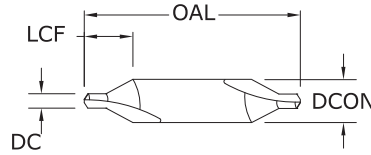


METRIC

# Combined Drill & Countersink



**301M**  
METRIC SERIES



DRILL DIAMETER DC	mm			EDP NO.	
	BODY DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	UNCOATED	Ti-NAMITE-A (AlTiN)
0,5	3,15	20,0	3,0	67005	67035
0,8	3,15	20,0	3,5	67007	67037
1	3,15	31,5	3,5	67009	67039
1,25	3,15	31,5	4,0	67011	67041
1,6	4,0	35,5	5,0	67013	67043
2	5,0	40,0	6,0	67015	67045
2,5	6,3	45,0	7,0	67017	67047
3,15	8,0	50,0	9,0	67019	67049
4	10,0	56,0	11,0	67021	67051
5	12,5	63,0	14,0	67023	67053

**TOLERANCES (mm)**

DC = +0,076/-0,000  
DCON = -0,0025/-0,0127

- STEELS
- STAINLESS STEELS
- CAST IRON
- HIGH TEMP ALLOYS
- TITANIUM
- HARDENED STEELS
- NON-FERROUS
- PLASTICS/COMPOSITES

For patent information visit [www.ksptpatents.com](http://www.ksptpatents.com)

# Combined Drill & Countersink

Series 301M Metric	Hardness	Vc (m/min)	DC • mm						
			1	1.6	2.5	4	5		
<b>P</b>  <b>CARBON STEELS</b> 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536	≤ 175 Bhn or ≤ 7 HRc	81	RPM	8155	6422	4078	2569	2055	
		(65-97)	Fr	0.017	0.022	0.034	0.054	0.068	
			Feed (mm/min)	139	139	139	139	139	
	≤ 300 Bhn or ≤ 32 HRc	38	RPM	3847	3029	1923	1212	969	
		(30-46)	Fr	0.016	0.020	0.032	0.051	0.064	
			Feed (mm/min)	62	62	62	62	62	
	≤ 425 Bhn or ≤ 45 HRc	26	RPM	2616	2060	1308	824	659	
		(21-31)	Fr	0.010	0.013	0.020	0.032	0.039	
			Feed (mm/min)	26	26	26	26	26	
	<b>M</b>  <b>ALLOY STEELS</b> 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 50100	≤ 275 Bhn or ≤ 28 HRc	70	RPM	7078	5574	3539	2230	1784
			(56-84)	Fr	0.016	0.020	0.032	0.051	0.063
				Feed (mm/min)	113	113	113	113	113
≤ 375 Bhn or ≤ 40 HRc		44	RPM	4462	3514	2231	1406	1125	
		(35-53)	Fr	0.015	0.019	0.030	0.048	0.060	
			Feed (mm/min)	67	67	67	67	67	
≤ 450 Bhn or ≤ 48 HRc		18	RPM	1847	1454	923	582	465	
		(15-22)	Fr	0.007	0.009	0.014	0.022	0.028	
			Feed (mm/min)	13	13	13	13	13	
<b>K</b>  <b>STAINLESS STEELS (FREE MACHINING)</b> 303, 416, 420F, 430F 440F		≤ 250 Bhn or ≤ 24 HRc	64	RPM	6463	5089	3231	2036	1629
			(51-77)	Fr	0.012	0.015	0.024	0.038	0.048
				Feed (mm/min)	78	78	78	78	78
	≤ 330 Bhn or ≤ 36 HRc	34	RPM	3385	2666	1693	1066	853	
		(27-40)	Fr	0.007	0.009	0.014	0.023	0.028	
			Feed (mm/min)	24	24	24	24	24	
	<b>K</b>  <b>STAINLESS STEELS (DIFFICULT)</b> 304, 316, 321, 13-8 PH, 15-5PH, 17-4 PH, Custom 450	≤ 275 Bhn or ≤ 28 HRc	20	RPM	2000	1575	1000	630	504
			(16-24)	Fr	0.009	0.011	0.018	0.029	0.036
				Feed (mm/min)	18	18	18	18	18
		≤ 375 Bhn or ≤ 40 HRc	17	RPM	1693	1333	846	533	427
			(13-20)	Fr	0.008	0.011	0.017	0.026	0.033
				Feed (mm/min)	14	14	14	14	14
<b>K</b>  <b>CAST IRONS</b> Gray, Malleable, Ductile		≤ 220 Bhn or ≤ 19 HRc	85	RPM	8617	6786	4309	2714	2171
			(68-102)	Fr	0.021	0.027	0.042	0.067	0.083
				Feed (mm/min)	181	181	181	181	181
		≤ 330 Bhn or ≤ 36 HRc	76	RPM	7694	6059	3847	2424	1939
			(61-91)	Fr	0.021	0.027	0.042	0.067	0.084
				Feed (mm/min)	162	162	162	162	162

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# Combined Drill & Countersink

Series 301M Metric	Hardness	Vc (m/min)	DC • mm						
			1	1.6	2.5	4	5		
<b>N</b>  <b>ALUMINUM ALLOYS</b> 2017, 2024, 356, 6061, 7075	≤ 80 Bhn or ≤ 47 HRb	165	RPM	16619	13087	8309	5235	4188	
		(132-198)	Fr	0.025	0.032	0.050	0.079	0.099	
			Feed (mm/min)	415	415	415	415	415	
	≤ 150 Bhn or ≤ 7 HRc	139	RPM	14003	11027	7001	4411	3529	
		(111-166)	Fr	0.025	0.032	0.050	0.079	0.099	
			Feed (mm/min)	350	350	350	350	350	
	<b>COPPER ALLOYS</b> Alum Bronze, C110, Muntz Brass	≤ 140 Bhn or ≤ 3 HRc	58	RPM	5847	4605	2924	1842	1474
			(46-69)	Fr	0.012	0.015	0.024	0.038	0.048
				Feed (mm/min)	70	70	70	70	70
		≤ 200 Bhn or ≤ 23 HRc	53	RPM	5386	4241	2693	1696	1357
			(43-64)	Fr	0.012	0.015	0.024	0.038	0.048
				Feed (mm/min)	65	65	65	65	65
<b>PLASTICS</b> Polycarbonate, PVC		152	RPM	15388	12118	7694	4847	3878	
		(122-183)	Fr	0.025	0.032	0.050	0.079	0.099	
			Feed (mm/min)	385	385	385	385	385	
<b>S</b>  <b>SUPER ALLOYS</b> (NICKEL, COBALT, IRON BASE) Inconel 601, 617, 625, Incoloy 800, Monel 400, Rene, Waspaloy	≤ 220 Bhn or ≤ 19 HRc	12	RPM	1231	969	616	388	310	
		(10-15)	Fr	0.009	0.011	0.018	0.028	0.035	
			Feed (mm/min)	11	11	11	11	11	
	≤ 320 Bhn or ≤ 34 HRc	8	RPM	769	606	385	242	194	
		(6-9)	Fr	0.008	0.010	0.016	0.025	0.031	
			Feed (mm/min)	6	6	6	6	6	
	≤ 425 Bhn or ≤ 45 HRc	6	RPM	616	485	308	194	155	
		(5-7)	Fr	0.003	0.004	0.006	0.010	0.013	
			Feed (mm/min)	2	2	2	2	2	
	<b>TITANIUM ALLOYS</b> Pure Titanium, Ti6Al4V, Ti6Al2Sn4Zr2Mo, Ti4Al4Mo2Sn0.5Si, Ti-6Al4V	≤ 275 Bhn or ≤ 28 HRc	26	RPM	2616	2060	1308	824	659
			(21-31)	Fr	0.016	0.020	0.032	0.051	0.064
				Feed (mm/min)	42	42	42	42	42
≤ 350 Bhn or ≤ 38 HRc		20	RPM	2000	1575	1000	630	504	
		(16-24)	Fr	0.009	0.011	0.018	0.029	0.036	
			Feed (mm/min)	18	18	18	18	18	
≤ 440 Bhn or ≤ 47 HRc	17	RPM	1693	1333	846	533	427		
	(13-20)	Fr	0.008	0.011	0.017	0.026	0.033		
		Feed (mm/min)	14	14	14	14	14		
<b>H</b>  <b>TOOL STEELS</b> A2, D2, H13, L2, M2, P20, S7, T15, W2	≤ 250 Bhn or ≤ 24 HRc	26	RPM	2616	2060	1308	824	659	
		(21-31)	Fr	0.009	0.012	0.018	0.029	0.036	
			Feed (mm/min)	24	24	24	24	24	
	≤ 375 Bhn or ≤ 40 HRc	17	RPM	1693	1333	846	533	427	
		(13-20)	Fr	0.004	0.005	0.008	0.013	0.016	
			Feed (mm/min)	7	7	7	7	7	
	≤ 475 Bhn or ≤ 50 HRc	12	RPM	1231	969	616	388	310	
		(10-15)	Fr	0.004	0.005	0.008	0.013	0.016	
			Feed (mm/min)	5	5	5	5	5	

Bhn (Brinell) HRc (Rockwell C) HRb (Rockwell B)  
 rpm = (Vc x 1000) / (DCON x 3.14)  
 mm/min = Fr x rpm  
 reduce speed and feed 30 percent when using uncoated drills  
 reduce speed and feed for materials harder than listed  
 refer to the SGS Tool Wizard® for complete technical information ([www.kyocera-sgstoool.com](http://www.kyocera-sgstoool.com))