

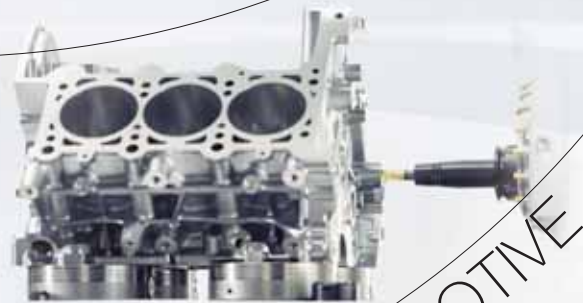
MACHINE TOOL INDUSTRIE

AEROSPACE



DIE & MOLD

HM
HARD MATERIAL
Catalog



AUTOMOTIVE

 **MAKINA TAKIM**

www.makinatakim.com.tr


500 TONS OF PRODUCTION ANNUALLY WITH STATE OF THE ART MANUFACTURING TECHNOLOGIES

Being one of the oldest companies of Turkish industry and consequently having worked with many other companies involved within Turkish industry over a long period, patent, know-how and workbench production knowledge it obtained or transferred from the greatest technology producers since its establishment, its high quality in the produced products with the engineer, employee crew it trained in its own factory, its capacity size and with its accumulation of knowledge and manufacturing technology, enable Makina Takım brand to be one of the leading cutting tool brand of Turkey. In addition, it is among the known brands most preferred in the industry abroad.

Makina Takım Endüstrisi A.Ş. meets the increasing demands of its customers by following technological innovations in the cutting-tool sector, and through its knowledge and experience, all of which ensure internal and external customer satisfaction. It provides reliable services to all the cutting-tool users before and after sale through its Istanbul, Bursa, Ankara, and Izmir Branches, and through its broad network of dealers throughout Turkey.

IDEAL TOOL GEOMETRY
WITH PRECISION 

LATEST TECHNOLOGY
PRODUCTION MACHINES 

HIGH QUALITY
RAW MATERIALS WITH
HIGH PERFORMANCE 

WIDE RANGE OF
PRODUCTS 

10000 m2 NEW PRODUCTION
AREA WITH MODERN PRODUCTION
TECHNOLOGY 

MAXIMUM STOCK LEVELS 

STRONG DISTRIBUTION
CHANNELS 

TECHNICAL SUPPORT 

VISION MISSION QUALITY POLICY STATEMENT

Makina Takım Endüstrisi A.Ş. (MTE), WAS ESTABLISHED IN 1957 AS THE FIRST CUTTING TOOL MANUFACTURER OF TURKEY. 3 YEARS AFTER ITS ESTABLISHMENT, IT BEGAN TO EXPORT ITS PRODUCTS TO USA IN 1960 AND BECAME THE FIRST ESTABLISHMENT THAT EXPORT INDUSTRIAL PRODUCTS IN TURKEY.

Our vision

As a follower and developer of technological innovation in the cutting tool sector and sustainable leading manufacturer of Turkey and the region, becoming an international brand that can respond local and global demand in a dynamic way.

Our mission

To meet the requirements of Turkish industries by providing products and services of the highest quality and at the most appropriate prices; to contribute in the development of the industries we serve by closely following developments in the cutting-tools and machining industries of the greater world; to minimize the foreign-source dependency of the cutting-tools and products industry in Turkey; and to increase our contributions to shareholders, internal and external customers, society, and the protection of environment.

Quality Policy























To meet customer needs and expectations in the line of Makina Takım vision, develops high performance products with wide product range, produces on time and provides after - sell service.



MAKINA TAKIM



HARD MATERIAL
Catalog

Material	HM							
Standard	MTE	Din 6539	Din 6528	Din 6527	ALTAY	SARP	FIRTINA	ATAK
Coating	TiAlN	TiSiN	AlTiN	AlCrN	TiN			
Type								
Point Angle								
Helix Angle	R30°	R35° R38°	R52°					
The Shank								
Suited for Handened Steels	HRC 65							
Radius								
Drilling Depth								
Double Margin								
Coolat								
Cutting Property	HSC	HPC						

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HM SOLID SHORT DRILLS**HM SOLID KISA MATKAP**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm
B12551103000	3	3	46	16
B12551103500	3.5	3.5	52	20
B12551104000	4	4	55	22
B12551104500	4.5	4.5	58	24
B12551105000	5	5	62	26
B12551105500	5.5	5.5	66	28
B12551106000	6	6	66	28
B12551106500	6.5	6.5	70	31
B12551106800	6.8	6.8	74	34
B12551108000	8	8	79	37
B12551108500	8.5	8.5	79	37
B12551109000	9	9	84	40
B12551109500	9.5	9.5	84	40
B12551110000	10	10	89	43
B12551111000	11	11	95	47
B12551112000	12	12	102	51
B12551114000	14	14	107	54
B12551116000	16	16	115	58
B12551118000	18	18	123	62
B12551120000	20	20	131	66



HM SOLID DRILLS 3XD

HM SOLID 3XD MATKAP



Product Code	d1 mm	d2 mm	L1 mm	L2 mm	NL min
B12560300300	3	6	62	20	14
B12560300310	3.1	6	62	20	14
B12560300320	3.2	6	62	20	14
B12560300330	3.3	6	62	20	14
B12560300340	3.4	6	62	20	14
B12560300350	3.5	6	62	20	14
B12560300360	3.6	6	62	20	14
B12560300365	3.65	6	62	20	14
B12560300370	3.7	6	62	20	14
B12560300380	3.8	6	66	24	17
B12560300390	3.9	6	66	24	17
B12560300400	4	6	66	24	17
B12560300410	4.1	6	66	24	17
B12560300420	4.2	6	66	24	17
B12560300430	4.3	6	66	24	17
B12560300440	4.4	6	66	24	17
B12560300450	4.5	6	66	24	17
B12560300460	4.6	6	66	24	17
B12560300470	4.7	6	66	24	17
B12560300480	4.8	6	66	28	20
B12560300490	4.9	6	66	28	20
B12560300500	5	6	66	28	20
B12560300510	5.1	6	66	28	20
B12560300520	5.2	6	66	28	20
B12560300530	5.3	6	66	28	20
B12560300540	5.4	6	66	28	20
B12560300550	5.5	6	66	28	20
B12560300555	5.55	6	66	28	20
B12560300560	5.6	6	66	28	20
B12560300565	5.65	6	66	28	20
B12560300570	5.7	6	66	28	20
B12560300580	5.8	6	66	28	20
B12560300590	5.9	6	66	28	20
B12560300600	6	6	66	28	20
B12560300610	6.1	8	79	34	24
B12560300620	6.2	8	79	34	24
B12560300630	6.3	8	79	34	24
B12560300640	6.4	8	79	34	24
B12560300650	6.5	8	79	34	24
B12560300660	6.6	8	79	34	24
B12560300670	6.7	8	79	34	24
B12560300680	6.8	8	79	34	24
B12560300690	6.9	8	79	34	24
B12560300700	7	8	79	34	24
B12560300710	7.1	8	79	41	29
B12560300720	7.2	8	79	41	29
B12560300730	7.3	8	79	41	29
B12560300740	7.4	8	79	41	29
B12560300750	7.5	8	79	41	29
B12560300755	7.55	8	79	41	29
B12560300760	7.6	8	79	41	29



HM SOLID DRILLS 3XD

HM SOLID 3XD MATKAP



Product Code	d1 mm	d2 mm	L1 mm	L2 mm	NL min
B12560300770	7.7	8	79	41	29
B12560300780	7.8	8	79	41	29
B12560300790	7.9	8	79	41	29
B12560300800	8	8	79	41	29
B12560300810	8.1	10	89	47	35
B12560300820	8.2	10	89	47	35
B12560300830	8.3	10	89	47	35
B12560300840	8.4	10	89	47	35
B12560300850	8.5	10	89	47	35
B12560300860	8.6	10	89	47	35
B12560300870	8.7	10	89	47	35
B12560300880	8.8	10	89	47	35
B12560300890	8.9	10	89	47	35
B12560300900	9	10	89	47	35
B12560300910	9.1	10	89	47	35
B12560300920	9.2	10	89	47	35
B12560300930	9.3	10	89	47	35
B12560300940	9.4	10	89	47	35
B12560300950	9.5	10	89	47	35
B12560300955	9.55	10	89	47	35
B12560300960	9.6	10	89	47	35
B12560300970	9.7	10	89	47	35
B12560300980	9.8	10	89	47	35
B12560300990	9.9	10	89	47	35
B12560301000	10	10	89	47	35
B12560301010	10.1	12	102	55	40
B12560301020	10.2	12	102	55	40
B12560301030	10.3	12	102	55	40
B12560301040	10.4	12	102	55	40
B12560301050	10.5	12	102	55	40
B12560301060	10.6	12	102	55	40
B12560301070	10.7	12	102	55	40
B12560301080	10.8	12	102	55	40
B12560301090	10.9	12	102	55	40
B12560301100	11	12	102	55	40
B12560301110	11.1	12	102	55	40
B12560301120	11.2	12	102	55	40
B12560301130	11.3	12	102	55	40
B12560301140	11.4	12	102	55	40
B12560301150	11.5	12	102	55	40
B12560301155	11.5	12	102	55	40
B12560301160	11.6	12	102	55	40
B12560301170	11.7	12	102	55	40
B12560301180	11.8	12	102	55	40
B12560301190	11.9	12	102	55	40
B12560301200	12	12	102	55	40
B12560301210	12.1	12	107	60	43
B12560301220	12.1	12	107	60	43
B12560301230	12.3	14	107	60	43
B12560301240	12.4	14	107	60	43
B12560301250	12.5	14	107	60	43

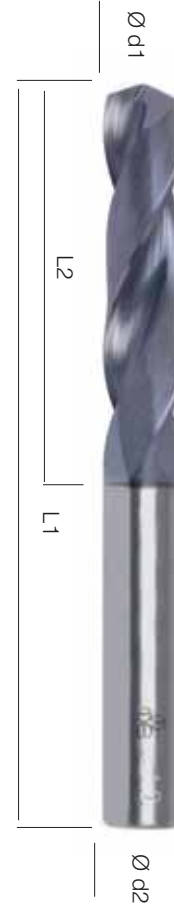


HM SOLID DRILLS 3XD

HM SOLID 3XD MATKAP

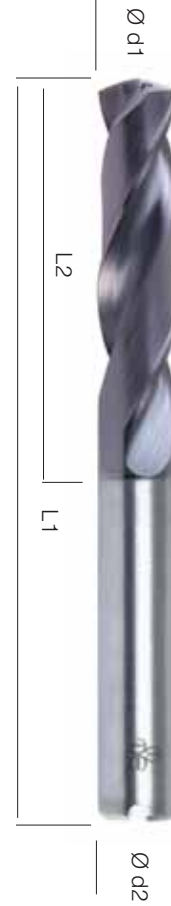


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B12560301280	12.8	14	107	60	43
B12560301290	12.9	14	107	60	43
B12560301300	13	14	107	60	43
B12560301310	13.1	14	107	60	43
B12560301320	13.2	14	107	60	43
B12560301340	13.4	14	107	60	43
B12560301350	13.5	14	107	60	43
B12560301360	13.6	14	107	60	43
B12560301370	13.7	14	107	60	43
B12560301380	13.8	14	107	60	43
B12560301390	13.9	14	107	60	43
B12560301400	14	14	107	60	43
B12560301410	14.1	16	115	65	45
B12560301420	14.2	16	115	65	45
B12560301430	14.3	16	115	65	45
B12560301440	14.4	16	115	65	45
B12560301450	14.5	16	115	65	45
B12560301460	14.6	16	115	65	45
B12560301470	14.7	16	115	65	45
B12560301480	14.8	16	115	65	45
B12560301490	14.9	16	115	65	45
B12560301500	15	16	115	65	45
B12560301510	15.1	16	115	65	45
B12560301520	15.2	16	115	65	45
B12560301530	15.3	16	115	65	45
B12560301540	15.4	16	115	65	45
B12560301550	15.5	16	115	65	45
B12560301560	15.6	16	115	65	45
B12560301570	15.7	16	115	65	45
B12560301580	15.8	16	115	65	45
B12560301590	15.9	16	115	65	45
B12560301600	16	16	115	65	45
B12560301650	16.5	18	123	73	51
B12560301680	16.8	18	123	73	51
B12560301700	17	18	123	73	51
B12560301750	17.5	18	123	73	51
B12560301780	17.8	18	123	73	51
B12560301800	18	18	123	73	51
B12560301850	18.5	20	131	79	55
B12560301880	18.8	20	131	79	55
B12560301900	19	20	131	79	55
B12560301950	19.5	20	131	79	55
B12560301980	19.8	20	131	79	55
B12560302000	20	20	131	79	55



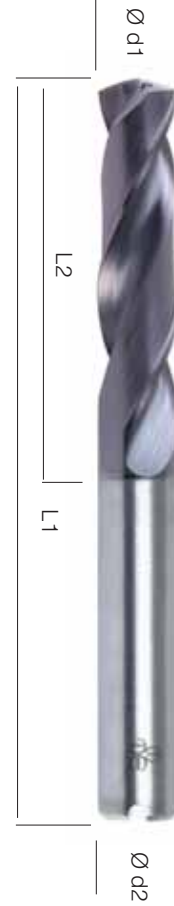
HM SOLID DRILLS 3XD - INTERNAL COOLANT**HM SOLID 3XD MATKAP - İÇTEN SU VERMELİ**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	NL min
B12560310300	3	6	62	20	14
B12560310310	3.1	6	62	20	14
B12560310320	3.2	6	62	20	14
B12560310330	3.3	6	62	20	14
B12560310340	3.4	6	62	20	14
B12560310350	3.5	6	62	20	14
B12560310360	3.6	6	62	20	14
B12560310365	3.65	6	62	20	14
B12560310370	3.7	6	62	20	14
B12560310380	3.8	6	66	24	17
B12560310390	3.9	6	66	24	17
B12560310400	4	6	66	24	17
B12560310410	4.1	6	66	24	17
B12560310420	4.2	6	66	24	17
B12560310430	4.3	6	66	24	17
B12560310440	4.4	6	66	24	17
B12560310450	4.5	6	66	24	17
B12560310460	4.6	6	66	24	17
B12560310470	4.7	6	66	24	17
B12560310480	4.8	6	66	28	20
B12560310490	4.9	6	66	28	20
B12560310500	5	6	66	28	20
B12560310510	5.1	6	66	28	20
B12560310520	5.2	6	66	28	20
B12560310530	5.3	6	66	28	20
B12560310540	5.4	6	66	28	20
B12560310550	5.5	6	66	28	20
B12560310555	5.55	6	66	28	20
B12560310560	5.6	6	66	28	20
B12560310565	5.65	6	66	28	20
B12560310570	5.7	6	66	28	20
B12560310580	5.8	6	66	28	20
B12560310590	5.9	6	66	28	20
B12560310600	6	6	66	28	20
B12560310610	6.1	8	79	34	24
B12560310620	6.2	8	79	34	24
B12560310630	6.3	8	79	34	24
B12560310640	6.4	8	79	34	24
B12560310650	6.5	8	79	34	24
B12560310660	6.6	8	79	34	24
B12560310670	6.7	8	79	34	24
B12560310680	6.8	8	79	34	24
B12560310690	6.9	8	79	34	24
B12560310700	7	8	79	34	24
B12560310710	7.1	8	79	41	29
B12560310720	7.2	8	79	41	29
B12560310730	7.3	8	79	41	29
B12560310740	7.4	8	79	41	29
B12560310750	7.5	8	79	41	29
B12560310755	7.55	8	79	41	29
B12560310760	7.6	8	79	41	29



HM SOLID DRILLS 3XD - INTERNAL COOLANT**HM SOLID 3XD MATKAP - İÇTEN SU VERMELİ**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	NL min
B12560310770	7.7	8	79	41	29
B12560310780	7.8	8	79	41	29
B12560310790	7.9	8	79	41	29
B12560310800	8	8	79	41	29
B12560310810	8.1	10	89	47	35
B12560310820	8.2	10	89	47	35
B12560310830	8.3	10	89	47	35
B12560310840	8.4	10	89	47	35
B12560310850	8.5	10	89	47	35
B12560310860	8.6	10	89	47	35
B12560310870	8.7	10	89	47	35
B12560310880	8.8	10	89	47	35
B12560310890	8.9	10	89	47	35
B12560310900	9	10	89	47	35
B12560310910	9.1	10	89	47	35
B12560310920	9.2	10	89	47	35
B12560310930	9.3	10	89	47	35
B12560310940	9.4	10	89	47	35
B12560310950	9.5	10	89	47	35
B12560310955	9.55	10	89	47	35
B12560310960	9.6	10	89	47	35
B12560310970	9.7	10	89	47	35
B12560310980	9.8	10	89	47	35
B12560310990	9.9	10	89	47	35
B12560311000	10	10	89	47	35
B12560311010	10.1	12	102	55	40
B12560311020	10.2	12	102	55	40
B12560311030	10.3	12	102	55	40
B12560311040	10.4	12	102	55	40
B12560311050	10.5	12	102	55	40
B12560311060	10.6	12	102	55	40
B12560311070	10.7	12	102	55	40
B12560311080	10.8	12	102	55	40
B12560311090	10.9	12	102	55	40
B12560311100	11	12	102	55	40
B12560311110	11.1	12	102	55	40
B12560311120	11.2	12	102	55	40
B12560311130	11.3	12	102	55	40
B12560311140	11.4	12	102	55	40
B12560311150	11.5	12	102	55	40
B12560311155	11.5	12	102	55	40
B12560311160	11.6	12	102	55	40
B12560311170	11.7	12	102	55	40
B12560311180	11.8	12	102	55	40
B12560311190	11.9	12	102	55	40
B12560311200	12	12	102	55	40
B12560311210	12.1	12	107	60	43
B12560311220	12.1	12	107	60	43
B12560311230	12.3	14	107	60	43
B12560311240	12.4	14	107	60	43
B12560311250	12.5	14	107	60	43



HM SOLID DRILLS 3XD - INTERNAL COOLANT**HM SOLID 3XD MATKAP - İÇTEN SU VERMELİ**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	NL min
B12560311280	12.8	14	107	60	43
B12560311290	12.9	14	107	60	43
B12560311300	13	14	107	60	43
B12560311310	13.1	14	107	60	43
B12560311320	13.2	14	107	60	43
B12560311340	13.4	14	107	60	43
B12560311350	13.5	14	107	60	43
B12560311360	13.6	14	107	60	43
B12560311370	13.7	14	107	60	43
B12560311380	13.8	14	107	60	43
B12560311390	13.9	14	107	60	43
B12560311400	14	14	107	60	43
B12560311410	14.1	16	115	65	45
B12560311420	14.2	16	115	65	45
B12560311430	14.3	16	115	65	45
B12560311440	14.4	16	115	65	45
B12560311450	14.5	16	115	65	45
B12560311460	14.6	16	115	65	45
B12560311470	14.7	16	115	65	45
B12560311480	14.8	16	115	65	45
B12560311490	14.9	16	115	65	45
B12560311500	15	16	115	65	45
B12560311510	15.1	16	115	65	45
B12560311520	15.2	16	115	65	45
B12560311530	15.3	16	115	65	45
B12560311540	15.4	16	115	65	45
B12560311550	15.5	16	115	65	45
B12560311560	15.6	16	115	65	45
B12560311570	15.7	16	115	65	45
B12560311580	15.8	16	115	65	45
B12560311590	15.9	16	115	65	45
B12560311600	16	16	115	65	45
B12560311650	16.5	18	123	73	51
B12560311680	16.8	18	123	73	51
B12560311700	17	18	123	73	51
B12560311750	17.5	18	123	73	51
B12560311780	17.8	18	123	73	51
B12560311800	18	18	123	73	51
B12560311850	18.5	20	131	79	55
B12560311880	18.8	20	131	79	55
B12560311900	19	20	131	79	55
B12560311950	19.5	20	131	79	55
B12560311980	19.8	20	131	79	55
B12560312000	20	20	131	79	55



HM SOLID DRILLS 5XD**HM SOLID 5XD MATKAP**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	NL min
B12560500300	3	6	66	28	23
B12560500310	3.1	6	66	28	23
B12560500320	3.2	6	66	28	23
B12560500330	3.3	6	66	28	23
B12560500340	3.4	6	66	28	23
B12560500350	3.5	6	66	28	23
B12560500360	3.6	6	66	28	23
B12560500365	3.65	6	66	28	23
B12560500370	3.7	6	66	28	23
B12560500380	3.8	6	74	36	29
B12560500390	3.9	6	74	36	29
B12560500400	4	6	74	36	29
B12560500410	4.1	6	74	36	29
B12560500420	4.2	6	74	36	29
B12560500430	4.3	6	74	36	29
B12560500440	4.4	6	74	36	29
B12560500450	4.5	6	74	36	29
B12560500460	4.6	6	74	36	29
B12560500470	4.7	6	74	36	29
B12560500480	4.8	6	82	44	35
B12560500490	4.9	6	82	44	35
B12560500500	5	6	82	44	35
B12560500510	5.1	6	82	44	35
B12560500520	5.2	6	82	44	35
B12560500530	5.3	6	82	44	35
B12560500540	5.4	6	82	44	35
B12560500550	5.5	6	82	44	35
B12560500555	5.55	6	82	44	35
B12560500560	5.6	6	82	44	35
B12560500565	5.65	6	82	44	35
B12560500570	5.7	6	82	44	35
B12560500580	5.8	6	82	44	35
B12560500590	5.9	6	82	44	35
B12560500600	6	6	82	44	35
B12560500610	6.1	8	91	53	43
B12560500620	6.2	8	91	53	43
B12560500630	6.3	8	91	53	43
B12560500640	6.4	8	91	53	43
B12560500650	6.5	8	91	53	43
B12560500660	6.6	8	91	53	43
B12560500670	6.7	8	91	53	43
B12560500680	6.8	8	91	53	43
B12560500690	6.9	8	91	53	43
B12560500700	7	8	91	53	43
B12560500710	7.1	8	91	53	43
B12560500720	7.2	8	91	53	43
B12560500730	7.3	8	91	53	43
B12560500740	7.4	8	91	53	43
B12560500750	7.5	8	91	53	43
B12560500755	7.55	8	91	53	43
B12560500760	7.6	8	91	53	43
B12560500770	7.7	8	91	53	43
B12560500780	7.8	8	91	53	43
B12560500790	7.9	8	91	53	43



HM SOLID DRILLS 5XD

HM SOLID 5XD MATKAP



Product Code	d1 mm	d2 mm	L1 mm	L2 mm	NL min
B12560500800	8	8	91	53	43
B12560500810	8.1	10	103	61	49
B12560500820	8.2	10	103	61	49
B12560500830	8.3	10	103	61	49
B12560500840	8.4	10	103	61	49
B12560500850	8.5	10	103	61	49
B12560500860	8.6	10	103	61	49
B12560500870	8.7	10	103	61	49
B12560500880	8.8	10	103	61	49
B12560500890	8.9	10	103	61	49
B12560500900	9	10	103	61	49
B12560500910	9.1	10	103	61	49
B12560500920	9.2	10	103	61	49
B12560500930	9.3	10	103	61	49
B12560500940	9.4	10	103	61	49
B12560500950	9.5	10	103	61	49
B12560500955	9.55	10	103	61	49
B12560500960	9.6	10	103	61	49
B12560500970	9.7	10	103	61	49
B12560500980	9.8	10	103	61	49
B12560500990	9.9	10	103	61	49
B12560501000	10	10	103	61	49
B12560501010	10.1	12	118	71	56
B12560501020	10.2	12	118	71	56
B12560501030	10.3	12	118	71	56
B12560501040	10.4	12	118	71	56
B12560501050	10.5	12	118	71	56
B12560501060	10.6	12	118	71	56
B12560501070	10.7	12	118	71	56
B12560501080	10.8	12	118	71	56
B12560501090	10.9	12	118	71	56
B12560501100	11	12	118	71	56
B12560501110	11.1	12	118	71	56
B12560501120	11.2	12	118	71	56
B12560501130	11.3	12	118	71	56
B12560501140	11.4	12	118	71	56
B12560501150	11.5	12	118	71	56
B12560501155	11.55	12	118	71	56
B12560501160	11.6	12	118	71	56
B12560501170	11.7	12	118	71	56
B12560501180	11.8	12	118	71	56
B12560501190	11.9	12	118	71	56
B12560501200	12	12	118	71	56
B12560501210	12.1	14	124	77	60
B12560501220	12.2	14	124	77	60
B12560501230	12.3	14	124	77	60
B12560501240	12.4	14	124	77	60
B12560501250	12.5	14	124	77	60
B12560501260	12.6	14	124	77	60
B12560501270	12.7	14	124	77	60
B12560501280	12.8	14	124	77	60
B12560501290	12.9	14	124	77	60
B12560501300	13	14	124	77	60
B12560501310	13.1	14	124	77	60



HM SOLID DRILLS 5XD

HM SOLID 5XD MATKAP



Product Code	d1 mm	d2 mm	L1 mm	L2 mm	NL min
B12560501320	13.2	14	124	77	60
B12560501330	13.3	14	124	77	60
B12560501340	13.4	14	124	77	60
B12560501350	13.5	14	124	77	60
B12560501360	13.6	14	124	77	60
B12560501370	13.7	14	124	77	60
B12560501380	13.8	14	124	77	60
B12560501390	13.9	14	124	77	60
B12560501400	14	14	124	77	60
B12560501410	14.1	16	133	83	63
B12560501420	14.2	16	133	83	63
B12560501430	14.3	16	133	83	63
B12560501440	14.4	16	133	83	63
B12560501450	14.5	16	133	83	63
B12560501460	14.6	16	133	83	63
B12560501470	14.7	16	133	83	63
B12560501480	14.8	16	133	83	63
B12560501490	14.9	16	133	83	63
B12560501500	15	16	133	83	63
B12560501510	15.1	16	133	83	63
B12560501520	15.2	16	133	83	63
B12560501530	15.3	16	133	83	63
B12560501540	15.4	16	133	83	63
B12560501550	15.5	16	133	83	63
B12560501560	15.6	16	133	83	63
B12560501570	15.7	16	133	83	63
B12560501580	15.8	16	133	83	63
B12560501590	15.9	16	133	83	63
B12560501600	16	16	133	83	63
B12560501650	16.5	18	143	93	71
B12560501680	16.8	18	143	93	71
B12560501700	17	18	143	93	71
B12560501750	17.5	18	143	93	71
B12560501780	17.8	18	143	93	71
B12560501800	18	18	143	93	71
B12560501850	18.5	20	153	101	77
B12560501880	18.8	20	153	101	77
B12560501900	19	20	153	101	77
B12560501950	19.5	20	153	101	77
B12560501980	19.8	20	153	101	77
B12560502000	20	20	153	101	77



HM SOLID DRILLS 5XD - INTERNAL COOLANT**HM SOLID 5XD MATKAP - İÇTEN SU VERMELİ**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	NL min
B12560510300	3	6	66	28	23
B12560510310	3.1	6	66	28	23
B12560510320	3.2	6	66	28	23
B12560510330	3.3	6	66	28	23
B12560510340	3.4	6	66	28	23
B12560510350	3.5	6	66	28	23
B12560510360	3.6	6	66	28	23
B12560510365	3.65	6	66	28	23
B12560510370	3.7	6	66	28	23
B12560510380	3.8	6	74	36	29
B12560510390	3.9	6	74	36	29
B12560510400	4	6	74	36	29
B12560510410	4.1	6	74	36	29
B12560510420	4.2	6	74	36	29
B12560510430	4.3	6	74	36	29
B12560510440	4.4	6	74	36	29
B12560510450	4.5	6	74	36	29
B12560510460	4.6	6	74	36	29
B12560510470	4.7	6	74	36	29
B12560510480	4.8	6	82	44	35
B12560510490	4.9	6	82	44	35
B12560510500	5	6	82	44	35
B12560510510	5.1	6	82	44	35
B12560510520	5.2	6	82	44	35
B12560510530	5.3	6	82	44	35
B12560510540	5.4	6	82	44	35
B12560510550	5.5	6	82	44	35
B12560510555	5.55	6	82	44	35
B12560510560	5.6	6	82	44	35
B12560510565	5.65	6	82	44	35
B12560510570	5.7	6	82	44	35
B12560510580	5.8	6	82	44	35
B12560510590	5.9	6	82	44	35
B12560510600	6	6	82	44	35
B12560510610	6.1	8	91	53	43
B12560510620	6.2	8	91	53	43
B12560510630	6.3	8	91	53	43
B12560510640	6.4	8	91	53	43
B12560510650	6.5	8	91	53	43
B12560510660	6.6	8	91	53	43
B12560510670	6.7	8	91	53	43
B12560510680	6.8	8	91	53	43
B12560510690	6.9	8	91	53	43
B12560510700	7	8	91	53	43
B12560510710	7.1	8	91	53	43
B12560510720	7.2	8	91	53	43
B12560510730	7.3	8	91	53	43
B12560510740	7.4	8	91	53	43
B12560510750	7.5	8	91	53	43
B12560510755	7.55	8	91	53	43
B12560510760	7.6	8	91	53	43



HM SOLID DRILLS 5XD - INTERNAL COOLANT**HM SOLID 5XD MATKAP - İÇTEN SU VERMELİ**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	NL min
B12560510770	7.7	8	91	53	43
B12560510780	7.8	8	91	53	43
B12560510790	7.9	8	91	53	43
B12560510800	8	8	91	53	43
B12560510810	8.1	10	103	61	49
B12560510820	8.2	10	103	61	49
B12560510830	8.3	10	103	61	49
B12560510840	8.4	10	103	61	49
B12560510850	8.5	10	103	61	49
B12560510860	8.6	10	103	61	49
B12560510870	8.7	10	103	61	49
B12560510880	8.8	10	103	61	49
B12560510890	8.9	10	103	61	49
B12560510900	9	10	103	61	49
B12560510910	9.1	10	103	61	49
B12560510920	9.2	10	103	61	49
B12560510930	9.3	10	103	61	49
B12560510940	9.4	10	103	61	49
B12560510950	9.5	10	103	61	49
B12560510955	9.55	10	103	61	49
B12560510960	9.6	10	103	61	49
B12560510970	9.7	10	103	61	49
B12560510980	9.8	10	103	61	49
B12560510990	9.9	10	103	61	49
B12560511000	10	10	103	61	49
B12560511010	10.1	12	118	71	56
B12560511020	10.2	12	118	71	56
B12560511030	10.3	12	118	71	56
B12560511040	10.4	12	118	71	56
B12560511050	10.5	12	118	71	56
B12560511060	10.6	12	118	71	56
B12560511070	10.7	12	118	71	56
B12560511080	10.8	12	118	71	56
B12560511090	10.9	12	118	71	56
B12560511100	11	12	118	71	56
B12560511110	11.1	12	118	71	56
B12560511120	11.2	12	118	71	56
B12560511130	11.3	12	118	71	56
B12560511140	11.4	12	118	71	56
B12560511150	11.5	12	118	71	56
B12560511155	11.55	12	118	71	56
B12560511160	11.6	12	118	71	56
B12560511170	11.7	12	118	71	56
B12560511180	11.8	12	118	71	56
B12560511190	11.9	12	118	71	56
B12560511200	12	12	118	71	56
B12560511210	12.1	14	124	77	60
B12560511220	12.2	14	124	77	60
B12560511230	12.3	14	124	77	60
B12560511240	12.4	14	124	77	60
B12560511250	12.5	14	124	77	60



HM SOLID DRILLS 5XD - INTERNAL COOLANT**HM SOLID 5XD MATKAP - İÇTEN SU VERMELİ**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	NL min
B12560511260	12.6	14	124	77	60
B12560511270	12.7	14	124	77	60
B12560511280	12.8	14	124	77	60
B12560511290	12.9	14	124	77	60
B12560511300	13	14	124	77	60
B12560511310	13.1	14	124	77	60
B12560511320	13.2	14	124	77	60
B12560511330	13.3	14	124	77	60
B12560511340	13.4	14	124	77	60
B12560511350	13.5	14	124	77	60
B12560511360	13.6	14	124	77	60
B12560511370	13.7	14	124	77	60
B12560511380	13.8	14	124	77	60
B12560511390	13.9	14	124	77	60
B12560511400	14	14	124	77	60
B12560511410	14.1	16	133	83	63
B12560511420	14.2	16	133	83	63
B12560511430	14.3	16	133	83	63
B12560511440	14.4	16	133	83	63
B12560511450	14.5	16	133	83	63
B12560511460	14.6	16	133	83	63
B12560511470	14.7	16	133	83	63
B12560511480	14.8	16	133	83	63
B12560511490	14.9	16	133	83	63
B12560511500	15	16	133	83	63
B12560511510	15.1	16	133	83	63
B12560511520	15.2	16	133	83	63
B12560511530	15.3	16	133	83	63
B12560511540	15.4	16	133	83	63
B12560511550	15.5	16	133	83	63
B12560511560	15.6	16	133	83	63
B12560511570	15.7	16	133	83	63
B12560511580	15.8	16	133	83	63
B12560511590	15.9	16	133	83	63
B12560511600	16	16	133	83	63
B12560511650	16.5	18	143	93	71
B12560511680	16.8	18	143	93	71
B12560511700	17	18	143	93	71
B12560511750	17.5	18	143	93	71
B12560511780	17.8	18	143	93	71
B12560511800	18	18	143	93	71
B12560511850	18.5	20	153	101	77
B12560511880	18.8	20	153	101	77
B12560511900	19	20	153	101	77
B12560511950	19.5	20	153	101	77
B12560511980	19.8	20	153	101	77
B12560512000	20	20	153	101	77



HM SOLID DRILLS 5XD - INTERNAL COOLANT - DOUBLE MARGIN**HM SOLID 5XD MATKAP - İÇTEN SU VERMELİ - ÇİFT FAZLI**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	NL min
B12560520300	3	6	66	28	23
B12560520310	3.1	6	66	28	23
B12560520320	3.2	6	66	28	23
B12560520330	3.3	6	66	28	23
B12560520340	3.4	6	66	28	23
B12560520350	3.5	6	66	28	23
B12560520360	3.6	6	66	28	23
B12560520365	3.65	6	66	28	23
B12560520370	3.7	6	66	28	23
B12560520380	3.8	6	74	36	29
B12560520390	3.9	6	74	36	29
B12560520400	4	6	74	36	29
B12560520410	4.1	6	74	36	29
B12560520420	4.2	6	74	36	29
B12560520430	4.3	6	74	36	29
B12560520440	4.4	6	74	36	29
B12560520450	4.5	6	74	36	29
B12560520460	4.6	6	74	36	29
B12560520470	4.7	6	74	36	29
B12560520480	4.8	6	82	44	35
B12560520490	4.9	6	82	44	35
B12560520500	5	6	82	44	35
B12560520510	5.1	6	82	44	35
B12560520520	5.2	6	82	44	35
B12560520530	5.3	6	82	44	35
B12560520540	5.4	6	82	44	35
B12560520550	5.5	6	82	44	35
B12560520555	5.55	6	82	44	35
B12560520560	5.6	6	82	44	35
B12560520565	5.65	6	82	44	35
B12560520570	5.7	6	82	44	35
B12560520580	5.8	6	82	44	35
B12560520590	5.9	6	82	44	35
B12560520600	6	6	82	44	35
B12560520610	6.1	8	91	53	43
B12560520620	6.2	8	91	53	43
B12560520630	6.3	8	91	53	43
B12560520640	6.4	8	91	53	43
B12560520650	6.5	8	91	53	43
B12560520660	6.6	8	91	53	43
B12560520670	6.7	8	91	53	43
B12560520680	6.8	8	91	53	43
B12560520690	6.9	8	91	53	43
B12560520700	7	8	91	53	43
B12560520710	7.1	8	91	53	43
B12560520720	7.2	8	91	53	43
B12560520730	7.3	8	91	53	43
B12560520740	7.4	8	91	53	43
B12560520750	7.5	8	91	53	43
B12560520755	7.55	8	91	53	43
B12560520760	7.6	8	91	53	43



HM SOLID DRILLS 5XD - INTERNAL COOLANT - DOUBLE MARGIN**HM SOLID 5XD MATKAP - İÇTEN SU VERMELİ - ÇİFT FAZLI**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	NL min
B12560520770	7.7	8	91	53	43
B12560520780	7.8	8	91	53	43
B12560520790	7.9	8	91	53	43
B12560520800	8	8	91	53	43
B12560520810	8.1	10	103	61	49
B12560520820	8.2	10	103	61	49
B12560520830	8.3	10	103	61	49
B12560520840	8.4	10	103	61	49
B12560520850	8.5	10	103	61	49
B12560520860	8.6	10	103	61	49
B12560520870	8.7	10	103	61	49
B12560520880	8.8	10	103	61	49
B12560520890	8.9	10	103	61	49
B12560520900	9	10	103	61	49
B12560520910	9.1	10	103	61	49
B12560520920	9.2	10	103	61	49
B12560520930	9.3	10	103	61	49
B12560520940	9.4	10	103	61	49
B12560520950	9.5	10	103	61	49
B12560520955	9.55	10	103	61	49
B12560520960	9.6	10	103	61	49
B12560520970	9.7	10	103	61	49
B12560520980	9.8	10	103	61	49
B12560520990	9.9	10	103	61	49
B12560521000	10	10	103	61	49
B12560521010	10.1	12	118	71	56
B12560521020	10.2	12	118	71	56
B12560521030	10.3	12	118	71	56
B12560521040	10.4	12	118	71	56
B12560521050	10.5	12	118	71	56
B12560521060	10.6	12	118	71	56
B12560521070	10.7	12	118	71	56
B12560521080	10.8	12	118	71	56
B12560521090	10.9	12	118	71	56
B12560521100	11	12	118	71	56
B12560521110	11.1	12	118	71	56
B12560521120	11.2	12	118	71	56
B12560521130	11.3	12	118	71	56
B12560521140	11.4	12	118	71	56
B12560521150	11.5	12	118	71	56
B12560521155	11.55	12	118	71	56
B12560521160	11.6	12	118	71	56
B12560521170	11.7	12	118	71	56
B12560521180	11.8	12	118	71	56
B12560521190	11.9	12	118	71	56
B12560521200	12	12	118	71	56
B12560521210	12.1	14	124	77	60
B12560521220	12.2	14	124	77	60
B12560521230	12.3	14	124	77	60
B12560521240	12.4	14	124	77	60
B12560521250	12.5	14	124	77	60



HM SOLID DRILLS 5XD - INTERNAL COOLANT - DOUBLE MARGIN**HM SOLID 5XD MATKAP - İÇTEN SU VERMELİ - ÇİFT FAZLI**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	NL min
B12560521260	12.6	14	124	77	60
B12560521270	12.7	14	124	77	60
B12560521280	12.8	14	124	77	60
B12560521290	12.9	14	124	77	60
B12560521300	13	14	124	77	60
B12560521310	13.1	14	124	77	60
B12560521320	13.2	14	124	77	60
B12560521330	13.3	14	124	77	60
B12560521340	13.4	14	124	77	60
B12560521350	13.5	14	124	77	60
B12560521360	13.6	14	124	77	60
B12560521370	13.7	14	124	77	60
B12560521380	13.8	14	124	77	60
B12560521390	13.9	14	124	77	60
B12560521400	14	14	124	77	60
B12560521410	14.1	16	133	83	63
B12560521420	14.2	16	133	83	63
B12560521430	14.3	16	133	83	63
B12560521440	14.4	16	133	83	63
B12560521450	14.5	16	133	83	63
B12560521460	14.6	16	133	83	63
B12560521470	14.7	16	133	83	63
B12560521480	14.8	16	133	83	63
B12560521490	14.9	16	133	83	63
B12560521500	15	16	133	83	63
B12560521510	15.1	16	133	83	63
B12560521520	15.2	16	133	83	63
B12560521530	15.3	16	133	83	63
B12560521540	15.4	16	133	83	63
B12560521550	15.5	16	133	83	63
B12560521560	15.6	16	133	83	63
B12560521570	15.7	16	133	83	63
B12560521580	15.8	16	133	83	63
B12560521590	15.9	16	133	83	63
B12560521600	16	16	133	83	63
B12560521650	16.5	18	143	93	71
B12560521680	16.8	18	143	93	71
B12560521700	17	18	143	93	71
B12560521750	17.5	18	143	93	71
B12560521780	17.8	18	143	93	71
B12560521800	18	18	143	93	71
B12560521850	18.5	20	153	101	77
B12560521880	18.8	20	153	101	77
B12560521900	19	20	153	101	77
B12560521950	19.5	20	153	101	77
B12560521980	19.8	20	153	101	77
B12560522000	20	20	153	101	77



HM SOLID DRILLS 8XD - INTERNAL COOLANT - DOUBLE MARGIN**HM SOLID 8XD MATKAP - İÇTEN SU VERMELİ - ÇİFT FAZLI**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	NL min
B12560820400	4	6	81	43	35
B12560820410	4.1	6	81	43	35
B12560820420	4.2	6	81	43	35
B12560820430	4.3	6	81	43	35
B12560820440	4.4	6	81	43	35
B12560820450	4.5	6	81	43	35
B12560820460	4.6	6	81	43	35
B12560820470	4.7	6	95	57	35
B12560820480	4.8	6	95	57	45
B12560820490	4.9	6	95	57	45
B12560820500	5	6	95	57	45
B12560820510	5.1	6	95	57	45
B12560820520	5.2	6	95	57	45
B12560820530	5.3	6	95	57	45
B12560820540	5.4	6	95	57	45
B12560820550	5.5	6	95	57	45
B12560820560	5.6	6	95	57	45
B12560820570	5.7	6	95	57	45
B12560820580	5.8	6	95	57	45
B12560820590	5.9	6	95	57	45
B12560820600	6	6	95	57	45
B12560820610	6.1	8	114	76	52
B12560820620	6.2	8	114	76	52
B12560820630	6.3	8	114	76	52
B12560820640	6.4	8	114	76	52
B12560820650	6.5	8	114	76	52
B12560820660	6.6	8	114	76	52
B12560820670	6.7	8	114	76	52
B12560820680	6.8	8	114	76	52
B12560820690	6.9	8	114	76	52
B12560820700	7	8	114	76	60
B12560820710	7.1	8	114	76	60
B12560820720	7.2	8	114	76	60
B12560820730	7.3	8	114	76	60
B12560820740	7.4	8	114	76	60
B12560820750	7.5	8	114	76	60
B12560820760	7.6	8	114	76	60
B12560820770	7.7	8	114	76	60
B12560820780	7.8	8	114	76	60
B12560820790	7.9	8	114	76	60
B12560820800	8	8	114	76	60
B12560820810	8.1	10	142	95	68
B12560820820	8.2	10	142	95	68
B12560820830	8.3	10	142	95	68
B12560820840	8.4	10	142	95	68
B12560820850	8.5	10	142	95	68
B12560820860	8.6	10	142	95	68
B12560820870	8.7	10	142	95	68
B12560820880	8.8	10	142	95	68
B12560820890	8.9	10	142	95	68
B12560820900	9	10	142	95	68
B12560820910	9.1	10	142	95	76
B12560820920	9.2	10	142	95	76
B12560820930	9.3	10	142	95	76
B12560820940	9.4	10	142	95	76
B12560820950	9.5	10	142	95	76



HM SOLID DRILLS 8XD - INTERNAL COOLANT - DOUBLE MARGIN**HM SOLID 8XD MATKAP - İÇTEN SU VERMELİ - ÇİFT FAZLI**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	NL min
B12560820960	9.6	10	142	95	76
B12560820970	9.7	10	142	95	76
B12560820980	9.8	10	142	95	76
B12560820990	9.9	10	142	95	76
B12560821000	10	10	142	95	76
B12560821010	10.1	12	162	114	90
B12560821020	10.2	12	162	114	90
B12560821030	10.3	12	162	114	90
B12560821040	10.4	12	162	114	90
B12560821050	10.5	12	162	114	90
B12560821060	10.6	12	162	114	90
B12560821070	10.7	12	162	114	90
B12560821080	10.8	12	162	114	90
B12560821090	10.9	12	162	114	90
B12560821100	11	12	162	114	90
B12560821110	11.1	12	162	114	90
B12560821120	11.2	12	162	114	90
B12560821130	11.3	12	162	114	90
B12560821140	11.4	12	162	114	90
B12560821150	11.5	12	162	114	90
B12560821160	11.6	12	162	114	90
B12560821170	11.7	12	162	114	90
B12560821180	11.8	12	162	114	90
B12560821190	11.9	12	162	114	90
B12560821200	12	12	162	114	90
B12560821210	12.1	14	178	133	106
B12560821230	12.3	14	178	133	106
B12560821250	12.5	14	178	133	106
B12560821270	12.7	14	178	133	106
B12560821290	12.9	14	178	133	106
B12560821300	13	14	178	133	106
B12560821310	13.1	14	178	133	106
B12560821350	13.5	14	178	133	106
B12560821370	13.7	14	178	133	106
B12560821390	13.9	14	178	133	106
B12560821400	14	14	178	133	106
B12560821410	14.1	16	203	152	122
B12560821430	14.3	16	203	152	122
B12560821450	14.5	16	203	152	122
B12560821470	14.7	16	203	152	122
B12560821490	14.9	16	203	152	122
B12560821500	15	16	203	152	122
B12560821510	15.1	16	203	152	122
B12560821530	15.3	16	203	152	122
B12560821550	15.5	16	203	152	122
B12560821570	15.7	16	203	152	122
B12560821590	15.9	16	203	152	122
B12560821600	16	16	203	152	122
B12560821650	16.5	18	223	171	144
B12560821700	17	18	223	171	144
B12560821750	17.5	18	223	171	144
B12560821800	18	18	223	171	144
B12560821850	18.5	20	244	190	160
B12560821900	19	20	244	190	160
B12560821950	19.5	20	244	190	160
B12560822000	20	20	244	190	160



HM SOLID DRILLS 12XD - INTERNAL COOLANT - DOUBLE MARGIN

HM SOLID 12XD MATKAP - İÇTEN SU VERMELİ - ÇİFT FAZLI



Product Code	d1 mm	d2 mm	L1 mm	L2 mm	NL min
B12561220500	5	6	116	78	70
B12561220550	5.5	6	116	78	70
B12561220580	5.8	6	116	78	70
B12561220600	6	6	116	78	70
B12561220650	6.5	8	146	108	94
B12561220680	6.8	8	146	108	94
B12561220700	7	8	146	108	94
B12561220750	7.5	8	146	108	94
B12561220780	7.8	8	146	108	94
B12561220800	8	8	146	108	94
B12561220850	8.5	10	162	120	110
B12561220880	8.8	10	162	120	110
B12561220900	9	10	162	120	110
B12561220950	9.5	10	162	120	110
B12561220980	9.8	10	162	120	110
B12561221000	10	10	162	120	110
B12561221020	10.2	12	204	156	142
B12561221050	10.5	12	204	156	142
B12561221080	10.8	12	204	156	142
B12561221100	11	12	204	156	142
B12561221150	11.5	12	204	156	142
B12561221180	11.8	12	204	156	142
B12561221200	12	12	204	156	142
B12561221250	12.5	14	230	182	166
B12561221280	12.8	14	230	182	166
B12561221300	13	14	230	182	166
B12561221350	13.5	14	230	182	166
B12561221400	14	14	230	182	166
B12561221450	14.5	16	260	208	192
B12561221500	15	16	260	208	192
B12561221550	15.5	16	260	208	192
B12561221600	16	16	260	208	192



HM SOLID DRILLS 15XD - INTERNAL COOLANT - DOUBLE MARGIN

HM SOLID 15XD MATKAP - İÇTEN SU VERMELİ - ÇİFT FAZLI

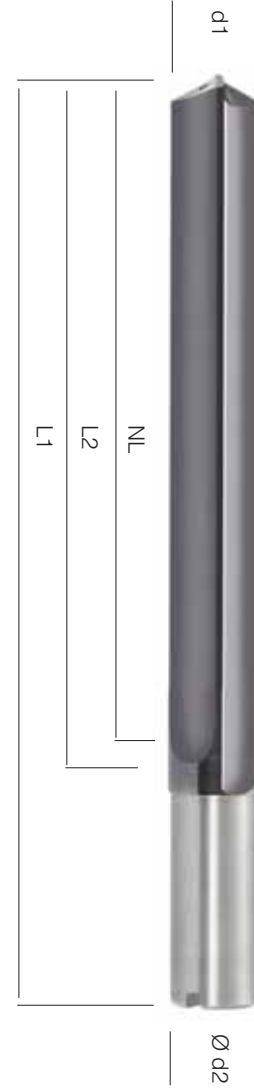


Product Code	d1 mm	d2 mm	L1 mm	L2 mm	NL min
B12561520500	5	6	125	84	75
B12561520510	5.1	6	130	92	77
B12561520520	5.2	6	130	92	78
B12561520530	5.3	6	130	92	80
B12561520540	5.4	6	130	92	81
B12561520550	5.5	6	130	92	83
B12561520560	5.6	6	140	100	84
B12561520570	5.7	6	140	100	86
B12561520580	5.8	6	140	100	87
B12561520590	5.9	6	140	100	90
B12561520600	6	6	140	100	90
B12561520610	6.1	8	145	108	92
B12561520620	6.2	8	145	108	93
B12561520630	6.3	8	145	108	96
B12561520640	6.4	8	145	108	96
B12561520650	6.5	8	145	108	97
B12561520660	6.6	8	170	130	99
B12561520670	6.7	8	170	130	101
B12561520680	6.8	8	170	130	102
B12561520690	6.9	8	170	130	104
B12561520700	7	8	170	130	105
B12561520750	7.5	8	170	130	115
B12561520780	7.8	8	170	130	117
B12561520800	8	8	170	130	120
B12561520850	8.5	10	208	163	128
B12561520880	8.8	10	208	163	132
B12561520900	9	10	208	163	135
B12561520950	9.5	10	208	163	143
B12561520980	9.8	10	208	163	147
B12561521000	10	10	208	163	150
B12561521020	10.2	12	245	195	153
B12561521050	10.5	12	245	195	158
B12561521080	10.8	12	245	195	162
B12561521100	11	12	245	195	165
B12561521120	11.2	12	245	195	168
B12561521150	11.5	12	245	195	173
B12561521180	11.8	12	245	195	177
B12561521200	12	12	245	195	180
B12561521250	12.5	14	280	230	188
B12561521300	13	14	280	230	195
B12561521380	13.8	14	280	230	207
B12561521400	14	14	280	230	210
B12561521480	14.8	16	310	260	222
B12561521500	15	16	310	260	225
B12561521580	15.8	16	310	260	237
B12561521600	16	16	310	260	240



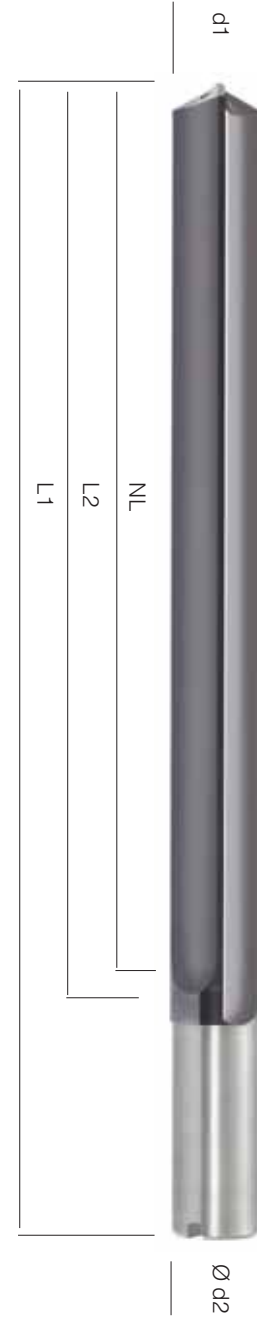
HM SOLID STRAIGHT FLUTE DRILLS 5XD - INTERNAL COOLANT**HM SOLID DÜZ KANALLI 5XD MATKAP - İÇTEN SU VERMELİ**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	NL min
B12560530600	6	6	82	35	44
B12560530680	6.8	8	91	43	53
B12560530700	7	8	91	43	53
B12560530750	7.5	8	91	43	53
B12560530780	7.8	8	91	43	53
B12560530800	8	8	91	43	53
B12560530840	8.4	10	103	49	61
B12560530880	8.8	10	103	49	61
B12560530900	9	10	103	49	61
B12560530950	9.5	10	103	49	61
B12560531000	10	10	103	49	61
B12560531020	10.2	12	118	56	71
B12560531050	10.5	12	118	56	71
B12560531100	11	12	118	56	71
B12560531200	12	12	118	56	71
B12560531250	12.5	14	124	60	77
B12560531280	12.8	14	124	60	77
B12560531300	13	14	124	60	77
B12560531400	14	14	124	60	77
B12560531450	14.5	16	133	63	83
B12560531500	15	16	133	63	83
B12560531550	15.5	16	133	63	83
B12560531600	16	16	133	63	83
B12560531700	17	18	143	71	93
B12560531750	17.5	18	143	71	93
B12560531800	18	18	143	71	93
B12560531850	18.5	20	153	77	101
B12560531900	19	20	153	77	101
B12560531950	19.5	20	153	77	101
B12560532000	20	20	153	77	101



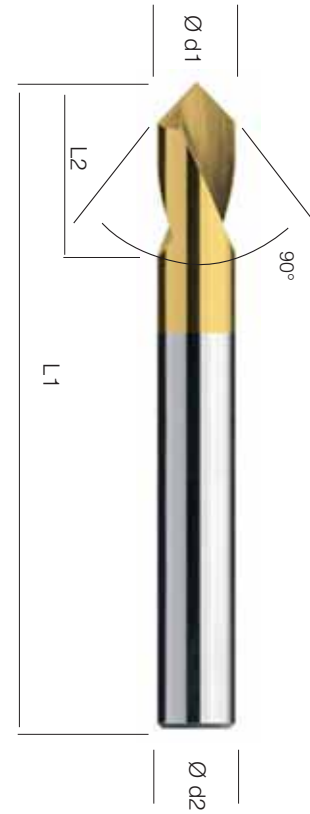
HM SOLID STRAIGHT FLUTE DRILLS 8XD - INTERNAL COOLANT**HM SOLID DÜZ KANALLI 8XD MATKAP - İÇTEN SU VERMELİ**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	NL min
B12560830600	6	6	95	48	57
B12560830680	6.8	8	114	64	76
B12560830700	7	8	114	64	76
B12560830750	7.5	8	114	64	76
B12560830780	7.8	8	114	64	76
B12560830800	8	8	114	64	76
B12560830840	8.4	10	142	80	95
B12560830880	8.8	10	142	80	95
B12560830900	9	10	142	80	95
B12560830950	9.5	10	142	80	95
B12560831000	10	10	142	80	95
B12560831020	10.2	12	162	96	114
B12560831050	10.5	12	162	96	114
B12560831100	11	12	162	96	114
B12560831200	12	12	162	96	114
B12560831250	12.5	14	178	110	131
B12560831280	12.8	14	178	110	131
B12560831300	13	14	178	110	131
B12560831400	14	14	178	110	131
B12560831450	14.5	16	203	128	152
B12560831500	15	16	203	128	152
B12560831550	15.5	16	203	128	152
B12560831600	16	16	203	128	152
B12560831700	17	18	222	144	171
B12560831750	17.5	18	222	144	171
B12560831800	18	18	222	144	171
B12560831850	18.5	20	243	160	190
B12560831900	19	20	243	160	190
B12560831950	19.5	20	243	160	190
B12560832000	20	20	243	160	190

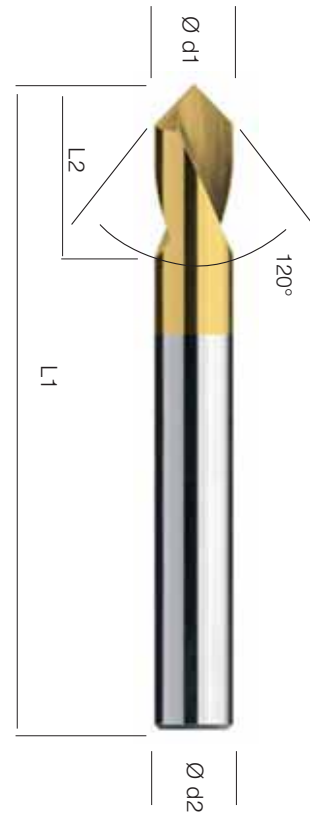


HM SOLID NC CENTERING DRILLS - 90°**HM SOLID NC MERZLEME MATKABI 90°**

Product Code	d1 mm	L1 mm	L2 mm
B10562100300	3	46	13
B10562100400	4	55	16
B10562100500	5	60	16
B10562100600	6	66	19
B10562100800	8	79	23
B10562101000	10	89	26
B10562101200	12	102	31
B10562101400	14	107	34
B10562101600	16	115	34
B10562102000	20	131	38

**HM SOLID NC CENTERING DRILLS - 120°****HM SOLID NC MERZLEME MATKABI 120°**

Product Code	d1 mm	L1 mm	L2 mm
B10562200300	3	46	13
B10562200400	4	55	16
B10562200500	5	60	16
B10562200600	6	66	19
B10562200800	8	79	23
B10562201000	10	89	26
B10562201200	12	102	31
B10562201400	14	107	34
B10562201600	16	115	34
B10562202000	20	131	38



HM SOLID REAMER - HELICAL FLUTE**HM SOLID RAYBA - HELİSEL**

Product Code	d1 mm	d2 mm	L mm	L1 mm	L2 mm	Z
B12565100300	3	3	61	15	30	6
B12565100400	4	4	75	19	32	6
B12565100500	5	5	86	23	34	6
B12565100600	6	6	93	26	36	6
B12565100800	8	8	117	33	42	6
B12565101000	10	10	133	38	46	6
B12565101200	12	12	150	44	46	6
B12565101400	14	14	160	47	50	6
B12565101600	16	16	165	52	50	6
B12565101800	18	18	165	55	52	6
B12565102000	20	20	165	60	58	6

**HM SOLID REAMER - STRAIGHT FLUTE****HM SOLID RAYBA - DÜZ KANALLI**

Product Code	d1 mm	d2 mm	L mm	L1 mm	L2 mm	Z
B12565000300	3	3	61	15	30	6
B12565000400	4	4	75	19	32	6
B12565000500	5	5	86	23	34	6
B12565000600	6	6	93	26	36	6
B12565000800	8	8	117	33	42	6
B12565001000	10	10	133	38	46	6
B12565001200	12	12	150	44	46	6
B12565001400	14	14	160	47	50	6
B12565001600	16	16	165	52	50	6
B12565001800	18	18	165	55	52	6
B12565002000	20	20	165	60	58	6

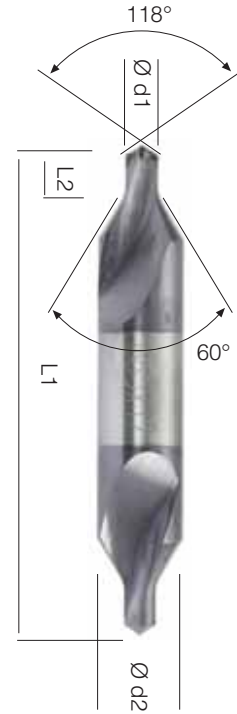


HM SOLID CENTER DRILLS

HM SOLID PUNTA MATKABI



Product Code	d1 mm	d2 mm	L1 mm	L2 mm
B12562000315	3.15	8	63	3.9
B12562000400	4	10	72	5.0
B12562000500	5	12	83	6.3
B12562000630	6.3	16	92	8.0
B12562000800	8	20	104	10.1



SARP



HM SOLID DRILLS 3XD - INTERNAL COOLANT - DOUBLE MARGIN**HM SOLID 3XD MATKAP - İÇTEN SU VERMELİ - ÇİFT FAZLI**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	NL min
B12560320300200	3	6	62	20	14
B12560320310200	3.1	6	62	20	14
B12560320320200	3.2	6	62	20	14
B12560320330200	3.3	6	62	20	14
B12560320340200	3.4	6	62	20	14
B12560320350200	3.5	6	62	20	14
B12560320360200	3.6	6	62	20	14
B12560320370200	3.7	6	62	20	14
B12560320380200	3.8	6	66	24	17
B12560320390200	3.9	6	66	24	17
B12560320400200	4	6	66	24	17
B12560320410200	4.1	6	66	24	17
B12560320420200	4.2	6	66	24	17
B12560320430200	4.3	6	66	24	17
B12560320440200	4.4	6	66	24	17
B12560320450200	4.5	6	66	24	17
B12560320460200	4.6	6	66	24	17
B12560320470200	4.7	6	66	24	17
B12560320480200	4.8	6	66	28	20
B12560320490200	4.9	6	66	28	20
B12560320500200	5	6	66	28	20
B12560320510200	5.1	6	66	28	20
B12560320520200	5.2	6	66	28	20
B12560320530200	5.3	6	66	28	20
B12560320540200	5.4	6	66	28	20
B12560320550200	5.5	6	66	28	20
B12560320560200	5.6	6	66	28	20
B12560320570200	5.7	6	66	28	20
B12560320580200	5.8	6	66	28	20
B12560320590200	5.9	6	66	28	20
B12560320600200	6	6	66	28	20
B12560320610200	6.1	8	79	34	24
B12560320620200	6.2	8	79	34	24
B12560320630200	6.3	8	79	34	24
B12560320640200	6.4	8	79	34	24
B12560320650200	6.5	8	79	34	24
B12560320660200	6.6	8	79	34	24
B12560320670200	6.7	8	79	34	24
B12560320680200	6.8	8	79	34	24
B12560320690200	6.9	8	79	34	24
B12560320700200	7	8	79	34	24
B12560320710200	7.1	8	79	41	29
B12560320720200	7.2	8	79	41	29
B12560320730200	7.3	8	79	41	29
B12560320740200	7.4	8	79	41	29
B12560320750200	7.5	8	79	41	29
B12560320760200	7.6	8	79	41	29
B12560320770200	7.7	8	79	41	29
B12560320780200	7.8	8	79	41	29
B12560320790200	7.9	8	79	41	29
B12560320800200	8	8	79	41	29



HM SOLID DRILLS 3XD - INTERNAL COOLANT - DOUBLE MARGIN**HM SOLID 3XD MATKAP - İÇTEN SU VERMELİ - ÇİFT FAZLI**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	NL min
B12560320810200	8.1	10	89	47	35
B12560320820200	8.2	10	89	47	35
B12560320830200	8.3	10	89	47	35
B12560320840200	8.4	10	89	47	35
B12560320850200	8.5	10	89	47	35
B12560320860200	8.6	10	89	47	35
B12560320870200	8.7	10	89	47	35
B12560320880200	8.8	10	89	47	35
B12560320890200	8.9	10	89	47	35
B12560320900200	9	10	89	47	35
B12560320910200	9.1	10	89	47	35
B12560320920200	9.2	10	89	47	35
B12560320930200	9.3	10	89	47	35
B12560320940200	9.4	10	89	47	35
B12560320950200	9.5	10	89	47	35
B12560320960200	9.6	10	89	47	35
B12560320970200	9.7	10	89	47	35
B12560320980200	9.8	10	89	47	35
B12560320990200	9.9	10	89	47	35
B12560321000200	10	10	89	47	35
B12560321010200	10.1	12	102	55	40
B12560321020200	10.2	12	102	55	40
B12560321030200	10.3	12	102	55	40
B12560321040200	10.4	12	102	55	40
B12560321050200	10.5	12	102	55	40
B12560321060200	10.6	12	102	55	40
B12560321070200	10.7	12	102	55	40
B12560321080200	10.8	12	102	55	40
B12560321090200	10.9	12	102	55	40
B12560321100200	11	12	102	55	40
B12560321110200	11.1	12	102	55	40
B12560321120200	11.2	12	102	55	40
B12560321130200	11.3	12	102	55	40
B12560321140200	11.4	12	102	55	40
B12560321150200	11.5	12	102	55	40
B12560321160200	11.6	12	102	55	40
B12560321170200	11.7	12	102	55	40
B12560321180200	11.8	12	102	55	40
B12560321190200	11.9	12	102	55	40
B12560321200200	12	12	102	55	40
B12560321220200	12.2	14	107	60	43
B12560321230200	12.3	14	107	60	43
B12560321250200	12.5	14	107	60	43
B12560321280200	12.8	14	107	60	43
B12560321300200	13	14	107	60	43
B12560321350200	13.5	14	107	60	43
B12560321380200	13.8	14	107	60	43
B12560321400200	14	14	107	60	43
B12560321450200	14.5	16	115	65	45
B12560321480200	14.8	16	115	65	45
B12560321500200	15	16	115	65	45



HM SOLID DRILLS 3XD - INTERNAL COOLANT - DOUBLE MARGIN**HM SOLID 3XD MATKAP - İÇTEN SU VERMELİ - ÇİFT FAZLI**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	NL min
B12560321550200	15.5	16	115	65	45
B12560321580200	15.8	16	115	65	45
B12560321600200	16	16	115	65	45
B12560321650200	16.5	18	123	73	51
B12560321680200	16.8	18	123	73	51
B12560321700200	17	18	123	73	51
B12560321750200	17.5	18	123	73	51
B12560321780200	17.8	18	123	73	51
B12560321800200	18	18	123	73	51
B12560321850200	18.5	20	131	79	55
B12560321880200	18.8	20	131	79	55
B12560321900200	19	20	131	79	55
B12560321950200	19.5	20	131	79	55
B12560321980200	19.8	20	131	79	55
B12560322000200	20	20	131	79	55



HM SOLID DRILLS 5XD - INTERNAL COOLANT - DOUBLE MARGIN**HM SOLID 5XD MATKAP - İÇTEN SU VERMELİ - ÇİFT FAZLI**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	NL min
B12560520300200	3	6	66	28	23
B12560520310200	3.1	6	66	28	23
B12560520320200	3.2	6	66	28	23
B12560520330200	3.3	6	66	28	23
B12560520340200	3.4	6	66	28	23
B12560520350200	3.5	6	66	28	23
B12560520360200	3.6	6	66	28	23
B12560520370200	3.7	6	66	28	23
B12560520380200	3.8	6	74	36	29
B12560520390200	3.9	6	74	36	29
B12560520400200	4	6	74	36	29
B12560520410200	4.1	6	74	36	29
B12560520420200	4.2	6	74	36	29
B12560520430200	4.3	6	74	36	29
B12560520440200	4.4	6	74	36	29
B12560520450200	4.5	6	74	36	29
B12560520460200	4.6	6	74	36	29
B12560520470200	4.7	6	74	36	29
B12560520480200	4.8	6	82	44	35
B12560520490200	4.9	6	82	44	35
B12560520500200	5	6	82	44	35
B12560520510200	5.1	6	82	44	35
B12560520520200	5.2	6	82	44	35
B12560520530200	5.3	6	82	44	35
B12560520540200	5.4	6	82	44	35
B12560520550200	5.5	6	82	44	35
B12560520560200	5.6	6	82	44	35
B12560520570200	5.7	6	82	44	35
B12560520580200	5.8	6	82	44	35
B12560520590200	5.9	6	82	44	35
B12560520600200	6	6	82	44	35
B12560520610200	6.1	8	91	53	43
B12560520620200	6.2	8	91	53	43
B12560520630200	6.3	8	91	53	43
B12560520640200	6.4	8	91	53	43
B12560520650200	6.5	8	91	53	43
B12560520660200	6.6	8	91	53	43
B12560520670200	6.7	8	91	53	43
B12560520680200	6.8	8	91	53	43
B12560520690200	6.9	8	91	53	43
B12560520700200	7	8	91	53	43
B12560520710200	7.1	8	91	53	43
B12560520720200	7.2	8	91	53	43
B12560520730200	7.3	8	91	53	43
B12560520740200	7.4	8	91	53	43
B12560520750200	7.5	8	91	53	43
B12560520760200	7.6	8	91	53	43
B12560520770200	7.7	8	91	53	43
B12560520780200	7.8	8	91	53	43
B12560520790200	7.9	8	91	53	43
B12560520800200	8	8	91	53	43



HM SOLID DRILLS 5XD - INTERNAL COOLANT - DOUBLE MARGIN

HM SOLID 5XD MATKAP - İÇTEN SU VERMELİ - ÇİFT FAZLI



Product Code	d1 mm	d2 mm	L1 mm	L2 mm	NL min
B12560520810200	8.1	10	103	61	49
B12560520820200	8.2	10	103	61	49
B12560520830200	8.3	10	103	61	49
B12560520840200	8.4	10	103	61	49
B12560520850200	8.5	10	103	61	49
B12560520860200	8.6	10	103	61	49
B12560520870200	8.7	10	103	61	49
B12560520880200	8.8	10	103	61	49
B12560520890200	8.9	10	103	61	49
B12560520900200	9	10	103	61	49
B12560520910200	9.1	10	103	61	49
B12560520920200	9.2	10	103	61	49
B12560520930200	9.3	10	103	61	49
B12560520940200	9.4	10	103	61	49
B12560520950200	9.5	10	103	61	49
B12560520960200	9.6	10	103	61	49
B12560520970200	9.7	10	103	61	49
B12560520980200	9.8	10	103	61	49
B12560520990200	9.9	10	103	61	49
B12560521000200	10	10	103	61	49
B12560521010200	10.1	12	118	71	56
B12560521020200	10.2	12	118	71	56
B12560521030200	10.3	12	118	71	56
B12560521040200	10.4	12	118	71	56
B12560521050200	10.5	12	118	71	56
B12560521060200	10.6	12	118	71	56
B12560521070200	10.7	12	118	71	56
B12560521080200	10.8	12	118	71	56
B12560521090200	10.9	12	118	71	56
B12560521100200	11	12	118	71	56
B12560521110200	11.1	12	118	71	56
B12560521120200	11.2	12	118	71	56
B12560521130200	11.3	12	118	71	56
B12560521140200	11.4	12	118	71	56
B12560521150200	11.5	12	118	71	56
B12560521160200	11.6	12	118	71	56
B12560521170200	11.7	12	118	71	56
B12560521180200	11.8	12	118	71	56
B12560521190200	11.9	12	118	71	56
B12560521200200	12	12	118	71	56
B12560521220200	12.2	14	124	77	60
B12560521230200	12.3	14	124	77	60
B12560521250200	12.5	14	124	77	60
B12560521280200	12.8	14	124	77	60
B12560521300200	13	14	124	77	60
B12560521350200	13.5	14	124	77	60
B12560521380200	13.8	14	124	77	60
B12560521400200	14	14	124	77	60
B12560521450200	14.5	16	133	83	63
B12560521480200	14.8	16	133	83	63
B12560521500200	15	16	133	83	63



HM SOLID DRILLS 5XD - INTERNAL COOLANT - DOUBLE MARGIN**HM SOLID 5XD MATKAP - İÇTEN SU VERMELİ - ÇİFT FAZLI**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	NL min
B12560521550200	15.5	16	133	83	63
B12560521580200	15.8	16	133	83	63
B12560521600200	16	16	133	83	63
B12560521650200	16.5	18	143	93	71
B12560521680200	16.8	18	143	93	71
B12560521700200	17	18	143	93	71
B12560521750200	17.5	18	143	93	71
B12560521780200	17.8	18	143	93	71
B12560521800200	18	18	143	93	71
B12560521850200	18.5	20	153	101	71
B12560521900200	19	20	153	101	71
B12560521950200	19.5	20	153	101	71
B12560521980200	19.8	20	153	101	71
B12560522000200	20	20	153	101	71

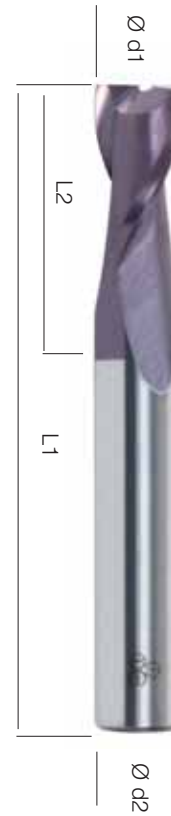




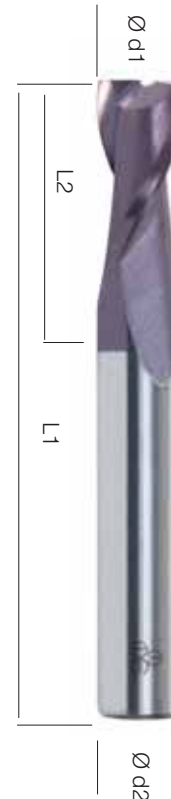
HM END MILLS

HM SOLID END MILLS 2 FLUTES**HM SOLID FREZE 2 KANALLI**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	Z
B12553203000	3	3	50	8	2
B12553204000	4	4	50	10	2
B12553205000	5	5	50	13	2
B12553206000	6	6	57	14	2
B12553208000	8	8	63	19	2
B12553210000	10	10	72	22	2
B12553212000	12	12	83	26	2
B12553214000	14	14	83	26	2
B12553216000	16	16	92	32	2
B12553218000	18	18	92	32	2
B12553220000	20	20	104	38	2

**HM SOLID END MILLS 2 FLUTES - WELDON SHANK****HM SOLID FREZE 2 KANALLI - WELDONLU**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	Z
B12553203000025	3	3	50	8	2
B12553204000025	4	4	50	10	2
B12553205000025	5	5	50	13	2
B12553206000025	6	6	57	14	2
B12553208000025	8	8	63	19	2
B12553210000025	10	10	72	22	2
B12553212000025	12	12	83	26	2
B12553214000025	14	14	83	26	2
B12553216000025	16	16	92	32	2
B12553218000025	18	18	92	32	2
B12553220000025	20	20	104	38	2



HM SOLID EXTRA LONG END MILLS 2 FLUTES**HM SOLID EKSTRA UZUN FREZE 2 KANALLI**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	Z
B12553203000022	3	3	83	20	2
B12553204000022	4	4	83	22	2
B12553205000022	5	5	92	25	2
B12553206000022	6	6	92	25	2
B12553208000022	8	8	105	38	2
B12553210000022	10	10	105	44	2
B12553212000022	12	12	105	52	2
B12553214000022	14	14	105	52	2
B12553216000022	16	16	150	64	2
B12553218000022	18	18	150	64	2
B12553220000022	20	20	150	75	2

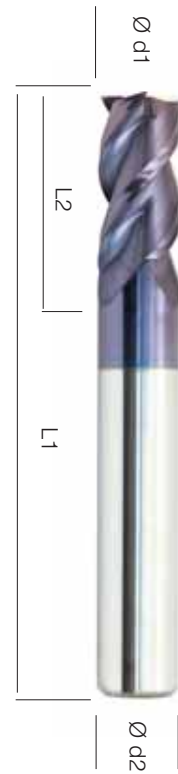
**HM SOLID EXTRA LONG END MILLS 2 FLUTES - WELDON SHANK****HM SOLID EKSTRA UZUN FREZE 2 KANALLI - WELDONLU**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	Z
B12553203000024	3	3	83	20	2
B12553204000024	4	4	83	22	2
B12553205000024	5	5	92	25	2
B12553206000024	6	6	92	25	2
B12553208000024	8	8	105	38	2
B12553210000024	10	10	105	44	2
B12553212000024	12	12	105	52	2
B12553214000024	14	14	105	52	2
B12553216000024	16	16	150	64	2
B12553218000024	18	18	150	64	2
B12553220000024	20	20	150	75	2

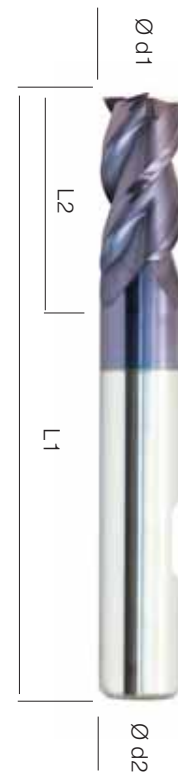


HM SOLID END MILLS 3 FLUTES**HM SOLID FREZE 3 KANALLI**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	Z
B12553103000	3	3	50	8	3
B12553104000	4	4	50	10	3
B12553105000	5	5	50	13	3
B12553106000	6	6	57	14	3
B12553108000	8	8	63	19	3
B12553110000	10	10	72	22	3
B12553112000	12	12	83	26	3
B12553114000	14	14	83	26	3
B12553116000	16	16	92	32	3
B12553118000	18	18	92	32	3
B12553120000	20	20	104	38	3

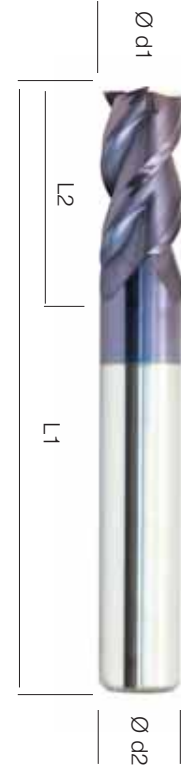
**HM SOLID END MILLS 3 FLUTES - WELDON SHANK****HM SOLID FREZE 3 KANALLI - WELDONLU**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	Z
B12553103000025	3	3	50	8	3
B12553104000025	4	4	50	10	3
B12553105000025	5	5	50	13	3
B12553106000025	6	6	57	14	3
B12553108000025	8	8	63	19	3
B12553110000025	10	10	72	22	3
B12553112000025	12	12	83	26	3
B12553114000025	14	14	83	26	3
B12553116000025	16	16	92	32	3
B12553118000025	18	18	92	32	3
B12553120000025	20	20	104	38	3

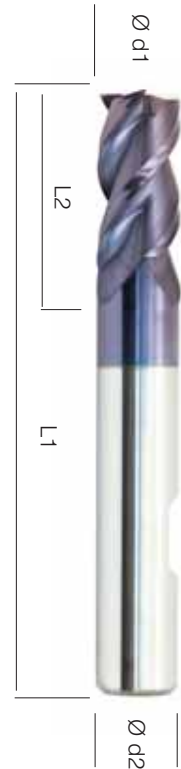


HM SOLID EXTRA LONG END MILLS 3 FLUTES**HM SOLID EKSTRA UZUN FREZE 3 KANALLI**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	Z
B12553103000022	3	3	83	20	3
B12553104000022	4	4	83	22	3
B12553105000022	5	5	92	25	3
B12553106000022	6	6	92	25	3
B12553108000022	8	8	105	38	3
B12553110000022	10	10	105	44	3
B12553112000022	12	12	105	52	3
B12553114000022	14	14	105	52	3
B12553116000022	16	16	150	64	3
B12553118000022	18	18	150	64	3
B12553120000022	20	20	150	75	3

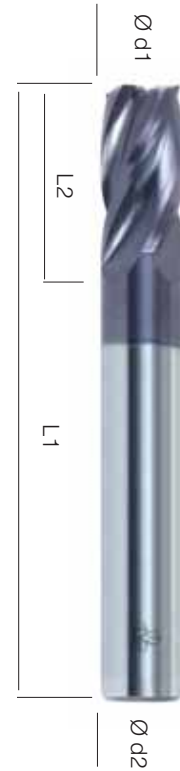
**HM SOLID EXTRA LONG END MILLS 3 FLUTES - WELDON SHANK****HM SOLID EKSTRA UZUN FREZE 3 KANALLI - WELDONLU**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	Z
B12553103000024	3	3	83	20	3
B12553104000024	4	4	83	22	3
B12553105000024	5	5	92	25	3
B12553106000024	6	6	92	25	3
B12553108000024	8	8	105	38	3
B12553110000024	10	10	105	44	3
B12553112000024	12	12	105	52	3
B12553114000024	14	14	105	52	3
B12553116000024	16	16	150	64	3
B12553118000024	18	18	150	64	3
B12553120000024	20	20	150	75	3

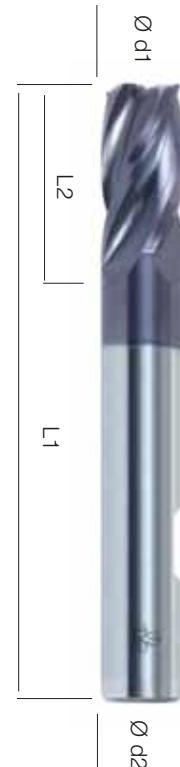


HM SOLID END MILLS 4 FLUTES**HM SOLID FREZE 4 KANALLI**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	Z
B12553003000	3	3	50	8	4
B12553004000	4	4	50	11	4
B12553005000	5	5	50	13	4
B12553006000	6	6	57	14	4
B12553008000	8	8	63	19	4
B12553010000	10	10	72	22	4
B12553012000	12	12	83	26	4
B12553014000	14	14	83	26	4
B12553016000	16	16	92	32	4
B12553018000	18	18	92	32	4
B12553020000	20	20	104	38	4

**HM SOLID END MILLS 4 FLUTES - WELDON SHANK****HM SOLID FREZE 4 KANALLI - WELDONLU**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	Z
B12553003000025	3	3	50	8	4
B12553004000025	4	4	50	11	4
B12553005000025	5	5	50	13	4
B12553006000025	6	6	57	14	4
B12553008000025	8	8	63	19	4
B12553010000025	10	10	72	22	4
B12553012000025	12	12	83	26	4
B12553014000025	14	14	83	26	4
B12553016000025	16	16	92	32	4
B12553018000025	18	18	92	32	4
B12553020000025	20	20	104	38	4



HM SOLID LONG END MILLS 4 FLUTES**HM SOLID UZUN FREZE 4 KANALLI**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	Z
B12553003000021	3	3	50	15	4
B12553004000021	4	4	50	17	4
B12553005000021	5	5	50	20	4
B12553006000021	6	6	57	20	4
B12553008000021	8	8	63	30	4
B12553010000021	10	10	72	32	4
B12553012000021	12	12	83	40	4
B12553014000021	14	14	83	40	4
B12553016000021	16	16	92	50	4
B12553018000021	18	18	92	50	4
B12553020000021	20	20	104	60	4

**HM SOLID LONG END MILLS 4 FLUTES - WELDON SHANK****HM SOLID UZUN FREZE 4 KANALLI - WELDONLU**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	Z
B12553003000023	3	3	50	15	4
B12553004000023	4	4	50	17	4
B12553005000023	5	5	50	20	4
B12553006000023	6	6	57	20	4
B12553008000023	8	8	63	30	4
B12553010000023	10	10	72	32	4
B12553012000023	12	12	83	40	4
B12553014000023	14	14	83	40	4
B12553016000023	16	16	92	50	4
B12553018000023	18	18	92	50	4
B12553020000023	20	20	104	60	4



HM SOLID EXTRA LONG END MILLS 4 FLUTES**HM SOLID EKSTRA UZUN FREZE 4 KANALLI**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	Z
B12553003000022	3	3	83	20	4
B12553004000022	4	4	83	22	4
B12553005000022	5	5	92	25	4
B12553006000022	6	6	92	25	4
B12553008000022	8	8	105	38	4
B12553010000022	10	10	105	44	4
B12553012000022	12	12	105	52	4
B12553014000022	14	14	105	52	4
B12553016000022	16	16	150	64	4
B12553018000022	18	18	150	64	4
B12553020000022	20	20	150	75	4



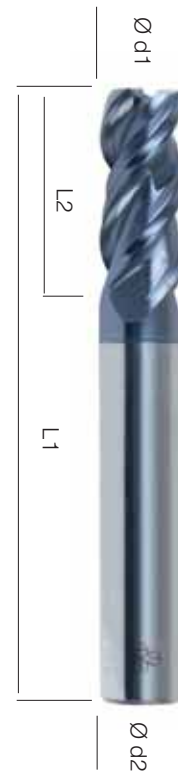
HM SOLID EXTRA LONG END MILLS 4 FLUTES - WELDON SHANK**HM SOLID EKSTRA UZUN FREZE 4 KANALLI - WELDONLU**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	Z
B12553003000024	3	3	83	20	4
B12553004000024	4	4	83	22	4
B12553005000024	5	5	92	25	4
B12553006000024	6	6	92	25	4
B12553008000024	8	8	105	38	4
B12553010000024	10	10	105	44	4
B12553012000024	12	12	105	52	4
B12553014000024	14	14	105	52	4
B12553016000024	16	16	150	64	4
B12553018000024	18	18	150	64	4
B12553020000024	20	20	150	75	4

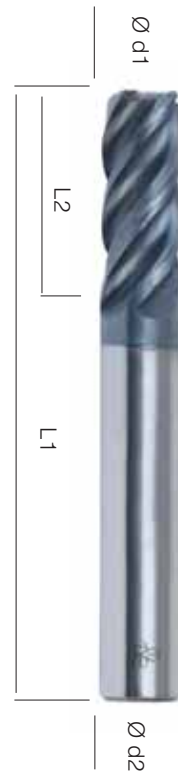


HM SOLID END MILLS 3 FLUTES - INOX - CHAMFER**HM SOLID FREZE 3 KANALLI - INOX - PAHLI**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	Chamfer	Z
B16553703000	3	6	57	8	0.1	3
B16553704000	4	6	57	11	0.1	3
B16553705000	5	6	57	13	0.1	3
B16553706000	6	6	57	13	0.1	3
B16553708000	8	8	63	19	0.15	3
B16553710000	10	10	72	22	0.2	3
B16553712000	12	12	83	30	0.2	3
B16553714000	14	14	83	26	0.2	3
B16553716000	16	16	92	45	0.2	3
B16553718000	18	18	92	32	0.2	3
B16553720000	20	20	104	38	0.2	3

**HM SOLID END MILLS 4 FLUTES - INOX - CHAMFER****HM SOLID FREZE 4 KANALLI - INOX - PAHLI**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	Chamfer	Z
B16553804000	4	6	57	11	0.1	4
B16553805000	5	6	57	13	0.1	4
B16553806000	6	6	57	13	0.1	4
B16553808000	8	8	63	19	0.15	4
B16553810000	10	10	72	22	0.2	4
B16553812000	12	12	83	30	0.2	4
B16553814000	14	14	83	26	0.2	4
B16553816000	16	16	92	45	0.2	4
B16553818000	18	18	92	32	0.2	4
B16553820000	20	20	104	38	0.2	4



HM SOLID END MILLS 4 FLUTES 35/38 - INOX - CHAMFER**HM SOLID 35°/38° FREZE 4 KANALLI - INOX - PAHLI**

Product Code	d1 mm	d2 mm	d3 mm	L1 mm	L2 mm	L3 mm	Chamfer	Z
B16557103000	3	6	2.8	57	8	18	0.1	4
B16557104000	4	6	3.6	57	11	21	0.1	4
B16557105000	5	6	4.6	57	13	21	0.1	4
B16557106000	6	6	5.5	57	13	21	0.1	4
B16557108000	8	8	7.5	69	19	27	0.15	4
B16557110000	10	10	9.5	72	22	32	0.2	4
B16557112000	12	12	11.5	83	30	38	0.2	4
B16557114000	14	14	13.6	83	26	42	0.2	4
B16557116000	16	16	15.5	92	45	44	0.2	4
B16557118000	18	18	17.5	92	32	50	0.2	4
B16557120000	20	20	19.5	104	38	54	0.2	4

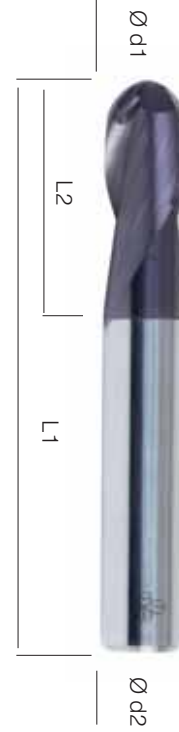


HM SOLID BALL NOSE SHORT END MILLS 2 FLUTES

HM SOLID KÜRE KISA FREZE 2 KANALLI



Product Code	d1 mm	d2 mm	L1 mm	L2 mm	r	Z
B12554003000020	3	3	57	7	1.5	2
B12554004000020	4	4	57	8	2	2
B12554005000020	5	5	57	10	2.5	2
B12554006000020	6	6	57	10	3	2
B12554008000020	8	8	63	16	4	2
B12554010000020	10	10	72	19	5	2
B12554012000020	12	12	83	22	6	2
B12554014000020	14	14	83	22	7	2
B12554016000020	16	16	92	26	8	2
B12554018000020	18	18	92	26	9	2
B12554020000020	20	20	104	32	10	2



HM SOLID BALL NOSE LONG END MILLS 2 FLUTES

HM SOLID KÜRE UZUN FREZE 2 KANALLI



Product Code	d1 mm	d2 mm	L1 mm	L2 mm	r	Z
B12554003000021	3	3	65	12	1.5	2
B12554004000021	4	4	65	14	2	2
B12554005000021	5	5	75	16	2.5	2
B12554006000021	6	6	75	20	3	2
B12554008000021	8	8	83	32	4	2
B12554010000021	10	10	100	40	5	2
B12554012000021	12	12	100	40	6	2
B12554014000021	14	14	110	40	7	2
B12554016000021	16	16	110	45	8	2
B12554018000021	18	18	110	45	9	2
B12554020000021	20	20	110	50	10	2



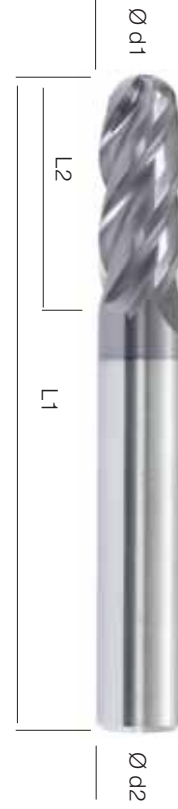
HM SOLID BALL NOSE EXTRA LONG END MILLS 2 FLUTES**HM SOLID KÜRE EKSTRA UZUN FREZE 2 KANALLI**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	r	Z
B12554003000022	3	3	83	20	1.5	2
B12554004000022	4	4	83	25	2	2
B12554005000022	5	5	92	25	2.5	2
B12554006000022	6	6	100	40	3	2
B12554008000022	8	8	110	40	4	2
B12554010000022	10	10	150	50	5	2
B12554012000022	12	12	150	60	6	2
B12554014000022	14	14	150	70	7	2
B12554016000022	16	16	150	70	8	2
B12554018000022	18	18	150	70	9	2
B12554020000022	20	20	150	70	10	2



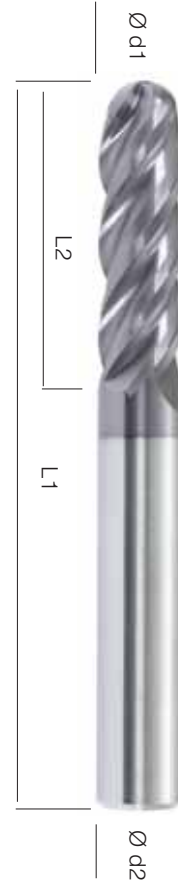
HM SOLID BALL NOSE SHORT END MILLS 4 FLUTES**HM SOLID KÜRE KISA FREZE 4 KANALLI**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	r	Z
B12554103000020	3	3	57	7	1.5	4
B12554104000020	4	4	57	8	2	4
B12554105000020	5	5	57	10	2.5	4
B12554106000020	6	6	57	10	3	4
B12554108000020	8	8	63	16	4	4
B12554110000020	10	10	72	19	5	4
B12554112000020	12	12	83	22	6	4
B12554114000020	14	14	83	22	7	4
B12554116000020	16	16	92	26	8	4
B12554118000020	18	18	92	26	9	4
B12554120000020	20	20	104	32	10	4



HM SOLID BALL NOSE LONG END MILLS 4 FLUTES**HM SOLID KÜRE UZUN FREZE 4 KANALLI**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	r	Z
B12554103000021	3	3	65	12	1.5	4
B12554104000021	4	4	65	14	2	4
B12554105000021	5	5	75	16	2.5	4
B12554106000021	6	6	75	20	3	4
B12554108000021	8	8	83	32	4	4
B12554110000021	10	10	100	40	5	4
B12554112000021	12	12	100	40	6	4
B12554114000021	14	14	110	40	7	4
B12554116000021	16	16	110	45	8	4
B12554118000021	18	18	110	45	9	4
B12554120000021	20	20	110	50	10	4



HM SOLID BALL NOSE EXTRA LONG END MILLS 4 FLUTES**HM SOLID KÜRE EKSTRA UZUN FREZE 4 KANALLI**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	r	Z
B12554103000022	3	3	83	20	1.5	4
B12554104000022	4	4	83	25	2	4
B12554105000022	5	5	92	25	2.5	4
B12554106000022	6	6	100	40	3	4
B12554108000022	8	8	110	40	4	4
B12554110000022	10	10	150	50	5	4
B12554112000022	12	12	150	60	6	4
B12554114000022	14	14	150	70	7	4
B12554116000022	16	16	150	70	8	4
B12554118000022	18	18	150	70	9	4
B12554120000022	20	20	150	70	10	4

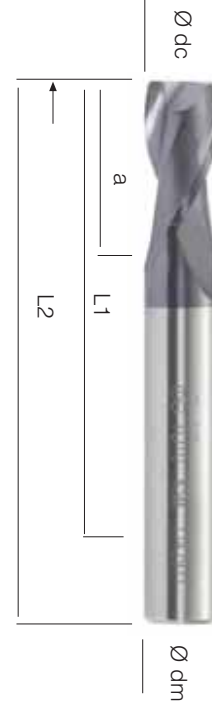


HM SOLID WEDGE CHANNEL END MILL Z2

HM SOLID KAMA KANAL FREZE 2 KANALLI

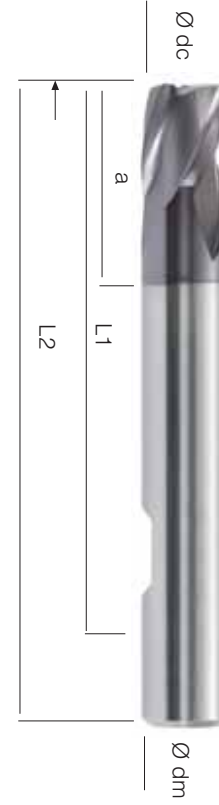


Product Code	dc mm	dm mm	L1 mm	L2 mm	Z	Ch1 mm
B12557602800	2.80	6	32	50	2	0.10
B12557603000	3.00	6	14	50	2	0.10
B12557603500	3.50	6	32	50	2	0.10
B12557603800	3.80	6	36	54	2	0.10
B12557604000	4.00	6	36	54	2	0.10
B12557604800	4.80	6	36	54	2	0.15
B12557605000	5.00	6	36	54	2	0.15
B12557605750	5.75	6	36	54	2	0.15
B12557606000	6.00	6	36	54	2	0.15
B12557606750	6.75	8	40	58	2	0.15
B12557607000	7.00	8	40	58	2	0.15
B12557607750	7.75	8	40	58	2	0.15
B12557608000	8.00	8	40	58	2	0.15
B12557609000	9.00	10	46	66	2	0.25
B12557609700	9.70	10	46	66	2	0.15
B12557610000	10.00	10	46	66	2	0.25
B12557611700	11.70	12	50.5	73	2	0.25
B12557612000	12.00	12	50.5	73	2	0.25
B12557613700	13.70	14	52.5	75	2	0.25
B12557614000	14.00	14	52.5	75	2	0.25
B12557615700	15.70	16	58	82	2	0.25
B12557616000	16.00	16	58	82	2	0.25
B12557617700	17.70	18	60	84	2	0.25
B12557618000	18.00	18	60	84	2	0.25
B12557619700	19.70	20	67	92	2	0.25
B12557620000	20.00	20	67	92	2	0.35



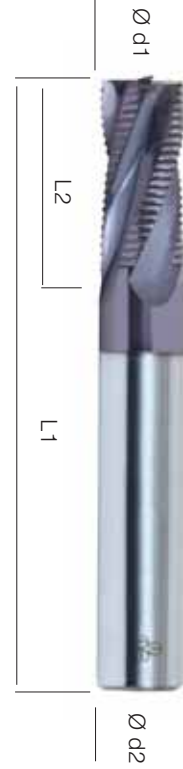
HM SOLID WEDGE CHANNEL END MILL Z3**HM SOLID KAMA KANAL FREZE 3 KANALLI**

Product Code	dc mm	dm mm	L1 mm	L2 mm	Z	Ch1 mm
B12557702800	2.80	6	32	50	3	0.10
B12557703000	3.00	6	32	50	3	0.10
B12557703500	3.50	6	32	50	3	0.10
B12557703800	3.80	6	36	53	3	0.10
B12557704000	4.00	6	36	54	3	0.10
B12557704800	4.80	6	36	54	3	0.15
B12557705000	5.00	6	36	54	3	0.15
B12557705750	5.75	6	36	54	3	0.15
B12557706000	6.00	6	36	54	3	0.15
B12557706750	6.75	8	40	58	3	0.15
B12557707000	7.00	8	40	58	3	0.15
B12557707750	7.75	8	40	58	3	0.15
B12557708000	8.00	8	40	58	3	0.15
B12557709000	9.00	10	46	66	3	0.25
B12557709700	9.70	10	46	66	3	0.25
B12557710000	10.00	10	46	66	3	0.25
B12557711700	11.70	12	50.5	73	3	0.25
B12557712000	12.00	12	50.5	73	3	0.25
B12557713700	13.70	14	52.5	75	3	0.25
B12557714000	14.00	14	52.5	75	3	0.25
B12557715700	15.70	16	58	82	3	0.25
B12557716000	16.00	16	58	82	3	0.25
B12557717700	17.70	18	60	84	3	0.25
B12557718000	18.00	18	60	84	3	0.25
B12557719700	19.70	20	67	92	3	0.25
B12557720000	20.00	20	67	92	3	0.35



HM SOLID ROUGHING END MILLS 4 FLUTES**HM SOLID KABA TALAŞ FREZE 4 KANALLI**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	Z
B12557203000	3	6	57	8	4
B12557204000	4	6	57	11	4
B12557205000	5	6	57	13	4
B12557206000	6	6	57	13	4
B12557208000	8	8	69	19	4
B12557210000	10	10	72	22	4
B12557212000	12	12	83	26	4
B12557214000	14	14	83	26	4
B12557216000	16	16	92	32	4
B12557218000	18	18	92	32	4
B12557220000	20	20	104	38	4
B12557225000	25	25	104	38	4

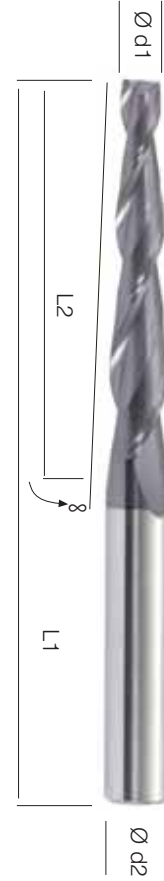


HM SOLID TAPERED END MILL CORNER SHARP

HM SOLID KONİK FREZE - KESKİN KÖŞE

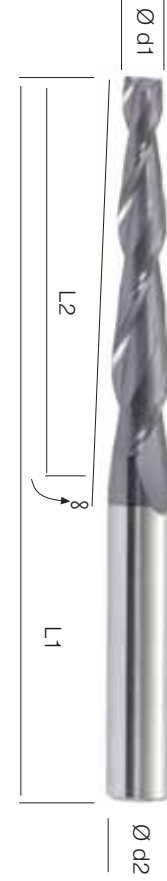


Product Code	d1 mm	d2 mm	L1 mm	L2 mm	∞	Z
B12556002000	2	3	65	20	30'	2
B12556003000	3	4	65	25	30'	2
B12556004000	4	5	65	30	30'	3
B12556005000	5	6	68	30	30'	3
B12556006000	6	8	88	40	30'	3
B12556008000	8	10	100	45	30'	3
B12556010000	10	12	100	45	30'	4
B12556012000	12	14	100	45	30'	4
B12556102000	2	3	65	20	1°	2
B12556103000	3	4	65	28	1°	2
B12556104000	4	5	65	28	1°	3
B12556105000	5	6	68	28	1°	3
B12556106000	6	8	88	40	1°	3
B12556108000	8	10	100	45	1°	3
B12556110000	10	12	100	45	1°	4
B12556112000	12	14	100	45	1°	4
B12556202000	2	3	65	19	1°.30'	2
B12556203000	3	4	65	19	1°.30'	2
B12556204000	4	5	68	19	1°.30'	3
B12556205000	5	6	68	19	1°.30'	3
B12556206000	6	8	88	38	1°.30'	3
B12556208000	8	10	100	38	1°.30'	3
B12556210000	10	12	100	38	1°.30'	4
B12556212000	12	14	100	38	1°.30'	4



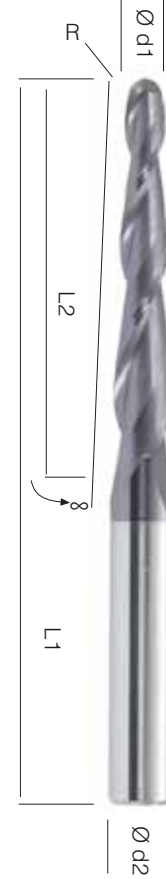
HM SOLID TAPERED END MILL CORNER SHARP**HM SOLID KONİK FREZE - KESKİN KÖŞE**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	∞	Z
B12556302000	2	4	65	20	2°	2
B12556303000	3	5	65	28	2°	2
B12556304000	4	6	68	28	2°	3
B12556305000	5	8	88	42	2°	3
B12556306000	6	10	100	45	2°	3
B12556308000	8	12	100	45	2°	3
B12556310000	10	14	100	45	2°	4
B12556312000	12	16	100	45	2°	4
B12556402000	2	4	65	19	3°	2
B12556403000	3	6	68	28	3°	2
B12556404000	4	8	88	38	3°	3
B12556405000	5	10	100	48	3°	3
B12556406000	6	12	100	48	3°	3
B12556408000	8	14	100	48	3°	3
B12556410000	10	16	100	48	3°	4
B12556412000	12	18	100	48	3°	4
B12556502000	2	6	68	20	5°	2
B12556503000	3	8	88	28	5°	2
B12556504000	4	10	100	34	5°	3
B12556505000	5	12	100	40	5°	3
B12556506000	6	14	100	45	5°	3
B12556508000	8	16	100	45	5°	3
B12556510000	10	18	100	45	5°	4
B12556512000	12	20	100	45	5°	4



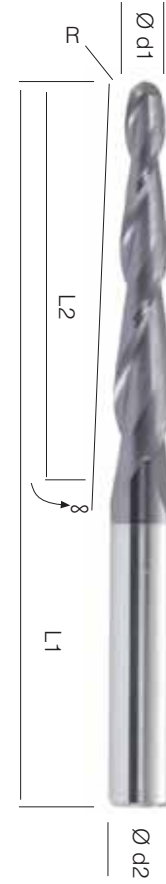
HM SOLID TAPERED END MILL BALL NOSE**HM SOLID KONİK FREZE - KÜRE**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	∞	R	Z
B12556002000028	2	3	65	20	30'	1	2
B12556003000028	3	4	65	25	30'	1.5	2
B12556004000028	4	5	65	30	30'	2	2
B12556005000028	5	6	68	30	30'	2.5	2
B12556006000028	6	8	88	40	30'	3	2
B12556008000028	8	10	100	45	30'	4	2
B12556010000028	10	12	100	45	30'	5	2
B12556012000028	12	14	100	45	30'	6	2
B12556102000028	2	3	65	19	1°	1	2
B12556103000028	3	4	65	28	1°	1.5	2
B12556104000028	4	5	65	28	1°	2	2
B12556105000028	5	6	68	28	1°	2.5	2
B12556106000028	6	8	88	40	1°	3	2
B12556108000028	8	10	100	45	1°	4	2
B12556110000028	10	12	100	45	1°	5	2
B12556112000028	12	14	100	45	1°	6	2
B12556202000028	2	3	65	19	1°.30'	1	2
B12556203000028	3	4	65	19	1°.30'	1.5	2
B12556204000028	4	5	65	19	1°.30'	2	2
B12556205000028	5	6	68	19	1°.30'	2.5	2
B12556206000028	6	8	88	38	1°.30'	3	2
B12556208000028	8	10	100	38	1°.30'	4	2
B12556210000028	10	12	100	38	1°.30'	5	2
B12556212000028	12	14	100	38	1°.30'	6	2



HM SOLID TAPERED END MILL BALL NOSE**HM SOLID KONİK FREZE - KÜRE**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	∞	R	Z
B12556302000028	2	4	65	20	2°	1	2
B12556303000028	3	5	65	28	2°	1.5	2
B12556304000028	4	6	68	28	2°	2	2
B12556305000028	5	8	88	42	2°	2.5	2
B12556306000028	6	10	100	45	2°	3	2
B12556308000028	8	12	100	45	2°	4	2
B12556310000028	10	14	100	45	2°	5	2
B12556312000028	12	16	100	45	2°	6	2
B12556402000028	2	4	65	19	3°	1	2
B12556403000028	3	6	68	28	3°	1.5	2
B12556404000028	4	8	88	38	3°	2	2
B12556405000028	5	10	100	48	3°	2.5	2
B12556406000028	6	12	100	48	3°	3	2
B12556408000028	8	14	100	48	3°	4	2
B12556410000028	10	16	100	48	3°	5	2
B12556412000028	12	18	100	48	3°	6	2
B12556502000028	2	6	65	20	5°	1	2
B12556503000028	3	8	88	28	5°	1.5	2
B12556504000028	4	10	100	34	5°	2	2
B12556505000028	5	12	100	40	5°	2.5	2
B12556506000028	6	14	100	45	5°	3	2
B12556508000028	8	16	100	45	5°	4	2
B12556510000028	10	18	100	45	5°	5	2
B12556512000028	12	20	100	45	5°	6	2





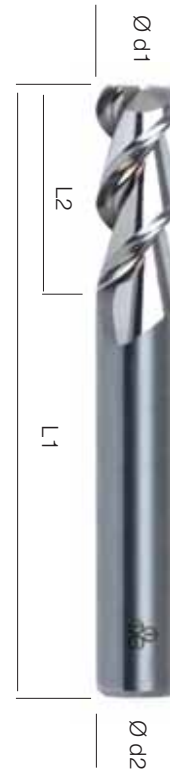
ALTAY

END MILLS



HM SOLID END MILLS 2 FLUTES - ALU**HM SOLID FREZE 2 KANALLI**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	Z
B27557403000	3	6	57	8	2
B27557404000	4	6	57	10	2
B27557405000	5	6	57	13	2
B27557406000	6	6	57	14	2
B27557408000	8	8	63	19	2
B27557410000	10	10	72	22	2
B27557412000	12	12	83	26	2
B27557414000	14	14	83	26	2
B27557416000	16	16	92	32	2
B27557418000	18	18	92	32	2
B27557420000	20	20	104	38	2

**HM SOLID END MILLS 3 FLUTES - ALU****HM SOLID FREZE 3 KANALLI**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	Z	r
B27557503000028	3	6	57	8	3	0.1
B27557504000028	4	6	57	10	3	0.2
B27557505000028	5	6	57	13	3	0.2
B27557506000028	6	6	60	14	3	0.2
B27557508000028	8	8	78	19	3	0.2
B27557510000028	10	10	78	22	3	0.2
B27557512000028	12	12	89	26	3	0.2
B27557514000028	14	14	89	26	3	0.2
B27557516000028	16	16	96	32	3	0.2
B27557520000028	20	20	111	32	3	0.2



HM SOLID END MILLS 3 FLUTES - ALU - WITH SHORT NECK**HM SOLID UZUN FREZE 3 KANALLI - ALU - BOYUNLU**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	L3 mm	d3 mm	Z	r
B27557506000036	6	6	83	14	35	5.8	3	0.2
B27557508000036	8	8	105	19	50	7.8	3	0.2
B27557510000036	10	10	105	22	58	9.7	3	0.2
B27557512000036	12	12	120	26	73	11.7	3	0.2
B27557514000036	14	14	120	26	73	13.7	3	0.2
B27557516000036	16	16	150	32	100	15.7	3	0.2
B27557518000036	18	18	150	32	100	17.6	3	0.2
B27557520000036	20	20	150	38	100	19.5	3	0.2

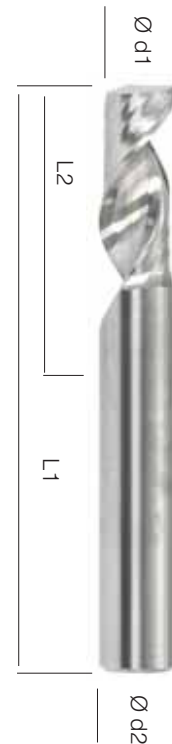


HM SOLID END MILLS 1 FLUTES - ALU (25°)**HM SOLID FREZE 1 KANALLI - ALU - (25°)**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	Z	Helis
B27553900654	3	3	40	14	1	25°
B27553900655	4	4	50	15	1	25°
B27553900656	5	5	50	16	1	25°
B27553900657	6	6	57	18	1	25°
B27553900658	8	8	63	20	1	25°
B27553900659	10	10	72	22	1	25°
B27553900660	12	12	83	26	1	25°
B27553900661	3	3	65	16	1	25°
B27553900662	4	4	65	18	1	25°
B27553900663	5	5	65	20	1	25°
B27553900664	6	6	68	24	1	25°
B27553900665	8	8	88	38	1	25°
B27553900666	10	10	100	45	1	25°
B27553900667	12	12	110	53	1	25°

**HM SOLID END MILLS 1 FLUTES - ALU (40°)****HM SOLID FREZE 1 KANALLI - ALU - (40°)**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	Z	Helis
B2755390668	3	3	40	14	1	40°
B2755390669	4	4	50	15	1	40°
B2755390670	5	5	50	16	1	40°
B2755390671	6	6	57	18	1	40°
B2755390672	8	8	63	20	1	40°
B2755390673	10	10	72	22	1	40°
B2755390674	12	12	83	26	1	40°
B2755390675	3	3	65	16	1	40°
B2755390676	4	4	65	18	1	40°
B2755390677	5	5	65	20	1	40°
B2755390678	6	6	68	24	1	40°
B2755390679	8	8	88	38	1	40°
B2755390680	10	10	100	45	1	40°
B2755390681	12	12	110	53	1	40°



ATAK

END MILLS

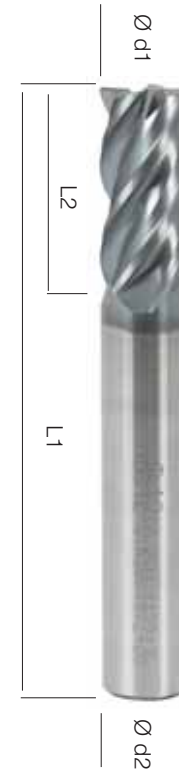


HM SOLID END MILLS 4 CORNER CHAMFER**HM SOLID FREZE 4 KANALLI - PAHLI**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	Chamfer	Z
B17557003000227	3	6	57	8	0.1	4
B17557004000227	4	6	57	11	0.1	4
B17557005000227	5	6	57	13	0.1	4
B17557006000227	6	6	57	13	0.1	4
B17557008000227	8	8	63	19	0.15	4
B17557010000227	10	10	72	22	0.2	4
B17557012000227	12	12	83	30	0.2	4
B17557014000227	14	14	83	26	0.2	4
B17557016000227	16	16	92	45	0.2	4
B17557018000227	18	18	92	32	0.2	4
B17557020000227	20	20	104	38	0.2	4

**HM SOLID END MILLS 4 CORNER SHARP****HM SOLID FREZE 4 KANALLI - KESKİN KÖŞE**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	Z
B17557003000200	3	6	57	8	4
B17557004000200	4	6	57	11	4
B17557005000200	5	6	57	13	4
B17557006000200	6	6	57	13	4
B17557008000200	8	8	63	19	4
B17557010000200	10	10	72	22	4
B17557012000200	12	12	83	30	4
B17557014000200	14	14	83	26	4
B17557016000200	16	16	92	45	4
B17557018000200	18	18	92	32	4
B17557020000200	20	20	104	38	4



HM SOLID END MILLS 4 WELDON SHANK - CORNER CHAMFER**HM SOLID FREZE 4 KANALLI - WELDONLU - PAHLI**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	Chamfer	Z
B17557003000232	3	6	57	8	0.1	4
B17557004000232	4	6	57	11	0.1	4
B17557005000232	5	6	57	13	0.1	4
B17557006000232	6	6	57	13	0.1	4
B17557008000232	8	8	63	19	0.15	4
B17557010000232	10	10	72	22	0.2	4
B17557012000232	12	12	83	30	0.2	4
B17557014000232	14	14	83	26	0.2	4
B17557016000232	16	16	92	45	0.2	4
B17557018000232	18	18	92	32	0.2	4
B17557020000232	20	20	104	38	0.2	4

**HM SOLID END MILLS 4 WELDON SHANK - CORNER SHARP****HM SOLID FREZE 4 KANALLI - WELDONLU - KESKİN KÖŞE**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	Z
B17557003000225	3	6	57	8	4
B17557004000225	4	6	57	11	4
B17557005000225	5	6	57	13	4
B17557006000225	6	6	57	13	4
B17557008000225	8	8	63	19	4
B17557010000225	10	10	72	22	4
B17557012000225	12	12	83	30	4
B17557014000225	14	14	83	26	4
B17557016000225	16	16	92	45	4
B17557018000225	18	18	92	32	4
B17557020000225	20	20	104	38	4



HM SOLID END MILLS 4 CORNER RADIUS

HM SOLID FREZE 4 KANALLI - RADYUSLU



Product Code	d1 mm	d2 mm	L1 mm	L2 mm	Z	r
B1755390746	6	6	57	13	4	0.5
B1755390747	6	6	57	13	4	1
B1755390748	8	8	63	19	4	0.5
B1755390749	8	8	63	19	4	1
B1755390750	10	10	72	22	4	0.5
B1755390751	10	10	72	22	4	1
B1755390752	10	10	72	22	4	2
B1755390753	12	12	83	26	4	0.5
B1755390754	12	12	83	26	4	1
B1755390755	12	12	83	26	4	2
B1755390756	14	14	83	26	4	0.5
B1755390757	14	14	83	26	4	1
B1755390758	14	14	83	26	4	2
B1755390759	16	16	92	32	4	1
B1755390760	16	16	92	32	4	2
B1755390761	16	16	92	32	4	3
B1755390762	18	18	92	32	4	1
B1755390763	18	18	92	32	4	2
B1755390764	18	18	92	32	4	3
B1755390765	20	20	104	38	4	1
B1755390766	20	20	104	38	4	2
B1755390767	20	20	104	38	4	3

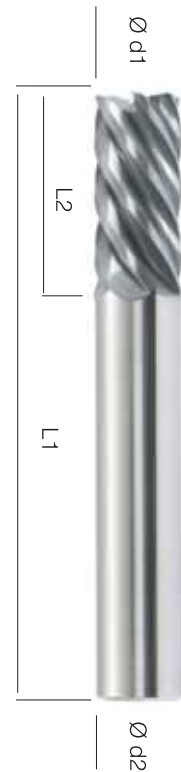


HM SOLID END MILLS 6 CORNER CHAMFER

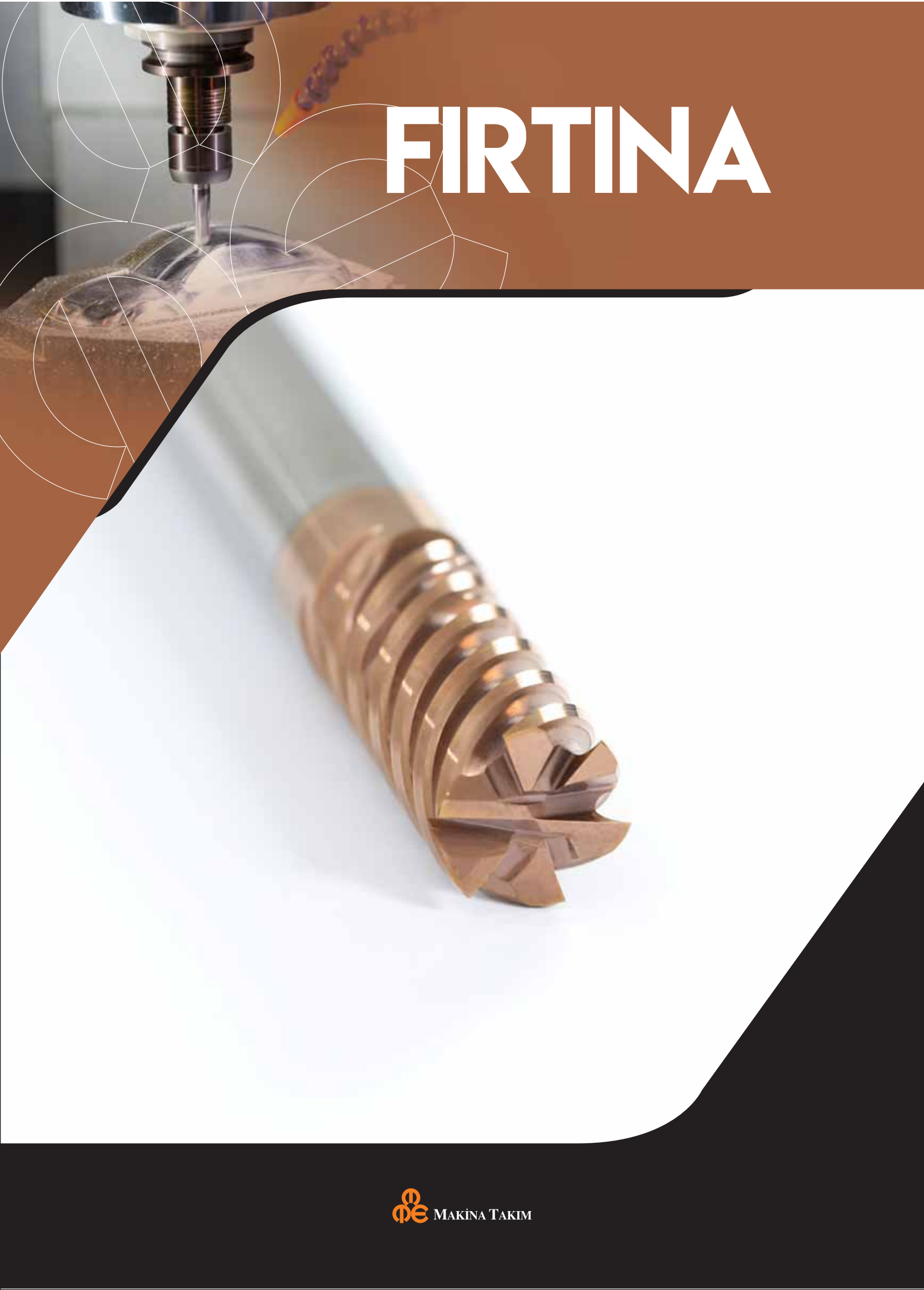
HM SOLID FREZE 6 KANALLI - PAHLI (ATAK II)



Product Code	d1 mm	d mm	Ap1 max mm	L mm	Z	Chamfer
B17553900738	6	6	13	57	6	0.15
B17553900739	8	8	19	63	6	0.15
B17553900740	10	10	22	72	6	0.2
B17553900741	12	12	26	83	6	0.2
B17553900742	14	14	26	83	6	0.2
B17553900743	16	16	32	92	6	0.2
B17553900744	20	20	38	104	6	0.2
B17553900745	25	25	45	121	6	0.2

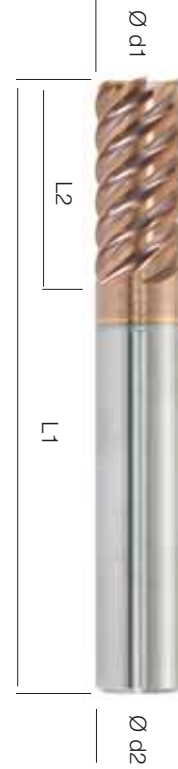


FIRTINA



HM SOLID END MILLS 4/5/6 (65 HRC)**HM SOLID FREZE 4/5/6 KANALLI - PAHLI (HRC)**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	Chamfer	Z
B19554503000027	3	6	57	8	0.10	4
B19554504000027	4	6	57	11	0.10	4
B19554505000027	5	6	57	13	0.15	5
B19554506000027	6	6	57	13	0.15	6
B19554508000027	8	8	69	19	0.15	6
B19554510000027	10	10	72	22	0.20	6
B19554512000027	12	12	83	26	0.20	6
B19554514000027	14	14	83	26	0.20	6
B19554516000027	16	16	92	32	0.20	6
B19554518000027	18	18	92	32	0.20	6
B19554520000027	20	20	104	38	0.20	6

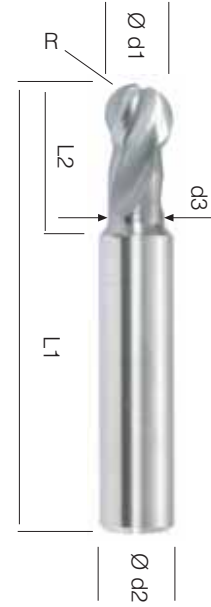


HM SOLID 270° BALL CUT

HM SOLID 270° KÜRE FREZE



Product Code	d1 mm	d2 mm	d3 mm	L1 mm	L2 mm	Z	R
B17553900722	3	6	2.5	57	2.56	2	1.5
B17553900723	4	6	3.3	57	3.41	2	2
B17553900724	5	6	4.1	57	4.27	2	2.5
B17553900725	6	6	4.7	57	5.12	2	3
B17553900726	8	8	6.5	63	6.83	2	4
B17553900727	10	10	8.2	72	8.54	2	5
B17553900728	12	12	9.8	83	10.24	2	6
B17553900729	16	16	13.4	92	13.66	2	8
B17553900730	3	6	2.3	100	2.56	2	1.5
B17553900731	4	6	3.3	100	3.41	2	2
B17553900732	5	6	4.1	100	4.27	2	2.5
B17553900733	6	6	4.7	100	5.12	2	3
B17553900734	8	8	6.5	100	6.83	2	4
B17553900735	10	10	8.2	100	8.54	2	5
B17553900736	12	12	9.8	130	10.24	2	6
B17553900737	16	16	13.4	130	13.66	2	8



HM SOLID COUNTER SINKER CONVEKS 3 FLUTES

HM SOLID HAVŞA FREZE 3 KANALLI



Product Code	d1 mm	d2 mm	d3 mm	L1 mm	Z	∞
B12553900713	6.3	5	2	45	3	90°
B12553900714	8.3	6	2	50	3	90°
B12553900715	10.4	6	2.5	50	3	90°
B12553900716	12.4	8	2.8	56	3	90°
B12553900717	15.0	10	3.2	60	3	90°
B12553900718	16.5	10	3.2	60	3	90°
B12553900719	20.5	10	3.5	63	3	90°
B12553900720	25.0	10	3.8	67	3	90°
B12553900721	31.0	12	4.2	71	3	90°



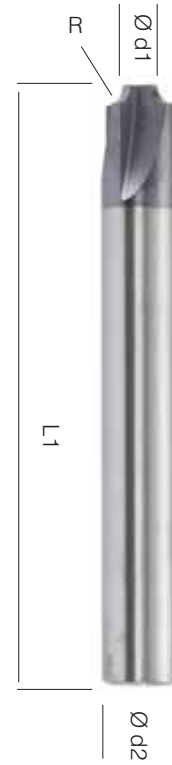
HM SOLID CHAMFERING END MILL 4 FLUTES**HM SOLID HAVŞA FREZE 4 KANALLI**

Product Code	a	D mm	L mm	Z
B12562300300	60°	3	50	4
B12562300400	60°	4	50	4
B12562300500	60°	5	57	4
B12562300600	60°	6	57	4
B12562300800	60°	8	63	4
B12562301000	60°	10	75	4
B12562301200	60°	12	80	4
B12562301400	60°	14	80	4
B12562301600	60°	16	80	4
B12562301800	60°	18	80	4
B12562302000	60°	20	80	4
B12562400300	90°	3	50	4
B12562400400	90°	4	50	4
B12562400500	90°	5	57	4
B12562400600	90°	6	57	4
B12562400800	90°	8	63	4
B12562401000	90°	10	75	4
B12562401200	90°	12	80	4
B12562401400	90°	14	80	4
B12562401600	90°	16	80	4
B12562401800	90°	18	80	4
B12562402000	90°	20	80	4
B12562500300	100°	3	50	4
B12562500400	100°	4	50	4
B12562500500	100°	5	57	4
B12562500600	100°	6	57	4
B12562500800	100°	8	63	4
B12562501000	100°	10	75	4
B12562501200	100°	12	80	4
B12562501400	100°	14	80	4
B12562501600	100°	16	80	4
B12562501800	100°	18	80	4
B12562502000	100°	20	80	4
B12562600300	120°	3	50	4
B12562600400	120°	4	50	4
B12562600500	120°	5	57	4
B12562600600	120°	6	57	4
B12562600800	120°	8	63	4
B12562601000	120°	10	75	4
B12562601200	120°	12	80	4
B12562601400	120°	14	80	4
B12562601600	120°	16	80	4
B12562601800	120°	18	80	4
B12562602000	120°	20	80	4

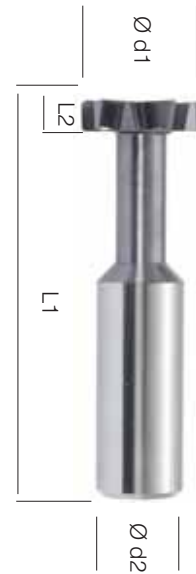


HM SOLID ROUNDING CUTTER CONCAVE ENDMILL**HM SOLID RADYÜS İÇ BÜKEY FREZE**

Product Code	d1 mm	d2 mm	L1 mm	Z	R
B12553900682	7	8	63	4	0.5
B12553900683	6	8	63	4	1
B12553900684	7	10	72	4	1.5
B12553900685	6	10	83	4	2
B12553900686	7	12	83	4	2.5
B12553900687	6	12	83	4	3
B12553900688	9	16	92	4	3.5
B12553900689	8	16	92	4	4
B12553900690	7	16	92	4	4.5
B12553900691	10	20	104	4	5
B12553900692	8	20	104	4	6

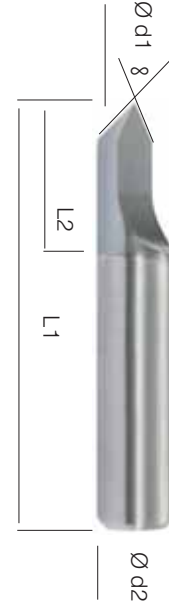
**HM SOLID T-SLOTTING ENDMILL****HM SOLID T FREZE**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	Z
B12553900693	7.5	6	50	1.5	6
B12553900694	7.5	6	50	2	6
B12553900695	10.5	6	50	2	6
B12553900696	10.5	6	50	2.5	6
B12553900697	10.5	6	50	3	6
B12553900698	13.5	10	56	3	8
B12553900699	13.5	10	56	4	8
B12553900700	16.5	10	56	3	8
B12553900701	16.5	10	56	4	8
B12553900702	16.5	10	56	5	8
B12553900703	19.5	10	63	3	10
B12553900704	19.5	10	63	4	10
B12553900705	19.5	10	63	5	10
B12553900706	22.5	10	63	4	10
B12553900707	22.5	10	63	5	10
B12553900708	22.5	10	63	6	10
B12553900709	25.5	10	63	5	10
B12553900710	25.5	10	63	6	10
B12553900711	25.5	10	63	7	10
B12553900712	25.5	10	63	8	10



HM SOLID PANTOGRAPH**HM SOLID YAZI KALEMI**

Product Code	d1 mm	d2 mm	L1 mm	L2 mm	∞	Z
B12551900418	3	3	40	4	60°	1
B12551900419	3	3	100	4	60°	1
B12551900420	4	4	50	5	60°	1
B12551900421	4	4	100	5	60°	1
B12551900422	6	6	57	7	60°	1
B12551900423	6	6	100	7	60°	1
B12551900424	3	3	40	4	90°	1
B12551900425	3	3	100	4	90°	1
B12551900426	4	4	50	5	90°	1
B12551900427	4	4	100	5	90°	1
B12551900428	6	6	57	7	90°	1
B12551900429	6	6	100	7	90°	1





MTE - NEW GENERATION MILLING



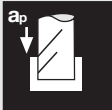
	Standard MILLING DIN 6528 K30 TiAlN	INOX K20 AlCrN	STEEL K30 AlCrN	ALUMINIUM Z2 K30	ALUMINIUM Z3 K30	65 HRC K10 AlTiN
Steel < 850 N/mm ²	X		X			
Steel 850 - 1100 N/mm ²	X	(x)	X			
Steel 1100 - 1300 N/mm ²		(x)	X			
Steel 1300 - 1500 N/mm ³			(x)			
Cold Work Tool Steel 12%Cr / High Alloyed Steel			X			
Stainless Steel - Cr-Ni		X	X			
Stainless Steel - Cr-Ni-Mo...		X				
Stainless Steel / Duplex Steel		(x)				
Hardened Tool Steel 48 - 52 HRC			(x)			X
Hardened Tool Steel 52 - 56 HRC						X
Hardened Tool Steel 56 - 60 HRC						X
Hardened Tool Steel > 60 HRC						X
HSS						(x)
Titanium		(x)	(x)			
Nickel Alloys >1000 N/mm ²		(x)				
Cast Iron			(x)			(x)
Aluminium >99%				(x)	(x)	
Aluminium Alloys (Si <6%)				X	X	
Aluminium Casting (Si 6% - 15%)				(x)	(x)	
Copper				X	X	
Plastic (Thermoplast)				X	X	

MTE - STANDARD MILLING DIN 6528

		d1 (mm)	z	max. value Vc (m/dk)	fz (mm)	ap (mm)	ae (mm)	K30	TiAlN
								n (min-1)	vf (mm/min)
Steel <850 N/mm²		3	4	170	0.015	4.5	1.2	18038	1082
		4	4	170	0.020	6.0	1.6	13528	1082
		5	4	170	0.025	7.5	2.0	10823	1082
		6	4	170	0.030	9.0	2.4	9019	1082
		8	4	170	0.040	12.0	3.2	6764	1082
		10	4	170	0.050	15.0	4.0	5411	1082
		12	4	170	0.060	18.0	4.8	4509	1082
		16	4	170	0.075	24.0	6.4	3382	1015
Steel 850-1100 N/mm²		20	4	170	0.095	30.0	8.0	2706	1028
		3	4	120	0.015	4.5	1.2	12732	764
		4	4	120	0.020	6.0	1.6	9549	764
		5	4	120	0.025	7.5	2.0	7639	764
		6	4	120	0.030	9.0	2.4	6366	764
		8	4	120	0.040	12.0	3.2	4775	764
		10	4	120	0.050	15.0	4.0	3820	764
		12	4	120	0.060	18.0	4.8	3183	764
Cold Speed Steel 12%Cr / High Alloy Steel		16	4	120	0.075	24.0	6.4	2387	716
		20	4	0	0.095	30.0	8.0	0	0
		3	4	80	0.010	4.5	1.2	8488	340
		4	4	80	0.015	6.0	1.6	6366	382
		5	4	80	0.020	7.5	2.0	5093	407
		6	4	80	0.025	9.0	2.4	4244	424
		8	4	80	0.030	12.0	3.2	3183	382
		10	4	80	0.040	15.0	4.0	2546	407
Stainless Steel - Cr-Ni		12	4	80	0.050	18.0	4.8	2122	424
		16	4	80	0.060	24.0	6.4	1592	382
		20	4	80	0.075	30.0	8.0	1273	382
		3	4	135	0.015	4.5	1.2	14324	859
		4	4	135	0.020	6.0	1.6	10743	859
		5	4	135	0.030	7.5	2.0	8594	1031
		6	4	135	0.035	9.0	2.4	7162	1003
		8	4	135	0.045	12.0	3.2	5371	967
	10	4	135	0.055	15.0	4.0	4297	945	
	12	4	135	0.065	18.0	4.8	3581	931	
	16	4	135	0.085	24.0	6.4	2686	913	
	20	4	135	0.105	30.0	8.0	2149	902	

* Standard tools doesn't recommended for unsuitable materials.
Vc:m/dk all conditions are the maximum value to be given at the desired level.


MTE - STANDARD MILLING DIN 6528

	d1 (mm)	z	max. value Vc (m/dk)	fz (mm)	ap (mm)	ae (mm)	K30	TiAlN
							n (min-1)	vf (mm/min)
Steel <850 N/mm²	3	4	135	0.010	3.0	3.0	14324	573
	4	4	135	0.015	4.0	4.0	10743	645
	5	4	135	0.020	5.0	5.0	8594	688
	6	4	135	0.025	6.0	6.0	7162	716
	8	4	135	0.030	8.0	8.0	5371	645
	10	4	135	0.040	10.0	10.0	4297	688
	12	4	135	0.045	12.0	12.0	3581	645
	16	4	135	0.055	8.0	16.0	2686	591
Steel 850-1100 N/mm²	20	4	135	0.070	10.0	20.0	2149	602
	3	4	95	0.010	3.0	3.0	10080	403
	4	4	95	0.015	4.0	4.0	7560	454
	5	4	95	0.020	5.0	5.0	6048	484
	6	4	95	0.025	6.0	6.0	5040	504
	8	4	95	0.030	8.0	8.0	3780	454
	10	4	95	0.040	10.0	10.0	3024	484
	12	4	95	0.045	12.0	12.0	2520	454
Cold Speed Steel 12%Cr / High Alloy Steel	16	4	95	0.055	8.0	16.0	1890	416
	20	4	95	0.070	10.0	20.0	1512	423
	3	4	65	0.01	2.1	3.0	6897	276
	4	4	65	0.01	2.8	4.0	5173	207
	5	4	65	0.015	3.5	5.0	4138	248
	6	4	65	0.02	4.2	6.0	3448	276
	8	4	65	0.025	8	8.0	2586	259
	10	4	65	0.03	10	10.0	2069	248
Stainless Steel - Cr-Ni	12	4	65	0.04	12	12.0	1724	276
	16	4	65	0.045	8	16.0	1293	233
	20	4	65	0.055	10	20.0	1035	228
	3	4	115	0.010	3.0	3.0	12202	488
	4	4	115	0.015	4.0	4.0	9151	549
	5	4	115	0.020	5.0	5.0	7321	586
	6	4	115	0.025	6.0	6.0	6101	610
	8	4	115	0.030	8.0	8.0	4576	549
Stainless Steel - Cr-Ni	10	4	115	0.040	10.0	10.0	3661	586
	12	4	115	0.045	12.0	12.0	3050	549
	16	4	115	0.055	8.0	16.0	2288	503
	20	4	115	0.070	10.0	20.0	1830	512

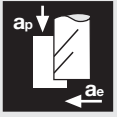
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Vc:m/dk all conditions are the maximum value to be given at the desired level.

	d1 (mm)	z	max. value Vc (m/dk)	fz (mm)	ap (mm)	ae (mm)	K30	AlCrN
							n (min-1)	vf (mm/min)
Steel <850 N/mm²	3	4	205	0.020	4.5	1.2	21751	1740
	4	4	205	0.025	6.0	1.6	16313	1631
	5	4	205	0.035	7.5	2.0	13051	1827
	6	4	205	0.040	9.0	2.4	10876	1740
	8	4	205	0.055	12.0	3.2	8157	1794
	10	4	205	0.070	15.0	4.0	6525	1827
	12	4	205	0.075	18.0	4.8	5438	1631
	16	4	205	0.100	24.0	6.4	4078	1631
Steel 850-1100 N/mm²	20	4	205	0.130	30.0	8.0	3263	1697
	3	4	140	0.020	4.5	1.2	14854	1188
	4	4	140	0.025	6.0	1.6	11141	1114
	5	4	140	0.035	7.5	2.0	8913	1248
	6	4	140	0.040	9.0	2.4	7427	1188
	8	4	140	0.055	12.0	3.2	5570	1225
	10	4	140	0.070	15.0	4.0	4456	1248
	12	4	140	0.075	18.0	4.8	3714	1114
Cold Speed Steel 12%Cr / High Alloy Steel	16	4	140	0.100	24.0	6.4	2785	1114
	20	4	0	0.130	30.0	8.0	0	0
	3	4	70	0.020	4.5	1.2	7427	594
	4	4	70	0.025	6.0	1.6	5570	557
	5	4	70	0.030	7.5	2.0	4456	535
	6	4	70	0.040	9.0	2.4	3714	594
	8	4	70	0.050	12.0	3.2	2785	557
	10	4	70	0.065	15.0	4.0	2228	579
Stainless Steel - Cr-Ni	12	4	70	0.075	18.0	4.8	1857	557
	16	4	70	0.095	24.0	6.4	1393	529
	20	4	70	0.120	30.0	8.0	1114	535
	3	4	90	0.015	4.5	1.2	9549	573
	4	4	90	0.020	6.0	1.6	7162	573
	5	4	90	0.020	7.5	2.0	5730	458
	6	4	90	0.030	9.0	2.4	4775	573
	8	4	90	0.035	12.0	3.2	3581	501
	10	4	90	0.045	15.0	4.0	2865	516
	12	4	90	0.055	18.0	4.8	2387	525
	16	4	90	0.065	24.0	6.4	1790	466
	20	4	90	0.085	30.0	8.0	1432	487

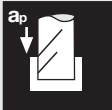
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Vc:m/dk all conditions are the maximum value to be given at the desired level.

	d1 (mm)	z	max. value Vc (m/dk)	fz (mm)	ap (mm)	ae (mm)	K30	AlCrN
							n (min-1)	vf (mm/min)
Steel <850 N/mm²	3	4	170	0.015	3.0	3.0	18038	1082
	4	4	170	0.020	4.0	4.0	13528	1082
	5	4	170	0.030	5.0	5.0	10823	1299
	6	4	170	0.035	6.0	6.0	9019	1263
	8	4	170	0.045	8.0	8.0	6764	1218
	10	4	170	0.055	10.0	10.0	5411	1190
	12	4	170	0.060	12.0	12.0	4509	1082
	16	4	170	0.075	8.0	16.0	3382	1015
Steel 850-1100 N/mm²	20	4	170	0.095	10.0	20.0	2706	1028
	3	4	105	0.015	3.0	3.0	11141	668
	4	4	105	0.020	4.0	4.0	8356	668
	5	4	105	0.030	5.0	5.0	6685	802
	6	4	105	0.035	6.0	6.0	5570	780
	8	4	105	0.045	8.0	8.0	4178	752
	10	4	105	0.055	10.0	10.0	3342	735
	12	4	105	0.060	12.0	12.0	2785	668
Cold Speed Steel 12%Cr / High Alloy Steel	16	4	105	0.075	8.0	16.0	2089	627
	20	4	105	0.095	10.0	20.0	1671	635
	3	4	55	0.015	3.0	3.0	5836	350
	4	4	55	0.020	4.0	4.0	4377	350
	5	4	55	0.030	5.0	5.0	3501	420
	6	4	55	0.035	6.0	6.0	2918	408
	8	4	55	0.045	8.0	8.0	2188	394
	10	4	55	0.055	10.0	10.0	1751	385
Stainless Steel - Cr-Ni	12	4	55	0.060	12.0	12.0	1459	350
	16	4	55	0.075	8.0	16.0	1094	328
	20	4	55	0.095	10.0	20.0	875	333
	3	4	70	0.010	3.0	3.0	7427	297
	4	4	70	0.015	4.0	4.0	5570	334
	5	4	70	0.025	5.0	5.0	4456	446
	6	4	70	0.030	6.0	6.0	3714	446
	8	4	70	0.035	8.0	8.0	2785	390
	10	4	70	0.045	10.0	10.0	2228	401
	12	4	70	0.050	12.0	12.0	1857	371
	16	4	70	0.060	8.0	16.0	1393	334
	20	4	70	0.075	10.0	20.0	1114	334

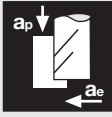
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Vc:m/dk all conditions are the maximum value to be given at the desired level.

		d1 (mm)	z	max. value Vc (m/dk)	fz (mm)	ap (mm)	ae (mm)	K20	AlCrN
								n (min-1)	vf (mm/min)
Stainless Steel - Cr-Ni		3	4	80	0.015	4.5	1.2	8488	509
		4	4	80	0.020	6.0	1.6	6366	509
		5	4	80	0.025	7.5	2.0	5093	509
		6	4	80	0.025	9.0	2.4	4244	424
		8	4	80	0.035	12.0	3.2	3183	446
		10	4	80	0.045	15.0	4.0	2546	458
		12	4	80	0.050	18.0	4.8	2122	424
		16	4	80	0.075	24.0	3.2	1592	477
	20	4	80				1273	0	
Stainless Steel Cr-Ni-Mo		3	4	70	0.015	4.5	1.2	7427	446
		4	4	70	0.020	6.0	1.6	5570	446
		5	4	70	0.025	7.5	2.0	4456	446
		6	4	70	0.025	9.0	2.4	3714	371
		8	4	70	0.035	12.0	3.2	2785	390
		10	4	70	0.045	15.0	4.0	2228	401
		12	4	70	0.050	18.0	4.8	1857	371
		16	4	70	0.075	24.0	3.2	1393	418
	20	4	70				1114	0	
Stainless Steel / Duplex		3	4	25	0.010	4.5	1.2	2653	106
		4	4	25	0.015	6.0	1.6	1989	119
		5	4	25	0.020	7.5	2.0	1592	127
		6	4	25	0.020	9.0	2.4	1326	106
		8	4	25	0.030	12.0	3.2	995	119
		10	4	25	0.035	15.0	4.0	796	111
		12	4	25	0.040	18.0	4.8	663	106
		16	4	25	0.060	24.0	3.2	497	119
	20	4	25				398	0	
Stainless Steel >1000 N/mm²		3	4	15	0.010	4.5	1.2	1592	64
		4	4	15	0.015	6.0	1.6	1194	72
		5	4	15	0.020	7.5	2.0	955	76
		6	4	15	0.020	9.0	2.4	796	64
		8	4	15	0.030	12.0	3.2	597	72
		10	4	15	0.035	15.0	4.0	477	67
		12	4	15	0.040	18.0	4.8	398	64
		16	4	15	0.060	24.0	3.2	298	72
	20	4	15				239	0	


* Standard tools doesn't recommended for unsuitable materials.
Vc:m/dk all conditions are the maximum value to be given at the desired level.

		d1 (mm)	z	max. value Vc (m/dk)	fz (mm)	ap (mm)	ae (mm)	K20	AlCrN
								n (min-1)	vf (mm/min)
Stainless Steel - Cr-Ni		3	4	60	0.015	1.5	3.0	6366	382
		4	4	60	0.020	2.0	4.0	4775	382
		5	4	60	0.025	2.5	5.0	3820	382
		6	4	60	0.030	3.0	6.0	3183	382
		8	4	60	0.040	4.0	8.0	2387	382
		10	4	60	0.055	5.0	10.0	1910	420
		12	4	60	0.055	6.0	12.0	1592	350
		16	4	60	0.085	4.0	16.0	1194	406
	20	4	60				955	0	
Stainless Steel Cr-Ni-Mo		3	4	55	0.015	1.5	3.0	5836	350
		4	4	55	0.020	2.0	4.0	4377	350
		5	4	55	0.025	2.5	5.0	3501	350
		6	4	55	0.030	3.0	6.0	2918	350
		8	4	55	0.040	4.0	8.0	2188	350
		10	4	55	0.055	5.0	10.0	1751	385
		12	4	55	0.055	6.0	12.0	1459	321
		16	4	55	0.085	4.0	16.0	1094	372
	20	4	55				875	0	
Stainless Steel / Duplex		3	4	20	0.015	1.5	3.0	2122	127
		4	4	20	0.020	2.0	4.0	1592	127
		5	4	20	0.025	2.5	5.0	1273	127
		6	4	20	0.025	3.0	6.0	1061	106
		8	4	20	0.035	4.0	8.0	796	111
		10	4	20	0.045	5.0	10.0	637	115
		12	4	20	0.050	6.0	12.0	531	106
		16	4	20	0.075	4.0	16.0	398	119
	20	4	20				318	0	
Stainless Steel >1000 N/mm²		3	4	10	0.015	1.5	3.0	1061	64
		4	4	10	0.020	2.0	4.0	796	64
		5	4	10	0.025	2.5	5.0	637	64
		6	4	10	0.025	3.0	6.0	531	53
		8	4	10	0.035	4.0	8.0	398	56
		10	4	10	0.045	5.0	10.0	318	57
		12	4	10	0.050	6.0	12.0	265	53
		16	4	10	0.075	4.0	16.0	199	60
	20	4	10				159	0	

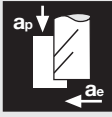
* Standard tools doesn't recommended for unsuitable materials.
Vc:m/dk all conditions are the maximum value to be given at the desired level.

		d1 (mm)	z	max. value Vc (m/dk)	fz (mm)	ap (mm)	ae (mm)	K30	—
								n (min-1)	vf (mm/min)
Aluminium Alloys (Si <6%)		3	2	550	0.055	4.5	1.8	58357	6419
		4	2	550	0.075	6.0	2.4	43768	6565
		5	2	550	0.090	7.5	3.0	35014	6303
		6	2	550	0.120	9.0	3.6	29178	7003
		8	2	550	0.160	12.0	4.8	21884	7003
		10	2	550	0.200	15.0	6.0	17507	7003
		12	2	550	0.220	18.0	7.2	14589	6419
		16	2	550	0.245	24.0	9.6	10942	5362
Copper (Pure)		20	2	550	0.285	30.0	12.0	8754	4990
		3	2	400	0.045	4.5	1.8	42441	3820
		4	2	400	0.060	6.0	2.4	31831	3820
		5	2	400	0.070	7.5	3.0	25465	3565
		6	2	400	0.095	9.0	3.6	21221	4032
		8	2	400	0.130	12.0	4.8	15915	4138
		10	2	400	0.160	15.0	6.0	12732	4074
		12	2	400	0.175	18.0	7.2	10610	3714
Plastic (Thermoplast)		16	2	400	0.195	24.0	9.6	7958	3104
		20	2	400	0.230	30.0	12.0	6366	2928
		3	2	1000	0.055	4.5	1.8	106103	11671
		4	2	1000	0.075	6.0	2.4	79577	11937
		5	2	1000	0.090	7.5	3.0	63662	11459
		6	2	1000	0.120	9.0	3.6	53052	12732
		8	2	1000	0.160	12.0	4.8	39789	12732
		10	2	1000	0.200	15.0	6.0	31831	12732
Aluminium Cast (Si 6% - 15%)		12	2	1000	0.220	18.0	7.2	26526	11671
		16	2	1000	0.245	24.0	9.6	19894	9748
		20	2	1000	0.285	30.0	12.0	15915	9072
		3	2	350	0.040	4.5	1.8	37136	2971
		4	2	350	0.055	6.0	2.4	27852	3064
		5	2	350	0.065	7.5	3.0	22282	2897
		6	2	350	0.085	9.0	3.6	18568	3157
		8	2	350	0.110	12.0	4.8	13926	3064
	10	2	350	0.140	15.0	6.0	11141	3119	
	12	2	350	0.155	18.0	7.2	9284	2878	
	16	2	350	0.170	24.0	9.6	6963	2367	
	20	2	350	0.200	30.0	12.0	5570	2228	

* Standard tools doesn't recommended for unsuitable materials.
Vc:m/dk all conditions are the maximum value to be given at the desired level.


	d1 (mm)	z	max. value Vc (m/dk)	fz (mm)	ap (mm)	ae (mm)	K30	
							n (min-1)	vf (mm/min)
Aluminium Alloys (Si <6%)	3	2	450	0.040	3.0	3.0	47746	3820
	4	2	450	0.055	4.0	4.0	35810	3939
	5	2	450	0.065	5.0	5.0	28648	3724
	6	2	450	0.085	6.0	6.0	23873	4058
	8	2	450	0.110	8.0	8.0	17905	3939
	10	2	450	0.140	10.0	10.0	14324	4011
	12	2	450	0.155	12.0	12.0	11937	3700
	16	2	450	0.170	16.0	16.0	8952	3044
Copper (Pure)	20	2	450	0.200	20.0	20.0	7162	2865
	3	2	350	0.030	3.0	3.0	37136	2228
	4	2	350	0.045	4.0	4.0	27852	2507
	5	2	350	0.050	5.0	5.0	22282	2228
	6	2	350	0.070	6.0	6.0	18568	2600
	8	2	350	0.090	8.0	8.0	13926	2507
	10	2	350	0.110	10.0	10.0	11141	2451
	12	2	350	0.125	12.0	12.0	9284	2321
Plastic (Thermoplast)	16	2	350	0.135	16.0	16.0	6963	1880
	20	2	350	0.160	20.0	20.0	5570	1783
	3	2	800	0.040	3.0	3.0	84883	6791
	4	2	800	0.055	4.0	4.0	63662	7003
	5	2	800	0.065	5.0	5.0	50930	6621
	6	2	800	0.085	6.0	6.0	42441	7215
	8	2	800	0.110	8.0	8.0	31831	7003
	10	2	800	0.140	10.0	10.0	25465	7130
Aluminium Cast (Si 6% - 15%)	12	2	800	0.155	12.0	12.0	21221	6578
	16	2	800	0.170	16.0	16.0	15915	5411
	20	2	800	0.200	20.0	20.0	12732	5093
	3	2	300	0.030	3.0	3.0	31831	1910
	4	2	300	0.040	4.0	4.0	23873	1910
	5	2	300	0.045	5.0	5.0	19099	1719
	6	2	300	0.060	6.0	6.0	15915	1910
	8	2	300	0.075	8.0	8.0	11937	1790
10	2	300	0.100	10.0	10.0	9549	1910	
12	2	300	0.110	12.0	12.0	7958	1751	
16	2	300	0.120	16.0	16.0	5968	1432	
20	2	300	0.140	20.0	20.0	4775	1337	

* Standard tools doesn't recommended for unsuitable materials.
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		d1 (mm)	z	max. value Vc (m/dk)	fz (mm)	ap (mm)	ae (mm)	K30	—
								n (min-1)	vf (mm/min)
Aluminium Alloys (Si <6%)		3	3	550	0.050	4.5	1.4	58357	8754
		4	3	550	0.065	6.0	1.8	43768	8535
		5	3	550	0.085	7.5	2.3	35014	8929
		6	3	550	0.110	9.0	2.7	29178	9629
		8	3	550	0.135	12.0	3.6	21884	8863
		10	3	550	0.165	15.0	4.5	17507	8666
		12	3	550	0.200	18.0	5.4	14589	8754
		16	3	550	0.215	24.0	7.2	10942	7058
Copper (Pure)		20	3	550	0.250	30.0	9.0	8754	6565
		3	3	400	0.04	4.5	1.4	42441	5093
		4	3	400	0.05	6.0	1.8	31831	4775
		5	3	400	0.07	7.5	2.3	25465	5348
		6	3	400	0.09	9.0	2.7	21221	5730
		8	3	400	0.11	12.0	3.6	15915	5252
		10	3	400	0.13	15.0	4.5	12732	4966
		12	3	400	0.16	18.0	5.4	10610	5093
Plastic (Thermoplast)		16	3	400	0.17	24.0	7.2	7958	4058
		20	3	400	0.2	30.0	9.0	6366	3820
		3	3	1000	0.050	4.5	1.4	106103	15915
		4	3	1000	0.065	6.0	1.8	79577	15518
		5	3	1000	0.085	7.5	2.3	63662	16234
		6	3	1000	0.110	9.0	2.7	53052	17507
		8	3	1000	0.135	12.0	3.6	39789	16114
		10	3	1000	0.165	15.0	4.5	31831	15756
Aluminium Cast (Si 6% - 15%)		12	3	1000	0.200	18.0	5.4	26526	15915
		16	3	1000	0.215	24.0	7.2	19894	12832
		20	3	1000	0.250	30.0	9.0	15915	11937
		3	3	350	0.035	4.5	1.4	37136	3899
		4	3	350	0.045	6.0	1.8	27852	3760
		5	3	350	0.06	7.5	2.3	22282	4011
		6	3	350	0.075	9.0	2.7	18568	4178
		8	3	350	0.095	12.0	3.6	13926	3969
	10	3	350	0.115	15.0	4.5	11141	3844	
	12	3	350	0.14	18.0	5.4	9284	3899	
	16	3	350	0.15	24.0	7.2	6963	3133	
	20	3	350	0.175	30.0	9.0	5570	2924	

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MTE - ALTAY MILLING - ALUMINUM Z3

	K30							
	d1 (mm)	z	max. value Vc (m/dk)	fz (mm)	ap (mm)	ae (mm)	n (min-1)	vf (mm/min)
Aluminium Alloys (Si <6%)	3	3	450	0.035	1.8	3.0	47746	5013
	4	3	450	0.045	2.4	4.0	35810	4834
	5	3	450	0.060	3.0	5.0	28648	5157
	6	3	450	0.075	3.6	6.0	23873	5371
	8	3	450	0.095	4.8	8.0	17905	5103
	10	3	450	0.115	6.0	10.0	14324	4942
	12	3	450	0.140	7.2	12.0	11937	5013
	16	3	450	0.150	9.6	16.0	8952	4029
Copper (Pure)	20	3	450	0.175	12.0	20.0	7162	3760
	3	3	350	0.030	1.8	3.0	37136	3342
	4	3	350	0.035	2.4	4.0	27852	2924
	5	3	350	0.050	3.0	5.0	22282	3342
	6	3	350	0.060	3.6	6.0	18568	3342
	8	3	350	0.075	4.8	8.0	13926	3133
	10	3	350	0.090	6.0	10.0	11141	3008
	12	3	350	0.110	7.2	12.0	9284	3064
Plastic (Thermoplast)	16	3	350	0.120	9.6	16.0	6963	2507
	20	3	350	0.140	12.0	20.0	5570	2340
	3	3	800	0.035	1.8	3.0	84883	8913
	4	3	800	0.045	2.4	4.0	63662	8594
	5	3	800	0.060	3.0	5.0	50930	9167
	6	3	800	0.075	3.6	6.0	42441	9549
	8	3	800	0.095	4.8	8.0	31831	9072
	10	3	800	0.115	6.0	10.0	25465	8785
Aluminium Cast (Si 6% - 15%)	12	3	800	0.140	7.2	12.0	21221	8913
	16	3	800	0.150	9.6	16.0	15915	7162
	20	3	800	0.175	12.0	20.0	12732	6685
	3	3	300	0.025	1.8	3.0	31831	2387
	4	3	300	0.030	2.4	4.0	23873	2149
	5	3	300	0.040	3.0	5.0	19099	2292
	6	3	300	0.055	3.6	6.0	15915	2626
	8	3	300	0.065	4.8	8.0	11937	2328
	10	3	300	0.080	6.0	10.0	9549	2292
	12	3	300	0.100	7.2	12.0	7958	2387
	16	3	300	0.105	9.6	16.0	5968	1880
	20	3	300	0.125	12.0	20.0	4775	1790

* Standard tools doesn't recommended for unsuitable materials.
Vc:m/dk all conditions are the maximum value to be given at the desired level.

	d1 (mm)	z	max. value Vc (m/dk)	fz (mm)	ap (mm)	ae (mm)	K10	AlTiN
							n (min-1)	vf (mm/min)
Tool Steel (Hardened) 48 - 52 HRC	3	4	150	0.008	4.5	0.1	15915	509
	4	4	150	0.010	6.0	0.1	11937	477
	5	5	150	0.014	7.5	0.1	9549	668
	6	6	150	0.016	9.0	0.1	7958	764
	8	6	150	0.022	12.0	0.1	5968	788
	10	6	150	0.028	15.0	0.1	4775	802
	12	6	150	0.032	18.0	0.1	3979	764
	16	6	150	0.044	24.0	0.2	2984	788
	20	8	150	0.054	30.0	0.2	2387	1031
Tool Steel (Hardened) 52 - 56 HRC	3	4	120	0.008	4.5	0.1	12732	407
	4	4	120	0.010	6.0	0.1	9549	382
	5	5	120	0.014	7.5	0.1	7639	535
	6	6	120	0.016	9.0	0.1	6366	611
	8	6	120	0.022	12.0	0.1	4775	630
	10	6	120	0.028	15.0	0.1	3820	642
	12	6	120	0.032	18.0	0.1	3183	611
	16	6	120	0.044	24.0	0.2	2387	630
	20	8	120	0.054	30.0	0.2	1910	825
Tool Steel (Hardened) 56 - 60 HRC	3	4	100	0.008	4.5	0.1	10610	340
	4	4	100	0.010	6.0	0.1	7958	318
	5	5	100	0.014	7.5	0.1	6366	446
	6	6	100	0.016	9.0	0.1	5305	509
	8	6	100	0.022	12.0	0.1	3979	525
	10	6	100	0.028	15.0	0.1	3183	535
	12	6	100	0.032	18.0	0.1	2653	509
	16	6	100	0.044	24.0	0.2	1989	525
	20	8	100	0.054	30.0	0.2	1592	688
Tool Steel (Hardened) >60 HRC	3	4	80	0.008	4.5	0.1	8488	272
	4	4	80	0.010	6.0	0.1	6366	255
	5	5	80	0.012	7.5	0.1	5093	306
	6	6	80	0.016	9.0	0.1	4244	407
	8	6	80	0.020	12.0	0.1	3183	382
	10	6	80	0.026	15.0	0.1	2546	397
	12	6	80	0.030	18.0	0.1	2122	382
	16	6	80	0.040	24.0	0.2	1592	382
	20	8	80	0.050	30.0	0.2	1273	509
HSS	3	4	50	0.035	1.8	0.1	5305	743
	4	4	50	0.045	2.4	0.1	3979	716
	5	5	50	0.060	3.0	0.1	3183	955
	6	6	50	0.075	3.6	0.1	2653	1194
	8	6	50	0.095	4.8	0.1	1989	1134
	10	6	50	0.115	6.0	0.1	1592	1098
	12	6	50	0.140	7.2	0.1	1326	1114
	16	6	50	0.150	9.6	0.2	995	895
	20	8	50	0.175	12.0	0.2	796	1114
Cast Iron GG (G)	3	4	220	0.008	4.5	0.1	23343	747
	4	4	220	0.010	6.0	0.1	17507	700
	5	5	220	0.014	7.5	0.1	14006	980
	6	6	220	0.016	9.0	0.1	11671	1120
	8	6	220	0.022	12.0	0.1	8754	1155
	10	6	220	0.028	15.0	0.1	7003	1176
	12	6	220	0.032	18.0	0.1	5836	1120
	16	6	220	0.044	24.0	0.2	4377	1155
	20	8	220	0.054	30.0	0.2	3501	1513

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		HM Solid Drills Diameter, (mm)				
		DRILL BITS	3-6	6-10	10-14	14-20
		Cutting Speed (Vc), m/min.		Feed Rate mm/rev		
Materials	DIN					
Steel	Steel					
Construction soft steel	St37-3	100-130	0,10 - 0,25	0,15 - 0,30	0,20 - 0,40	0,22 - 0,40
Free-cutting steels Construction steel Carburizing steel	9 S 20, 9 SMn 28 ST33-1, St37-3, C10	90-120	0,10 - 0,25	0,15 - 0,30	0,20 - 0,40	0,22 - 0,40
Carbon steel	35S20, St52-3					
Low-alloy steel	9SMnPb28, C45					
Cast steel	St-50-2, GS40Mn5	70-100	0,10 - 0,25	0,15 - 0,30	0,20 - 0,40	0,22 - 0,40
P	Alloy steel	C55, C60				
	Cold-Work tool steel	41CrAlMo7, 41Cr4	60-80			
	Tempered steel	100Cr6				
	Up to 38 HRC	30CrNiMo8 34CrMo4, 40NiCrMo2 36CrNiMo4, 42CrMo4	40-70			
	High-alloyed steels hardened	55NiCrMoV6				
Up to 44 HRC	S6-5-2, 50CrV4	30-50				
Stainless Steel	Stainless Steel					
M	Ferritic, Martensic, Austenic, Austenic-Ferritic duplex	X 46 Cr 13 X 5CrNi18 10 X2CrNiMoN22-5-3	40-70*			
	Cast Iron	Cast Iron				
	Grey cast iron	GG15, GG20, GG25, GG30	100-120			
K	Malleable cast iron	GTS-35-10, GTS-45-06, GTS-55-04, GTW-35-04	70-90			
	Spheodial cast iron	GGG40, GGG50, GGG60, GGG70	90-120			
Non-Ferrous Materials Aluminium Alloys	Non-Metal materials					
N	Unalloyed aluminium, Aluminium alloys	Al99.99 AlCuSiMn GAlSi10Mg	180-220*			
	Pure copper, Low alloyed copper,	Cu-Of				
	Copper zinc alloys (Brass, long chipping),	Cu Zn 37, Cu Zn 15,	110-160			
	Copper zinc alloys (Brass, short chipping)	Cu Zn 39 Pb 3 Cu Zn 39 Pb 2	150-170 180-240			
	Special Materials - Titanium Alloys	Heat Resistant materils				
S	Titanium alloys	Ti Al 6 V 4	20-40*			
	Nickel alloys	Ni Cu 30 Fe	10-25*			
Hard Materials	Hardened Steels					
H	High strenght steels	Weldox1100				
	Hardened steels	Hardox 500 Armox600T				
	Hard casting	HSSE	20-40*			

* Standard tools doesn't recommended for unsuitable materials.

(NEW) Sarp HM Solid Drills Diameter, (mm)									
END MILLS	2	3	4	6	8	10	12	16	20
Cutting Speed (Vc), m/min.	Feed Rate mm/rev								
70-140	0,05 - 0,12	0,07 - 0,14	0,08 - 0,16	0,11 - 0,22	0,13 - 0,26	0,15 - 0,31	0,18 - 0,35	0,22 - 0,42	0,28 - 0,54
90-140	0,05 - 0,12	0,07 - 0,14	0,08 - 0,16	0,11 - 0,22	0,13 - 0,26	0,15 - 0,31	0,18 - 0,35	0,22 - 0,42	0,31 - 0,53
80-100	0,06 - 0,13	0,08 - 0,15	0,09 - 0,17	0,12 - 0,23	0,15 - 0,28	0,19 - 0,33	0,22 - 0,38	0,26 - 0,46	0,34 - 0,58
60-100	0,06 - 0,13	0,08 - 0,15	0,09 - 0,17	0,12 - 0,23	0,15 - 0,28	0,19 - 0,33	0,22 - 0,38	0,26 - 0,46	0,28 - 0,58
50-100	0,05 - 0,12	0,07 - 0,14	0,08 - 0,16	0,11 - 0,22	0,13 - 0,26	0,15 - 0,31	0,18 - 0,35	0,22 - 0,42	0,28 - 0,54
40-70	0,04 - 0,06	0,05 - 0,08	0,06 - 0,10	0,08 - 0,14	0,10 - 0,18	0,13 - 0,22	0,14 - 0,24	0,18 - 0,32	0,23 - 0,41
40-70*	0,03 - 0,07	0,04 - 0,08	0,06 - 0,10	0,08 - 0,12	0,08 - 0,14	0,10 - 0,16	0,12 - 0,18	0,14 - 0,20	0,16 - 0,20
80-170	0,09 - 0,17	0,11 - 0,22	0,12 - 0,24	0,16 - 0,31	0,20 - 0,38	0,23 - 0,44	0,25 - 0,49	0,31 - 0,60	0,38 - 0,74
80-140	0,11 - 0,15	0,12 - 0,16	0,13 - 0,19	0,16 - 0,25	0,20 - 0,31	0,23 - 0,44	0,23 - 0,36	0,25 - 0,40	0,38 - 0,60
80-130	0,07 - 0,15	0,08 - 0,17	0,09 - 0,19	0,12 - 0,25	0,14 - 0,30	0,17 - 0,35	0,19 - 0,40	0,24 - 0,48	0,30 - 0,60
90-315*	0,06 - 0,13	0,08 - 0,14	0,09 - 0,17	0,10 - 0,16	0,12 - 0,20	0,16 - 0,24	0,20 - 0,28	0,24 - 0,32	0,32 - 0,48
90-270	0,06 - 0,12	0,08 - 0,16	0,10 - 0,20	0,12 - 0,24	0,16 - 0,28	0,20 - 0,32	0,24 - 0,36	0,28 - 0,40	0,32 - 0,48
20-30*	0,02 - 0,05	0,03 - 0,06	0,04 - 0,08	0,06 - 0,10	0,08 - 0,12	0,09 - 0,13	0,10 - 0,14	0,12 - 0,16	0,14 - 0,18
10-40*	0,02 - 0,03	0,02 - 0,04	0,03 - 0,06	0,05 - 0,08	0,07 - 0,10	0,08 - 0,11	0,09 - 0,11	0,10 - 0,14	0,11 - 0,16



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www.makinatakim.com.tr



Makina Takim Endüstrisi A.Ş.
Balçık Mahallesi 3257 Sokak
No: 15/A 41480 Gebze / KOCAELİ / TÜRKİYE
Tel: +90 262 744 18 80 (Pbx)
Faks: +90 262 744 14 44

www.makinatakim.com.tr