,0	40,0	65218	
0.3504	8.900 mm		10.0	103.0	61.0	48.0	40.0	65219	
0.3543	9.000 mm		10.0	103.0	61.0	48.0	40.0	65220	
0.3583	9,100 mm		10.0	103.0	61.0	47.0	40.0	65221	
0.3594	9,129 mm	23/64	10.0	103.0	61.0	47.0	40.0	55179	
0.3622	9,200 mm	- 1 -	10.0	103.0	61.0	47.0	40.0	65222	
0.3661	9.300 mm		10.0	103.0	61.0	47.0	40.0	65223	
0.3680	9,347 mm	U	10,0	103,0	61,0	47,0	40,0	55180	
0.3701	9,400 mm		10,0	103,0	61,0	47,0	40,0	65224	
0.3740	9,500 mm		10,0	103,0	61,0	47,0	40,0	65225	
0.3750	9,525 mm	3/8	10,0	103,0	61,0	47,0	40,0	55181	
0.3780	9,600 mm		10,0	103,0	61,0	47,0	40,0	65226	
0.3819	9,700 mm		10,0	103,0	61,0	46,0	40,0	65227	
0.3858	9,800 mm		10,0	103,0	61,0	46,0	40,0	65228	
0.3898	9,900 mm		10,0	103,0	61,0	46,0	40,0	65229	
0.3906	9,921 mm	25/64	10,0	103,0	61,0	46,0	40,0	55182	
0.3937	10,000 mm		10,0	103,0	61,0	46,0	40,0	65230	
0.3976	10,100 mm		12,0	118,0	71,0	56,0	45,0	65231	
0.4016	10,200 mm		12,0	118,0	71,0	56,0	45,0	65232	
0.4055	10,300 mm		12,0	118,0	71,0	56,0	45,0	65233	
0.4062	10,317 mm	13/32	12,0	118,0	71,0	56,0	45,0	55183	
0.4095	10,400 mm		12,0	118,0	71,0	55,0	45,0	65234	
0.4134	10,500 mm		12,0	118,0	71,0	55,0	45,0	65235	
0.4173	10,600 mm		12,0	118,0	71,0	55,0	45,0	65236	
0.4213	10,700 mm		12,0	118,0	71,0	55,0	45,0	65237	
0.4219	10,716 mm	27/64	12,0	118,0	71,0	55,0	45,0	55184	
0.4252	10,800 mm		12,0	118,0	71,0	55,0	45,0	65238	
0.4291	10,900 mm		12,0	118,0	71,0	55,0	45,0	65239	
0.4331	11,000 mm		12,0	118,0	71,0	54,0	45,0	65240	
0.4370	11,100 mm		12,0	118,0	71,0	54,0	45,0	65241	
0.4375	11,113 mm	7/16	12,0	118,0	71,0	54,0	45,0	55185	
0.4409	11,200 mm		12,0	118,0	71,0	54,0	45,0	65242	
0.4449	11,300 mm		12,0	118,0	71,0	54,0	45,0	65243	
0.4488	11,400 mm		12,0	118,0	71,0	54,0	45,0	65244	
0.4528	11,500 mm		12,0	118,0	71,0	54,0	45,0	65245	
0.4567	11,600 mm		12,0	118,0	71,0	54,0	45,0	65246	
0.4606	11,700 mm		12,0	118,0	71,0	53,0	45,0	65247	
0.4646	11,800 mm		12,0	118,0	71,0	53,0	45,0	65248	
0.4685	11,900 mm		12,0	118,0	71,0	53,0	45,0	65249	
0.4688	11,908 mm	15/32	12,0	118,0	71,0	53,0	45,0	55186	
0.4724	12,000 mm		12,0	118,0	71,0	53,0	45,0	65250	









Fractional & Metric Series 141K 5xD

• 3-margin design				inch & mm					EDP NO.
improves hole stability and size control while providing superior	DECIMAL DC	METRIC DC	FRACTIONAL/ LETTER/WIRE DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	SHANK LENGTH LS	Ti-NAMITE [®] -M (TM)
finish, roundness and	0.4844	12,304 mm	31/64	14,0	124,0	77,0	58,0	45,0	55187
Cylinaricity Solf stabilizing pyramid	0.4921	12,500 mm		14,0	124,0	77,0	58,0	45,0	65251
point design stabilizes	0.5000	12,700 mm	1/2	14,0	124,0	77,0	58,0	45,0	55188
the drill on contact with	0.5039	12,800 mm		14,0	124,0	77,0	58,0	45,0	65252
Open flute structure	0.5118	13,000 mm		14,0	124,0	77,0	58,0	45,0	65253
efficiently transports	0.5156	13,096 mm	33/64	14,0	124,0	77,0	57,0	45,0	55189
strength at high	0.5315	13,500 mm		14,0	124,0	77,0	57,0	45,0	65254
feed rates	0.5433	13,800 mm		14,0	124,0	77,0	56,0	45,0	65255
 Sculpted gash allows chips to easily flow away 	0.5512	14,000 mm		14,0	124,0	77,0	56,0	45,0	65256
from the drill center	0.5625	14,288 mm	9/16	16,0	133,0	83,0	61,0	48,0	55190
Recommended for	0.5709	14,500 mm		16,0	133,0	83,0	61,0	48,0	65257
$(\leq 400 \text{ Bhn})$	0.5781	14,684 mm	37/64	16,0	133,0	83,0	61,0	48,0	55191
	0.5827	14,800 mm		16,0	133,0	83,0	61,0	48,0	65258
	0.5906	15,000 mm		16,0	133,0	83,0	60,0	48,0	65259
	0.6102	15,500 mm		16,0	133,0	83,0	60,0	48,0	65260
	0.6221	15,800 mm		16,0	133,0	83,0	59,0	48,0	65261
	0.6250	15,875 mm	5/8	16,0	133,0	83,0	59,0	48,0	55192
	0.6299	16,000 mm		16,0	133,0	83,0	59,0	48,0	65262
	0.6562	16,667 mm	21/32	18,0	143,0	93,0	68,0	48,0	55193
	0.6875	17,463 mm	11/16	18,0	143,0	93,0	67,0	48,0	55194
	0.7500	19,050 mm	3/4	20,0	153,0	101,0	72,0	50,0	55195

TOLERANCES (inch)

```
≤.1181 DIAMETER
DC = +.00008/+.00047
DCON = h<sub>6</sub>
>.1181-.2362 DIAMETER
DC = +.00016/+.00063
DCON = h<sub>6</sub>
>.2362-.3937 DIAMETER
DC = +.00024/+.00083
DCON = h_6
>.3937-.7087 DIAMETER
DC = +.00028/+.00098
DCON = h_6
>.7087–1.1811 DIAMETER
DC = +.00031/+.00114
DCON = h_6
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TOLERANCES (mm)

≤3 DIAMETER

DC = +0,002/+0,012 DCON = h₆

>3-6 DIAMETER

DC = +0,004/+0,016 $DCON = h_6$

>6-10 DIAMETER

DC = +0,006/+0,021 $DCON = h_6$

>10-18 DIAMETER **DC** = +0,007/+0,025

 $DCON = h_6$



For patent information visit www.ksptpatents.com





Series		Ve					DC • in			
Fractional	Hardness	(sfm)		1/8	3/16	1/4	3/8	1/2	5/8	3/4
GRAY CAST IRON	< 150 Bhn	450	RPM	13752	9168	6876	4584	3438	2750	2292
FERRITIC ASTM A48: CLASS 20		(260 540)	Fr	0.0049	0.0074	0.0099	0.0148	0.0198	0.0247	0.0297
SAE J431C: GRADE 1800	≤ 1 HKC	(300-340)	Feed (ipm)	68	68	68	68	68	68	68
GRAY CAST IRON	< 220 Bhn	375	RPM	11460	7640	5730	3820	2865	2292	1910
PEARLITIC ASTM A48: CLASS 30, 35, 40	Or	(200 450)	Fr	0.0039	0.0059	0.0079	0.0118	0.0157	0.0196	0.0236
SAE J431C: GRADE 3000	≤ 19 HRc	(300-430)	Feed (ipm)	45	45	45	45	45	45	45
	< 250 Bhn	325	RPM	9932	6621	4966	3311	2483	1986	1655
COMPACTED GRAPHITE IRON		(260,200)	Fr	0.0039	0.0059	0.0079	0.0118	0.0157	0.0196	0.0236
	≤ 25 HRC	(200-390)	Feed (ipm)	39	39	39	39	39	39	39
MALLEABLE CAST IRON	< 160 Bhn	450	RPM	13752	9168	6876	4584	3438	2750	2292
FERRITIC ASTM A220: GRADE 40010		(260 540)	Fr	0.0049	0.0074	0.0099	0.0148	0.0198	0.0247	0.0297
SAE J158: GRADE M4504	≤ 3 HKC	(300-340)	Feed (ipm)	68	68	68	68	68	68	68
MALLEABLE CAST IRON	< 320 Bhn	250	RPM	7640	5093	3820	2547	1910	1528	1273
MARTENSITE ASTM A220: GRADE 90001	Or	(200, 200)	Fr	0.0031	0.0047	0.0063	0.0094	0.0126	0.0157	0.0188
SAE J158: GRADE M8501	≤ 34 HRc	(200-300)	Feed (ipm)	24	24	24	24	24	24	24

Bhn (Brinell) HRc (Rockwell C)

rpm = Vc x 3.82 / DC ipm = Fr x rpm reduce speed and feed for materials harder than listed refer to the SGS Tool Wizard® for complete technical information (www.kyocera-sgstool.com)

Series		Va					DC • mm			
Metric	Hardness	(m/min)		3	6	8	10	12	14	16
GRAY CAST IRON	< 150 Bhn	137	RPM	14541	7271	5453	4362	3635	3116	2726
FERRITIC ASTM A48: CLASS 20	Or	(110 165)	Fr	0.119	0.237	0.316	0.395	0.475	0.554	0.633
SAE J431C: GRADE 1800	≤ I HKC	(110-100)	Feed (mm/min)	1725	1725	1725	1725	1725	1725	1725
GRAY CAST IRON	< 220 Bhn	114	RPM	12118	6059	4544	3635	3029	2597	2272
PEARLITIC ASTM A48: CLASS 30, 35, 40		/01 127)	Fr	0.094	0.189	0.252	0.315	0.378	0.441	0.504
SAE J431C: GRADE 3000	≤ 19 HKC	(91-137)	Feed (mm/min)	1145	1145	1145	1145	1145	1145	1145
	< 250 Bhn	99	RPM	10502	5251	3938	3151	2626	2250	1969
COMPACTED GRAPHITE IRON	Or	/70 110)	Fr	0.094	0.189	0.251	0.314	0.377	0.440	0.503
	≤ 25 HRc	(79-119)	Feed (mm/min)	990	990	990	990	990	990	990
MALLEABLE CAST IRON	< 160 Bhn	137	RPM	14541	7271	5453	4362	3635	3116	2726
FERRITIC ASTM A220: GRADE 40010	Or	(110 165)	Fr	0.119	0.237	0.316	0.395	0.475	0.554	0.633
SAE J158: GRADE M4504	≤ 3 HKC	(110-100)	Feed (mm/min)	1725	1725	1725	1725	1725	1725	1725
MALLEABLE CAST IRON	< 320 Bhn	76	RPM	8078	4039	3029	2424	2020	1731	1515
MARTENSITE ASTM A220: GRADE 90001		(61.01)	Fr	0.076	0.151	0.201	0.252	0.302	0.352	0.403
SAE J158: GRADE M8501	≤ 34 HRc	(01-91)	Feed (mm/min)	610	610	610	610	610	610	610

(Brinell) HRc (Rockwell C) rpm = (Vc x 1000) / (DC x 3.14)

mm/min = Fr x rpm

reduce speed and feed for materials harder than listed refer to the SGS Tool Wizard® for complete technical information (www.kyocera-sgstool.com)

Series 141K



SERIES 131N



HIGH PERFORMANCE CARBIDE DRILLS

The key features designed into the Hi-PerCarb[®] Series 131N Drill allow the product to offer application benefits not only beyond that of standard carbide drills, but also other High Performance drills. Each feature of the Hi-PerCarb[®] Series 131N Drill was uniquely engineered as a solution towards addressing the issues commonly encountered during high production drilling.

3-MARGIN DESIGN

- improved hole stability over two-flute designs
 superior surface finish, roundness and hole cylindricity
- unsurpassed hole size control

B) SELF-STABILIZING POINT

 pyramid design stabilizes the drill on contact with the workpiece

C OPEN FLUTE STRUCTURE

 efficiently transports chips while maintaining strength at high feed rates

D SCULPTED GASH

- allows chips to easily flow away from the drill center
- reduced cutting forces over competitive three-flute designs

E MINIMAL MARGIN DESIGN

- reduces frictional heat generated by excessive margin contact with the workpiece
- parallel design maintains contact width as margin wears for performance consistency

PERFORMANCE. PRECISION. PASSION. HI-PERCARB[®] SERIES 131N ALUMINUM DRILLS



PERFORMANCE.



www.kyocera-sgstool.com

PRECISION.

4847 RPM

SERIES 131N 3 Flute Drill vs. Competition 2 Flute Drill in 2024 Aluminum



6786 RPM 100 INCHES PER MINUTE



PASSION.

Lab Results Indicate the Hi-Per Carb[®] Series 131N Drill outperforms the competition in measured hole quality at a variety of speed and feed rates.





9530 RPM 200 INCHES PER MINUTE





This ceramic based coating ensures a smooth surface and a low affinity to cold welding or edge build-up, which makes it optimal for aluminum and copper applications. It has high toughness and high hardness.

Microhardness: 4000 HV

Oxidation Temperature: 850°C / 1562°F

Coefficient of Friction: 0.10-0.20

Thickness: 1–2 Microns (based on tool diameter)

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OAL





				:					501	
margin design proves hole stability d size control while	DECIMAL DC	METRIC DC	FRACTIONAL/ LETTER/WIRE DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	SHANK LENGTH LS	UNCOATED	Ti-NAMITE®-B (TiB ₂)
h, roundness and	0.1181	3,000 mm		6,0	62,0	20,0	15,0	36,0	64600	67600
dricity	0.1220	3,100 mm		6,0	62,0	20,0	15,0	36,0	64601	67601
ng pyramid stabilizes	0.1250	3,175 mm	1/8	6,0	62,0	20,0	15,0	36,0	54600	54700
tact with	0.1260	3,200 mm		6,0	62,0	20,0	15,0	36,0	64602	67602
cture	0.1299	3,300 mm		6,0	62,0	20,0	15,0	36,0	64603	67603
sports	0.1339	3,400 mm		6,0	62,0	20,0	15,0	36,0	64604	67604
intaining	0.1360	3,454 mm	#29	6,0	62,0	20,0	15,0	36,0	54601	54701
	0.1378	3,500 mm		6,0	62,0	20,0	15,0	36,0	64605	67605
OWS	0.1406	3,571 mm	9/64	6,0	62,0	20,0	15,0	36,0	54602	54702
ter	0.1417	3,600 mm		6,0	62,0	20,0	15,0	36,0	64606	67606
or	0.1457	3,700 mm		6,0	62,0	20,0	15,0	36,0	64607	67607
	0.1496	3,800 mm		6,0	66,0	24,0	18,0	36,0	64608	67608
	0.1535	3,900 mm		6,0	66,0	24,0	18,0	36,0	64609	67609
	0.1562	3,967 mm	5/32	6,0	66,0	24,0	18,0	36,0	54603	54703
	0.1575	4,000 mm		6,0	66,0	24,0	18,0	36,0	64610	67610
	0.1590	4,039 mm	#21	6,0	66,0	24,0	18,0	36,0	54604	54704
	0.1614	4,100 mm		6,0	66,0	24,0	18,0	36,0	64611	67611
	0.1654	4,200 mm		6,0	66,0	24,0	18,0	36,0	64612	67612
	0.1693	4,300 mm		6,0	66,0	24,0	18,0	36,0	64613	67613
	0.1719	4,366 mm	11/64	6,0	66,0	24,0	17,0	36,0	54605	54705
	0.1732	4,400 mm		6,0	66,0	24,0	17,0	36,0	64614	67614
	0.1772	4,500 mm		6,0	66,0	24,0	17,0	36,0	64615	67615
	0.1811	4,600 mm		6,0	66,0	24,0	17,0	36,0	64616	67616
	0.1850	4,699 mm	#13	6,0	66,0	24,0	17,0	36,0	64617	67617
	0.1875	4,763 mm	3/16	6,0	66,0	28,0	21,0	36,0	54606	54706
	0.1890	4,801 mm	#12	6,0	66,0	28,0	21,0	36,0	64618	67618
	0.1929	4,900 mm		6,0	66,0	28,0	21,0	36,0	64619	67619
	0.1969	5,000 mm		6,0	66,0	28,0	20,0	36,0	64620	67620
	0.2008	5,100 mm		6,0	66,0	28,0	20,0	36,0	64621	67621
	0.2031	5,159 mm	13/64	6,0	66,0	28,0	20,0	36,0	54607	54707
	0.2047	5,200 mm		6,0	66,0	28,0	20,0	36,0	64622	67622
	0.2087	5,300 mm		6,0	66,0	28,0	20,0	36,0	64623	67623
	0.2126	5,400 mm		6,0	66,0	28,0	20,0	36,0	64624	67624
	0.2165	5,500 mm		6,0	66,0	28,0	20,0	36,0	64625	67625
	0.2188	5,558 mm	7/32	6,0	66,0	28,0	20,0	36,0	54608	54708
	0.2205	5,600 mm		6,0	66,0	28,0	20,0	36,0	64626	67626
	0.2244	5,700 mm		6,0	66,0	28,0	19,0	36,0	64627	67627
	0.2283	5,800 mm		6,0	66,0	28,0	19,0	36,0	64628	67628

TOLERANCES (inch)

```
≤.1181 DIAMETER
DC = +.00008/+.00047
DCON = h_6
>.1181-.2362 DIAMETER
DC = +.00016/+.00063
DCON = h_6
>.2362-.3937 DIAMETER
DC = +.00024/+.00083
DCON = h_6
>.3937-.7087 DIAMETER
DC = +.00028/+.00098
DCON = h_6
>.7087-1.1811 DIAMETER
DC = +.00031/+.00114
DCON = h_6
TOLERANCES (mm)
≤3 DIAMETER
DC = +0,002/+0,012
DCON = h_6
>3-6 DIAMETER
DC = +0,004/+0,016
DCON = h<sub>6</sub>
>6–10 DIAMETER
DC = +0,006/+0,021
DCON = h_6
>10-18 DIAMETER
DC = +0,007/+0,025
DCON = h_6
 NON-FERROUS
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continued on next page





CONTINUED

			inch & mm					FDI	P NO
DECIMAL DC	METRIC DC	FRACTIONAL/ LETTER/WIRE DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	SHANK LENGTH LS	UNCOATED	Ti-NAMITE [®] -B (TiB ₂)
0.2323	5,900 mm		6,0	66,0	28,0	19,0	36,0	64629	67629
0.2344	5,954 mm	15/64	6,0	66,0	28,0	19,0	36,0	54609	54709
0.2362	6,000 mm		6,0	66,0	28,0	19,0	36,0	64630	67630
0.2402	6,100 mm		8,0	79,0	34,0	25,0	36,0	64631	67631
0.2441	6,200 mm		8,0	79,0	34,0	25,0	36,0	64632	67632
0.2480	6,300 mm		8,0	79,0	34,0	25,0	36,0	64633	67633
0.2500	6,350 mm	1/4 E #0	8,0	79,0	34,0	24,0	36,0	54610	54710
0.2520	6,400 mm		8,0	79,0	34,0	24,0	36,0	64634	67634
0.2559	6,500 mm		8,0	79,0	34,0	24,0	36,0	64635	67635
0.2570	6,528 mm	F	8,0	79,0	34,0	24,0	36,0	54611	54711
0.2598	6,600 mm		8,0	79,0	34,0	24,0	36,0	64636	67636
0.2638	6,700 mm		8,0	79,0	34,0	24,0	36,0	64637	67637
0.2656	6,746 mm	17/64	8,0	79,0	34,0	24,0	36,0	54612	54712
0.2677	6,800 mm		8,0	79,0	34,0	24,0	36,0	64638	67638
0.2717	6,900 mm		8,0	79,0	34,0	24,0	36,0	64639	67639
0.2756	7,000 mm		8,0	79,0	34,0	24,0	36,0	64640	67640
0.2795	7,100 mm		8,0	79,0	41,0	30,0	36,0	64641	67641
0.2812	7,142 mm	9/32	8,0	79,0	41,0	30,0	36,0	54613	54713
0.2835	7,200 mm		8,0	79,0	41,0	30,0	36,0	64642	67642
0.2874	7,300 mm		8,0	79,0	41,0	30,0	36,0	64643	67643
0.2913	7,400 mm		8,0	79,0	41,0	30,0	36,0	64644	67644
0.2953	7,500 mm		8,0	79,0	41,0	30,0	36,0	64645	67645
0.2969	7,541 mm	19/64	8,0	79,0	41,0	30,0	36,0	54614	54714
0.2992	7,600 mm		8,0	79,0	41,0	30,0	36,0	64646	67646
0.3031	7,700 mm		8,0	79,0	41,0	29,0	36,0	64647	67647
0.3071	7,800 mm		8,0	79,0	41,0	29,0	36,0	64648	67648
0.3110	7,900 mm		8,0	79,0	41,0	29,0	36,0	64649	67649
0.3125	7,938 mm	5/16	8,0	79,0	41,0	29,0	36,0	54615	54715
0.3150	8,000 mm		8,0	79,0	41,0	29,0	36,0	64650	67650
0.3189	8,100 mm		10,0	89,0	47,0	35,0	40,0	64651	67651
0.3228	8,200 mm		10,0	89,0	47,0	35,0	40,0	64652	67652
0.3268	8,300 mm		10,0	89,0	47,0	35,0	40,0	64653	67653
0.3281	8,334 mm	21/64	10,0	89,0	47,0	34,0	40,0	54616	54716
0.3307	8,400 mm	•	10,0	89,0	47,0	34,0	40,0	64654	67654
0.3320	8,433 mm	Q	10,0	89,0	47,0	34,0	40,0	54617	54717
0.3346	8,500 mm		10,0	89,0	47,0	34,0	40,0	64655	67655
0.3386	8,600 mm		10,0	89,0	47,0	34,0	40,0	64656	67656
0.3425	8,700 mm	11/00	10,0	89,0	47,0	34,0	40,0	64657	6/657
0.3438	8,733 mm	11/32	10,0	89,0	47,0	34,0	40,0	54618	54/18
0.3465	8,800 mm		10,0	89,0	47,0	34,0	40,0	64658	67658
0.3504	8,900 mm		10,0	89,0	47,0	34,0	40,0	64659	67659
0.3543	9,000 mm		10,0	89,0	47,0	34,0	40,0	64660	67660
0.3583	9,100 mm	00/07	10,0	89,0	47,0	33,0	40,0	64661	6/661
0.3594	9,129 mm	23/64	10,0	89,0	47,0	33,0	40,0	54619	54719

Fractional & Metric

Series 131N 3xD



-OAL





				inch 9 mm					EDI	2 NO
argin design roves hole stability size control while	DECIMAL	METRIC	FRACTIONAL/ LETTER/WIRE DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH	SHANK LENGTH LS	UNCOATED	Ti-NAMITE [®] -B (TiB ₂)
h, roundness and	0.3622	9,200 mm		10,0	89,0	47,0	33,0	40,0	64662	67662
ricity	0.3661	9,300 mm		10,0	89,0	47,0	33,0	40,0	64663	67663
lizing pyramid	0.3680	9,347 mm	U	10,0	89,0	47,0	33,0	40,0	54620	54720
ntact with	0.3701	9,400 mm		10,0	89,0	47,0	33,0	40,0	64664	67664
turo	0.3740	9,500 mm		10,0	89,0	47,0	33,0	40,0	64665	67665
ts	0.3750	9,525 mm	3/8	10,0	89,0	47,0	33,0	40,0	54621	54721
ining	0.3780	9,600 mm		10,0	89,0	47,0	33,0	40,0	64666	67666
	0.3819	9,700 mm		10,0	89,0	47,0	32,0	40,0	64667	67667
VS	0.3858	9,800 mm		10,0	89,0	47,0	32,0	40,0	64668	67668
ter	0.3898	9,900 mm		10,0	89,0	47,0	32,0	40,0	64669	67669
.	0.3906	9,921 mm	25/64	10,0	89,0	47,0	32,0	40,0	54622	54722
nn	0.3937	10,000 mm		10,0	89,0	47,0	32,0	40,0	64670	67670
	0.3976	10,100 mm		12,0	102,0	55,0	40,0	45,0	64671	67671
	0.4016	10,200 mm		12,0	102,0	55,0	40,0	45,0	64672	67672
	0.4055	10,300 mm		12,0	102,0	55,0	40,0	45,0	64673	67673
	0.4062	10,317 mm	13/32	12,0	102,0	55,0	40,0	45,0	54623	54723
	0.4095	10,400 mm		12,0	102,0	55,0	39,0	45,0	64674	67674
	0.4134	10,500 mm		12,0	102,0	55,0	39,0	45,0	64675	67675
	0.4173	10,600 mm		12,0	102,0	55,0	39,0	45,0	64676	67676
	0.4213	10,700 mm		12,0	102,0	55,0	39,0	45,0	64677	67677
	0.4219	10,716 mm	27/64	12,0	102,0	55,0	39,0	45,0	54624	54724
	0.4252	10,800 mm		12,0	102,0	55,0	39,0	45,0	64678	67678
	0.4291	10,900 mm		12,0	102,0	55,0	39,0	45,0	64679	67679
	0.4331	11,000 mm		12,0	102,0	55,0	39,0	45,0	64680	67680
	0.4370	11,100 mm		12,0	102,0	55,0	38,0	45,0	64681	67681
	0.4375	11,113 mm	7/16	12,0	102,0	55,0	38,0	45,0	54625	54725
	0.4409	11,200 mm		12,0	102,0	55,0	38,0	45,0	64682	67682
	0.4449	11,300 mm		12,0	102,0	55,0	38,0	45,0	64683	67683
	0.4488	11,400 mm		12,0	102,0	55,0	38,0	45,0	64684	67684
	0.4528	11,500 mm		12,0	102,0	55,0	38,0	45,0	64685	67685
	0.4567	11,600 mm		12,0	102,0	55,0	38,0	45,0	64686	67686
	0.4606	11,700 mm		12,0	102,0	55,0	37,0	45,0	64687	67687
	0.4646	11,800 mm		12,0	102,0	55,0	37,0	45,0	64688	67688
	0.4685	11,900 mm		12,0	102,0	55,0	37,0	45,0	64689	67689
	0.4688	11,908 mm	15/32	12,0	102,0	55,0	37,0	45,0	54626	54726
	0.4724	12,000 mm		12,0	102,0	55,0	37,0	45,0	64690	67690
	0.4844	12,304 mm	31/64	14,0	107,0	60,0	41,0	45,0	54627	54727
	0.4921	12,500 mm		14,0	107,0	60,0	41,0	45,0	64691	67691

TOLERANCES (inch)

≤.1181 [DIAMETER
DC =	+.00008/+.00047
DCON=	h ₆
>.1181–	.2362 DIAMETER
DC =	+.00016/+.00063
DCON=	h ₆
>.2362-	- .3937 DIAMETER
DC =	+.00024/+.00083
DCON=	h ₆
>.3937-	- .7087 DIAMETER
DC =	+.00028/+.00098
DCON=	h ₆
>.7087–	1.1811 DIAMETER
DC =	+.00031/+.00114
DCON=	h ₆
TOLER	ANCES (mm)
≤ 3 dian	NETER
DC =	+0,002/+0,012
DCON=	h ₆
> 3—6 d	HAMETER
dc =	+0,004/+0,016
dcon=	h ₆
> 6-10	DIAMETER
dc =	+0,006/+0,021
dcon=	h ₆
> 10–18	B DIAMETER
DC =	+0,007/+0,025
DCON=	h ₆
NON	I-FERROUS
For pate	ent
informa	tion visit
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131N 3xD FRACTIONAL & METRIC SERIES

CONTINUED

			inch & mm					EDI	P NO
DECIMAL DC	METRIC DC	FRACTIONAL/ LETTER/WIRE DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	SHANK LENGTH LS	UNCOATED	Ti-NAMITE [®] -B (TiB ₂)
0.5000	12,700 mm	1/2	14,0	107,0	60,0	41,0	45,0	54628	54728
0.5039	12,800 mm		14,0	107,0	60,0	41,0	45,0	64692	67692
0.5118	13,000 mm		14,0	107,0	60,0	41,0	45,0	64693	67693
0.5156	13,096 mm	33/64	14,0	107,0	60,0	40,0	45,0	54629	54729
0.5315	13,500 mm		14,0	107,0	60,0	40,0	45,0	64694	67694
0.5433	13,800 mm		14,0	107,0	60,0	39,0	45,0	64695	67695
0.5512	14,000 mm		14,0	107,0	60,0	39,0	45,0	64696	67696
0.5625	14,288 mm	9/16	16,0	115,0	65,0	43,0	48,0	54630	54730
0.5709	14,500 mm		16,0	115,0	65,0	43,0	48,0	64697	67697
0.5781	14,684 mm	37/64	16,0	115,0	65,0	43,0	48,0	54631	54731
0.5827	14,800 mm		16,0	115,0	65,0	43,0	48,0	64698	67698
0.5906	15,000 mm		16,0	115,0	65,0	42,0	48,0	64699	67699
0.6102	15,500 mm		16,0	115,0	65,0	42,0	48,0	64700	67700
0.6221	15,800 mm		16,0	115,0	65,0	41,0	48,0	64701	67701
0.6250	15,875 mm	5/8	16,0	115,0	65,0	41,0	48,0	54632	54732
0.6299	16,000 mm		16,0	115,0	65,0	41,0	48,0	64702	67702
0.6562	16,667 mm	21/32	18,0	123,0	73,0	47,0	48,0	54633	54733
0.6875	17,463 mm	11/16	18,0	123,0	73,0	47,0	48,0	54634	54734
0.7500	19,050 mm	3/4	20,0	131,0	79,0	50,0	50,0	54635	54735



OAL

-LS

LCF

LU

DC

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IN			inch	s mm					EDI	'NU.
stability of while	DECIMAL		FRACTIONAL/ LETTER/WIRE DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH	SHANK LENGTH LS	UNCOATED	Ti-NAMITE [®] -I (TiB ₂)
rior bnc and	0.1181	3.000 mm		6.0	66.0	28.0	23.0	36.0	65000	64800
.33 anu	0 1220	3 100 mm		6.0	66.0	28.0	23.0	36.0	65001	64801
pyramid	0 1250	3 175 mm	1/8	6.0	66.0	28.0	23.0	36.0	55000	54800
abilizes	0.1260	3 200 mm	1,0	6.0	66.0	28.0	23.0	36.0	65002	6/802
itact with	0.1200	3 300 mm		6.0	66.0	28.0	23,0	36.0	65002	6/1802
icture	0.1233	3,300 mm		6,0	66 0	20,0	23,0	36.0	65004	64804
sports	0.1360	3,451 mm	#29	6,0	66.0	20,0	23,0	36.0	55001	5/1801
aintaining	0.1378	3 500 mm	// 23	6.0	66.0	28.0	23,0	36.0	65005	64805
	0.1406	3 571 mm	9/64	6.0	66.0	28.0	23,0	36.0	55002	54802
ows	0.1400	3,571 mm	5/04	6.0	66 0	20,0	23,0	36.0	65006	6/806
w away	0.1417	3,000 mm		6,0	66.0	20,0	23,0	36.0	65007	6/1807
er	0.1457	3,700 mm		6,0	7/ 0	20,0	20,0	36.0	65008	6/18/08
n	0.1430	3,000 mm		6.0	7/1 0	36.0	20,0 20 N	36.0	65000	6/12/10
	0.1555	3,300 mm	5/22	6.0	74,0 7≬ ∩	36.0	20,0 20 N	36.0	55003	54203
	0.1502	/ 000 mm	J/ JZ	6.0	7/1 0	36.0	20,0 20 N	36.0	65010	6/1210
	0.1575	4,000 mm	#21	0,0 6.0	74,0	26.0	20,0	26.0	55004	5/20/
	0.1550	4,039 mm	#21	6,0	74,0	30,0	29,0	36,0	65011	6/1911
	0.1014	4,100 mm		6.0	74,0	26.0	29,0	26.0	65012	6/011
	0.1004	4,200 mm		6,0	74,0	30,0	29,0	36,0	65012	6/12
	0.1033	4,300 mm	11/6/	6.0	74,0	26.0	29,0	26.0	55005	54015 54005
	0.1713	4,300 mm	11/04	6,0	74,0	26.0	20,0	26.0	65014	6/01/
	0.1732	4,400 mm		6.0	74,0	30,0	29,0	30,0	65015	6/014
	0.1772	4,000 mm		6,0	74,0	36,0	20,0	36,0	65016	6/816
	0.1011	4,000 mm	#12	0,0 6.0	74,0	26.0	20,0	26.0	65017	6/010
	0.1850	4,055 mm	#13 2/16	6,0	22 0	30,0 // 0	23,0	36,0	55006	5/1906
	0.1075	4,703 mm	3/10 #12	6.0	02,0	44,0	27.0	26.0	65010	54000 6/1010
	0.1030	4,001 11111	#12	6,0	02,0	44,0	37,0	30,0	65010	04010 64010
	0.1929	4,300 mm		6.0	02,0	44,0	26.0	26.0	65020	6/020
	0.1303	5,000 mm		6.0	02,0 92.0	44,0 // 0	30,0 36,0	36,0	65020	6/1020
	0.2000	5,100 mm	12/6/	6.0	02,0	44,0	26.0	26.0	55007	040Z1
	0.2031	5,109 IIIII	13/04	6,0	02,0 92.0	44,0	30,0 36.0	30,0	65022	04007 6/1000
	0.2047	5,200 mm		6.0	02,0	44,0	26.0	26.0	65022	6/022
	0.2007	5,300 mm		0,0	0∠,U g2 ∩	44,0 // 0	30,0 36.0	30,0 36.0	65024	04023 6/02/
	0.2120	5,400 mm		6.0	02,0	44,0	26.0	26.0	65025	04024 6/025
	0.2100	5,500 mm	7/00	0,0	02,U 02.0	44,0	30,0 26.0	26.0	55000	04020 54000
	0.2100 0.220E	5,558 mm	1/3Z	0,0	02,U 02.0	44,0	30,U 26.0	30,0	00000 00000	040U0
	0.2200	5,000 mm		0,0	02,U 02.0	44,0	30,U 2E 0	30,0	00020	04020 64007
	0.2244	5,700 IIIII		0,0	02,0	44,0	30,0 2E 0	30,0	65020	04027
	0.2283	5,800 mm		0,U	ŏΖ,U	44,0	30,U 25.0	30,U	00028	04828 64020
	0.2323	5,900 mm	15/04	0,0	02,0	44,0	30,0	30,0	00029	04829
	0.2344	5,954 mm	15/64	0,U	ŏΖ,U	44,0	30,U	30,U	00009	04809
	0.2362	6,000 mm		0,0	δ2,U	44,U	35,0	30,U	00030	0483U
	0.2402	6,100 mm		8,U	91,0	53,U	44,0	30,U	00031	04831 64000
	0.2441	0,200 mm		8,0	91,0	53,0	44,0	30,0	00032	04832
	0.2480	6,300 MM		ŏ,U	91,0	53,0	44,0	30,0	00033	04833

TOLERANCES (inch)

DCON

1

≤.1181	DIAMETER
DC ==	= +.00008/+.00047
DCON =	= h ₆
>.1181	- .2362 DIAMETER
DC	= +.00016/+.00063
DCON :	= h ₆
>. 236	2–.3937 DIAMETER
DC	= +.00024/+.00083
DCON	= h ₆
>.393	77087 DIAMETER
DC	= +.00028/+.00098
DCON	= h ₆
>.7087	7-1.1811 DIAMETER
DC ==	= +.00031/+.00114
DCON =	= h ₆
TOLE	RANCES (mm)
≤ 3 di <i>i</i>	AMETER
DC ==	= +0,002/+0,012
DCON =	= h ₆
> 3–6	DIAMETER
DC =	= +0,004/+0,016
DCON =	= h ₆
> 6–1	0 DIAMETER
DC	= +0,006/+0,021
DCON:	= h ₆
> 10 —	18 DIAMETER
DC =	= +0,007/+0,025
DCON =	= h ₆
N	ON-FERROUS
For pa	atent
inforn	nation visit
www.	.ksptpatents.com





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InterfaceInterfa										
DC DC DCN OAN LEF LU LS 0.2500 6,300 mm 1/4 E #0 8,0 91,0 53,0 43,0 36,0 55010 54810 0.2500 6,400 mm 8,0 91,0 53,0 43,0 36,0 65035 64833 0.2590 6,528 mm F 8,0 91,0 53,0 43,0 36,0 65036 64835 0.2586 6,700 mm 8,0 91,0 53,0 43,0 36,0 65037 64837 0.2676 6,800 mm 8,0 91,0 53,0 43,0 36,0 65040 64843 0.2776 7,000 mm 8,0 91,0 53,0 42,0 36,0 65041 64844 0.2825 7,200 mm 8,0 91,0 53,0 42,0 36,0 65042 64842 0.2825 7,200 mm 8,0 91,0 53,0 42,0 36,0 65044 648443 0.2837 <td< th=""><th>DECIMAL</th><th>METRIC</th><th>inch & FRACTIONAL/ LETTER/WIRE</th><th>& mm SHANK DIAMETER</th><th>OVERALL LENGTH</th><th>FLUTE</th><th>USABLE LENGTH</th><th>SHANK LENGTH</th><th>EDI UNCOATED</th><th>PNO. Ti-NAMITE®-B (TiB2)</th></td<>	DECIMAL	METRIC	inch & FRACTIONAL/ LETTER/WIRE	& mm SHANK DIAMETER	OVERALL LENGTH	FLUTE	USABLE LENGTH	SHANK LENGTH	EDI UNCOATED	PNO. Ti-NAMITE®-B (TiB2)
0.2500 6,350 mm 1/4 E #0 8,0 91,0 53,0 43,0 36,0 65010 54810 0.2520 6,500 mm 8,0 91,0 53,0 43,0 36,0 65034 64834 0.2570 6,528 mm F 8,0 91,0 53,0 43,0 36,0 65036 64836 0.2636 6,700 mm 8,0 91,0 53,0 43,0 36,0 65037 64837 0.2656 6,746 mm 17/64 8,0 91,0 53,0 43,0 36,0 65038 64838 0.2716 6,900 mm 8,0 91,0 53,0 42,0 36,0 65044 64841 0.2812 7,142 mm 9/32 8,0 91,0 53,0 42,0 36,0 65044 64842 0.2812 7,142 mm 9/32 8,0 91,0 53,0 42,0 36,0 65044 64842 0.2813 7,400 mm 8,0 91,0 53,0 42,0	DC	DC	DC	DCON	OAL	LCF	LU	LS		
0.2520 6,400 mm 8,0 91,0 53,0 43,0 36,0 65034 64835 0.2559 6,528 mm F 8,0 91,0 53,0 43,0 36,0 65035 64835 0.2568 6,700 mm 8,0 91,0 53,0 43,0 36,0 65037 64837 0.2666 6,746 mm 17/64 8,0 91,0 53,0 43,0 36,0 65037 64837 0.2767 6,900 mm 8,0 91,0 53,0 43,0 36,0 65049 64839 0.2776 7,000 mm 8,0 91,0 53,0 42,0 36,0 65044 64844 0.2825 7,100 mm 8,0 91,0 53,0 42,0 36,0 65044 64842 0.2937 7,500 mm 8,0 91,0 53,0 42,0 36,0 65044 64843 0.2937 7,500 mm 8,0 91,0 53,0 42,0 36,0 65044 64844 </td <td>0.2500</td> <td>6,350 mm</td> <td>1/4 E #0</td> <td>8,0</td> <td>91,0</td> <td>53,0</td> <td>43,0</td> <td>36,0</td> <td>55010</td> <td>54810</td>	0.2500	6,350 mm	1/4 E #0	8,0	91,0	53,0	43,0	36,0	55010	54810
0.2559 6,500 mm 8,0 91,0 53,0 43,0 36,0 65035 64835 0.2570 6,500 mm 8,0 91,0 53,0 43,0 36,0 65036 64835 0.2638 6,700 mm 8,0 91,0 53,0 43,0 36,0 65037 64837 0.2636 6,746 mm 17/64 8,0 91,0 53,0 43,0 36,0 65038 64839 0.2717 6,900 mm 8,0 91,0 53,0 42,0 36,0 65044 64841 0.2785 7,100 mm 8,0 91,0 53,0 42,0 36,0 65044 64844 0.2812 7,142 mm 9/32 8,0 91,0 53,0 42,0 36,0 65044 64844 0.2813 7,400 mm 8,0 91,0 53,0 42,0 36,0 65044 64844 0.2923 7,600 mm 8,0 91,0 53,0 41,0 36,0 65044 6484	0.2520	6,400 mm		8,0	91,0	53,0	43,0	36,0	65034	64834
D.2570 6,528 mm F 8,0 91,0 53,0 43,0 66,0 54811 0.2588 6,000 mm 8,0 91,0 53,0 43,0 36,0 65036 64836 0.2686 6,746 mm 17/64 8,0 91,0 53,0 43,0 36,0 65038 64838 0.2717 6,800 mm 8,0 91,0 53,0 42,0 36,0 65043 64848 0.2756 7,000 mm 8,0 91,0 53,0 42,0 36,0 65041 64841 0.2825 7,122 mm 9/32 8,0 91,0 53,0 42,0 36,0 65042 64844 0.2817 7,300 mm 8,0 91,0 53,0 42,0 36,0 65044 64844 0.2913 7,500 mm 8,0 91,0 53,0 41,0 36,0 65045 64846 0.3011 7,400 mm 8,0 91,0 53,0 41,0 36,0 65044 648449 </td <td>0.2559</td> <td>6,500 mm</td> <td></td> <td>8,0</td> <td>91,0</td> <td>53,0</td> <td>43,0</td> <td>36,0</td> <td>65035</td> <td>64835</td>	0.2559	6,500 mm		8,0	91,0	53,0	43,0	36,0	65035	64835
0.2588 6,000 mm 8,0 91,0 53,0 43,0 36,0 65036 64836 0.2686 6,700 mm 8,0 91,0 53,0 43,0 36,0 65037 64837 0.2677 6,600 mm 8,0 91,0 53,0 43,0 36,0 65038 64838 0.2717 6,000 mm 8,0 91,0 53,0 42,0 36,0 65040 64843 0.2717 7,000 mm 8,0 91,0 53,0 42,0 36,0 65042 64844 0.2815 7,200 mm 8,0 91,0 53,0 42,0 36,0 65043 64844 0.2813 7,400 mm 8,0 91,0 53,0 42,0 36,0 65045 64844 0.2923 7,500 mm 8,0 91,0 53,0 41,0 36,0 65046 64844 0.3011 7,900 mm 8,0 91,0 53,0 41,0 36,0 650514 64847 0.3011	0.2570	6,528 mm	F	8,0	91,0	53,0	43,0	36,0	55011	54811
0.2638 6,700 mm 8,0 91,0 53,0 43,0 36,0 65037 64837 0.2656 6,746 mm 17/64 8,0 91,0 53,0 43,0 36,0 65033 64839 0.2717 6,900 mm 8,0 91,0 53,0 42,0 36,0 65039 64839 0.2756 7,000 mm 8,0 91,0 53,0 42,0 36,0 65041 64844 0.2812 7,142 mm 9/32 8,0 91,0 53,0 42,0 36,0 65043 64844 0.2812 7,200 mm 8,0 91,0 53,0 42,0 36,0 65044 64844 0.2913 7,40 mm 8,0 91,0 53,0 42,0 36,0 65044 64843 0.2925 7,500 mm 8,0 91,0 53,0 41,0 36,0 65045 64845 0.2929 7,600 mm 8,0 91,0 53,0 41,0 36,0 65051 64846	0.2598	6,600 mm		8,0	91,0	53,0	43,0	36,0	65036	64836
0.2656 6,746 mm 17/64 8,0 91,0 53,0 43,0 36,0 55012 54812 0.2717 6,800 mm 8,0 91,0 53,0 43,0 36,0 65038 64839 0.2756 7,000 mm 8,0 91,0 53,0 42,0 36,0 65044 64849 0.2755 7,100 mm 8,0 91,0 53,0 42,0 36,0 65044 64844 0.2815 7,200 mm 8,0 91,0 53,0 42,0 36,0 65042 64844 0.2825 7,500 mm 8,0 91,0 53,0 42,0 36,0 65045 64844 0.2923 7,600 mm 8,0 91,0 53,0 41,0 36,0 65046 64844 0.3011 7,700 mm 8,0 91,0 53,0 41,0 36,0 65046 64844 0.3110 7,900 mm 8,0 91,0 53,0 41,0 36,0 65051 648150	0.2638	6,700 mm		8.0	91.0	53.0	43.0	36.0	65037	64837
0.2677 6,800 mm 8,0 91,0 53,0 43,0 36,0 65038 64838 0.2717 6,900 mm 8,0 91,0 53,0 43,0 36,0 65039 64839 0.2755 7,100 mm 8,0 91,0 53,0 42,0 36,0 65041 64840 0.2785 7,100 mm 8,0 91,0 53,0 42,0 36,0 65042 64843 0.2817 7,200 mm 8,0 91,0 53,0 42,0 36,0 65043 64842 0.2817 7,300 mm 8,0 91,0 53,0 42,0 36,0 65045 64845 0.2983 7,500 mm 8,0 91,0 53,0 41,0 36,0 65046 64844 0.2982 7,500 mm 8,0 91,0 53,0 41,0 36,0 65046 64848 0.310 7,900 mm 8,0 91,0 53,0 41,0 36,0 65046 64848 0.310 <td>0.2656</td> <td>6.746 mm</td> <td>17/64</td> <td>8.0</td> <td>91.0</td> <td>53.0</td> <td>43.0</td> <td>36.0</td> <td>55012</td> <td>54812</td>	0.2656	6.746 mm	17/64	8.0	91.0	53.0	43.0	36.0	55012	54812
0.2717 6,900 mm 8,0 91,0 53,0 43,0 36,0 65039 64839 0.2756 7,000 mm 8,0 91,0 53,0 42,0 36,0 65040 64840 0.2757 7,100 mm 8,0 91,0 53,0 42,0 36,0 65041 64841 0.2781 7,120 mm 8,0 91,0 53,0 42,0 36,0 65042 64842 0.2835 7,200 mm 8,0 91,0 53,0 42,0 36,0 65043 648443 0.2953 7,500 mm 8,0 91,0 53,0 42,0 36,0 65045 64844 0.2953 7,500 mm 8,0 91,0 53,0 41,0 36,0 65046 64846 0.3031 7,700 mm 8,0 91,0 53,0 41,0 36,0 65047 64847 0.3011 7,900 mm 8,0 91,0 53,0 41,0 36,0 65047 64849 0.3150	0.2677	6.800 mm	,	8.0	91.0	53.0	43.0	36.0	65038	64838
D.2756 7,000 mm 8,0 91,0 53,0 42,0 36,0 65040 64840 0.2795 7,100 mm 8,0 91,0 53,0 42,0 36,0 65041 64841 0.2815 7,200 mm 8,0 91,0 53,0 42,0 36,0 65042 64843 0.2815 7,200 mm 8,0 91,0 53,0 42,0 36,0 65044 648443 0.2815 7,200 mm 8,0 91,0 53,0 42,0 36,0 65044 648444 0.2959 7,500 mm 8,0 91,0 53,0 42,0 36,0 65046 64845 0.3011 7,000 mm 8,0 91,0 53,0 41,0 36,0 65046 64848 0.3110 7,900 mm 8,0 91,0 53,0 41,0 36,0 65051 64851 0.3125 7,938 mm 5/16 8,0 91,0 53,0 41,0 36,0 65051 64851	0 2717	6 900 mm		8.0	91.0	53.0	43.0	36.0	65039	64839
b.2.2785 7,100 mm 8,0 91,0 53,0 42,0 36,0 65041 64841 0.2812 7,142 mm 9/32 8,0 91,0 53,0 42,0 36,0 65041 64842 0.2874 7,300 mm 8,0 91,0 53,0 42,0 36,0 65043 64842 0.2874 7,300 mm 8,0 91,0 53,0 42,0 36,0 65045 64844 0.2953 7,500 mm 8,0 91,0 53,0 42,0 36,0 65046 64845 0.2969 7,541 mm 19/64 8,0 91,0 53,0 41,0 36,0 65046 64844 0.3011 7,00 mm 8,0 91,0 53,0 41,0 36,0 650515 54814 0.3125 7,300 mm 8,0 91,0 53,0 41,0 36,0 65051 54814 0.3125 7,300 mm 10,0 103,0 61,0 49,0 40,0 65051	0.2756	7 000 mm		8.0	91.0	53.0	42.0	36.0	65040	64840
0.2812 7,142 mm 9/32 8.0 91,0 53,0 42,0 36,0 55013 54813 0.2835 7,200 mm 8,0 91,0 53,0 42,0 36,0 65043 64844 0.2913 7,400 mm 8,0 91,0 53,0 42,0 36,0 65044 64844 0.2953 7,500 mm 8,0 91,0 53,0 42,0 36,0 65045 64844 0.2959 7,541 mm 19/64 8,0 91,0 53,0 42,0 36,0 65045 64844 0.3011 7,000 mm 8,0 91,0 53,0 41,0 36,0 65048 64846 0.3011 7,900 mm 8,0 91,0 53,0 41,0 36,0 65050 64850 0.3125 7,338 mm 5/16 8,0 91,0 53,0 41,0 36,0 65051 64851 0.3228 8,200 mm 10,0 103,0 61,0 49,0 40,0 650	0.2795	7 100 mm		8.0	91.0	53.0	42.0	36.0	65041	64841
0.2012 7,142 mm 5,02 51,0 53,01 42,0 36,0 65042 64842 0.2874 7,300 mm 8,0 91,0 53,0 42,0 36,0 65042 64842 0.2913 7,400 mm 8,0 91,0 53,0 42,0 36,0 65044 64844 0.2953 7,500 mm 19/64 8,0 91,0 53,0 42,0 36,0 65045 64845 0.2969 7,541 mm 19/64 8,0 91,0 53,0 41,0 36,0 65046 64846 0.3011 7,900 mm 8,0 91,0 53,0 41,0 36,0 65047 64849 0.3110 7,900 mm 8,0 91,0 53,0 41,0 36,0 65051 54815 0.3150 8,000 mm 10,0 103,0 61,0 49,0 40,0 65052 64851 0.3228 8,300 mm 10,0 103,0 61,0 48,0 40,0 650	0.2733	7,100 mm	9/32	8.0	91 N	53,0	/2 0	36.0	55012	5/1813
0.2837 7,200 mm 8,0 91,0 53,0 42,0 36,0 65043 64843 0.2913 7,400 mm 8,0 91,0 53,0 42,0 36,0 65043 64843 0.2913 7,500 mm 8,0 91,0 53,0 42,0 36,0 65044 64844 0.2953 7,500 mm 8,0 91,0 53,0 42,0 36,0 65046 64845 0.2992 7,600 mm 8,0 91,0 53,0 41,0 36,0 65048 64846 0.3011 7,900 mm 8,0 91,0 53,0 41,0 36,0 65049 64849 0.3125 7,938 mm 5/16 8,0 91,0 53,0 41,0 36,0 65051 64851 0.3125 7,938 mm 10,0 103,0 61,0 49,0 40,0 65055 64852 0.3228 8,200 mm 10,0 103,0 61,0 48,0 40,0 65055 64853	0.2012	7,142 mm	5/52	0,0	01.0	52.0	42,0	26.0	65042	6/0/0
0.2913 7,400 mm 8,0 91,0 53,0 42,0 36,0 65044 64844 0.2953 7,500 mm 8,0 91,0 53,0 42,0 36,0 65044 64844 0.2953 7,500 mm 8,0 91,0 53,0 42,0 36,0 65044 64844 0.2953 7,600 mm 8,0 91,0 53,0 41,0 36,0 65047 64847 0.3031 7,700 mm 8,0 91,0 53,0 41,0 36,0 65048 64848 0.3071 7,800 mm 8,0 91,0 53,0 41,0 36,0 65051 64851 0.3125 7,938 mm 5/16 8,0 91,0 53,0 41,0 36,0 65051 64851 0.3128 8,000 mm 10,0 103,0 61,0 49,0 40,0 65051 64851 0.3228 8,200 mm 10,0 103,0 61,0 48,0 40,0 65055 64853	0.2000	7,200 mm		0,0	01 0	53,0	42,0	26.0	65042	C1012
0.2913 7,400 mm 8,0 91,0 53,0 42,0 36,0 65045 64845 0.2953 7,500 mm 8,0 91,0 53,0 42,0 36,0 65045 64845 0.2992 7,600 mm 8,0 91,0 53,0 42,0 36,0 65046 64845 0.3031 7,700 mm 8,0 91,0 53,0 41,0 36,0 65047 64847 0.3011 7,900 mm 8,0 91,0 53,0 41,0 36,0 65049 64849 0.3110 7,900 mm 8,0 91,0 53,0 41,0 36,0 65050 64850 0.3112 7,900 mm 8,0 91,0 53,0 41,0 36,0 65051 64851 0.3128 8,000 mm 10,0 103,0 61,0 48,0 40,0 65055 64852 0.3228 8,200 mm 10,0 103,0 61,0 48,0 40,0 65054 64854 0.3228 8,300 mm 10,0 103,0 61,0 48,0 40,0 65057	0.2074	7,300 mm		0,0	J1,0	53,0	42,0	30,0	00040	64043
0.2935 7,500 mm 8,0 91,0 53,0 42,0 36,0 55014 54814 0.2969 7,541 mm 19/64 8,0 91,0 53,0 42,0 36,0 65046 64846 0.3031 7,700 mm 8,0 91,0 53,0 41,0 36,0 65048 64847 0.3071 7,800 mm 8,0 91,0 53,0 41,0 36,0 65048 64849 0.31125 7,938 mm 5/16 8,0 91,0 53,0 41,0 36,0 65015 64851 0.3125 7,938 mm 5/16 8,0 91,0 53,0 41,0 36,0 65051 64851 0.3128 8,100 mm 10,0 103,0 61,0 49,0 40,0 65051 64851 0.3228 8,200 mm 10,0 103,0 61,0 49,0 40,0 65054 64854 0.3281 8,334 mm 21/64 10,0 103,0 61,0 48,0 40,0 65055 64855 0.3286 8,000 mm 10,0 103,0<	0.2913	7,400 mm		8,0	91,0	53,0	42,0	30,0	05044	04844
0.2959 7,541 mm 19/64 8,0 91,0 53,0 42,0 36,0 55046 64846 0.2992 7,600 mm 8,0 91,0 53,0 41,0 36,0 65046 64847 0.3031 7,700 mm 8,0 91,0 53,0 41,0 36,0 65048 64847 0.3011 7,900 mm 8,0 91,0 53,0 41,0 36,0 65049 64849 0.3125 7,938 mm 5/16 8,0 91,0 53,0 41,0 36,0 65051 64851 0.3128 8,000 mm 8,0 91,0 53,0 41,0 36,0 65055 64852 0.3228 8,200 mm 10,0 103,0 61,0 49,0 40,0 65054 64853 0.3228 8,334 mm 21/64 10,0 103,0 61,0 48,0 40,0 65054 64855 0.3320 8,433 mm 0 10,0 103,0 61,0 48,0 40,0 65056 64855 0.3348 8,500 mm 10,0 103,0	0.2953	7,500 mm	10/04	8,0	91,0	53,0	42,0	36,0	65045	64845
0.2992 7,600 mm 8,0 91,0 53,0 42,0 36,0 65047 64846 0.3031 7,700 mm 8,0 91,0 53,0 41,0 36,0 65047 64847 0.3071 7,900 mm 8,0 91,0 53,0 41,0 36,0 65048 64848 0.3110 7,900 mm 8,0 91,0 53,0 41,0 36,0 65050 64843 0.3125 7,938 mm 5/16 8,0 91,0 53,0 41,0 36,0 65051 64851 0.3128 8,100 mm 10,0 103,0 61,0 49,0 40,0 65053 64853 0.3228 8,300 mm 10,0 103,0 61,0 48,0 40,0 55016 54816 0.3307 8,400 mm 10,0 103,0 61,0 48,0 40,0 65055 64857 0.3346 8,600 mm 10,0 103,0 61,0 48,0 40,0 65055 64856 <td>0.2969</td> <td>7,541 mm</td> <td>19/64</td> <td>8,0</td> <td>91,0</td> <td>53,0</td> <td>42,0</td> <td>36,0</td> <td>55014</td> <td>54814</td>	0.2969	7,541 mm	19/64	8,0	91,0	53,0	42,0	36,0	55014	54814
0.3031 7,700 mm 8,0 91,0 53,0 41,0 36,0 65047 64847 0.3071 7,800 mm 8,0 91,0 53,0 41,0 36,0 65048 64849 0.3110 7,900 mm 8,0 91,0 53,0 41,0 36,0 65050 64849 0.3125 7,338 mm 5/16 8,0 91,0 53,0 41,0 36,0 65051 64850 0.3125 7,338 mm 5/16 8,0 91,0 53,0 41,0 36,0 65052 64851 0.3228 8,200 mm 10,0 103,0 61,0 49,0 40,0 65053 64853 0.3281 8,334 mm 21/64 10,0 103,0 61,0 48,0 40,0 55016 54816 0.3307 8,400 mm 10,0 103,0 61,0 48,0 40,0 65056 64855 0.3328 8,733 mm 10,0 103,0 61,0 48,0 40,0 65056 64856 0.3425 8,700 mm 10,0 103,0 61,0<	0.2992	7,600 mm		8,0	91,0	53,0	42,0	36,0	65046	64846
0.3071 7,800 mm 8,0 91,0 53,0 41,0 36,0 65048 64848 0.3110 7,900 mm 8,0 91,0 53,0 41,0 36,0 65049 64849 0.3125 7,938 mm 5/16 8,0 91,0 53,0 41,0 36,0 65050 64850 0.3128 8,100 mm 10,0 103,0 61,0 49,0 40,0 65051 64851 0.3228 8,200 mm 10,0 103,0 61,0 49,0 40,0 65053 64853 0.3281 8,334 mm 21/64 10,0 103,0 61,0 48,0 40,0 55016 54816 0.3320 8,433 mm 0 10,0 103,0 61,0 48,0 40,0 65054 64855 0.3346 8,600 mm 10,0 103,0 61,0 48,0 40,0 65056 64855 0.3438 8,733 mm 11/32 10,0 103,0 61,0 48,0 40,0 65059 64855 0.3543 9,000 mm 10,0 103,	0.3031	7,700 mm		8,0	91,0	53,0	41,0	36,0	65047	64847
0.3110 7,900 mm 8,0 91,0 53,0 41,0 36,0 65049 64849 0.3125 7,938 mm 5/16 8,0 91,0 53,0 41,0 36,0 65015 54815 0.3150 8,000 mm 8,0 91,0 53,0 41,0 36,0 65051 64850 0.3189 8,100 mm 10,0 103,0 61,0 49,0 40,0 65052 64852 0.3228 8,200 mm 10,0 103,0 61,0 48,0 40,0 65054 64854 0.3307 8,400 mm 10,0 103,0 61,0 48,0 40,0 65055 64855 0.3326 8,433 mm 0 10,0 103,0 61,0 48,0 40,0 65055 64855 0.3346 8,500 mm 10,0 103,0 61,0 48,0 40,0 65056 64856 0.3425 8,700 mm 10,0 103,0 61,0 48,0 40,0 65058	0.3071	7,800 mm		8,0	91,0	53,0	41,0	36,0	65048	64848
0.3125 7,938 mm 5/16 8,0 91,0 53,0 41,0 36,0 55015 54815 0.3150 8,000 mm 10,0 103,0 61,0 49,0 40,0 65051 64850 0.3189 8,100 mm 10,0 103,0 61,0 49,0 40,0 65052 64852 0.3228 8,200 mm 100,0 103,0 61,0 49,0 40,0 65053 64853 0.3281 8,334 mm 21/64 10,0 103,0 61,0 48,0 40,0 65054 64854 0.3320 8,433 mm 0 10,0 103,0 61,0 48,0 40,0 65055 64855 0.3326 8,600 mm 10,0 103,0 61,0 48,0 40,0 65056 64856 0.3428 8,700 mm 10,0 103,0 61,0 48,0 40,0 65058 64856 0.3438 8,733 mm 11/32 10,0 103,0 61,0 48,0 40,0 65058 64858 0.3504 8,900 mm 10,0 <td< td=""><td>0.3110</td><td>7,900 mm</td><td></td><td>8,0</td><td>91,0</td><td>53,0</td><td>41,0</td><td>36,0</td><td>65049</td><td>64849</td></td<>	0.3110	7,900 mm		8,0	91,0	53,0	41,0	36,0	65049	64849
0.3150 8,000 mm 8,0 91,0 53,0 41,0 36,0 65050 64850 0.3189 8,100 mm 10,0 103,0 61,0 49,0 40,0 65051 64851 0.3228 8,200 mm 10,0 103,0 61,0 49,0 40,0 65053 64852 0.3268 8,300 mm 10,0 103,0 61,0 48,0 40,0 65054 64854 0.3327 8,400 mm 10,0 103,0 61,0 48,0 40,0 65055 64855 0.3326 8,433 mm 0 10,0 103,0 61,0 48,0 40,0 65055 64855 0.3336 8,600 mm 10,0 103,0 61,0 48,0 40,0 65057 64857 0.3425 8,700 mm 10,0 103,0 61,0 48,0 40,0 65058 64858 0.3438 8,733 mm 11/32 10,0 103,0 61,0 48,0 40,0 65056	0.3125	7,938 mm	5/16	8,0	91,0	53,0	41,0	36,0	55015	54815
0.3189 8,100 mm 10,0 103,0 61,0 49,0 40,0 65051 64851 0.3228 8,200 mm 10,0 103,0 61,0 49,0 40,0 65052 64852 0.3268 8,300 mm 10,0 103,0 61,0 49,0 40,0 65053 64853 0.3281 8,334 mm 21/64 10,0 103,0 61,0 48,0 40,0 65054 64854 0.3320 8,433 mm Q 10,0 103,0 61,0 48,0 40,0 65055 64855 0.3346 8,600 mm 10,0 103,0 61,0 48,0 40,0 65057 64857 0.3346 8,600 mm 10,0 103,0 61,0 48,0 40,0 65058 64858 0.3455 8,700 mm 10,0 103,0 61,0 48,0 40,0 65058 64858 0.3504 8,900 mm 10,0 103,0 61,0 47,0 40,0 65061	0.3150	8,000 mm		8,0	91,0	53,0	41,0	36,0	65050	64850
0.3228 8,200 mm 10,0 103,0 61,0 49,0 40,0 65052 64852 0.3268 8,300 mm 10,0 103,0 61,0 49,0 40,0 65053 64853 0.3281 8,334 mm 21/64 10,0 103,0 61,0 48,0 40,0 65054 64854 0.3307 8,400 mm 10,0 103,0 61,0 48,0 40,0 65055 64855 0.3320 8,433 mm Q 10,0 103,0 61,0 48,0 40,0 65055 64855 0.3346 8,000 mm 10,0 103,0 61,0 48,0 40,0 65057 64857 0.3425 8,700 mm 10,0 103,0 61,0 48,0 40,0 65058 64858 0.3438 8,733 mm 11/32 10,0 103,0 61,0 48,0 40,0 65058 64858 0.3543 9,000 mm 10,0 103,0 61,0 47,0 40,0	0.3189	8,100 mm		10,0	103,0	61,0	49,0	40,0	65051	64851
0.3268 8,300 mm 10,0 103,0 61,0 49,0 40,0 65053 64853 0.3281 8,334 mm 21/64 10,0 103,0 61,0 48,0 40,0 55016 54816 0.3307 8,400 mm 10,0 103,0 61,0 48,0 40,0 65054 64854 0.3320 8,433 mm 0 10,0 103,0 61,0 48,0 40,0 65055 64855 0.3320 8,433 mm 0 10,0 103,0 61,0 48,0 40,0 65055 64856 0.3346 8,600 mm 10,0 103,0 61,0 48,0 40,0 65057 64857 0.3438 8,733 mm 11/32 10,0 103,0 61,0 48,0 40,0 65058 64858 0.3543 9,000 mm 10,0 103,0 61,0 47,0 40,0 65061 64861 0.3583 9,100 mm 10,0 103,0 61,0 47,0 40,0 65062 64862 0.3661 9,300 mm 10,0 1	0.3228	8,200 mm		10,0	103,0	61,0	49,0	40,0	65052	64852
0.3281 8,334 mm 21/64 10,0 103,0 61,0 48,0 40,0 55016 54816 0.3307 8,400 mm 10,0 103,0 61,0 48,0 40,0 65054 64854 0.3320 8,433 mm 0 10,0 103,0 61,0 48,0 40,0 65055 64855 0.3346 8,500 mm 10,0 103,0 61,0 48,0 40,0 65055 64855 0.3386 8,600 mm 10,0 103,0 61,0 48,0 40,0 65057 64857 0.3425 8,700 mm 10,0 103,0 61,0 48,0 40,0 65058 64858 0.3465 8,800 mm 10,0 103,0 61,0 48,0 40,0 65059 64859 0.3543 9,000 mm 10,0 103,0 61,0 47,0 40,0 65060 64860 0.3523 9,100 mm 10,0 103,0 61,0 47,0 40,0 65062	0.3268	8,300 mm		10,0	103,0	61,0	49,0	40,0	65053	64853
0.3307 8,400 mm 10,0 103,0 61,0 48,0 40,0 65054 64854 0.3320 8,433 mm Q 10,0 103,0 61,0 48,0 40,0 55017 54817 0.3346 8,500 mm 10,0 103,0 61,0 48,0 40,0 65055 64855 0.3386 8,600 mm 10,0 103,0 61,0 48,0 40,0 65057 64857 0.3425 8,700 mm 10,0 103,0 61,0 48,0 40,0 65058 64858 0.3465 8,800 mm 10,0 103,0 61,0 48,0 40,0 65059 64859 0.3504 8,900 mm 10,0 103,0 61,0 48,0 40,0 65060 64860 0.3583 9,100 mm 10,0 103,0 61,0 47,0 40,0 65061 64861 0.3522 9,200 mm 10,0 103,0 61,0 47,0 40,0 65062 64862	0.3281	8,334 mm	21/64	10,0	103,0	61,0	48,0	40,0	55016	54816
0.3320 8,433 mm Q 10,0 103,0 61,0 48,0 40,0 55017 54817 0.3346 8,500 mm 10,0 103,0 61,0 48,0 40,0 65055 64855 0.3386 8,600 mm 10,0 103,0 61,0 48,0 40,0 65056 64856 0.3425 8,700 mm 10,0 103,0 61,0 48,0 40,0 65057 64857 0.3438 8,733 mm 11/32 10,0 103,0 61,0 48,0 40,0 65058 64858 0.3465 8,800 mm 10,0 103,0 61,0 48,0 40,0 65059 64859 0.3504 8,900 mm 10,0 103,0 61,0 47,0 40,0 65060 64860 0.3543 9,000 mm 10,0 103,0 61,0 47,0 40,0 65061 64861 0.3522 9,200 mm 10,0 103,0 61,0 47,0 40,0 65062	0.3307	8,400 mm		10,0	103,0	61,0	48,0	40,0	65054	64854
0.3346 8,500 mm 10,0 103,0 61,0 48,0 40,0 65055 64855 0.3386 8,600 mm 10,0 103,0 61,0 48,0 40,0 65055 64856 0.3425 8,700 mm 10,0 103,0 61,0 48,0 40,0 65057 64857 0.3438 8,733 mm 11/32 10,0 103,0 61,0 48,0 40,0 65058 64858 0.3465 8,800 mm 10,0 103,0 61,0 48,0 40,0 65059 64859 0.3504 8,900 mm 10,0 103,0 61,0 48,0 40,0 65060 64860 0.3583 9,100 mm 10,0 103,0 61,0 47,0 40,0 65061 64861 0.3522 9,200 mm 10,0 103,0 61,0 47,0 40,0 65063 64863 0.3622 9,200 mm 10,0 103,0 61,0 47,0 40,0 65065 64864 <td>0.3320</td> <td>8.433 mm</td> <td>Q</td> <td>10.0</td> <td>103.0</td> <td>61.0</td> <td>48.0</td> <td>40.0</td> <td>55017</td> <td>54817</td>	0.3320	8.433 mm	Q	10.0	103.0	61.0	48.0	40.0	55017	54817
0.3386 8,600 mm 10,0 103,0 61,0 48,0 40,0 65056 64856 0.3425 8,700 mm 10,0 103,0 61,0 48,0 40,0 65057 64857 0.3438 8,733 mm 11/32 10,0 103,0 61,0 48,0 40,0 65057 64857 0.3438 8,733 mm 11/32 10,0 103,0 61,0 48,0 40,0 65058 64858 0.3465 8,800 mm 10,0 103,0 61,0 48,0 40,0 65059 64859 0.3504 8,900 mm 10,0 103,0 61,0 48,0 40,0 65060 64860 0.3543 9,000 mm 10,0 103,0 61,0 47,0 40,0 65061 64861 0.3523 9,100 mm 10,0 103,0 61,0 47,0 40,0 65062 64862 0.3661 9,300 mm 10,0 103,0 61,0 47,0 40,0 65063 <td>0.3346</td> <td>8,500 mm</td> <td></td> <td>10.0</td> <td>103.0</td> <td>61.0</td> <td>48.0</td> <td>40.0</td> <td>65055</td> <td>64855</td>	0.3346	8,500 mm		10.0	103.0	61.0	48.0	40.0	65055	64855
10,0 10,0 <th< td=""><td>0.3386</td><td>8.600 mm</td><td></td><td>10.0</td><td>103.0</td><td>61.0</td><td>48.0</td><td>40.0</td><td>65056</td><td>64856</td></th<>	0.3386	8.600 mm		10.0	103.0	61.0	48.0	40.0	65056	64856
0.3438 8,733 mm 11/32 10,0 103,0 61,0 48,0 40,0 55018 54818 0.3465 8,800 mm 10,0 103,0 61,0 48,0 40,0 65058 64858 0.3504 8,900 mm 10,0 103,0 61,0 48,0 40,0 65059 64859 0.3543 9,000 mm 10,0 103,0 61,0 48,0 40,0 65060 64860 0.3583 9,100 mm 10,0 103,0 61,0 47,0 40,0 65061 64861 0.3622 9,200 mm 10,0 103,0 61,0 47,0 40,0 65063 64863 0.3661 9,300 mm 10,0 103,0 61,0 47,0 40,0 65063 64864 0.3701 9,400 mm 10,0 103,0 61,0 47,0 40,0 65065 64864 0.3740 9,500 mm 10,0 103,0 61,0 47,0 40,0 65065 64865 0.3780 9,600 mm 10,0 103,0 61,0 47,0	0.3425	8 700 mm		10.0	103.0	61.0	48.0	40.0	65057	64857
0.3465 8,800 mm 10,0 103,0 61,0 40,0 65058 64858 0.3504 8,900 mm 10,0 103,0 61,0 48,0 40,0 65058 64858 0.3504 8,900 mm 10,0 103,0 61,0 48,0 40,0 65059 64859 0.3543 9,000 mm 10,0 103,0 61,0 48,0 40,0 65060 64860 0.3583 9,100 mm 10,0 103,0 61,0 47,0 40,0 65061 64861 0.3622 9,200 mm 10,0 103,0 61,0 47,0 40,0 65063 64863 0.3661 9,300 mm 10,0 103,0 61,0 47,0 40,0 65063 64863 0.3760 9,347 mm U 10,0 103,0 61,0 47,0 40,0 65065 64864 0.3740 9,500 mm 10,0 103,0 61,0 47,0 40,0 65065 64865 0.3780 9,600 mm 10,0 103,0 61,0 47,0 40,0 <td< td=""><td>0.3438</td><td>8 733 mm</td><td>11/32</td><td>10,0</td><td>103,0</td><td>61.0</td><td>48.0</td><td>40.0</td><td>55018</td><td>54818</td></td<>	0.3438	8 733 mm	11/32	10,0	103,0	61.0	48.0	40.0	55018	54818
0.3503 0,000 mm 10,0 103,0 61,0 40,0 40,0 65050 64850 0.3504 8,900 mm 10,0 103,0 61,0 48,0 40,0 65060 64859 0.3543 9,000 mm 10,0 103,0 61,0 48,0 40,0 65060 64860 0.3583 9,100 mm 10,0 103,0 61,0 47,0 40,0 65061 64861 0.3524 9,129 mm 23/64 10,0 103,0 61,0 47,0 40,0 65062 64862 0.3661 9,300 mm 10,0 103,0 61,0 47,0 40,0 65063 64863 0.3680 9,347 mm U 10,0 103,0 61,0 47,0 40,0 65064 64864 0.3701 9,400 mm 10,0 103,0 61,0 47,0 40,0 65065 64865 0.3750 9,525 mm 3/8 10,0 103,0 61,0 47,0 40,0 65066 64866 0.3819 9,700 mm 10,0 103,0 <td< td=""><td>0.3/65</td><td>8 800 mm</td><td>11/02</td><td>10,0</td><td>103,0</td><td>61.0</td><td>/8.0</td><td>/0.0</td><td>65058</td><td>6/858</td></td<>	0.3/65	8 800 mm	11/02	10,0	103,0	61.0	/8.0	/0.0	65058	6/858
0.3504 8,500 mm 10,0 103,0 61,0 46,0 46,0 65060 64853 0.3543 9,000 mm 10,0 103,0 61,0 47,0 40,0 65060 64860 0.3583 9,100 mm 10,0 103,0 61,0 47,0 40,0 65061 64861 0.3594 9,129 mm 23/64 10,0 103,0 61,0 47,0 40,0 65062 64862 0.3661 9,300 mm 10,0 103,0 61,0 47,0 40,0 65063 64863 0.3680 9,347 mm U 10,0 103,0 61,0 47,0 40,0 65064 64864 0.3701 9,400 mm 10,0 103,0 61,0 47,0 40,0 65065 64865 0.3740 9,500 mm 10,0 103,0 61,0 47,0 40,0 65066 64866 0.3780 9,600 mm 10,0 103,0 61,0 47,0 40,0 65066 64866 0.3819 9,700 mm 10,0 103,0 61,0 <t< td=""><td>0.0400</td><td>0,000 mm</td><td></td><td>10,0</td><td>103,0</td><td>61.0</td><td>10,0</td><td>40,0</td><td>65050</td><td>6/950</td></t<>	0.0400	0,000 mm		10,0	103,0	61.0	10,0	40,0	65050	6/950
0.3543 3,000 mm 10,0 103,0 61,0 40,0 40,0 50000 64800 0.3583 9,100 mm 10,0 103,0 61,0 47,0 40,0 65061 64861 0.3594 9,129 mm 23/64 10,0 103,0 61,0 47,0 40,0 65062 64862 0.3661 9,300 mm 10,0 103,0 61,0 47,0 40,0 65063 64863 0.3680 9,347 mm U 10,0 103,0 61,0 47,0 40,0 65064 64864 0.3701 9,400 mm 10,0 103,0 61,0 47,0 40,0 65065 64865 0.3750 9,525 mm 3/8 10,0 103,0 61,0 47,0 40,0 65066 64866 0.3780 9,600 mm 10,0 103,0 61,0 47,0 40,0 65068 64868 0.3819 9,700 mm 10,0 103,0 61,0 46,0 40,0 65068 64868 0.3898 9,800 mm 10,0 103,0 <td< td=""><td>0.3304</td><td>0,300 mm</td><td></td><td>10,0</td><td>103,0</td><td>61.0</td><td>40,0</td><td>40,0</td><td>65060</td><td>64055</td></td<>	0.3304	0,300 mm		10,0	103,0	61.0	40,0	40,0	65060	64055
0.3363 9,100 mm 10,0 103,0 61,0 47,0 40,0 65061 64861 0.3594 9,129 mm 23/64 10,0 103,0 61,0 47,0 40,0 55019 54819 0.3622 9,200 mm 10,0 103,0 61,0 47,0 40,0 65062 64862 0.3661 9,300 mm 10,0 103,0 61,0 47,0 40,0 65063 64863 0.3680 9,347 mm U 10,0 103,0 61,0 47,0 40,0 65064 64864 0.3701 9,400 mm 10,0 103,0 61,0 47,0 40,0 65065 64865 0.3740 9,500 mm 10,0 103,0 61,0 47,0 40,0 65066 64866 0.3750 9,525 mm 3/8 10,0 103,0 61,0 47,0 40,0 65066 64866 0.3819 9,700 mm 10,0 103,0 61,0 46,0 40,0 65068 64868 0.3858 9,800 mm 10,0 103,0 <td< td=""><td>0.0040</td><td>0,100 mm</td><td></td><td>10,0</td><td>103,0</td><td>61.0</td><td>40,0</td><td>40,0</td><td>65061</td><td>64061</td></td<>	0.0040	0,100 mm		10,0	103,0	61.0	40,0	40,0	65061	64061
0.3534 9,129 mm 23/04 10,0 103,0 61,0 47,0 40,0 55019 54819 0.3622 9,200 mm 10,0 103,0 61,0 47,0 40,0 65062 64862 0.3661 9,300 mm 10,0 103,0 61,0 47,0 40,0 65063 64863 0.3680 9,347 mm U 10,0 103,0 61,0 47,0 40,0 65064 64864 0.3701 9,400 mm 10,0 103,0 61,0 47,0 40,0 65065 64865 0.3750 9,525 mm 3/8 10,0 103,0 61,0 47,0 40,0 65066 64866 0.3780 9,600 mm 10,0 103,0 61,0 47,0 40,0 65066 64866 0.3819 9,700 mm 10,0 103,0 61,0 46,0 40,0 65068 64868 0.3898 9,800 mm 10,0 103,0 61,0 46,0 40,0 65069 64869 0.3906 9,921 mm 25/64 10,0 <td< td=""><td>0.0000</td><td>9,100 mm</td><td>22/64</td><td>10,0</td><td>103,0</td><td>61.0</td><td>47,0</td><td>40,0</td><td>00001</td><td>04001 E4010</td></td<>	0.0000	9,100 mm	22/64	10,0	103,0	61.0	47,0	40,0	00001	04001 E4010
0.3622 9,200 mm 10,0 103,0 61,0 47,0 40,0 65062 64862 0.3661 9,300 mm 10,0 103,0 61,0 47,0 40,0 65063 64863 0.3680 9,347 mm U 10,0 103,0 61,0 47,0 40,0 65063 64863 0.3701 9,400 mm 10,0 103,0 61,0 47,0 40,0 65065 64864 0.3740 9,500 mm 10,0 103,0 61,0 47,0 40,0 65065 64865 0.3750 9,525 mm 3/8 10,0 103,0 61,0 47,0 40,0 65066 64866 0.3819 9,700 mm 10,0 103,0 61,0 46,0 40,0 65068 64868 0.3858 9,800 mm 10,0 103,0 61,0 46,0 40,0 65069 64869 0.3898 9,900 mm 10,0 103,0 61,0 46,0 40,0 65069 64869 0.3937 10,000 mm 10,0 103,0 61,0 <td< td=""><td>0.3594</td><td>9,129 mm</td><td>23/64</td><td>10,0</td><td>103,0</td><td>01,0</td><td>47,0</td><td>40,0</td><td>00019</td><td>54819</td></td<>	0.3594	9,129 mm	23/64	10,0	103,0	01,0	47,0	40,0	00019	54819
0.30019,300 mm10,0103,061,047,040,065063648630.36809,347 mmU10,0103,061,047,040,055020548200.37019,400 mm10,0103,061,047,040,065064648640.37409,500 mm10,0103,061,047,040,065065648650.37509,525 mm3/810,0103,061,047,040,055021548210.37809,600 mm10,0103,061,047,040,065066648660.38199,700 mm10,0103,061,046,040,065068648680.38589,800 mm10,0103,061,046,040,065069648690.39069,921 mm25/6410,0103,061,046,040,065070648700.393710,000 mm10,0103,061,046,040,065070648700.397610,100 mm12,0118,071,056,045,065071648710.401610,200 mm12,0118,071,056,045,06507264872	0.3022	9,200 mm		10,0	103,0	01,0	47,0	40,0	00002	04002
0.3880 9,347 mm 0 10,0 103,0 61,0 47,0 40,0 55020 54820 0.3701 9,400 mm 10,0 103,0 61,0 47,0 40,0 65064 64864 0.3740 9,500 mm 10,0 103,0 61,0 47,0 40,0 65065 64865 0.3750 9,525 mm 3/8 10,0 103,0 61,0 47,0 40,0 65066 64866 0.3780 9,600 mm 10,0 103,0 61,0 47,0 40,0 65066 64866 0.3819 9,700 mm 10,0 103,0 61,0 46,0 40,0 65068 64868 0.3858 9,800 mm 10,0 103,0 61,0 46,0 40,0 65069 64869 0.3898 9,900 mm 10,0 103,0 61,0 46,0 40,0 65069 64869 0.3906 9,921 mm 25/64 10,0 103,0 61,0 46,0 40,0 65070 64870 0.3937 10,000 mm 10,0 103,0 <t< td=""><td>0.3001</td><td>9,300 mm</td><td></td><td>10,0</td><td>103,0</td><td>01,0</td><td>47,0</td><td>40,0</td><td>05003</td><td>64863</td></t<>	0.3001	9,300 mm		10,0	103,0	01,0	47,0	40,0	05003	64863
0.3701 9,400 mm 10,0 103,0 61,0 47,0 40,0 65064 64864 0.3740 9,500 mm 10,0 103,0 61,0 47,0 40,0 65065 64865 0.3750 9,525 mm 3/8 10,0 103,0 61,0 47,0 40,0 55021 54821 0.3780 9,600 mm 10,0 103,0 61,0 47,0 40,0 65066 64866 0.3819 9,700 mm 10,0 103,0 61,0 46,0 40,0 65068 64868 0.3858 9,800 mm 10,0 103,0 61,0 46,0 40,0 65069 64869 0.3898 9,900 mm 10,0 103,0 61,0 46,0 40,0 65069 64869 0.3906 9,921 mm 25/64 10,0 103,0 61,0 46,0 40,0 65070 64870 0.3937 10,000 mm 10,0 103,0 61,0 46,0 40,0 65070 <td>0.3680</td> <td>9,347 mm</td> <td>U</td> <td>10,0</td> <td>103,0</td> <td>61,0</td> <td>47,0</td> <td>40,0</td> <td>55020</td> <td>54820</td>	0.3680	9,347 mm	U	10,0	103,0	61,0	47,0	40,0	55020	54820
U.3 /4U 9,500 mm 10,0 103,0 61,0 47,0 40,0 65065 64865 0.3750 9,525 mm 3/8 10,0 103,0 61,0 47,0 40,0 55021 54821 0.3780 9,600 mm 10,0 103,0 61,0 47,0 40,0 65066 64866 0.3819 9,700 mm 10,0 103,0 61,0 46,0 40,0 65067 64867 0.3858 9,800 mm 10,0 103,0 61,0 46,0 40,0 65068 64868 0.3898 9,900 mm 10,0 103,0 61,0 46,0 40,0 65069 64869 0.3906 9,921 mm 25/64 10,0 103,0 61,0 46,0 40,0 65070 64870 0.3937 10,000 mm 10,0 103,0 61,0 46,0 40,0 65070 64870 0.3976 10,100 mm 12,0 118,0 71,0 56,0 45,0 65071 </td <td>0.3701</td> <td>9,400 mm</td> <td></td> <td>10,0</td> <td>103,0</td> <td>61,0</td> <td>47,0</td> <td>40,0</td> <td>65064</td> <td>64864</td>	0.3701	9,400 mm		10,0	103,0	61,0	47,0	40,0	65064	64864
U.3 / 509,525 mm3/810,0103,061,047,040,055021548210.37809,600 mm10,0103,061,047,040,065066648660.38199,700 mm10,0103,061,046,040,065067648670.38589,800 mm10,0103,061,046,040,065068648680.38989,900 mm10,0103,061,046,040,065069648690.39069,921 mm25/6410,0103,061,046,040,055022548220.393710,000 mm10,0103,061,046,040,065070648700.397610,100 mm12,0118,071,056,045,065071648710.401610,200 mm12,0118,071,056,045,06507264872	0.3740	9,500 mm	0.12	10,0	103,0	61,0	47,0	40,0	65065	64865
0.3780 9,600 mm 10,0 103,0 61,0 47,0 40,0 65066 64866 0.3819 9,700 mm 10,0 103,0 61,0 46,0 40,0 65067 64867 0.3858 9,800 mm 10,0 103,0 61,0 46,0 40,0 65068 64868 0.3898 9,900 mm 10,0 103,0 61,0 46,0 40,0 65069 64869 0.3906 9,921 mm 25/64 10,0 103,0 61,0 46,0 40,0 55022 54822 0.3937 10,000 mm 10,0 103,0 61,0 46,0 40,0 65070 64870 0.3976 10,100 mm 12,0 118,0 71,0 56,0 45,0 65071 64871 0.4016 10,200 mm 12,0 118,0 71,0 56,0 45,0 65072 64872	0.3750	9,525 mm	3/8	10,0	103,0	61,0	47,0	40,0	55021	54821
0.3819 9,700 mm 10,0 103,0 61,0 46,0 40,0 65067 64867 0.3858 9,800 mm 10,0 103,0 61,0 46,0 40,0 65068 64868 0.3898 9,900 mm 10,0 103,0 61,0 46,0 40,0 65069 64869 0.3906 9,921 mm 25/64 10,0 103,0 61,0 46,0 40,0 55022 54822 0.3937 10,000 mm 10,0 103,0 61,0 46,0 40,0 65070 64870 0.3976 10,100 mm 12,0 118,0 71,0 56,0 45,0 65071 64871 0.4016 10,200 mm 12,0 118,0 71,0 56,0 45,0 65072 64872	0.3780	9,600 mm		10,0	103,0	61,0	47,0	40,0	65066	64866
0.3858 9,800 mm 10,0 103,0 61,0 46,0 40,0 65068 64868 0.3898 9,900 mm 10,0 103,0 61,0 46,0 40,0 65069 64869 0.3906 9,921 mm 25/64 10,0 103,0 61,0 46,0 40,0 55022 54822 0.3937 10,000 mm 10,0 103,0 61,0 46,0 40,0 65070 64870 0.3976 10,100 mm 12,0 118,0 71,0 56,0 45,0 65071 64871 0.4016 10,200 mm 12,0 118,0 71,0 56,0 45,0 65072 64872	0.3819	9,700 mm		10,0	103,0	61,0	46,0	40,0	65067	64867
0.3898 9,900 mm 10,0 103,0 61,0 46,0 40,0 65069 64869 0.3906 9,921 mm 25/64 10,0 103,0 61,0 46,0 40,0 55022 54822 0.3937 10,000 mm 10,0 103,0 61,0 46,0 40,0 65070 64870 0.3976 10,100 mm 12,0 118,0 71,0 56,0 45,0 65071 64871 0.4016 10,200 mm 12,0 118,0 71,0 56,0 45,0 65072 64872	0.3858	9,800 mm		10,0	103,0	61,0	46,0	40,0	65068	64868
0.3906 9,921 mm 25/64 10,0 103,0 61,0 46,0 40,0 55022 54822 0.3937 10,000 mm 10,0 103,0 61,0 46,0 40,0 65070 64870 0.3976 10,100 mm 12,0 118,0 71,0 56,0 45,0 65071 64871 0.4016 10,200 mm 12,0 118,0 71,0 56,0 45,0 65072 64872	0.3898	9,900 mm		10,0	103,0	61,0	46,0	40,0	65069	64869
0.3937 10,000 mm 10,0 103,0 61,0 46,0 40,0 65070 64870 0.3976 10,100 mm 12,0 118,0 71,0 56,0 45,0 65071 64871 0.4016 10,200 mm 12,0 118,0 71,0 56,0 45,0 65072 64872	0.3906	9,921 mm	25/64	10,0	103,0	61,0	46,0	40,0	55022	54822
0.397610,100 mm12,0118,071,056,045,065071648710.401610,200 mm12,0118,071,056,045,06507264872	0.3937	10,000 mm		10,0	103,0	61,0	46,0	40,0	65070	64870
0.4016 10,200 mm 12,0 118,0 71,0 56,0 45,0 65072 64872	0.3976	10,100 mm		12,0	118,0	71,0	56,0	45,0	65071	64871
	0.4016	10,200 mm		12,0	118,0	71,0	56,0	45,0	65072	64872

continued on next page

Series 131N 5xD





- 1111



			inch	& mm					EUI	NO
• 3-margin design improves hole stability and size control while	DECIMAL	METRIC DC	FRACTIONAL/ LETTER/WIRE DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE Length Lu	SHANK LENGTH LS	UNCOATED	Ti-NAMITE*-B (TiB ₂)
finish roundness and	0.4055	10,300 mm		12,0	118,0	71,0	56,0	45,0	65073	64873
cylindricity	0.4062	10,317 mm	13/32	12,0	118,0	71,0	56,0	45,0	55023	54823
 Self-stabilizing pyramid 	0.4095	10,400 mm		12,0	118,0	71,0	55,0	45,0	65074	64874
point design stabilizes	0.4134	10,500 mm		12,0	118,0	71,0	55,0	45,0	65075	64875
the workpiece	0.4173	10,600 mm		12,0	118,0	71,0	55,0	45,0	65076	64876
Open flute structure	0.4213	10,700 mm		12,0	118,0	71,0	55,0	45,0	65077	64877
efficiently transports	0.4219	10,716 mm	27/64	12,0	118,0	71,0	55,0	45,0	55024	54824
strength at high	0.4252	10,800 mm		12,0	118,0	71,0	55,0	45,0	65078	64878
feed rates	0.4291	10,900 mm		12,0	118,0	71,0	55,0	45,0	65079	64879
 Sculpted gash allows 	0.4331	11,000 mm		12.0	118.0	71.0	54.0	45.0	65080	64880
chips to easily flow away	0.4370	11.100 mm		12.0	118.0	71.0	54.0	45.0	65081	64881
Becommended for	0.4375	11.113 mm	7/16	12.0	118.0	71.0	54.0	45.0	55025	54825
materials ≤ 175 Bhn	0.4409	11.200 mm	.,	12.0	118.0	71.0	54.0	45.0	65082	64882
(≤ 16 HRc)	0.4449	11.300 mm		12.0	118.0	71.0	54.0	45.0	65083	64883
	0.4488	11.400 mm		12.0	118.0	71.0	54.0	45.0	65084	64884
	0.4528	11.500 mm		12.0	118.0	71.0	54.0	45.0	65085	64885
	0.4567	11.600 mm		12.0	118.0	71.0	54.0	45.0	65086	64886
	0.4606	11.700 mm		12.0	118.0	71.0	53.0	45.0	65087	64887
	0.4646	11.800 mm		12.0	118.0	71.0	53.0	45.0	65088	64888
	0.4685	11.900 mm		12.0	118.0	71.0	53.0	45.0	65089	64889
	0.4688	11.908 mm	15/32	12.0	118.0	71.0	53.0	45.0	55026	54826
	0.4724	12.000 mm	, .=	12.0	118.0	71.0	53.0	45.0	65090	64890
	0.4844	12.304 mm	31/64	14.0	124.0	77.0	58.0	45.0	55027	54827
	0.4921	12,500 mm	.,	14.0	124.0	77.0	58.0	45.0	65091	64891
	0.5000	12,700 mm	1/2	14.0	124.0	77.0	58.0	45.0	55028	54828
	0.5039	12.800 mm	., _	14.0	124.0	77.0	58.0	45.0	65092	64892
	0.5118	13.000 mm		14.0	124.0	77.0	58.0	45.0	65093	64893
	0.5156	13.096 mm	33/64	14.0	124.0	77.0	57.0	45.0	55029	54829
	0.5315	13.500 mm	, -	14.0	124.0	77.0	57.0	45.0	65094	64894
	0.5433	13,800 mm		14.0	124.0	77.0	56.0	45.0	65095	64895
	0.5512	14,000 mm		14.0	124.0	77.0	56.0	45.0	65096	64896
	0.5625	14.288 mm	9/16	16.0	133.0	83.0	61.0	48.0	55030	54830
	0.5709	14,500 mm	-,	16.0	133.0	83.0	61.0	48.0	65097	64897
	0.5781	14,684 mm	37/64	16.0	133.0	83.0	61.0	48.0	55031	54831
	0.5827	14.800 mm	.,	16.0	133.0	83.0	61.0	48.0	65098	64898
	0.5906	15.000 mm		16.0	133.0	83.0	60.0	48.0	65099	64899
	0.6102	15.500 mm		16.0	133.0	83.0	60.0	48.0	65100	64900
	0.6221	15.800 mm		16.0	133.0	83.0	59.0	48.0	65101	64901
	0.6250	15,875 mm	5/8	16.0	133.0	83.0	59.0	48.0	55032	54832
	0.6299	16.000 mm	-/ •	16.0	133.0	83.0	59.0	48.0	65102	64902
	0.6562	16.667 mm	21/32	18.0	143.0	93.0	68.0	48.0	55033	54833
	0.6875	17,463 mm	11/16	18,0	143,0	93,0	67,0	48,0	55034	54834

3/4

19,050 mm

20,0

153,0 101,0 72,0

50,0

55035

54835



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1

DC

TOLERANCES (inch)
<pre>\$\lefter 1181 DIAMETER DC = +.00008/+.00047 DCON = h_6</pre>
>.11812362 DIAMETER DC = +.00016/+.00063 DCON = h ₆
>.23623937 DIAMETER DC = +.00024/+.00083 DCON = h ₆
>.39377087 DIAMETER DC = +.00028/+.00098 DCON= h ₆
>.7087-1.1811 DIAMETER DC = +.00031/+.00114 DCON = h ₆
TOLERANCES (mm)
\leq 3 DIAMETER DC = +0,002/+0,012 DCON = h ₆
> 3-6 DIAMETER DC = +0,004/+0,016 DCON = h ₆
>6-10 DIAMETER DC = +0,006/+0,021 DCON = h ₆
>10-18 DIAMETER DC = +0,007/+0,025 DCON = h ₆
NON-FERROUS
For patent information visit www.ksptpatents.com

Fractional & Metric

0.7500



	Series 131N 3D & 5D		Vc					DC • in											
	Fractional	Hardness	(sfm)		1/8	3/16	1/4	3/8	1/2	5/8	3/4								
		< 150 Php	800	RPM	24448	16299	12224	8149	6112	4890	4075								
	< 12% SI		(640,060)	Fr	0.0055	0.0083	0.0110	0.0166	0.0221	0.0276	0.0331								
	0001, 2024, 7075	≤ 88 HRD	(040-900)	Feed (ipm)	135	135	135	135	135	135	135								
		< 125 Php	600	RPM	18336	12224	9168	6112	4584	3667	3056								
	> 12% SI	≤ 125 Dilli 0ľ < 77 ⊔Ph	(400 720)	Fr	0.0055	0.0082	0.0109	0.0164	0.0218	0.0273	0.0327								
NI	A330.0, 390.0, 319.0	≤ <i>11</i> ⊓nD	(400-720)	Feed (ipm)	100	100	100	100	100	100	100								
		< 175 Bbp	550	RPM	16808	11205	8404	5603	4202	3362	2801								
	Alum Bronze, Muntz	≤ 175 Dilli 0r < 16 HPa	(440 660)	Fr	0.0020	0.0030	0.0040	0.0061	0.0081	0.0101	0.0121								
	Drass, Navel Drass	S 10 HHC	(440-000)	Feed (ipm)	34	34	34	34	34	34	34								
	ΡΙΔΥΤΙΓΥ	(3	450	450	RPM	13752	9168	6876	4584	3438	2750	2292							
	Acrylic, PVC,			(360-540)	Fr	0.0025	0.0037	0.0049	0.0074	0.0099	0.0124	0.0148							
	Polypropylene												(360-540)	Feed (ipm)	34	34	34	34	34

Bhn (Brinell) HRc (Rockwell C) HRb (Rockwell B)

rpm = Vc x 3.82 / DC

ipm = Fr x rpmreduce speed and feed for materials harder than listed

refer to the SGS Tool Wizard® for complete technical information (www.kyocera-sgstool.com)

	Series 131N	Vc					DC • mm					
	Metric	Hardness	(m/min)		3	6	8	10	12	14	16	
		< 150 Php	244	RPM	25851	12926	9694	7755	6463	5540	4847	
	< 12% SI	0r < 88 HBb	(105 202)	Fr	0.133	0.265	0.354	0.442	0.531	0.619	0.708	
	0001, 2024, 7075	≤ 88 HKD	(195-293)	Feed (mm/min)	3430	3430	3430	3430	3430	3430	3430	
		< 125 Php	183	RPM	19388	9694	7271	5816	4847	4155	3635	
	> 12% SI		(146-219)	Fr	0.131	0.262	0.349	0.437	0.524	0.611	0.699	
NI	A350.0, 350.0, 315.0	≤ <i>11</i> ⊓nj		Feed (mm/min)	2540	2540	2540	2540	2540	2540	2540	
IN		< 175 Bhn	168	RPM	17773	8886	6665	5332	4443	3808	3332	
	Alum Bronze, Muntz		(124 201)	Fr	0.049	0.097	0.130	0.162	0.194	0.227	0.259	
	DIdss, Navei Didss	S 10 HHC	(134-201)	Feed (mm/min)	864	864	864	864	864	864	864	
	DIACTICS		137	RPM	14541	7271	5453	4362	3635	3116	2726	
	Acrylic, PVC,		/110.105	(110-165)	Fr	0.059	0.119	0.158	0.198	0.238	0.277	0.317
	Polypropylene		(110-165)	Feed (mm/min)	864	864	864	864	864	864	864	

Bhn (Brinell) HRc (Rockwell C) rpm = (Vc x 1000) / (DC x 3.14) HRb (Rockwell B)

mm/min = Fr x rpm

reduce speed and feed for materials harder than listed refer to the SGS Tool Wizard® for complete technical information (www.kyocera-sgstool.com)

Series 131N



SERIES 120

SERIES 120 COMPOSITE DRILL

The key features of the 8 Facet Double Angle Series 120 drill design offers application benefits beyond that of other high performance drills in its category. Each feature of this 8 facet design was engineered as a solution towards addressing the issues commonly encountered during Composite drilling. This unique High Performance design successfully creates an accurate hole without splintering or delamination.

4-MARGIN CONSTRUCTION

- improves drill stability for better hole finish and size control
- allows coolant to reach the point for improved hole quality and extended tool life

B DOUBLE ANGLE POINT

- minimizes workpiece delamination on drill entry and exit
- redistributes loads along multiple cutting edges for improved performance

C NOTCHED POINT

- reduces cutting forces at the drill center for enhanced performance and tool life
- manufactured exclusively with Di-NAMITE[®] coating for even wear, extended tool life, and improved finishes

PERFORMANCE. PRECISION. PASSION. SERIES 120 COMPOSITE DRILL



PERFORMANCE.

- 4-margin design stabilized the drill for greater hole accuracy and improved surface finish in final hole.
- Minimized delamination at hole entry/exit.
- Manufactured exclusively with Di-NAMITE[®] coating for even wear, extended tool life and improved finishes.

PRECISION.

A test was conducted of our CFRP drill to determine the necessity of coating when drilling Carbon Fiber material. Fifty holes were drilled using a special size .190" CFRP drill. The tool's design produces acceptable quality holes; but as shown in the photos, early edge wear on the uncoated drill resulted in holes with frayed edges. The diamond coated drill produced all 50 holes with little to no fraying and edge wear was 38% less than the uncoated drills.

The geometry of the 8 Facet drill with the Di-NAMITE[®] coating is a necessity for additional tool life and productivity when manufacturing Carbon Fiber material.

SPEED 5,000 rpm	FEED 5.0 ipm	DIAMETER .190″	HOLE DEPTH .240"	WORKPIEC CFRP	CE	MACHI Vertica Center	NE TYPE Machining	COOLANT none
TOOL NO.	TYPE DESCRIPTION	TIR IN MACHINE	USAGE	TOOL NO.	T DESC	YPE RIPTION	TIR IN MACHINE	USAGE
1	.190" CFRP drill uncoated	.0001"	50 holes	2	.190″ dia	CFRP drill mond	.0002″	50 holes
INSPECTION NOTES	Good hole qu fraying starti	ality for 1st 3 h ng by 3rd hole,	oles. .0021" wear	INSPE 1	CTION NOTES	Good ho slight fra	ble quality all s aying, .0013" v	50 holes wear
1ST HOLE	3RD HOLE	50TH HOLE	AFTER 50 HOLES	1ST HOLE	25TH	HOLE	50TH HOLE	AFTER 50 HOLES
					CR			e e

PASSION.

- The compound angle creates 4 cutting edges along the drill point.
- Distinct double angle prevents abrasiveness of the Composite from localizing along the point and diminishing tool life.

www.kyocera-sgstool.com











• 8 facet point reduces fiber breakout and delamination on exit

 90 degree secondary chamfer angle improve: hole entrance and exit quality

				inch & mm					EDP NO.
	DECIMAL DC	METRIC DC	FRACTIONAL/ LETTER/WIRE DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE Length LCF	USABLE LENGTH LU	SHANK LENGTH LS	Di-NAMITE® (Diamond)
	0.0980	2,489 mm	#40	1/8	2	9/16	7/16	1-1/4	50000
	0.1063	2,700 mm		6,0	63,0	20,0	16,0	32,0	50001
	0.1181	3,000 mm		6,0	63,0	20,0	16,0	36,0	50002
	0.1250	3,175 mm	1/8	1/4	2-1/2	3/4	9/16	1-7/16	50003
	0.1260	3,200 mm		6,0	63,0	20,0	15,0	36,0	50004
	0.1285	3,264 mm	#30	1/4	2-1/2	3/4	9/16	1-7/16	50005
s	0.1405	3,569 mm	#28	1/4	2-1/2	3/4	9/16	1-7/16	50006
	0.1570	3,988 mm	#22	1/4	2-5/8	7/8	5/8	1-7/16	50007
	0.1590	4,039 mm	#21	1/4	2-5/8	7/8	5/8	1-7/16	50008
	0.1614	4,100 mm		6,0	66,0	24,0	18,0	36,0	50009
	0.1660	4,216 mm	#19	1/4	2-5/8	7/8	5/8	1-7/16	50010
	0.1719	4,366 mm	11/64	1/4	2-5/8	7/8	5/8	1-7/16	50011
	0.1875	4,763 mm	3/16	1/4	2-5/8	1	23/32	1-7/16	50012
	0.1910	4,851 mm	#11	1/4	2-5/8	1	23/32	1-7/16	50013
	0.1990	5,055 mm	#8	1/4	2-5/8	1	23/32	1-7/16	50014
	0.2010	5,105 mm	#7	1/4	2-5/8	1	23/32	1-7/16	50015
	0.2210	5,613 mm	#2	1/4	2-5/8	1	21/32	1-7/16	50016
	0.2362	6,000 mm		6,0	66,0	28,0	19,0	36,0	50017
	0.2500	6,350 mm	1/4 E #0	1/4	3-1/8	1-5/16	15/16	1-7/16	50018
	0.2510	6,380 mm		5/16	3-1/8	1-5/16	15/16	1-7/16	50019
	0.2570	6,528 mm	F	5/16	3-1/8	1-5/16	15/16	1-7/16	50020
	0.2720	6,909 mm	I	5/16	3-1/8	1-5/16	29/32	1-7/16	50021
	0.2770	7,036 mm	J	5/16	3-1/8	1-5/16	29/32	1-7/16	50022
	0.2810	7,137 mm	К	5/16	3-1/8	1-9/16	1-9/64	1-7/16	50023
	0.3125	7,938 mm	5/16	5/16	3-1/8	1-9/16	1-3/32	1-7/16	50024
	0.3150	8,000 mm		8,0	79,0	41,0	29,0	36,0	50025
	0.3750	9,525 mm	3/8	3/8	3-1/2	1-27/32	1-9/32	1-9/16	50026
	0.3770	9,576 mm	V	1/2	3-1/2	1-27/32	1-9/32	1-9/16	50027
	0.3937	10,000 mm		10,0	89,0	47,0	32,0	40,0	50028
	0.4375	11,113 mm	7/16	1/2	4-1/16	2-3/16	1-17/32	1-9/16	50029
	0.4724	12,000 mm		12,0	102,0	55,0	37,0	45,0	50030
	0.5000	12,700 mm	1/2	1/2	4-1/4	2-5/16	1-9/16	1-3/4	50031

TOLERANCES (inch)

OAL

DC = +.0000/+.0005 DCON = h₆

TOLERANCES (mm)

NON-FERROUS

For patent information visit www.ksptpatents.com



	Series	Vo					DC • in			
	Fractional	(sfm)		1/8	3/16	1/4	5/16	3/8	7/16	1/2
		320	RPM	9779	6519	4890	3912	3260	2794	2445
	(Carbon Fiber, Aromid Fiber)	(256, 204)	Fr	0.0006	0.0009	0.0012	0.0015	0.0018	0.0021	0.0024
	Aramid Fiber)	(200-304)	Feed (ipm)	5.9	5.9	5.9	5.9	5.9	5.9	5.9
		240	RPM	7334	4890	3667	2934	2445	2096	1834
N	GFRP (Fiberglass)	(102.200)	Fr	0.0006	0.0009	0.0012	0.0015	0.0018	0.0021	0.0024
		(192-200)	Feed (ipm)	4.4	4.4	4.4	4.4	4.4	4.4	4.4
		400	RPM	12224	8149	6112	4890	4075	3493	3056
	CARBON, GRAPHITE	(320-480)	Fr	0.0008	0.0012	0.0016	0.0020	0.0024	0.0028	0.0032
			Feed (ipm)	9.8	9.8	9.8	9.8	9.8	9.8	9.8

rpm = Vc x 3.82 / DC ipm = Fr x rpm

adjust speed and / or feed based on resin type and / or fiber structure refer to the SGS Tool Wizard® for complete technical information (www.kyocera-sgstool.com)

	Series	Va					DC • mm			
	Metric	(m/min)		2.5	3	4	6	8	10	12
		100	RPM	12722	10602	7951	5301	3976	3181	2650
	(Carbon Fiber, Aromid Fiber)	(80-120)	Fr	0.012	0.014	0.019	0.028	0.038	0.047	0.057
	Aramid Fiber)		Feed (mm/min)	150	150	150	150	150	150	150
		75	RPM	9542	7951	5963	3976	2982	2385	1988
Ν	GFRP (Fiberglass)	(05,00)	Fr	0.012	0.014	0.019	0.029	0.039	0.048	0.058
	((00-90)	Feed (mm/min)	115	115	115	115	115	115	115
		120	RPM	15266	12722	9542	6361	4771	3817	3181
	CARBON, GRAPHITE	(96-144)	Fr	0.015	0.018	0.025	0.037	0.049	0.062	0.074
			Feed (mm/min)	235	235	235	235	235	235	235

rpm = (Vc x 1000) / (DC x 3.14)

mm/min = Fr x rpm

adjust speed and / or feed based on resin type and / or fiber structure refer to the SGS Tool Wizard® for complete technical information (www.kyocera-sgstool.com)

CHARGE CARDE

B2

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B1

HIGH PERFORMANCE CARBIDE DRILLS

The key features designed into the Hi-PerCarb[®] Series 135 Drill allow the product to offer application benefits not only beyond that of standard carbide drills, but also other High Performance drills. Each feature of the Hi-PerCarb[®] Series 135 Drill was uniquely engineered as a solution towards addressing the issues commonly encountered during high production drilling.

SERIES 135

HIGH PERFORMANCE FLUTE DESIGN

efficiently transports chips
increases strength for aggressive drilling

Ti-NAMITE®-A COATING

- improves resistance to heat and wear
- enhances tool life

A-MARGIN DESIGN

E

- improves accuracy and surface finish
- B2) increases stability and rigidity

SECONDARY FLUTE

- improves coolant flow to point
- reduces friction along drill body
- assists in fine swarf evacuation

SPECIALIZED 145° NOTCHED POINT

- self centering eliminates need for spot drill
- improves chip control
- decreases drill thrust and deflection

ENGINEERED EDGE PROTECTION

- improves edge strength
- reduces edge fatigue
- allows increased feed rates

PERFORMANCE. PRECISION. PASSION. HI-PERCARB[®] SERIES 135 DRILLS



PERFORMANCE.

MACHINING ENVIRONMENT:

Haas VM-3 with 9% Water Soluble Oil Flood Coolant 5/16" (.3125) diameter hole: 4140 application – .650" deep 6Al-4V application – 1.125" deep



HI-PERCARB[®] SERIES 135

SOLID CARBIDE DRILL AND REAMER

The 4-margin design gives the Hi-PerCarb[®] Series 135 Drill a burnishing effect and the flute form effectively controls and transports chips allowing the drill to offer superior surface finishes and hole size in high production environments saving cycle time by often avoiding the need for reaming in many applications.

PRECISION.

The stability of the 4-margin design and penetration capability of the point geometry allow the Hi-PerCarb[®] Series 135 Drill to address demanding applications that would normally require reduced operating parameters or a two step process.

PASSION.

The secondary flute provides a channel for cooling capabilities normally not found in external coolant drills, this combined with the Ti-NAMITE[®]-A tool coating and the high strength edge design results in increased operating parameters with additional tool life.

	COMPETITOR	HI-PERCARB [®] SERIES 135
NUMBER OF PARTS TO PRODUCE	50000	50000
SURFACE FEET PER MINUTE (SFM)	74	124
SPEED IN REVOLUTIONS PER MINUTE (RPM)	1200	2000
FEED IN INCHES PER MINUTE (IPM)	3.6	10
NUMBER OF PARTS PRODUCED PER TOOL	140	500
DEPTH OF HOLE	0.6800	0.6800
NUMBER OF NEW TOOLS REQUIRED TO COMPLETE JOB	358	100
TOTAL HOURS OF MACHINING TIME	157	57
TOTAL MACHINING COST	\$10,231.48	\$3,683.33
TOOL CHANGE COST	\$1,939.17	\$541.67
TOTAL COST	\$39,017.07	\$8,460.00
COST PER PART	\$0.78	\$0.17
MATERIAL REMOVAL RATE (IN ³ / MIN) – DRILLING	0.16	0.44
CUTTING TIME PER PART – MINUTES	0.19	0.07
SAVINGS PER PART – DOLLARS	0	\$0.61
TOTAL COST SAVINGS / JOB – PERCENTAGE	0	78.32%
TOTAL COST SAVINGS / JOB – DOLLARS	0	\$30,557.07

ACTUAL CUSTOMER APPLICATION USING A 6MM DRILL IN 17-4 PH STAINLESS STEEL







TOOL COST REDUCED BY
 MACHINING COST REDUCED BY
 COOLANT COST REDUCED BY

MACHINE DOWNTIME COST REDUCED BYTOOL CHANGE COST REDUCED BY

ADMINISTRATIVE COST REDUCED BY

Using 100 tools per job compared to 358 means less inventory and fewer purchase orders to issue resulting in improved administrative cost and reduced tooling cost per job.

Increasing the feed by 278% has decreased the total hours of machine time by 100 hours gaining manufacturing capacity; this factored with the hourly shop rate has resulted in the largest portion of the savings.

- With a tool life of 500 parts compared to 140 parts or a 357% improvement in tool life equates to less time dedicated to changing tools to keep the job running.
 - Increasing the material removal rate by .28 cubic inches or 275% requires less time in the cut and a reduced use of coolant.









• 4-margin design				inch & mm					EDP NO.
improves accuracy and surface finish along with increased strength for	DECIMAL DC	METRIC DC	FRACTIONAL/ Letter/wire DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	SHANK LENGTH LS	Ti-NAMITE-A (AITiN)
aggressive drilling	0.0156	0,396 mm	1/64	1/8	1-1/2	1/8	7/64	1	51752*
Specialized self- contoring notchod point	0.0312	0,792 mm	1/32	1/8	1-1/2	1/4	13/64	1	51269*
eliminates the need for	0.0469	1,191 mm	3/64	1/8	1-1/2	3/8	5/16	1	51270*
spot drilling decreasing thrust and deflection	0.0492	1,250 mm		3,0	38,0	9,5	8,0	25,0	64500*
Engineered edge	0.0571	1,450 mm		3,0	38,0	9,5	7,0	25,0	64501*
protection improves edge	0.0595	1,511 mm	#53	1/8	1-1/2	3/8	9/32	1	64502*
edge fatigue allowing for	0.0625	1,588 mm	1/16	1/8	2	7/16	11/32	1-1/4	51271*
increased feed rates	0.0630	1,600 mm		3,0	50,0	11,0	9,0	32,0	64503*
 Recommended for materials ≤ 50 HRc 	0.0689	1,750 mm		3,0	50,0	11,0	8,0	32,0	64504*
(≤ 475 Bhn)	0.0700	1,778 mm	#50	1/8	2	7/16	21/64	1-1/4	64505*
	0.0781	1,984 mm	5/64	1/8	2	1/2	25/64	1-1/4	51272*
	0.0785	1,994 mm	#47	1/8	2	1/2	25/64	1-1/4	64506*
	0.0807	2,050 mm		3,0	50,0	12,0	9,0	32,0	64507*
	0.0810	2,057 mm	#46	1/8	2	1/2	3/8	1-1/4	64508*
	0.0890	2,261 mm	#43	1/8	2	1/2	3/8	1-1/4	64509*
	0.0935	2,375 mm	#42	1/8	2	1/2	23/64	1-1/4	64510*
	0.0938	2,383 mm	3/32	1/8	2	1/2	23/64	1-1/4	51273
	0.0980	2,489 mm	#40	1/8	2	9/16	27/64	1-1/4	51274
	0.0984	2,500 mm		3,0	50,0	14,0	10,0	32,0	64511
	0.0995	2,527 mm	#39	1/8	2	9/16	27/64	1-1/4	51753
	0.1015	2,578 mm	#38	1/8	2	9/16	27/64	1-1/4	51754
	0.1040	2,642 mm	#37	1/8	2	9/16	13/32	1-1/4	51755
	0.1065	2,705 mm	#36	1/8	2	9/16	13/32	1-1/4	51756
	0.1094	2,779 mm	7/64	1/8	2	5/8	15/32	1-1/4	51275
	0.1100	2,794 mm	#35	1/8	2	5/8	15/32	1-1/4	51276
	0.1110	2,819 mm	#34	1/8	2	5/8	15/32	1-1/4	51277
	0.1130	2,870 mm	#33	1/8	2	5/8	29/64	1-1/4	51757
	0.1142	2,900 mm		3,0	50,0	16,0	12,0	32,0	64512
	0.1160	2,946 mm	#32	1/8	2	5/8	29/64	1-1/4	51758
	0.1181	3,000 mm		6,0	62,0	20,0	16,0	36,0	63155
	0.1200	3,048 mm	#31	1/8	2	5/8	29/64	1-1/4	51759
	0.1220	3,100 mm		6,0	62,0	20,0	15,0	36,0	63741
	0.1250	3,175 mm	1/8	1/4	2-1/2	3/4	9/16	1-7/16	51330
	0.1260	3,200 mm		6,0	62,0	20,0	15,0	36,0	63156
	0.1285	3,264 mm	#30	1/4	2-1/2	3/4	9/16	1-7/16	51278
	0.1299	3,300 mm		6,0	62,0	20,0	15,0	36,0	63157
	0.1339	3,400 mm		6,0	62,0	20,0	15,0	36,0	63158

TOLERANCES (inch)

\leq .1181 DIAMETER DC = +.00008/+.00047 DCON = h_6
>.1181–.2362 DIAMETER DC = $+.00016/+.00063$ DCON = h_6
>.23623937 DIAMETER DC = +.00024/+.00083 DCON = h ₆
>.39377087 DIAMETER DC = +.00028/+.00098 DCON = h ₆
$\begin{array}{llllllllllllllllllllllllllllllllllll$
TOLERANCES (mm)
\leq 3 DIAMETER DC = +0,002/+0,012 DCON = h ₆
> 3-6 DIAMETER DC = +0,004/+0,016 DCON= h ₆
>6-10 DIAMETER DC = +0,006/+0,021 DCON = h ₆
>10-18 DIAMETER DC = +0,007/+0,025 DCON = h ₆
>18-30 DIAMETER DC = +0,008/+0,029 DCON= h ₆
STEELS
STAINLESS STEELS
CAST IRON
NON-FERROUS
HIGH TEMP ALLOYS
HARDENED STEELS

51331 continued on next page

0.1360

*Single Margin

3,454 mm

#29

1/4

2-1/2

3/4

9/16

1-7/16

For patent information visit www.ksptpatents.com



135 3xD FRACTIONAL & METRIC SERIES

			inch & mm					EDP NO.
DECIMAL DC	METRIC DC	FRACTIONAL/ Letter/wire DC	SHANK Diameter DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	SHANK LENGTH LS	Ti-NAMITE-A (AITiN)
0.1378	3,500 mm		6,0	62,0	20,0	15,0	36,0	63159
0.1405	3,569 mm	#28	1/4	2-1/2	3/4	35/64	1-7/16	51760
0.1406	3,571 mm	9/64	1/4	2-1/2	3/4	9/16	1-7/16	51332
0.1417	3,600 mm		6,0	62,0	20,0	15,0	36,0	63160
0.1440	3,658 mm	#27	1/4	2-1/2	3/4	35/64	1-7/16	51761
0.1457	3,700 mm		6,0	62,0	20,0	14,0	36,0	63161
0.1470	3,734 mm	#26	1/4	2-1/2	3/4	17/32	1-7/16	51762
0.1495	3,797 mm	#25	1/4	2-5/8	7/8	21/32	1-7/16	51333
0.1496	3,800 mm		6,0	66,0	24,0	18,0	36,0	63742
0.1520	3,861 mm	#24	1/4	2-5/8	7/8	21/32	1-7/16	51763
0.1535	3,900 mm		6,0	66,0	24,0	18,0	36,0	63743
0.1540	3,912 mm	#23	1/4	2-5/8	7/8	21/32	1-7/16	51764
0.1562	3,967 mm	5/32	1/4	2-5/8	7/8	41/64	1-7/16	51334
0.1570	3,988 mm	#22	1/4	2-5/8	7/8	41/64	1-7/16	51765
0.1575	4,000 mm		6,0	66,0	24,0	18,0	36,0	63162
0.1590	4,039 mm	#21	1/4	2-5/8	7/8	41/64	1-7/16	51335
0.1610	4,089 mm	#20	1/4	2-5/8	7/8	5/8	1-7/16	51279
0.1614	4,100 mm		6,0	66,0	24,0	18,0	36,0	63744
0.1654	4,200 mm		6,0	66,0	24,0	18,0	36,0	63163
0.1660	4,216 mm	#19	1/4	2-5/8	7/8	5/8	1-7/16	51766
0.1693	4,300 mm		6,0	66,0	24,0	18,0	36,0	63164
0.1695	4,305 mm	#18	1/4	2-5/8	7/8	5/8	1-7/16	51767
0.1719	4,366 mm	11/64	1/4	2-5/8	7/8	39/64	1-7/16	51336
0.1730	4,394 mm	#17	1/4	2-5/8	7/8	5/8	1-7/16	51768
0.1732	4,400 mm		6,0	66,0	24,0	17,0	36,0	63745
0.1770	4,496 mm	#16	1/4	2-5/8	7/8	39/64	1-7/16	51769
0.1772	4,500 mm		6,0	66,0	24,0	17,0	36,0	63165
0.1800	4,572 mm	#15	1/4	2-5/8	7/8	39/64	1-7/16	51770
0.1811	4,600 mm		6,0	66,0	24,0	17,0	36,0	63166
0.1820	4,623 mm	#14	1/4	2-5/8	7/8	39/64	1-7/16	51771
0.1850	4,699 mm	#13	1/4	2-5/8	7/8	39/64	1-7/16	51772
0.1850	4,699 mm	#13	6,0	66,0	24,0	17,0	36,0	63746
0.1875	4,763 mm	3/16	1/4	2-5/8	1	23/32	1-7/16	51337
0.1890	4,801 mm	#12	1/4	2-5/8	1	23/32	1-7/16	51773
0.1890	4,801 mm	#12	6,0	66,0	28,0	21,0	36,0	63167
0.1910	4,851 mm	#11	1/4	2-5/8	1	23/32	1-7/16	51774
0.1929	4,900 mm		6,0	66,0	28,0	21,0	36,0	63747
0.1935	4,915 mm	#10	1/4	2-5/8	1	23/32	1-7/16	51775
0.1960	4,978 mm	#9	1/4	2-5/8	1	23/32	1-7/16	51776
0.1969	5,000 mm		6,0	66,0	28,0	20,0	36,0	63168
0.1990	5,055 mm	#8	1/4	2-5/8	1	45/64	1-7/16	51777
0.2008	5,100 mm		6,0	66,0	28,0	20,0	36,0	63748
0.2010	5,105 mm	#7	1/4	2-5/8	1	45/64	1-7/16	51338
0.2031	5,159 mm	13/64	1/4	2-5/8	1	45/64	1-7/16	51339
0.2040	5,182 mm	#6	1/4	2-5/8	1	45/64	1-7/16	51778
0.2047	5.200 mm		6.0	66.0	28.0	20.0	36.0	63749

135 3xD



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DCON

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OAL

4-margin design				inch & mm					EDP NO.
improves accuracy and surface finish along with increased strength for	DECIMAL DC	METRIC DC	FRACTIONAL/ Letter/Wire DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE Length LCF	USABLE LENGTH LU	SHANK LENGTH LS	Ti-NAMITE-/ (AITiN)
aggressive drilling	0.2055	5,220 mm	#5	1/4	2-5/8	1	45/64	1-7/16	51779
Specialized self- centering notched point	0.2067	5,250 mm		6,0	66,0	28,0	20,0	36,0	63169
eliminates the need for	0.2087	5,300 mm		6,0	66,0	28,0	20,0	36,0	63170
spot drilling decreasing thrust and deflection	0.2090	5,309 mm	#4	1/4	2-5/8	1	11/16	1-7/16	51780
Engineered edge	0.2126	5,400 mm		6,0	66,0	28,0	20,0	36,0	63750
protection improves edge	0.2130	5,410 mm	#3	1/4	2-5/8	1	11/16	1-7/16	51340
edge fatigue allowing for	0.2165	5,500 mm		6,0	66,0	28,0	20,0	36,0	63171
increased feed rates	0.2188	5,558 mm	7/32	1/4	2-5/8	1	43/64	1-7/16	51341
 Recommended for materials ≤ 50 HRc 	0.2205	5,600 mm		6,0	66,0	28,0	20,0	36,0	63751
(≤ 475 Bhn)	0.2210	5,613 mm	#2	1/4	2-5/8	1	11/16	1-7/16	51781
	0.2244	5,700 mm		6,0	66,0	28,0	19,0	36,0	63752
	0.2280	5,791 mm	#1	1/4	2-5/8	1	21/32	1-7/16	51782
	0.2283	5,800 mm		6,0	66,0	28,0	19,0	36,0	63172
	0.2323	5,900 mm		6,0	66,0	28,0	19,0	36,0	63753
	0.2340	5,944 mm	А	1/4	2-5/8	1	21/32	1-7/16	51601
	0.2344	5,954 mm	15/64	1/4	2-5/8	1	21/32	1-7/16	51342
	0.2362	6,000 mm		6,0	66,0	28,0	19,0	36,0	63173
	0.2380	6,045 mm	В	1/4	3-1/8	1-5/16	31/32	1-7/16	51602
	0.2402	6,100 mm		8,0	79,0	34,0	25,0	36,0	63754
	0.2420	6,147 mm	С	1/4	3-1/8	1-5/16	61/64	1-7/16	51603
	0.2441	6,200 mm		8,0	79,0	34,0	25,0	36,0	63755
	0.2460	6,248 mm	D	1/4	3-1/8	1-5/16	61/64	1-7/16	51604
	0.2461	6,250 mm		8,0	79,0	34,0	25,0	36,0	63174
	0.2480	6,300 mm		8,0	79,0	34,0	25,0	36,0	63756
	0.2500	6,350 mm	1/4 E #0	1/4	3-1/8	1-5/16	15/16	1-7/16	51343
	0.2520	6,400 mm		8,0	79,0	34,0	24,0	36,0	63175
	0.2559	6,500 mm		8,0	79,0	34,0	24,0	36,0	63213
	0.2570	6,528 mm	F	5/16	3-1/8	1-5/16	59/64	1-7/16	51344
	0.2598	6,600 mm		8,0	79,0	34,0	24,0	36,0	63757
	0.2610	6,629 mm	G	5/16	3-1/8	1-5/16	59/64	1-7/16	51606
	0.2638	6,700 mm		8,0	79,0	34,0	24,0	36,0	63758
	0.2656	6,746 mm	17/64	5/16	3-1/8	1-5/16	59/64	1-7/16	51345
	0.2660	6,756 mm	Н	5/16	3-1/8	1-5/16	59/64	1-7/16	51607
	0.2677	6,800 mm		8,0	79,0	34,0	24,0	36,0	63176
	0.2717	6,900 mm		8,0	79,0	34,0	24,0	36,0	63759
	0.2720	6,909 mm	I	5/16	3-1/8	1-5/16	29/32	1-7/16	51346
	0.2756	7,000 mm		8,0	79,0	34,0	24,0	36,0	63177
	0.2770	7,036 mm	J	5/16	3-1/8	1-5/16	29/32	1-7/16	51608

TOLEBANCES (inch)

I OLLINATOLO (IIICII)
\leq .1181 DIAMETER DC = +.00008/+.00047 DCON = h_6
>.11812362 DIAMETER DC = +.00016/+.00063 DCON = h ₆
>.23623937 DIAMETER DC = +.00024/+.00083 DCON = h ₆
>.39377087 DIAMETER DC = +.00028/+.00098 DCON = h ₆
>.7087–1.1811 DIAMETER DC = $+.00031/+.00114$ DCON = h_6
TOLERANCES (mm)
\leq 3 DIAMETER DC = +0,002/+0,012 DCON = h ₆
> 3–6 DIAMETER DC = +0,004/+0,016 DCON= h ₆
>6-10 DIAMETER DC = $+0,006/+0,021$ DCON = h_6
>10-18 DIAMETER DC = +0,007/+0,025 DCON = h ₆
>18-30 DIAMETER DC = +0,008/+0,029 DCON = h ₆
STEELS
STAINLESS STEELS
CAST IRON
NON-FERROUS

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HIGH TEMP ALLOYS HARDENED STEELS

continued	on	next page	



135 3xD FRACTIONAL & METRIC SERIES

inch & mm FDP NO.
FRACTIONAL/ SHANK OVERALL FLUTE USABLE SHANK TI-NAMITE-A DECIMAL METRIC LETTER/WIRE DIAMETER LENGTH LENGTH LENGTH LENGTH (AITIN) DC DC DC DC DCON OAL LCF LU LS
0.2795 7,100 mm 8,0 79,0 41,0 30,0 36,0 63760
0.2810 7,137 mm K 5/16 3-1/8 1-9/16 1-9/64 1-7/16 51609
0.2812 7,142 mm 9/32 5/16 3-1/8 1-9/16 1-9/64 1-7/16 51347
0.2835 7,200 mm 8,0 79,0 41,0 30,0 36,0 63761
0.2854 7,250 mm 8,0 79,0 41,0 30,0 36,0 63178
0.2874 7,300 mm 8,0 79,0 41,0 30,0 36,0 63762
0.2900 7,366 mm L 5/16 3-1/8 1-9/16 1-1/8 1-7/16 51610
0.2913 7,400 mm 8,0 79,0 41,0 30,0 36,0 63763
0.2950 7,493 mm M 5/16 3-1/8 1-9/16 1-1/8 1-7/16 51611
0.2953 7,500 mm 8,0 79,0 41,0 30,0 36,0 63179
0.2969 7,541 mm 19/64 5/16 3-1/8 1-9/16 1-7/64 1-7/16 51348
0.2992 7,600 mm 8,0 79,0 41,0 30,0 36,0 63764
0.3020 7,671 mm N 5/16 3-1/8 1-9/16 1-7/64 1-7/16 51612
0.3031 7,700 mm 8,0 79,0 41,0 29,0 36,0 63765
0.3071 7,800 mm 8,0 79,0 41,0 29,0 36,0 63180
0.3110 7,900 mm 8,0 79,0 41,0 29,0 36,0 63766
0.3125 7,938 mm 5/16 5/16 3-1/8 1-9/16 1-3/32 1-7/16 51349
0.3150 8,000 mm 8,0 79,0 41,0 29,0 36,0 63181
U.3160 8,026 mm U 3/8 3-1/2 1-2//32 1-3/8 1-9/16 51613
0.3189 8,100 mm 10,0 89,0 47,0 35,0 40,0 63767
U.3228 8,200 mm 10,0 89,0 47,0 35,0 40,0 63768
U.3230 8,204 mm P 3/8 3-1/2 1-2//32 1-23/64 1-9/16 51614
U.3268 8,300 mm IU,0 89,0 47,0 35,0 40,0 63769
0.3261 6,334 IIIII 21/04 3/6 3-1/2 1-21/32 1-23/04 1-9/10 51330
0.3307 0.400 mm 0 $2/9$ $2.1/2$ $1.27/22$ $1.11/22$ $1.0/16$ 51251
0.3320 0,433 mm 0 3/0 3-1/2 1-2//32 1-1//32 1-3/10 31331
0.3346 8 600 mm 10.0 89.0 47.0 34.0 40.0 63703
0.3390 8.611 mm B 3/8 3-1/2 1-27/32 1-11/32 1-9/16 51615
0.3425 8 700 mm 10 0 89 0 47 0 34 0 40 0 63771
0.3438 8.733 mm 11/32 3/8 3-1/2 1-27/32 1-21/64 1-9/16 51352
0.3465 8.800 mm 10.0 89.0 47.0 34.0 40.0 63184
0.3480 8.839 mm S 3/8 3-1/2 1-27/32 1-21/64 1-9/16 51616
0.3504 8.900 mm 10.0 89.0 47.0 34.0 40.0 63772
0.3543 9,000 mm 10,0 89.0 47.0 34.0 40.0 63185
0.3580 9,093 mm T 3/8 3-1/2 1-27/32 1-5/16 1-9/16 51617
0.3583 9,100 mm 10,0 89,0 47.0 33.0 40.0 63773
0.3594 9,129 mm 23/64 3/8 3-1/2 1-27/32 1-21/64 1-9/16 51353
0.3622 9,200 mm 10,0 89,0 47,0 33,0 40,0 63774
0.3642 9,250 mm 10,0 89,0 47,0 33,0 40,0 63186
0.3661 9,300 mm 10,0 89,0 47,0 33,0 40,0 63775
0.3680 9,347 mm U 3/8 3-1/2 1-27/32 1-19/64 1-9/16 51354
0.3701 9,400 mm 10,0 89,0 47,0 33,0 40,0 63776
0.3740 9,500 mm 10,0 89,0 47,0 33,0 40,0 63187





OAL

LS

DCON

LCF

ΗU

DC

1







TOLERANCES (inch)

```
≤.1181 DIAMETER
DC = +.00008/+.00047
DCON = h_6
>.1181-.2362 DIAMETER
DC = +.00016/+.00063
DCON = h_6
>.2362-.3937 DIAMETER
DC = +.00024/+.00083
DCON = h_6
>.3937-.7087 DIAMETER
DC = +.00028/+.00098
DCON = h_6
>.7087-1.1811 DIAMETER
DC = +.00031/+.00114
DCON = h_6
TOLERANCES (mm)
≤3 DIAMETER
DC = +0,002/+0,012
DCON = h_6
>3-6 DIAMETER
DC = +0,004/+0,016
DCON = h_6
>6-10 DIAMETER
DC = +0,006/+0,021
DCON = he
>10-18 DIAMETER
DC = +0,007/+0,025
DCON = h_6
>18-30 DIAMETER
DC = +0,008/+0,029
DCON = h_6
   STEELS
   STAINLESS STEELS
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(≤ 475 Bhn)



135 3xD FRACTIONAL & METRIC SERIES

CONTINUED

			inch & mm	0.455 411				EDP NO.
DECIMAL DC	METRIC DC	LETTER/WIRE DC	SHANK DIAMETER DCON	UVERALL LENGTH OAL	LENGTH LCF	USABLE LENGTH LU	SHANK LENGTH LS	(AITIN)
0.4844	12,304 mm	31/64	1/2	4-1/4	2-5/16	1-19/32	1-49/64	51362
0.4921	12,500 mm		14,0	107,0	60,0	41,0	45,0	63196
0.5000	12,700 mm	1/2	1/2	4-1/4	2-5/16	1-9/16	1-49/64	51363
0.5039	12,800 mm		14,0	107,0	60,0	41,0	45,0	63197
0.5118	13,000 mm		14,0	107,0	60,0	41,0	45,0	63198
0.5156	13,096 mm	33/64	5/8	4-1/4	2-5/16	1-35/64	1-49/64	51364
0.5312	13,492 mm	17/32	5/8	4-1/4	2-5/16	1-33/64	1-49/64	51365
0.5315	13,500 mm		14,0	107,0	60,0	40,0	45,0	63199
0.5469	13,8 mm	35/64	5/8	4-1/4	2-5/16	1-1/2	1-49/64	51783
0.5469	13,891 mm	35/64	14,0	107,0	60,0	39,0	45,0	63200
0.5512	14,000 mm		5/8	4-9/16	2-1/2	1-21/32	1-57/64	51366
0.5625	14,288 mm	9/16	16,0	115,0	65,0	43,0	48,0	63201
0.5781	14,684 mm	37/64	5/8	4-9/16	2-1/2	1-41/64	1-57/64	51367
0.5906	15,000 mm		16,0	115,0	65,0	42,0	48,0	63202
0.5938	15,083 mm	19/32	5/8	4-9/16	2-1/2	1-39/64	1-57/64	51784
0.6094	15,479 mm	39/64	5/8	4-9/16	2-1/2	1-19/32	1-57/64	51785
0.6102	15,500 mm		16,0	115,0	65,0	42,0	48,0	63203
0.6250	15,875 mm	5/8	5/8	4-9/16	2-1/2	1-9/16	1-57/64	51368
0.6299	16,000 mm		16,0	115,0	65,0	41,0	48,0	63204
0.6406	16,271 mm	41/64	3/4	4-7/8	2-3/4	1-51/64	1-57/64	51786
0.6496	16,500 mm		18,0	123,0	73,0	48,0	48,0	63205
0.6562	16,667 mm	21/32	3/4	4-7/8	2-3/4	1-25/32	1-57/64	51369
0.6693	17,000 mm		18,0	123,0	73,0	47,0	48,0	63206
0.6719	17,066 mm	43/64	3/4	4-7/8	2-3/4	1-3/4	1-57/64	51787
0.6875	17,463 mm	11/16	3/4	4-7/8	2-3/4	1-47/64	1-57/64	51370
0.6890	17,500 mm		18,0	123,0	73,0	47,0	48,0	63207
0.7031	17,859 mm	45/64	3/4	4-7/8	2-3/4	1-45/64	1-57/64	51788
0.7087	18,000 mm		18,0	123,0	73,0	46,0	48,0	63208
0.7188	18,258 mm	23/32	3/4	4-7/8	2-3/4	1-43/64	1-57/64	51789
0.7283	18,500 mm		20,0	131,0	79,0	51,0	50,0	63209
0.7344	18,654 mm	47/64	3/4	4-7/8	2-3/4	1-21/32	1-57/64	51790
0.7480	19,000 mm		20,0	131,0	79,0	51,0	50,0	63210
0.7500	19,050 mm	3/4	3/4	5-1/4	3-1/16	1-15/16	1-31/32	51371
0.7656	19,446 mm	49/64	7/8	5-1/4	3-1/16	1-59/64	1-31/32	51372
0.7677	19,500 mm		20,0	131,0	79,0	50,0	50,0	63211
0.7812	19,842 mm	25/32	7/8	6	3-11/16	2-33/64	2-1/8	51791
0.7874	2,0000 mm		20,0	131,0	79,0	49,0	50,0	63212
0.7969	20,241 mm	51/64	7/8	6	3-11/16	2-1/2	2-1/8	51792
0.8071	20,500 mm		22,0	150,0	93,0	62,0	53,0	64513
0.8125	20,638 mm	13/16	7/8	6	3-11/16	2-15/32	2-1/8	51373
0.8268	21,000 mm		22,0	150,0	93,0	61,0	53,0	64514
0.8661	22,000 mm		22,0	150,0	93,0	60,0	53,0	64515
0.8750	22,225 mm	7/8	7/8	6	3-11/16	2-3/8	2-1/8	51374
0.9219	23,416 mm	59/64	1	6	3-11/16	2-5/16	2-1/8	51375

FRACTIONAL Series 135



	Series		Vc					DC • in			
	Fractional	Hardness	(sfm)		1/32	1/8	1/4	3/8	1/2	5/8	7/8
		< 175 Bhn	385	RPM	47062	11766	5883	3922	2941	2353	1681
		or	(308-462)	Fr	0.0010	0.0038	0.0076	0.0115	0.0153	0.0191	0.0268
		≤ / HKC		Feed (ipm)	45.0	45.0	45.0	45.0	45.0	45.0	45.0
	CARBON STEELS	< 275 Bhn	350	RPM	42784	10696	5348	3565	2674	2139	1528
	1018, 1040, 1080, 1090, 10L50,	Or Or	(280-420)	Fr	0.0009	0.0036	0.0071	0.0107	0.0142	0.0178	0.0249
	1140, 1212, 12L15, 1525, 1536	≤ 28 HKC	(200-420)	Feed (ipm)	38.0	38.0	38.0	38.0	38.0	38.0	38.0
		< 425 Bhn	200	RPM	24448	6112	3056	2037	1528	1222	873
		Or	(160-2/10)	Fr	0.0007	0.0029	0.0059	0.0088	0.0118	0.0147	0.0206
		≤ 43 HKC	(100-240)	Feed (ipm)	18.0	18.0	18.0	18.0	18.0	18.0	18.0
		< 275 Bhn	300	RPM	36672	9168	4584	3056	2292	1834	1310
		Or	(240-360)	Fr	0.0007	0.0029	0.0059	0.0088	0.0118	0.0147	0.0206
P		≤ 28 HKC	(240-300)	Feed (ipm)	27.0	27.0	27.0	27.0	27.0	27.0	27.0
1	ALLOY STEELS	< 375 Bhn	185	RPM	22614	5654	2827	1885	1413	1131	808
	4140, 4150, 4320, 5120, 5150,		(140 222)	Fr	0.0006	0.0026	0.0051	0.0077	0.0103	0.0128	0.0180
	8630, 86L20, 50100	≤ 40 HKC	(140-222)	Feed (ipm)	14.5	14.5	14.5	14.5	14.5	14.5	14.5
		≤ 425 Bhn or ≤ 45 HRc	130	RPM	15891	3973	1986	1324	993	795	568
			(104-156)	Fr	0.0004	0.0018	0.0035	0.0053	0.0070	0.0088	0.0123
				Feed (ipm)	7.0	7.0	7.0	7.0	7.0	7.0	7.0
	TOOL STEELS A2, D2, H13, L2, M2, P20, S7, T15, W2	< 200 Bhn	130	RPM	15891	3973	1986	1324	993	795	568
		or ≤ 13 HRc	(104-156)	Fr	0.0007	0.0026	0.0053	0.0079	0.0106	0.0132	0.0185
				Feed (ipm)	10.5	10.5	10.5	10.5	10.5	10.5	10.5
		≤ 375 Bhn or ≤ 40 HRc	90	RPM	11002	2750	1375	917	688	550	393
			(72-108)	Fr	0.0003	0.0012	0.0023	0.0035	0.0047	0.0058	0.0081
				Feed (ipm)	3.2	3.2	3.2	3.2	3.2	3.2	3.2
		≤ 185 Bhn or ≤ 9 HRc	275	RPM	33616	8404	4202	2801	2101	1681	1201
			(220-330)	Fr	0.0006	0.0026	0.0051	0.0077	0.0102	0.0128	0.0179
	STAINLESS STEELS (FREE MACHINING)		(220-330)	Feed (ipm)	21.5	21.5	21.5	21.5	21.5	21.5	21.5
	303, 416, 420F, 430F, 440F	≤ 275 Bhn	170	RPM	20781	5195	2598	1732	1299	1039	742
		Or	(136-204)	Fr	0.0005	0.0020	0.0040	0.0061	0.0081	0.0101	0.0141
м		5 20 mil	(100 201)	Feed (ipm)	10.5	10.5	10.5	10.5	10.5	10.5	10.5
		≤ 275 Bhn	90	RPM	11002	2750	1375	917	688	550	393
	STAINI ESS STEELS	or	(72-108)	Fr	0.0005	0.0020	0.0040	0.0060	0.0080	0.0100	0.0140
	(DIFFICULT)	S 20 MMC	(72 100)	Feed (ipm)	5.5	5.5	5.5	5.5	5.5	5.5	5.5
	304, 316, 321, 13-8 PH, 15-5PH, 17-4 PH, Custom 450	≤ 375 Bhn	65	RPM	7946	1986	993	662	497	397	284
		Or	(52-78)	Fr	0.0004	0.0018	0.0035	0.0053	0.0070	0.0088	0.0123
		≤ 40 HKc	(32 70)	Feed (ipm)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
		≤ 220 Bhn	320	RPM	39117	9779	4890	3260	2445	1956	1397
			(256-384)	Fr	0.0012	0.0046	0.0092	0.0138	0.0184	0.0230	0.0322
к	CAST IRONS Grav. Malleable		(200 004)	Feed (ipm)	45.0	45.0	45.0	45.0	45.0	45.0	45.0
	Ductile	≤ 260 Bhn	285	RPM	34838	8710	4355	2903	2177	1742	1244
		Or	(228-342)	Fr	0.0011	0.0046	0.0092	0.0138	0.0184	0.0230	0.0321
		≤ 2b HKC	(220-342)	Feed (ipm)	40.0	40.0	40.0	40.0	40.0	40.0	40.0



Series

FRACTIONAL Series 135

	Series 135.3D		Vc	_				DC • in			
	Fractional	Hardness	(sfm)		1/32	1/8	1/4	3/8	1/2	5/8	7/8
		< 80 Bhn	700	RPM	85568	21392	10696	7131	5348	4278	3056
	ALUMINUM ALLOYS		(EE0 940)	Fr	0.0012	0.0049	0.0098	0.0147	0.0196	0.0245	0.0344
		≤ 47 HKD	(300-640)	Feed (ipm)	105.0	105.0	105.0	105.0	105.0	105.0	105.0
	6061, 7075	< 150 Bhn	600	RPM	73344	18336	9168	6112	4584	3667	2619
			(480-720)	Fr	0.0012	0.0050	0.0099	0.0149	0.0199	0.0248	0.0347
Ν		≤ 88 HKD	(400-720)	Feed (ipm)	91.0	91.0	91.0	91.0	91.0	91.0	91.0
IN .		< 140 Rhn	500	RPM	61120	15280	7640	5093	3820	3056	2183
		or	(400-600)	Fr	0.0005	0.0020	0.0039	0.0059	0.0079	0.0098	0.0137
	COPPER ALLOYS	≤ 3 HKC	(400-000)	Feed (ipm)	30.0	30.0	30.0	30.0	30.0	30.0	30.0
	Muntz Brass	< 200 Bhn	400	RPM	48896	12224	6112	4075	3056	2445	1746
		Or	(220, 490)	Fr	0.0005	0.0020	0.0040	0.0060	0.0080	0.0100	0.0140
		≤ 23 HRC	(320-400)	Feed (ipm)	24.5	24.5	24.5	24.5	24.5	24.5	24.5
	HIGH TEMP ALLOYS (NICKEL , COBALT, IRON BASE) Inconel 601, 617, 625, Incoloy, Monel 400, Rene, Waspaloy	≤ 300 Bhn or ≤ 32 HRc	55	RPM	6723	1681	840	560	420	336	240
			(44-66)	Fr	0.0002	0.0008	0.0015	0.0023	0.0031	0.0039	0.0054
				Feed (ipm)	1.3	1.3	1.3	1.3	1.3	1.3	1.3
		≤ 400 Bhn or ≤ 43 HRc	30	RPM	3667	917	458	306	229	183	131
			(24-36)	Fr	0.0002	0.0007	0.0013	0.0020	0.0026	0.0033	0.0046
				Feed (ipm)	0.6	0.6	0.6	0.6	0.6	0.6	0.6
		≤ 275 Bhn or	135	RPM	16502	4126	2063	1375	1031	825	589
S			/100 100	Fr	0.0004	0.0018	0.0035	0.0053	0.0071	0.0088	0.0124
		≤ 28 HKC	(100-102)	Feed (ipm)	7.3	7.3	7.3	7.3	7.3	7.3	7.3
	TITANIUM ALLOYS Pure Titanium Ti6AI4V	< 350 Bhn	100	RPM	12224	3056	1528	1019	764	611	437
	Ti6Al2Sn4Zr2Mo,	Or Or	(80-120)	Fr	0.0004	0.0016	0.0033	0.0049	0.0065	0.0082	0.0115
	Ti-6AI4V	≤ 38 HKC	(00-120)	Feed (ipm)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
		< 440 Bhn	55	RPM	6723	1681	840	560	420	336	240
		Or 0r	(44-66)	Fr	0.0003	0.0012	0.0024	0.0036	0.0048	0.0059	0.0083
		≤ 47 HKC	(44-00)	Feed (ipm)	2.0	2.0	2.0	2.0	2.0	2.0	2.0
	TOOL STEELS	< 475 Bhn	75	RPM	9168	2292	1146	764	573	458	327
Н	A2, D2, H13, L2, M2,		(60,00)	Fr	0.0002	0.0008	0.0016	0.0024	0.0031	0.0039	0.0055
	P20, S7, T15, W2	≤ 50 HRc	(00-30)	Feed (ipm)	1.8	1.8	1.8	1.8	1.8	1.8	1.8

Bhn (Brinell) HRc (Rockwell C) HRb (Rockwell B) rpm = Vc x 3.82 / DC ipm = Fr x rpm reduce speed and feed for materials harder than listed refer to the SGS Tool Wizard[®] for complete technical information (www.kyocera-sgstool.com)

METRIC Series 135



	Series		Vc	_	DC • mm							
	Metric	Hardness	(m/min)		1.5	3	6	8	10	12	16	20
		< 175 Bhn	117	RPM	24882	12441	6220	4665	3732	3110	2333	1866
		≤ 175 Dilli	(94-141)	Fr	0.047	0.094	0.189	0.252	0.315	0.378	0.504	0.630
		≤ / HKc		Feed (mm/min)	1175	1175	1175	1175	1175	1175	1175	1175
	CARRON STEELS	< 275 Bhn	107	RPM	22620	11310	5655	4241	3393	2827	2121	1696
	1018, 1040, 1080, 1090, 10L50,	Or Or	(OF 100)	Fr	0.043	0.086	0.172	0.229	0.286	0.343	0.457	0.572
	1140, 1212, 12L15, 1525, 1536	≤ 28 HRc	(00-120)	Feed (mm/min)	970	970	970	970	970	970	970	970
		< /175 Bhn	61	RPM	12926	6463	3231	2424	1939	1616	1212	969
		Or	(40.72)	Fr	0.036	0.071	0.142	0.190	0.237	0.285	0.380	0.475
		≤ 45 HKC	(49-73)	Feed (mm/min)	460	460	460	460	460	460	460	460
		< 275 Bhn	91	RPM	19388	9694	4847	3635	2908	2424	1818	1454
		Or Or	(72, 110)	Fr	0.036	0.071	0.142	0.190	0.237	0.285	0.380	0.475
		≤ 28 HKc	(73-110)	Feed (mm/min)	690	690	690	690	690	690	690	690
٢		< 375 Bhn	56	RPM	11956	5978	2989	2242	1793	1495	1121	897
	4140, 4150, 4320, 5120, 5150,	Or Or	(45,00)	Fr	0.031	0.061	0.122	0.163	0.204	0.244	0.326	0.407
	8630, 86120, 50100	≤ 40 HKc	(45-68)	Feed (mm/min)	365	365	365	365	365	365	365	365
		< 125 Bhn	40	RPM	8402	4201	2100	1575	1260	1050	788	630
		≤ 425 Dim or ≤ 45 HRc	(32-48)	Fr	0.021	0.042	0.083	0.111	0.139	0.167	0.222	0.278
				Feed (mm/min)	175	175	175	175	175	175	175	175
	TOOL STEELS A2, D2, H13, L2, M2, P20, S7, T15, W2	< 200 Bhn	40	RPM	8402	4201	2100	1575	1260	1050	788	630
		or ≤ 13 HRc	(32-48)	Fr	0.032	0.063	0.126	0.168	0.210	0.252	0.336	0.421
				Feed (mm/min)	265	265	265	265	265	265	265	265
		≤ 375 Bhn or ≤ 40 HRc	27	RPM	5816	2908	1454	1091	872	727	545	436
			(22-33)	Fr	0.014	0.028	0.055	0.073	0.092	0.110	0.147	0.183
				Feed (mm/min)	80	80	80	80	80	80	80	80
		≤ 185 Bhn or ≤ 9 HRc	84	RPM	17773	8886	4443	3332	2666	2222	1666	1333
			(67-101)	Fr	0.031	0.061	0.123	0.164	0.204	0.245	0.327	0.409
	STAINLESS STEELS			Feed (mm/min)	545	545	545	545	545	545	545	545
	303, 416, 420F, 430F, 440F	< 275 Bhn	52	RPM	10987	5493	2747	2060	1648	1373	1030	824
		Or	(41.62)	Fr	0.024	0.047	0.095	0.126	0.158	0.189	0.252	0.316
D.A.		≤ 28 HKC	(41-02)	Feed (mm/min)	260	260	260	260	260	260	260	260
		< 275 Bhn	27	RPM	5816	2908	1454	1091	872	727	545	436
		Or	(22.22)	Fr	0.023	0.046	0.093	0.124	0.155	0.186	0.248	0.309
	(DIFFICULT)	≤ 28 HKC	(22-33)	Feed (mm/min)	135	135	135	135	135	135	135	135
	304, 316, 321, 13-8 PH, 15-5PH 17-4 PH Custom 450	< 375 Bhn	20	RPM	4201	2100	1050	788	630	525	394	315
	13 51 H, 17 4 H, 005(0H 450	Or Or	(10.04)	Fr	0.020	0.040	0.081	0.108	0.135	0.162	0.216	0.270
		≤ 40 HRc	(10-24)	Feed (mm/min)	85	85	85	85	85	85	85	85
		< 220 Bbp	98	RPM	20681	10340	5170	3878	3102	2585	1939	1551
			(70 117)	Fr	0.055	0.110	0.220	0.293	0.366	0.439	0.585	0.732
W.	CAST IRONS	≤ 19 HRc	(/ŏ-١١/)	Feed (mm/min)	1135	1135	1135	1135	1135	1135	1135	1135
ĸ	uray, Malleable, Ductile	< 260 Bhn	87	RPM	18419	9209	4605	3454	2763	2302	1727	1381
			(00.104)	Fr	0.055	0.110	0.219	0.292	0.366	0.439	0.585	0.731
		≤ 26 HRc	(69-104)	Feed (mm/min)	1010	1010	1010	1010	1010	1010	1010	1010


METRIC Series 135

	Series		Ve					DC • mm				
	Metric	Hardness	(m/min)		1.5	3	6	8	10	12	16	20
		< 80 Bhn	213	RPM	45239	22620	11310	8482	6786	5655	4241	3393
			(171 256)	Fr	0.059	0.119	0.238	0.317	0.396	0.476	0.634	0.793
	ALUMINUM ALLOYS	≤ 47 HKD	(171-250)	Feed (mm/min)	2690	2690	2690	2690	2690	2690	2690	2690
	6061, 7075	< 150 Bhn	183	RPM	38777	19388	9694	7271	5816	4847	3635	2908
			(1/6-219)	Fr	0.060	0.120	0.240	0.320	0.400	0.480	0.640	0.799
N		≤ 8 HKD	(140-213)	Feed (mm/min)	2325	2325	2325	2325	2325	2325	2325	2325
N.		< 140 Rhn	152	RPM	32314	16157	8078	6059	4847	4039	3029	2424
		or	(122-182)	Fr	0.024	0.048	0.096	0.128	0.160	0.192	0.256	0.320
	COPPER ALLOYS	≤ 3 HKC	(122-103)	Feed (mm/min)	776	776	776	776	776	776	776	776
	Muntz Brass	< 200 Bhn	122	RPM	25851	12926	6463	4847	3878	3231	2424	1939
		Or	(08-146)	Fr	0.024	0.049	0.097	0.130	0.162	0.195	0.260	0.325
		≤ 23 HKC	(30-140)	Feed (mm/min)	630	630	630	630	630	630	630	630
		< 300 Bhn	17	RPM	3555	1777	889	666	533	444	333	267
	HIGH TEMP ALLOYS	Or c 22 UD-	(13-20)	Fr	0.010	0.020	0.039	0.053	0.066	0.079	0.105	0.131
	(NICKEL , COBALT,	S 32 HRC	(13-20)	Feed (mm/min)	35	35	35	35	35	35	35	35
	inconel 601, 617, 625, incoloy, Monel 400, Rene, Waspaloy	< 400 Bhn	9 (7-11)	RPM	1939	969	485	364	291	242	182	145
		Or		Fr	0.008	0.015	0.031	0.041	0.052	0.062	0.083	0.103
		≤ 43 HRc		Feed (mm/min)	15	15	15	15	15	15	15	15
		≤ 275 Bhn	41	RPM	8725	4362	2181	1636	1309	1091	818	654
S		Or	(33-/19)	Fr	0.021	0.042	0.085	0.113	0.141	0.170	0.226	0.283
		≤ 20 HHC	(00 +3)	Feed (mm/min)	185	185	185	185	185	185	185	185
	TITANIUM ALLOYS Pure Titanium, Ti6AI4V,	≤ 350 Bhn	30	RPM	6463	3231	1616	1212	969	808	606	485
	Ti6Al2Sn4Zr2Mo,	Or	(24-37)	Fr	0.019	0.039	0.077	0.103	0.129	0.155	0.206	0.258
	Ti-6Al4V	S 30 HHC	(24 07)	Feed (mm/min)	125	125	125	125	125	125	125	125
		≤ 440 Bhn	17	RPM	3555	1777	889	666	533	444	333	267
		Or	(13-20)	Fr	0.014	0.028	0.056	0.075	0.094	0.113	0.150	0.188
		≤ 47 nnc	(10 20)	Feed (mm/min)	50	50	50	50	50	50	50	50
	TOOL STEELS	≤ 475 Bhn	23	RPM	4847	2424	1212	909	727	606	454	364
H	A2, D2, H13, L2, M2, P20_S7_T15_W2	≤ 475 Bhn —— or ≤ 50 HRc ((18-27)	Fr	0.009	0.019	0.037	0.050	0.062	0.074	0.099	0.124
	P20, S7, T15, W2		(18-27)	Feed (mm/min)	45	45	45	45	45	45	45	45

Bhn (Brinell) HRc (Rockwell C) HRb (Rockwell B) rpm = (Vc x 1000) / (DC x 3.14) mm/min = Fr x rpm reduce speed and feed for materials harder than listed refer to the SGS Tool Wizard[®] for complete technical information (www.kyocera-sgstool.com)







- OAL

135 5xD **FRACTIONAL & METRIC SERIES**

argin design				inch & mm					EDP NO.
oves accuracy and ace finish along with eased strength for	DECIMAL DC	METRIC DC	FRACTIONAL/ Letter/wire DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	SHANK LENGTH LS	Ti-NAMITE-A (AITiN)
essive drilling	0.0156	0,396 mm	1/64	1/8	1 1/2	5/32	1/8	1	52300*
ialized self-	0.0312	0,792 mm	1/32	1/8	1 1/2	5/16	17/64	1	52301*
inates the need for	0.0469	1,191 mm	3/64	1/8	1 1/2	25/64	21/64	1	52302*
drilling decreasing	0.0492	1,250 mm		3,0	38,0	10,0	8,0	25,0	64520*
neered edge	0.0571	1,450 mm		3,0	38,0	10,0	8,0	25,0	64521*
ection improves edge	0.0595	1,511 mm	#53	1/8	1-1/2	25/64	5/16	1	64522*
fatigue allowing for	0.0625	1,588 mm	1/16	1/8	2	15/32	3/8	1-1/4	52303*
ased feed rates	0.0630	1,600 mm		3,0	50,0	12,0	10,0	32,0	64523*
nmended for rials < 56 HBc	0.0689	1,750 mm		3,0	50,0	12,0	9,0	32,0	64524*
7 Bhn)	0.0700	1,778 mm	#50	1/8	2	15/32	23/64	1-1/4	64525*
	0.0781	1,984 mm	5/64	1/8	2	35/64	7/16	1-1/4	52304*
	0.0785	1,994 mm	#47	1/8	2	35/64	7/16	1-1/4	64526*
	0.0807	2,050 mm		3,0	50,0	14,0	11,0	32,0	64527*
	0.0810	2,057 mm	#46	1/8	2	35/64	27/64	1-1/4	64528*
	0.0890	2,261 mm	#43	1/8	2	19/32	15/32	1-1/4	64529*
	0.0935	2,375 mm	#42	1/8	2	5/8	31/64	1-1/4	64530*
	0.0938	2,383 mm	3/32	1/8	2	5/8	31/64	1-1/4	52305
	0.0980	2,489 mm	#40	1/8	2	43/64	17/32	1-1/4	52306
	0.0984	2,500 mm		3,0	50,0	17,0	13,0	32,0	64531
	0.0995	2,527 mm	#39	1/8	2	43/64	17/32	1-1/4	52307
	0.1015	2,578 mm	#38	1/8	2	43/64	17/32	1-1/4	52308
	0.1040	2,642 mm	#37	1/8	2	45/64	35/64	1-1/4	52309
	0.1065	2,705 mm	#36	1/8	2	45/64	35/64	1-1/4	52310
	0.1094	2,779 mm	7/64	1/8	2	3/4	19/32	1-1/4	52311
	0.1100	2,794 mm	#35	1/8	2	3/4	19/32	1-1/4	52312
	0.1110	2,819 mm	#34	1/8	2	3/4	19/32	1-1/4	52313
	0.1130	2,870 mm	#33	1/8	2	3/4	19/32	1-1/4	52314
	0.1142	2,900 mm		3,0	50,0	19,0	15,0	32,0	64532
	0.1160	2,946 mm	#32	1/8	2	3/4	37/64	1-1/4	52315
	0.1181	3,000 mm		6,0	66,0	28,0	24,0	36,0	64100
	0.1200	3,048 mm	#31	1/8	2	3/4	37/64	1-1/4	52316
	0.1220	3,100 mm		6,0	66,0	28,0	23,0	36,0	64101
	0.1250	3,175 mm	1/8	1/4	3	1	13/16	1-7/16	51580
	0.1260	3,200 mm		6,0	66,0	28,0	23,0	36,0	64102
	0.1285	3,264 mm	#30	1/4	3	1	13/16	1-7/16	51581
	0.1299	3,300 mm		6,0	66,0	28,0	23,0	36,0	64103
	0.1339	3,400 mm		6,0	66,0	28,0	23,0	36,0	64104
I									

TOLERANCES (inch)

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≤.1181 DIAMETER
DC = +.00008/+.00047
DCON = h_6
>.1181-.2362 DIAMETER
DC = +.00016/+.00063
DCON = h_6
>.2362-.3937 DIAMETER
DC = +.00024/+.00083
DCON = h_6
>.3937-.7087 DIAMETER
DC = +.00028/+.00098
DCON = h_6
>.7087-1.1811 DIAMETER
DC = +.00031/+.00114
DCON = h_6
TOLERANCES (mm)
≤3 DIAMETER
DC = +0,002/+0,012
DCON = h_6
>3–6 DIAMETER
DC = +0,004/+0,016
DCON = h_6
>6-10 DIAMETER
```

DC = +0,006/+0,021 $DCON = h_6$

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>10-18 DIAMETER
DC = +0,007/+0,025
DCON = h_6
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>18-30 DIAMETER
DC = +0,008/+0,029
DCON = h_6
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For patent information visit www.ksptpatents.com



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135 5xD FRACTIONAL & METRIC SERIES

CONTINUED

								500.00
		FRACTIONAL/	inch & mm SHANK	OVERALL	FLUTE	USABLE	SHANK	EDP NO. Ti-NAMITE-A
DECIMAL DC	METRIC DC	LETTER/WIRE DC	DIAMETER DCON	LENGTH OAL	LENGTH LCF	LENGTH LU	LENGTH LS	(AITiN)
0.1378	3,500 mm		6,0	66,0	28,0	23,0	36,0	64105
0.1405	3,569 mm	#28	1/4	3	1	51/64	1- 7/16	52317
0.1406	3,571 mm	9/64	1/4	3	1	51/64	1-7/16	51583
0.1417	3,600 mm		6,0	66,0	28,0	23,0	36,0	64106
0.1440	3,658 mm	#27	1/4	3	1	51/64	1-7/16	52318
0.1457	3,700 mm		6,0	66,0	28,0	22,0	36,0	64107
0.1470	3,734 mm	#26	1/4	3	1	25/32	1-7/16	52319
0.1495	3,797 mm	#25	1/4	3-1/4	1-1/4	1-1/32	1-7/16	51584
0.1496	3,800 mm		6,0	74,0	36,0	30,0	36,0	64108
0.1520	3,861 mm	#24	1/4	3-1/4	1-1/4	1-1/32	1-7/16	52321
0.1535	3,900 mm		6,0	74,0	36,0	30,0	36,0	64109
0.1540	3,912 mm	#23	1/4	3-1/4	1-1/4	1-1/32	1-7/16	52322
0.1562	3,967 mm	5/32	1/4	3-1/4	1-1/4	1-1/64	1-7/16	51585
0.1570	3,988 mm	#22	1/4	3-1/4	1-1/4	1-1/64	1-7/16	52323
0.1575	4,000 mm		6,0	74,0	36,0	30,0	36,0	64110
0.1590	4,039 mm	#21	1/4	3-1/4	1-1/4	1-1/64	1-7/16	51586
0.1610	4,089 mm	#20	1/4	3-1/4	1-1/4	1	1-7/16	51587
0.1614	4,100 mm		6,0	74,0	36,0	30,0	36,0	64111
0.1654	4,200 mm		6,0	74,0	36,0	30,0	36,0	64112
0.1660	4,216 mm	#19	1/4	3-1/4	1-1/4	1	1-7/16	52324
0.1693	4,300 mm		6,0	74,0	36,0	30,0	36,0	64113
0.1695	4,305 mm	#18	1/4	3-1/4	1-1/4	1	1-7/16	52325
0.1719	4,366 mm	11/64	1/4	3-1/4	1-1/4	1	1-7/16	51588
0.1730	4,394 mm	#17	1/4	3-1/4	1-1/4	1	1-7/16	52326
0.1732	4,400 mm		6,0	74,0	36,0	29,0	36,0	64114
0.1772	4,500 mm		6,0	74,0	36,0	29,0	36,0	64115
0.1800	4,572 mm	#15	1/4	3-1/4	1-1/4	63/64	1-7/16	52327
0.1811	4,600 mm		6,0	74,0	36,0	29,0	36,0	64116
0.1820	4,623 mm	#14	1/4	3-1/4	1-1/4	63/64	1-7/16	52328
0.1850	4,699 mm	#13	1/4	3-1/4	1-1/4	63/64	1-7/16	52329
0.1850	4,699 mm	#13	6,0	74,0	36,0	29,0	36,0	64117
0.1875	4,763 mm	3/16	1/4	3-1/4	1-3/4	1-15/32	1-7/16	51589
0.1890	4,801 mm	#12	1/4	3-1/4	1-3/4	1-15/32	1-7/16	52330
0.1890	4,801 mm	#12	6,0	82,0	44,0	37,0	36,0	64118
0.1929	4,900 mm		6,0	82,0	44,0	37,0	36,0	64119
0.1935	4,915 mm	#10	1/4	3-1/4	1-3/4	1-15/32	1-7/16	52331
0.1960	4,978 mm	#9	1/4	3-1/4	1-3/4	1-15/32	1-7/16	52332
0.1969	5,000 mm		6,0	82,0	44,0	36,0	36,0	64120
0.1990	5,055 mm	#8	1/4	3-1/4	1-3/4	1-15/32	1-7/16	52333
0.2008	5,100 mm		6,0	82,0	44,0	36,0	36,0	64121
0.2010	5,105 mm	#7	1/4	3-1/4	1-3/4	1-29/64	1-7/16	51506
0.2031	5,159 mm	13/64	1/4	3-1/4	1-3/4	1-29/64	1-7/16	51507
0.2040	5,182 mm	#6	1/4	3 1/4	1 3/4	1-29/64	1 7/16	52334
0.2047	5,200 mm		6,0	82,0	44,0	36,0	36,0	64122







- OAL

135 5xD **FRACTIONAL & METRIC SERIES**

4-margin design				inch & mm					EDP NO.
improves accuracy and surface finish along with increased strength for	DECIMAL DC	METRIC DC	FRACTIONAL/ Letter/wire DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	SHANK LENGTH LS	Ti-NAMITE-A (AITiN)
ggressive drilling	0.2055	5,220 mm	#5	1/4	3-1/4	1-3/4	1-29/64	1-7/16	51590
pecialized self-	0.2067	5,250 mm		6,0	82,0	44,0	36,0	36,0	64123
liminates the need for	0.2087	5,300 mm		6,0	82,0	44,0	36,0	36,0	64124
pot drilling decreasing	0.2090	5,309 mm	#4	1/4	3-1/4	1-3/4	1-7/16	1-7/16	51508
ngineered edge	0.2126	5,400 mm		6,0	82,0	44,0	36,0	36,0	64125
rotection improves edge	0.2130	5,410 mm	#3	1/4	3-1/4	1-3/4	1-7/16	1-7/16	51509
ge fatigue allowing for	0.2165	5,500 mm		6,0	82,0	44,0	36,0	36,0	64126
creased feed rates	0.2188	5,558 mm	7/32	1/4	3-1/4	1-3/4	1-27/64	1-7/16	51510
ecommended for aterials ≤ 56 HBc	0.2205	5,600 mm		6,0	82,0	44,0	36,0	36,0	64127
577 Bhn)	0.2210	5,613 mm	#2	1/4	3-1/4	1-3/4	1-27/64	1-7/16	52335
	0.2244	5,700 mm		6,0	82,0	44,0	35,0	36,0	64128
	0.2280	5,791 mm	#1	1/4	3-1/4	1-3/4	1-13/32	1-7/16	52336
	0.2283	5,800 mm		6,0	82,0	44,0	35,0	36,0	64129
	0.2323	5,900 mm		6,0	82,0	44,0	35,0	36,0	64130
	0.2340	5,944 mm	А	1/4	3-1/4	1-3/4	1-13/32	1-7/16	52337
	0.2344	5,954 mm	15/64	1/4	3-1/4	1-3/4	1-13/32	1-7/16	51591
	0.2362	6,000 mm		6,0	82,0	44,0	35,0	36,0	64131
	0.2380	6,045 mm	В	1/4	3 5/8	2-5/64	1-13/32	1-7/16	52338
	0.2402	6,100 mm		8,0	91,0	53,0	44,0	36,0	64132
	0.2420	6,147 mm	С	1/4	3 5/8	2-5/64	1-13/32	1-7/16	52339
	0.2441	6,200 mm		8,0	91,0	53,0	44,0	36,0	64133
	0.2460	6,248 mm	D	1/4	3 5/8	2-5/64	1-13/32	1-7/16	52340
	0.2461	6,250 mm		8,0	91,0	53,0	44,0	36,0	64134
	0.2480	6,300 mm		8,0	91,0	53,0	44,0	36,0	64135
	0.2500	6,350 mm	1/4 E #0	1/4	3-5/8	2-5/64	1-45/64	1-7/16	51511
	0.2520	6,400 mm		8,0	91,0	53,0	43,0	36,0	64136
	0.2559	6,500 mm		8,0	91,0	53,0	43,0	36,0	64137
	0.2570	6,528 mm	F	5/16	3-5/8	2-5/64	1-45/64	1-7/16	51512
	0.2598	6,600 mm		8,0	91,0	53,0	43,0	36,0	64138
	0.2610	6,629 mm	G	5/16	3 5/8	2 5/64	1-11/16	1 7/16	52341
	0.2638	6,700 mm		8,0	91,0	53,0	43,0	36,0	64139
	0.2656	6,746 mm	17/64	5/16	3-5/8	2-5/64	1-11/16	1-7/16	51513
	0.2660	6,756 mm	Н	5/16	3-5/8	2-5/64	1-11/16	1-7/16	52342
	0.2677	6,800 mm		8,0	91,0	53,0	43,0	36,0	64140
	0.2717	6,900 mm		8,0	91,0	53,0	43,0	36,0	64141
	0.2720	6,909 mm	I	5/16	3-5/8	2-5/64	1-43/64	1-7/16	51514
	0.2756	7,000 mm		8,0	91,0	53,0	42,0	36,0	64142
	0.2770	7,036 mm	J	5/16	3 5/8	2-5/64	1-43/64	1-7/16	52343

TOLERANCES (inch)

≤.1181 DIAMETER **DC** = +.00008/+.00047 $DCON = h_6$ >.1181-.2362 DIAMETER DC = +.00016/+.00063 $DCON = h_6$ >.2362-.3937 DIAMETER **DC** = +.00024/+.00083 $DCON = h_6$ >.3937-.7087 DIAMETER **DC** = +.00028/+.00098 **DCON** = h_6 >.7087-1.1811 DIAMETER **DC** = +.00031/+.00114 $DCON = h_6$ TOLERANCES (mm) ≤3 DIAMETER **DC** = +0,002/+0,012 $DCON = h_6$ >3–6 DIAMETER **DC** = +0,004/+0,016 $DCON = h_6$ >6–10 DIAMETER **DC** = +0,006/+0,021 $DCON = h_6$ >10-18 DIAMETER **DC** = +0,007/+0,025 $DCON = h_6$ >18-30 DIAMETER DC = +0,008/+0,029 $DCON = h_6$ STEELS STAINLESS STEELS CAST IRON



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135 5xD FRACTIONAL & METRIC SERIES

CONTINUED

		FRACTIONAL/	inch & mm	OVERALL	FLUTE	IISARI F	SHANK	EDP NO.
DECIMAL DC	METRIC DC	LETTER/WIRE DC	DIAMETER	LENGTH	LENGTH	LENGTH	LENGTH	(AITIN)
0.2795	7,100 mm		8,0	91,0	53,0	42,0	36,0	64143
0.2810	7,137 mm	К	5/16	3 5/8	2-5/64	1-21/32	1-7/16	52344
0.2812	7,142 mm	9/32	5/16	3-5/8	2-5/64	1-21/32	1-7/16	51515
0.2835	7,200 mm		8,0	91,0	53,0	42,0	36,0	64144
0.2854	7,250 mm		8,0	91,0	53,0	42,0	36,0	64145
0.2874	7,300 mm		8,0	91,0	53,0	42,0	36,0	64146
0.2900	7,366 mm	L	5/16	3-5/8	2-5/64	1-41/64	1-7/16	52345
0.2913	7,400 mm		8,0	91,0	53,0	42,0	36,0	64147
0.2950	7,493 mm	Μ	5/16	3-5/8	2-5/64	1-41/64	1-7/16	52346
0.2953	7,500 mm		8,0	91,0	53,0	42,0	36,0	64148
0.2969	7,541 mm	19/64	5/16	3-5/8	2-5/64	1-41/64	1-7/16	51516
0.2992	7,600 mm		8,0	91,0	53,0	42,0	36,0	64149
0.3020	7,671 mm	Ν	5/16	3-5/8	2-5/64	1-5/8	1-7/16	52347
0.3031	7,700 mm		8,0	91,0	53,0	41,0	36,0	64150
0.3071	7,800 mm		8,0	91,0	53,0	41,0	36,0	64151
0.3110	7,900 mm		8,0	91,0	53,0	41,0	36,0	64152
0.3125	7,938 mm	5/16	5/16	3-5/8	2-5/64	1-39/64	1-7/16	51517
0.3150	8,000 mm		8,0	91,0	53,0	41,0	36,0	64153
0.3160	8,026 mm	0	3/8	4	2-13/32	1-15/16	1-9/16	52348
0.3189	8,100 mm		10,0	103,0	61,0	49,0	40,0	64154
0.3228	8,200 mm		10,0	103,0	61,0	49,0	40,0	64155
0.3230	8,204 mm	Р	3/8	4	2-13/32	1-59/64	1-9/16	51518
0.3268	8,300 mm		10,0	103,0	61,0	49,0	40,0	64156
0.3281	8,334 mm	21/64	3/8	4	2-13/32	1-59/64	1-9/16	51519
0.3307	8,400 mm		10,0	103,0	61,0	48,0	40,0	64157
0.3320	8,433 mm	Q	3/8	4	2-13/32	1-59/64	1-9/16	51520
0.3346	8,500 mm		10,0	103,0	61,0	48,0	40,0	64158
0.3386	8,600 mm		10,0	103,0	61,0	48,0	40,0	64159
0.3390	8,611 mm	R	3/8	4	2-13/32	1-29/32	1-9/16	52349
0.3425	8,700 mm		10,0	103,0	61,0	48,0	40,0	64160
0.3438	8,733 mm	11/32	3/8	4	2-13/32	1-57/64	1-9/16	51521
0.3465	8,800 mm	-	10,0	103,0	61,0	48,0	40,0	64161
0.3480	8,839 mm	S	3/8	4	2-13/32	1-57/64	1-9/16	51522
0.3504	8,900 mm		10,0	103,0	61,0	48,0	40,0	64162
0.3543	9,000 mm	_	10,0	103,0	61,0	48,0	40,0	64163
0.3580	9,093 mm	Т	3/8	4	2 13/32	1-7/8	1 9/16	52350
0.3583	9,100 mm	00/01	10,0	103,0	61,0	47,0	40,0	64164
0.3594	9,129 mm	23/64	3/8	4	2-13/32	1-7/8	1-9/16	51523
0.3622	9,200 mm		10,0	103,0	61,0	47,0	40,0	64165
0.3642	9,250 mm		10,0	103,0	61,0	47,0	40,0	64166
0.3661	9,300 mm		10,0	103,0	61,0	47,0	40,0	64167
0.3680	9,347 mm	U	3/8	4	2-13/32	1-55/64	1-9/16	51524
0.3701	9,400 mm		10,0	103,0	61,0	47,0	40,0	64168
0.3740	9,500 mm		10,0	103,0	61,0	47,0	40,0	64169







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Fractional	
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	increased strength for aggressive drilling
•	Specialized self- centering notched poin eliminates the need for spot drilling decreasin thrust and deflection
•	Engineered edge protection improves en strength and reduces

• 4-margin design

135 5xD





12,0

118,0

71,0

53,0

TOLERANCES (inch)

≤.1181 DIAMETER DC = +.00008/+.00047 DCON = h ₆
>.11812362 DIAMETER DC = $+.00016/+.00063$ DCON = h_6
>.23623937 DIAMETER DC = +.00024/+.00083 DCON = h ₆
>.39377087 DIAMETER DC = +.00028/+.00098 DCON = h ₆
$\begin{array}{llllllllllllllllllllllllllllllllllll$
TOLERANCES (mm)
\leq 3 DIAMETER DC = +0,002/+0,012 DCON = h ₆
> 3-6 DIAMETER DC = +0,004/+0,016 DCON = h ₆
>6-10 DIAMETER DC = +0,006/+0,021 DCON = h ₆
>10-18 DIAMETER DC = +0,007/+0,025 DCON = h ₆
>18-30 DIAMETER DC = +0,008/+0,029 DCON = h ₆
STEELS
STAINLESS STEELS
CAST IRON
NON-FERROUS
HIGH TEMP ALLOYS
HARDENED STEELS
For a start

continued on next page

64195

45,0

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0.4724

12,000 mm



135 5xD FRACTIONAL & METRIC SERIES

CONTINUED

_				inch 9 mm					EDB NO
			FRACTIONAL/	SHANK	OVERALL	FLUTE	USABLE	SHANK	TI-NAMITE-A
	DECIMAL DC	METRIC DC	LETTER/WIRE DC	DIAMETER	LENGTH	LENGTH LCF	LENGTH	LENGTH LS	(AITiN)
	0.4844	12,304 mm	31/64	1/2	4-7/8	3-1/32	1-5/16	1-49/64	51533
	0.4921	12,500 mm		14,0	124,0	77,0	58,0	45,0	64196
	0.5000	12,700 mm	1/2	1/2	4-7/8	3-1/32	2-9/32	1-49/64	51534
	0.5039	12,800 mm		14,0	124,0	77,0	58,0	45,0	64197
	0.5118	13,000 mm		14,0	124,0	77,0	58,0	45,0	64198
	0.5156	13,096 mm	33/64	5/8	4-7/8	3-1/32	2-17/64	1-49/64	51535
	0.5312	13,492 mm	17/32	5/8	4-7/8	3-1/32	2-15/64	1-49/64	51536
	0.5315	13,500 mm		14,0	124,0	77,0	57,0	45,0	64199
	0.5469	13,8 mm	35/64	5/8	4-7/8	3-1/32	2-7/32	1-49/64	51537
	0.5512	14,000 mm		14,0	124,0	77,0	56,0	45,0	64200
	0.5625	14,288 mm	9/16	5/8	5-1/4	3-1/4	2-13/32	1-57/64	51538
	0.5709	14,500 mm		16,0	133,0	83,0	61,0	48,0	64201
	0.5781	14,684 mm	37/64	5/8	5-1/4	3-1/4	2-25/64	1-57/64	51539
	0.5906	15,000 mm		16,0	133,0	83,0	60,0	48,0	64202
	0.5938	15,083 mm	19/32	5/8	5-1/4	3-1/4	2-23/64	1-57/64	51592
	0.6094	15,479 mm	39/64	5/8	5-1/4	3-1/4	2-11/32	1-57/64	51593
	0.6102	15,500 mm		16,0	133,0	83,0	60,0	48,0	64203
	0.6250	15,875 mm	5/8	5/8	5-1/4	3-1/4	2-5/16	1-57/64	51540
	0.6299	16,000 mm		16,0	133,0	83,0	59,0	48,0	64204
	0.6406	16,271 mm	41/64	3/4	5-5/8	3-5/8	2-43/64	1-57/64	51594
	0.6496	16,500 mm		18,0	143,0	93,0	68,0	48,0	64205
	0.6562	16,667 mm	21/32	3/4	5-5/8	3-5/8	2-41/64	1-57/64	51541
	0.6693	17,000 mm		18,0	143,0	93,0	67,0	48,0	64206
	0.6719	17,066 mm	43/64	3/4	5-5/8	3-5/8	2-5/8	1-57/64	51595
	0.6875	17,463 mm	11/16	3/4	5-5/8	3-5/8	2-19/32	1-57/64	51542
	0.6890	17,500 mm	45 (0.4	18,0	143,0	93,0	67,0	48,0	64207
	0.7031	17,859 mm	45/64	3/4	5-5/8	3-5/8	2-37/64	1-57/64	51543
	0.7087	18,000 mm	22/22	18,0	143,0	93,0	66,U	48,0	64208
	0.7188	10,258 mm	23/32	3/4	0	4	2-59/64	1-31/32	51590
	0.7244	10,500 mm	17/61	20,0	153,0	101,0	/ J,U	00,0 1 01/00	04209 51544
	0.7344	10,004 mm	47/04	3/4	0	4	2-29/32	1-31/32	51544 64210
	0.7400	10.050 mm	2/4	20,0	103,0 e	101,0	13,0	00,0 1 01/00	51545
	0.7500	19,000 mm	3/4 /0/6/	3/4 7/9	6	4	2-1/0	1 21/32	52255
	0.7030	19,440 IIIII	43/04	20 0	152.0	4 101 0	2-00/04 72 0	50.0	64211
	0.7077	19,300 IIIII	25/22	20,0	6 6	/	2-55/6/	1_21/22	52256
	0.787/	20 000 mm	25/32	20.0	152.0	4 101 0	2-33/04 71 0	50.0	64212
	0.7969	20,000 mm	51/64	7/8	6	лот,0 Д	2-13/16	1-31/32	52357
	0.8071	20,241 mm	51/04	22.0	153.0	101.0	70.0	50.0	64533
	0.8125	20,000 mm	13/16	7/8	6-1/2	4-1/2	3-3/32	1-31/32	52358
	0.8268	21 000 mm	10/10	22.0	153.0	101.0	69.0	50.0	64534
	0.8661	22.000 mm		22.0	178.0	127.0	94.0	50.0	64535
	0.8750	22,225 mm	7/8	7/8	6-1/2	4-1/2	3-3/16	1-31/32	52359
	0.9219	23,416 mm	59/64	1	7	5	3-5/8	2-1/8	52360
	3.0210	_0,0	00/01			0	0 0,0	- 1/0	02000

FRACTIONAL Series 135



	Series		Ve					DC • in			
	Fractional	Hardness	(sfm)		1/32	1/8	1/4	3/8	1/2	5/8	7/8
		< 175 Bhn	345	RPM	42173	10543	5272	3514	2636	2109	1506
		or	(276-414)	Fr	0.0010	0.0040	0.0080	0.0120	0.0159	0.0199	0.0279
		≤ / HKC	(270-414)	Feed (ipm)	42.0	42.0	42.0	42.0	42.0	42.0	42.0
	CARBON STEELS	< 275 Bhn	310	RPM	37894	9474	4737	3158	2368	1895	1353
	1018, 1040, 1080, 1090, 10L50,	Or Or	(248-372)	Fr	0.0009	0.0036	0.0072	0.0108	0.0144	0.0179	0.0251
	1140, 1212, 12L15, 1525, 1536	≤ 28 HKC	(240-372)	Feed (ipm)	34.0	34.0	34.0	34.0	34.0	34.0	34.0
		< 425 Bhn	180	RPM	22003	5501	2750	1834	1375	1100	786
		Or or	(144-216)	Fr	0.0007	0.0030	0.0060	0.0090	0.0120	0.0150	0.0210
		≤ 40 MNC	(144-210)	Feed (ipm)	16.5	16.5	16.5	16.5	16.5	16.5	16.5
		≤ 275 Bhn	270	RPM	33005	8251	4126	2750	2063	1650	1179
		Or		Fr	0.0008	0.0030	0.0061	0.0091	0.0121	0.0151	0.0212
P		≤ 28 HKC	(210-324)	Feed (ipm)	25.0	25.0	25.0	25.0	25.0	25.0	25.0
1	ALLOY STEELS	< 375 Bhn	165	RPM	20170	5042	2521	1681	1261	1008	720
	4140, 4150, 4320, 5120, 5150, 9520, 95120, 50100	Or	(132-198)	Fr	0.0006	0.0026	0.0052	0.0077	0.0103	0.0129	0.0180
	5150, 8030, 80L20, 50100	≤ 40 HKC	(132-130)	Feed (ipm)	13.0	13.0	13.0	13.0	13.0	13.0	13.0
		< 425 Bhn	115	RPM	14058	3514	1757	1171	879	703	502
		Or	(92-138)	Fr	0.0004	0.0018	0.0035	0.0053	0.0071	0.0088	0.0123
		≤ 43 HKC	(52-150)	Feed (ipm)	6.2	6.2	6.2	6.2	6.2	6.2	6.2
		≤ 200 Bhn	120	RPM	14669	3667	1834	1222	917	733	524
		Or	(96-144)	Fr	0.0006	0.0026	0.0051	0.0077	0.0103	0.0128	0.0179
	TOOL STEELS A2, D2, H13, L2, M2, P20, S7, T15, W2	S 13 ⊓n¢	(30-1++)	Feed (ipm)	9.4	9.4	9.4	9.4	9.4	9.4	9.4
		≤ 375 Bhn or ≤ 40 HRc	80	RPM	9779	2445	1222	815	611	489	349
			(64-96)	Fr	0.0003	0.0012	0.0024	0.0036	0.0047	0.0059	0.0083
			(04-30)	Feed (ipm)	2.9	2.9	2.9	2.9	2.9	2.9	2.9
		≤ 185 Bhn	250	RPM	30560	7640	3820	2547	1910	1528	1091
		or	(200-300)	Fr	0.0006	0.0026	0.0051	0.0077	0.0102	0.0128	0.0179
	STAINLESS STEELS (FREE MACHINING)	5 J IIIC	(200 000)	Feed (ipm)	19.5	19.5	19.5	19.5	19.5	19.5	19.5
	303, 416, 420F, 430F, 440F	≤ 275 Bhn	150	RPM	18336	4584	2292	1528	1146	917	655
		or	(120-180)	Fr	0.0005	0.0020	0.0039	0.0059	0.0079	0.0098	0.0137
м		3 20 mile	(120 100)	Feed (ipm)	9.0	9.0	9.0	9.0	9.0	9.0	9.0
		≤ 275 Bhn	80	RPM	9779	2445	1222	815	611	489	349
	STAINI ESS STEELS	or	(64-96)	Fr	0.0005	0.0020	0.0039	0.0059	0.0079	0.0098	0.0137
	(DIFFICULT)	5 20 mil	(01.00)	Feed (ipm)	4.8	4.8	4.8	4.8	4.8	4.8	4.8
	304, 316, 321, 13-8 PH, 15-5PH, 17-4 PH, Custom 450	≤ 375 Bhn	55	RPM	6723	1681	840	560	420	336	240
		or < 40 HBc	(44-66)	Fr	0.0004	0.0018	0.0036	0.0054	0.0071	0.0089	0.0125
			,	Feed (ipm)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
		≤ 220 Bhn	300	RPM	36672	9168	4584	3056	2292	1834	1310
		0r < 19 HRc	(240-360)	Fr	0.0011	0.0045	0.0089	0.0134	0.0179	0.0224	0.0313
к	CAST IRONS	2 13 1110	,= .=,	Feed (ipm)	41.0	41.0	41.0	41.0	41.0	41.0	41.0
	Gray, Malleable, Ductile	≤ 260 Bhn	265	RPM	32394	8098	4049	2699	2025	1620	1157
		Or < 26 ⊔Ro	(212-318) —	Fr	0.0011	0.0046	0.0091	0.0137	0.0183	0.0228	0.0320
		≤ 26 HRc		Feed (ipm)	37.0	37.0	37.0	37.0	37.0	37.0	37.0



Series

FRACTIONAL Series 135

	Series 135 5D Fractional		Vc					DC • in			
	Fractional	Hardness	(sfm)		1/32	1/8	1/4	3/8	1/2	5/8	7/8
		< 80 Bhn	635	RPM	77622	19406	9703	6469	4851	3881	2772
			(509 762)	Fr	0.0012	0.0049	0.0099	0.0148	0.0198	0.0247	0.0346
	ALUMINUM ALLOYS	≤ 47 HKD	(308-702)	Feed (ipm)	96.0	96.0	96.0	96.0	96.0	96.0	96.0
	6061, 7075	< 150 Bhn	540	RPM	66010	16502	8251	5501	4126	3300	2357
			(132-618)	Fr	0.0012	0.0050	0.0099	0.0149	0.0199	0.0248	0.0348
Ν		S 00 ⊓nC	,	Feed (ipm)	82.0	82.0	82.0	82.0	82.0	82.0	82.0
		< 140 Bhn	450	RPM	55008	13752	6876	4584	3438	2750	1965
	COPPER ALLOYS	or	(360-540)	Fr	0.0005	0.0020	0.0040	0.0060	0.0080	0.0100	0.0140
		≤ 3 HKC	(300-340)	Feed (ipm)	27.5	27.5	27.5	27.5	27.5	27.5	27.5
	Muntz Brass	< 200 Bhn	360	RPM	44006	11002	5501	3667	2750	2200	1572
		Or Or	(288-132)	Fr	0.0005	0.0020	0.0040	0.0060	0.0080	0.0100	0.0140
		≤ 23 HKC	(200-432)	Feed (ipm)	22.0	22.0	22.0	22.0	22.0	22.0	22.0
	HIGH TEMP ALLOYS (Nickel , Cobalt, Iron Base) Inconel 601, 617, 625, Incoloy, Monel 400, Rene, Waspaloy	< 300 Bhn	40	RPM	4890	1222	611	407	306	244	175
			(22,10)	Fr	0.0002	0.0008	0.0016	0.0025	0.0033	0.0041	0.0057
		≤ 32 HKC	(32-40)	Feed (ipm)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
		< 400 Bhn	20	RPM	2445	611	306	204	153	122	87
			(16-24)	Fr	0.0002	0.0007	0.0013	0.0020	0.0026	0.0033	0.0046
		≤ 43 HRc		Feed (ipm)	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		< 275 Bhn	105	RPM	12835	3209	1604	1070	802	642	458
S		Or Or	(84-126)	Fr	0.0005	0.0018	0.0036	0.0054	0.0072	0.0090	0.0127
		≤ 28 HKC	(04-120)	Feed (ipm)	5.8	5.8	5.8	5.8	5.8	5.8	5.8
	TITANIUM ALLOYS Pure Titanium Ti6AI4V	< 350 Bhn	80	RPM	9779	2445	1222	815	611	489	349
	Ti6Al2Sn4Zr2Mo,	Or Or	(64-96)	Fr	0.0004	0.0016	0.0032	0.0048	0.0064	0.0080	0.0112
	Ti-6AI4V	≤ 38 HKC	(04-30)	Feed (ipm)	3.9	3.9	3.9	3.9	3.9	3.9	3.9
		< 440 Bhn	42	RPM	5134	1284	642	428	321	257	183
		Or 01	(34-50)	Fr	0.0003	0.0012	0.0025	0.0037	0.0050	0.0062	0.0087
		≤ 4/ HKC	1001	Feed (ipm)	1.6	1.6	1.6	1.6	1.6	1.6	1.6
	TOOL STEELS	≤ 475 Bhn	70	RPM	8557	2139	1070	713	535	428	306
Η	A2, D2, H13, L2, M2, P20, S7, T15, W2		(56-84) —	Fr	0.0002	0.0008	0.0016	0.0024	0.0032	0.0040	0.0056
	P20, S7, T15, W2	≤ 50 HRc		Feed (ipm)	1.7	1.7	1.7	1.7	1.7	1.7	1.7

Bhn (Brinell) HRc (Rockwell C) HRb (Rockwell B) rpm = Vc x 3.82 / DC ipm = Fr x rpm reduce speed and feed for materials harder than listed refer to the SGS Tool Wizard[®] for complete technical information (www.kyocera-sgstool.com)

METRIC Series 135



	Series 135M 5D Vc				DC • mm								
	Metric	Hardness	(m/min)		1.5	3	6	8	10	12	16	20	
		< 175 Php	105	RPM	22297	11148	5574	4181	3344	2787	2090	1672	
			(04.100)	Fr	0.048	0.095	0.190	0.254	0.317	0.380	0.507	0.634	
		≤ / HRc	(84-120)	Feed (mm/min)	1060	1060	1060	1060	1060	1060	1060	1060	
	CARRON STEELS	< 275 Bhn	94	RPM	20035	10017	5009	3756	3005	2504	1878	1503	
	1018, 1040, 1080, 1090, 10L50,		(76 112)	Fr	0.043	0.085	0.171	0.228	0.285	0.341	0.455	0.569	
	1140, 1212, 12L15, 1525, 1536	≤ 28 HRc	(70-113)	Feed (mm/min)	855	855	855	855	855	855	855	855	
		< 125 Bhn	55	RPM	11633	5816	2908	2181	1745	1454	1091	872	
			(44.66)	Fr	0.036	0.071	0.143	0.190	0.238	0.285	0.381	0.476	
		≤ 45 HRc	(44-00)	Feed (mm/min)	415	415	415	415	415	415	415	415	
		< 275 Bhn	82	RPM	17449	8725	4362	3272	2617	2181	1636	1309	
			or HBc (66-99)	Fr	0.036	0.072	0.143	0.191	0.239	0.287	0.382	0.478	
D		≤ 28 HRC	(00-99)	Feed (mm/min)	625	625	625	625	625	625	625	625	
r	ALLOY STEELS	< 375 Bhn	50	RPM	10664	5332	2666	1999	1600	1333	1000	800	
		or	(40,60)	Fr	0.031	0.062	0.124	0.165	0.206	0.248	0.330	0.413	
		≤ 40 HRc	(40-00)	Feed (mm/min)	330	330	330	330	330	330	330	330	
		≤ 425 Bhn or	35	RPM	7432	3716	1858	1394	1115	929	697	557	
			(20 12)	Fr	0.022	0.043	0.086	0.115	0.144	0.172	0.230	0.287	
		≤ 45 HRc	(20-42)	Feed (mm/min)	160	160	160	160	160	160	160	160	
		< 200 Bhn	37	RPM	7755	3878	1939	1454	1163	969	727	582	
		Or Or	(20, 44)	Fr	0.031	0.062	0.124	0.165	0.206	0.248	0.330	0.413	
	TOOL STEELS A2, D2, H13, L2, M2, – P20, S7, T15, W2	≤ 13 HRC	(29-44)	Feed (mm/min)	240	240	240	240	240	240	240	240	
		≤ 375 Bhn	24	RPM	5170	2585	1293	969	776	646	485	388	
		Or Or	(20, 20)	Fr	0.015	0.029	0.058	0.077	0.097	0.116	0.155	0.193	
		≤ 40 HRc	(20-23)	Feed (mm/min)	75	75	75	75	75	75	75	75	
		< 185 Bhn	76	RPM	16157	8078	4039	3029	2424	2020	1515	1212	
		Or Or	(61-91)	Fr	0.031	0.061	0.123	0.163	0.204	0.245	0.327	0.408	
	STAINLESS STEELS	≤9 HKC	(01-51)	Feed (mm/min)	495	495	495	495	495	495	495	495	
	303, 416, 420F, 430F, 440F	< 275 Bhn	46	RPM	9694	4847	2424	1818	1454	1212	909	727	
		Or 20 HPo	(37-55)	Fr	0.024	0.047	0.095	0.127	0.158	0.190	0.253	0.316	
м		S 20 ⊓∩C	(07-00)	Feed (mm/min)	230	230	230	230	230	230	230	230	
		≤ 275 Bhn	24	RPM	5170	2585	1293	969	776	646	485	388	
	CTAINI FOO OTFFLO	Or Or	(20-29)	Fr	0.023	0.046	0.093	0.124	0.155	0.186	0.248	0.309	
	(DIFFICULT)	≤ 28 HKC	(20-23)	Feed (mm/min)	120	120	120	120	120	120	120	120	
	304, 316, 321, 13-8 PH, 15-5PH, 17-4 PH, Custom 450	< 375 Bhn	17	RPM	3555	1777	889	666	533	444	333	267	
			(12-20)	Fr	0.021	0.042	0.084	0.113	0.141	0.169	0.225	0.281	
		S 40 MKC	(10-20)	Feed (mm/min)	75	75	75	75	75	75	75	75	
		< 220 Bhn	91	RPM	19388	9694	4847	3635	2908	2424	1818	1454	
			(73-110)	Fr	0.054	0.108	0.217	0.289	0.361	0.433	0.578	0.722	
K	CAST IRONS	S IS HKC	(70.110)	Feed (mm/min)	1050	1050	1050	1050	1050	1050	1050	1050	
	Gray, Malleable, Ductile	≤ 260 Bhn	81	RPM	17126	8563	4282	3211	2569	2141	1606	1284	
			(65-07)	Fr	0.055	0.109	0.218	0.291	0.364	0.437	0.582	0.728	
		≤ 26 HRc	(65-97)	Feed (mm/min)	935	935	935	935	935	935	935	935	



METRIC Series 135

	Series		Ma		DC • mm							
	Metric	Hardness	(m/min)		1.5	3	6	8	10	12	16	20
		< 80 Bhn	194	RPM	41039	20519	10260	7695	6156	5130	3847	3078
		or ≤ 47 HRb	(155-232)	Fr	0.059	0.118	0.237	0.316	0.395	0.474	0.632	0.790
	ALUMINUM ALLOYS 2017, 2024, 356, 6061, 7075			Feed (mm/min)	2430	2430	2430	2430	2430	2430	2430	2430
		< 150 Bhn	165	RPM	34899	17449	8725	6544	5235	4362	3272	2617
			(122 100)	Fr	0.059	0.118	0.237	0.316	0.394	0.473	0.631	0.789
N		≤ 88 HRc	(132-130)	Feed (mm/min)	2065	2065	2065	2065	2065	2065	2065	2065
IN		< 1/0 Bhn	137	RPM	29082	14541	7271	5453	4362	3635	2726	2181
			(110 165)	Fr	0.027	0.053	0.107	0.142	0.178	0.213	0.284	0.355
	Copper Alloys	≤ 3 HKC	(110-165)	Feed (mm/min)	775	775	775	775	775	775	775	775
	Muntz Brass	≤ 200 Bhn or < 22 µPo	110	RPM	23266	11633	5816	4362	3490	2908	2181	1745
			(88-132)	Fr	0.027	0.054	0.108	0.144	0.181	0.217	0.289	0.361
		≤ 23 HRC	(00-132)	Feed (mm/min)	630	630	630	630	630	630	630	630
	HIGH TEMP ALLOYS	< 300 Bhn	12	RPM	2585	1293	646	485	388	323	242	194
			(10.15)	Fr	0.010	0.019	0.039	0.052	0.064	0.077	0.103	0.129
	(Nickel , Cobalt,	≤ 32 HKC	(10-13)	Feed (mm/min)	25	25	25	25	25	25	25	25
	Inconel 601, 617, 625, Incoloy,	≤ 400 Bhn or ≤ 43 HRc	6	RPM	1293	646	323	242	194	162	121	97
	Monel 400, Rene, Waspaloy		(5-7)	Fr	0.007	0.014	0.028	0.037	0.046	0.056	0.074	0.093
				Feed (mm/min)	9	9	9	9	9	9	9	9
		< 275 Bhn	32	RPM	6786	3393	1696	1272	1018	848	636	509
S			126 201	Fr	0.021	0.043	0.085	0.114	0.142	0.171	0.228	0.285
		S 20 HHC	(20-30)	Feed (mm/min)	145	145	145	145	145	145	145	145
	TITANIUM ALLOYS Pure Titanium, Ti6AI4V,	< 350 Bhn	24	RPM	5170	2585	1293	969	776	646	485	388
	Ti6Al2Sn4Zr2Mo,	Or or	(20-29)	Fr	0.019	0.039	0.077	0.103	0.129	0.155	0.206	0.258
	Ti-6AI4V	≤ 38 HRC	(20-23)	Feed (mm/min)	100	100	100	100	100	100	100	100
		< 440 Bhn	13	RPM	2714	1357	679	509	407	339	254	204
		Or < 47 HPa	(10-15)	Fr	0.015	0.029	0.059	0.079	0.098	0.118	0.157	0.196
		≤ 4/ HKC	(10-13)	Feed (mm/min)	40	40	40	40	40	40	40	40
	TOOL STEELS	≤ 475 Bhn	21	RPM	4524	2262	1131	848	679	565	424	339
H	A2, D2, H13, L2, M2, P20, S7, T15, W2		(17-26)	Fr	0.010	0.019	0.038	0.051	0.064	0.076	0.102	0.127
P20	FZU, 37, 113, WZ	≤ 50 HRc		Feed (mm/min)	43	43	43	43	43	43	43	43

Bhn (Brinell) HRc (Rockwell C) HRb (Rockwell B) rpm = (Vc x 1000) / (DC x 3.14) mm/min = Fr x rpm reduce speed and feed for materials harder than listed refer to the SGS Tool Wizard[®] for complete technical information (www.kyocera-sgstool.com)



HIGH PERFORMANCE CARBIDE DRILLS

The key features designed into the Hi-PerCarb[®] Series 146U and 136U Drills allow the product to offer application benefits not only beyond that of standard carbide drills, but also other High Performance drills. Each feature of the Hi-PerCarb[®] Series 146U and 136U Drills was uniquely engineered as a solution towards addressing the issues commonly encountered during high production drilling.

NEW SERIES

SERIES 146U / 136U

ECCENTRIC 4-MARGIN DESIGN

- a unique coolant channel design allows repositioning of the trailing margins for improved stability over conventional two and four margin drills
- eccentric style clearance reduces margin contact with the workpiece without reducing strength

END GEOMETRY

В

- the primary only relief allows the trailing margins to help stabilize the drill up to three times faster than conventional designs
- high shear corner geometry minimizes exit bur
- computer controlled edge hone protects against edge chipping in difficult applications

COOLANT CHANNELS

 the two-channel design provides additional coolant in the hole when thru-tool coolant is not available

D COATING AND CARBIDE

- proprietary SGS Ti-NAMITE[®]-X coating and post-coat polishing combine to minimize material adhesion and maximize wear resistance in a wide range of workpiece materials
- all Series 146U and 136U drills are manufactured from lab certified premium quality carbide

PERFORMANCE. PRECISION. PASSION. HI-PERCARB[®] SERIES 146/136U FLAT BOTTOM DRILLS



PERFORMANCE.

HOLE DIAMETER VARIATION

4140 alloy steel / 19 HRc 2700 rpm / 25.4 ipm straight blind holes with flood coolant

CMM diameter measurement of ten random holes shows the size variation produced by the Series 136U is ten times better than the competition.

TOOL LIFE

4140 alloy steel / 19 HRc 2700 rpm / 25.4 ipm straight blind holes with flood coolant

Tool life testing was performed until each drill exhibited sufficient damage to stop the test. Results show the Series 136U lasts 40 percent longer than competitor 2 and 250 percent longer than competitor 1.

WALL STRAIGHTNESS

4140 alloy steel / 19 HRc 2700 rpm / 25.4 ipm 30° angle with flood coolant

Wall straightness of holes drilled on a 30° angle show the Series 136U produced 39 percent less deflection than competitor 3 and 57 percent less than competitor 2. During this test all tools were extended from the holder at an equal amount.



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146U 3xD **FRACTIONAL & METRIC SERIES**

• A-margin design				inch & mm					EDP NO.	TOLERANCES (inch)
improves accuracy and surface finish along with increased strength for	DECIMAL DC	METRIC DC	FRACTIONAL/ Letter/Wire DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE Length Lu	SHANK LENGTH LS	Ti-NAMITE°-X (TX)	≤.1181 DIAMETER DC = +.00008/+.00047
aggressive drilling	0.1181	3,000 mm		6,0	55,0	13,0	9,0	34,0	67705	DCON = h ₆
 Specialized self- centering notched point 	0.1220	3,100 mm		6,0	55,0	14,0	9,0	34,0	67706	>.1181–.2362 DIAMETER
eliminates the need for	0.1250	3,175 mm	1/8	6,0	55,0	14,0	10,0	34,0	58800	DC = +.00016/+.00063
spot drilling decreasing thrust and deflection	0.1260	3,200 mm		6,0	55,0	14,0	10,0	34,0	67707	DCON = 116
Engineered edge	0.1299	3,300 mm		6,0	55,0	15,0	10,0	34,0	67708	>.23623937 DIAMETER
protection improves edge	0.1339	3,400 mm		6,0	55,0	15,0	10,0	34,0	67709	DC = +.00024/+.00083 DCON = he
edge fatigue allowing for	0.1360	3,454 mm	#29	6,0	55,0	16,0	10,0	34,0	58801	> 2027 - 7007 DIAMETER
increased feed rates	0.1378	3,500 mm		6,0	55,0	16,0	11,0	34,0	67710	>.39377087 DIAMETER
 Recommended for materials ≤ 56 HRc 	0.1405	3,569 mm	#28	6,0	55,0	16,0	11,0	34,0	58802	DCON = h_6
(≤ 577 Bhn)	0.1406	3,571 mm	9/64	6,0	55,0	16,0	11,0	34,0	58803	> 7087–1 1811 DIAMETER
	0.1417	3,600 mm		6,0	55,0	16,0	11,0	34,0	67711	DC = +.00031/+.00114
	0.1457	3,700 mm		6,0	60,0	17,0	11,0	34,0	67712	DCON = h ₆
	0.1470	3,734 mm	#26	6,0	60,0	17,0	11,0	34,0	58804	
	0.1495	3,797 mm	#25	6,0	60,0	17,0	11,0	34,0	58805	TOLERANCES (mm)
	0.1496	3,800 mm		6,0	60,0	17,0	11,0	34,0	67713	≤ 3 DIAMETER
	0.1520	3,861 mm	#24	6,0	60,0	17,0	12,0	34,0	58806	DC = +0,002/+0,012
	0.1535	3,900 mm		6,0	60,0	18,0	12,0	34,0	67714	DCON = h ₆
	0.1562	3,967 mm	5/32	6,0	60,0	18,0	12,0	34,0	58807	>3–6 DIAMETER
	0.1570	3,988 mm	#22	6,0	60,0	18,0	12,0	34,0	58808	DC = +0,004/+0,016
	0.1575	4,000 mm		6,0	60,0	18,0	12,0	34,0	67715	
	0.1590	4,039 mm	#21	6,0	60,0	18,0	12,0	34,0	58809	>6-10 DIAMETER
	0.1610	4,089 mm	#20	6,0	60,0	18,0	12,0	34,0	58810	DC = +0,006/+0,021 DCON = he
	0.1614	4,100 mm		6,0	60,0	18,0	12,0	34,0	67716	
	0.1654	4,200 mm		6,0	60,0	19,0	13,0	34,0	67717	>10-10 DIAMETER DC = +0.007/+0.025
	0.1693	4,300 mm		6,0	60,0	19,0	13,0	34,0	67718	DCON = h_6
	0.1719	4,366 mm	11/64	6,0	60,0	20,0	13,0	34,0	58811	>18-30 DIAMETER
	0.1732	4,400 mm		6,0	60,0	20,0	13,0	34,0	67719	DC = +0,008/+0,029
	0.1770	4,496 mm	#16	6,0	60,0	20,0	13,0	34,0	58812	DCON = h ₆
	0.1772	4,500 mm		6,0	60,0	20,0	14,0	34,0	67720	
	0.1811	4,600 mm		6,0	60,0	21,0	14,0	34,0	67721	STEELS
	0.1850	4,699 mm	#13	6,0	60,0	21,0	14,0	34,0	58813	STAINLESS STEELS
	0.1875	4,763 mm	3/16	6,0	60,0	21,0	14,0	34,0	58814	
	0.1890	4,801 mm	#12	6,0	65,0	22,0	14,0	33,0	58815	CAST IRON
	0.1929	4,900 mm		6,0	65,0	22,0	15,0	33,0	67724	NON-FERROUS
	0.1935	4,915 mm	#10	6,0	65,0	22,0	15,0	33,0	58816	HIGH TEMP ALLOYS
	0.1969	5,000 mm		6,0	65,0	23,0	15,0	33,0	67725	HARDENED STEELS
	0.2008	5,100 mm		6,0	65,0	23,0	15,0	33,0	67726	TRADERED STEELS
	0.2010	5,105 mm	#7	6,0	65,0	23,0	15,0	33,0	58817	For patent

continued on next page

information visit www.ksptpatents.com



146U 3xD FRACTIONAL & METRIC SERIES

			inch & mm					EDP NO.	CONTINUED
DECIMAL DC	METRIC DC	FRACTIONAL/ Letter/Wire DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE Length Lu	SHANK LENGTH LS	Ti-NAMITE®-X (TX)	CONTINUED
0.2031	5,159 mm	13/64	6,0	65,0	23,0	15,0	33,0	58818	
0.2047	5,200 mm		6,0	65,0	23,0	16,0	33,0	67727	
0.2087	5,300 mm		6,0	65,0	24,0	16,0	33,0	67728	
0.2090	5,309 mm	#4	6,0	65,0	24,0	16,0	33,0	58819	
0.2126	5,400 mm		6,0	65,0	24,0	16,0	33,0	67729	
0.2130	5,410 mm	#3	6,0	65,0	24,0	16,0	33,0	58820	
0.2165	5,500 mm		6,0	65,0	25,0	16,0	33,0	67730	
0.2188	5,558 mm	7/32	6,0	65,0	25,0	17,0	33,0	58821	
0.2205	5,600 mm		6,0	65,0	25,0	17,0	33,0	67731	
0.2244	5,700 mm		6,0	65,0	26,0	17,0	33,0	67732	
0.2283	5,800 mm		6,0	65,0	26,0	17,0	33,0	67733	
0.2323	5,900 mm		6,0	65,0	27,0	18,0	33,0	67734	
0.2344	5,954 mm	15/64	6,0	65,0	27,0	18,0	33,0	58822	
0.2362	6,000 mm		6,0	65,0	27,0	18,0	33,0	67735	
0.2402	6,100 mm		8,0	70,0	28,0	19,0	34,0	67736	
0.2441	6,200 mm		8,0	70,0	28,0	19,0	34,0	67737	
0.2461	6,250 mm		8,0	70,0	28,0	19,0	34,0	67738	
0.2480	6,300 mm		8,0	70,0	28,0	19,0	34,0	67739	
0.2500	6,350 mm	1/4 E #0	8,0	70,0	29,0	19,0	34,0	58823	
0.2520	6,400 mm		8,0	70,0	29,0	19,0	34,0	67740	
0.2559	6,500 mm		8,0	70,0	29,0	19,0	34,0	67741	
0.2570	6,528 mm	F	8,0	70,0	29,0	20,0	34,0	58824	
0.2598	6,600 mm		8,0	70,0	30,0	20,0	34,0	67742	
0.2638	6,700 mm		8,0	70,0	30,0	20,0	34,0	67743	
0.2656	6,746 mm	17/64	8,0	70,0	30,0	20,0	34,0	58825	
0.2677	6,800 mm		8,0	70,0	31,0	20,0	34,0	67744	
0.2717	6,900 mm		8,0	70,0	31,0	21,0	34,0	67745	
0.2720	6,909 mm	I	8,0	70,0	31,0	21,0	34,0	58826	
0.2756	7,000 mm		8,0	75,0	32,0	21,0	34,0	67746	
0.2795	7,100 mm		8,0	75,0	32,0	21,0	34,0	67747	
0.2812	7,142 mm	9/32	8,0	75,0	32,0	21,0	34,0	58827	
0.2835	7,200 mm		8,0	75,0	32,0	22,0	34,0	67748	
0.2854	7,250 mm		8,0	75,0	33,0	22,0	34,0	67749	
0.2874	7,300 mm		8,0	75,0	33,0	22,0	34,0	67750	
0.2913	7,400 mm		8,0	75,0	33,0	22,0	34,0	67751	
0.2953	7,500 mm		8,0	75,0	34,0	23,0	34,0	67752	
0.2969	7,541 mm	19/64	8,0	75,0	34,0	23,0	34,0	58828	
0.2992	7,600 mm		8,0	75,0	34,0	23,0	34,0	67753	
0.3031	7,700 mm		8,0	75,0	35,0	23,0	34,0	67754	
0.3071	7,800 mm		8,0	75,0	35,0	23,0	34,0	67755	
0.3110	7,900 mm	-	8,0	75,0	36,0	24,0	34,0	67756	
0.3125	7,938 mm	5/16	8,0	75,0	36,0	24,0	34,0	58829	
0.3150	8,000 mm		8,0	75,0	36,0	24,0	34,0	67757	
0.3189	8,100 mm		10,0	80,0	36,0	24,0	34,0	67758	
0.3228	8,200 mm		10,0	80,0	37,0	25,0	34,0	67759	
0.3268	8,300 mm		10,0	80,0	37,0	25,0	34,0	67760	







146U 3xD **FRACTIONAL & METRIC SERIES**

Fractional & Metric

Series 146U 3xD

Brit Barger Brace in the sector of the sector
ssive drilling alized self- ing notched point tates the need for thilling decreasing and deflection 0.3281 8,334 mm 21/64 10,0 80,0 38,0 25,0 34,0 58830 0.3307 8,400 mm 10,0 80,0 38,0 25,0 34,0 67761 0.3320 8,433 mm 0 10,0 80,0 38,0 25,0 34,0 58831 0.3320 8,433 mm 0 10,0 80,0 38,0 25,0 34,0 67761 0.3320 8,433 mm 0 10,0 80,0 38,0 25,0 34,0 67762 0.3386 8,600 mm 10,0 80,0 39,0 26,0 34,0 67763 0.3425 8,700 mm 10,0 80,0 40,0 26,0 34,0 67765 0.3465 8,800 mm 10,0 80,0 40,0 27,0 34,0 67767 0.3504 8,900 mm 10,0 80,0 41,0 27,0 34,0 67768 0.3594 </th
alized self- ring notched point arades the need for irling decreasing and deflection everd edge thin improves edge that neduces failus al Soft Hard tesh hand 0.3307 $8,400 \text{ mm}$ $10,0$ $80,0$ $38,0$ $25,0$ $34,0$ 67761 0.3320 $8,433 \text{ mm}$ 0 $10,0$ $80,0$ $38,0$ $25,0$ $34,0$ 58831 0.3346 $8,500 \text{ mm}$ $10,0$ $80,0$ $38,0$ $25,0$ $34,0$ 67762 0.3386 $8,600 \text{ mm}$ $10,0$ $80,0$ $39,0$ $26,0$ $34,0$ 67763 0.3425 $8,700 \text{ mm}$ $10,0$ $80,0$ $39,0$ $26,0$ $34,0$ 67764 0.3438 $8,733 \text{ mm}$ $11/32$ $10,0$ $80,0$ $39,0$ $26,0$ $34,0$ 67764 0.3445 $8,700 \text{ mm}$ $10,0$ $80,0$ $40,0$ $27,0$ $34,0$ 67765 0.3465 $8,800 \text{ mm}$ $10,0$ $80,0$ $40,0$ $27,0$ $34,0$ 67766 0.3564 $8,900 \text{ mm}$ $10,0$ $80,0$ $41,0$ $27,0$ $34,0$ 67767 0.3583 $9,100 \text{ mm}$ $10,0$ $80,0$ $41,0$ $27,0$ $34,0$ 67768 0.3594 $9,129 \text{ mm}$ $23/64$ $10,0$ $80,0$ $41,0$ $27,0$ $34,0$ 67768 0.3661 $9,300 \text{ mm}$ $10,0$ $85,0$ $42,0$ $28,0$ $35,0$ 67776 0.3680 $9,347 \text{ mm}$ U $10,0$ $85,0$ $43,0$ $28,0$
$ \begin{array}{c} 0.3320 & 8,433 \ mm & 0 & 10,0 & 80,0 & 38,0 & 25,0 & 34,0 & 58831 \\ 0.3346 & 8,500 \ mm & 10,0 & 80,0 & 38,0 & 25,0 & 34,0 & 67762 \\ 0.3386 & 8,600 \ mm & 10,0 & 80,0 & 39,0 & 26,0 & 34,0 & 67763 \\ 0.3386 & 8,600 \ mm & 10,0 & 80,0 & 39,0 & 26,0 & 34,0 & 67763 \\ 0.3425 & 8,700 \ mm & 10,0 & 80,0 & 39,0 & 26,0 & 34,0 & 67764 \\ 0.3438 & 8,733 \ mm & 11/32 & 10,0 & 80,0 & 39,0 & 26,0 & 34,0 & 58832 \\ 0.3465 & 8,800 \ mm & 10,0 & 80,0 & 39,0 & 26,0 & 34,0 & 67765 \\ 0.3504 & 8,900 \ mm & 10,0 & 80,0 & 40,0 & 27,0 & 34,0 & 67766 \\ 0.3543 & 9,000 \ mm & 10,0 & 80,0 & 40,0 & 27,0 & 34,0 & 67767 \\ 0.3583 & 9,100 \ mm & 10,0 & 80,0 & 41,0 & 27,0 & 34,0 & 67767 \\ 0.3583 & 9,100 \ mm & 10,0 & 80,0 & 41,0 & 27,0 & 34,0 & 67768 \\ 0.3661 & 9,300 \ mm & 10,0 & 85,0 & 42,0 & 28,0 & 35,0 & 67770 \\ 0.3680 & 9,347 \ mm & U & 10,0 & 85,0 & 42,0 & 28,0 & 35,0 & 67777 \\ 0.3760 & 9,500 \ mm & 10,0 & 85,0 & 42,0 & 28,0 & 35,0 & 67777 \\ 0.3770 & 9,500 \ mm & 10,0 & 85,0 & 43,0 & 29,0 & 35,0 & 67777 \\ 0.3780 & 9,600 \ mm & 10,0 & 85,0 & 43,0 & 29,0 & 35,0 & 67777 \\ 0.3819 & 9,700 \ mm & 10,0 & 85,0 & 44,0 & 29,0 & 35,0 & 67777 \\ 0.3898 & 9,900 \ mm & 10,0 & 85,0 & 44,0 & 29,0 & 35,0 & 67777 \\ 0.3898 & 9,900 \ mm & 10,0 & 85,0 & 45,0 & 30,0 & 35,0 & 67775 \\ 0.3898 & 9,900 \ mm & 10,0 & 85,0 & 45,0 & 30,0 & 35,0 & 67775 \\ 0.3898 & 9,900 \ mm & 10,0 & 85,0 & 45,0 & 30,0 & 35,0 & 67775 \\ 0.3898 & 9,900 \ mm & 10,0 & 85,0 & 45,0 & 30,0 & 35,0 & 67775 \\ 0.3898 & 9,900 \ mm & 10,0 & 85,0 & 45,0 & 30,0 & 35,0 & 67775 \\ 0.3898 & 9,900 \ mm & 10,0 & 85,0 & 45,0 & 30,0 & 35,0 & 67775 \\ 0.3898 & 9,900 \ mm & 10,0 & 85,0 & 45,0 & 30,0 & 35,0 & 67775 \\ 0.3898 & 9,900 \ mm & 10,0 & 85,0 & 45,0 & 30,0 & 35,0 & 67775 \\ 0.3898 & 9,900 \ mm & 10,0 & 85,0 & 45,0 & 30,0 & 35,0 & 67775 \\ 0.3898 & 9,900 \ mm & 10,0 & 85,0 & 45,0 & 30,0 & 35,0 & 67775 \\ 0.3898 & 9,900 \ mm & 10,0 & 85,0 & 45,0 & 30,0 & 35,0 & 67775 \\ 0.3898 & 9,900 \ mm & 10,0 & 85,0 & 45,0 & 30,0 & 35,0 & 67775 \\ 0.3898 & 9,900 \ mm & 10,0 & 85,0 & 45,0 & 30,0 & 35,0 & 67775 \\ 0.3890 $
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ction improves edge th and reduces fatigue allowing for ials \leq 56 HRc ' Bhn)0.34258,700 mm10,080,039,026,034,0677640.34388,733 mm11/3210,080,039,026,034,0588320.34658,800 mm10,080,040,026,034,0677650.35048,900 mm10,080,040,027,034,0677660.35339,000 mm10,080,040,027,034,0677680.35839,100 mm10,080,041,027,034,0677680.35949,129 mm23/6410,080,041,027,034,0588330.36229,200 mm10,085,042,028,035,0677700.36809,347 mmU10,085,042,028,035,0677710.37019,400 mm10,085,042,028,035,0677710.37409,500 mm10,085,043,029,035,0677710.37809,600 mm10,085,043,029,035,0677740.38199,700 mm10,085,044,029,035,0677740.38589,800 mm10,085,044,029,035,0677750.38989,900 mm10,085,044,029,035,0677750.38989,900 mm10,085,045,030,035,0
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nmmeded for ials < 56 HRc / Bhn) 0.3504 8,900 mm 10,0 80,0 40,0 27,0 34,0 67766 0.3543 9,000 mm 10,0 80,0 40,0 27,0 34,0 67767 0.3583 9,100 mm 10,0 80,0 41,0 27,0 34,0 67768 0.3594 9,129 mm 23/64 10,0 80,0 41,0 27,0 34,0 58833 0.3622 9,200 mm 10,0 80,0 41,0 28,0 35,0 67769 0.3661 9,300 mm 10,0 85,0 42,0 28,0 35,0 58834 0.3701 9,400 mm 10,0 85,0 42,0 28,0 35,0 67771 0.3740 9,500 mm 10,0 85,0 43,0 29,0 35,0 67772 0.3750 9,525 mm 3/8 10,0 85,0 43,0 29,0 35,0 67773 0.3819 9,700 mm 10,0 85,0 44,0
P Bhn) 0.3543 9,000 mm 10,0 80,0 40,0 27,0 34,0 67767 0.3583 9,100 mm 10,0 80,0 41,0 27,0 34,0 67768 0.3594 9,129 mm 23/64 10,0 80,0 41,0 27,0 34,0 58833 0.3622 9,200 mm 10,0 80,0 41,0 28,0 35,0 67769 0.3661 9,300 mm 10,0 85,0 42,0 28,0 35,0 67770 0.3680 9,347 mm U 10,0 85,0 42,0 28,0 35,0 67771 0.3701 9,400 mm 10,0 85,0 42,0 28,0 35,0 67771 0.3740 9,500 mm 10,0 85,0 43,0 29,0 35,0 67773 0.3750 9,525 mm 3/8 10,0 85,0 43,0 29,0 35,0 67773 0.3819 9,000 mm 10,0 85,0 44,0 29
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0.3970 10,084 mm X 12,0 90,0 46,0 31,0 36,0 58837
0.3976 10,100 mm 12,0 90,0 46,0 31,0 36,0 67778
0.4016 10,200 mm 12,0 90,0 46,0 31,0 36,0 67779
0.4040 10,262 mm Y 12,0 90,0 46,0 31,0 36,0 58838
0.4055 10,300 mm 12,0 90,0 46,0 31,0 36,0 67780
0.4062 10,317 mm 13/32 12,0 90,0 46,0 31,0 36,0 58839
0.4094 10,400 mm 12,0 90,0 47,0 31,0 36,0 67781
0.4134 10,500 mm 12,0 90,0 47,0 32,0 36,0 67782
0.4173 10,600 mm 12,0 90,0 48,0 32,0 36,0 67783
0.4213 10,700 mm 12,0 90,0 48,0 32,0 36,0 67784
0.4219 10,716 mm 27/64 12,0 90,0 48,0 32,0 36,0 58840
0.4252 10,800 mm 12,0 90,0 49,0 32,0 36,0 67785
0.4291 10,900 mm 12,0 90,0 49,0 33,0 36,0 67786
0.4331 11,000 mm 12,0 95,0 50,0 33,0 36,0 67787

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IULEKANCES (Inch)
\leq .1181 DIAMETER DC = +.00008/+.00047 DCON = h ₆
>.1181–.2362 DIAMETER DC = $+.00016/+.00063$ DCON = h_6
>.23623937 DIAMETER DC = +.00024/+.00083 DCON = h ₆
>.39377087 DIAMETER DC = +.00028/+.00098 DCON = h ₆
>.7087–1.1811 DIAMETER DC = +.00031/+.00114 DCON = h ₆
TOLERANCES (mm)
\leq 3 DIAMETER DC = +0,002/+0,012 DCON = h ₆
> 3-6 DIAMETER DC = +0,004/+0,016 DCON = h ₆
>6-10 DIAMETER DC = +0,006/+0,021 DCON = h ₆
>10-18 DIAMETER DC = +0,007/+0,025 DCON = h ₆
>18-30 DIAMETER DC = +0,008/+0,029 DCON = h ₆
STEELS
STAINLESS STEELS
CAST IRON
NON-FERROUS
HIGH TEMP ALLOYS
HARDENED STEELS
For patent

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			inch & mm					EDP NO.
DECIMAL DC	METRIC DC	FRACTIONAL/ LETTER/WIRE DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	SHANK LENGTH LS	Ti-NAMITE®-X (TX)
0.4370	11,100 mm		12,0	95,0	50,0	33,0	36,0	67788
0.4375	11,113 mm	7/16	12,0	95,0	50,0	33,0	36,0	58841
0.4409	11,200 mm		12,0	95,0	50,0	34,0	36,0	67789
0.4449	11,300 mm		12,0	95,0	51,0	34,0	36,0	67790
0.4488	11,400 mm		12,0	95,0	51,0	34,0	36,0	67791
0.4528	11,500 mm		12,0	95,0	52,0	35,0	36,0	67792
0.4531	11,509 mm	29/64	12,0	95,0	52,0	35,0	36,0	58842
0.4567	11,600 mm		12,0	95,0	52,0	35,0	36,0	67793
0.4606	11,700 mm		12,0	95,0	53,0	35,0	36,0	67794
0.4646	11,800 mm		12,0	95,0	53,0	35,0	36,0	67795
0.4685	11,900 mm		12,0	95,0	54,0	36,0	36,0	67796
0.4688	11,908 mm	15/32	12,0	95,0	54,0	36,0	36,0	58843
0.4724	12,000 mm		12,0	95,0	54,0	36,0	36,0	67797
0.4844	12,304 mm	31/64	14,0	105,0	55,0	37,0	37,0	58844
0.4921	12,500 mm		14,0	105,0	56,0	37,0	37,0	67798
0.5000	12,700 mm	1/2	14,0	105,0	57,0	38,0	37,0	58845
0.5039	12.800 mm		14.0	105.0	58.0	38.0	37.0	67799
0.5118	13,000 mm		14,0	105,0	58,0	39,0	37,0	67800
0.5156	13,096 mm	33/64	14,0	105,0	59,0	39,0	37,0	58846
0.5312	13,492 mm	17/32	14,0	105,0	61,0	40,0	37,0	58847
0.5315	13,500 mm		14,0	105,0	61,0	41,0	37,0	67801
0.5469	13,891 mm	35/64	14,0	105,0	63,0	42,0	37,0	58848
0.5512	14,000 mm		14,0	105,0	63,0	42,0	37,0	67802
0.5625	14,288 mm	9/16	16,0	115,0	64,0	43,0	38,0	58849
0.5709	14.500 mm		16.0	115.0	65.0	44.0	38.0	67803
0.5781	14,684 mm	37/64	16,0	115,0	66,0	44,0	38,0	58850
0.5906	15,000 mm		16,0	115,0	68,0	45,0	38,0	67804
0.5938	15,083 mm	19/32	16,0	115,0	68,0	45,0	38,0	58851
0.6094	15,479 mm	39/64	16,0	115,0	70,0	46,0	38,0	58852
0.6102	15,500 mm		16,0	115,0	70,0	46,0	38,0	67805
0.6250	15,875 mm	5/8	16,0	115,0	71,0	48,0	38,0	58853
0.6299	16,000 mm		16,0	115,0	72,0	48,0	38,0	67806
0.6406	16,271 mm	41/64	18,0	130,0	73,0	49,0	44,0	58854
0.6496	16,500 mm		18,0	130,0	74,0	49,0	44,0	67807
0.6562	16,667 mm	21/32	18,0	130,0	75,0	50,0	44,0	58855
0.6693	17,000 mm		18,0	130,0	77,0	51,0	44,0	67808
0.6719	17,066 mm	43/64	18,0	130,0	77,0	51,0	44,0	58856
0.6875	17,463 mm	11/16	18,0	130,0	79,0	52,0	44,0	58857
0.6890	17,500 mm		18,0	130,0	79,0	53,0	44,0	67809
0.7031	17,859 mm	45/64	18,0	130,0	80,0	54,0	44,0	58858
0.7087	18,000 mm		18,0	130,0	81,0	54,0	44,0	67810
0.7188	18,258 mm	23/32	20,0	140,0	82,0	55,0	45,0	58859
0.7283	18,500 mm		20,0	140,0	83,0	55,0	45,0	67811
0.7344	18,654 mm	47/64	20,0	140,0	84,0	56,0	45,0	58860
0.7480	19,000 mm		20,0	140,0	85,0	57,0	45,0	67812
0.7500	19,050 mm	3/4	20,0	140,0	86,0	57,0	45,0	58861







FLUTE

LENGTH

LCF

88,0

88,0

89,0

90,0

91,0

92,0

93,0

USABLE

LENGTH

1.0

58,0

58,0

60,0

60,0

61,0

62,0

62,0

OVERALL

0AL

140,0

140,0

140,0

140,0

150,0

150,0

150,0

inch & mm SHANK

DCON

20,0

20,0

20,0

20,0

22,0

22,0

22,0

DC

49/64

25/32

51/64

13/16

146U 3xD **FRACTIONAL & METRIC SERIES**

 4-margin design
improves accuracy and
surface finish along with
increased strength for
aggressive drilling
 Specialized self-
centering notched point

- edge fatigue allowing for increased feed rates · Recommended for materials ≤ 56 HRc (≤ 577 Bhn)
- FRACTIONAL/ DECIMAL METRIC LETTER/WIRE DIAMETER LENGTH DC DC 0.7656 19,446 mm

19,500 mm

19,842 mm

20,000 mm

20,241 mm

20,500 mm

20,638 mm

0.7677

0.7812

0.7874

0.7969

0.8071

0.8125



SHANK

LENGTH

LS

45,0

45,0

45,0

45,0

52,0

52,0

52,0

Ti-NAMITE[®]-X

(TX)

58862

67813

58863

67814

58864

67815

58865

OAL

TOLERANCES (inch)

```
≤.1181 DIAMETER
DC = +.00008/+.00047
DCON = h_6
```

>.1181-.2362 DIAMETER DC = +.00016/+.00063 $DCON = h_6$

>.2362-.3937 DIAMETER **DC** = +.00024/+.00083 **DCON** = h_6

>.3937-.7087 DIAMETER **DC** = +.00028/+.00098 $DCON = h_6$

>.7087-1.1811 DIAMETER **DC** = +.00031/+.00114 $DCON = h_6$

TOLERANCES (mm)

≤3 DIAMETER

DC = +0,002/+0,012 $DCON = h_6$

>3-6 DIAMETER **DC** = +0,004/+0,016DCON = he

>6-10 DIAMETER

DC = +0,006/+0,021 **DCON** = h_6

>10-18 DIAMETER DC = +0,007/+0,025 DCON = he

>18-30 DIAMETER DC = +0,008/+0,029

 $DCON = h_6$



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180°



Flutes





146U 5xD **FRACTIONAL & METRIC SERIES**

TOLERANCES (inch)				inch & mm					EDP NO.	
≤.1181 DIAMETER DC = +.00008/+.00047	DECIMAL DC	METRIC DC	FRACTIONAL/ Letter/wire DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	SHANK LENGTH LS	Ti-NAMITE®-X (TX)	4-margin design improves accuracy and surface finish along with increased strength
DCON = h ₆	0.1181	3,000 mm		6,0	75,0	19,0	15,0	51,0	67816	for aggressive drilling
>.11812362 DIAMETER	0.1220	3,100 mm		6,0	80,0	20,0	15,0	49,0	67817	 Specialized self-
DC = +.00016/+.00063	0.1250	3,175 mm	1/8	6,0	80,0	21,0	16,0	49,0	58866	centering notched point
DCON = h ₆	0.1260	3,200 mm		6,0	80,0	21,0	16,0	49,0	67818	spot drilling decreasing
>.23623937 DIAMETER	0.1299	3,300 mm		6,0	80,0	21,0	16,0	49,0	67819	thrust and deflection
DC = +.00024/+.00083	0.1339	3,400 mm		6,0	80,0	22,0	17,0	49,0	67820	Engineered edge protostion improvos
DCON = h ₆	0.1360	3,454 mm	#29	6,0	80,0	22,0	17,0	49,0	58867	edge strength and
>.39377087 DIAMETER	0.1378	3,500 mm		6,0	80,0	23,0	18,0	49,0	67821	reduces edge fatigue
DC = +.00028/+.00098	0.1405	3,569 mm	#28	6,0	80,0	23,0	18,0	49,0	58868	feed rates
DCON = h ₆	0.1406	3,571 mm	9/64	6,0	80,0	23,0	18,0	49,0	58869	Recommended for
>.7087–1.1811 DIAMETER	0.1417	3,600 mm		6,0	80,0	23,0	18,0	49,0	67822	materials ≤ 56 HRc
DC = +.00031/+.00114	0.1457	3,700 mm		6,0	80,0	24,0	19,0	49,0	67823	(≤ 5/7 Bhn)
DCON = h ₆	0.1470	3,734 mm	#26	6,0	80,0	24,0	19,0	49,0	58870	
	0.1495	3,797 mm	#25	6,0	80,0	25,0	19,0	49,0	58871	
TOLERANCES (mm)	0.1496	3,800 mm		6,0	80,0	25,0	19,0	49,0	67824	
<3 DIAMETER	0.1520	3,861 mm	#24	6,0	80,0	25,0	19,0	49,0	58872	
DC = +0.002/+0.012	0.1535	3,900 mm		6,0	80,0	25,0	19,0	49,0	67825	
DCON = h ₆	0.1562	3,967 mm	5/32	6,0	80,0	26,0	20,0	49,0	58873	
S-6 DIAMETER	0.1570	3,988 mm	#22	6,0	80,0	26,0	20,0	49,0	58874	
PC = +0.004/+0.016	0.1575	4,000 mm		6,0	80,0	26,0	20,0	49,0	67826	
DCON = h ₆	0.1590	4,039 mm	#21	6,0	80,0	26,0	20,0	49,0	58875	
	0.1610	4,089 mm	#20	6,0	90,0	27,0	20,0	53,0	58876	
>0-10 DIAMETER	0.1614	4,100 mm		6,0	90,0	27,0	20,0	53,0	67827	
DCON = he	0.1654	4,200 mm		6,0	90,0	27,0	21,0	53,0	67828	
	0.1693	4,300 mm		6,0	90,0	28,0	22,0	53,0	67829	
>IU-IN DIAMETER	0.1719	4,366 mm	11/64	6,0	90,0	28,0	22,0	53,0	58877	
DC = +0,007/+0,025	0.1732	4,400 mm		6,0	90,0	29,0	22,0	53,0	67830	
	0.1770	4,496 mm	#16	6,0	90,0	29,0	22,0	53,0	58878	
>18-30 DIAMETER	0.1772	4,500 mm		6,0	90,0	29,0	23,0	53,0	67831	
DC = +0,008/+0,029	0.1811	4,600 mm		6,0	90,0	30,0	23,0	53,0	67832	
DCOM = 116	0.1850	4,699 mm	#13	6,0	90,0	31,0	23,0	53,0	58879	
	0.1875	4,763 mm	3/16	6,0	90,0	31,0	24,0	53,0	58880	
STEELS	0.1890	4,801 mm	#12	6,0	90,0	31,0	24,0	53,0	58881	
STAINLESS STEELS	0.1929	4,900 mm		6,0	90,0	32,0	24,0	53,0	67835	
	0.1935	4,915 mm	#10	6,0	90,0	32,0	25,0	53,0	58882	
CAST IRON	0.1969	5,000 mm		6,0	95,0	33,0	25,0	51,0	67836	
HIGH TEMP ALLOYS	0.2008	5,100 mm		6,0	95,0	33,0	26,0	51,0	67837	
	0.2010	5,105 mm	#7	6.0	95,0	33.0	26,0	51,0	58883	
NUN-FERROUS	0.2031	5,159 mm	13/64	6.0	95,0	34,0	26,0	51,0	58884	
	0.2047	5,200 mm		6.0	95.0	34.0	26.0	51.0	67838	
For patent	0.2087	5,300 mm		6,0	95,0	34,0	27,0	51,0	67839	
www.ksptpatents.com	0.2090	5,309 mm	#4	6,0	95,0	35,0	27,0	51,0	58885	

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146U 5xD **FRACTIONAL & METRIC SERIES**

• A mornin design				inch & mm					EDP NO.	TOLERANCES (inch)
 4-margin design improves accuracy and surface finish along with ingreased strength for 	DECIMAL DC	METRIC DC	FRACTIONAL/ Letter/wire DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	SHANK LENGTH LS	Ti-NAMITE°-X (TX)	≤.1181 DIAMETER DC = +.00008/+.00
aggressive drilling	0.2126	5,400 mm		6,0	95,0	35,0	27,0	51,0	67840	DCON = h ₆
Specialized self-	0.2130	5,410 mm	#3	6,0	95,0	35,0	27,0	51,0	58886	>.11812362 DIAME
centering notched point	0.2165	5,500 mm		6,0	95,0	36,0	27,0	51,0	67841	DC = +.00016/+.00
spot drilling decreasing	0.2188	5,558 mm	7/32	6,0	95,0	36,0	28,0	51,0	58887	DCON = h ₆
thrust and deflection	0.2205	5,600 mm		6,0	95,0	36,0	28,0	51,0	67842	>.23623937 DIAME
Engineered edge protoction improves edge	0.2244	5,700 mm		6,0	95,0	37,0	28,0	51,0	67843	DC = +.00024/+.000
strength and reduces	0.2283	5,800 mm		6,0	95,0	38,0	29,0	51,0	67844	DCON = h ₆
edge fatigue allowing for	0.2323	5,900 mm		6,0	95,0	38,0	30,0	51,0	67845	> 3937- 7087 DIAME
Possemmended for	0.2344	5,954 mm	15/64	6,0	95,0	39,0	30,0	51,0	58888	DC = +.00028/+.00
materials ≤ 56 HRc	0.2362	6,000 mm		6,0	95,0	39,0	30,0	51,0	67846	DCON = h ₆
(≤ 577 Bhn)	0.2402	6,100 mm		8,0	100,0	40,0	31,0	49,0	67847	> 7007 1 1011 DIAME
	0.2441	6,200 mm		8,0	100,0	40,0	31,0	49,0	67848	DC = + 0.0031/+ 0.00000000000000000000000000000000000
	0.2461	6,250 mm		8,0	100,0	41,0	31,0	49,0	67849	DCON = h ₆
	0.2480	6,300 mm		8,0	100,0	41,0	31,0	49,0	67850	
	0.2500	6,350 mm	1/4 E #0	8,0	100,0	41,0	32,0	49,0	58889	TOLEBANCES (mm)
	0.2520	6,400 mm		8,0	100,0	42,0	32,0	49,0	67851	
	0.2559	6,500 mm		8,0	100,0	42,0	32,0	49,0	67852	
	0.2570	6,528 mm	F	8,0	100,0	42,0	33,0	49,0	58890	DC = +0,002/+0,01
	0.2598	6,600 mm		8,0	100,0	43,0	33,0	49,0	67853	
	0.2638	6,700 mm		8,0	100,0	44,0	34,0	49,0	67854	>3-6 DIAMETER
	0.2656	6,746 mm	17/64	8,0	100,0	44,0	34,0	49,0	58891	DC = +0,004/+0,010
	0.2677	6,800 mm		8,0	100,0	44,0	34,0	49,0	67855	
	0.2717	6,900 mm		8,0	100,0	45,0	35,0	49,0	67856	>6–10 DIAMETER
	0.2720	6,909 mm	I	8,0	100,0	45,0	35,0	49,0	58892	DC = +0,006/+0,02
	0.2756	7,000 mm		8,0	100,0	46,0	35,0	49,0	67857	DCON = n ₆
	0.2795	7,100 mm		8,0	100,0	46,0	35,0	49,0	67858	>10–18 DIAMETER
	0.2812	7,142 mm	9/32	8,0	100,0	46,0	36,0	49,0	58893	DC = +0,007/+0,02
	0.2835	7,200 mm		8,0	110,0	47,0	36,0	53,0	67859	DCON = h ₆
	0.2854	7,250 mm		8,0	110,0	47,0	36,0	53,0	67860	>18–30 DIAMETER
	0.2874	7,300 mm		8,0	110,0	47,0	36,0	53,0	67861	DC = +0,008/+0,02
	0.2913	7,400 mm		8,0	110,0	48,0	37,0	53,0	67862	DCON = h ₆
	0.2953	7,500 mm		8,0	110,0	49,0	38,0	53,0	67863	
	0.2969	7,541 mm	19/64	8,0	110,0	49,0	38,0	53,0	58894	STEELS
	0.2992	7,600 mm		8,0	110,0	49,0	38,0	53,0	67864	STAINLESS STEELS
	0.3031	7,700 mm		8,0	110,0	50,0	38,0	53,0	67865	
	0.3071	7,800 mm		8,0	110,0	51,0	39,0	53,0	67866	CAST IRON
	0.3110	7,900 mm		8,0	110,0	51,0	39,0	53,0	67867	NON-FERROUS
	0.3125	7,938 mm	5/16	8,0	110,0	52,0	40,0	53,0	58895	HIGH TEMP ALL OVE
	0.3150	8,000 mm		8,0	110,0	52,0	40,0	53,0	67868	THOST TEMP ALLOTS
	0.3189	8,100 mm		10,0	115,0	53,0	41,0	51,0	67869	HARDENED STEELS
	0.3228	8,200 mm		10,0	115,0	53,0	41,0	51,0	67870	
	0.3268	8,300 mm		10,0	115,0	54,0	42,0	51,0	67871	For patent

continued on next page

008/+.00047 DIAMETER 16/+.00063 DIAMETER 024/+.00083 DIAMETER 28/+.00098 DIAMETER 031/+.00114 **S** (mm) 02/+0,012 TER 04/+0,016 ETER 6/+0,021 IETER 07/+0,025 METER 08/+0,029 STEELS ous ALLOYS STEELS information visit www.ksptpatents.com





CONTINUED

								111/10
			inch & mm					EDP NO.
DECIMAL DC	METRIC DC	FRACTIONAL/ LETTER/WIRE DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	SHANK LENGTH LS	Ti-NAMITE [®] -X (TX)
0.3281	8,334 mm	21/64	10,0	115,0	54,0	42,0	51,0	58896
0.3307	8,400 mm		10,0	115,0	55,0	42,0	51,0	67872
0.3320	8,433 mm	Q	10,0	115,0	55,0	42,0	51,0	58897
0.3346	8,500 mm		10,0	115,0	55,0	42,0	51,0	67873
0.3386	8,600 mm		10,0	115,0	56,0	43,0	51,0	67874
0.3425	8,700 mm		10,0	115,0	57,0	43,0	51,0	67875
0.3438	8.733 mm	11/32	10.0	115.0	57.0	44.0	51.0	58898
0.3465	8.800 mm		10.0	115.0	57.0	44.0	51.0	67876
0.3504	8,900 mm		10.0	115.0	58.0	45.0	51.0	67877
0.3543	9,000 mm		10.0	115.0	58.0	45.0	51.0	67878
0.3583	9.100 mm		10.0	115.0	59.0	46.0	51.0	67879
0.3594	9.129 mm	23/64	10.0	115.0	59.0	46.0	51.0	58899
0.3622	9 200 mm	20,01	10.0	125.0	60.0	46.0	55.0	67880
0.3661	9.300 mm		10.0	125.0	60.0	46.0	55.0	67881
0.3680	9 347 mm	11	10.0	125.0	61.0	47.0	55.0	58900
0.0000	9 400 mm	0	10,0	125,0	61.0	47.0	55.0	67882
0.3740	9 500 mm		10,0	125,0	62.0	47.0	55,0	67883
0.3740	9 525 mm	3/8	10,0	125,0	62.0	/18.0	55.0	58901
0.3780	9.600 mm	0/0	10,0	125,0	62.0	/18 በ	55.0	6788/
0.3700	9 700 mm		10,0	125,0	62,0	-10,0 /10 N	55,0	67885
0.3013	9 800 mm		10,0	125,0	64.0	45,0	55.0	67886
0.3030	9,000 mm		10,0	125,0	64.0	40,0 50.0	55,0	67887
0.3030	9,900 mm	25/6/	10,0	125,0	64.0	50,0	55,0	59002
0.3900	9,921 IIIII	23/04	10,0	120,0	04,0 65.0	50,0	55,0	0030Z
0.3937	10,000 mm	V	10,0	125,0	00,0 66.0	50,0	55,0	07888
0.3970	10,004 11111	Λ	12,0	100,0	66.0	50,0	57,0	00900
0.3970	10,100 1111		12,0	130,0	00,0	50,0	57,0	07889
0.4010	10,200 11111	V	12,0	130,0	67.0	51,0	57,0	07890
0.4040	10,202 11111	T	12,0	133,0	67.0	51,0	57,0	00304
0.4000	10,300 mm	10/00	12,0	135,0	07,U	51,0	57,0	67891
0.4062	10,317 mm	13/3Z	12,0	135,0	67,0	52,0	57,0	58905
0.4094	10,400 mm		12,0	135,0	68,0	52,0	57,0	67892
0.4134	10,500 mm		12,0	135,0	68,0	53,0	57,0	67893
0.41/3	10,600 mm		12,0	135,0	69,0	53,0	57,0	67894
0.4213	10,700 mm	07/04	12,0	135,0	70,0	54,0	5/,0	67895
0.4219	10,716 mm	27/64	12,0	135,0	70,0	54,0	57,0	58906
0.4252	10,800 mm		12,0	135,0	70,0	54,0	57,0	67896
0.4291	10,900 mm		12,0	135,0	/1,0	54,0	57,0	6/89/
0.4331	11,000 mm		12,0	135,0	/2,0	55,0	57,0	67898
0.4370	11,100 mm		12,0	135,0	72,0	55,0	57,0	67899
0.4375	11,113 mm	7/16	12,0	135,0	72,0	56,0	57,0	58907
0.4409	11,200 mm		12,0	135,0	73,0	56,0	57,0	67900
0.4449	11,300 mm		12,0	135,0	73,0	57,0	57,0	67901
0.4488	11,400 mm		12,0	145,0	74,0	57,0	62,0	67902
0.4528	11,500 mm		12,0	145,0	75,0	58,0	62,0	67903
0.4531	11,509 mm	29/64	12,0	145,0	75,0	58,0	62,0	58908
0.4567	11,600 mm		12,0	145,0	75,0	58,0	62,0	67904
0.4606	11,700 mm		12,0	145,0	76,0	58,0	62,0	67905
0.4646	11,800 mm		12,0	145,0	77,0	59,0	62,0	67906
0.4685	11,900 mm		12,0	145,0	77,0	59,0	62,0	67907
0.4688	11,908 mm	15/32	12,0	145,0	77,0	60,0	62,0	58909







146U 5xD FRACTIONAL & METRIC SERIES

• A-margin design				inch & mm					EDP NO.	TOLERANCE
improves accuracy and surface finish along with	DECIMAL DC	METRIC DC	FRACTIONAL/ Letter/wire DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE Length LCF	USABLE Length Lu	SHANK LENGTH LS	Ti-NAMITE®-X (TX)	≤.1181 DIAME DC = +.000
aggressive drilling	0.4724	12,000 mm		12,0	145,0	78,0	60,0	62,0	67908	DCON = h ₆
Specialized self-	0.4844	12,304 mm	31/64	14,0	155,0	80,0	62,0	59,0	58910	>.11812362
centering notched point eliminates the need for	0.4921	12,500 mm		14,0	155,0	81,0	62,0	59,0	67909	DC = +.000
spot drilling decreasing	0.5000	12,700 mm	1/2	14,0	155,0	83,0	64,0	59,0	58911	DCON = h ₆
thrust and deflection	0.5039	12,800 mm		14,0	155,0	83,0	64,0	59,0	67910	>.23623937
Engineered edge protoction improves edge	0.5118	13,000 mm		14,0	155,0	84,0	65,0	59,0	67911	DC = +.000
strength and reduces	0.5156	13,096 mm	33/64	14,0	155,0	85,0	65,0	59,0	58912	DCON = h ₆
edge fatigue allowing for	0.5312	13,492 mm	17/32	14,0	155,0	88,0	67,0	59,0	58913	> 3937- 7087
Bocommonded for	0.5315	13,500 mm		14,0	155,0	88,0	68,0	59,0	67912	DC = +.000
materials ≤ 56 HRc	0.5469	13,891 mm	35/64	14,0	155,0	90,0	69,0	59,0	58914	DCON = h ₆
(≤ 577 Bhn)	0.5512	14,000 mm		14,0	155,0	91,0	70,0	59,0	67913	\$ 7007 1 1011
	0.5625	14,288 mm	9/16	16,0	175,0	93,0	71,0	66,0	58915	DC = + 000
	0.5709	14,500 mm		16,0	175,0	94,0	73,0	66,0	67914	DCON = h ₆
	0.5781	14,684 mm	37/64	16,0	175,0	95,0	73,0	66,0	58916	Ŭ
	0.5906	15,000 mm		16,0	175,0	98,0	75,0	66,0	67915	TOLEBANCE
	0.5938	15,083 mm	19/32	16,0	175,0	98,0	75,0	66,0	58917	
	0.6094	15,479 mm	39/64	16,0	175,0	101,0	77,0	66,0	58918	
	0.6102	15,500 mm		16,0	175,0	101,0	77,0	66,0	67916	DC = +0,00
	0.6250	15,875 mm	5/8	16,0	175,0	103,0	79,0	66,0	58919	
	0.6299	16,000 mm		16,0	175,0	104,0	80,0	66,0	67917	>3-6 DIAME
	0.6406	16,271 mm	41/64	18,0	195,0	106,0	81,0	73,0	58920	DC = +0,00
	0.6496	16,500 mm		18,0	195,0	107,0	82,0	73,0	67918	DCON= 116
	0.6562	16,667 mm	21/32	18,0	195,0	108,0	83,0	73,0	58921	>6–10 DIAM
	0.6693	17,000 mm		18,0	195,0	111,0	85,0	73,0	67919	DC = +0,00
	0.6719	17,066 mm	43/64	18,0	195,0	111,0	85,0	73,0	58922	DCON = N ₆
	0.6875	17,463 mm	11/16	18,0	195,0	114,0	87,0	73,0	58923	>10–18 DIAN
	0.6890	17,500 mm		18,0	195,0	114,0	88,0	73,0	67920	DC = +0,00
	0.7031	17,859 mm	45/64	18,0	195,0	116,0	89,0	73,0	58924	DCON = h ₆
	0.7087	18,000 mm		18,0	195,0	117,0	90,0	73,0	67921	> 18–30 diam
	0.7188	18,258 mm	23/32	20,0	215,0	119,0	91,0	80,0	58925	DC = +0,00
	0.7283	18,500 mm		20,0	215,0	120,0	92,0	80,0	67922	DCON = h ₆
	0.7344	18,654 mm	47/64	20,0	215,0	121,0	93,0	80,0	58926	
	0.7480	19,000 mm		20,0	215,0	123,0	95,0	80,0	67923	STEELS
	0.7500	19,050 mm	3/4	20,0	215,0	124,0	95,0	80,0	58927	STAINLESS
	0.7656	19,446 mm	49/64	20,0	215,0	126,0	97,0	80,0	58928	
	0.7677	19,500 mm		20,0	215,0	127,0	97,0	80,0	67924	CAST IRON
	0.7812	19,842 mm	25/32	20,0	215,0	129,0	99,0	80,0	58929	NON-FERR
	0.7874	20,000 mm		20,0	215,0	130,0	100,0	80,0	67925	
	0.7969	20,241 mm	51/64	22,0	220,0	132,0	101,0	81,0	58930	
	0.8071	20,500 mm		22,0	220,0	133,0	103,0	81,0	67926	HARDENED
	0.8125	20.638 mm	13/16	22.0	220.0	134.0	103.0	81.0	58931	

TOLERANCES (inch)

≤.1181 DIAMETER
DC = +.00008/+.00047
DCON = h ₆
>.1181–.2362 DIAMETER
DC = +.00016/+.00063
DCON = h ₆
>.23623937 DIAMETER
DC = + 0.0024/+ 0.0083
DCON = he
>.3937–.7087 DIAMETER
DC = +.00028/+.00098
DCON = h ₆
>.7087–1.1811 DIAMETER
DC = +.00031/+.00114
DCON = h ₆
v
I ULEKANGES (MM)
≤ 3 DIAMETER
DC = +0,002/+0,012
DCON = h ₆
DCON = N ₆
>6–10 DIAMETER
DC = +0,006/+0,021
DCON = h ₆
DC = +0,007/+0,023
>18–30 DIAMETER
DC = +0,008/+0,029
DCON = h ₆
STEELS
JIEELJ
STAINLESS STEELS
CAST IRON
NON-FERROUS
HIGH TEMP ALLOYS
HARDENED STEELS
For patent information visit www.ksptpatents.com



Margins

Flutes

180°

Point Angle

External Coolant







<u>15°</u>

136U 2xD FRACTIONAL & METRIC SERIES

TOLERANCES (inch)

TOLERANCES (inch)				inch & mm					EDP NO.	• A margin dasign
<.1181 DIAMETER DC = +.00008/+.00047	DECIMAL DC	METRIC DC	FRACTIONAL/ LETTER/WIRE DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	SHANK LENGTH LS	Ti-NAMITE®-X (TX)	 4-margin design improves accuracy and surface finish along with increased strength
DCON = n ₆	0.0591	1,500 mm		6,0	45,0	5,0	3,0	33,0	67060	for aggressive drilling
>.1181–.2362 DIAMETER	0.0625	1,588 mm	1/16	6,0	45,0	6,0	3,0	33,0	58480	Specialized self-
DC = +.00016/+.00063 DCON = he	0.0630	1,600 mm		6,0	45,0	6,0	3,0	33,0	67061	eliminates the need for
> 2262 2027 DIAMETER	0.0669	1,700 mm		6,0	45,0	6,0	3,0	33,0	67062	spot drilling decreasing thrust and deflection
DC = +.00024/+.00083	0.0709	1,800 mm		6,0	45,0	6,0	4,0	33,0	67063	Engineered edge
DCON = h ₆	0.0748	1,900 mm		6,0	45,0	7,0	4,0	33,0	67064	protection improves
>.3937–.7087 DIAMETER	0.0781	1,984 mm	5/64	6,0	45,0	7,0	4,0	33,0	58481	reduces edge fatigue
DC = +.00028/+.00098	0.0787	2,000 mm		6,0	45,0	7,0	4,0	33,0	67065	allowing for increased
DCON = h ₆	0.0827	2,100 mm		6,0	45,0	7,0	4,0	33,0	67066	Recommended for
>.7087–1.1811 DIAMETER	0.0866	2,200 mm		6,0	50,0	8,0	4,0	31,0	67067	materials \leq 56 HRc
DC = +.00031/+.00114	0.0906	2,300 mm		6,0	50,0	8,0	5,0	31,0	67068	(≤ 577 Bun)
DCON = h ₆	0.0938	2,383 mm	3/32	6,0	50,0	8,0	5,0	31,0	58482	
	0.0945	2,400 mm		6,0	50,0	8,0	5,0	31,0	67069	
TOLERANCES (mm)	0.0984	2,500 mm		6,0	50,0	9,0	5,0	31,0	67070	
≤ 3 DIAMETER	0.1015	2,578 mm	#38	6,0	50,0	9,0	5,0	31,0	58483	
DC = +0,002/+0,012	0.1024	2,600 mm		6,0	50,0	9,0	5,0	31,0	67071	
DCON = n ₆	0.1040	2,642 mm	#37	6,0	50,0	9,0	5,0	31,0	58484	
>3-6 DIAMETER	0.1063	2,700 mm		6,0	50,0	9,0	5,0	31,0	67072	
DC = +0,004/+0,016 DCON = he	0.1065	2,705 mm	#36	6,0	50,0	9,0	5,0	31,0	58485	
	0.1094	2,779 mm	7/64	6,0	50,0	10,0	6,0	31,0	58486	
>b-1U DIAMETER	0.1102	2,800 mm		6,0	50,0	10,0	6,0	31,0	67073	
DCON = h_6	0.1130	2,870 mm	#33	6,0	50,0	10,0	6,0	31,0	58487	
	0.1142	2,900 mm		6,0	50,0	10,0	6,0	31,0	67074	
DC = +0.007/+0.025	0.1181	3,000 mm		6,0	50,0	10,0	6,0	31,0	67075	
DCON = h ₆	0.1220	3,100 mm		6,0	50,0	11,0	6,0	31,0	67076	
>18-30 DIAMETER	0.1250	3,175 mm	1/8	6,0	50,0	11,0	6,0	31,0	58488	
DC = +0,008/+0,029	0.1260	3,200 mm		6,0	50,0	11,0	6,0	31,0	67077	
DCON = h ₆	0.1299	3,300 mm		6,0	50,0	12,0	7,0	31,0	67078	
	0.1339	3,400 mm		6,0	50,0	12,0	7,0	31,0	67079	
STEELS	0.1360	3,454 mm	#29	6,0	50,0	12,0	7,0	31,0	58489	
STAINI ESS STEELS	0.1378	3,500 mm		6,0	50,0	12,0	7,0	31,0	67080	
STAINLESS STEELS	0.1405	3,569 mm	#28	6,0	50,0	12,0	7,0	31,0	58490	
CAST IRON	0.1406	3,571 mm	9/64	6,0	50,0	12,0	7,0	31,0	58491	
HIGH TEMP ALLOYS	0.1417	3,600 mm		6,0	50,0	13,0	7,0	31,0	67081	
NON-FERROUS	0.1457	3,700 mm		6,0	50,0	13,0	7,0	31,0	67082	
	0.1470	3,734 mm	#26	6,0	50,0	13,0	7,0	31,0	58492	
For natent	0.1495	3,797 mm	#25	6,0	50,0	13,0	8,0	31,0	58493	
information visit	0.1496	3,800 mm		6,0	50,0	13,0	8,0	31,0	67083	
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FRACTIONAL & METRIC SERIES







OAL

• 4-margin design				inch & mm					EDP NO.
improves accuracy and surface finish along with increased strength for	DECIMAL DC	METRIC DC	FRACTIONAL/ Letter/Wire DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE Length LCF	USABLE LENGTH LU	SHANK LENGTH LS	Ti-NAMITE®-X (TX)
aggressive drilling	0.1520	3,861 mm	#24	6,0	50,0	14,0	8,0	31,0	58494
Specialized self- contoring patched point	0.1535	3,900 mm		6,0	50,0	14,0	8,0	31,0	67084
eliminates the need for	0.1562	3,967 mm	5/32	6,0	50,0	14,0	8,0	31,0	58495
spot drilling decreasing thrust and deflection	0.1570	3,988 mm	#22	6,0	50,0	14,0	8,0	31,0	58496
Engineered edge	0.1575	4,000 mm		6,0	50,0	14,0	8,0	31,0	67085
protection improves edge	0.1590	4,039 mm	#21	6,0	50,0	14,0	8,0	31,0	58497
edge fatigue allowing for	0.1610	4,089 mm	#20	6,0	50,0	14,0	8,0	31,0	58498
increased feed rates	0.1614	4,100 mm		6,0	50,0	14,0	8,0	31,0	67086
 Recommended for materials ≤ 56 HRc 	0.1654	4,200 mm		6,0	60,0	15,0	8,0	34,0	67087
(≤ 577 Bhn)	0.1693	4,300 mm		6,0	60,0	15,0	9,0	34,0	67088
	0.1719	4,366 mm	11/64	6,0	60,0	15,0	9,0	34,0	58499
	0.1732	4,400 mm		6,0	60,0	15,0	9,0	34,0	67089
	0.1770	4,496 mm	#16	6,0	60,0	16,0	9,0	34,0	58500
	0.1772	4,500 mm		6,0	60,0	16,0	9,0	34,0	67090
	0.1811	4,600 mm		6,0	60,0	16,0	9,0	34,0	67091
	0.1850	4,699 mm	#13	6,0	60,0	16,0	9,0	34,0	58501
	0.1875	4,763 mm	3/16	6,0	60,0	17,0	10,0	34,0	58502
	0.1890	4,801 mm	#12	6,0	60,0	17,0	10,0	34,0	58503
	0.1929	4,900 mm		6,0	60,0	17,0	10,0	34,0	67094
	0.1935	4,915 mm	#10	6,0	60,0	17,0	10,0	34,0	58504
	0.1969	5,000 mm		6,0	60,0	18,0	10,0	34,0	67095
	0.2008	5,100 mm		6,0	60,0	18,0	10,0	34,0	67096
	0.2010	5,105 mm	#7	6,0	60,0	18,0	10,0	34,0	58505
	0.2031	5,159 mm	13/64	6,0	60,0	18,0	10,0	34,0	58506
	0.2047	5,200 mm		6,0	60,0	18,0	10,0	34,0	67097
	0.2087	5,300 mm		6,0	60,0	19,0	11,0	34,0	67098
	0.2090	5,309 mm	#4	6,0	60,0	19,0	11,0	34,0	58507
	0.2126	5,400 mm		6,0	60,0	19,0	11,0	34,0	67099
	0.2130	5,410 mm	#3	6,0	60,0	19,0	11,0	34,0	58508
	0.2165	5,500 mm		6,0	60,0	19,0	11,0	34,0	67100
	0.2188	5,558 mm	7/32	6,0	60,0	19,0	11,0	34,0	58509
	0.2205	5,600 mm		6,0	60,0	20,0	11,0	34,0	67101
	0.2244	5,700 mm		6,0	60,0	20,0	11,0	34,0	67102
	0.2283	5,800 mm		6,0	60,0	20,0	12,0	34,0	67103
	0.2323	5,900 mm		6,0	60,0	21,0	12,0	34,0	67104
	0.2344	5,954 mm	15/64	6,0	60,0	21,0	12,0	34,0	58510
	0.2362	6,000 mm		6,0	60,0	21,0	12,0	34,0	67105
	0.2402	6,100 mm		8,0	70,0	22,0	13,0	37,0	67106
	0.2441	6,200 mm		8,0	70,0	22,0	12,0	37,0	67107
	0.2461	6,250 mm		8,0	70,0	22,0	13,0	37,0	67108

OLERANCES (inch)

≤.1181 DIAMETER
DC = +.00008/+.00047
DCON = h ₆
>.11812362 DIAMETER
DC = +.00016/+.00063
DCON = h ₆
>.23623937 DIAMETER
DC = +.00024/+.00083
DCON = h_6
>.39377087 DIAMETER
DC = +.00028/+.00098
>.7087–1.1811 DIAMETER
DC = +.00031/+.00114 DCON = hs
TOLERANCES (mm)
≤ 3 DIAMETER
DC = +0,002/+0,012
DCON = h ₆
>3-6 DIAMETER
DC = +0,004/+0,016
DCON = h ₆
>6–10 DIAMETER
DC = +0,006/+0,021
DCON = h ₆
>10–18 DIAMETER
DC = +0,007/+0,025
DCUN = h ₆
>18-30 DIAMETER
DC = +0,008/+0,029
STEELS
STAINLESS STEELS
CAST IRON
NON-FERROUS
HIGH TEMP ALLOYS
HARDENED STEELS
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CONTINUED

			inch 9 mm					EDD NO
DECIMAL	METRIC	FRACTIONAL/ LETTER/WIRE	SHANK	OVERALL LENGTH	FLUTE LENGTH	USABLE LENGTH	SHANK	Ti-NAMITE [®] -X (TX)
0 2/180	6 300 mm	DC	8 D	0AL 70.0	22.0	13 0	37.0	67109
0.2400	6 350 mm	1// E #0	0,0 8.0	70,0	22,0	13,0	37,0	58511
0.2500	6 400 mm	1/4 2 // 0	8.0	70,0	22,0	13.0	37.0	67110
0.2559	6 500 mm		8.0	70,0	23.0	13.0	37.0	67111
0.2570	6 528 mm	F	8.0	70,0	23.0	13.0	37.0	58512
0.2598	6 600 mm		8.0	70,0	23,0	13.0	37.0	67112
0.2638	6 700 mm		8.0	70.0	23.0	13.0	37.0	67113
0.2656	6 746 mm	17/64	8.0	70.0	24.0	13.0	37.0	58513
0 2677	6 800 mm	17,01	8.0	70.0	24.0	14.0	37.0	67114
0.2017	6 900 mm		8.0	70.0	24.0	14.0	37.0	67115
0 2720	6 909 mm	1	8.0	70.0	24.0	14.0	37.0	58514
0.2756	7 000 mm	•	8.0	70.0	25.0	14.0	37.0	67116
0.2795	7,100 mm		8.0	70.0	25.0	14.0	37.0	67117
0.2812	7,142 mm	9/32	8.0	70.0	25.0	14.0	37.0	58515
0.2835	7,200 mm	-,	8.0	70.0	25.0	14.0	37.0	67118
0.2854	7.250 mm		8.0	70.0	25.0	14.0	37.0	67119
0.2874	7.300 mm		8.0	70.0	26.0	15.0	37.0	67120
0.2913	7.400 mm		8.0	70.0	26.0	15.0	37.0	67121
0.2953	7,500 mm		8,0	70,0	26,0	15,0	37,0	67122
0.2969	7.541 mm	19/64	8.0	70.0	26.0	15.0	37.0	58516
0.2992	7.600 mm	-, -	8.0	70.0	27.0	15.0	37.0	67123
0.3031	7,700 mm		8,0	70,0	27,0	15,0	37,0	67124
0.3071	7.800 mm		8.0	70.0	27.0	16.0	37.0	67125
0.3110	7,900 mm		8,0	70,0	28,0	16,0	37,0	67126
0.3125	7,938 mm	5/16	8,0	70,0	28,0	16,0	37,0	58517
0.3150	8,000 mm		8,0	70,0	28,0	16,0	37,0	67127
0.3189	8,100 mm		10,0	80,0	29,0	17,0	40,0	67128
0.3228	8,200 mm		10,0	80,0	29,0	16,0	40,0	67129
0.3268	8,300 mm		10,0	80,0	29,0	17,0	40,0	67130
0.3281	8,334 mm	21/64	10,0	80,0	29,0	17,0	40,0	58518
0.3307	8,400 mm		10,0	80,0	29,0	17,0	40,0	67131
0.3320	8,433 mm	Q	10,0	80,0	30,0	17,0	40,0	58519
0.3346	8,500 mm		10,0	80,0	30,0	17,0	40,0	67132
0.3386	8,600 mm		10,0	80,0	30,0	17,0	40,0	67133
0.3425	8,700 mm		10,0	80,0	30,0	17,0	40,0	67134
0.3438	8,733 mm	11/32	10,0	80,0	31,0	17,0	40,0	58520
0.3465	8,800 mm		10,0	80,0	31,0	18,0	40,0	67135
0.3504	8,900 mm		10,0	80,0	31,0	18,0	40,0	67136
0.3543	9,000 mm		10,0	80,0	31,0	18,0	40,0	67137
0.3583	9,100 mm		10,0	80,0	32,0	18,0	40,0	67138
0.3594	9,129 mm	23/64	10,0	80,0	32,0	18,0	40,0	58521
0.3622	9,200 mm		10,0	80,0	32,0	18,0	40,0	67139
0.3661	9,300 mm		10,0	80,0	33,0	19,0	40,0	67140
0.3680	9,347 mm	U	10,0	80,0	33,0	19,0	40,0	58522
0.3701	9,400 mm		10,0	80,0	33,0	19,0	40,0	67141
0.3740	9,500 mm		10,0	80,0	33,0	19,0	40,0	67142

136U 2xD

FRACTIONAL & METRIC SERIES







OAL

losian				inch & mm					EDP NO.
accuracy and ish along with	DECIMAL DC	METRIC DC	FRACTIONAL/ Letter/Wire DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	SHANK LENGTH LS	Ti-NAMITE®-X (TX)
drilling	0.3750	9,525 mm	3/8	10,0	80,0	33,0	19,0	40,0	58523
d self-	0.3780	9,600 mm		10,0	80,0	34,0	19,0	40,0	67143
the need for	0.3819	9,700 mm		10,0	80,0	34,0	19,0	40,0	67144
g decreasing	0.3858	9,800 mm		10,0	80,0	34,0	20,0	40,0	67145
d edae	0.3898	9,900 mm		10,0	80,0	35,0	20,0	40,0	67146
mproves edge	0.3906	9,921 mm	25/64	10,0	80,0	35,0	20,0	40,0	58524
allowing for	0.3937	10,000 mm		10,0	80,0	35,0	20,0	40,0	67147
rates	0.3970	10,084 mm	Х	12,0	90,0	36,0	21,0	43,0	58525
for HRc	0.3976	10,100 mm		12,0	90,0	36,0	21,0	43,0	67148
	0.4016	10,200 mm		12,0	90,0	36,0	20,0	43,0	67149
	0.4040	10,262 mm	Y	12,0	90,0	36,0	21,0	43,0	58526
	0.4055	10,300 mm		12,0	90,0	36,0	21,0	43,0	67150
	0.4062	10,317 mm	13/32	12,0	90,0	36,0	21,0	43,0	58527
	0.4094	10,400 mm		12,0	90,0	36,0	21,0	43,0	67151
	0.4134	10,500 mm		12,0	90,0	37,0	21,0	43,0	67152
	0.4173	10,600 mm		12,0	90,0	37,0	21,0	43,0	67153
	0.4213	10,700 mm		12,0	90,0	37,0	21,0	43,0	67154
	0.4219	10,716 mm	27/64	12,0	90,0	38,0	21,0	43,0	58528
	0.4252	10,800 mm		12,0	90,0	38,0	22,0	43,0	67155
	0.4291	10,900 mm		12,0	90,0	38,0	22,0	43,0	67156
	0.4331	11,000 mm		12,0	90,0	39,0	22,0	43,0	67157
	0.4370	11,100 mm		12,0	90,0	39,0	22,0	43,0	67158
	0.4375	11,113 mm	7/16	12,0	90,0	39,0	22,0	43,0	58529
	0.4409	11,200 mm		12,0	90,0	39,0	22,0	43,0	67159
	0.4449	11,300 mm		12,0	90,0	40,0	23,0	43,0	67160
	0.4488	11,400 mm		12,0	90,0	40,0	23,0	43,0	67161
	0.4528	11,500 mm		12,0	90,0	40,0	23,0	43,0	67162
	0.4531	11,509 mm	29/64	12,0	90,0	40,0	23,0	43,0	58530
	0.4567	11,600 mm		12,0	90,0	41,0	23,0	43,0	67163
	0.4606	11,700 mm		12,0	90,0	41,0	23,0	43,0	67164
	0.4646	11,800 mm		12,0	90,0	41,0	24,0	43,0	67165
	0.4685	11,900 mm		12,0	90,0	42,0	24,0	43,0	67166
	0.4688	11,908 mm	15/32	12,0	90,0	42,0	24,0	43,0	58531
	0.4724	12,000 mm		12,0	90,0	42,0	24,0	43,0	67167
	0.4844	12,304 mm	31/64	14,0	100,0	43,0	25,0	46,0	58532
	0.4921	12,500 mm		14,0	100,0	44,0	25,0	46,0	67168
	0.5000	12,700 mm	1/2	14,0	100,0	44,0	25,0	46,0	58533
	0.5039	12,800 mm		14,0	100,0	45,0	26,0	46,0	67169

RANCES (inch)

≤.1181 DIAMETER
DC = +.00008/+.00047 $DCON = h_{e}$
· 4404 - 2202 DIAMETER
>.11812362 DIAMETER DC = + 00016/+ 00063
DCON = h_6
>.2362–.3937 DIAMETER
DC = +.00024/+.00083
DCON = h ₆
>.39377087 DIAMETER
DC = +.00028/+.00098
DCON = n ₆
>.7087–1.1811 DIAMETER
DC = +.00037/+.00114 DCON = h ₆
v
TOLERANCES (mm)
≤ 3 DIAMETER
DC = +0,002/+0,012
DCON = h ₆
>3–6 DIAMETER
DC = +0,004/+0,016
>0-10 DIAMETER DC = +0.006/+0.021
DCON = h_6
>10–18 DIAMETER
DC = +0,007/+0,025
DCON = h ₆
>18-30 DIAMETER
DC = +0,008/+0,029
DCOM = 116
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CASTIKON
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CONTINUED

			inch & mm					EDP NO.
DECIMAL DC	METRIC DC	FRACTIONAL/ LETTER/WIRE DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	SHANK LENGTH LS	Ti-NAMITE®-X (TX)
0.5118	13,000 mm		14,0	100,0	45,0	26,0	46,0	67170
0.5156	13,096 mm	33/64	14,0	100,0	46,0	26,0	46,0	58534
0.5312	13,492 mm	17/32	14,0	100,0	47,0	27,0	46,0	58535
0.5315	13,500 mm		14,0	100,0	47,0	27,0	46,0	67171
0.5469	13,891 mm	35/64	14,0	100,0	49,0	28,0	46,0	58536
0.5512	14,000 mm		14,0	100,0	49,0	28,0	46,0	67172
0.5625	14,288 mm	9/16	16,0	110,0	50,0	29,0	49,0	58537
0.5709	14,500 mm		16,0	110,0	51,0	29,0	49,0	67173
0.5781	14,684 mm	37/64	16,0	110,0	51,0	29,0	49,0	58538
0.5906	15,000 mm		16,0	110,0	53,0	30,0	49,0	67174
0.5938	15,083 mm	19/32	16,0	110,0	53,0	30,0	49,0	58539
0.6094	15,479 mm	39/64	16,0	110,0	54,0	31,0	49,0	58540
0.6102	15,500 mm		16,0	110,0	54,0	31,0	49,0	67175
0.6250	15,875 mm	5/8	16,0	110,0	56,0	32,0	49,0	58541
0.6299	16,000 mm		16,0	110,0	56,0	32,0	49,0	67176
0.6406	16,271 mm	41/64	18,0	125,0	57,0	33,0	57,0	58542
0.6496	16,500 mm		18,0	125,0	58,0	33,0	57,0	67177
0.6562	16,667 mm	21/32	18,0	125,0	58,0	33,0	57,0	58543
0.6693	17,000 mm		18,0	125,0	60,0	34,0	57,0	67178
0.6719	17,066 mm	43/64	18,0	125,0	60,0	34,0	57,0	58544
0.6875	17,463 mm	11/16	18,0	125,0	61,0	35,0	57,0	58545
0.6890	17,500 mm		18,0	125,0	61,0	35,0	57,0	67179
0.7031	17,859 mm	45/64	18,0	125,0	63,0	36,0	57,0	58546
0.7087	18,000 mm		18,0	125,0	63,0	36,0	57,0	67180
0.7188	18,258 mm	23/32	20,0	135,0	64,0	37,0	60,0	58547
0.7283	18,500 mm		20,0	135,0	65,0	37,0	60,0	67181
0.7344	18,654 mm	47/64	20,0	135,0	65,0	37,0	60,0	58548
0.7480	19,000 mm		20,0	135,0	66,0	38,0	60,0	67182
0.7500	19,050 mm	3/4	20,0	135,0	67,0	38,0	60,0	58549
0.7656	19,446 mm	49/64	20,0	135,0	68,0	39,0	60,0	58550
0.7677	19,500 mm		20,0	135,0	68,0	39,0	60,0	67183
0.7812	19,842 mm	25/32	20,0	135,0	69,0	40,0	60,0	58551
0.7874	20,000 mm		20,0	135,0	70,0	40,0	60,0	67184
0.7969	20,241 mm	51/64	22,0	145,0	71,0	40,0	68,0	58552
0.8071	20,500 mm		22,0	145,0	72,0	41,0	68,0	67185
0.8125	20,638 mm	13/16	22,0	145,0	72,0	41,0	68,0	58553

FRACTIONAL Series 146U • Series 136U



	Series 146U, 136U		Vc					DC • in				
	Fractional	Hardness	(sfm)		1/16	1/8	1/4	3/8	1/2	5/8	3/4	13/16
		< 175 Bhn	285	RPM	17419	8710	4355	2903	2177	1742	1452	1340
		Or	(220 242)	Fr	0.0016	0.0031	0.0062	0.0093	0.0124	0.0155	0.0186	0.0202
		≤ / HKC	(220-342)	Feed (ipm)	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0
	CARBON STEELS	< 275 Bhn	255	RPM	15586	7793	3896	2598	1948	1559	1299	1199
	1018, 1040, 1080, 1090, 10L50,	Or Or	(204, 206)	Fr	0.0013	0.0027	0.0054	0.0081	0.0108	0.0135	0.0162	0.0175
	1140, 1212, 12L15, 1525, 1536	≤ 28 HRc	(204-300)	Feed (ipm)	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0
		< 125 Bbr	145	RPM	8862	4431	2216	1477	1108	886	739	682
		or Or	(110 174)	Fr	0.0011	0.0023	0.0045	0.0068	0.0090	0.0113	0.0135	0.0147
		≤ 45 HRc	(110-1/4)	Feed (ipm)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
		< 275 Bhn	220	RPM	13446	6723	3362	2241	1681	1345	1121	1034
Р		or	(176 264)	Fr	0.0015	0.0030	0.0059	0.0089	0.0119	0.0149	0.0178	0.0193
	ALLOY STEELS	≤ 28 HKC	(176-264)	Feed (ipm)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
	5150, 8630, 86L20, 50100	< 375 Bhn	135	RPM	8251	4126	2063	1375	1031	825	688	635
			(100 162)	Fr	0.0013	0.0027	0.0053	0.0080	0.0107	0.0133	0.0160	0.0173
		≤ 40 HKC	(100-102)	Feed (ipm)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
		< 200 Bhn	125	RPM	7640	3820	1910	1273	955	764	637	588
	TOOL STEELS A2, D2, H13, L2, M2, P20, S7, T15, W2	Or (12)UD- (1	(100-150)	Fr	0.0012	0.0025	0.0050	0.0075	0.0099	0.0124	0.0149	0.0162
		≤ 13 HKC	(100-150)	Feed (ipm)	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
		≤ 375 Bhn	90	RPM	5501	2750	1375	917	688	550	458	423
			(72-108)	Fr	0.0005	0.0011	0.0022	0.0033	0.0044	0.0055	0.0065	0.0071
		≤ 40 HKC	(72-100)	Feed (ipm)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
		≤ 185 Bhn or ≤ 9 HRc	265	RPM	16197	8098	4049	2699	2025	1620	1350	1246
			(212-318)	Fr	0.0008	0.0016	0.0032	0.0048	0.0064	0.0080	0.0096	0.0104
	STAINLESS STEELS		(212-310)	Feed (ipm)	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
	303, 416, 420F, 430F, 440F	≤ 275 Bhn	170	RPM	10390	5195	2598	1732	1299	1039	866	799
		Or 20 LIPo	(136-204)	Fr	0.0006	0.0013	0.0025	0.0038	0.0050	0.0063	0.0075	0.0081
м		S 20 HHC	(100 201)	Feed (ipm)	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
		≤ 275 Bhn	130	RPM	7946	3973	1986	1324	993	795	662	611
	STAINI ESS STEELS	or ∠28 HBc	(104-156)	Fr	0.0006	0.0013	0.0025	0.0038	0.0050	0.0063	0.0076	0.0082
	(DIFFICULT)	1 20 mile		Feed (ipm)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	304, 316, 321, 13-8 PH, 15-5PH, 17-4 PH, Custom 450	≤ 375 Bhn	95	RPM	5806	2903	1452	968	726	581	484	447
		or ∠ ∕0 HBc	(76-114)	Fr	0.0006	0.0011	0.0023	0.0034	0.0045	0.0057	0.0068	0.0074
		1 10 mile	(-)	Feed (ipm)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
		≤ 220 Bhn	250	RPM	15280	7640	3820	2547	1910	1528	1273	1175
	GRAY CAST IRONS	0r < 19 HBc	(200-300)	Fr	0.0016	0.0031	0.0063	0.0094	0.0126	0.0157	0.0188	0.0204
к		_ 10 mil	,	Feed (ipm)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
		≤ 260 Bhn	220	RPM	13446	6723	3362	2241	1681	1345	1121	1034
	DUCTILE CAST IRONS 0 ≤ 260 ≤ 260	or < 26 HBc	n ; (176-264) —	Fr	0.0015	0.0030	0.0059	0.0089	0.0119	0.0149	0.0178	0.0193
		≤ 26 HRc		Feed (ipm)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0



FRACTIONAL Series 146U • Series 136U

	Series 14611 13611		Vc		DC • in								
	Fractional	Hardness	(sfm)		1/16	1/8	1/4	3/8	1/2	5/8	3/4	13/16	
		< 150 Bhn	475	RPM	29032	14516	7258	4839	3629	2903	2419	2233	
	(WROUGHT)	Or	(200 570)	Fr	0.0016	0.0031	0.0062	0.0093	0.0124	0.0155	0.0186	0.0202	
	2024, 6061, 7075	≤ 88 HRb	(380-570)	Feed (ipm)	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	
IN .		< 140 Bhn	380	RPM	23226	11613	5806	3871	2903	2323	1935	1787	
	(CAST)	or Or	(004 450)	Fr	0.0014	0.0028	0.0055	0.0083	0.0110	0.0138	0.0165	0.0179	
	A356, A380, 390	≤ 3 HRc	(304-430)	Feed (ipm)	32.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0	
		< 275 Bhn	175	RPM	10696	5348	2674	1783	1337	1070	891	823	
		Or	(140, 210)	Fr	0.0007	0.0014	0.0028	0.0042	0.0055	0.0069	0.0083	0.0090	
	TITANIUM ALLOYS Pure Titanium, Ti6Al4V, Ti6Al2Sn4Zr2Mo, Ti4Al4Mo2Sn0.5Si, Ti-6Al4V	S ZO HƘC	(140-210)	Feed (ipm)	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	
		< 350 Bhn	130	RPM	7946	3973	1986	1324	993	795	662	611	
S		Or Or	(104 156)	Fr	0.0006	0.0013	0.0025	0.0038	0.0050	0.0063	0.0076	0.0082	
		≤ 38 HRc	(104-130)	Feed (ipm)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
		< 440 Bhn	70	RPM	4278	2139	1070	713	535	428	357	329	
		Or Or	(EC 04)	Fr	0.0005	0.0009	0.0019	0.0028	0.0037	0.0047	0.0056	0.0061	
		≤ 47 HKC	(30-04)	Feed (ipm)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
	Allov Steels	< 450 Bhn	95	RPM	5806	2903	1452	968	726	581	484	447	
	4140, 4150, 4320, 5120, 5150,	Or Or	(76 114)	Fr	0.0008	0.0016	0.0031	0.0047	0.0062	0.0078	0.0093	0.0101	
ш	8630, 86L20, 50100	≤ 48 HRC	(70-114)	Feed (ipm)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
H	TOOL STEELS	< 475 Bhn	80	RPM	4890	2445	1222	815	611	489	407	376	
	A2, D2, H13, L2, M2,	≤4/5Bhn — or	or 0 HRc (64-96) -	Fr	0.0007	0.0014	0.0029	0.0043	0.0057	0.0072	0.0086	0.0093	
	P20, S7, T15, W2	≤ 50 HKC		Feed (ipm)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	

reduce rates when material is harder than listed, when drilling conditions are not optimum, or coolant is not available

rates shown are for drilling into a flat surface and should be lowered using the reducion multiplier when the workpiece is angled or curved

reduce rates 10 to 20 percent when using drills without internal coolant

always use the shortest overhang possible

longer drills may require a spot drill operation to avoid walking on entry

internal coolant required in ISO S and M material groups or when drilling depth exceeds 3xD Bhn (Brinell) HRc (Rockwell C) HRb (Rockwell B) rpm = Vc x 3.82 / DC

ipm = Fr x rpm

speed and feed for materials harder than listed

refer to the SGS Tool Wizard® for complete technical information (www.kyocera-sgstool.com)

reduction	multiplier
speed x	feed x
1.0	0.6
0.7	0.4

angle °

up to 30

over 30

METRIC Series 146U • Series 136U



	Series 14611 13611		Vc	_	DC • mm							
	Metric	Hardness	(m/mm)		1.5	3	6	8	10	12	16	20
		< 175 Bhn	87	RPM	18419	9209	4605	3454	2763	2302	1727	1381
		or	(00.104)	Fr	0.037	0.074	0.149	0.199	0.248	0.298	0.397	0.496
		≤ / HKC	(09-104)	Feed (mm/min)	686	686	686	686	686	686	686	686
	CARBON STEELS	< 275 Bhn	78	RPM	16480	8240	4120	3090	2472	2060	1545	1236
	1018, 1040, 1080, 1090, 10L50,	or	(62.02)	Fr	0.032	0.065	0.129	0.173	0.216	0.259	0.345	0.432
	1140, 1212, 12L15, 1525, 1536	≤ 28 HRc	(02-93)	Feed (mm/min)	533	533	533	533	533	533	533	533
		< 425 Bhn	44	RPM	9371	4686	2343	1757	1406	1171	879	703
			(35-53)	Fr	0.027	0.054	0.108	0.145	0.181	0.217	0.289	0.361
		≤ 45 HKC		Feed (mm/min)	254	254	254	254	254	254	254	254
		< 275 Bhn	67	RPM	14218	7109	3555	2666	2133	1777	1333	1066
Р		Or Or	(54.00)	Fr	0.036	0.071	0.143	0.191	0.238	0.286	0.381	0.476
	ALLOY STEELS	≤ 28 HKC	(34-00)	Feed (mm/min)	508	508	508	508	508	508	508	508
	5150, 8630, 86L20, 50100	< 375 Bhn	41	RPM	8725	4362	2181	1636	1309	1091	818	654
			(22-10)	Fr	0.032	0.064	0.128	0.171	0.213	0.256	0.342	0.427
		≤ 40 nnc	(33-49)	Feed (mm/min)	279	279	279	279	279	279	279	279
		< 200 Bhn	38	RPM	8078	4039	2020	1515	1212	1010	757	606
	TOOL STEELS A2, D2, H13, L2, M2, P20, S7, T15, W2	or	(30-46)	Fr	0.030	0.060	0.119	0.159	0.199	0.239	0.319	0.398
		S IS HHC	(00 +0)	Feed (mm/min)	241	241	241	241	241	241	241	241
		≤ 375 Bhn	27	RPM	5816	2908	1454	1091	872	727	545	436
		Or	(22-33)	Fr	0.013	0.026	0.052	0.070	0.087	0.105	0.140	0.175
		≤ 40 Hht	(22 00)	Feed (mm/min)	76	76	76	76	76	76	76	76
		≤ 185 Bhn or ≤ 9 HRc (65-97	81	RPM	17126	8563	4282	3211	2569	2141	1606	1284
			(65-97)	Fr	0.019	0.039	0.077	0.103	0.129	0.154	0.206	0.257
	STAINLESS STEELS (FREE MACHINING)		(00-07)	Feed (mm/min)	330	330	330	330	330	330	330	330
	303, 416, 420F, 430F, 440F	≤ 275 Bhn	52	RPM	10987	5493	2747	2060	1648	1373	1030	824
		Or	(41-62)	Fr	0.015	0.030	0.060	0.080	0.100	0.120	0.160	0.200
м		5 20 mic		Feed (mm/min)	165	165	165	165	165	165	165	165
		≤ 275 Bhn	40	RPM	8402	4201	2100	1575	1260	1050	788	630
	STAINI ESS STEELS	0r < 28 HB د	(32-48)	Fr	0.015	0.030	0.060	0.081	0.101	0.121	0.161	0.202
	(DIFFICULT)	3 20 mile	(Feed (mm/min)	127	127	127	127	127	127	127	127
	304, 316, 321, 13-8 PH, 15-5PH, 17-4 PH, Custom 450	≤ 375 Bhn	29	RPM	6140	3070	1535	1151	921	767	576	460
		or < 40 HBc	(23-35)	Fr	0.014	0.027	0.055	0.073	0.091	0.109	0.146	0.182
			,	Feed (mm/min)	84	84	84	84	84	84	84	84
		≤ 220 Bhn	76	RPM	16157	8078	4039	3029	2424	2020	1515	1212
	GRAY CAST IRONS	or < 19 HBc	(61-91)	Fr	0.038	0.075	0.151	0.201	0.252	0.302	0.402	0.503
К			,	Feed (mm/min)	610	610	610	610	610	610	610	610
	<	≤ 260 Bhn	67	RPM	14218	7109	3555	2666	2133	1777	1333	1066
	DUCTILE CAST IRONS	≤ 260 Brn — or ≤ 26 HRc	(54-80) -	Fr	0.036	0.071	0.143	0.191	0.238	0.286	0.381	0.476
			1Rc (54-80)	Feed (mm/min)	508	508	508	508	508	508	508	508



METRIC Series 146U • Series 136U

DC • mm

	Series 146U 136U		Vc	_				00 - 11111				
	Metric	Hardness	(m/mm)		1.5	3	6	8	10	12	16	20
		< 150 Bhn	145	RPM	30698	15349	7675	5756	4605	3837	2878	2302
	(WROUGHT)		(116 174)	Fr	0.037	0.074	0.149	0.199	0.248	0.298	0.397	0.496
NI	2024, 6061, 7075	≤ 88 HKD	(110-174)	Feed (mm/min)	1143	1143	1143	1143	1143	1143	1143	1143
N		≤ 140 Bhn or ≤ 3 HRc	116	RPM	24559	12279	6140	4605	3684	3070	2302	1842
	(CAST)		(02 120)	Fr	0.033	0.066	0.132	0.177	0.221	0.265	0.353	0.441
	A356, A380, 390		(93-139)	Feed (mm/min)	813	813	813	813	813	813	813	813
		< 275 Bhn	53	RPM	11310	5655	2827	2121	1696	1414	1060	848
		≤ 275 Bnn or ≤ 28 HRc	(43-64)	Fr	0.017	0.033	0.066	0.089	0.111	0.133	0.177	0.222
	TITANIUM ALLOYS Pure Titanium, Ti6Al4V, Ti6Al2Sn4Zr2Mo, Ti4Al4Mo2Sn0.5Si, Ti-6Al4V			Feed (mm/min)	188	188	188	188	188	188	188	188
		< 350 Bhn	40	RPM	8402	4201	2100	1575	1260	1050	788	630
S		Or	(22,40)	Fr	0.015	0.030	0.060	0.081	0.101	0.121	0.161	0.202
		≤ 38 HKC	(02 40)	Feed (mm/min)	127	127	127	127	127	127	127	127
		< 440 Bhn	21	RPM	4524	2262	1131	848	679	565	424	339
		≥ 440 Dilli 0r	(17.26)	Fr	0.011	0.022	0.045	0.060	0.075	0.090	0.120	0.150
		≤ 47 HKC	(17-20)	Feed (mm/min)	51	51	51	51	51	51	51	51
	Allov Steels	< 450 Bhn	29	RPM	6140	3070	1535	1151	921	767	576	460
	4140, 4150, 4320, 5120, 5150,	Or	(22.25)	Fr	0.019	0.037	0.074	0.099	0.124	0.149	0.199	0.248
	8630, 86L20, 50100	≤ 48 HKC	(23-33)	Feed (mm/min)	114	114	114	114	114	114	114	114
H	TOOL STEELS	< 475 Bhn	24	RPM	5170	2585	1293	969	776	646	485	388
	A2, D2, H13, L2, M2,	Or	(20-29)	Fr	0.017	0.034	0.069	0.092	0.115	0.138	0.183	0.229
	P20, S7, T15, W2	≤ 50 HRc		Feed (mm/min)	89	89	89	89	89	89	89	89

reduce rates when material is harder than listed, when drilling conditions are not optimum, or coolant is not available

rates shown are for drilling into a flat surface and should be lowered using the reducion multiplier when the workpiece is angled or curved

reduce rates 10 to 20 percent when using drills without internal coolant

always use the shortest overhang possible

longer drills may require a spot drill operation to avoid walking on entry

internal coolant required in ISO S and M material groups or when drilling depth exceeds 3xD Bhn (Brinell) HRc (Rockwell C) HRb (Rockwell B) rpm = (Vc x 1000) / (DC x 3.14)

mm/min = Fr x rpm

speed and feed for materials harder than listed

refer to the SGS Tool Wizard® for complete technical information (www.kyocera-sgstool.com)

	reduction multiplier	
angle °	speed x	feed x
up to 30	1.0	0.6
over 30	0.7	0.4

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