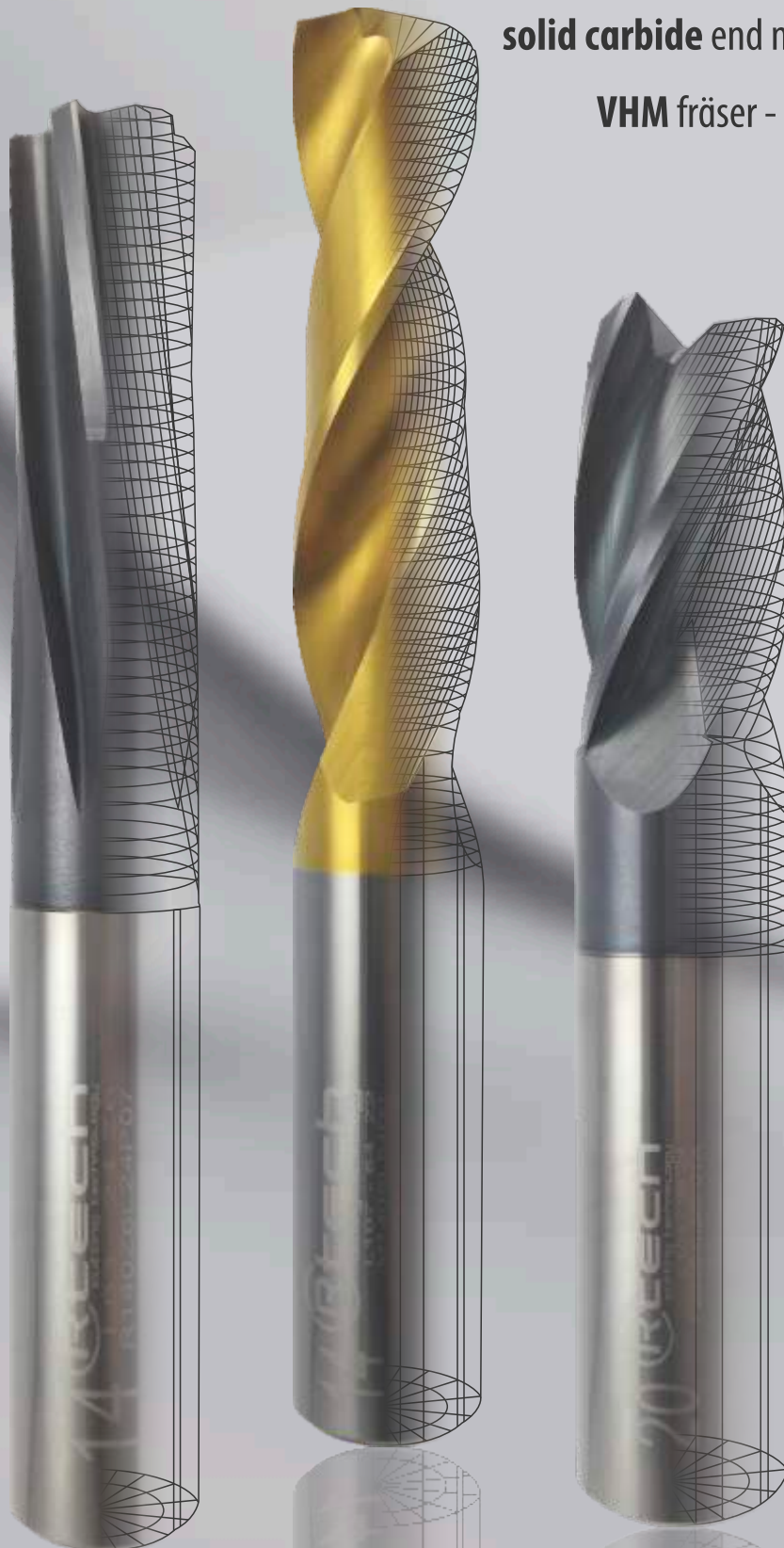




karbür - freze - matkap - rayba

solid carbide end mill - drill - reamer

VHM fräser - bohrer - reibahlen





Ürünlerimizin üretimi 5 eksenli CNC taşlama ve bileme tezgahlarında yapılmaktadır .

Our tools process is on 5 Axis CNC grinding and sharpening machines.



Ölçme ve kontrol işlemlerinde PWB swiss Tool Master 250 ölçüm cihazı kullanılmaktadır.

We have a PWB Swiss ToolMaster 250 measuring device for defining dimensions and control of tools.



Tampo print lazer markalama makinası kullanılarak ürünlerin markalandırma işlemi gerçekleştirilmektedir.

we use Tampoprint Laser machine for marking and writing of our Tools.



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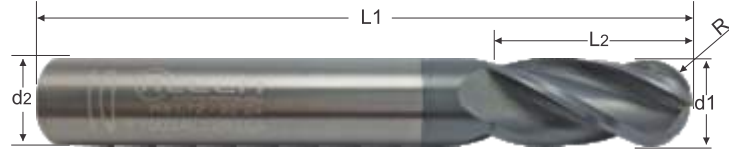
VHM - Schaftfräser - Solid Carbide End Mills



Kesici Uç Çapı d1 (e8)	Kesici Boyu L2 mm	Tam Boy L1 mm	Şaft Çapı d2 mm (h6)	Kanal Sayısı Z Adet	Kaplamasız		Kaplama	
					Kod	Fiyatı (Euro-€)	Kod	Fiyatı (Euro-€)
2	8	40	2	2-3-4	F020S4L08P01	13,77	F020S4L08P01A	15,37
3	12	40	3	2-3-4	F030S4L12P01	11,22	F030S4L12P01A	12,82
4	11	50	4	2-3-4	F040S4L11P01	11,48	F040S4L11P01A	13,28
5	13	50	5	2-3-4	F050S4L13P01	13,18	F050S4L13P01A	15,06
6	13	57	6	2-3-4	F060S4L13P01	15,39	F060S4L13P01A	17,69
7	16	60	7	2-3-4	F070S4L16P01	22,70	F070S4L16P01A	25,50
8	19	63	8	2-3-4	F080S4L19P01	20,06	F080S4L19P01A	22,86
9	19	67	9	2-3-4	F090S4L19P01	32,22	F090S4L19P01A	36,12
10	22	72	10	2-3-4	F100S4L22P01	30,00	F100S4L22P01A	33,90
11	26	83	11	2-3-4	F110S4L26P01	35,96	F110S4L26P01A	40,26
12	26	83	12	2-3-4	F120S4L26P01	39,44	F120S4L26P01A	43,74
13	26	83	13	2-3-4	F130S4L26P01	53,55	F130S4L26P01A	57,85
14	26	83	14	2-3-4	F140S4L26P01	63,54	F140S4L26P01A	67,84
15	32	92	15	2-3-4	F150S4L32P01	75,46	F150S4L32P01A	80,66
16	32	92	16	2-3-4	F160S4L32P01	78,29	F160S4L32P01A	83,49
18	32	92	18	2-3-4	F180S4L32P01	127,47	F180S4L32P01A	133,97
20	38	104	20	2-3-4	F200S4L38P01	149,45	F200S4L38P01A	156,60

d1	ap	ae	HRC 20-30			HRC 30-40			INOX			GG			AL			CU			TITAN			< 52 HRC		
			vc	n	Vf	vc	n	Vf	vc	n	Vf	vc	n	Vf	vc	n	Vf	vc	n	Vf	vc	n	Vf	vc	n	Vf
			100 m/dk.			75 m/dk.			55 m/dk.			120 m/dk.			190 m/dk.			50 m/dk.			50 m/dk.					
2	1,0	1,0	0.012	15925	190xZ	0.014	11942	170xZ	0.013	8757	115xZ	0.031	19107	590xZ	0.023	47770	1100xZ	0.026	30255	785xZ	0.008	7960	65 xZ	0.007	7960	55xZ
3	1,5	1,5	0.018	10616	190xZ	0.021	7962	170xZ	0.020	5838	115xZ	0.046	12738	590xZ	0.035	31846	1100xZ	0.039	20170	785xZ	0.012	5306	65 xZ	0.010	5306	55xZ
4	2,0	2,0	0.024	7962	190xZ	0.028	5971	170xZ	0.026	4379	115xZ	0.062	9554	590xZ	0.046	23885	1100xZ	0.052	15127	785xZ	0.016	3980	65 xZ	0.014	3980	55xZ
5	2,5	2,5	0.030	6370	190xZ	0.036	4777	170xZ	0.033	3503	115xZ	0.077	7643	590xZ	0.058	19108	1100xZ	0.065	12102	785xZ	0.020	3184	65 xZ	0.017	3184	55xZ
6	3,0	3,0	0.036	5308	190xZ	0.043	3980	170xZ	0.039	2919	115xZ	0.093	6369	590xZ	0.069	15923	1100xZ	0.078	10085	785xZ	0.025	2653	65 xZ	0.020	2653	55xZ
8	4,0	4,0	0.048	3981	190xZ	0.057	2985	170xZ	0.053	2189	115xZ	0.123	4777	590xZ	0.092	11942	1100xZ	0.104	7564	785xZ	0.033	1990	65 xZ	0.028	1990	55xZ
10	5,0	5,0	0.060	3185	190xZ	0.071	2388	170xZ	0.066	1751	115xZ	0.154	3821	590xZ	0.115	9554	1100xZ	0.130	6051	785xZ	0.041	1592	65 xZ	0.035	1592	55xZ
12	6,0	6,0	0.072	2654	190xZ	0.085	1990	170xZ	0.079	1460	115xZ	0.185	3185	590xZ	0.138	7962	1100xZ	0.156	5042	785xZ	0.049	1327	65 xZ	0.041	1327	55xZ
14	7,0	7,0	0.083	2275	190xZ	0.100	1706	170xZ	0.092	1251	115xZ	0.216	2730	590xZ	0.161	6824	1100xZ	0.182	4322	785xZ	0.057	1137	65 xZ	0.048	1137	55xZ
16	8,0	8,0	0.095	1990	190xZ	0.114	1493	170xZ	0.105	1095	115xZ	0.247	2388	590xZ	0.184	5971	1100xZ	0.207	3782	785xZ	0.065	995	65 xZ	0.055	995	55xZ
18	9,0	9,0	0.108	1760	190xZ	0.118	1327	170xZ	0.118	973	115xZ	0.278	2123	590xZ	0.207	5308	1100xZ	0.233	3362	785xZ	0.073	885	65 xZ	0.062	885	55xZ
20	10,0	10,0	0.119	1592	190xZ	0.131	1194	170xZ	0.131	875	115xZ	0.309	1910	590xZ	0.230	4777	1100xZ	0.260	3025	785xZ	0.082	796	65 xZ	0.069	796	55xZ
25	12,5	12,5	0.149	1274	190xZ	0.164	955	170xZ	0.164	700	115xZ	0.386	1528	590xZ	0.288	3822	1100xZ	0.324	2420	785xZ	0.102	637	65 xZ	0.086	637	55xZ

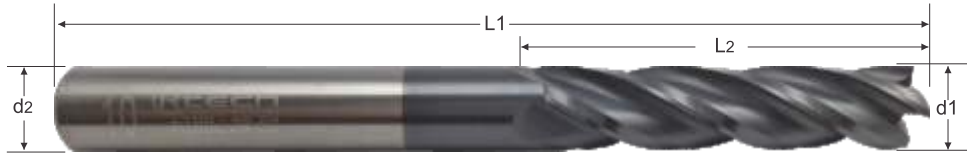
VHM - Radiusfräser - Solid Carbide Ball Nose End Mills



Kesici Uç Çapı	Kesici Boyu	Tam Boy	Şaft Çapı	Kanal Sayısı	Küre Yarı Çapı	Kaplamasız		Kaplmalı	
d1 (e8)	L2 mm	L1 mm	d2 mm (h6)	Z Adet	R mm	Kod	Fiyatı (Euro-€)	Kod	Fiyatı (Euro-€)
2	6	40	2	2-3-4	1	F020S4L06R10	16,24	F020S4L06R10A	17,84
3	8	40	3	2-3-4	1,5	F030S4L08R15	12,41	F030S4L08R15A	12,82
4	11	50	4	2-3-4	2	F040S4L11R20	13,86	F040S4L11R20A	15,66
5	13	50	5	2-3-4	2,5	F050S4L13R25	17,09	F050S4L13R25A	18,97
6	13	57	6	2-3-4	3	F060S4L13R30	18,79	F060S4L13R30A	21,09
7	16	60	7	2-3-4	3,5	F070S4L16R35	27,71	F070S4L16R35A	30,51
8	19	63	8	2-3-4	4	F080S4L19R40	24,65	F080S4L19R40A	27,45
9	19	67	9	2-3-4	4,5	F090S4L19R45	39,78	F090S4L19R45A	43,68
10	22	72	10	2-3-4	5	F100S4L22R50	37,06	F100S4L22R50A	40,96
11	26	83	11	2-3-4	5,5	F110S4L26R55	47,77	F110S4L26R55A	52,07
12	26	83	12	2-3-4	6	F120S4L26R60	48,96	F120S4L26R60A	53,26
13	26	83	13	2-3-4	6,5	F130S4L26R65	77,61	F130S4L26R65A	81,91
14	26	83	14	2-3-4	7	F140S4L26R70	91,10	F140S4L26R70A	95,40
15	32	92	15	2-3-4	7,5	F150S4L32R75	103,13	F150S4L32R75A	108,33
16	32	92	16	2-3-4	8	F160S4L32R80	106,26	F160S4L32R80A	111,46
18	32	92	18	2-3-4	9	F180S4L32R90	140,08	F180S4L32R90A	146,58
20	38	104	20	2-3-4	10	F200S4L38R10	163,54	F200S4L38R10A	170,69

Geometrik Parametreler				HRC 20-30	HRC 30-40	INOX	GG	AL	CU	TITAN	< 52 HRC																
d1	de	ap	ae	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf			
2	2	1.0	1.0	0.012	17500	210xZ	0.015	12740	190xZ	0.0013	9554	125xZ	0.030	20700	620xZ	0.022	50950	1120xZ	0.025	31850	800xZ	0.008	7960	65xZ	0.007	7960	55xZ
3	3	1.5	1.5	0.018	11666	210xZ	0.022	8492	190xZ	0.020	6369	125xZ	0.045	13800	620xZ	0.033	33966	1120xZ	0.038	21233	800xZ	0.012	5306	65xZ	0.010	5306	55xZ
4	4	2.0	2.0	0.024	8750	210xZ	0.030	6370	190xZ	0.026	4777	125xZ	0.060	10350	620xZ	0.044	25475	1120xZ	0.050	15925	800xZ	0.016	3980	65xZ	0.014	3980	55xZ
5	5	2.5	2.5	0.030	7000	210xZ	0.037	5100	190xZ	0.033	3822	125xZ	0.075	8280	620xZ	0.055	20380	1120xZ	0.063	12740	800xZ	0.020	3184	65xZ	0.017	3184	55xZ
6	6	3.0	3.0	0.036	5833	210xZ	0.045	4250	190xZ	0.039	3185	125xZ	0.090	6900	620xZ	0.066	16983	1120xZ	0.075	10616	800xZ	0.025	2653	65xZ	0.020	2653	55xZ
8	8	4.0	4.0	0.048	4375	210xZ	0.060	3185	190xZ	0.052	2389	125xZ	0.122	5175	620xZ	0.077	12737	1120xZ	0.100	7962	800xZ	0.033	1990	65xZ	0.028	1990	55xZ
10	10	5.0	5.0	0.060	3500	210xZ	0.075	2550	190xZ	0.065	1911	125xZ	0.150	4140	620xZ	0.088	10190	1120xZ	0.126	6370	800xZ	0.041	1592	65xZ	0.035	1592	55xZ
12	12	6.0	6.0	0.072	2916	210xZ	0.089	2123	190xZ	0.078	1592	125xZ	0.180	3450	620xZ	0.132	8492	1120xZ	0.151	5308	800xZ	0.049	1327	65xZ	0.041	1327	55xZ
14	14	7.0	7.0	0.084	2500	210xZ	0.104	1820	190xZ	0.092	1365	125xZ	0.194	3204	620xZ	0.154	7278	1120xZ	0.176	4550	800xZ	0.057	1137	65xZ	0.048	1135	55xZ
16	16	8.0	8.0	0.096	2187	210xZ	0.119	1592	190xZ	0.105	1194	125xZ	0.240	2587	620xZ	0.176	6369	1120xZ	0.201	3981	800xZ	0.065	995	65xZ	0.055	995	55xZ
18	18	9.0	9.0	0.108	1944	210xZ	0.134	1415	190xZ	0.118	1062	125xZ	0.270	2300	620xZ	0.198	5661	1120xZ	0.226	3539	800xZ	0.073	885	65xZ	0.062	885	55xZ
20	20	10.0	10.0	0.120	1750	210xZ	0.149	1275	190xZ	0.131	955	125xZ	0.300	2070	620xZ	0.220	5095	1120xZ	0.251	3185	800xZ	0.082	796	65xZ	0.069	796	55xZ
25	25	12.5	12.5	0.150	1400	210xZ	0.186	1020	190xZ	0.164	764	125xZ	0.370	1656	620xZ	0.275	4076	1120xZ	0.314	2548	800xZ	0.102	637	65xZ	0.086	637	55xZ

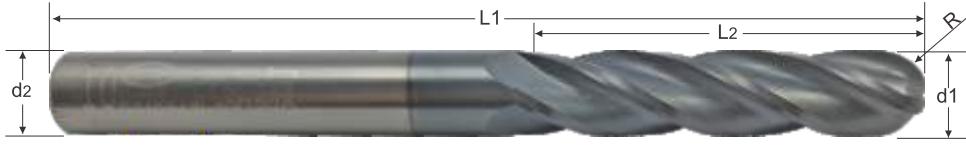
VHM - Schaftfräser Lang - Solid Carbide End Mills Long



Kesici Uç Çapı d1 (e8)	Kesici Boyu L2 mm	Tam Boy L1 mm	Şaft Çapı d2 mm (h6)	Kanal Sayısı Z Adet	Kaplamasız		Kaplmalı	
					Kod	Fiyatı (Euro-€)	Kod	Fiyatı (Euro-€)
3	16	65	3	4	F030U4L16P01	21,85	F030U4L16P01A	23,45
4	18	65	4	4	F040U4L18P01	23,46	F040U4L18P01A	25,26
5	20	65	5	4	F050U4L20P01	24,40	F050U4L20P01A	26,28
6	24	68	6	4	F060U4L24P01	25,84	F060U4L24P01A	28,14
8	38	68	8	4	F080U4L38P01	34,26	F080U4L38P01A	37,06
3	20	100	3	4	F030U4L20P01	27,12	F030U4L20P01A	28,72
4	26	100	4	4	F040U4L26P01	30,01	F040U4L26P01A	31,81
5	26	100	5	4	F050U4L26P01	33,58	F050U4L26P01A	35,46
6	40	100	6	4	F060U4L40P01	40,80	F060U4L40P01A	43,10
8	45	100	8	4	F080U4L45P01	42,76	F080U4L45P01A	45,56
10	45	100	10	4	F100U4L45P01	46,33	F100U4L45P01A	50,23
12	45	100	12	4	F120U4L45P01	54,32	F120U4L45P01A	58,62
14	45	100	14	4	F140U4L45P01	91,01	F140U4L45P01A	95,31
16	45	100	16	4	F160U4L45P01	115,25	F160U4L45P01A	120,45
18	45	100	18	4	F180U4L45P01	156,11	F180U4L45P01A	162,61
20	45	104	20	4	F200U4L45P01	176,25	F200U4L45P01A	183,40

Kesici Uç Çapı			Kesici Boyu			Tam Boy			Şaft Çapı			Kanal Sayısı			Kaplamasız			Kaplmalı		
d1	L2	L1	d2	Z	Kod	Fiyatı	Kod	Fiyatı	d2	Z	Kod	Fiyatı	Kod	Fiyatı	d2	Z	Kod	Fiyatı		
3	16	65	3	4	F030U4L16P01	21,85	F030U4L16P01A	23,45	3	4	F030U4L16P01	21,85	F030U4L16P01A	23,45	3	4	F030U4L16P01	21,85		
4	18	65	4	4	F040U4L18P01	23,46	F040U4L18P01A	25,26	4	4	F040U4L18P01	23,46	F040U4L18P01A	25,26	4	4	F040U4L18P01	23,46		
5	20	65	5	4	F050U4L20P01	24,40	F050U4L20P01A	26,28	5	4	F050U4L20P01	24,40	F050U4L20P01A	26,28	5	4	F050U4L20P01	24,40		
6	24	68	6	4	F060U4L24P01	25,84	F060U4L24P01A	28,14	6	4	F060U4L24P01	25,84	F060U4L24P01A	28,14	6	4	F060U4L24P01	25,84		
8	38	68	8	4	F080U4L38P01	34,26	F080U4L38P01A	37,06	8	4	F080U4L38P01	34,26	F080U4L38P01A	37,06	8	4	F080U4L38P01	34,26		
3	20	100	3	4	F030U4L20P01	27,12	F030U4L20P01A	28,72	3	4	F030U4L20P01	27,12	F030U4L20P01A	28,72	3	4	F030U4L20P01	27,12		
4	26	100	4	4	F040U4L26P01	30,01	F040U4L26P01A	31,81	4	4	F040U4L26P01	30,01	F040U4L26P01A	31,81	4	4	F040U4L26P01	30,01		
5	26	100	5	4	F050U4L26P01	33,58	F050U4L26P01A	35,46	5	4	F050U4L26P01	33,58	F050U4L26P01A	35,46	5	4	F050U4L26P01	33,58		
6	40	100	6	4	F060U4L40P01	40,80	F060U4L40P01A	43,10	6	4	F060U4L40P01	40,80	F060U4L40P01A	43,10	6	4	F060U4L40P01	40,80		
8	45	100	8	4	F080U4L45P01	42,76	F080U4L45P01A	45,56	8	4	F080U4L45P01	42,76	F080U4L45P01A	45,56	8	4	F080U4L45P01	42,76		
10	45	100	10	4	F100U4L45P01	46,33	F100U4L45P01A	50,23	10	4	F100U4L45P01	46,33	F100U4L45P01A	50,23	10	4	F100U4L45P01	46,33		
12	45	100	12	4	F120U4L45P01	54,32	F120U4L45P01A	58,62	12	4	F120U4L45P01	54,32	F120U4L45P01A	58,62	12	4	F120U4L45P01	54,32		
14	45	100	14	4	F140U4L45P01	91,01	F140U4L45P01A	95,31	14	4	F140U4L45P01	91,01	F140U4L45P01A	95,31	14	4	F140U4L45P01	91,01		
16	45	100	16	4	F160U4L45P01	115,25	F160U4L45P01A	120,45	16	4	F160U4L45P01	115,25	F160U4L45P01A	120,45	16	4	F160U4L45P01	115,25		
18	45	100	18	4	F180U4L45P01	156,11	F180U4L45P01A	162,61	18	4	F180U4L45P01	156,11	F180U4L45P01A	162,61	18	4	F180U4L45P01	156,11		
20	45	104	20	4	F200U4L45P01	176,25	F200U4L45P01A	183,40	20	4	F200U4L45P01	176,25	F200U4L45P01A	183,40	20	4	F200U4L45P01	176,25		

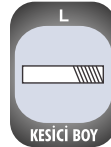
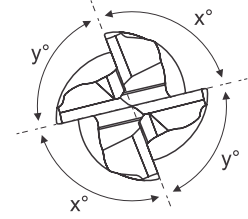
VHM - Radiusfräser Lang - Solid Carbide Ball Nose End Mills Long



Kesici Uç Çapı	Kesici Boyu	Tam Boy	Şaft Çapı	Kanal Sayısı	Küre Yarı Çapı	Kaplamasız		Kaplmalı	
d1 (e8)	L2 mm	L1 mm	d2 mm (h6)	Z Adet	R mm	Kod	Fiyatı (Euro-€)	Kod	Fiyatı (Euro-€)
3	16	65	3	4	1,5	F030U4L16R15	24,40	F030U4L16R15A	26,00
4	18	65	4	4	2	F040U4L18R15	25,42	F040U4L18R15A	27,22
5	20	65	5	4	2,5	F050U4L20R15	27,46	F050U4L20R15A	29,34
6	24	68	6	4	3	F060U4L24R15	29,84	F060U4L24R15A	32,14
8	38	68	8	4	4	F080U4L38R15	39,02	F080U4L38R15A	41,82
3	20	100	3	4	1,5	F030U4L20R15	32,90	F030U4L20R15A	34,50
4	26	100	4	4	2	F040U4L26R20	35,40	F040U4L26R20A	37,20
5	26	100	5	4	2,5	F050U4L26R25	37,06	F050U4L26R25A	38,94
6	40	100	6	4	3	F060U4L40R30	47,26	F060U4L40R30A	49,56
8	45	100	8	4	4	F080U4L45R40	50,24	F080U4L45R40A	53,04
10	45	100	10	4	5	F100U4L45R50	52,96	F100U4L45R50A	56,86
12	45	100	12	4	6	F120U4L45R60	71,91	F120U4L45R60A	76,21
14	45	100	14	4	7	F140U4L45R70	106,06	F140U4L45R70A	110,36
16	45	100	16	4	8	F160U4L45R80	137,05	F160U4L45R80A	142,25
18	45	100	18	4	9	F180U4L45R90	184,94	F180U4L45R90A	191,44
20	45	104	20	4	10	F200U4L45R10	205,57	F200U4L45R10A	212,72

Geometrik Parametreler				HRC 20-30			HRC 30-40			INOX			GG			AL			CU			TITAN			< 52 HRC		
d1	de	ap	ae	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf
3	3	1,5	1,5	0,017	10616	180xZ	0,018	8492	150xZ	0,021	5838	125xZ	0,051	12738	650xZ	0,039	31846	1240xZ	0,043	20170	875xZ	0,014	4777	65xZ	0,012	4777	55xZ
4	4	2,0	2,0	0,023	7962	180xZ	0,024	6370	150xZ	0,028	4379	125xZ	0,068	9554	650xZ	0,052	23885	1240xZ	0,058	15127	875xZ	0,018	3582	65xZ	0,015	3582	55xZ
5	5	2,5	2,5	0,028	6370	180xZ	0,029	5100	150xZ	0,035	3503	125xZ	0,085	7643	650xZ	0,065	19108	1240xZ	0,072	12102	875xZ	0,023	2866	65xZ	0,019	2866	55xZ
6	6	3,0	3,0	0,034	5308	180xZ	0,035	4250	150xZ	0,043	2919	125xZ	0,102	6369	650xZ	0,078	15923	1240xZ	0,087	10085	875xZ	0,027	2388	65xZ	0,023	2388	55xZ
8	8	4,0	4,0	0,045	3981	180xZ	0,047	3185	150xZ	0,057	2189	125xZ	0,136	4777	650xZ	0,104	11942	1240xZ	0,116	7564	875xZ	0,036	1791	65xZ	0,031	1791	55xZ
10	10	5,0	5,0	0,056	3185	180xZ	0,059	2550	150xZ	0,071	1751	125xZ	0,170	3821	650xZ	0,130	9554	1240xZ	0,145	6051	875xZ	0,045	1433	65xZ	0,038	1433	55xZ
12	12	6,0	6,0	0,068	2654	180xZ	0,071	2123	150xZ	0,086	1460	125xZ	0,204	3185	650xZ	0,156	7962	1240xZ	0,174	5042	875xZ	0,054	1194	65xZ	0,046	1194	55xZ
14	14	7,0	7,0	0,079	2275	180xZ	0,082	1820	150xZ	0,100	1251	125xZ	0,238	2730	650xZ	0,182	6824	1240xZ	0,202	4322	875xZ	0,063	1024	65xZ	0,054	1024	55xZ
16	16	8,0	8,0	0,090	1990	180xZ	0,094	1592	150xZ	0,114	1095	125xZ	0,272	2388	650xZ	0,208	5971	1240xZ	0,231	3782	875xZ	0,073	896	65xZ	0,061	896	55xZ
18	18	9,0	9,0	0,102	1760	180xZ	0,106	1415	150xZ	0,128	973	125xZ	0,306	2123	650xZ	0,234	5308	1240xZ	0,260	3362	875xZ	0,082	796	65xZ	0,069	796	55xZ
20	20	10,0	10,0	0,113	1592	180xZ	0,117	1275	150xZ	0,143	875	125xZ	0,340	1910	650xZ	0,260	4777	1240xZ	0,290	3025	875xZ	0,090	716	65xZ	0,077	716	55xZ
25	25	12,5	12,5	0,141	1274	180xZ	0,147	1020	150xZ	0,179	700	125xZ	0,425	1528	650xZ	0,324	3822	1240xZ	0,362	2420	875xZ	0,113	573	65xZ	0,100	573	55xZ

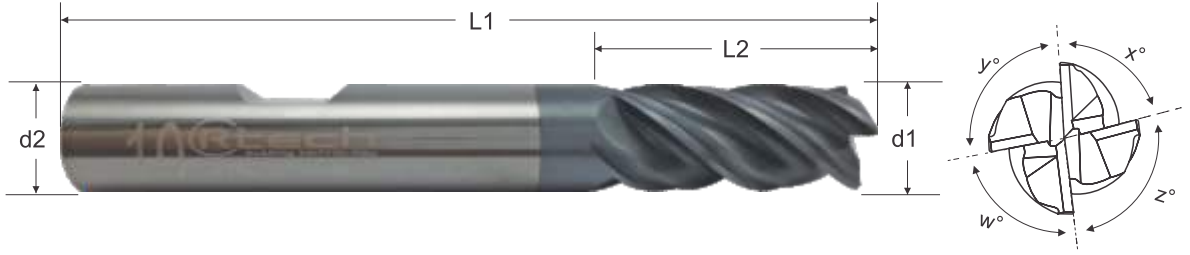
VHM - Schafffräser EXTRA - Solid Carbide End Mills EXTRA



Kesici Uç Çapı	Kesici Boyu	Tam Boy	Şaft Çapı	Kanal Sayısı	Kaplama	
d1 (e8)	L2 mm	L1 mm	d2 mm (h6)	Z Adet	Kod	Fiyatı (Euro-€)
3	5	57	6	4	F030Q4L05P01A	21,62
4	7	57	6	4	F040Q4L07P01A	21,62
5	8	57	6	4	F050Q4L08P01A	21,62
6	10	57	6	4	F060Q4L10P01A	21,62
8	16	63	8	4	F080Q4L16P01A	29,44
10	22	72	10	4	F100Q4L22P01A	45,35
12	26	83	12	4	F120Q4L26P01A	57,50
14	26	83	14	4	F140Q4L26P01A	75,62
16	32	92	16	4	F160Q4L32P01A	118,86
18	32	92	18	4	F180Q4L32P01A	185,38
20	38	104	20	4	F200Q4L38P01A	213,80

d1	ap	ae	HRC 20-30			HRC 30-40			INOX			GG			AL			CU			TITAN			< 52 HRC		
			fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf
6	3,0	3,0	0,045	4250	190xZ	0,032	4777	150xZ	0,040	3450	140xZ	0,090	6900	620xZ	0,066	16983	1120xZ	0,075	10616	800xZ	0,008	2654	65xZ	0,007	2854	55xZ
8	4,0	4,0	0,060	3185	190xZ	0,042	3582	150xZ	0,054	2587	140xZ	0,120	5175	620xZ	0,088	12737	1120xZ	0,100	7962	800xZ	0,033	1990	65xZ	0,028	1990	55xZ
10	5,0	5,0	0,075	2550	190xZ	0,052	2866	150xZ	0,068	2070	140xZ	0,150	4140	620xZ	0,110	10190	1120xZ	0,126	6370	800xZ	0,041	1592	65xZ	0,035	1592	55xZ
12	6,0	6,0	0,090	2123	190xZ	0,063	2388	150xZ	0,081	1725	140xZ	0,180	3450	620xZ	0,132	8492	1120xZ	0,151	5308	800xZ	0,049	1327	65xZ	0,041	1327	55xZ
14	7,0	7,0	0,104	1820	190xZ	0,073	2047	150xZ	0,095	1478	140xZ	0,210	2957	620xZ	0,154	7278	1120xZ	0,176	4550	800xZ	0,057	1137	65xZ	0,048	1137	55xZ
16	8,0	8,0	0,119	1592	190xZ	0,084	1791	150xZ	0,108	1294	140xZ	0,240	2587	620xZ	0,176	6369	1120xZ	0,201	3981	800xZ	0,065	995	65xZ	0,055	995	55xZ
18	9,0	9,0	0,134	1415	190xZ	0,094	1592	150xZ	0,122	1150	140xZ	0,270	2300	620xZ	0,198	5661	1120xZ	0,226	3539	800xZ	0,073	885	65xZ	0,062	885	55xZ
20	10,0	10,0	0,149	1275	190xZ	0,105	1433	150xZ	0,135	1035	140xZ	0,300	2070	620xZ	0,220	5095	1120xZ	0,251	3185	800xZ	0,082	796	65xZ	0,069	796	55xZ

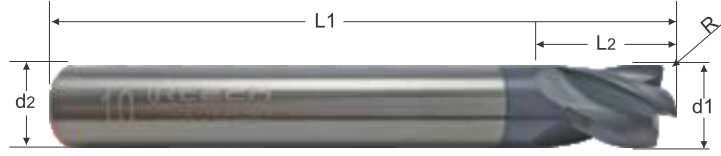
VHM - Schafffräser VARIABLE - Solid Carbide End Mills VARIABLE HELIX



Kesici Uç Çapı	Kesici Boyu	Tam Boy	Şaft Çapı	Kanal Sayısı	Köşe PaHI	Kaplama	
d1 (e8)	L2 mm	L1 mm	d2 mm (h6)	Z Adet	α 45°	Kod	Fiyatı (Euro-€)
3	5	57	6	4	0,15	F030V4L05P015A	21,62
4	7	57	6	4	0,20	F040V4L07P020A	21,62
5	8	57	6	4	0,25	F050V4L08P025A	21,62
6	10	57	6	4	0,30	F060V4L10P030A	21,62
8	16	63	8	4	0,40	F080V4L16P040A	29,44
10	22	72	10	4	0,50	F100V4L22P050A	45,35
12	26	83	12	4	0,60	F120V4L26P060A	57,50
14	26	83	14	4	0,70	F140V4L26P070A	75,62
16	32	92	16	4	0,80	F160V4L32P080A	118,86
18	32	92	18	4	0,90	F180V4L32P090A	185,38
20	38	104	20	4	1,00	F200V4L38P100A	213,80

	HRC 20-30		HRC 30-40		INOX		GG		AL		CU		TITAN		< 52 HRC											
	1.0050-2 1.0060-2 1.0070-2		1.5864 1.6580 1.7225		1.4405 1.4460 1.4505		0.6035 0.7080 0.8055		3.2151 3.2373 3.2382		2.1247 2.0580 2.0598		3.7035 3.7055 3.7065		1.3255 1.3265 1.3333											
	Vc=120 m/dk.		Vc=90 m/dk.		Vc=65 m/dk.		Vc=130 m/dk.		Vc=320 m/dk.		Vc=200 m/dk.		Vc=50 m/dk.		Vc=50 m/dk.											
d1	ap	ae	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf									
6	3,0	3,0	0,045	4250	190xZ	0,032	4777	150xZ	0,040	3450	140xZ	0,090	6900	620xZ	0,066	16983	1120xZ	0,075	10616	800xZ	0,008	2654	65xZ	0,007	2854	55xZ
8	4,0	4,0	0,060	3185	190xZ	0,042	3582	150xZ	0,054	2587	140xZ	0,120	5175	620xZ	0,088	12737	1120xZ	0,100	7962	800xZ	0,033	1990	65xZ	0,028	1990	55xZ
10	5,0	5,0	0,075	2550	190xZ	0,052	2866	150xZ	0,068	2070	140xZ	0,150	4140	620xZ	0,110	10190	1120xZ	0,126	6370	800xZ	0,041	1592	65xZ	0,035	1592	55xZ
12	6,0	6,0	0,090	2123	190xZ	0,063	2388	150xZ	0,081	1725	140xZ	0,180	3450	620xZ	0,132	8492	1120xZ	0,151	5308	800xZ	0,049	1327	65xZ	0,041	1327	55xZ
14	7,0	7,0	0,104	1820	190xZ	0,073	2047	150xZ	0,095	1478	140xZ	0,210	2957	620xZ	0,154	7278	1120xZ	0,176	4550	800xZ	0,057	1137	65xZ	0,048	1137	55xZ
16	8,0	8,0	0,119	1592	190xZ	0,084	1791	150xZ	0,108	1294	140xZ	0,240	2587	620xZ	0,176	6369	1120xZ	0,201	3981	800xZ	0,065	995	65xZ	0,055	995	55xZ
18	9,0	9,0	0,134	1415	190xZ	0,094	1592	150xZ	0,122	1150	140xZ	0,270	2300	620xZ	0,198	5661	1120xZ	0,226	3539	800xZ	0,073	885	65xZ	0,062	885	55xZ
20	10,0	10,0	0,149	1275	190xZ	0,105	1433	150xZ	0,135	1035	140xZ	0,300	2070	620xZ	0,220	5095	1120xZ	0,251	3185	800xZ	0,082	796	65xZ	0,069	796	55xZ

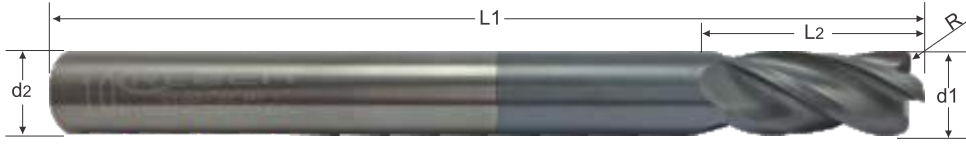
VHM - Schafffräser mit Eckenradius - Solid Carbide Corner Radius End Mills



Kesici Uç Çapı d1 (e8)	Kesici Boyu L2 mm	Tam Boy L1 mm	Şaft Çapı d2 mm (h6)	Kanal Sayısı Z Adet	Köşe Radyüs Kr. mm	Kaplamasız		Kaplama	
						Kod	Fiyatı (Euro-€)	Kod	Fiyatı (Euro-€)
3	5	40	3	4	0,5	F030S4L05KR05	16,58	F030S4L05KR05A	18,18
4	7	50	4	4	0,5	F040S4L07KR05	17,68	F040S4L07KR05A	19,48
5	8	50	5	4	0,5	F050S4L08KR05	18,36	F050S4L08KR05A	20,24
6	8	57	6	4	0,5	F060S4L08KR05	19,13	F060S4L08KR05A	21,43
6	8	57	6	4	1,0	F060S4L08KR10	19,13	F060S4L08KR10A	21,43
8	11	63	8	4	0,5	F080S4L11KR05	27,12	F080S4L11KR05A	29,92
8	11	63	8	4	1,0	F080S4L11KR10	27,12	F080S4L11KR10A	29,92
8	11	63	8	4	1,5	F080S4L11KR15	27,12	F080S4L11KR15A	29,92
8	11	63	8	4	2,0	F080S4L11KR20	27,12	F080S4L11KR20A	29,92
10	13	72	10	4	0,5	F100S4L13KR05	41,14	F100S4L13KR05A	45,04
10	13	72	10	4	1,0	F100S4L13KR10	41,14	F100S4L13KR10A	45,04
10	13	72	10	4	1,5	F100S4L13KR15	41,14	F100S4L13KR15A	45,04
10	13	72	10	4	2,0	F100S4L13KR20	41,14	F100S4L13KR20A	45,04
12	16	83	12	4	0,5	F120S4L16KR05	56,19	F120S4L16KR05A	60,49
12	16	83	12	4	1,0	F120S4L16KR10	56,19	F120S4L16KR10A	60,49
12	16	83	12	4	1,5	F120S4L16KR15	56,19	F120S4L16KR15A	60,49
12	16	83	12	4	2,0	F120S4L16KR20	56,19	F120S4L16KR20A	60,49
14	16	83	14	4	0,5	F140S4L16KR05	88,76	F140S4L16KR05A	93,06
14	16	83	14	4	1,0	F140S4L16KR10	88,76	F140S4L16KR10A	93,06
14	16	83	14	4	1,5	F140S4L16KR15	88,76	F140S4L16KR15A	93,06
14	16	83	14	4	2,0	F140S4L16KR20	88,76	F140S4L16KR20A	93,06
16	19	92	16	4	0,5	F160S4L19KR05	112,91	F160S4L19KR05A	118,11
16	19	92	16	4	1,0	F160S4L19KR10	112,91	F160S4L19KR10A	118,11
16	19	92	16	4	1,5	F160S4L19KR15	112,91	F160S4L19KR15A	118,11
16	19	92	16	4	2,0	F160S4L19KR20	112,91	F160S4L19KR20A	118,11

d ₁	a _p	a _e	HRC 20-30			HRC 30-40			INOX			GG			AL			CU			TITAN			< 52 HRC		
			fz	n	V _f	fz	n	V _f	fz	n	V _f	fz	n	V _f	fz	n	V _f	fz	n	V _f	fz	n	V _f	fz	n	V _f
			Vc=120 m/dk.			Vc=90 m/dk.			Vc=65 m/dk.			Vc=130 m/dk.			Vc=320 m/dk.			Vc=200 m/dk.			Vc=50 m/dk.			Vc=50 m/dk.		
3	1,5	1,5	0,016	12739	205xZ	0,019	9554	180xZ	0,017	6900	120xZ	0,045	13800	620xZ	0,034	33970	1150xZ	0,037	21233	785xZ	0,012	5300	65 xZ	0,010	5300	53xZ
4	2,0	2,0	0,021	9554	205xZ	0,025	7166	180xZ	0,023	5175	120xZ	0,060	10350	620xZ	0,045	25477	1150xZ	0,049	15925	785xZ	0,016	3975	65 xZ	0,013	3975	53xZ
5	2,5	2,5	0,027	7643	205xZ	0,031	5732	180xZ	0,029	4140	120xZ	0,075	8280	620xZ	0,056	20382	1150xZ	0,062	12740	785xZ	0,020	3180	65 xZ	0,017	3180	53xZ
6	3,0	3,0	0,032	6369	205xZ	0,038	4777	180xZ	0,035	3450	120xZ	0,090	6900	620xZ	0,068	16985	1150xZ	0,074	10617	785xZ	0,025	2650	65 xZ	0,020	2650	53xZ
8	4,0	4,0	0,043	4777	205xZ	0,050	3583	180xZ	0,046	2587	120xZ	0,120	5175	620xZ	0,090	12739	1150xZ	0,099	7962	785xZ	0,033	1987	65 xZ	0,027	1987	53xZ
10	5,0	5,0	0,053	3822	205xZ	0,063	2866	180xZ	0,058	2070	120xZ	0,150	4140	620xZ	0,110	10191	1150xZ	0,123	6370	785xZ	0,041	1590	65 xZ	0,033	1590	53xZ
12	6,0	6,0	0,064	3185	205xZ	0,075	2389	180xZ	0,070	1725	120xZ	0,180	3450	620xZ	0,140	8492	1150xZ	0,148	5308	785xZ	0,049	1325	65 xZ	0,040	1325	53xZ
14	7,0	7,0	0,075	2730	205xZ	0,088	2047	180xZ	0,081	1478	120xZ	0,210	2957	620xZ	0,160	7279	1150xZ	0,173	4550	785xZ	0,057	1136	65 xZ	0,047	1136	53xZ
16	8,0	8,0	0,086	2389	205xZ	0,100	1791	180xZ	0,093	1294	120xZ	0,240	2588	620xZ	0,180	6369	1150xZ	0,197	3981	785xZ	0,065	994	65 xZ	0,053	994	53xZ

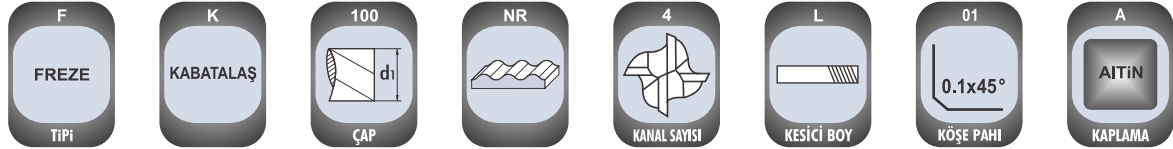
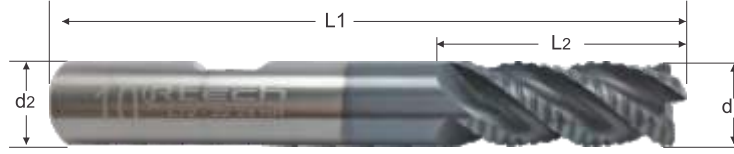
VHM - Schaftfräser mit Eckenradius Lang - Solid Carbide Corner Radius End Mills Long



Kesici Uç Çapı	Kesici Boyu	Tam Boy	Şaft Çapı	Kanal Sayısı	Köşe Radyüs	Kaplamasız		Kaplama	
						Kod	Fiyatı (Euro-€)	Kod	Fiyatı (Euro-€)
d1 (e8)	L2 mm	L1 mm	d2 mm (h6)	Z Adet	Kr. mm				
3	12	65	3	4	0,5	F030U4L12KR05	27,06	F030U4L12KR05A	28,66
4	11	65	4	4	0,5	F040U4L11KR05	28,90	F040U4L11KR05A	30,70
5	13	65	5	4	0,5	F050U4L13KR05	30,40	F050U4L13KR05A	32,28
6	13	68	6	4	0,5	F060U4L13KR05	31,89	F060U4L13KR05A	34,19
6	13	68	6	4	1,0	F060U4L13KR10	31,89	F060U4L13KR10A	34,19
8	19	88	8	4	0,5	F080U4L19KR05	41,48	F080U4L19KR05A	44,28
8	19	88	8	4	1,0	F080U4L19KR10	41,48	F080U4L19KR10A	44,28
8	19	88	8	4	1,5	F080U4L19KR15	41,48	F080U4L19KR15A	44,28
8	19	88	8	4	2,0	F080U4L19KR20	41,48	F080U4L19KR20A	44,28
10	22	100	10	4	0,5	F100U4L22KR05	55,76	F100U4L22KR05A	59,66
10	22	100	10	4	1,0	F100U4L22KR10	55,76	F100U4L22KR10A	59,66
10	22	100	10	4	1,5	F100U4L22KR15	55,76	F100U4L22KR15A	59,66
10	22	100	10	4	2,0	F100U4L22KR20	55,76	F100U4L22KR20A	59,66
12	26	110	12	4	0,5	F120U4L26KR05	70,98	F120U4L26KR05A	75,98
12	26	110	12	4	1,0	F120U4L26KR10	70,98	F120U4L26KR10A	75,98
12	26	110	12	4	1,5	F120U4L26KR15	70,98	F120U4L26KR15A	75,98
12	26	110	12	4	2,0	F120U4L26KR20	70,98	F120U4L26KR20A	75,98
14	26	110	14	4	0,5	F140U4L26KR05	107,04	F140U4L26KR05A	112,04
14	26	110	14	4	1,0	F140U4L26KR10	107,04	F140U4L26KR10A	112,04
14	26	110	14	4	1,5	F140U4L26KR15	107,04	F140U4L26KR15A	112,04
14	26	110	14	4	2,0	F140U4L26KR20	107,04	F140U4L26KR20A	112,04
16	32	110	16	4	1,0	F160U4L32KR10	132,46	F160U4L32KR10A	139,61
16	32	110	16	4	2,0	F160U4L32KR20	132,46	F160U4L32KR20A	139,61
16	32	110	16	4	3,0	F160U4L32KR30	132,46	F160U4L32KR30A	139,61

d ₁	a _p	a _e	HRC 20-30			HRC 30-40			INOX			GG			AL			CU			TITAN			< 52 HRC		
			fz	n	V _f	fz	n	V _f	fz	n	V _f	fz	n	V _f	fz	n	V _f	fz	n	V _f	fz	n	V _f	fz	n	V _f
			Vc=110 m/dk.			Vc=80 m/dk.			Vc=60 m/dk.			Vc=120 m/dk.			Vc=300 m/dk.			Vc=200 m/dk.			Vc=50 m/dk.			Vc=50 m/dk.		
3	1,5	1,5	0,016	11677	185xZ	0,019	8493	160xZ	0,017	6369	110xZ	0,045	12739	570xZ	0,034	31847	1080xZ	0,037	21233	785xZ	0,012	5300	65 xZ	0,010	5300	53xZ
4	2,0	2,0	0,021	8757	185xZ	0,025	6370	160xZ	0,023	4777	110xZ	0,060	9554	570xZ	0,045	23885	1080xZ	0,049	15925	785xZ	0,016	3975	65 xZ	0,013	3975	53xZ
5	2,5	2,5	0,026	7006	185xZ	0,031	5095	160xZ	0,029	3822	110xZ	0,075	7643	570xZ	0,057	19108	1080xZ	0,062	12740	785xZ	0,020	3180	65 xZ	0,017	3180	53xZ
6	3,0	3,0	0,032	5838	185xZ	0,038	4246	160xZ	0,035	3185	110xZ	0,090	6369	570xZ	0,068	15923	1080xZ	0,074	10617	785xZ	0,025	2650	65 xZ	0,020	2650	53xZ
8	4,0	4,0	0,042	4379	185xZ	0,050	3185	160xZ	0,046	2389	110xZ	0,119	4777	570xZ	0,090	11942	1080xZ	0,099	7962	785xZ	0,033	1987	65 xZ	0,027	1985	53xZ
10	5,0	5,0	0,053	3503	185xZ	0,063	2548	160xZ	0,057	1911	110xZ	0,149	3822	570xZ	0,113	9554	1080xZ	0,123	6370	785xZ	0,041	1590	65 xZ	0,033	1590	53xZ
12	6,0	6,0	0,063	2919	185xZ	0,075	2123	160xZ	0,069	1592	110xZ	0,179	3185	570xZ	0,136	7962	1080xZ	0,148	5308	785xZ	0,049	1325	65 xZ	0,040	1325	53xZ
14	7,0	7,0	0,074	2502	185xZ	0,088	1820	160xZ	0,081	1365	110xZ	0,209	2730	570xZ	0,158	6824	1080xZ	0,173	4550	785xZ	0,057	1136	65 xZ	0,047	1136	53xZ
16	8,0	8,0	0,085	2189	185xZ	0,110	1592	160xZ	0,092	1194	110xZ	0,239	2388	570xZ	0,181	5971	1080xZ	0,197	3981	785xZ	0,065	994	65 xZ	0,053	994	53xZ

VHM - Schruppfräser NR - Solid Carbide Roughing End Mills NR

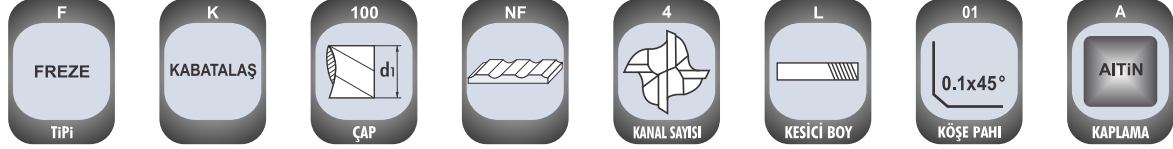


Kesici Uç Çapı	Kesici Boyu	Tam Boy	Şaft Çapı	Kanal Sayısı	Köşe Pahtı	Kaplamasız		Kaplama	
d1 (e8)	L2 mm	L1 mm	d2 mm (h6)	Z Adet	x 45°	Kod	Fiyatı (Euro-€)	Kod	Fiyatı (Euro-€)
6	13	57	6	4	0,30	FK060NR4L13T030	34,96	FK060NR4L13T030A	37,26
7	16	60	7	4	0,35	FK070NR4L16T035	51,40	FK070NR4L16T035A	54,20
8	19	63	8	4	0,40	FK080NR4L19T040	49,40	FK080NR4L19T040A	51,70
9	19	67	9	4	0,45	FK090NR4L19T045	59,95	FK090NR4L19T045A	63,85
10	22	72	10	4	0,50	FK100NR4L22T050	57,95	FK100NR4L22T050A	61,85
12	26	83	12	4	0,60	FK120NR4L26T060	74,94	FK120NR4L26T060A	79,24
14	26	83	14	4	0,70	FK140NR4L26T070	98,50	FK140NR4L26T070A	102,80
16	32	92	16	4	0,80	FK160NR4L32T080	118,86	FK160NR4L32T080A	124,06
18	32	92	18	4	0,90	FK180NR4L32T090	165,20	FK180NR4L32T090A	171,70
20	38	104	20	4	1,00	FK200NR4L38T100	180,17	FK200NR4L38T100A	188,32
6	24	68	6	4	0,30	FK060NR4L24T030	52,25	FK060NR4L24T030A	54,55
8	38	88	8	4	0,40	FK080NR4L38T040	76,66	FK080NR4L38T040A	79,46
10	45	100	10	4	0,50	FK100NR4L45T050	88,15	FK100NR4L45T050A	92,05
12	53	110	12	4	0,60	FK120NR4L53T060	114,97	FK120NR4L53T060A	119,97
14	53	110	14	4	0,70	FK140NR4L53T070	141,07	FK140NR4L53T070A	146,07
16	63	110	16	4	0,80	FK160NR4L63T080	190,97	FK160NR4L63T080A	198,12
18	63	110	18	4	0,90	FK180NR4L63T090	282,21	FK180NR4L63T090A	290,36
20	75	141	20	4	1,00	FK200NR4L75T100	330,90	FK200NR4L75T100A	339,05

		NR			NR			HR			NR			WR			WR			HR			HR			
		HRC 20-30			HRC 30-40			INOX			GG			AL			CU			TITAN			< 52 HRC			
		1.0050-2 1.0060-2 1.0070-2			1.5864 1.6580 1.7225			1.4405 1.4460 1.4505			0.6035 0.7080 0.8055			3.2151 3.2373 3.2382			2.1247 2.0580 2.0598			3.7035 3.7055 3.7065			1.3255 1.3265 1.3333			
		Vc=70 m/dk.			Vc=50 m/dk.			Vc=35 m/dk.			Vc=100 m/dk.			Vc=70 m/dk.			Vc=180 m/dk.			Vc=30 m/dk.			Vc=30 m/dk.			
d1	ap	ae	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf			
6	3.0	3.0	0,081	3715	300xZ	0,083	2654	220xZ	0,065	1858	120xZ	0,042	5308	225xZ	0,094	13800	1300xZ	0,058	9554	550xZ	0,041	1592	65xZ	0,035	1592	55xZ
7	3.5	3.5	0,094	3185	300xZ	0,097	2275	220xZ	0,075	1592	120xZ	0,049	4550	225xZ	0,110	11828	1300xZ	0,067	8189	550xZ	0,048	1365	65xZ	0,040	1365	55xZ
8	4.0	4.0	0,108	2787	300xZ	0,110	1990	220xZ	0,086	1393	120xZ	0,056	3981	225xZ	0,126	10350	1300xZ	0,077	7166	550xZ	0,054	1194	65xZ	0,046	1194	55xZ
9	4.5	4.5	0,121	2477	300xZ	0,124	1769	220xZ	0,097	1238	120xZ	0,064	3538	225xZ	0,141	9200	1300xZ	0,086	6370	550xZ	0,061	1062	65xZ	0,052	1062	55xZ
10	5.0	5.0	0,135	2229	300xZ	0,138	1592	220xZ	0,108	1115	120xZ	0,071	3185	225xZ	0,157	8280	1300xZ	0,096	5732	550xZ	0,068	955	65xZ	0,057	955	55xZ
12	6.0	6.0	0,161	1858	300xZ	0,166	1327	220xZ	0,129	929	120xZ	0,085	2654	225xZ	0,188	6900	1300xZ	0,115	4777	550xZ	0,082	796	65xZ	0,069	796	55xZ
14	7.0	7.0	0,188	1592	300xZ	0,194	1137	220xZ	0,151	796	120xZ	0,100	2275	225xZ	0,220	5914	1300xZ	0,134	4095	550xZ	0,095	682	65xZ	0,080	682	55xZ
16	8.0	8.0	0,215	1393	300xZ	0,221	995	220xZ	0,172	697	120xZ	0,113	1990	225xZ	0,251	5175	1300xZ	0,154	3583	550xZ	0,109	597	65xZ	0,092	597	55xZ
18	9.0	9.0	0,242	1238	300xZ	0,250	885	220xZ	0,194	619	120xZ	0,127	1769	225xZ	0,282	4600	1300xZ	0,173	3185	550xZ	0,122	531	65xZ	0,103	531	55xZ
20	10.0	10.0	0,269	1115	300xZ	0,280	796	220xZ	0,215	557	120xZ	0,141	1592	225xZ	0,314	4140	1300xZ	0,192	2866	550xZ	0,136	478	65xZ	0,115	478	55xZ
22	11.0	11.0	0,296	1013	300xZ	0,300	724	220xZ	0,240	507	120xZ	0,155	1448	225xZ	0,345	3766	1300xZ	0,211	2606	550xZ	0,150	434	65xZ	0,127	434	55xZ
25	12.5	12.5	0,336	892	300xZ	0,345	637	220xZ	0,269	446	120xZ	0,177	1274	225xZ	0,392	3312	1300xZ	0,240	2293	550xZ	0,170	382	65xZ	0,144	382	55xZ
28	14.0	14.0	0,377	796	300xZ	0,390	569	220xZ	0,300	398	120xZ	0,198	1137	225xZ	0,440	2957	1300xZ	0,268	2047	550xZ	0,190	341	65xZ	0,161	341	55xZ

VHM - Schruppfräser NF - Solid Carbide Roughing End Mills NF

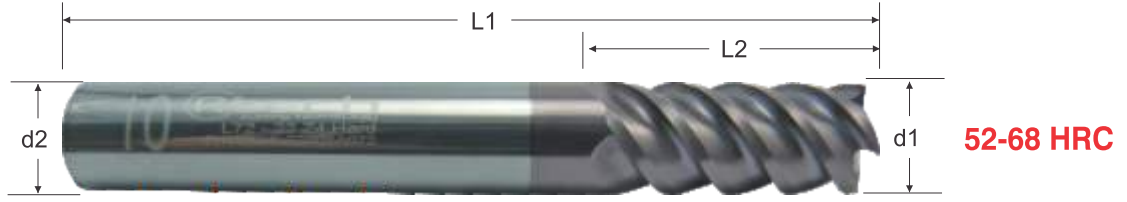
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Kesici Uç Çapı	Kesici Boyu	Tam Boy	Şaft Çapı	Kanal Sayısı	Köşe Pahi	Kaplamasız		Kaplama	
d1 (e8)	L2 mm	L1 mm	d2 mm (h6)	Z Adet	x 45°	Kod	Fiyatı (Euro-€)	Kod	Fiyatı (Euro-€)
6	13	57	6	4	0,30	FK060NF4L13T030	34,96	FK060NF4L13T030A	37,26
7	16	60	7	4	0,35	FK070NF4L16T035	51,40	FK070NF4L16T035A	54,20
8	19	63	8	4	0,40	FK080NF4L19T040	49,40	FK080NF4L19T040A	51,70
9	19	67	9	4	0,45	FK090NF4L19T045	59,95	FK090NF4L19T045A	63,85
10	22	72	10	4	0,50	FK100NF4L22T050	57,95	FK100NF4L22T050A	61,85
12	26	83	12	4	0,60	FK120NF4L26T060	74,94	FK120NF4L26T060A	79,24
14	26	83	14	4	0,70	FK140NF4L26T070	98,50	FK140NF4L26T070A	102,80
16	32	92	16	4	0,80	FK160NF4L32T080	118,86	FK160NF4L32T080A	124,06
18	32	92	18	4	0,90	FK180NF4L32T090	165,20	FK180NF4L32T090A	171,70
20	38	104	20	4	1,00	FK200NF4L38T100	180,17	FK200NF4L38T100A	188,32
6	24	68	6	4	0,30	FK060NF4L24T030	52,25	FK060NF4L24T030A	54,55
8	38	88	8	4	0,40	FK080NF4L38T040	76,66	FK080NF4L38T040A	79,46
10	45	100	10	4	0,50	FK100NF4L45T050	88,15	FK100NF4L45T050A	92,05
12	53	110	12	4	0,60	FK120NF4L53T060	114,97	FK120NF4L53T060A	119,97
14	53	110	14	4	0,70	FK140NF4L53T070	141,07	FK140NF4L53T070A	146,07
16	63	110	16	4	0,80	FK160NF4L63T080	190,97	FK160NF4L63T080A	198,12
18	63	110	18	4	0,90	FK180NF4L63T090	282,21	FK180NF4L63T090A	290,36
20	75	141	20	4	1,00	FK200NF4L75T100	330,90	FK200NF4L75T100A	339,05

		NF			NF			HF			NF			WF			WF			HF			HF			
		HRC 20-30			HRC 30-40			INOX			GG			AL			CU			TITAN			< 52 HRC			
		1.0050-2			1.5864			1.4405			0.6035			3.2151			2.1247			3.7035			1.3255			
		1.0060-2			1.6580			1.4460			0.7080			3.2373			2.0580			3.7055			1.3265			
		1.0070-2			1.7225			1.4505			0.8055			3.2382			2.0598			3.7065			1.3333			
		Vc=70 m/dk.			Vc=50 m/dk.			Vc=35 m/dk.			Vc=100 m/dk.			Vc=260 m/dk.			Vc=180 m/dk.			Vc=30 m/dk.			Vc=30 m/dk.			
d1	ap	ae	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf			
6	3,0	3,0	0,070	3715	260xZ	0,070	2654	185xZ	0,054	1858	100xZ	0,034	5308	180xZ	0,079	13800	1100xZ	0,048	9554	460xZ	0,031	1592	50xZ	0,025	1592	24xZ
7	3,5	3,5	0,081	3185	260xZ	0,081	2275	185xZ	0,063	1592	100xZ	0,040	4500	180xZ	0,093	11828	1100xZ	0,056	8189	460xZ	0,037	1365	50xZ	0,029	1365	40xZ
8	4,0	4,0	0,093	2787	260xZ	0,093	1190	185xZ	0,072	1393	100xZ	0,045	3981	180xZ	0,106	10350	1100xZ	0,064	7166	460xZ	0,042	1194	50xZ	0,034	1194	40xZ
9	4,5	4,5	0,105	2477	260xZ	0,105	1769	185xZ	0,081	1238	100xZ	0,051	3538	180xZ	0,119	9200	1100xZ	0,072	6370	460xZ	0,047	1062	50xZ	0,038	1062	40xZ
10	5,0	5,0	0,116	2229	260xZ	0,116	1592	185xZ	0,090	1115	100xZ	0,056	3185	180xZ	0,133	8280	1100xZ	0,080	5732	460xZ	0,052	955	50xZ	0,042	955	40xZ
12	6,0	6,0	0,140	1858	260xZ	0,140	1327	185xZ	0,107	929	100xZ	0,068	2654	180xZ	0,159	6900	1100xZ	0,096	4777	460xZ	0,063	796	50xZ	0,050	796	40xZ
14	7,0	7,0	0,163	1592	260xZ	0,163	1137	185xZ	0,125	796	100xZ	0,079	2275	180xZ	0,186	5914	1100xZ	0,112	4095	460xZ	0,073	682	50xZ	0,058	682	40xZ
16	8,0	8,0	0,187	1393	260xZ	0,187	995	185xZ	0,143	697	100xZ	0,090	1990	180xZ	0,212	5175	1100xZ	0,128	3583	460xZ	0,084	597	50xZ	0,067	597	40xZ
18	9,0	9,0	0,210	1238	260xZ	0,210	885	185xZ	0,161	619	100xZ	0,102	1769	180xZ	0,239	4600	1100xZ	0,144	3185	460xZ	0,094	531	50xZ	0,075	531	40xZ
20	10,0	10,0	0,233	1115	260xZ	0,233	796	185xZ	0,179	557	100xZ	0,113	1592	180xZ	0,266	4140	1100xZ	0,161	2866	460xZ	0,105	478	50xZ	0,084	478	40xZ
22	11,0	11,0	0,257	1013	260xZ	0,257	724	185xZ	0,197	507	100xZ	0,124	1448	180xZ	0,292	3766	1100xZ	0,176	2606	460xZ	0,115	434	50xZ	0,092	434	40xZ
25	12,5	12,5	0,291	892	260xZ	0,291	637	185xZ	0,224	446	100xZ	0,141	1274	180xZ	0,332	3312	1100xZ	0,201	2293	460xZ	0,131	382	50xZ	0,105	382	40xZ
28	14,0	14,0	0,327	796	260xZ	0,327	569	185xZ	0,251	398	100xZ	0,158	1137	180xZ	0,372	2957	1100xZ	0,225	2047	460xZ	0,147	341	50xZ	0,117	341	40xZ

VHM - Schafffräser Hart - Solid Carbide Hard End Mills



Kesici Uç Çapı	Kesici Boyu	Tam Boy	Şaft Çapı	Kanal Sayısı	Kaplama	
d1 (e8)	L2 mm	L1 mm	d2 mm (h6)	Z Adet	Kod	Fiyatı (Euro-€)
3	10	40	3	4	FH030S4L10P01A040	18,80
4	11	50	4	4	FH040S4L11P01A050	16,90
5	13	50	5	4	FH050S4L13P01A050	18,90
6	13	57	6	4	FH060S4L13P01A057	20,90
8	19	63	8	4	FH080S4L19P01A063	28,60
10	22	72	10	4	FH100S4L22P01A072	44,30
12	26	83	12	4	FH120S4L26P01A083	58,90
14	26	83	14	4	FH140S4L26P01A086	91,90
16	32	92	16	4	FH160S4L32P01A092	117,40
18	32	92	18	4	FH180S4L32P01A092	183,00
20	38	104	20	4	FH200S4L38P01A104	212,00

				HRC <50			HRC <53			HRC <56			HRC <59			HRC <61			HRC <63			HRC <65			HRC <68		
				1.5860-1.6587 1.6587-1.7326			1.1520 - 1.1525 1.1545 - 1.1820			1.2002 - 1.2003 1.2082 - 1.2344			1.1563 - 1.2004 1.2056 - 1.2057			1.2365 - 1.2379 1.2601 - 1.2622			1.3343 - 1.3344 1.3348 - 1.3355			1.3302 - 1.3318 1.3333 - 1.3334			1.2067 - 1.3343 1.3344 - 1.3355		
				Vc=200m/dk.			Vc=190m/dk.			Vc=180 m/dk.			Vc=170m/dk.			Vc=160m/dk.			Vc=150m/dk.			Vc=140m/dk.			Vc=130m/dk.		
d1	ap	ap	ae	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf
4	0,04	0,32	0,04	0,025	15925	400xZ	0,022	15127	340xZ	0,019	14331	280xZ	0,016	13535	220xZ	0,013	12739	160xZ	0,010	11942	120xZ	0,007	11146	80xZ	0,003	13800	40xZ
5	0,05	0,40	0,05	0,031	12740	400xZ	0,028	12102	340xZ	0,024	11465	280xZ	0,020	10828	220xZ	0,016	10191	160xZ	0,012	9554	120xZ	0,009	8917	80xZ	0,004	10350	40xZ
6	0,06	0,48	0,06	0,038	10617	400xZ	0,034	10085	340xZ	0,029	9554	280xZ	0,023	9023	220xZ	0,019	8492	160xZ	0,015	7962	120xZ	0,011	7431	80xZ	0,005	8280	40xZ
8	0,08	0,64	0,08	0,050	7962	400xZ	0,045	7564	340xZ	0,039	7166	280xZ	0,033	6767	220xZ	0,025	6369	160xZ	0,020	5971	120xZ	0,014	5573	80xZ	0,006	6900	40xZ
10	0,10	0,80	0,10	0,060	6370	400xZ	0,056	6051	340xZ	0,049	5732	280xZ	0,041	5414	220xZ	0,031	5095	160xZ	0,025	4777	120xZ	0,018	4458	80xZ	0,008	5175	40xZ
12	0,12	0,96	0,12	0,075	5308	400xZ	0,067	5042	340xZ	0,058	4777	280xZ	0,048	4512	220xZ	0,038	4246	160xZ	0,030	3981	120xZ	0,022	3715	80xZ	0,010	4140	40xZ
14	0,14	1,12	0,14	0,088	4550	400xZ	0,078	4322	340xZ	0,068	4095	280xZ	0,057	3867	220xZ	0,044	3640	160xZ	0,035	3412	120xZ	0,025	3185	80xZ	0,012	3450	40xZ
16	0,16	1,28	0,16	0,010	3981	400xZ	0,090	3782	340xZ	0,078	3583	280xZ	0,065	3384	220xZ	0,050	3185	160xZ	0,040	2986	120xZ	0,029	2787	80xZ	0,013	2957	40xZ
18	0,18	1,44	0,18	0,011	3539	400xZ	0,101	3362	340xZ	0,088	3185	280xZ	0,073	3008	220xZ	0,056	2831	160xZ	0,045	2654	120xZ	0,032	2477	80xZ	0,015	2588	40xZ
20	0,20	1,60	0,20	0,125	3185	400xZ	0,112	3025	340xZ	0,098	2866	280xZ	0,081	2707	220xZ	0,063	2548	160xZ	0,050	2388	120xZ	0,036	2229	80xZ	0,019	2070	40xZ

VHM - Schafffräser - Solid Carbide Finishing End Mills

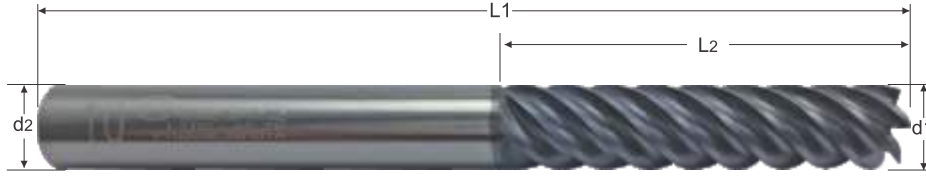
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Kesici Uç Çapı d1 (e8)	Kesici Boyu L2 mm	Tam Boy L1 mm	Şaft Çapı d2 mm (h6)	Kanal Sayısı Z Adet	Kaplamasız		Kaplmalı	
					Kod	Fiyatı (Euro-€)	Kod	Fiyatı (Euro-€)
6	13	57	6	6	F060S6L13H01	21,00	F060S6L13H01A	23,30
8	19	63	8	6	F080S6L19H01	28,99	F080S6L19H01A	31,79
10	22	72	10	6	F100S6L22H01	41,99	F100S6L22H01A	45,89
12	26	83	12	6	F120S6L26H01	54,66	F120S6L26H01A	58,96
14	26	83	14	6	F140S6L26H01	91,89	F140S6L26H01A	96,19
16	32	92	16	6	F160S6L32H01	102,74	F160S6L32H01A	107,94
18	32	92	18	8	F180S6L32H01	164,22	F180S6L32H01A	170,72
20	38	104	20	8	F200S6L38H01	178,88	F200S6L38H01A	186,03

HRC 20-30		HRC 30-40		GG		< 52 HRC		
1.0050-2 1.0060-2 1.0070-2		1.5864 1.6580 1.7225		0.6035 0.7080 0.8055		1.3255 1.3265 1.3333		
Vc = 130 m/dk.		Vc = 100 m/dk.		Vc = 120 m/dk.		Vc = 60 m/dk.		
d1	ap	ae	fz	n	Vf	fz	n	Vf
6	6	6	0,015	6900	100 xZ	0,015	5308	80 xZ
8	8	8	0,019	5175	100 xZ	0,020	3981	80 xZ
10	10	10	0,024	4140	100 xZ	0,025	3185	80 xZ
12	12	12	0,029	3450	100 xZ	0,030	2654	80 xZ
14	14	14	0,034	2957	100 xZ	0,035	2275	80 xZ
16	16	16	0,038	2588	100 xZ	0,040	1990	80 xZ
18	18	18	0,043	2300	100 xZ	0,045	1770	80 xZ
20	20	20	0,048	2070	100 xZ	0,050	1592	80 xZ
25	25	25	0,060	1656	100 xZ	0,063	1274	80 xZ

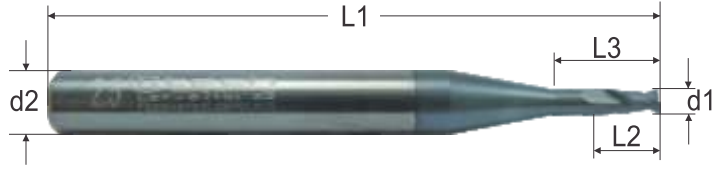
VHM - Schaftfräser Lang - Solid Carbide Finishing End Mills



Kesici Uç Çapı d1 (e8)	Kesici Boyu L2 mm	Tam Boy L1 mm	Şaft Çapı d2 mm (h6)	Kanal Sayısı Z Adet	Kaplamasız		Kaplmalı	
					Kod	Fiyatı (Euro-€)	Kod	Fiyatı (Euro-€)
6	24	68	6	6	F060U6L24H01	40,80	F060U6L24H01A	43,10
8	38	88	8	6	F080U6L38H01	57,12	F080U6L38H01A	59,92
10	45	100	10	6	F100U6L45H01	89,08	F100U6L45H01A	92,98
12	53	110	12	6	F120U6L53H01	106,08	F120U6L53H01A	111,08
16	63	110	16	6	F160U6L63H01	201,76	F160U6L63H01A	208,91
20	75	141	20	6	F200U8L75H01	303,81	F200U8L75H01A	311,96

HRC 20-30		HRC 30-40		GG		< 52 HRC		
1.0050-2 1.0060-2 1.0070-2		1.5864 1.6580 1.7225		0.6035 0.7080 0.8055		1.3255 1.3265 1.3333		
Vc=130 m/dk.		Vc=100 m/dk.		Vc=120 m/dk.		Vc=60 m/dk.		
d1	ap	ae	fz	n	Vf	fz	n	Vf
6	6	6	0,015	6900	100 xZ	0,015	5308	80 xZ
8	8	8	0,019	5175	100 xZ	0,020	3981	80 xZ
10	10	10	0,024	4140	100 xZ	0,025	3185	80 xZ
12	12	12	0,029	3450	100 xZ	0,030	2654	80 xZ
14	14	14	0,034	2957	100 xZ	0,035	2275	80 xZ
16	16	16	0,038	2588	100 xZ	0,040	1990	80 xZ
18	18	18	0,043	2300	100 xZ	0,045	1770	80 xZ
20	20	20	0,048	2070	100 xZ	0,050	1592	80 xZ
25	25	25	0,060	1656	100 xZ	0,063	1274	80 xZ

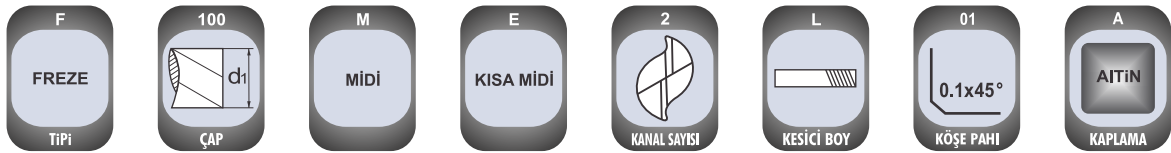
WHM Schafffräser Midi - Solid Carbide End Mills Midi



Kesici Uç Çapı	Kesici Boyu	Boğaz Boyu	Tam Boy	Şaft Çapı	Kanal Sayısı	Kaplamasız		Kaplama	
						Kod	Fiyatı (Euro-€)	Kod	Fiyatı (Euro-€)
d1 (e8)	L2 mm	L3 mm	L1 mm	d2 mm (h6)	Z Adet				
2	5	10	57	6	2	F020M57S2L05P01C10	20,10	F020M57S2L05P01A10	22,40
2,5	5	10	57	6	2	F025M57S2L05P01C10	20,10	F025M57S2L05P01A10	22,40
3	6	12	57	6	2	F030M57S2L06P01C12	18,28	F030M57S2L06P01A12	20,58
3,5	6	12	57	6	2	F035M57S2L08P01C16	18,28	F035M57S2L08P01A16	20,58
4	7	14	57	6	2-4	F040M57S2L06P01C14	18,28	F040M57S2L06P01A14	20,58
5	8	16	57	6	2-4	F050M57S2L08P01C16	18,28	F050M57S2L08P01A16	20,58
2	7	14	76	6	2	F020M76S2L07P01C14	27,10	F020M76S2L07P01A14	29,40
2,5	7	14	76	6	2	F025M76S2L05P01C10	27,10	F025M76S2L05P01A10	29,40
3	8	16	76	6	2	F030M76S2L08P01C16	24,57	F030M76S2L08P01A16	26,87
3,5	8	16	76	6	2	F035M76S2L08P01C16	24,57	F035M76S2L08P01A16	26,87
4	9	18	76	6	2-4	F040M76S2L09P01C18	24,57	F040M76S2L09P01A18	26,87
5	10	20	76	6	2-4	F050M76S2L10P01C20	24,57	F050M76S2L10P01A20	26,87

KARBÜR MİDİ FREZE KISA

WHM Schafffräser Midi Kurz - Solid Carbide End Mills Midi Short



Kesici Uç Çapı	Kesici Boyu	Tam Boy	Şaft Çapı	Kanal Sayısı	Kaplama	
					Kod	Fiyatı (Euro-€)
d1 (e8)	L2 mm	L1 mm	d2 mm (h6)	Z Adet		
2	5	50	6	2-3	F020M50E2L05P01A	17,05
2,5	5	50	6	2-3	F025M50E2L05P01A	17,05
3	5	50	6	2-3-4	F030M50E2L05P01A	15,40
3,5	5	50	6	2-3-4	F035M50E2L05P01A	15,40
4	8	50	6	2-3-4	F040M50E2L05P01A	15,40
5	8	50	6	2-3-4	F050M50E2L05P01A	15,40

d ₂		V _c x 0,8		V _c x 1		HRC 20-30		HRC 30-40		INOX		GG		AL		CU		TITAN		< 52 HRC						
d ₁	a _p	a _e	f _z	n	V _f	f _z	n	V _f	f _z	n	V _f	f _z	n	V _f	f _z	n	V _f	f _z	n	V _f	f _z	n	V _f			
2.0	0.20	0.20	0.031	19200	2381	0.035	12800	2406	0.042	9600	1613	0.025	32000	3200	0.016	60000	3840	0.022	36800	3238	0.031	9600	1190	0.033	8000	1056
3.0	0.30	0.30	0.047	12800	2406	0.047	8500	2414	0.064	6400	1638	0.037	21300	3152	0.016	60000	3136	0.034	24500	3332	0.047	6400	1203	0.052	5300	1102
4.0	0.40	0.40	0.065	9600	2496	0.059	6400	2432	0.087	4800	1670	0.049	16000	3136	0.016	58800	2355	0.046	18400	3386	0.063	4800	1210	0.072	4000	1152
5.0	0.50	0.50	0.085	7600	2584	0.071	5100	2428	0.111	3800	1687	0.061	12800	3123	0.016	49000	1882	0.060	14700	3528	0.079	3800	1201	0.094	3200	1203

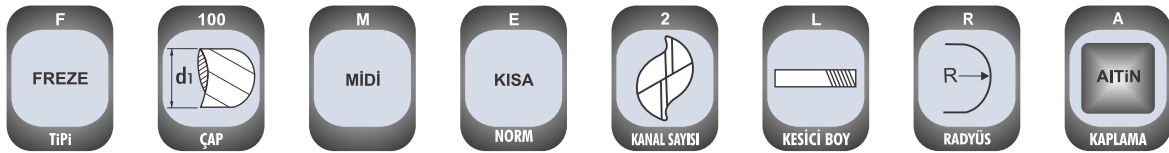
WHM Radiusfräser Midi - Solid Carbide Ball Nose End Midi



Kesici Uç Çapı	Kesici Boyu	Boğaz Boyu	Tam Boy	Şaft Çapı	Kanal Sayısı	Küre Yarı Çap	Kaplamasız		Kaplama	
							Kod	Fiyatı (Euro-€)	Kod	Fiyatı (Euro-€)
d1 (e8)	L2 mm	L3 mm	L1 mm	d2 mm (h6)	Z Adet	R				
2	5	10	57	6	2	1	F020M57S2L05R100C10	21,70	F020M57S2L05R100A10	25,47
2,5	5	10	57	6	2	1,25	F025M57S2L05R125C10	21,70	F025M57S2L05R125A10	25,47
3	6	12	57	6	2	1,5	F030M57S2L06R150C12	19,74	F030M57S2L06R150A12	23,15
3,5	6	12	57	6	2	1,75	F035M57S2L06R175C12	19,74	F035M57S2L06R175A12	23,15
4	7	14	57	6	2-4	2	F040M57S2L07R200C14	19,74	F040M57S2L07R200A14	23,15
5	8	16	57	6	2-4	2,5	F050M57S2L08R250C16	19,74	F050M57S2L08R250A16	23,15
2	7	14	76	6	2	1	F020M76S2L07R100C14	29,30	F020M76S2L07R100A14	33,50
2,5	7	14	76	6	2	1,25	F025M76S2L07R125C14	29,30	F025M76S2L07R125A14	33,50
3	8	16	76	6	2	1,5	F030M76S2L08R150C16	26,64	F030M76S2L08R150A16	30,47
3,5	8	16	76	6	2	1,75	F035M76S2L08R175C16	26,64	F035M76S2L08R175A16	30,47
4	9	18	76	6	2-4	2	F040M76S2L09R200C18	26,64	F040M76S2L09R200A18	30,47
5	10	20	76	6	2-4	2,5	F050M76S2L10R250C20	26,64	F050M76S2L10R250A20	30,47

KARBÜR MİDİ KÜRE FREZE KISA

WHM Radiusfräser Midi Kurz - Solid Carbide Ball Nose End Mills Midi Short



Kesici Uç Çapı	Kesici Boyu	Tam Boy	Şaft Çapı	Kanal Sayısı	Küre Yarı Çapı	Kaplama	
						Kod	Fiyatı (Euro-€)
d1 (e8)	L2 mm	L1 mm	d2 mm (h6)	Z Adet	R		
2	5	50	6	2	1	F020M50E2L05R100A	18,41
2,5	5	50	6	2	1,25	F025M50E2L05R125A	18,41
3	5	50	6	2	1,5	F030M50E2L05R150A	16,63
3,5	5	50	6	2	1,75	F035M50E2L05R175A	16,63
4	8	50	6	2-4	2	F040M50E2L08R200A	16,63
5	8	50	6	2-4	2,5	F050M50E2L08R250A	16,63

d1	ap	ae	HRC 20-30			HRC 30-40			INOX			GG			AL			CU			TITAN			< 52 HRC		
			fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf
2.0	0.20	0.20	0,031	19200	1190	0,035	12800	1203	0,042	9600	806	0,025	32000	1600	0,016	60000	1920	0,022	36800	1619	0,031	9600	595	0,033	8000	528
3.0	0.30	0.30	0,047	12800	1203	0,047	8500	1207	0,064	6400	819	0,037	21300	1576	0,016	60000	1568	0,034	24500	1666	0,047	6400	602	0,052	5300	551
4.0	0.40	0.40	0,065	9600	1248	0,059	6400	1216	0,087	4800	835	0,049	16000	1568	0,016	58800	1178	0,046	18400	1693	0,063	4800	605	0,072	4000	576
5.0	0.50	0.50	0,085	7600	1292	0,071	5100	1214	0,111	3800	844	0,061	12800	1562	0,016	49000	941	0,060	14700	1764	0,079	3800	600	0,094	3200	602

Whm Schafffräser Mit Eckenradius Midi - Solid Carbide Corner Radius End Mills Midi

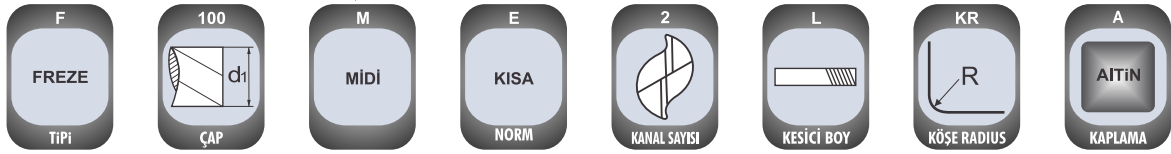
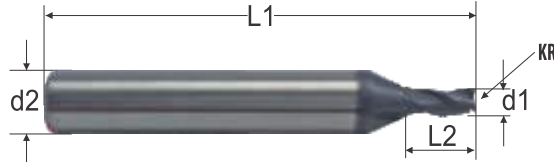
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Kesici Uç Çapı d1 (e8)	Kesici Boyu L2 mm	Boğaz Boyu L3 mm	Tam Boy L1 mm	Şaft Çapı d2 mm (h6)	Kanal Sayısı Z Adet	Köşe Radyüs KR mm	Kaplamasız		Kaplama	
							Kod	Fiyatı (Euro-€)	Kod	Fiyatı (Euro-€)
2	5	10	57	6	2	0,5	F020M57S2L05KR05C10	22,31	F020M57S2L05KR05A10	24,61
2,5	5	10	57	6	2	0,5	F025M57S2L05KR05C10	22,31	F025M57S2L05KR05A10	24,61
3	6	12	57	6	2	0,5	F030M57S2L06KR05C12	20,29	F030M57S2L06KR05A12	22,59
3,5	6	12	57	6	2	0,5	F035M57S2L06KR05C12	20,29	F035M57S2L06KR05A12	22,59
4	7	14	57	6	2-4	0,5	F040M57S2L07KR05C14	20,29	F040M57S2L07KR05A14	22,59
4	7	14	57	6	2-4	1,0	F040M57S2L07KR10C14	20,29	F040M57S2L07KR10A14	22,59
5	8	16	57	6	2-4	0,5	F050M57S2L08KR05C16	20,29	F050M57S2L08KR05A16	22,59
5	8	16	57	6	2-4	1,0	F050M57S2L08KR10C16	20,29	F050M57S2L08KR10A16	22,59
2	7	14	76	6	2	0,5	F020M76S2L07KR05C14	30,00	F020M76S2L07KR05A14	32,30
2,5	7	14	76	6	2	0,5	F025M76S2L07KR05C14	30,00	F025M76S2L07KR05A14	32,30
3	8	16	76	6	2	0,5	F030M76S2L08KR05C16	27,27	F030M76S2L08KR05A16	29,57
3,5	8	16	76	6	2	0,5	F035M76S2L08KR05C16	27,27	F035M76S2L08KR05A16	29,57
4	9	18	76	6	2-4	0,5	F040M76S2L09KR05C18	27,27	F040M76S2L09KR05A18	29,57
4	9	18	76	6	2-4	1,0	F040M76S2L09KR10C18	27,27	F040M76S2L09KR10A18	29,57
5	10	20	76	6	2-4	0,5	F050M76S2L10KR05C20	27,27	F050M76S2L10KR05A20	29,57
5	10	20	76	6	2-4	1,0	F050M76S2L10KR10C20	27,27	F050M76S2L10KR10A20	29,57

KARBÜR MİDİ KÖŞE RADYÜS FREZE KISA

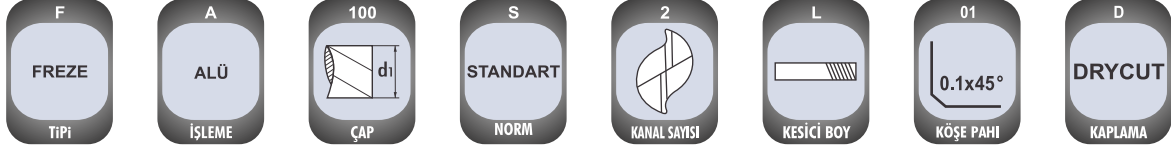
WHM Schafffräser Mit Eckenradius Midi Kurz - Solid Carbide Corner Radius End Mills Midi Short



Kesici Uç Çapı d1 (e8)	Kesici Boyu L2 mm	Tam Boy L1 mm	Şaft Çapı d2 mm (h6)	Kanal Sayısı Z Adet	Köşe Radyüs KR mm	Kaplama	
						Kod	Fiyatı (Euro-€)
2	5	50	6	2	0,5	F020M50E2L05KR05A	18,92
2,5	5	50	6	2	0,5	F025M50E2L05KR05A	18,92
3	6	50	6	2	0,5	F030M50E2L06KR05A	17,10
3,5	6	50	6	2	0,5	F035M50E2L06KR05A	17,10
4	7	50	6	2-4	0,5	F040M50E2L07KR05A	17,10
4	7	50	6	2-4	1,0	F040M50E2L07KR10A	17,10
5	8	50	6	2-4	0,5	F050M50E2L08KR05A	17,10
5	8	50	6	2-4	1,0	F050M50E2L08KR10A	17,10

d1	ap	ae	HRC 20-30			HRC 30-40			INOX			GG			AL			CU			TITAN			< 52 HRC		
			fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf
2.0	0.20	0.20	0,031	19200	2381	0,035	12800	2406	0,042	9600	1613	0,025	32000	3200	0,016	60000	3840	0,022	36800	3238	0,031	9600	1190	0,033	8000	1056
3.0	0.30	0.30	0,047	12800	2406	0,047	8500	2414	0,064	6400	1638	0,037	21300	3152	0,016	60000	3136	0,034	24500	3332	0,047	6400	1203	0,052	5300	1102
4.0	0.40	0.40	0,065	9600	2496	0,059	6400	2432	0,087	4800	1670	0,049	16000	3136	0,016	58800	2355	0,046	18400	3386	0,063	4800	1210	0,072	4000	1152
5.0	0.50	0.50	0,085	7600	2584	0,071	5100	2428	0,111	3800	1687	0,061	12800	3123	0,016	49000	1882	0,060	14700	3528	0,079	3800	1201	0,094	3200	1203

VHM - Schafffräser ALU - Solid carbide End Mills ALU

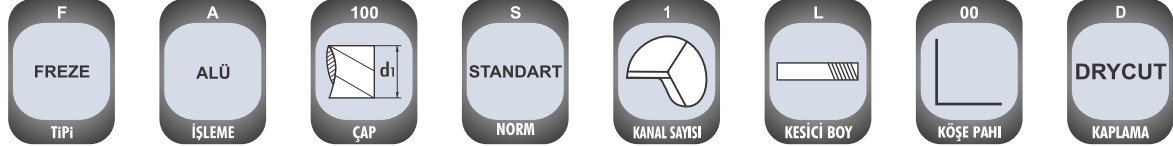
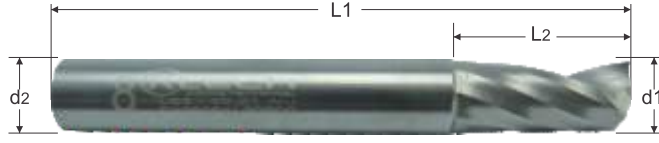


Kesici Uç Çapı	Kesici Boyu	Tam Boy	Şaft Çapı	Kanal Sayısı	Kaplamasız		Kaplama	
					Kod	Fiyatı (Euro-€)	Kod	Fiyatı (Euro-€)
d1 (e8)	L2 mm	L1 mm	d2 mm (h6)	Z Adet				
3	8	40	3	2-3	FA030S2L08P01	11,22	FA030S2L08P01D	12,82
4	11	50	4	2-3	FA040S2L11P01	11,48	FA040S2L11P01D	13,28
5	13	50	5	2-3	FA050S2L13P01	13,18	FA050S2L13P01D	15,06
6	13	57	6	2-3	FA060S2L13P01	15,39	FA060S2L13P01D	17,69
8	19	63	8	2-3	FA080S2L19P01	20,06	FA080S2L19P01D	22,86
10	22	72	10	2-3	FA100S2L22P01	30,00	FA100S2L22P01D	33,90
12	26	83	12	2-3	FA120S2L26P01	39,44	FA120S2L26P01D	43,74
14	26	83	14	2-3	FA140S2L26P01	63,53	FA140S2L26P01D	67,83
16	32	92	16	2-3	FA160S2L32P01	78,30	FA160S2L32P01D	83,49
18	32	92	18	2-3	FA180S2L32P01	127,47	FA180S2L32P01D	133,97
20	38	104	20	2-3	FA200S2L38P01	149,46	FA200S2L38P01D	157,60
3	16	65	3	2-3	FA030U2L16P01	21,85	FA030U2L16P01D	23,45
4	18	65	4	2-3	FA040U2L18P01	23,46	FA040U2L18P01D	25,26
5	20	65	5	2-3	FA050U2L20P01	24,40	FA050U2L20P01D	26,28
6	24	68	6	2-3	FA060U2L24P01	25,84	FA060U2L24P01D	28,14
8	38	88	8	2-3	FA080U2L38P01	34,26	FA080U2L38P01D	37,06
10	45	100	10	2-3	FA100U2L45P01	46,33	FA100U2L45P01D	50,23
12	53	110	12	2-3	FA120U2L53P01	54,32	FA120U2L53P01D	59,32
14	53	110	14	2-3	FA140U2L53P01	91,01	FA140U2L53P01D	96,01
16	63	110	16	2-3	FA160U2L63P01	115,25	FA160U2L63P01D	122,40
18	63	110	18	2-3	FA180U2L63P01	156,11	FA180U2L63P01D	164,26
20	75	141	20	2-3	FA200U2L75P01	176,25	FA200U2L75P01D	184,40

AL		CU		GRAPHIT	
3.2151	2.1247	3.2373	2.0580	3.2382	2.0598
Vc=300 m/dk.		Vc=220 m/dk.		Vc=400 m/dk.	
d1	ap	ae	fz	n	Vf
3	1,5	0,60	0,020	31847	637xZ
4	2,0	0,70	0,090	23885	2150xZ
5	2,5	0,80	0,100	19108	1911xZ
6	3,0	0,90	0,120	15924	1592xZ
8	4,0	1,00	0,150	11943	1194xZ
10	5,0	1,20	0,180	9554	1720xZ
12	6,0	1,40	0,200	7962	1592xZ
14	7,0	1,60	0,220	6824	1501xZ
16	8,0	1,80	0,250	5971	1493xZ
18	9,0	2,00	0,280	5308	1486xZ
20	10,0	2,20	0,300	4777	1433xZ

VHM - Schafffräser ALU Z1 - Solid carbide End Mills ALU Z1

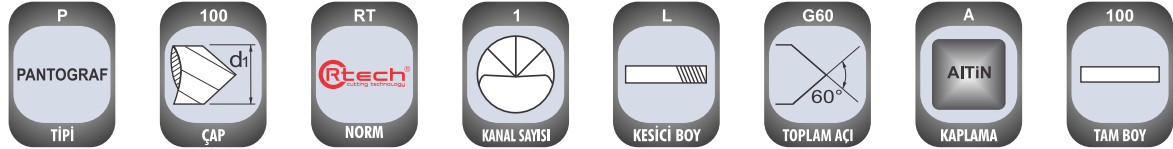
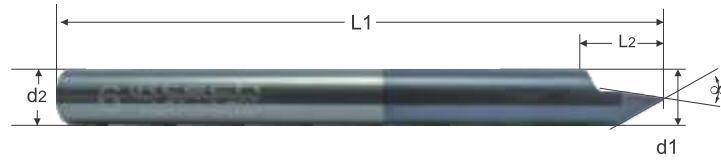
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Kesici Uç Çapı	Kesici Boyu	Tam Boy	Şaft Çapı	Kanal Sayısı	Kaplamasız		Kaplama	
d1 (e8)	L2 mm	L1 mm	d2 mm (h6)	Z Adet	Kod	Fiyatı (Euro-€)	Kod	Fiyatı (Euro-€)
3	14	40	3	1	FA030S1L08P0	20,13	FA030S1L08P0D	21,73
4	15	50	4	1	FA040S1L11P0	23,11	FA040S1L11P0D	24,91
5	16	50	5	1	FA050S1L13P0	23,75	FA050S1L13P0D	25,63
6	18	57	6	1	FA060S1L13P0	27,37	FA060S1L13P0D	29,67
8	20	63	8	1	FA080S1L19P0	32,70	FA080S1L19P0D	35,50
10	22	72	10	1	FA100S1L22P0	45,26	FA100S1L22P0D	49,16
12	26	83	12	1	FA120S1L26P0	54,32	FA120S1L26P0D	58,62
3	16	65	3	1	FA030U1L16P0	26,20	FA030U1L16P0D	27,80
4	18	65	4	1	FA040U1L18P0	28,35	FA040U1L18P0D	30,15
5	20	65	5	1	FA050U1L20P0	29,90	FA050U1L20P0D	31,78
6	24	68	6	1	FA060U1L24P0	35,00	FA060U1L24P0D	37,30
8	38	88	8	1	FA080U1L38P0	40,70	FA080U1L38P0D	43,50
10	45	100	10	1	FA100U1L45P0	57,20	FA100U1L45P0D	61,10
12	53	110	12	1	FA120U1L53P0	68,70	FA120U1L53P0D	73,70

d1	ap	ae	AL			CU			GRAPHIT			FLEX		
			fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf
3	1,5	0,30	0,030	31847	955	0,030	23355	701	0,030	53079	1592	0,030	53079	1592
4	2,0	0,40	0,040	23885	955	0,040	17516	701	0,040	39809	1592	0,040	39809	1592
5	2,5	0,50	0,050	19108	955	0,050	14013	701	0,050	31847	1592	0,050	31847	1592
6	3,0	0,60	0,060	15924	955	0,060	11677	701	0,060	26539	1592	0,060	26539	1592
8	4,0	0,80	0,070	11943	836	0,070	8758	613	0,070	19904	1393	0,070	19904	1393
10	5,0	1,00	0,080	9554	764	0,080	7006	561	0,080	15924	1274	0,080	15924	1274
12	6,0	1,20	0,090	7962	717	0,090	5839	525	0,090	13270	1194	0,090	13270	1194

WHM Pantograph - Solid Carbide Pantograph

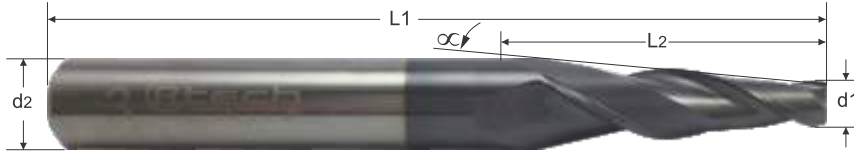


Kesici Uç Çapı d1 (e8)	Kesici Boyu L2 mm	Tam Boy L1 mm	Şaft Çapı d2 mm (h6)	Kanal Sayısı Z Adet	Açı	Kaplamasız		Kaplama	
						Kod	Fiyatı (Euro-€)	Kod	Fiyatı (Euro-€)
3	4	40	3	1	60°	P030RT1L04G60C040	19,55	P030RT1L04G60A040	22,10
3	4	100	3	1	60°	P030RT1L04G60C100	30,55	P030RT1L04G60A100	33,10
4	5	50	4	1	60°	P040RT1L05G60C050	21,10	P040RT1L05G60A050	23,90
4	5	100	4	1	60°	P040RT1L05G60C100	32,10	P040RT1L05G60A100	34,90
6	7	57	6	1	60°	P060RT1L07G60C057	22,50	P060RT1L07G60A057	25,70
6	7	100	6	1	60°	P060RT1L07G60C100	42,80	P060RT1L07G60A100	46,00
3	4	40	3	1	90°	P030RT1L04G90C040	19,55	P030RT1L04G90A040	22,10
3	4	100	3	1	90°	P030RT1L04G90C100	30,55	P030RT1L04G90A100	33,10
4	5	50	4	1	90°	P040RT1L05G90C050	21,10	P040RT1L05G90A050	23,90
4	5	100	4	1	90°	P040RT1L05G90C100	32,10	P040RT1L05G90A100	34,90
6	7	57	6	1	90°	P060RT1L07G90C057	22,50	P060RT1L07G90A057	25,70
6	7	100	6	1	90°	P060RT1L07G90C100	42,80	P060RT1L07G90A100	46,00

d1	HRC 20-30			HRC 30-40			INOX			GG			AL			CU			TITAN			< 52 HRC		
	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf
	0,04	5175	414	0,010	4379	88	0,004	2787	22	0,02	4777	191	0,10	11943	2389	0,04	8758	701	0,009	1990	36	0,004	1592	13
	1,0050-2			1,5864			1,4405			0,6035			3,2151			2,1247			3,7035			1,3255		
	1,0060-2			1,6580			1,4460			0,7080			3,2373			2,0580			3,7055			1,3265		
	1,0070-2			1,7225			1,4505			0,8055			3,2382			2,0598			3,7065			1,3333		
	Vc=130 m/dk.			Vc=130 m/dk.			Vc=70 m/dk.			Vc=120 m/dk.			Vc=300 m/dk.			Vc=220 m/dk.			Vc=50 m/dk.			Vc=40 m/dk.		
4	0,04	4140	331	0,010	3503	70	0,005	2229	22	0,02	3822	153	0,14	9554	2675	0,05	7006	701	0,010	1592	32	0,005	1274	13
5	0,05	3450	345	0,012	2919	70	0,006	1858	22	0,03	3185	191	0,18	7962	2866	0,06	5839	701	0,010	1327	27	0,005	1062	11
6	0,05	2957	296	0,015	2502	75	0,007	1592	22	0,03	2730	164	0,22	6824	3003	0,06	5005	601	0,010	1137	23	0,006	910	11
7	0,06	2588	311	0,018	2190	79	0,008	1393	22	0,04	2389	191	0,25	5971	2986	0,07	4379	613	0,012	995	24	0,006	796	10
8	0,07	2070	290	0,020	1752	70	0,010	1115	22	0,05	1911	191	0,34	4777	3248	0,08	3503	561	0,015	796	24	0,007	637	9
10	0,08	1725	276	0,030	1460	88	0,020	929	37	0,06	1592	191	0,42	3981	3344	0,10	2919	584	0,018	664	24	0,008	531	9
12	0,09	1479	266	0,035	1251	88	0,030	796	48	0,07	1365	191	0,50	3412	3412	0,15	2502	751	0,020	569	23	0,009	455	9
14	0,10	1294	259	0,040	1095	88	0,040	697	56	0,08	1194	191	0,58	2986	3463	0,20	2190	876	0,020	498	20	0,010	398	8
16	0,10	1150	230	0,045	973	88	0,040	619	50	0,08	1062	170	0,62	2654	3291	0,20	1946	779	0,024	442	21	0,012	354	9
18	0,10	1035	207	0,045	876	79	0,050	557	56	0,09	955	172	0,66	2389	3153	0,25	1752	876	0,028	398	22	0,012	319	8

WHM Konischer Schafffräser - Solid Carbide Conical End Mills

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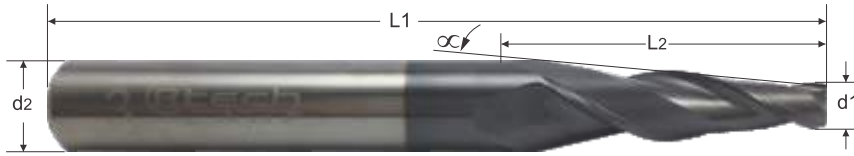


Kesici Uç Çapı	Kesici Boyu	Tam Boy	Şaft Çapı	Kanal Sayısı	Açı	Kesici Sonu Çap	Kaplamaşız		Kaplama	
d1 (e8)	L2 mm	L1 mm	d2 mm (h6)	Z Adet	α	d3	Kod	Fiyatı (Euro-€)	Kod	Fiyatı (Euro-€)
2	20	65	3	2	30'	2,35	FT020D030S2L20P01	24,84	FT020D030S2L20P01A	28,72
3	25	65	4	2	30'	3,45	FT030D030S2L25P01	26,56	FT030D030S2L25P01A	29,91
4	30	65	5	2	30'	4,50	FT040D030S2L30P01	27,00	FT040D030S2L30P01A	30,24
5	30	68	6	2	30'	5,50	FT050D030S2L30P01	28,08	FT050D030S2L30P01A	31,32
6	40	88	8	2	30'	6,80	FT060D030S2L40P01	31,53	FT060D030S2L40P01A	33,48
8	45	100	10	2	30'	8,80	FT080D030S2L45P01	37,15	FT080D030S2L45P01A	41,04
10	45	100	12	2	30'	10,80	FT100D030S2L45P01	57,88	FT100D030S2L45P01A	62,64
12	45	100	14	2	30'	12,80	FT120D030S2L45P01	87,04	FT120D030S2L45P01A	90,72
2	20	65	3	2	1°	2,70	FT020D100S2L20P01	24,84	FT020D100S2L20P01A	28,72
3	28	65	4	2	1°	4,00	FT030D100S2L28P01	26,56	FT030D100S2L28P01A	29,91
4	28	65	5	2	1°	5,00	FT040D100S2L28P01	27,00	FT040D100S2L28P01A	30,24
5	28	68	6	2	1°	6,00	FT050D100S2L28P01	28,08	FT050D100S2L28P01A	31,32
6	40	88	8	2	1°	7,40	FT060D100S2L40P01	31,53	FT060D100S2L40P01A	33,48
8	45	100	10	2	1°	9,60	FT080D100S2L12P01	37,15	FT080D100S2L12P01A	41,04
10	45	100	12	2	1°	11,60	FT100D100S2L45P01	57,88	FT100D100S2L45P01A	62,64
12	45	100	14	2	1°	13,60	FT120D100S2L45P01	87,04	FT120D100S2L45P01A	90,72
2	19	65	3	2	1°30'	3,00	FT020D130S2L19P01	24,84	FT020D130S2L19P01A	28,72
3	19	65	4	2	1°30'	4,30	FT030D130S2L19P01	26,56	FT030D130S2L19P01A	29,91
4	19	68	5	2	1°30'	5,60	FT040D130S2L19P01	27,00	FT040D130S2L19P01A	30,24
5	19	88	6	2	1°30'	7,00	FT050D130S2L19P01	28,08	FT050D130S2L19P01A	31,32
6	38	88	8	2	1°30'	8,00	FT060D130S2L38P01	31,53	FT060D130S2L38P01A	33,48
8	38	100	10	2	1°30'	10,00	FT080D130S2L38P01	37,15	FT080D130S2L38P01A	41,04
10	38	100	12	2	1°30'	12,00	FT100D130S2L38P01	57,88	FT100D130S2L38P01A	62,64
12	38	100	14	2	1°30'	14,00	FT120D130S2L38P01	87,04	FT120D130S2L38P01A	90,72

HRC 20-30		HRC 30-40		INOX		GG		AL		CU		TITAN		< 52 HRC													
1.0050-2		1.5864		1.4405		0.6035		3.2151		2.1247		3.7035		1.3255													
1.0060-2		1.6580		1.4460		0.7080		3.2373		2.0580		3.7055		1.3265													
1.0070-2		1.7225		1.4505		0.8055		3.2382		2.0598		3.7065		1.3333													
Vc=80m/dk.		Vc=70 m/dk.		Vc=50 m/dk.		Vc=100 m/dk.		Vc=300 m/dk.		Vc=240 m/dk.		Vc=50 m/dk.		Vc=50 m/dk.													
d1	α	ap	de	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf												
2	1°	1	2,035	0,025	12520	310x Z	0,025	10955	270x Z	0,018	7825	140x Z	0,040	15650	625x Z	0,050	4698	2350x Z	0,040	37559	1500x Z	0,018	7825	140x Z	0,015	7825	115x Z
3	1°	1,5	3,052	0,037	8348	310x Z	0,037	7304	270x Z	0,027	5218	140x Z	0,060	10435	625x Z	0,075	31304	2350x Z	0,060	25044	1500x Z	0,027	5218	140x Z	0,022	5218	115x Z
4	1°	2	4,070	0,050	6260	310x Z	0,049	5477	270x Z	0,036	3912	140x Z	0,080	7825	625x Z	0,100	23474	2350x Z	0,080	18780	1500x Z	0,036	3912	140x Z	0,029	3912	115x Z
5	1°	2,5	5,087	0,062	5008	310x Z	0,061	4451	270x Z	0,045	3130	140x Z	0,100	6260	625x Z	0,125	18781	2350x Z	0,100	15025	1500x Z	0,045	3130	140x Z	0,037	3130	115x Z
6	1°	3	6,105	0,074	4173	310x Z	0,074	3652	270x Z	0,054	2608	140x Z	0,120	5216	625x Z	0,150	15650	2350x Z	0,120	12520	1500x Z	0,054	2608	140x Z	0,044	2608	115x Z
8	1°	4	8,140	0,099	3130	310x Z	0,098	2739	270x Z	0,072	1956	140x Z	0,160	3912	625x Z	0,200	11737	2350x Z	0,160	9390	1500x Z	0,072	1956	140x Z	0,059	1956	115x Z
10	1°	5	10,175	0,124	2504	310x Z	0,123	2191	270x Z	0,089	1565	140x Z	0,200	3130	625x Z	0,250	9390	2350x Z	0,200	7512	1500x Z	0,089	1565	140x Z	0,073	1565	115x Z
12	1°	6	12,209	0,148	2087	310x Z	0,148	1826	270x Z	0,107	1304	140x Z	0,240	2608	625x Z	0,300	7825	2350x Z	0,240	6260	1500x Z	0,107	1304	140x Z	0,088	1304	115x Z



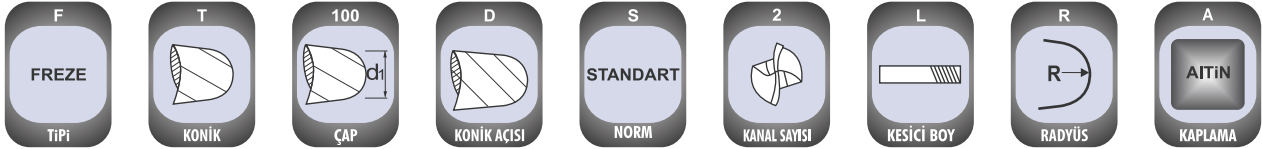
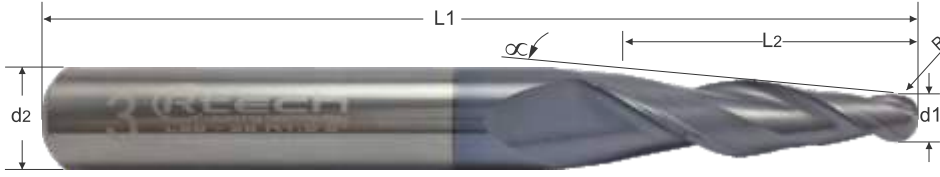
WHM Konischer Schafffräser - Solid Carbide Conical End Mills



Kesici Uç Çapı	Kesici Boyu	Tam Boy	Şaft Çapı	Kanal Sayısı	Açı	Kesici Sonu Çap	Kaplamaşız		Kaplama	
d1 (e8)	L2 mm	L1 mm	d2 mm (h6)	Z Adet	α	d3	Kod	Fiyatı (Euro-€)	Kod	Fiyatı (Euro-€)
2	20	65	4	2	2°	3,40	FT020D200S2L20P01	26,56	FT020D200S2L20P01A	29,16
3	28	65	5	2	2°	5,00	FT030D200S2L28P01	27,00	FT030D200S2L28P01A	30,24
4	28	68	6	2	2°	6,00	FT040D200S2L28P01	28,08	FT040D200S2L28P01A	31,32
5	42	88	8	2	2°	8,00	FT050D200S2L42P01	31,53	FT050D200S2L42P01A	33,48
6	45	100	10	2	2°	9,14	FT060D200S2L45P01	37,15	FT060D200S2L45P01A	41,04
8	45	100	12	2	2°	11,14	FT080D200S2L45P01	57,88	FT080D200S2L45P01A	62,64
10	45	100	14	2	2°	13,14	FT100D200S2L45P01	87,04	FT100D200S2L45P01A	90,72
12	45	100	16	2	2°	15,14	FT120D200S2L45P01	137,16	FT120D200S2L45P01A	142,56
2	19	65	5	2	3°	4,00	FT020D300S2L19P01	27,00	FT020D300S2L19P01A	30,24
3	28	68	6	2	3°	6,00	FT030D300S2L28P01	28,08	FT030D300S2L28P01A	31,32
4	38	88	8	2	3°	8,00	FT040D300S2L28P01	31,53	FT040D300S2L28P01A	33,48
5	48	100	10	2	3°	10,00	FT050D300S2L45P01	37,15	FT050D300S2L45P01A	41,04
6	48	100	12	2	3°	11,00	FT060D300S2L48P01	57,88	FT060D300S2L48P01A	62,64
8	48	100	14	2	3°	13,00	FT080D300S2L48P01	87,04	FT080D300S2L48P01A	90,72
10	48	100	16	2	3°	15,00	FT100D300S2L48P01	109,83	FT100D300S2L48P01A	114,48
12	48	100	18	2	3°	17,00	FT120D300S2L48P01	181,44	FT120D300S2L48P01A	190,08
2	20	68	6	2	5°	5,50	FT020D500S2L20P01	28,08	FT020D500S2L20P01A	31,32
3	28	88	8	2	5°	8,00	FT030D500S2L28P01	31,53	FT030D500S2L28P01A	33,48
4	34	100	10	2	5°	10,00	FT040D500S2L34P01	37,15	FT040D500S2L34P01A	41,04
5	40	100	12	2	5°	12,00	FT050D500S2L40P01	57,88	FT050D500S2L40P01A	62,64
6	45	100	14	2	5°	14,00	FT060D500S2L45P01	87,04	FT060D500S2L45P01A	90,72
8	45	100	16	2	5°	16,00	FT080D500S2L45P01	109,83	FT080D500S2L45P01A	114,48
10	45	100	18	2	5°	18,00	FT100D500S2L45P01	145,80	FT100D500S2L45P01A	152,28
12	45	100	20	2	5°	20,00	FT120D500S2L45P01	200,88	FT120D500S2L45P01A	210,60

HRC 20-30		HRC 30-40		INOX		GG		AL		CU		TITAN		< 52 HRC													
1.0050-2		1.5864		1.4405		0.6035		3.2151		2.1247		3.7035		1.3255													
1.0060-2		1.6580		1.4460		0.7080		3.2373		2.0580		3.7055		1.3265													
1.0070-2		1.7225		1.4505		0.8055		3.2382		2.0598		3.7065		1.3333													
Vc=80m/dk.		Vc=70 m/dk.		Vc=50 m/dk.		Vc=100 m/dk.		Vc=300 m/dk.		Vc=240 m/dk.		Vc=50 m/dk.		Vc=50 m/dk.													
d1	α	ap	de	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf						
2	1°	1	2,035	0,025	12520	310x Z	0,025	10955	270x Z	0,018	7825	140x Z	0,040	15650	625x Z	0,050	4698	2350x Z	0,040	37559	1500x Z	0,018	7825	140x Z	0,015	7825	115x Z
3	1°	1,5	3,052	0,037	8348	310x Z	0,037	7304	270x Z	0,027	5218	140x Z	0,060	10435	625x Z	0,075	31304	2350x Z	0,060	25044	1500x Z	0,027	5218	140x Z	0,022	5218	115x Z
4	1°	2	4,070	0,050	6260	310x Z	0,049	5477	270x Z	0,036	3912	140x Z	0,080	7825	625x Z	0,100	23474	2350x Z	0,080	18780	1500x Z	0,036	3912	140x Z	0,029	3912	115x Z
5	1°	2,5	5,087	0,062	5008	310x Z	0,061	4451	270x Z	0,045	3130	140x Z	0,100	6260	625x Z	0,125	18781	2350x Z	0,100	15025	1500x Z	0,045	3130	140x Z	0,037	3130	115x Z
6	1°	3	6,105	0,074	4173	310x Z	0,074	3652	270x Z	0,054	2608	140x Z	0,120	5216	625x Z	0,150	15650	2350x Z	0,120	12520	1500x Z	0,054	2608	140x Z	0,044	2608	115x Z
8	1°	4	8,140	0,099	3130	310x Z	0,098	2739	270x Z	0,072	1956	140x Z	0,160	3912	625x Z	0,200	11737	2350x Z	0,160	9390	1500x Z	0,072	1956	140x Z	0,059	1956	115x Z
10	1°	5	10,175	0,124	2504	310x Z	0,123	2191	270x Z	0,089	1565	140x Z	0,200	3130	625x Z	0,250	9390	2350x Z	0,200	7512	1500x Z	0,089	1565	140x Z	0,073	1565	115x Z
12	1°	6	12,209	0,148	2087	310x Z	0,148	1826	270x Z	0,107	1304	140x Z	0,240	2608	625x Z	0,300	7825	2350x Z	0,240	6260	1500x Z	0,107	1304	140x Z	0,088	1304	115x Z

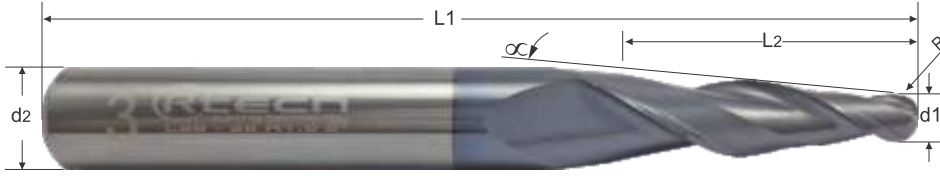
WHM Konischer Radiusfräser - Solid Carbide Conical Ball Nose End Mills



Kesici Uç Çapı	Kesici Boyu	Tam Boy	Şaft Çapı	Kanal Sayısı	Radius	Açı	Kesici Sonu Çap	Kaplamasız		Kaplama	
d1 (e8)	L2 mm	L1 mm	d2 mm (h6)	Z Adet	R	α	d3	Kod	Fiyatı (Euro-€)	Kod	Fiyatı (Euro-€)
2	20	65	3	2	1	30°	2,35	FT020D030S2L20R10	31,10	FT020D030S2L20R10A	34,34
3	25	65	4	2	1,5	30°	3,45	FT030D030S2L25R15	31,64	FT030D030S2L25R15A	34,77
4	30	65	5	2	2	30°	4,50	FT040D030S2L30R20	32,62	FT040D030S2L30R20A	35,97
5	30	68	6	2	2,5	30°	5,50	FT050D030S2L30R25	34,34	FT050D030S2L30R25A	37,58
6	40	88	8	2	3	30°	6,80	FT060D030S2L40R30	36,72	FT060D030S2L40R30A	40,17
8	45	100	10	2	4	30°	8,80	FT080D030S2L45R40	45,25	FT080D030S2L45R40A	49,24
10	45	100	12	2	5	30°	10,80	FT100D030S2L45R50	69,98	FT100D030S2L45R50A	75,16
12	45	100	14	2	6	30°	12,80	FT120D030S2L45R60	102,28	FT120D030S2L45R60A	108,86
2	20	65	3	2	1	1°	2,66	FT020D100S2L20R10	31,10	FT020D100S2L20R10A	34,34
3	28	65	4	2	1,5	1°	4,00	FT030D100S2L28R15	31,64	FT030D100S2L28R15A	34,77
4	28	65	5	2	2	1°	5,00	FT040D100S2L28R20	32,62	FT040D100S2L28R20A	35,96
5	28	68	6	2	2,5	1°	6,00	FT050D100S2L28R25	34,34	FT050D100S2L28R25A	37,58
6	40	88	8	2	3	1°	7,40	FT060D100S2L40R30	36,72	FT060D100S2L40R30A	40,17
8	45	100	10	2	4	1°	9,60	FT080D100S2L12R40	45,25	FT080D100S2L12R40A	49,24
10	45	100	12	2	5	1°	11,60	FT100D100S2L45R50	69,98	FT100D100S2L45R50A	75,16
12	45	100	14	2	6	1°	13,60	FT120D100S2L45R60	102,28	FT120D100S2L45R60A	108,86
2	20	65	3	2	1	1°30'	3,00	FT020D130S2L19R10	31,10	FT020D130S2L19R10A	34,34
3	28	65	4	2	1,5	1°30'	4,30	FT030D130S2L19R15	31,64	FT030D130S2L19R15A	34,77
4	34	68	5	2	2	1°30'	5,60	FT040D130S2L19R20	32,62	FT040D130S2L19R20A	35,96
5	40	88	6	2	2,5	1°30'	7,00	FT050D130S2L19R25	34,34	FT050D130S2L19R25A	37,58
6	45	88	8	2	3	1°30'	8,00	FT060D130S2L38R30	36,72	FT060D130S2L38R30A	40,17
8	45	100	10	2	4	1°30'	10,00	FT080D130S2L38R40	45,25	FT080D130S2L38R40A	49,24
10	45	100	12	2	5	1°30'	12,00	FT100D130S2L38R50	69,98	FT100D130S2L38R50A	75,16
12	45	100	14	2	6	1°30'	14,00	FT120D130S2L38R60	102,28	FT120D130S2L38R60A	108,86

HRC 20-30		HRC 30-40		INOX		GG		AL		CU		TITAN		< 52 HRC													
1.0050-2		1.5864		1.4405		0.6035		3.2151		2.1247		3.7035		1.3255													
1.0060-2		1.6580		1.4460		0.7080		3.2373		2.0580		3.7055		1.3265													
1.0070-2		1.7225		1.4505		0.8055		3.2382		2.0598		3.7065		1.3333													
Vc=80m/dk.		Vc=70m/dk.		Vc=50m/dk.		Vc=100 m/dk.		Vc=300m/dk.		Vc=240m/dk.		Vc=60 m/dk.		Vc=50 m/dk.													
d1	α	ap	ae	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf									
2	1°	1	2.035	0,025	12520	310 x Z	0,025	10955	270 x Z	0,018	7825	140 x Z	0,040	15650	625 x Z	0,050	4698	2350 x Z	0,040	37559	1500 x Z	0,018	7825	140 x Z	0,012	7825	115 x Z
3	1°	1,5	3.052	0,037	8348	310 x Z	0,037	7304	270 x Z	0,027	5218	140 x Z	0,060	10435	625 x Z	0,075	31304	2350 x Z	0,060	25044	1500 x Z	0,027	5218	140 x Z	0,022	5218	115 x Z
4	1°	2	4.070	0,050	6260	310 x Z	0,049	5477	270 x Z	0,036	3912	140 x Z	0,080	7825	625 x Z	0,100	23474	2350 x Z	0,080	18780	1500 x Z	0,036	3912	140 x Z	0,029	3912	115 x Z
5	1°	2,5	5.087	0,062	5008	310 x Z	0,061	4451	270 x Z	0,045	3130	140 x Z	0,100	6260	625 x Z	0,125	18781	2350 x Z	0,100	15025	1500 x Z	0,045	3130	140 x Z	0,037	3130	115 x Z
6	1°	3	6.105	0,074	4173	310 x Z	0,074	3652	270 x Z	0,054	2608	140 x Z	0,120	5216	625 x Z	0,150	15650	2350 x Z	0,120	12520	1500 x Z	0,054	2608	140 x Z	0,044	2608	115 x Z
8	1°	4	8.140	0,099	3130	310 x Z	0,098	2739	270 x Z	0,072	1956	140 x Z	0,160	3912	625 x Z	0,200	11737	2350 x Z	0,160	7390	1500 x Z	0,072	1956	140 x Z	0,059	1956	115 x Z
10	1°	5	10.175	0,124	2504	310 x Z	0,123	2191	270 x Z	0,089	1565	140 x Z	0,200	3130	625 x Z	0,250	9390	2350 x Z	0,200	7512	1500 x Z	0,089	1565	140 x Z	0,073	1565	115 x Z
12	1°	6	12.209	0,148	2087	310 x Z	0,148	1826	270 x Z	0,107	1304	140 x Z	0,240	2608	625 x Z	0,300	7825	2350 x Z	0,240	6260	1500 x Z	0,107	1304	140 x Z	0,088	1304	115 x Z

WHM Konischer Radiusfräser - Solid Carbide Conical Ball Nose End Mills



Kesici Uç Çapı	Kesici Boyu	Tam Boy	Şaft Çapı	Kanal Sayısı	Radius	Açı	Kesici Sonu Çap	Kaplamasız		Kaplama	
d1 (e8)	L2 mm	L1 mm	d2 mm (h6)	Z Adet	R	α	d3	Kod	Fiyatı (Euro-€)	Kod	Fiyatı (Euro-€)
2	20	65	4	2	1	2°	3,40	FT020D200S2L20R10	31,64	FT020D200S2L20R10A	34,77
3	28	65	5	2	1,5	2°	5,00	FT030D200S2L28R15	32,62	FT030D200S2L28R15A	35,96
4	28	68	6	2	2	2°	6,00	FT040D200S2L28R20	34,34	FT040D200S2L28R20A	37,54
5	42	88	8	2	2,5	2°	8,00	FT050D200S2L42R25	36,72	FT050D200S2L42R25A	40,17
6	45	100	10	2	3	2°	9,14	FT060D200S2L45R30	45,25	FT060D200S2L45R30A	49,24
8	45	100	12	2	4	2°	11,14	FT080D200S2L45R40	69,98	FT080D200S2L45R40A	75,16
10	45	100	14	2	5	2°	13,14	FT100D200S2L45R50	102,28	FT100D200S2L45R50A	108,86
12	45	100	16	2	6	2°	15,14	FT120D200S2L45R60	130,90	FT120D200S2L45R60A	137,37
2	19	65	5	2	1	3°	4,00	FT020D300S2L19R10	32,62	FT020D300S2L19R10A	35,96
3	28	68	6	2	1,5	3°	6,00	FT030D300S2L28R15	34,34	FT030D300S2L28R15A	37,58
4	38	88	8	2	2	3°	8,00	FT040D300S2L28R20	36,72	FT040D300S2L28R20A	40,17
5	48	100	10	2	2,5	3°	10,00	FT050D300S2L45R25	45,25	FT050D300S2L45R25A	49,24
6	48	100	12	2	3	3°	11,00	FT060D300S2L48R30	69,98	FT060D300S2L48R30A	75,16
8	48	100	14	2	4	3°	13,00	FT080D300S2L48R40	102,28	FT080D300S2L48R40A	108,86
10	48	100	16	2	5	3°	15,00	FT100D300S2L48R50	162,00	FT100D300S2L48R50A	170,60
12	48	100	18	2	6	3°	17,00	FT120D300S2L48R60	217,08	FT120D300S2L48R60A	227,80
2	20	68	6	2	1	5°	5,32	FT020D500S2L20R10	34,34	FT020D500S2L20R10A	37,58
3	28	88	8	2	1,5	5°	8,00	FT030D500S2L28R15	36,72	FT030D500S2L28R15A	40,17
4	34	100	10	2	2	5°	10,00	FT040D500S2L34R20	45,25	FT040D500S2L34R20A	49,24
5	40	100	12	2	2,5	5°	12,00	FT050D500S2L40R25	69,98	FT050D500S2L40R25A	75,16
6	45	100	14	2	3	5°	14,00	FT060D500S2L45R30	102,28	FT060D500S2L45R30A	108,86
8	45	100	16	2	4	5°	16,00	FT080D500S2L45R40	162,00	FT080D500S2L45R40A	170,60
10	45	100	18	2	5	5°	18,00	FT100D500S2L45R50	217,08	FT100D500S2L45R50A	227,88
12	45	100	20	2	6	5°	20,00	FT120D500S2L45R60	240,84	FT120D500S2L45R60A	251,64

HRC 20-30		HRC 30-40		INOX		GG		AL		CU		TITAN		< 52 HRC													
1.0050-2		1.5864		1.4405		0.6035		3.2151		2.1247		3.7035		1.3255													
1.0060-2		1.6580		1.4460		0.7080		3.2373		2.0580		3.7055		1.3265													
1.0070-2		1.7225		1.4505		0.8055		3.2382		2.0598		3.7065		1.3333													
Vc=80m/dk.		Vc=70m/dk.		Vc=50m/dk.		Vc=100 m/dk.		Vc=300m/dk.		Vc=240m/dk.		Vc=60 m/dk.		Vc=50 m/dk.													
d1	α	ap	ae	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf									
2	1°	1	2,035	0,025	12520	310 x Z	0,025	10955	270 x Z	0,018	7825	140 x Z	0,040	15650	625 x Z	0,050	4698	2350 x Z	0,040	37559	1500 x Z	0,018	7825	140 x Z	0,015	7825	115 x Z
3	1°	1,5	3,052	0,037	8348	310 x Z	0,037	7304	270 x Z	0,027	5218	140 x Z	0,060	10435	625 x Z	0,075	31304	2350 x Z	0,060	25044	1500 x Z	0,027	5218	140 x Z	0,022	5218	115 x Z
4	1°	2	4,070	0,050	6260	310 x Z	0,049	5477	270 x Z	0,036	3912	140 x Z	0,080	7825	625 x Z	0,100	23474	2350 x Z	0,080	18780	1500 x Z	0,036	3912	140 x Z	0,029	3912	115 x Z
5	1°	2,5	5,087	0,062	5008	310 x Z	0,061	4451	270 x Z	0,045	3130	140 x Z	0,100	6260	625 x Z	0,125	18781	2350 x Z	0,100	15025	1500 x Z	0,045	3130	140 x Z	0,037	3130	115 x Z
6	1°	3	6,105	0,074	4173	310 x Z	0,074	3652	270 x Z	0,054	2608	140 x Z	0,120	5216	625 x Z	0,150	15650	2350 x Z	0,120	12520	1500 x Z	0,054	2608	140 x Z	0,044	2608	115 x Z
8	1°	4	8,140	0,099	3130	310 x Z	0,098	2739	270 x Z	0,072	1956	140 x Z	0,160	3912	625 x Z	0,200	11737	2350 x Z	0,160	7390	1500 x Z	0,072	1956	140 x Z	0,059	1956	115 x Z
10	1°	5	10,175	0,124	2504	310 x Z	0,123	2191	270 x Z	0,089	1565	140 x Z	0,200	3130	625 x Z	0,250	9390	2350 x Z	0,200	7512	1500 x Z	0,089	1565	140 x Z	0,073	1565	115 x Z
12	1°	6	12,209	0,148	2087	310 x Z	0,148	1826	270 x Z	0,107	1304	140 x Z	0,240	2608	625 x Z	0,300	7825	2350 x Z	0,240	6260	1500 x Z	0,107	1304	140 x Z	0,088	1304	115 x Z

VHM - Kegelsenker - Solid Carbide Countersinker

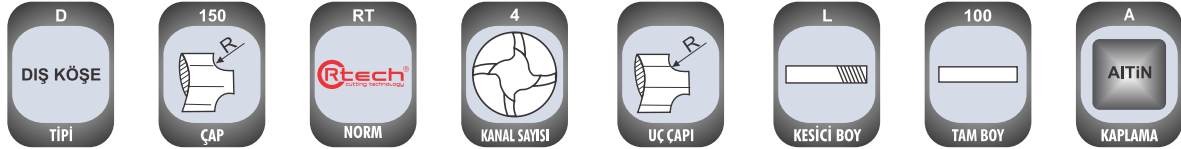
26



Şaft Çapı d1 mm (h6)	Açı α	Tam Boy L1 mm	Kanal Sayısı Z Adet	Kaplamasız		Kaplama	
				Kod	Fiyatı (Euro-€)	Kod	Fiyatı (Euro-€)
4	90°	50	4	HF040RT4G90L050	16,20	HF040RT4G90L050A	18,00
6	90°	50	4	HF060RT4G90L050	19,04	HF060RT4G90L050A	21,34
8	90°	60	4	HF080RT4G90L060	22,60	HF080RT4G90L060A	25,40
10	90°	60	4	HF100RT4G90L060	27,90	HF100RT4G90L060A	31,80
12	90°	70	4	HF120RT4G90L070	48,67	HF120RT4G90L070A	52,97
16	90°	76	4	HF160RT4G90L076	61,09	HF160RT4G90L076A	66,29
4	120°	50	4	HF040RT4G120L050	16,20	HF040RT4G120L050A	18,00
6	120°	50	4	HF060RT4G120L050	19,04	HF060RT4G120L050A	21,34
8	120°	60	4	HF080RT4G120L060	22,60	HF080RT4G120L060A	25,40
10	120°	60	4	HF100RT4G120L060	27,90	HF100RT4G120L060A	31,80
12	120°	70	4	HF120RT4G120L070	48,67	HF120RT4G120L070A	52,97
16	120°	76	4	HF160RT4G120L076	61,09	HF160RT4G120L076A	66,29

d1	HRC 20-30			HRC 30-40			INOX			GG			AL			CU			TITAN			< 52 HRC		
	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf
9	0,040	425	17xZ	0,030	350	11xZ	0,020	320	7xZ	0,040	530	21xZ	0,05	885	44xZ	0,05	885	44xZ	0,010	280	3xZ	0,008	250	2xZ
11	0,045	350	16xZ	0,035	290	10xZ	0,025	260	7xZ	0,045	435	20xZ	0,08	725	58xZ	0,08	725	58xZ	0,012	230	3xZ	0,010	200	2xZ
13	0,050	295	15xZ	0,040	245	10xZ	0,030	220	7xZ	0,050	370	19xZ	0,10	610	61xZ	0,10	610	61xZ	0,015	195	3xZ	0,012	170	2xZ
17	0,055	225	12xZ	0,045	190	9xZ	0,035	170	6xZ	0,055	280	16xZ	0,12	470	57xZ	0,12	470	57xZ	0,017	150	3xZ	0,014	130	2xZ
21	0,060	180	11xZ	0,050	150	8xZ	0,040	140	6xZ	0,060	230	14xZ	0,15	380	57xZ	0,15	380	57xZ	0,020	120	3xZ	0,015	105	2xZ

VHM - Viertelkreisfräser - Solid Carbide Corner Rounding Cutters

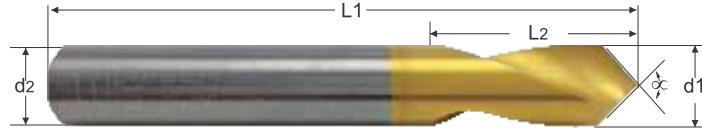


Radyüs R	Uç Çapı d1 (e8)	Tam Boy L1 mm	Şaft Çapı d2 mm (h6)	Kanal Sayısı Z Adet	Kaplamasız		Kaplama	
					Kod	Fiyatı (Euro-€)	Kod	Fiyatı (Euro-€)
0,5	7	60	8	4	D050RT4C07L060	61,64	D050RT4C07L060A	64,44
1,0	6	60	8	4	D100RT4C06L060	61,64	D100RT4C06L060A	64,44
1,5	7	70	10	4	D150RT4C07L070	65,87	D150RT4C07L070A	69,77
2,0	6	70	10	4	D200RT4C06L070	65,87	D200RT4C06L070A	69,72
2,5	7	80	12	4	D250RT4C07L080	70,56	D250RT4C07L080A	74,86
3,0	6	80	12	4	D300RT4C06L090	70,56	D300RT4C06L090A	74,86
3,5	10	90	16	4	D350RT4C10L090	94,08	D350RT4C10L090A	99,28
4,0	8	90	16	4	D400RT4C08L090	94,08	D400RT4C08L090A	99,28
4,5	7	90	16	4	D450RT4C07L090	94,08	D450RT4C07L090A	99,28
5,0	10	100	20	4	D500RT4C10L100	131,90	D500RT4C10L100A	139,00
6,0	8	100	20	4	D600RT4C08L100	131,90	D600RT4C08L100A	139,00

d1	HRC 20-30			HRC 30-40			INOX			GG			AL			CU			TITAN			< 52 HRC		
	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf
9	0,040	425	17xZ	0,030	350	11xZ	0,020	320	7xZ	0,040	530	21xZ	0,05	885	44xZ	0,05	885	44xZ	0,010	280	3xZ	0,008	250	2xZ
11	0,045	350	16xZ	0,035	290	10xZ	0,025	260	7xZ	0,045	435	20xZ	0,08	725	58xZ	0,08	725	58xZ	0,012	230	3xZ	0,010	200	2xZ
13	0,050	295	15xZ	0,040	245	10xZ	0,030	220	7xZ	0,050	370	19xZ	0,10	610	61xZ	0,10	610	61xZ	0,015	195	3xZ	0,012	170	2xZ
17	0,055	225	12xZ	0,045	190	9xZ	0,035	170	6xZ	0,055	280	16xZ	0,12	470	57xZ	0,12	470	57xZ	0,017	150	3xZ	0,014	130	2xZ
21	0,060	180	11xZ	0,050	150	8xZ	0,040	140	6xZ	0,060	230	14xZ	0,15	380	57xZ	0,15	380	57xZ	0,020	120	3xZ	0,015	105	2xZ

VHM - NC Bohrer - Solid Carbide NC Drills

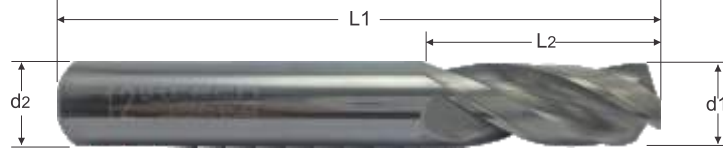
28



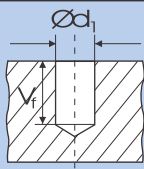
Kesici Uç Çapı	Kesici Boyu	Tam Boy	Şaft Çapı	Kanal Sayısı	Konik Açısı	Kaplamasız		Kaplama	
d1 (h6)	L2 mm	L1 mm	d2 mm (h6)	Z Adet	°	Kod	Fiyatı (Euro-€)	Kod	Fiyatı (Euro-€)
4	11	50	4	2	90°	NC040L11D90	15,30	NC040L11D90T	17,10
5	13	50	5	2	90°	NC050L13D90	17,34	NC050L13D90T	19,22
6	13	57	6	2	90°	NC060L13D90	19,64	NC060L13D90T	21,94
8	19	63	8	2	90°	NC080L19D90	29,33	NC080L19D90T	32,13
10	22	72	10	2	90°	NC100L22D90	38,93	NC100L22D90T	42,83
12	26	83	12	2	90°	NC120L26D90	53,30	NC120L26D90T	57,60
14	26	83	14	2	90°	NC140L26D90	82,41	NC140L26D90T	86,71
16	32	92	16	2	90°	NC160L32D90	94,53	NC160L32D90T	99,73
18	32	92	18	2	90°	NC180L32D90	140,76	NC180L32D90T	147,26
20	38	104	20	2	90°	NC200L38D90	164,91	NC200L38D90T	172,06
4	11	50	4	2	120°	NC040L11D120	15,30	NC040L11D120T	17,10
5	13	50	5	2	120°	NC050L13D120	17,34	NC050L13D120T	19,22
6	13	57	6	2	120°	NC060L13D120	19,64	NC060L13D120T	21,94
8	19	63	8	2	120°	NC080L19D120	29,33	NC080L19D120T	32,13
10	22	72	10	2	120°	NC100L22D120	38,93	NC100L22D120T	42,83
12	26	83	12	2	120°	NC120L26D120	53,30	NC120L26D120T	57,60
14	26	83	14	2	120°	NC140L26D120	82,41	NC140L26D120T	86,71
16	32	92	16	2	120°	NC160L32D120	94,53	NC160L32D120T	99,73
18	32	92	18	2	120°	NC180L32D120	140,76	NC180L32D120T	147,26
20	38	104	20	2	120°	NC200L38D120	164,91	NC200L38D120T	172,06

d1	HRC 20-30			HRC 30-40			INOX			GG			AL			CU			TITAN			< 52 HRC		
	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf
4	0,04	5175	414	0,010	4379	88	0,004	2787	22	0,02	4777	191	0,10	11943	2389	0,04	8758	701	0,009	1990	36	0,004	1592	13
5	0,04	4140	331	0,010	3503	70	0,005	2229	22	0,02	3822	153	0,14	9554	2675	0,05	7006	701	0,010	1592	32	0,005	1274	13
6	0,05	3450	345	0,012	2919	70	0,006	1858	22	0,03	3185	191	0,18	7962	2866	0,06	5839	701	0,010	1327	27	0,005	1062	11
7	0,05	2957	296	0,015	2502	75	0,007	1592	22	0,03	2730	164	0,22	6824	3003	0,06	5005	601	0,010	1137	23	0,006	910	11
8	0,06	2588	311	0,018	2190	79	0,008	1393	22	0,04	2389	191	0,25	5971	2986	0,07	4379	613	0,012	995	24	0,006	796	10
10	0,07	2070	290	0,020	1752	70	0,010	1115	22	0,05	1911	191	0,34	4777	3248	0,08	3503	561	0,015	796	24	0,007	637	9
12	0,08	1725	276	0,030	1460	88	0,020	929	37	0,06	1592	191	0,42	3981	3344	0,10	2919	584	0,018	664	24	0,008	531	9
14	0,09	1479	266	0,035	1251	88	0,030	796	48	0,07	1365	191	0,50	3412	3412	0,15	2502	751	0,020	569	23	0,009	455	9
16	0,10	1294	259	0,040	1095	88	0,040	697	56	0,08	1194	191	0,58	2986	3463	0,20	2190	876	0,020	498	20	0,010	398	8
18	0,10	1150	230	0,045	973	88	0,040	619	50	0,08	1062	170	0,62	2654	3291	0,20	1946	779	0,024	442	21	0,012	354	9
20	0,10	1035	207	0,045	876	79	0,050	557	56	0,09	955	172	0,66	2389	3153	0,25	1752	876	0,028	398	22	0,012	319	8

WHM Senker - Solid Carbide Senker

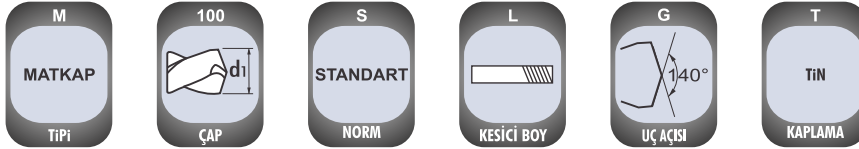
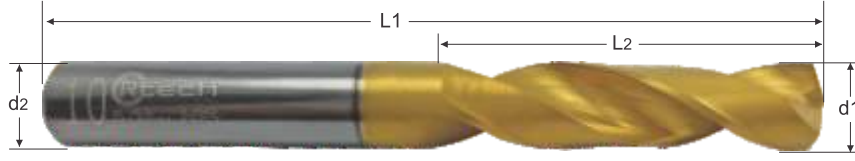


Kesici Uç Çapı d1 (h9)	Kesici Boyu L2 mm	Tam Boy L1 mm	Şaft Çapı d2 mm (h6)	Kanal Sayısı Z Adet	Kaplamasız		Kaplama	
					Kod	Fiyatı (Euro-€)	Kod	Fiyatı (Euro-€)
2	12	38	2	3	MS0200Z3L12G	9,31	MS0200Z3L12GT	10,91
2,5	14	43	2,5	3	MS0250Z3L14G	9,31	MS0250Z3L14GT	10,91
2,9	16	46	3	3	MS0290Z3L16G	10,83	MS0290Z3L16GT	10,91
3	16	46	3	3	MS0300Z3L16G	10,83	MS0300Z3L16GT	10,91
3,5	20	52	3,5	3	MS0350Z3L20G	13,01	MS0350Z3L20GT	14,81
3,9	22	55	4	3	MS0390Z3L22G	15,29	MS0390Z3L22GT	17,09
4	22	55	4	3	MS0400Z3L22G	15,29	MS0400Z3L22GT	17,09
4,5	24	58	4,5	3	MS0450Z3L24G	16,43	MS0450Z3L24GT	18,31
4,85	26	62	5	3	MS0485Z3L26G	19,19	MS0485Z3L26GT	21,07
5	26	62	5	3	MS0500Z3L26G	19,19	MS0500Z3L26GT	21,07
5,5	28	66	5,5	3	MS0550Z3L28G	25,74	MS0550Z3L28GT	28,04
5,85	28	66	6	3	MS0585Z3L28G	27,07	MS0585Z3L28GT	29,37
6	28	66	6	3	MS0600Z3L28G	27,07	MS0600Z3L28GT	29,37
6,5	31	70	6,5	3	MS0650Z3L31G	31,16	MS0650Z3L31GT	33,96
7	34	74	7	3	MS0700Z3L34G	43,51	MS0700Z3L34GT	46,31
7,5	37	74	7,5	3	MS0750Z3L34G	46,36	MS0750Z3L34GT	49,16
7,85	37	79	8	3	MS0785Z3L37G	49,97	MS0785Z3L37GT	52,77
8	37	79	8	3	MS0800Z3L37G	49,97	MS0800Z3L37GT	52,77
8,5	37	79	8,5	3	MS0850Z3L37G	52,15	MS0850Z3L37GT	56,05
9	40	84	9	3	MS0900Z3L40G	56,81	MS0900Z3L40GT	60,71
9,5	40	84	9,5	3	MS0950Z3L40G	60,42	MS0950Z3L40GT	64,32
9,85	43	89	10	3	MS0985Z3L40G	63,84	MS0985Z3L40GT	67,74
10	43	89	10	3	MS1000Z3L43G	63,84	MS1000Z3L43GT	67,74
10,5	43	89	10,5	3	MS1050Z3L43G	83,22	MS1050Z3L43GT	87,52
11	47	95	11	3	MS1100Z3L47G	83,22	MS1100Z3L47GT	87,52
11,5	47	95	11,5	3	MS1150Z3L47G	93,00	MS1150Z3L47GT	97,30
11,8	51	102	12	3	MS1180Z3L51G	93,00	MS1180Z3L51GT	98,00
12	51	102	12	3	MS1200Z3L51G	93,00	MS1200Z3L51GT	98,00
12,5	51	102	12,5	3	MS1250Z3L51G	108,11	MS1250Z3L51GT	113,11
13	51	102	13	3	MS1300Z3L51G	115,90	MS1300Z3L51GT	120,90
13,5	51	102	13,5	3	MS1350Z3L51G	130,91	MS1350Z3L51GT	135,91
13,8	54	107	14	3	MS1380Z3L54G	158,65	MS1380Z3L54GT	163,65
14	54	107	14	3	MS1400Z3L54G	158,65	MS1400Z3L54GT	163,65
15	56	111	15	3	MS1500Z3L56G	181,45	MS1500Z3L56GT	188,60
15,8	58	115	16	3	MS1580Z3L58G	207,95	MS1580Z3L58GT	215,10
16	58	115	16	3	MS1600Z3L58G	207,95	MS1600Z3L58GT	215,10
18	62	123	18	3	MS1800Z3L62G	241,68	MS1800Z3L62GT	249,83
20	66	131	20	3	MS2000Z3L66G	302,29	MS2000Z3L66GT	310,44

	HRC 20-30			HRC 30-40			INOX			GG			AL			CU			TITAN			< 52 HRC		
	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf
	Vc=130 m/dk.			Vc=110 m/dk.			Vc=70 m/dk.			Vc=120 m/dk.			Vc=300 m/dk.			Vc=220 m/dk.			Vc=50 m/dk.			Vc=40 m/dk.		
2	0,02	10350	414	0,006	8758	105	0,003	5573	33	0,01	9554	191	0,05	23885	2389	0,02	17516	701	0,003	3981	24	0,002	3185	13
3	0,03	6900	414	0,008	5839	93	0,004	3716	30	0,01	6369	127	0,08	15924	2548	0,03	11677	701	0,006	2654	32	0,003	2123	13
4	0,04	5175	414	0,010	4379	88	0,004	2787	22	0,02	4777	191	0,10	11943	2389	0,04	8758	701	0,009	1990	36	0,004	1592	13
5	0,04	4140	331	0,010	3503	70	0,005	2229	22	0,02	3822	153	0,14	9554	2675	0,05	7006	701	0,010	1592	32	0,005	1274	13
6	0,05	3450	345	0,012	2919	70	0,006	1858	22	0,03	3185	191	0,18	7962	2866	0,06	5839	701	0,010	1327	27	0,005	1062	11
7	0,05	2957	296	0,015	2502	75	0,007	1592	22	0,03	2730	164	0,22	6824	3003	0,06	5005	601	0,010	1137	23	0,006	910	11
8	0,06	2588	311	0,018	2190	79	0,008	1393	22	0,04	2389	191	0,25	5971	2986	0,07	4379	613	0,012	995	24	0,006	796	10
10	0,07	2070	290	0,020	1752	70	0,010	1115	22	0,05	1911	191	0,34	4777	3248	0,08	3503	561	0,015	796	24	0,007	637	9
12	0,08	1725	276	0,030	1592	88	0,020	929	37	0,06	1592	191	0,42	3981	3344	0,10	2919	584	0,018	664	24	0,008	531	9
14	0,09	1479	266	0,035	1251	88	0,030	796	48	0,07	1365	191	0,50	3412	3412	0,15	2502	751	0,020	569	23	0,009	455	8
16	0,10	1294	259	0,040	1095	88	0,040	697	56	0,08	1194	191	0,58	2986	3463	0,20	2190	876	0,020	498	20	0,010	398	8
18	0,10	1150	230	0,045	973	88	0,040	619	50	0,08	1062	170	0,62	2654	3291	0,20	1946	779	0,024	442	21	0,012	354	9
20	0,10	1035	207	0,045	876	79	0,050	557	56	0,09	955	172	0,66	2389	3153	0,25	1752	876	0,028	398	22	0,012	319	8

VHM - Bohrer - Solid Carbide Drills

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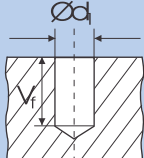
Kesici Uç Çapı	Kesici Boyu	Tam Boy	Şaft Çapı	Kanal Sayısı	Kaplamasız		Kaplama	
					Kod	Fiyatı (Euro-€)	Kod	Fiyatı (Euro-€)
d1 (h9)	L2 mm	L1 mm	d2 mm (h6)	Z Adet				
2	12	40	2,0	2	M020SL12G	11,28	M020SL12GT	12,88
2,5	14	43	2,5	2	M025SL14G	11,28	M025SL14GT	12,88
3	16	46	3,0	2	M030SL16G	12,22	M030SL16GT	13,82
3,3	16	46	3,5	2	M033SL16G	12,31	M033SL16GT	14,11
3,5	20	52	3,5	2	M035SL20G	12,78	M035SL20GT	14,58
4	22	55	4,0	2	M040SL22G	12,60	M040SL22GT	14,40
4,2	22	55	4,5	2	M042SL22G	13,72	M042SL22GT	15,60
4,5	24	58	4,5	2	M045SL24G	14,19	M045SL24GT	16,07
5	26	62	5,0	2	M050SL26G	15,96	M050SL26GT	17,84
5,5	28	66	5,5	2	M055SL28G	21,47	M055SL28GT	23,77
6	28	66	6,0	2	M060SL28G	22,61	M060SL28GT	24,91
6,5	31	70	6,5	2	M065SL31G	26,03	M065SL31GT	28,83
6,8	31	70	7,0	2	M068SL31G	30,59	M068SL31GT	33,39
7	34	74	7,0	2	M070SL34G	36,29	M070SL34GT	39,09
7,5	34	74	7,5	2	M075SL34G	38,67	M075SL34GT	41,47
8	37	79	8,0	2	M080SL37G	41,61	M080SL37GT	44,41
8,5	37	79	8,5	2	M085SL37G	44,27	M085SL37GT	48,17
9	40	84	9,0	2	M090SL40G	47,31	M090SL40GT	51,21
9,5	40	84	9,5	2	M095SL40G	50,35	M095SL40GT	54,25
10	43	89	10,0	2	M100SL43G	53,58	M100SL43GT	57,48
10,2	43	89	11,0	2	M102SL43G	64,98	M102SL43GT	69,28
10,5	43	89	11,0	2	M105SL43G	69,35	M105SL43GT	73,65
11	47	95	11,0	2	M110SL47G	69,35	M110SL47GT	73,65
11,5	47	95	11,5	2	M115SL47G	77,52	M115SL47GT	81,82
12	51	102	12,0	2	M120SL51G	77,52	M120SL51GT	82,52
12,5	51	102	12,5	2	M125SL51G	90,06	M125SL51GT	95,06
13	51	102	13,0	2	M130SL51G	96,52	M130SL51GT	101,52
13,5	51	102	13,5	2	M135SL51G	109,06	M135SL51GT	114,06
14	54	107	14,0	2	M140SL54G	132,24	M140SL54GT	137,24
15	56	111	15,0	2	M150SL56G	153,71	M150SL56GT	160,86
16	58	115	16,0	2	M160SL58G	173,30	M160SL58GT	180,45
18	62	123	18,0	2	M180SL62G	201,40	M180SL62GT	209,55
20	66	131	20,0	2	M200SL66G	251,75	M200SL66GT	259,90

	HRC 20-30			HRC 30-40			INOX			GG			AL			CU			TITAN			< 52 HRC		
	1.0050-2			1.5864			1.4405			0.6035			3.2151			2.1247			3.7035			1.3255		
	1.0060-2			1.6580			1.4460			0.7080			3.2373			2.0580			3.7055			1.3265		
1.0070-2			1.7225			1.4505			0.8055			3.2382			2.0598			3.7065			1.3333			
Vc=130 m/dk.			Vc=110 m/dk.			Vc=70 m/dk.			Vc=120 m/dk.			Vc=300 m/dk.			Vc=220 m/dk.			Vc=50 m/dk.			Vc=40 m/dk.			
d1	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf
2	0,02	10350	414	0,006	8758	105	0,003	5573	33	0,01	9554	191	0,05	23885	2389	0,02	17516	701	0,003	3981	24	0,002	3185	13
3	0,03	6900	414	0,008	5839	93	0,004	3716	30	0,01	6369	127	0,08	15924	2548	0,03	11677	701	0,006	2654	32	0,003	2123	13
4	0,04	5175	414	0,010	4379	88	0,004	2787	22	0,02	4777	191	0,10	11943	2389	0,04	8758	701	0,009	1990	36	0,004	1592	13
5	0,04	4140	331	0,010	3503	70	0,005	2229	22	0,02	3822	153	0,14	9564	2675	0,05	7006	701	0,010	1592	32	0,005	1274	13
6	0,05	3450	345	0,012	2919	70	0,006	1858	22	0,03	3185	191	0,18	7962	2866	0,06	5839	701	0,010	1327	27	0,005	1062	11
7	0,05	2957	296	0,015	2502	75	0,007	1592	22	0,03	2730	164	0,22	6824	3003	0,06	5005	601	0,010	1137	23	0,006	910	11
8	0,06	2588	311	0,018	2190	79	0,008	1393	22	0,04	2389	191	0,25	6971	2986	0,07	4379	613	0,012	995	24	0,006	796	10
10	0,07	2070	290	0,020	1752	70	0,010	1115	22	0,05	1911	191	0,34	4777	3248	0,08	3503	561	0,015	796	24	0,007	637	9
12	0,08	1725	276	0,030	1592	88	0,020	929	37	0,06	1592	191	0,42	3981	3344	0,10	2919	584	0,018	664	24	0,008	531	9
14	0,09	1479	266	0,035	1251	88	0,030	796	48	0,07	1365	191	0,50	3412	3412	0,15	2502	751	0,020	569	23	0,009	455	8
16	0,10	1294	259	0,040	1095	88	0,040	697	56	0,08	1194	191	0,58	2986	3463	0,20	2190	876	0,020	498	20	0,010	398	8
18	0,10	1150	230	0,045	973	88	0,040	619	50	0,08	1062	170	0,62	2654	3291	0,20	1946	779	0,024	442	21	0,012	354	9
20	0,10	1035	207	0,045	876	79	0,050	557	56	0,09	955	172	0,66	2389	3153	0,25	1752	876	0,028	398	22	0,012	319	8

VHM - Bohrer Lang - Solid Carbide Drills Long

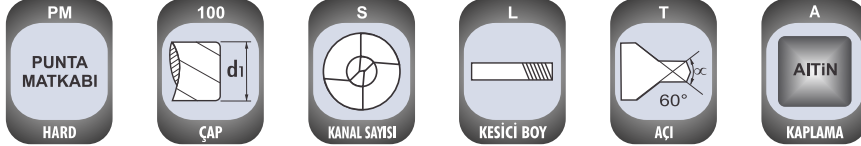
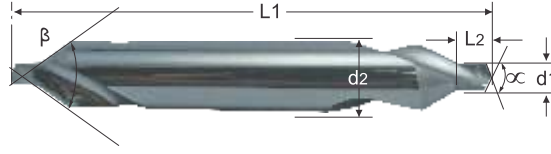


Kesici Uç Çapı	Kesici Boyu	Tam Boy	Şaft Çapı	Kanal Sayısı	Kaplamasız		Kaplama	
					Kod	Fiyatı (Euro-€)	Kod	Fiyatı (Euro-€)
d1 (h9)	L2 mm	L1 mm	d2 mm (h6)	Z Adet				
2	24	49	2,0	2	M020UL024G	20,49	M020UL024GT	22,09
2,5	30	57	2,5	2	M025UL030G	19,93	M025UL030GT	21,53
3	33	61	3,0	2	M030UL033G	20,12	M030UL033GT	21,72
3,3	33	61	3,5	2	M033UL033G	20,30	M033UL033GT	22,10
3,5	39	70	3,5	2	M035UL039G	20,77	M035UL039GT	22,57
4	43	75	4,0	2	M040UL043G	21,24	M040UL043GT	23,04
4,2	43	75	4,5	2	M042UL043G	21,62	M042UL043GT	23,50
4,5	47	80	4,5	2	M045UL047G	22,94	M045UL047GT	24,82
5	52	86	5,0	2	M050UL052G	26,22	M050UL052GT	28,10
5,5	57	93	5,5	2	M055UL057G	32,59	M055UL057GT	34,89
6	57	93	6,0	2	M060UL057G	37,81	M060UL057GT	40,11
6,5	63	101	6,5	2	M065UL063G	43,51	M065UL063GT	47,21
6,8	63	101	7,0	2	M068UL063G	46,93	M068UL063GT	50,63
7	69	109	7,0	2	M070UL069G	50,35	M070UL069GT	54,05
7,5	69	109	7,5	2	M075UL069G	55,67	M075UL069GT	59,37
8	75	117	8,0	2	M080UL075G	58,81	M080UL075GT	62,51
8,5	75	117	8,5	2	M085UL075G	64,03	M085UL075GT	68,93
9	81	125	9,0	2	M090UL081G	75,43	M090UL081GT	80,33
9,5	81	125	9,5	2	M095UL081G	81,89	M095UL081GT	86,79
10	87	133	10,0	2	M100UL087G	88,26	M100UL087GT	93,16
10,2	87	133	11,0	2	M102UL087G	90,54	M102UL087GT	95,54
10,5	94	133	11,0	2	M105UL087G	92,34	M105UL087GT	97,34
11	94	142	11,0	2	M110UL094G	107,16	M110UL094GT	112,16
11,5	94	142	11,5	2	M115UL094G	125,97	M115UL094GT	130,97
12	101	151	12,0	2	M120UL101G	142,88	M120UL101GT	148,88
12,5	101	151	12,5	2	M125UL101G	142,88	M125UL101GT	148,88
13	101	151	13,0	2	M130UL101G	155,23	M130UL101GT	161,23
13,5	101	151	13,5	2	M135UL101G	169,86	M135UL101GT	175,86
14	120	175	14,0	2	M140UL120G	178,41	M140UL120GT	184,41
15	120	175	15,0	2	M150UL120G	205,68	M150UL120GT	213,98
16	120	175	16,0	2	M160UL120G	224,58	M160UL120GT	232,88
18	120	175	18,0	2	M180UL120G	283,29	M180UL120GT	292,59
20	120	175	20,0	2	M200UL120G	356,82	M200UL120GT	366,12

	HRC 20-30			HRC 30-40			INOX			GG			AL			CU			TITAN			< 52 HRC		
	1.0050-2			1.5864			1.4405			0.6035			3.2151			2.1247			3.7035			1.3255		
	1.0060-2			1.6580			1.4460			0.7080			3.2373			2.0580			3.7055			1.3265		
1.0070-2			1.7225			1.4505			0.8055			3.2382			2.0598			3.7065			1.3333			
Vc=130 m/dk.			Vc=110 m/dk.			Vc=70 m/dk.			Vc=120 m/dk.			Vc=300 m/dk.			Vc=220 m/dk.			Vc=50 m/dk.			Vc=40 m/dk.			
d1	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf
2	0,02	10350	414	0,006	8758	105	0,003	5573	33	0,01	9554	191	0,05	23885	2389	0,02	17516	701	0,003	3981	24	0,002	3185	13
3	0,03	6900	414	0,008	5839	93	0,004	3716	30	0,01	6369	127	0,08	15924	2548	0,03	11677	701	0,006	2654	32	0,003	2123	13
4	0,04	5175	414	0,010	4379	88	0,004	2787	22	0,02	4777	191	0,10	11943	2389	0,04	8758	701	0,009	1990	36	0,004	1592	13
5	0,04	4140	331	0,010	3503	70	0,005	2229	22	0,02	3822	153	0,14	9554	2675	0,05	7006	701	0,010	1592	32	0,005	1274	13
6	0,05	3450	345	0,012	2919	70	0,006	1858	22	0,03	3185	191	0,18	7962	2866	0,06	5839	701	0,010	1327	27	0,005	1062	11
7	0,05	2957	296	0,015	2502	75	0,007	1592	22	0,03	2730	164	0,22	6824	3003	0,06	5005	601	0,010	1137	23	0,006	910	11
8	0,06	2588	311	0,018	2190	79	0,008	1393	22	0,04	2389	191	0,25	5971	2986	0,07	4379	613	0,012	995	24	0,006	796	10
10	0,07	2070	290	0,020	1752	70	0,010	1115	22	0,05	1911	191	0,34	4777	3248	0,08	3503	561	0,015	796	24	0,007	637	9
12	0,08	1725	276	0,030	1592	88	0,020	929	37	0,06	1592	191	0,42	3981	3344	0,10	2919	584	0,018	664	24	0,008	531	9
14	0,09	1479	266	0,035	1251	88	0,030	796	48	0,07	1365	191	0,50	3412	3412	0,15	2502	751	0,020	569	23	0,009	455	8
16	0,10	1294	259	0,040	1095	88	0,040	697	56	0,08	1194	191	0,58	2986	3463	0,20	2190	876	0,020	498	20	0,010	398	8
18	0,10	1150	230	0,045	973	88	0,040	619	50	0,08	1062	170	0,62	2654	3291	0,20	1946	779	0,024	442	21	0,012	354	9
20	0,10	1035	207	0,045	876	79	0,050	557	56	0,09	955	172	0,66	2389	3153	0,25	1752	876	0,028	398	22	0,012	319	8

VHM Zentrierbohrer - Solid Carbide Center Drills

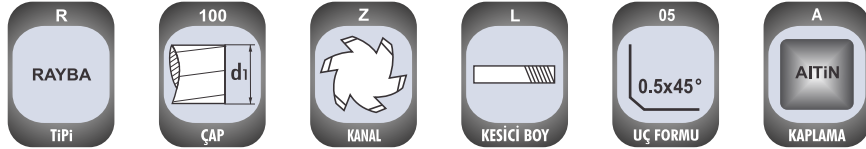
32



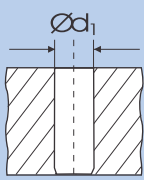
Kesici Uç Çapı d1 (e8)	İlk Kademe Boy L2 mm	Tam Boy L1 mm	Şaft Çapı d2 mm (h6)	Diş Sayısı Z Adet	Açı	Kaplamasız		Kaplama	
						Kod	Fiyatı (Euro-€)	Kod	Fiyatı (Euro-€)
1,00	1,30	40	3	2	60°	PM0100S2L013T60	16,07	PM0100S2L013T60A	18,13
1,25	1,60	40	3	2	60°	PM0125S2L016T60	16,79	PM0125S2L016T60A	18,85
1,60	2,00	40	4	2	60°	PM0160S2L020T60	18,64	PM0160S2L020T60A	20,39
2,00	2,50	40	5	2	60°	PM0200S2L025T60	21,12	PM0200S2L025T60A	22,97
2,50	3,10	45	6	2	60°	PM0250S2L031T60	23,59	PM0250S2L031T60A	25,85
3,15	3,90	50	8	2	60°	PM0315S2L039T60	31,21	PM0315S2L039T60A	32,55
4,00	5,00	56	10	2	60°	PM0400S2L050T60	40,27	PM0400S2L050T60A	43,26
5,00	6,30	63	12	2	60°	PM0500S2L063T60	56,44	PM0500S2L063T60A	59,64
6,30	8,00	71	16	2	60°	PM0630S2L080T60	77,97	PM0630S2L080T60A	81,89
8,00	10,10	80	20	2	60°	PM0800S2L101T60	99,91	PM0800S2L101T60A	105,06

d1	HRC 20-30			HRC 30-40			INOX			GG			AL			CU			TITAN			< 52 HRC		
	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf
	0,02	4777	191	0,006	3980	47	0,003	3388	14	0,01	4378	87	0,05	11942	119	0,02	9554	82	0,003	1592	9	0,002	1273	5
2	0,03	3184	191	0,008	2653	42	0,004	1592	12	0,01	2919	58	0,08	7961	127	0,03	6369	82	0,006	1061	12	0,003	849	5
3	0,04	2384	191	0,010	1990	39	0,004	1194	9	0,02	2189	87	0,10	5971	119	0,04	4777	82	0,009	796	14	0,004	636	5
4	0,04	1910	152	0,010	1592	31	0,005	955	9	0,02	1751	70	0,14	4777	133	0,05	3821	82	0,010	636	12	0,005	509	5
5	0,05	1592	159	0,012	1326	31	0,006	796	9	0,03	1459	87	0,18	3980	143	0,06	3184	82	0,010	530	10	0,005	424	4
6	0,05	1364	136	0,015	1137	34	0,007	682	9	0,03	1251	75	0,22	3412	150	0,06	2729	82	0,010	454	9	0,006	363	4
7	0,06	1194	143	0,018	995	35	0,008	597	9	0,04	1094	87	0,25	2985	149	0,07	2388	82	0,012	398	9	0,006	318	3

VHM - Reibahlen - Solid Carbide Reamer



Kesici Uç Çapı	Kesici Boyu	Tam Boy	Şaft Çapı	Kanal Sayısı	Kaplamasız		Kaplama	
					Kod	Fiyatı (Euro-€)	Kod	Fiyatı (Euro-€)
d1 (e8)	L2 mm	L1 mm	d2 mm (h6)	Z Adet				
3	14	40	3	4	R030Z4L14P01	28,56	R030Z4L14P01A	30,16
4	18	50	4	4	R040Z4L18P02	32,64	R040Z4L18P02A	34,44
5	20	50	5	6	R050Z6L20P03	39,70	R050Z6L20P03A	41,58
6	20	57	6	6	R060Z6L20P03	48,28	R060Z6L20P03A	50,58
7	22	57	7	6	R070Z6L22P04	62,14	R070Z6L22P04A	64,94
8	24	63	8	6	R080Z6L24P04	69,96	R080Z6L24P04A	72,76
9	24	63	9	6	R090Z6L24P05	78,54	R090Z6L24P05A	82,44
10	24	72	10	6	R100Z6L24P05	86,70	R100Z6L24P05A	90,60
11	24	72	11	6	R110Z6L24P06	96,36	R110Z6L24P06A	100,66
12	24	83	12	6	R120Z6L24P06	118,32	R120Z6L24P06A	122,62
13	24	83	13	6	R130Z6L24P07	130,90	R130Z6L24P07A	135,20
14	24	83	14	6	R140Z6L24P07	159,14	R140Z6L24P07A	163,44
15	24	83	15	6	R150Z6L24P08	193,94	R150Z6L24P08A	199,14
16	24	92	16	8	R160Z8L24P08	205,28	R160Z8L24P08A	210,48
18	24	92	18	8	R180Z8L24P09	228,93	R180Z8L24P09A	235,43
20	24	104	20	8	R200Z8L24P10	257,72	R200Z8L24P10A	264,87

	HRC 20-30			HRC 30-40			INOX			GG			AL			CU			TITAN			< 52 HRC		
	1.0050-2 1.0060-2 1.0070-2			1.5864 1.6580 1.7225			1.4405 1.4460 1.4505			0.6035 0.7080 0.8055			3.2151 3.2373 3.2382			2.1247 2.0580 2.0598			3.7035 3.7055 3.7065			1.3255 1.3265 1.3333		
	Vc=22 m/dk.			Vc=15 m/dk.			Vc=15 m/dk.			Vc=20 m/dk.			Vc=50 m/dk.			Vc=40 m/dk.			Vc=12 m/dk.			Vc=10 m/dk.		
d1	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf	fz	n	Vf
3	0,15	2335	350	0,15	1600	240	0,15	1600	240	0,15	2123	240	0,15	5307	796	0,15	4246	636	0,15	1273	190	0,15	1061	159
4	0,15	1751	262	0,15	1200	180	0,15	1200	180	0,15	1592	180	0,15	3980	597	0,15	3184	477	0,15	955	143	0,15	796	119
5	0,15	1401	210	0,15	960	144	0,15	960	144	0,15	1273	144	0,15	3184	477	0,15	2547	382	0,15	764	114	0,15	636	95
6	0,20	1167	233	0,20	800	160	0,20	800	160	0,20	1061	160	0,20	2653	503	0,20	1819	363	0,20	545	109	0,20	454	90
8	0,20	875	175	0,20	600	120	0,20	600	120	0,20	796	120	0,20	1990	398	0,20	1592	318	0,20	477	95	0,20	398	76
9	0,20	778	155	0,20	550	110	0,20	550	110	0,20	707	110	0,20	1769	353	0,20	1415	283	0,20	424	84	0,20	353	70
10	0,20	700	140	0,20	500	100	0,20	500	100	0,20	636	100	0,20	1592	318	0,20	1273	254	0,20	382	76	0,20	318	63
11	0,25	636	159	0,20	450	90	0,25	450	112	0,25	579	112	0,25	1447	361	0,25	1158	289	0,25	347	86	0,25	289	72
12	0,25	583	145	0,20	400	80	0,25	400	100	0,25	530	100	0,25	1326	331	0,25	1061	265	0,25	318	79	0,25	265	66
14	0,25	500	125	0,20	350	70	0,25	350	87	0,25	454	87	0,25	1137	284	0,25	909	227	0,25	272	68	0,25	227	56
16	0,25	437	109	0,20	300	60	0,25	300	75	0,25	398	75	0,25	995	248	0,25	796	199	0,25	238	59	0,25	119	29
18	0,25	389	97	0,20	270	54	0,25	270	67	0,25	353	67	0,25	884	221	0,25	707	176	0,25	212	53	0,25	176	44
20	0,25	350	87	0,20	240	48	0,25	240	60	0,25	318	60	0,25	796	199	0,25	636	159	0,25	191	47	0,25	159	39

Özel Takımlar - Special Tools

Kullanıcı ihtiyacına yönelik kademeli ve özel takımlar teknik detaylandırma ve tekliflendirme işleminin ardından en kısa sürede ve en uygun şartlarda üretilir.

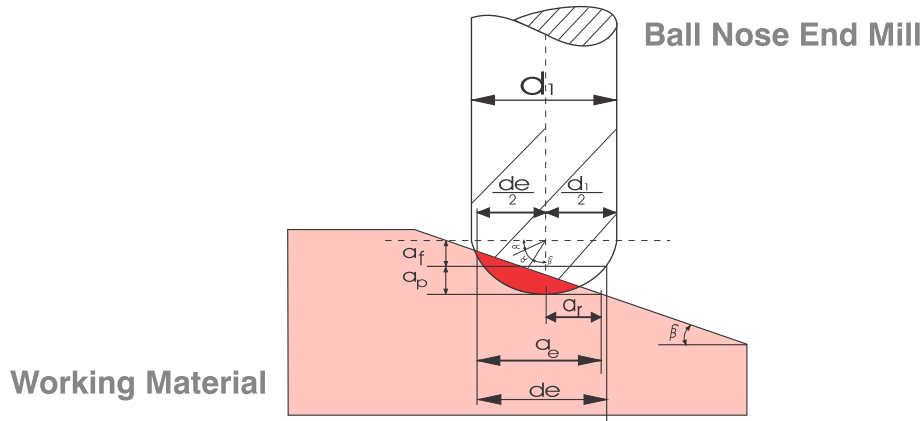
For End user requirements which are Step tools and Special tools , produce the earliest time and the best conditions after Technical detailing and quotation.

Üretim aşamasında 5 eksenli CNC makinalar kullanılır. Ölçüm ve kontrol için yine bilgisayar kontrollü ölçüm cihazlarında incelenir.

we have 5 Axes CNC Machines for processing. We define our tools with computer controlled measuring devices for controls of dimensions and other measurings.

Lazer markalama ve paketleme işleminin ardından belirlenen süre içerisinde teslimatı sağlanır.

After Laser Marking and packaging, Tools are delivered within our provided time.



Formüller - Formulas

$\text{tg } \beta = \frac{a_p}{a_e}$	$a_e = \frac{a_p}{\text{tg } \beta}$	$\cos \alpha = \frac{d_e}{d_1}$
$\alpha = 90^\circ - (\gamma + \beta)$	$\alpha = 90^\circ - \left(\sin \frac{d_1 - 2 \times a_p}{d_1} + \beta \right)$	
$a_f = \frac{d_1 - 2 \times a_p}{2}$	$a_r = \frac{2 \times a_e - d_e}{2}$	
$d_e = 2 \times (a_e - a_r)$	Milling with ball nose end mill on slope plane	
$d_e = 2 \times \sqrt{a_p \times (d_1 - a_p)}$	Milling with ball nose end mill on horizontal plane	
$V_c = \frac{\pi \cdot d_1 \cdot n}{1000}$	$n = \frac{1000 \cdot V_c}{\pi \cdot d_1}$	
$V_f = f_z \cdot n \cdot z$	$n = \frac{V_f}{f_z \cdot z}$	
$n = \frac{1000 \cdot V_c}{\pi \cdot d_e}$	Milling with ball nose end mill	$n = \frac{1000 \cdot V_c}{\pi \cdot d_3}$ Milling with taper end mill

Sembollerin anlamı - Meaning of symbols

d1 Diameter of the cutting edge	ae Cutting width
dk Maximum cutting diameter of taper end mill	Vc Cutting speed
de Maximum cutting diameter of ball nose end mill	n Spindle speed
z Number of flutes	fz Feed per tooth
α taper angle	Vf Table feed
β Slope angle of working material	
ap Cutting depth	d3 Maximum cutting diameter of taper end mill

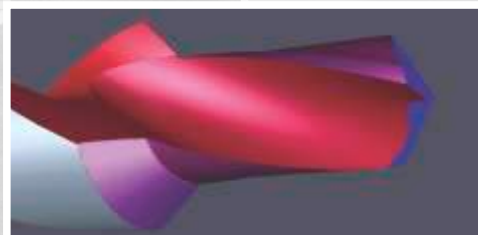


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