YÜKSEK KALİTE SERT METAL KARBÜR KESİCİ TAKIMLAR

MRKA®

CUTTING TOOLS

801 ROUTER

803 ALÜMİNYUM İŞLEME

804 ÇELİK İŞLEME

805 MODEL İŞLEME

807 SLOT İŞLEME

814 KÜRE İŞLEME

840 MICRO İŞLEMELER

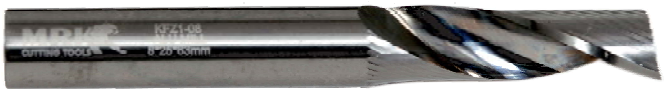
890 GRAVÜR İŞLEMELER

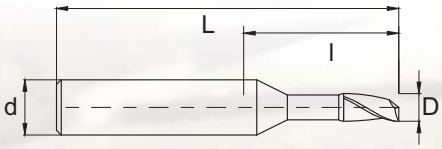
892 MERMER İŞLEMELER

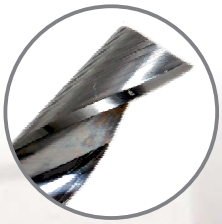
851 DELİK DELME

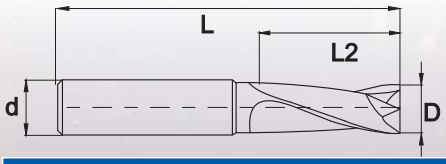
894 TI-INOX İŞLEMELER

896 ZOR ÇELİKLER







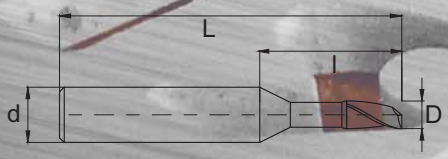


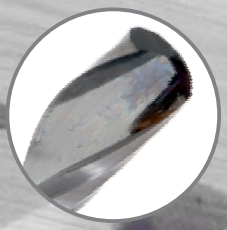
801 / TEK AĞIZ STANDART BOY ALU KARBÜR FREZELER

Kodu	D	d	z	l	L
80102050	2	3	1	6	50
80102550	2,5	3	1	6	50
80103050	3	3	1	12	50
80103063	3	3	1	20	63
80104050	4	4	1	14	50
80104063	4	4	1	22	63
80104075	4	4	1	25	75
80105050	5	5	1	16	50
80105063	5	5	1	25	63
80105075	5	5	1	32	75
80105100	5	5	1	25	100
80106058	6	6	1	19	58
80106063	6	6	1	25	63
80106075	6	6	1	32	75
80106100	6	6	1	25	100
80108064	8	8	1	25	64
80110073	10	10	1	32	73

802 / İKİ AĞIZ KISA KARBÜR FREZE

Kodu	D	d	z	l	L
80200338	0,3	3	2	1	38
80200438	0,4	3	2	1	38
80200538	0,5	3	2	1	38
80200738	0,7	3	2	1	38
80200838	0,8	3	2	2	38
80200938	0,9	3	2	2	38
80201038	1	3	2	3	38
80201538	1,5	3	2	4	38
80202038	2	3	2	4	38
80202538	2,5	3	2	4	38
80203050	3	3	2	12	50
80204050	4	4	2	14	50
80205050	5	5	2	16	50
80206058	6	6	2	19	58
80208064	8	8	2	20	64
80210073	10	10	2	21	73
80212084	12	12	2	25	84
80214084	14	14	2	32	84
80216093	16	16	2	32	93
80218093	18	18	2	35	93
80220100	20	20	2	38	100





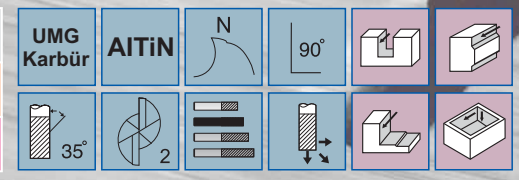
811 / TEK AĞIZ PVC KARBÜR FREZELER

Kodu	D	d	z	l	L
81102050	2	3	1	6	50
81102550	2,5	3	1	6	50
81103050	3	3	1	12	50
81104050	4	4	1	14	50
81105050	5	5	1	16	50
81105063	5	5	1	25	63
81106058	6	6	1	19	58
81106063	6	6	1	25	63

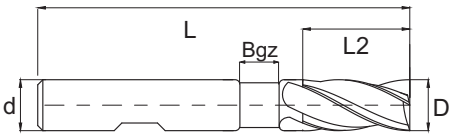
802 / İKİ AĞIZ UZUN BOY KARBÜR FREZE - TİALN

Kodu	D	d	z	L2	L
80203075	3	3	2	20	75
80203100	3	3	2	20	100
80204075	4	4	2	25	75
80204100	4	4	2	25	100
80205075	5	5	2	25	75
80205100	5	5	2	25	100
80206075	6	6	2	30	75
80206100	6	6	2	40	100
80208075	8	8	2	30	75
80208100	8	8	2	45	100
80208150	8	8	2	65	150
80210100	10	10	2	40	100
80210150	10	10	2	50	150
80212100	12	12	2	45	100
80212150	12	12	2	50	150
80216125	16	16	2	45	125
80216150	16	16	2	75	150
80220125	20	20	2	45	125
80220150	20	20	2	75	150

Teknik Detaylar						
S	1.SINIF ÇELİK	20-30 HRC Vc.80-120	2.SINIF ÇELİK	30-38 HRC Vc.60-100	SERT ÇELİKLER	38-48 HRC Vc.30-60
N ○						
K ●	1.SINIF PASLANMAZ	Vc.60-100	2.SINIF PASLANMAZ	Vc.40-60	TİTANYUM	
M ○						
H ●	1.SINIF ALU-BAKIR	Vc.200-250	2.SINIF PLASTİK	Vc.120-180	DÖKÜM	Vc.100-140
P ●						



KARBÜR FREZELER



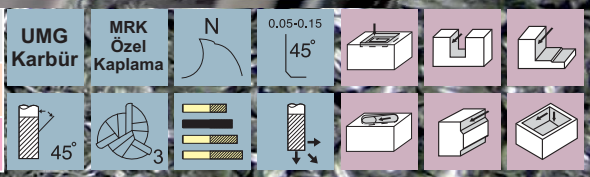
803 / ÜÇ AĞIZ UZUN BOY ALU KARBÜR FREZE

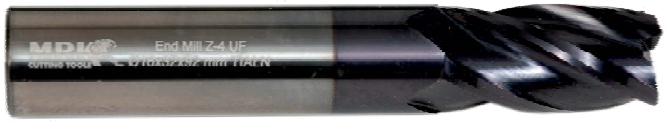
Kodu	D	d	z	l2	L	r	Bgz
80301054	1	4	3	3	50	0	7
80301554	1,5	4	3	3	50	0	7
80302054	2	4	3	4	50	0	8
80302075	2	4	3	4	75	0	26
80302554	2,5	4	3	4	50	0	8
80302575	2,5	4	3	4	75	0	26
80303054	3	4	3	6	50	0,1	10
80303075	3	4	3	10	75	0,1	30
80303104	3	4	3	20	100	0,1	40
80304075	4	4	3	16	75	0,1	30
80304100	4	4	3	20	100	0,1	40
80305075	5	5	3	16	75	0,1	30
80305100	5	5	3	20	100	0,1	40
80306075	6	6	3	16	75	0,2	30
80306100	6	6	3	30	100	0,2	30
80306150	6	6	3	50	150	0,2	50
80308100	8	8	3	30	100	0,2	30
80308150	8	8	3	50	150	0,2	50
80310120	10	10V	3	30	120	0,3	50
80310150	10	10V	3	50	150	0,3	50
80312120	12	12V	3	30	120	0,3	50
80312150	12	12V	3	50	150	0,3	50
80314150	14	14V	3	50	150	0,5	50
80316125	16	16V	3	40	125	0,5	40
80316150	16	16V	3	50	150	0,5	50
80316200	16	16V	3	75	200	0,5	60
80318150	18	18V	3	50	150	0,5	50
80320125	20	20V	3	30	125	0,5	40
80320150	20	20V	3	50	150	0,5	50
80320200	20	20V	3	75	200	0,5	60
80325150	25	25V	3	50	150	0,5	50

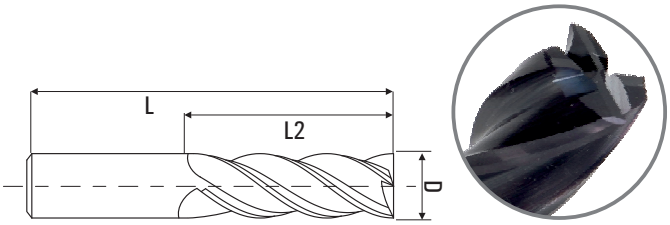
803 / ÜÇ AĞIZ STANDART ALU KARBÜR FREZE

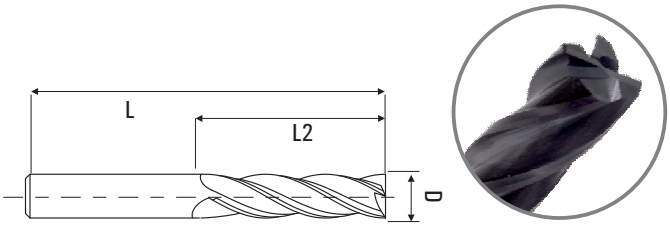
Kodu	D	d	z	l2	L	r	Bgz
80301038	1	3	3	3	38	0	3
80301538	1,5	3	3	3	38	0	3
80301534	1,5	4	3	3	38	0	3
80302038	2	3	3	3	38	0	3
80302034	2	4	3	3	38	0	3
80302538	2,5	3	3	4	38	0	4
80302554	2,5	4	3	4	38	0	4
80303038	3	3	3	4	38	0,1	4
80303034	3	4	3	4	50	0,1	4
80303056	3	6	3	6	50	0,1	6
80304050	4	4	3	6	50	0,1	6
80304056	4	6	3	8	50	0,1	8
80305050	5	5	3	10	50	0,1	10
80305056	5	6	3	12	57	0,1	12
80306057	6	6	3	10	57	0,2	10
80308063	8	8	3	14	63	0,2	14
80310072	10	10	3	18	72	0,3	18
80312083	12	12	3	20	83	0,3	20
80314083	14	14	3	25	83	0,5	25
80316092	16	16	3	25	92	0,5	25
80318092	18	18	3	30	92	0,5	30
80320100	20	20	3	30	100	0,5	30
80325100	25	25	3	38	100	0,5	38

Teknik Detaylar						
S ●	1.SINIF ÇELİK		2.SINIF ÇELİK		SERT ÇELİKLER	
N K M	1.SINIF PASLANMAZ		2.SINIF PASLANMAZ		TİTANYUM	
H P	1.SINIF ALU-BAKIR	Vc.80-120	2.SINIF ALU-BAKIR	Vc.180-220	DÖKÜM	









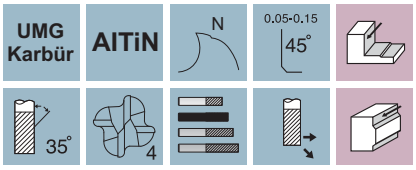
804 / DÖRT AĞIZ STANDART BOY KARBÜR FREZE TİALN

Kodu	D	d	Z	L2	L
80401038	1	3	4	3	38
80401538	1,5	3	4	5	38
80402038	2	3	4	6	38
80402056	2	6	4	10	57
80402538	2,5	3	4	7	38
80403050	3	3	4	12	50
80403056	3	6	4	12	57
80403550	3,5	4	4	12	50
80404050	4	4	4	14	50
80404056	4	6	4	14	57
80404550	4,5	5	4	14	50
80405050	5	5	4	16	50
80405056	5	6	4	19	57
80405557	5,5	6	4	19	57
80406057	6	6	4	19	57
80406560	6,5	7	4	19	60
80407060	7	7	4	19	60
80407563	7,5	8	4	19	63
80408063	8	8	4	20	63
80408572	8,5	9	4	20	72
80409072	9	9	4	21	72
80410072	10	10	4	21	72
80411083	11	12	4	25	83
80412083	12	12	4	25	83
80413083	13	14	4	32	83
80414083	14	14	4	32	83
80415092	15	16	4	32	92
80416092	16	16	4	32	92
80417092	17	18	4	35	92
80418092	18	18	4	35	92
80419100	19	20	4	35	100
80420100	20	20	4	38	100
80422100	22	22	4	38	100
80424100	24	24	4	38	100
80425100	25	25	4	38	100

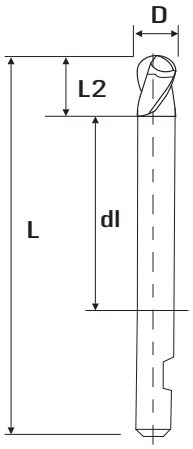
804 / DÖRT AĞIZ UZUN BOY KARBÜR FREZE TİALN KAPLI

Kodu	D	d	Z	L2	L
80401060	1	3	4	5	60
80401560	1,5	3	4	5	60
80402060	2	3	4	8	60
80402560	2,5	3	4	8	60
80403075	3	3	4	20	75
80403100	3	4	4	20	100
80404075	4	4	4	25	75
80404100	4	4	4	25	100
80405075	5	5	4	25	75
80405100	5	5	4	25	100
80406075	6	6	4	30	75
80406100	6	6	4	40	100
80406150	6	6	4	65	150
80408100	8	8	4	45	100
80408125	8	8	4	50	125
80408150	8	8	4	65	150
80410100	10	10	4	45	100
80410125	10	10	4	50	125
80410150	10	10	4	75	150
80412100	12	12	4	45	100
80412125	12	12	4	50	125
80412150	12	12	4	75	150
80412200	12	12	4	80	200
80414125	14	14	4	50	125
80414150	14	14	4	75	150
80416125	16	16	4	50	125
80416150	16	16	4	75	150
80416200	16	16	4	80	200
80418125	18	18	4	50	125
80418150	18	18	4	75	150
80420125	20	20	4	50	125
80420150	20	20	4	75	150
80420200	20	20	4	80	200
80425150	25	25	4	75	150

Teknik Detaylar							
S	○	1.SINIF ÇELİK	20-30 HRC Vc.80-120	2.SINIF ÇELİK	30-38 HRC Vc.60-100	SERT ÇELİKLER	38-48 HRC Vc.40-80
N	○						
K	●	1.SINIF PASLANMAZ	Vc.60-100	2.SINIF PASLANMAZ	Vc.40-60	TİTANYUM	Vc.60-100
M	○						
H	●	METAL OLMAYAN	Vc.120-180	METAL OLMAYAN		DÖKÜM	Vc.100-140
P	●						



KARBÜR FREZELER



805 / ÜÇ AĞIZ DÜZ TİP

805 / ÜÇ AĞIZ KÜRESEL

805 / ÜÇ AĞIZ KÖŞE RADİUS

805 / ÜÇ AĞIZ DÜZ TİP MODEL FREZE

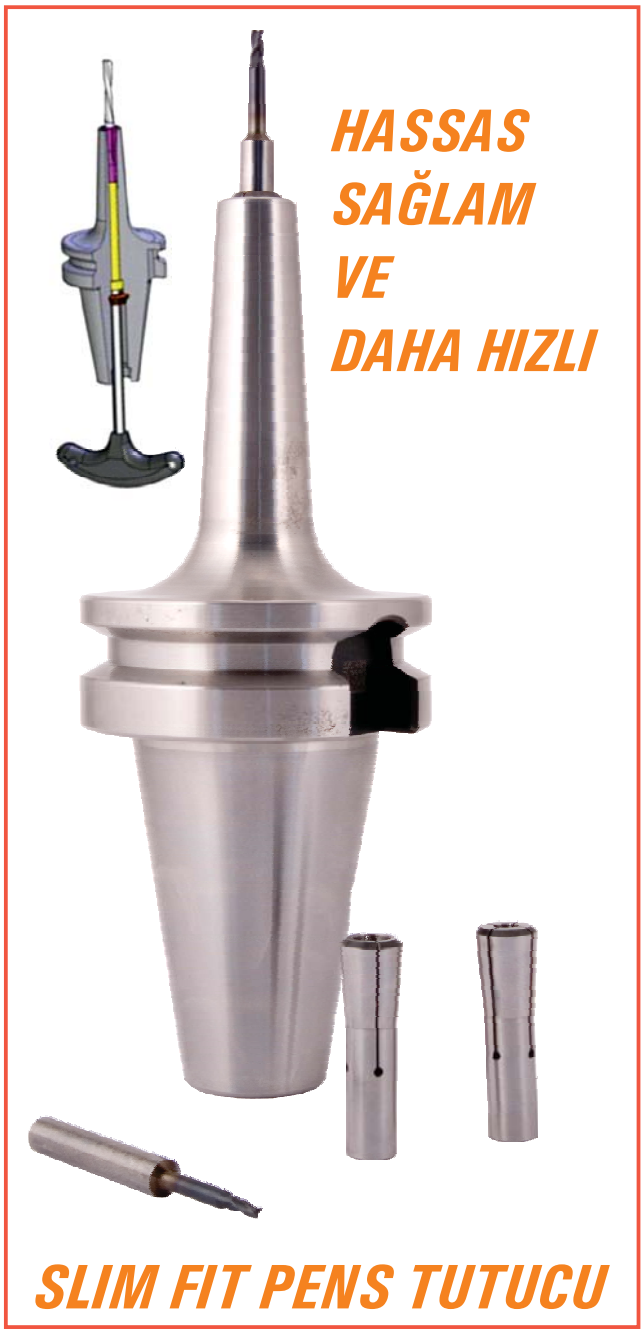
Kodu	D	d	Z	r	L2	dl	L
805060150	6	6	3	_	30	70	150
805080150	8	8	3	_	30	70	150
805100150	10	10	3	_	30	70	150
805120150	12	12	3	_	50	70	150
805080200	8	8	3	_	50	100	200
805100200	10	10	3	_	50	100	200
805120200	12	12	3	_	50	100	200
805100250	10	10	3	_	70	120	250
805120250	12	12	3	_	70	120	250

805 / ÜÇ AĞIZ KÜRESEL MODEL FREZE

Kodu	D	d	Z	r	L2	dl	L
805063150	6	6	3	3	30	40	150
805084150	8	8	3	4	30	40	150
805105150	10	10	3	5	30	40	150
805126150	12	12	3	6	50	40	150
805084200	8	8	3	4	50	50	200
805105200	10	10	3	5	50	50	200
805126200	12	12	3	6	50	50	200

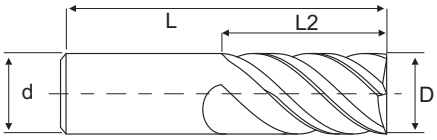
805 / ÜÇ AĞIZ KÖŞE RADİUS MODEL FREZE

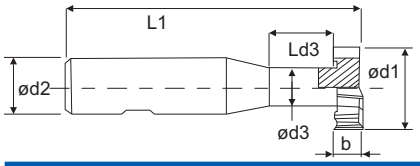
Kodu	D	d	Z	r	L2	dl	L
805061150	6	6	3	1	30	50	150
805062150	6	6	3	2	30	50	150
805081150	8	8	3	1	30	50	150
805082150	8	8	3	2	30	50	150
805101150	10	10	3	1	30	50	150
805102150	10	10	3	2	30	50	150
805121150	12	12	3	1	50	50	150
805122150	12	12	3	2	30	50	150
805082200	8	8	3	2	50	100	200
805102200	10	10	3	2	50	100	200
805122200	12	12	3	2	50	100	200

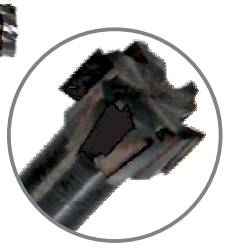


Teknik Detaylar							
S	1.SINIF ÇELİK		2.SINIF ÇELİK		SERT ÇELİKLER		
N	1.SINIF PASLANMAZ		2.SINIF PASLANMAZ		TİTANYUM		
K	1.SINIF ALU-BAKIR	Vc.80-120	2.SINIF ALU-BAKIR	Vc.180-220	DÖKÜM	Vc.180-220	
M							
H							
P							

UMG Karbür | MRK Özel Kaplama | N | 0.05-0.15 45° | 45° | 3





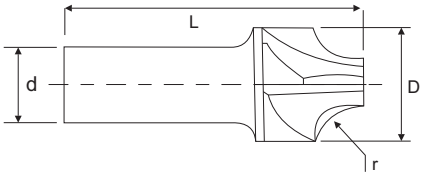


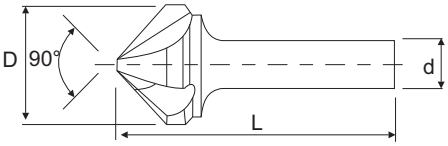
806 / ALTI AĞIZ HASSAS KARBÜR FREZE - TİALN

Kodu	D	d	Z	L2	L
80605057	5	5	6	19	57
80606057	6	6	6	19	57
80608064	8	8	6	20	64
80610073	10	10	6	20	73
80612084	12	12	6	25	84
80614084	14	14	6	32	84
80616093	16	16	6	32	93
80620100	20	20	6	38	100
80612120	12	12	6	60	120
80614120	14	14	6	60	120

807 / KARBÜR T - YARIK FREZE

Kodu	d1	b	d3	d2	z	Ld3	L1
807061057	6	1	4	6	4	20	57
807061557	6	1,5	4	6	4	20	57
807062057	6	2	4	6	4	20	57
807081063	8	1	5	8	4	30	63
807081563	8	1,5	5	8	4	30	63
807082063	8	2	5	8	4	30	63
807101072	10	1	6	10	6	30	72
807101572	10	1,5	6	10	6	30	72
807102072	10	2	6	10	6	30	72
807122083	12	2	7	12	6	35	83
807122583	12	2,5	7	12	6	35	83
807123083	12	3	7	12	6	35	83
807162592	16	2,5	8	16	6	40	92
807163092	16	3	8	16	6	40	92
807164092	16	4	8	16	6	40	92
807203100	20	3	10	20	6	45	100
807204100	20	4	10	20	6	45	100
807253100	25	3	12	25	6	45	100
807254100	25	4	12	25	6	45	100





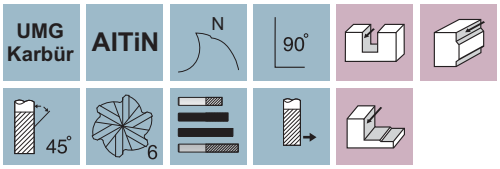
808 / KARBÜR KÖŞE YUVARLAMA FREZESİ

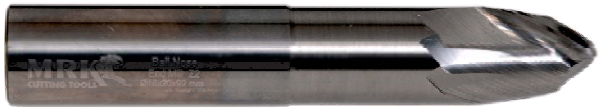
Kodu	r	D	d	z	L
808010063	1	8	8	4	63
808015072	1,5	9	10	4	72
808020072	2	10	10	4	72
808025083	2,5	11	12	4	83
808030083	3	12	12	4	83
808040083	4	14	14	4	83
808050092	5	16	16	4	92
808060100	6	20	20	4	100
808080100	8	24	24	4	100
808100100	10	25	25	4	100

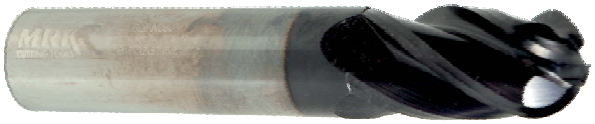
809 / KARBÜR HAVŞA FREZE

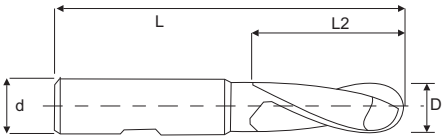
Kodu	D	d	Z	L
8099010	10	6	3	46
8099012	12	8	3	56
8099016	16	10	3	60
8099020	20	10	3	63
8099025	25	12	3	67
8096010	10	6	3	46
8096012	12	8	3	56
8096016	16	10	3	60
8096020	20	10	3	63
8096025	25	12	3	67

Teknik Detaylar							
S		1.SINIF ÇELİK	20-30 HRC Vc.80-120	2.SINIF ÇELİK	30-38 HRC Vc.60-100	SERT ÇELİKLER	38-48 HRC Vc.60-100
N	○						
K	○	1.SINIF PASLANMAZ	Vc.60-100	2.SINIF PASLANMAZ	Vc.40-60	TİTANYUM	
M	●						
H	●	1.SINIF ALU-BAKIR		2.SINIF ALU-BAKIR		DÖKÜM	Vc.100-140
P	●						









812 / İKİ AĞIZ STANDART BOY KAPLAMASIZ KÜRE KARBÜR FREZE

Kodu	D	d	r	z	L2	Bgz	L
812005038	0,5	3	0,25	2	1	_	38
812006038	0,6	3	0,30	2	1,2	_	38
812008038	0,8	3	0,40	2	1,6	_	38
812010038	1	3	0,50	2	3	3	38
812015038	1,5	3	0,75	2	3	3	38
812020038	2	3	1,0	2	4	4	38
812025038	2,5	3	1,25	2	5	5	38
812030050	3	3	1,5	2	6	6	50
812040050	4	4	2,0	2	8	8	50
812050050	5	5	2,5	2	10	10	50
812060057	6	6	3,0	2	12	12	57
812080063	8	8	4,0	2	16	16	63
812100072	10	10	5,0	2	20	20	72
812120083	12	12	6,0	2	24	24	83
812160092	16	16	8,0	2	25	25	92
812200100	20	20	10,0	2	30	30	100

813 / ÜÇ AĞIZ STANDART BOY KÜRE FREZE KAPLAMASIZ

Kodu	D	d	R	Z	L2	Bgz	L
813030057	3	6	1,5	3	6	10	57
813040057	4	6	2	3	8	10	57
813050057	5	6	2,5	3	10	10	57
813060057	6	6	3	3	12	12	57
813080064	8	8	4	3	16	16	64
813100073	10	10	5	3	20	20	73
813120084	12	12	6	3	25	25	84
813140084	14	14	7	3	25	25	84
813160092	16	16	8	3	25	25	92
813180092	18	18	9	3	30	30	92
813200100	20	20	10	3	30	30	100

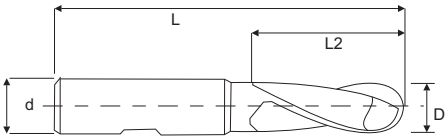
814 / DÖRT AĞIZ STANDART BOY KÜRE FREZE - TİALN

Kodu	D	d	r	Z	L2	L
814010038	1	3	0,5	4	4	38
814015038	1,5	3	0,75	4	4	38
814020038	2	3	1,0	4	4	38
814025038	2,5	3	1,25	4	4	38
814030050	3	3	1,5	4	12	50
814036057	3	6	1,5	4	19	57
814040050	4	4	2,0	4	12	50
814046057	4	6	2,0	4	19	57
814050050	5	5	2,5	4	16	50
814056057	5	6	2,5	4	19	57
814060057	6	6	3,0	4	19	57
814070064	7	8	3,5	4	20	64
814080064	8	8	4,0	4	20	64
814090073	9	10	4,5	4	20	73
814100073	10	10	5,0	4	21	73
814110084	11	12	5,5	4	25	84
814120084	12	12	6,0	4	25	84
814130084	13	14	6,5	4	25	84
814140084	14	14	7,0	4	25	84
814150092	15	15	7,5	4	32	92
814160092	16	16	8,0	4	32	92
814180092	18	18	9,0	4	35	92
814200100	20	20	10,0	4	38	100
814250100	25	25	12,5	4	38	100

Teknik Detaylar

S	1.SINIF ÇELİK	20-30 HRC Vc.100-140	2.SINIF ÇELİK	30-38 HRC Vc.80-120	SERT ÇELİKLER	38-48 HRC Vc.60-100
N	1.SINIF PASLANMAZ	Vc.60-100	2.SINIF PASLANMAZ	Vc.40-60	TİTANYUM	Vc.60-100
K	ALU-BAKIR	Vc.100-140	METAL OLMAYAN	Vc.180-200	DÖKÜM	Vc.100-140

UMG Karbür | AlTiN | H | 90° | 30° | 2 | 3 | 4



812 / İKİ AĞIZ UZUN BOY KAPLAMASIZ KÜRE KARBÜR FREZE

Kodu	D	d	Z	L2	Bgz	L
812010050	1	3	2	3	10	50
812015050	1,5	3	2	3	10	50
812020060	2	3	2	5	16	60
812025060	2,5	3	2	5	16	60
812030060	3	3	2	6	20	60
812030100	3	4	2	20	40	100
812040075	4	4	2	10	25	75
812040100	4	4	2	20	40	100
812050075	5	5	2	10	25	75
812050100	5	5	2	20	40	100
812060075	6	6	2	12	25	75
812060100	6	6	2	20	40	100
812080075	8	8	2	16	25	75
812080100	8	8	2	20	40	100
812100100	10	10	2	20	40	100
812120100	12	12	2	20	40	100
812160125	16	16	2	30	40	125
812200125	20	20	2	30	40	125
812080150	8	8	2	50	50	150
812100150	10	10	2	50	50	150
812120150	12	12	2	50	50	150
812160150	16	16	2	50	50	150
812200150	20	20	2	50	50	150

813 / ÜÇ AĞIZ UZUN BOY KÜRE FREZE KAPLAMASIZ

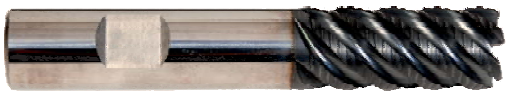
Kodu	D	d	R	Z	L2	Bgz	L
813030100	3	6	1,5	3	20	30	75
813040100	4	6	2	3	20	30	75
813050100	5	6	2,5	3	30	30	100
813060100	6	6	3	3	30	30	100
813080100	8	8	4	3	30	30	100
813080150	8	8	4	3	50	50	150
813100100	10	10	5	3	30	30	100
813100150	10	10	5	3	50	50	150
813120100	12	12	6	3	30	30	100
813120150	12	12	6	3	50	50	150
813160150	16	16	8	3	50	50	150
813200150	20	20	10	3	50	50	150

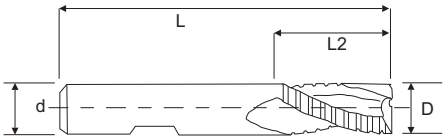
814 / DÖRT AĞIZ UZUN BOY KÜRE FREZE - TİALN

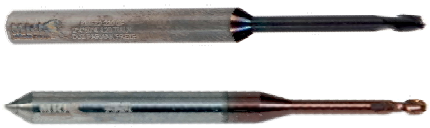
Kodu	D	d	Z	L2	Bgz	L
814010060	1	3	4	6	20	60
814015060	1,5	3	4	6	20	60
814020060	2	3	4	6	20	60
814025060	2,5	3	4	6	20	60
814030075	3	3	4	20	20	75
814030100	3	4	4	20	40	100
814040075	4	4	4	20	20	75
814040100	4	4	4	25	40	100
814050075	5	5	4	20	20	75
814050100	5	5	4	25	40	100
814060075	6	6	4	20	20	75
814060100	6	6	4	30	40	100
814060150	6	6	4	50	50	150
814080100	8	8	4	30	40	100
814080150	8	8	4	50	50	150
814100100	10	10	4	30	40	100
814100150	10	10	4	50	50	150
814120100	12	12	4	30	40	100
814120150	12	12	4	50	50	150
814120200	12	12	4	80	60	200
814140125	14	14	4	30	40	125
814160125	16	16	4	30	40	125
814160150	16	16	4	50	50	150
814160200	16	16	4	80	60	200
814200125	20	20	4	30	40	125
814200150	20	20	4	50	50	150

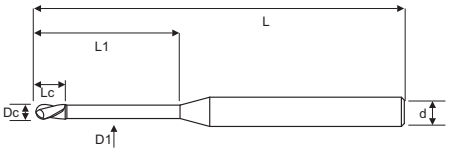
Teknik Detaylar						
S ○	1.SINIF ÇELİK	20-30 HRC Vc.80-120	2.SINIF ÇELİK	30-38 HRC Vc.60-100	SERT ÇELİKLER	38-48 HRC Vc.40-60
N ● K ○	1.SINIF PASLANMAZ	Vc.60-100	2.SINIF PASLANMAZ	Vc.40-60	TİTANYUM	Vc.60-100
H ● P ●	ALU-BAKIR	Vc.150-200	METAL OLMAYAN	Vc.180-220	DÖKÜM	Vc.100-140

UMG Karbür | AlTiN | N | R | 30° | 2 | 3 | 4









824 / DÖRT AĞIZ STANDART BOY KABATALAŞ FREZE

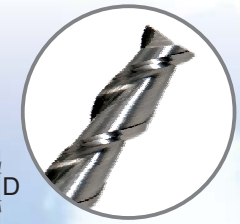
Kodu	D	d	Z	L2	L
82404057	4	6	4	16	57
82405057	5	6	4	16	57
82406057	6	6	4	19	57
82408063	8	8	4	20	63
82410071	10	10	4	21	71
82412083	12	12	4	25	83
82414083	14	14	4	32	83
82416092	16	16	4	32	92
82420100	20	20	4	38	100

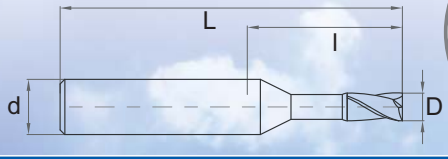
840 / İKİ AĞIZ KAPLAMALI MİKRO KARBÜR FREZE

Kodu	Dc	d	Z	Lc	L1	L
840101050	1	4	2	3	10	50
840101250	1	4	2	3	12	50
840101650	1	4	2	3	16	50
840102050	1	4	2	3	20	50
840151050	1,5	4	2	3	10	50
840151250	1,5	4	2	3	12	50
840151650	1,5	4	2	3	16	50
840152050	1,5	4	2	3	20	50
840201050	2	4	2	4	10	50
840201250	2	4	2	4	12	50
840201650	2	4	2	4	16	50
840202050	2	4	2	4	20	50
840203050	2	4	2	4	30	50
840251050	2,5	4	2	5	10	50
840251650	2,5	4	2	5	16	50
840252050	2,5	4	2	5	20	50
840253050	2,5	4	2	5	30	50

824 / DÖRT AĞIZ STANDART BOY NANO FREZE

Kodu	D	d	Z	L2	L
82404057	4	6	4	16	57
82405057	5	6	4	16	57
82406057	6	6	4	19	57
82408063	8	8	4	20	63
82410071	10	10	4	21	71
82412083	12	12	4	25	83
82414083	14	14	4	32	83
82416092	16	16	4	32	92
82420100	20	20	4	38	100





891 / STRAFOR & KÖPÜK KARBÜR FREZE

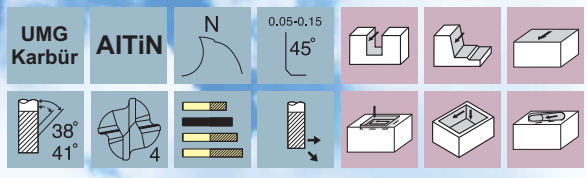
Kodu	D	d	Z	l	L
89105100	5	5	2	50	100
89105125	5	5	2	50	125
89106100	6	6	2	60	100
89106125	6	6	2	60	125

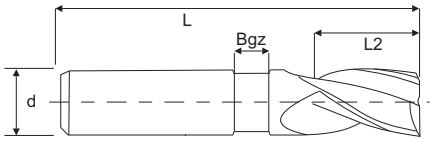
840 Mikro Frezeler Teknik Detaylar

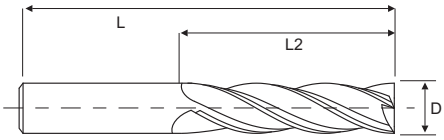
	UMG Karbür	AlTiN	N	30°	90°	
S ○ / N ●	1.SINIF ÇELİK	20-30 HRC Vc.60-80	2.SINIF ÇELİK	30-38 HRC Vc.40-60		
K ○ / M ○	PASLANMAZ	Vc.40-60	TİTANYUM	Vc.40-60		
H ● / P ●	DÖKÜM	Vc.80-100	SERT ÇELİKLER	38-48 HRC Vc.30-40		

824 Kaba Frezeler Teknik Detaylar

S ○ / N	1.SINIF ÇELİK	20-30 HRC Vc.180-200	2.SINIF ÇELİK	30-38 HRC Vc.120-150
K ○ / M ○	PASLANMAZ	Vc.60-80	TİTANYUM	Vc.70-90
H ● / P ●	DÖKÜM	Vc.160-180	SERT ÇELİKLER	38-48 HRC Vc.30-60







833 / ÜÇ AĞIZ KÖŞE (R) FREZE KAPLAMASIZ

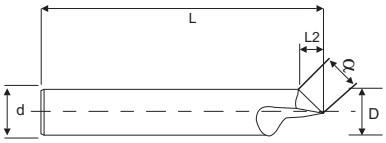
Kodu	D	d	r	Z	L2	Bgz	L
833030550	3	3	0,5	3	6	10	50
833040550	4	4	0,5	3	8	10	50
833041050	4	4	1	3	8	10	50
833050550	5	5	0,5	3	10	10	50
833051050	5	5	1	3	10	10	50
833060557	6	6	0,5	3	12	12	57
833061057	6	6	1	3	12	12	57
833062057	6	6	2	3	12	12	57
833081064	8	8	1	3	16	16	64
833082064	8	8	2	3	16	16	64
833101073	10	10	1	3	20	20	73
833102073	10	10	2	3	20	20	73
833103073	10	10	3	3	20	20	73
833121084	12	12	1	3	25	25	84
833122084	12	12	2	3	25	25	84
833123084	12	12	3	3	25	25	84
833142084	14	14	2	3	25	25	84
833161092	16	16	1	3	25	25	92
833162092	16	16	2	3	25	25	92
833163092	16	16	3	3	25	25	92
833202100	20	20	2	3	30	30	100
833203100	20	20	3	3	30	30	100
833041100	4	6	1	3	30	30	100
833051100	5	6	1	3	30	30	100
833061100	6	6	1	3	30	30	100
833062100	6	6	2	3	30	30	100
833081100	8	8	1	3	30	30	100
833082100	8	8	2	3	30	30	100
833101100	10	10	1	3	30	30	100
833102100	10	10	2	3	30	30	100
833121120	12	12	1	3	30	30	120
833122120	12	12	2	3	30	30	120
833161120	16	16	1	3	30	30	120
833162120	16	16	2	3	30	30	120
833163120	16	16	3	3	30	30	120
833202120	20	20	2	3	30	30	120
833203120	20	20	3	3	30	30	120

834 / DÖRT AĞIZ STANDART BOY KÖŞE RADÜS FREZE - TİALN

Kodu	D	d	r	Z	L2	L
834030550	3	3	0,5	4	12	50
834030575	3	3	0,5	4	20	75
834031050	3	3	1,0	4	12	50
834301075	3	3	1,0	4	20	75
834040551	4	4	0,5	4	14	51
834040575	4	4	0,5	4	25	75
834041051	4	4	1,0	4	14	51
834041075	4	4	1,0	4	25	75
834050551	5	5	0,5	4	16	51
834050575	5	5	0,5	4	25	75
834051051	5	5	1,0	4	16	51
834051075	5	5	1,0	4	25	75
834060100	6	6	0,5	4	30	100
834060558	6	6	0,5	4	19	58
834060575	6	6	0,5	4	19	75
834061058	6	6	1,0	4	19	58
834061100	6	6	1,0	4	30	100
834061558	6	6	1,5	4	19	58
834062058	6	6	2,0	4	19	58
834062100	6	6	2,0	4	30	100
834080564	8	8	0,5	4	20	64
834081064	8	8	1,0	4	20	64
834081100	8	8	1,0	4	45	100
834081500	8	8	1,5	4	45	100
834081564	8	8	1,5	4	20	64
834082064	8	8	2,0	4	20	64
834082100	8	8	2,0	4	45	100
834085100	8	8	0,5	4	45	100
834101100	10	10	1,0	4	45	100
834102073	10	10	2,0	4	21	73
834102100	10	10	2,0	4	45	100
834105073	10	10	0,5	4	21	73
834100100	10	10	0,5	4	45	100
834110073	10	10	1,0	4	21	73
834115073	10	10	1,5	4	21	73
834121084	12	12	1,0	4	25	84
834121125	12	12	1,0	4	45	125
834121584	12	12	1,5	4	25	84
834122084	12	12	2,0	4	25	84
834122125	12	12	2,0	4	45	125
834125084	12	12	0,5	4	25	84
834125125	12	12	0,5	4	45	125
834161093	16	16	1,0	4	35	93
834161125	16	16	1,0	4	45	125
834161593	16	16	1,5	4	35	93
834162093	16	16	2,0	4	35	93
834162125	16	16	2,0	4	45	125
834163093	16	16	3,0	4	35	93
834163125	16	16	3,0	4	45	125
834201125	20	20	1,0	4	45	125
834202125	20	20	2,0	4	45	125
834203125	20	20	3,0	4	45	125

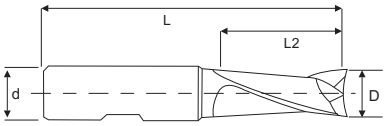
Teknik Detaylar						
S ○	1.SINIF ÇELİK	20-30 HRC Vc.80-120	2.SINIF ÇELİK	30-38 HRC Vc.60-80	SERT ÇELİKLER	38-48 HRC Vc.40-60
N ○ K ○	1.SINIF PASLANMAZ	Vc.60-80	2.SINIF PASLANMAZ	Vc.40-60	TİTANYUM	Vc.40-60
M ● H ● P ●	1.SINIF ALU-BAKIR	Vc.120-180	METAL OLMAYAN	Vc.150-200	DÖKÜM	Vc.80-100

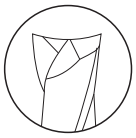
UMG Karbür | AlTiN | N | R | 30° | 3 | 4



890 / GRAVUR VE OYMA FREZESİ

Kodu	D	d	L2	α	L
8903050	3	3	4	45'	50
8904050	4	4	6	45'	50
8905050	5	5	8	45'	50
8906057	6	6	10	45'	57
8903150	3	3	4	30'	50
8904150	4	4	6	30'	50
8905150	5	5	8	30'	50
8906157	6	6	10	30'	57





893 / MDF-AHŞAP KARBÜR FREZELER

Kodu	D	d	Z	L2	L
8930250	2	3	2	6	50
8930350	3	3	2	12	50
8930450	4	4	2	15	50
8930550	5	5	2	20	50
8930663	6	6	2	25	63
8930875	8	8	2	32	75
8931075	10	10	2	32	75

890 Gravür Freze Teknik Detaylar

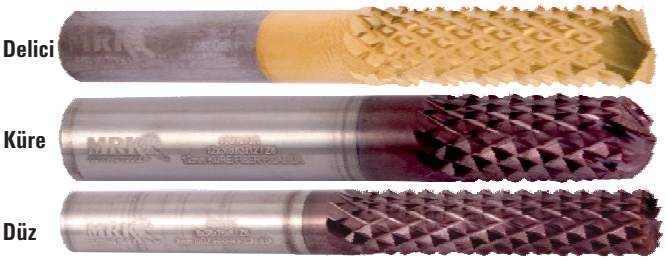
S	ÇELİK	Vc.60-80	UMG Karbür
N ○			
K ●	PASLANMAZ	Vc.40-60	
M ○			
H	METAL OLMAYAN	Vc.100-120	
P ●			

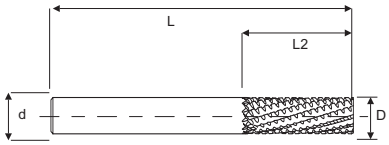
25° 2 90°

893 Ahşap Freze Teknik Detaylar

S	ÇELİK		UMG Karbür
N ●			
K ○	PASLANMAZ		
M ○			
H	METAL OLMAYAN	Vc.100-120	
P			

25° 2 90°





892 / MERMER - FİBER KARBÜR FREZE (Düz-Küresel ve Delici Tip)

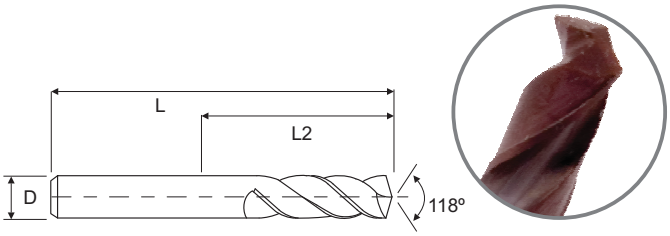
Kodu	D	d	L2	L
8920351	3	3	10	51
8920451	4	4	16	51
8920551	5	5	16	51
8920675	6	6	25	75
8920676	6	6	38	75
8920875	8	8	25	75
8920876	8	8	38	75
8921075	10	10	30	75
8921275	12	12	30	75
8921692	16	16	40	92
8922100R	20	20	45	100
8920551R	5	5	16	51
8920675R	6	6	25	75
8920676R	6	6	38	75
8920875R	8	8	25	75
8920876R	8	8	38	75
8921075R	10	10	30	75
8921275R	12	12	30	75
8921692R	16	16	40	92
8922100R	20	20	45	100
89208150R	8	8	110	150
89210150R	10	10	110	150
89212150R	12	12	110	150
89216150R	16	16	110	150
89220150R	20	20	110	150
89208200R	8	8	110	200
89210200R	10	10	110	200
89212200R	12	12	110	200

892 Frezeler Teknik Detaylar

S	FİBER	Vc.250-300	UMG Karbür
N ○			
K ●	KOMPOZİT	Vc.250-300	
M ○			
H ●	MERMER	Vc.180-220	
P ●			

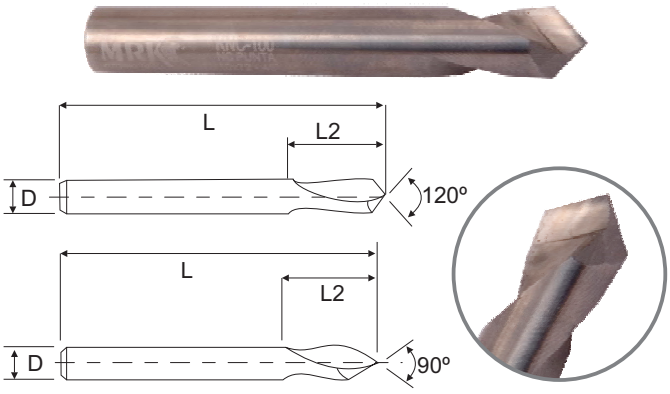
6 25° 2 90°

KARBÜR MATKAPLAR



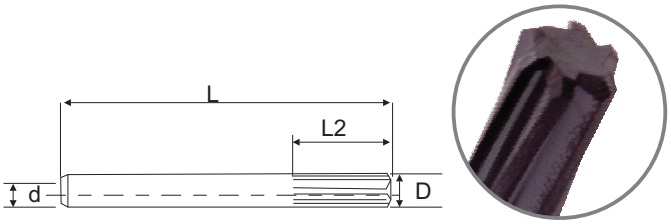
850 / MİKRO KARBÜR MATKAP UCU - DIN 6539 KISA TİP

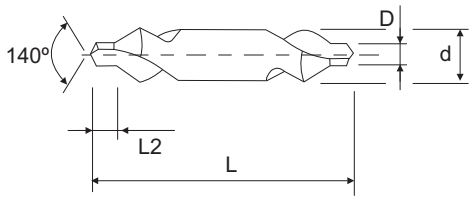
Kodu	d	L2	D	L
850010	1	8	3	50
850011	1,1	8	3	50
850012	1,2	8	3	50
850013	1,3	8	3	50
850014	1,4	8	3	50
850015	1,5	10	3	50
850016	1,6	10	3	50
850017	1,7	10	3	50
850018	1,8	10	3	50
850019	1,9	10	3	50
850020	2	12	3	50
850021	2,1	12	3	50
850022	2,2	12	3	50
850023	2,3	12	3	50
850024	2,4	12	3	50
850025	2,5	14	3	50
850026	2,6	14	3	50
850027	2,7	14	3	50
850028	2,8	14	3	50
850029	2,9	14	3	50



860 / NC KARBÜR MATKAP

Kodu	D	d	α	L2	L
86003050	3	3	90	8	50
86004050	4	4	90	8	50
86005050	5	5	90	8	50
86006057	6	6	90	8	57
86008063	8	8	90	12	63
86010072	10	10	90	12	72
86012083	12	12	90	16	83
86016092	16	16	90	20	92
86010272	10	10	120	12	72
86012283	12	12	120	16	83
86010120	10	10	90	12	120
86012120	12	12	90	16	120





862 / KARBÜR PUNTA MATKABI

Kodu	D	d	L
86201050	1	3	50
86201250	1,25	3	50
86201650	1,6	4	50
86202050	2	5	50
86202557	2,5	6	57
86203163	3,15	8	63
86204072	4	10	72
86205083	5	12	83
86206392	6,3	16	92

886 / KARBÜR RAYBA

Kodu	D	d	Z	L2	L
88602050	2	2	6	14	50
88603050	3	3	6	14	50
88604050	4	4	6	18	50
88605050	5	5	6	20	50
88606057	6	6	6	20	57
88608064	8	8	6	25	64
88610073	10	10	6	25	73
88612084	12	12	6	25	84
88614084	14	14	6	25	84
88616093	16	16	6	25	93
88620100	20	20	6	25	100

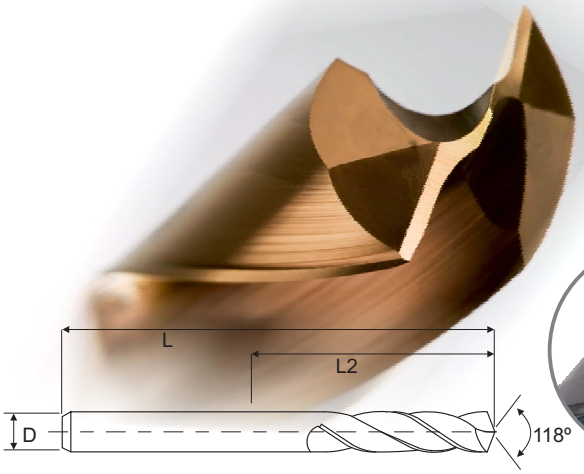
Teknik Detaylar

S		1.SINIF ÇELİK	20-30 HRC Vc.60-80	2.SINIF ÇELİK	30-38 HRC Vc.50-60	SERT ÇELİKLER	38-48 HRC Vc.30-40
N	○						
K	●	1.SINIF PASLANMAZ	Vc.40-60	2.SINIF PASLANMAZ	Vc.20-30	TİTANYUM	Vc.30-40
M	○						
H	●	METAL OLMAYAN	Vc.120-180	ALU-BAKIR	Vc.100-140	DÖKÜM	Vc.80-100
P	●						

UMG Karbür | AlTiN | DIN 6539 | DIN 333

3XD | D | 2 | 60° | 90° | 118° | 120°

KARBÜR MATKAPLAR



851 / KARBÜR MATKAP UÇLARI DIN 6539 KISA TİP

Kodu	D	L2	L	Kodu	D	L2	L
851030	3	16	46	851076	7,6	37	79
851031	3,1	18	49	851077	7,7	37	79
851032	3,2	18	49	851078	7,8	37	79
851033	3,3	18	49	851079	7,9	37	79
851034	3,4	18	49	851080	8	37	79
851035	3,5	20	52	851081	8,1	37	79
851036	3,6	20	52	851082	8,2	37	79
851037	3,7	20	52	851083	8,3	37	79
851038	3,8	20	52	851084	8,4	37	79
851039	3,9	20	52	851085	8,5	37	79
851040	4	22	55	851086	8,6	40	84
851041	4,1	22	55	851087	8,7	40	84
851042	4,2	22	55	851088	8,8	40	84
851043	4,3	22	55	851089	8,9	40	84
851044	4,4	22	55	851090	9	40	84
851045	4,5	24	58	851091	9,1	40	84
851046	4,6	24	58	851092	9,2	40	84
851047	4,7	24	58	851093	9,3	40	84
851048	4,8	24	58	851094	9,4	40	84
851049	4,9	24	58	851095	9,5	40	84
851050	5	26	62	851096	9,6	43	89
851051	5,1	26	62	851097	9,7	43	89
851052	5,2	26	62	851098	9,8	43	89
851053	5,3	26	62	851099	9,9	43	89
851054	5,4	26	62	851100	10	43	89
851055	5,5	28	66	851105	10,5	43	89
851056	5,6	28	66	851110	11	47	95
851057	5,7	28	66	851115	11,5	47	95
851058	5,8	28	66	851120	12	51	102
851059	5,9	28	66	851125	12,5	51	102
851060	6	28	66	851130	13	51	102
851061	6,1	31	70	851135	13,5	51	102
851062	6,2	31	70	851140	14	54	107
851063	6,3	31	70	851145	14,5	54	107
851064	6,4	31	70	851150	15	56	111
851065	6,5	31	70	851155	15,5	56	111
851066	6,6	31	70	851160	16	58	115
851067	6,7	31	70	851165	16,5	58	115
851068	6,8	31	70	851170	17	58	115
851069	6,9	34	74	851175	17,5	62	123
851070	7	34	74	851180	18	62	123
851071	7,1	34	74	851185	18,5	62	123
851072	7,2	34	74	851190	19	66	131
851073	7,3	34	74	851195	19,5	66	131
851074	7,4	34	74	851200	20	66	131
851075	7,5	34	74				

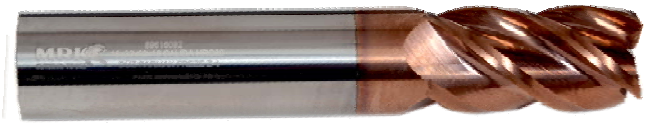
852/UZUN KARBÜR MATKAP UÇLARI - DIN 338 UZUN TİP

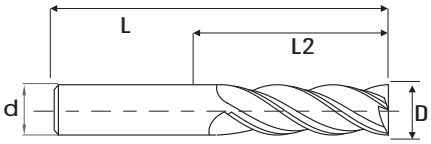
Kodu	D	L2	L	Kodu	D	L2	L
852030	3	33	61	852076	7,6	69	109
852031	3,1	33	75	852077	7,7	69	109
852032	3,2	33	75	852078	7,8	69	109
852033	3,3	33	75	852079	7,9	69	109
852034	3,4	33	75	852080	8	75	117
852035	3,5	39	75	852081	8,1	75	125
852036	3,6	39	75	852082	8,2	75	125
852037	3,7	39	75	852083	8,3	75	125
852038	3,8	39	75	852084	8,4	75	125
852039	3,9	39	75	852085	8,5	75	125
852040	4	43	75	852086	8,6	75	125
852041	4,1	43	86	852087	8,7	75	125
852042	4,2	43	86	852088	8,8	75	125
852043	4,3	43	86	852089	8,9	75	125
852044	4,4	43	86	852090	9	81	125
852045	4,5	47	86	852091	9,1	81	133
852046	4,6	47	86	852092	9,2	81	133
852047	4,7	47	86	852093	9,3	81	133
852048	4,8	47	86	852094	9,4	81	133
852049	4,9	47	86	852095	9,5	81	133
852050	5	52	86	852096	9,6	81	133
852051	5,1	52	93	852097	9,7	81	133
852052	5,2	52	93	852098	9,8	81	133
852053	5,3	52	93	852099	9,9	81	133
852054	5,4	52	93	852100	10	87	133
852055	5,5	57	93	852105	10,5	87	142
852056	5,6	57	93	852110	11	94	142
852057	5,7	57	93	852115	11,5	94	151
852058	5,8	57	93	852120	12	101	151
852059	5,9	57	93	852125	12,5	101	151
852060	6	57	93	852130	13	101	151
852061	6,1	57	109	852135	13,5	101	151
852062	6,2	57	109	852140	14	120	170
852063	6,3	57	109	852145	14,5	120	170
852064	6,4	57	109	852150	15	120	170
852065	6,5	63	109	852155	15,5	120	170
852066	6,6	63	109	852160	16	120	170
852067	6,7	63	109	852165	16,5	120	170
852068	6,8	63	109	852170	17	120	170
852069	6,9	63	109	852175	17,5	120	170
852070	7	69	109	852180	18	120	170
852071	7,1	69	109	852185	18,5	120	170
852072	7,2	69	109	852190	19	120	170
852073	7,3	69	109	852195	19,5	120	170
852074	7,4	69	109	852200	20	120	170
852075	7,5	69	109				

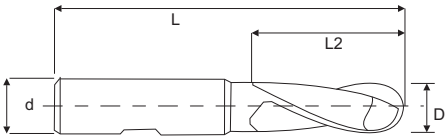
Teknik Detaylar							
S	○	1.SINIF ÇELİK	20-30 HRC Vc.80-100	2.SINIF ÇELİK	30-38 HRC Vc.60-80	SERT ÇELİKLER	38-48 HRC Vc.40-60
K	●	1.SINIF PASLANMAZ	Vc.40-60	2.SINIF PASLANMAZ	Vc.20-30	TİTANYUM	Vc.40-60
N	○						
M	●	METAL OLMAYAN	Vc.120-180	ALU-BAKIR	Vc.100-140	DÖKÜM	Vc.80-100
H	●						
P	●						

UMG Karbür	AlTiN	MRK ÖZEL KAPLAMA	DIN 6539	DIN 338
118°	3XD	2		

ÖZEL KARBÜR FREZELER







894 / TİTANYUM - İNOX KARBÜR FREZELER

Kodu	D	d	Z	L2	L
89401054	1	4	4	3	38
89401554	1,5	4	4	4	38
89402054	2	4	4	4	38
89402554	2,5	4	4	4	38
89403056	3	6	4	10	57
89404056	4	6	4	10	57
89405056	5	6	4	16	57
89406057	6	6	4	19	57
89408063	8	8	4	20	63
89410072	10	10	4	21	72
89412083	12	12	4	25	83
89414083	14	14	4	32	83
89416092	16	16	4	32	92
89418092	18	18	4	35	92
89420100	20	20	4	38	100

896 / HRC 60 KARBÜR FREZELER

Kodu	D	d	Z	L2	L
89601054	1	4	4	3	38
89601554	1,5	4	4	4	38
89602054	2	4	4	4	38
89602554	2,5	4	4	4	38
89603056	3	6	4	10	57
89604056	4	6	4	10	57
89605056	5	6	4	16	57
89606057	6	6	4	19	57
89608063	8	8	4	20	63
89610072	10	10	4	21	72
89612083	12	12	4	25	83
89614083	14	14	4	32	83
89616092	16	16	4	32	92
89618092	18	18	4	35	92
89620100	20	20	4	38	100

894 / TİTANYUM - İNOX KÜRESEL KARBÜR FREZELER

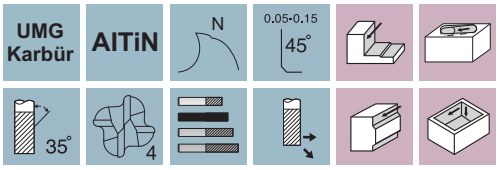
Kodu	D	d	Z	L2	L
89401054R	1	4	4	3	38
89401554R	1,5	4	4	4	38
89402054R	2	4	4	4	38
89402554R	2,5	4	4	4	38
89403056R	3	6	4	10	57
89404056R	4	6	4	10	57
89405056R	5	6	4	16	57
89406057R	6	6	4	19	57
89408063R	8	8	4	20	63
89410072R	10	10	4	21	72
89412083R	12	12	4	25	83
89414083R	14	14	4	32	83
89416092R	16	16	4	32	92
89418092R	18	18	4	35	92
89420100R	20	20	4	38	100

896 / HRC 60 KÜRESEL KARBÜR FREZELER

Kodu	D	d	Z	L2	L
89601054R	1	4	4	3	38
89601554R	1,5	4	4	4	38
89602054R	2	4	4	4	38
89602554R	2,5	4	4	4	38
89603056R	3	6	4	10	57
89604056R	4	6	4	10	57
89605056R	5	6	4	16	57
89606057R	6	6	4	19	57
89608063R	8	8	4	20	63
89610072R	10	10	4	21	72
89612083R	12	12	4	25	83
89614083R	14	14	4	32	83
89616092R	16	16	4	32	92
89618092R	18	18	4	35	92
89620100R	20	20	4	38	100

* 894 - 896 Serilerinde köşe radiuslu ürünler istek üzerine üretilmektedir.

Teknik Detaylar						
S	○	1.SINIF ÇELİK	Vc.80-100	2.SINIF ÇELİK	Vc.60-80	SERT ÇELİKLER	Vc.40-50
N	●	1.SINIF PASLANMAZ	Vc.80-100	2.SINIF PASLANMAZ	Vc.40-60	TİTANYUM	Vc.60-80
K	●						
M	●						
H	●	METAL OLMAYAN		METAL OLMAYAN		DÖKÜM	
P	●						



YÜKSEK HIZ ÇELİĞİ KILAVUZLAR

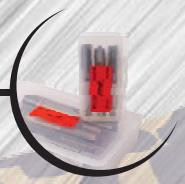
M KILAVUZLAR

UNC KILAVUZLAR

G KILAVUZLAR

AZ KILAVUZLAR

TAKIM KILAVUZ



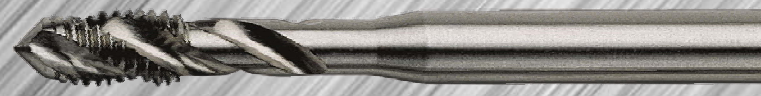
1200 N/mm Kadar

1200 N/mm Kadar

Paslanmaz Çelik

1000 N/mm Kadar

Tin Kaplı Aşınma Direnci



Genel Kullanım

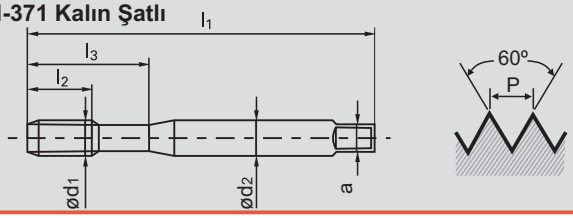
MIRKA®

CUTTING TOOLS

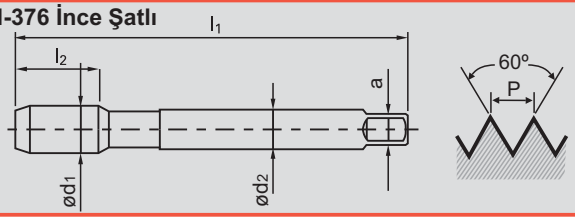
METRİK STANDART DİŞ MAKİNA KILAVUZLARI

MRK CUTTING TOOLS

DIN-371 Kalın Şatlı



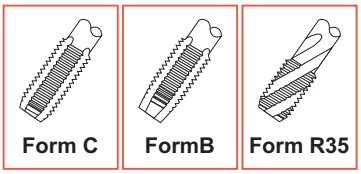
DIN-376 İnce Şatlı



Uygun Kullanım Yerleri

N800	800N/mm² Kadar yumuşak çelikler için
N1000	1000/mm² Kadar alaşım ve sert çelikler için
N1400	1400/mm² Kadar ısıl işlem görmüş çelikler için
NG	Dökme demir ve pik alaşımlar

İş Parçasına Göre Kesme Profilleri



Form C
Açık delik klavuz profili

Form B
Açık delik makina klavuz profili

Form R35
Kapalı delik makina klavuz profili

M	Standart Diş Makina Kılavuzlar TEKNİK DETAYLAR							HSS-E
ød1	P	l1	l2	l3	ød2	a	dk	
M 2	0,4	45	8		2,8	2,1	1,6	DIN-371
M 2,5	0,45	50	9		2,8	2,1	2,05	
M 3	0,5	56	10	18	3,5	2,7	2,5	
M 3,5	0,6	56	12	20	4	3	2,9	
M 4	0,7	63	12	21	4,5	3,4	3,3	
M 4,5	0,75	70	14	25	6	4,9	3,8	
M 5	0,8	70	14	25	6	4,9	4,2	
M 6	1	80	18	30	6	4,9	5	
M 7	1	80	18	30	7	5,5	6	
M 8	1,25	90	20	35	8	6,2	6,8	
M 9	1,25	90	20	35	9	7	7,8	
M 10	1,5	100	20	39	10	8	8,5	
M 4	0,7	63	13		2,8	2,1	3,3	DIN-376
M 5	0,8	70	16		3,5	2,7	4,2	
M 6	1	80	19		4,5	3,4	5	
M 8	1,25	90	22		6	4,9	6,8	
M 10	1,5	100	24		7	5,5	8,5	
M 12	1,75	110	29		9	7	10,2	
M 14	2	110	30		11	9	12	
M 16	2	110	32		12	9	14	
M 18	2,5	125	34		14	11	15,5	
M 20	2,5	140	34		16	12	17,5	
M 22	2,5	140	34		18	14,5	19,5	
M 24	3	160	38		18	14,5	21	
M 27	3	160	38		20	16	24	
M 30	3,5	180	45		22	18	26,5	
M 33	3,5	180	50		25	20	29,5	
M 36	4	200	56		28	22	32	
M 39	4	200	60		32	24	35	
M 42	4,5	200	60		32	24	37,5	
M 45	4,5	220	85		36	29	40,5	
M 48	5	250	70		36	29	43	
M 52	5	250	70		40	32	47	

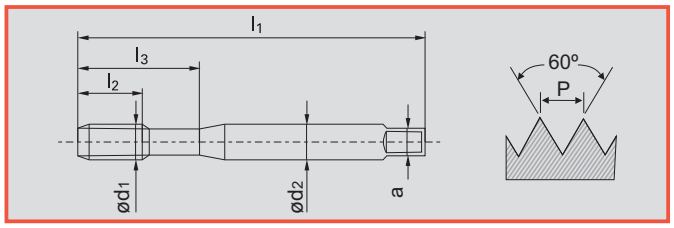
* Bütün ürünlerde sol klavuz mevcuttur.

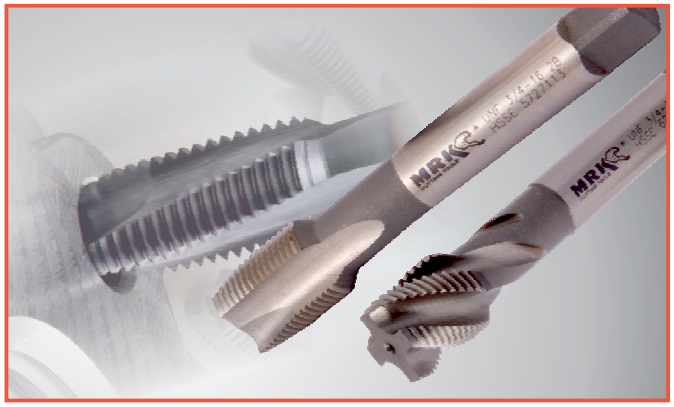
Kaplama Çeşitleri: **Tin** | **Tialn**

MF	İnce Diş Makina Kılavuzlar TEKNİK DETAYLAR								HSS-E
ød1	P	l1	l2	l2 R35	l3	ød2	a	dk	
M 4x0,5	0,5	63	10	7	21	4,5	3,4	3,7	DIN-371
M 5x0,5	0,5	70	12	8	25	6	4,9	4,5	
M 6x0,75	0,75	80	14	10	30	6	4,9	5,2	
M 8x0,75	0,75	80	18	10	30	8	6,2	7,2	
M 8x1	1	90	20	13	35	8	6,2	7	
M 10x0,75	0,75	90	20	13	35	10	8	9,2	
M 10x1	1	90	20	13	35	10	8	9	
M 10x1,25	1,25	100	20	15	39	10	8	8,8	
M 12x1	1	100	20	15		9	7	11	
M 12x1,25	1,25	100	20	15		9	7	10,8	DIN-374
M 12x1,5	1,5	100	20	15		9	7	10,5	
M 14x1	1	100	20	15		11	9	12,5	
M 14x1,5	1,5	100	20	15		11	9	12,5	
M 16x1	1	100	20	15		12	9	14,5	
M 16x1,5	1,5	100	20	15		12	9	14,5	
M 18x1,5	1,5	110	24	17		14	11	16,5	
M 20x1,5	1,5	125	24	17		16	12	18,5	
M 20x2	2	140	32	17		16	12	18	
M 22x1,5	1,5	125	24	17		18	14,5	19,5	
M 24x1,5	1,5	140	27	20		18	14,5	22,5	
M 24x2	2	140	27	20		18	14,5	22	
M 26x1,5	1,5	140	27	20		18	16	24,5	
M 27x1,5	1,5	140	27	20		20	16	25,5	
M 27x2	2	140	27	20		20	16	25	
M 30x1,5	1,5	150	27	20		22	18	28,5	
M 30x2	2	150	27	20		22	18	28	
M 30x3	3	150	27	20		22	18	28	

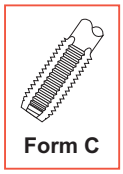
MRK CUTTING TOOLS Yarınların Klavuzu

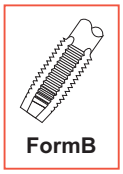
UNC ve UNF MAKİNA KILAVUZLARI





İş Parçasına Göre Kesme Profilleri


Form C


FormB

Form R35

Form C
Açık delik klavuz profili

Form B
Açık delik makina klavuz profili

Form R35
Kapalı delik makina klavuz profili

Kaplama Çeşitleri

Tialn

Tin

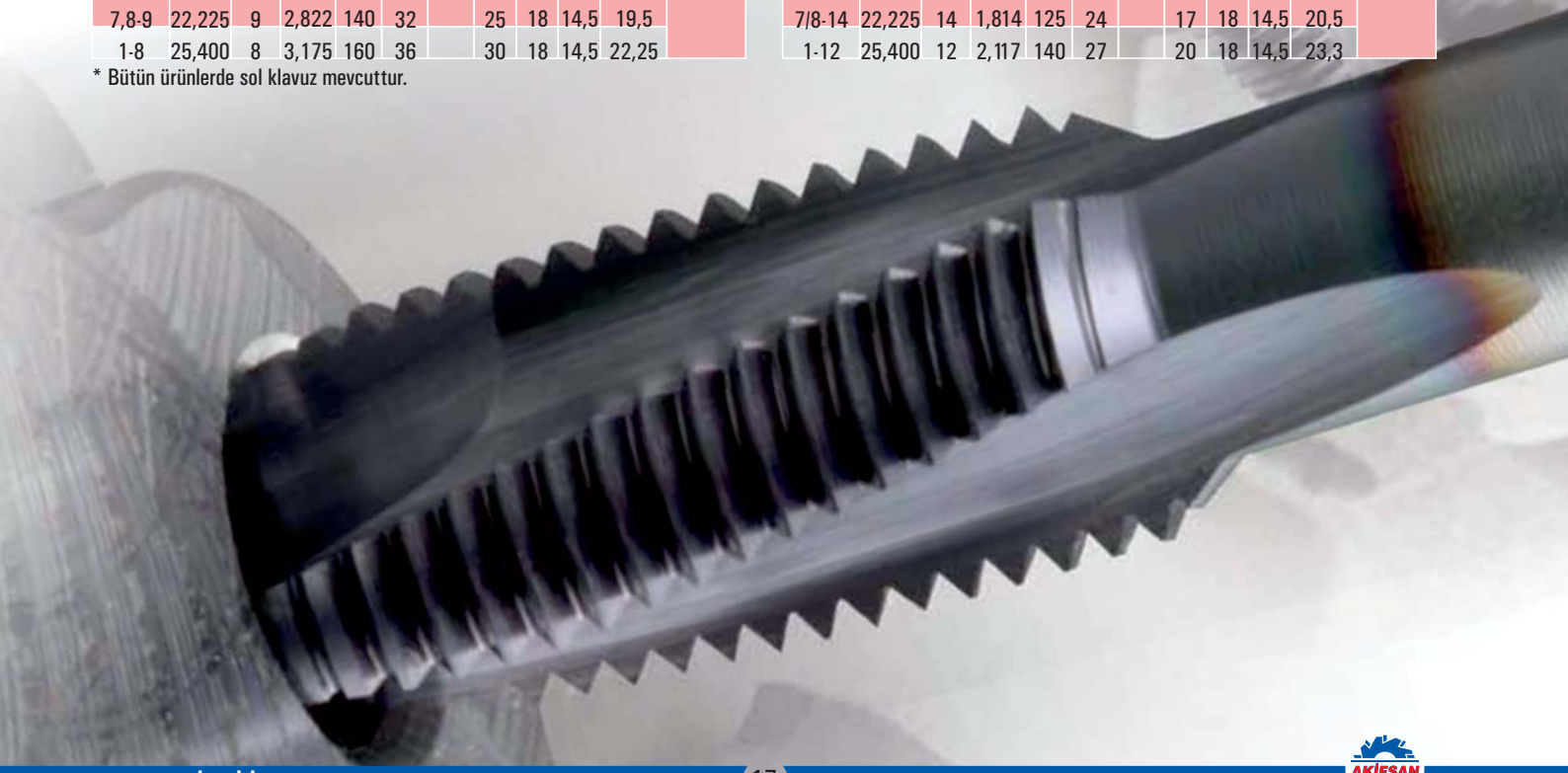
Uygun Kullanım Yerleri

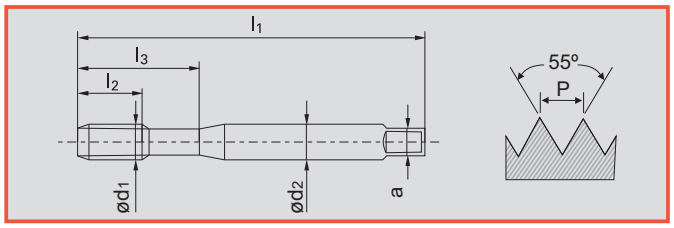
N800 800N/mm² Kadar yumuşak çelikler için

UNC	UNC Kalın Diş Makina Kılavuzları ÖLÇÜ										HSS-E
	ød1	1"/P	P	l1	l2	l3	l2 R35	ød2	a	dk	
No 5-40	3,175	40	0,635	56	10	18	5	3,5	2,7	2,6	DIN-371
No 6-32	3,505	32	0,794	56	12	20	6	4	3	2,7	
No 8-32	4,166	32	0,794	63	12	21	7	4,5	3,4	3,5	
No 10-24	4,826	24	1,058	70	14	25	8	6	4,9	3,8	
No 12-24	5,486	24	1,058	80	18	30	10	6	4,9	4,5	
1/4-20	6,350	20	1,270	80	18	30	12	7	5,5	5,1	
5/16-18	7,938	18	1,411	90	20	35	15	8	6,2	6,5	
3/8-16	9,525	16	1,588	100	21	39	18	10	8	8	
7/16-14	11,112	14	1,814	100	20		15	8	6,2	9,3	DIN-376
1/2-13	12,700	13	1,954	110	24		18	9	7	10,7	
9,16-12	14,288	12	2,117	110	28		20	11	9	12,3	
5,8-11	15,875	11	2,309	110	30		20	12	9	13,5	
3,4-10	19,050	10	2,504	125	32		25	14	11	16,5	
7,8-9	22,225	9	2,822	140	32		25	18	14,5	19,5	
1-8	25,400	8	3,175	160	36		30	18	14,5	22,25	

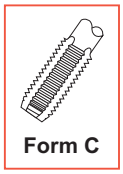
* Bütün ürünlerde sol klavuz mevcuttur.

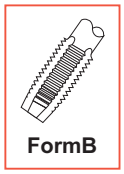
UNF	UNF İnce Diş Makina Kılavuzları ÖLÇÜ										HSS-E
	ød1	1"/P	P	l1	l2	l3	l2 R35	ød2	a	dk	
No 5-44	3,175	44	0,577	56	10	18	5	3,5	2,7	2,7	DIN-371
No 6-40	3,505	40	0,635	56	12	20	6	4	3	3	
No 8-36	4,166	36	0,705	63	12	21	7	45	3,4	3,5	
No 10-32	4,826	32	0,794	70	14	25	8	6	4,9	4,1	
No12-28	5,486	28	0,907	80	18	30	10	6	4,9	4,65	
1/4-28	6,350	28	0,907	80	18	30	12	7	5,5	5,5	
1/16-24	7,938	24	1,058	90	20	35	15	8	6,2	6,9	
3/8-24	9,525	24	1,058	100	21	39	18	10	8	8,5	
7/16-20	11,112	20	1,270	100	20		15	8	6,2	9,9	DIN-376
1,2-20	12,700	20	1,270	100	20		15	9	7	11,5	
9/16-18	14,288	18	1,411	100	20		15	11	9	13	
5/8-18	15,875	18	1,411	100	20		15	12	9	14,5	
3/4-16	19,050	16	1,588	110	24		17	14	11	17,5	
7/8-14	22,225	14	1,814	125	24		17	18	14,5	20,5	
1-12	25,400	12	2,117	140	27		20	18	14,5	23,3	

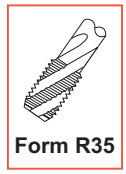




İş Parçasına Göre Kesme Profilleri


Form C


FormB


Form R35

Kaplama Çeşitleri

Tialn

Tin

Form C
Açık delik klavuz profili

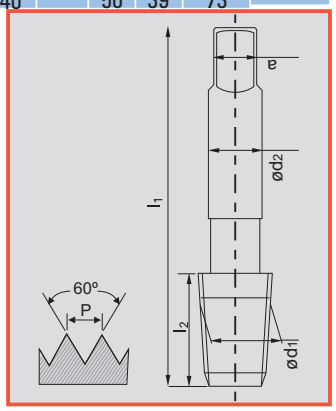
Form B
Açık delik makina klavuz profili

Form R35
Kapalı delik makina klavuz profili

Uygun Kullanım Yerleri

N800 800N/mm² Kadar yumuşak çelikler için

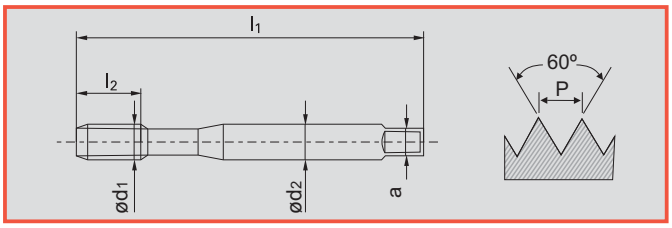
G	G Boru Diş Makine Kılavuzları ÖLÇÜ									HSS-E
	ød1	1"/P	P	l1	l2	l2 R35	ød2	a	dk	
G-1/16"	7,723	28	0,907	90	17	10	6	4,9	6,7	DIN-5156
G-1/8"	9,728	28	0,907	90	18	10	7	5,5	88	
G-1/4"	13,157	19	1,337	100	22	14	11	9	11,8	
G-3/8"	16,662	19	1,337	100	22	15	12	9	15,25	
G-1/2"	20,955	14	1,814	125	25	17	16	12	19	
G-5/8"	22,911	14	1,814	125	25	17	18	14,5	21	
G-3/4"	26,441	14	1,814	140	28	20	20	16	24,5	
G-7/8"	30,201	14	1,814	150	28	22	22	18	28,25	
G-1"	33,249	11	2,309	160	30	24	25	20	30,75	
G-1,1/8"	37,900	11	2,309	170	30	25	28	22	35,50	
G-1,1/4"	41,910	11	2,309	170	30	25	32	24	39,50	
G-1,3/8"	41,910	11	2,309	170	30	25	32	24	42	
G-1,1/2"	47,800	11	2,309	190	32	27	36	29	45,25	
G-1,3/4"	53,750	11		190	32		40	32	51	
G-2"	59,610	11		220	40		45	35	57	
G-2,1/2"	75,810	11		275	40		50	39	73	



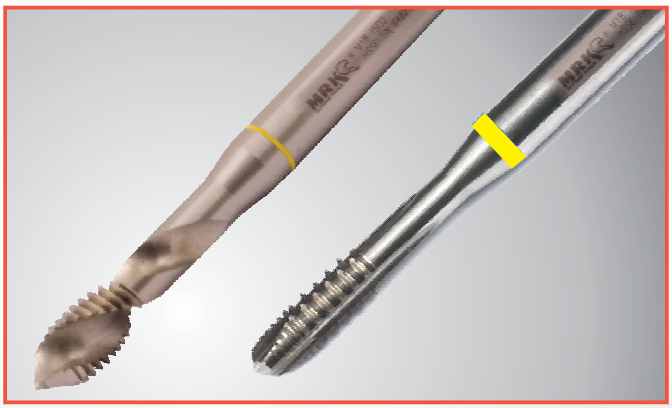
NPT	NPT-NPTF Konik Kılavuzları ÖLÇÜ						HSS-E
ød1	1"/P	l1	l2	ød2	a	dk	
1/8"	27	59	15	8	6,3	8,5	DIN-5156
1,4"	18	67	22	10	8	11,1	
3/8"	18	75	22	12,5	10	14,7	
1/2"	14	87	27	16	12,5	18	
3,4"	14	96	28	20	16	23,25	
1"	11,1/2	109	35	25	20	29,25	

UN	UN İnce Diş Özel Kılavuzlar ÖLÇÜ						HSS-E
	ød1	l1	l2	ød2	a	dk	
5/16-28	7,93	72	22	8,0	6,3	7,0	UN
3/8-20	9,52	80	24	10,0	8,0	8,3	
3/8-28	9,52	80	24	10,0	8,0	8,6	
7/16-32	11,11	85	25	8,0	6,3	10,3	
1/2-32	12,70	89	29	9,0	7,1	11,9	
9/16-20	14,28	95	30	11,2	9,0	10,9	
9/16-28	14,28	95	30	11,2	9,0	11,3	
9/16-32	14,28	95	30	11,2	9,0	11,4	
5/8-20	15,87	102	32	12,5	10,0	14,6	
5/8-28	15,87	102	32	12,5	10,0	15,0	
11/16-20	17,46	112	37	14,0	11,2	16,2	
11/16-16	17,46	112	37	14,0	11,2	15,9	
1"-32	25,40	130	45	18,0	14,0	24,6	
1/4-24	6,35	66	19	6,3	5,0	5,4	UNS
1/4-36	6,35	66	19	6,3	5,0	5,7	
1/4-40	6,35	66	19	6,3	5,0	5,75	
3/8-27	9,52	80	24	10,0	8,0	8,35	
7/16-24	11,11	85	25	8,0	6,3	10,1	
1/2-24	12,7	89	29	9,0	7,1	11,75	
5/8-27	15,87	102	32	12,5	10,0	14,7	
3/4-24	19,05	112	37	14,0	11,2	18,0	
7/8-18	22,22	118	38	16,0	12,5	21,0	
1"-14	25,4	130	45	18,0	14,0	23,75	
NR.12-32	5,48	62	17	5,6	4,5	4,75	UNEF
1/4-32	6,35	66	19	6,3	5,0	5,6	
5/16-32	7,93	72	22	8,0	6,3	7,2	
3/8-32	9,52	80	24	10,0	8,0	8,8	
7/16-28	14,11	85	25	8,0	6,3	10,25	
1/2-28	12,7	89	29	9,0	7,1	11,8	
9/16-24	14,28	95	30	11,2	9,0	13,3	
5/8-24	15,87	102	32	12,5	10,0	14,9	
11/16-24	17,46	112	37	14,0	11,2	16,5	
3/4-20	19,05	112	37	14,0	11,2	17,75	
13/16-20	20,63	118	38	16,0	12,5	19,5	
7/8-20	22,22	118	38	16,0	12,5	21,0	
15/16-20	23,81	130	45	18,0	14,0	22,5	
1"-20	25,4	130	45	18,0	14,0	24,5	

* Bütün ürünlerde sol klavuz mevcuttur.



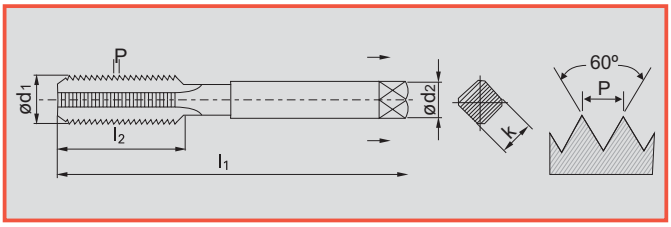
Uygun Kullanım Yerleri	
N800	800N/mm² Kadar yumuşak çelikler için



WGN (M)	Ezme Diş (Ovalama) Kılavuzları ÖLÇÜ						HSS-E
ød1	P	l1	l2	ød2	a	dk	
M 2	0,4	45	8	2,8	2,1	1,83	DIN-371
M 2,2	0,45	45	8	2,8	2,1	2	
M 2,5	0,45	50	9	2,8	2,1	2,3	
M 3	0,5	56	11	3,5	2,7	2,8	
M 3,5	0,6	56	12	4	3	3,25	
M 4	0,7	63	13	4,5	3,4	3,7	
M 5	0,8	70	15	6	4,9	4,65	
M 6	1	80	17	6	4,9	5,55	
M 7	1	80	18	7	5,5	6,0	
M 8	1,25	90	20	8	6,2	7,5	
M 9	1,25	90	20	9	7	7,8	
M 10	1,5	100	22	10	8	9,3	
12	1,75	110	24	9	7	11,2	DIN-376
14	2	110	26	11	9	13,	
16	2	110	27	12	9	15	
18	2,5	125	34	14	11	15,5	
20	2,5	140	34	16	12	17,5	

AZ (M)	Atlamalı Aleminyum Kılavuzları ÖLÇÜ						HSS-E
ød1	P	l1	l2	ød2	a	dk	
M 2	0,4	45	8	2,8	2,1	1,83	DIN-371
M 2,2	0,45	45	8	2,8	2,1	2	
M 2,5	0,45	50	9	2,8	2,1	2,3	
M 3	0,5	56	11	3,5	2,7	2,8	
M 3,5	0,6	56	12	4	3	3,25	
M 4	0,7	63	13	4,5	3,4	3,7	
M 5	0,8	70	15	6	4,9	4,65	
M 6	1	80	17	6	4,9	5,55	
M 7	1	80	18	7	5,5	6,0	
M 8	1,25	90	20	8	6,2	7,5	
M 9	1,25	90	20	9	7	7,8	
M 10	1,5	100	22	10	8	9,3	
12	1,75	110	24	9	7	11,2	DIN-376
14	2	110	26	11	9	13,	
16	2	110	27	12	9	15	
18	2,5	125	34	14	11	15,5	
20	2,5	140	34	16	12	17,5	

STANDART DİŞ TAKIM KILAVUZLARI

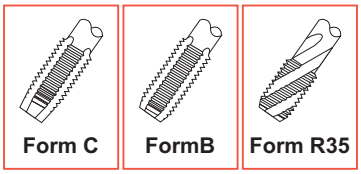


Kaplama Çeşitleri

Tin

Tialn

İş Parçasına Göre Kesme Profilleri



Form C
Açık delik klavuz profili

Form B
Açık delik makina klavuz profili

Form R35
Kapalı delik makina klavuz profili

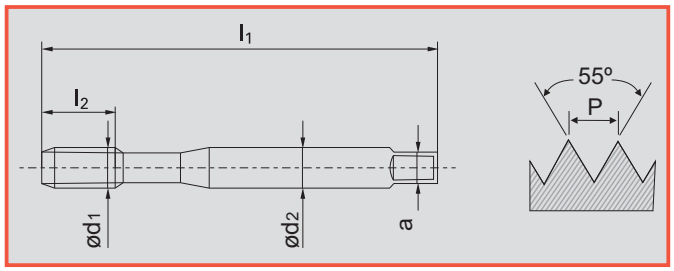
Uygun Kullanım Yerleri

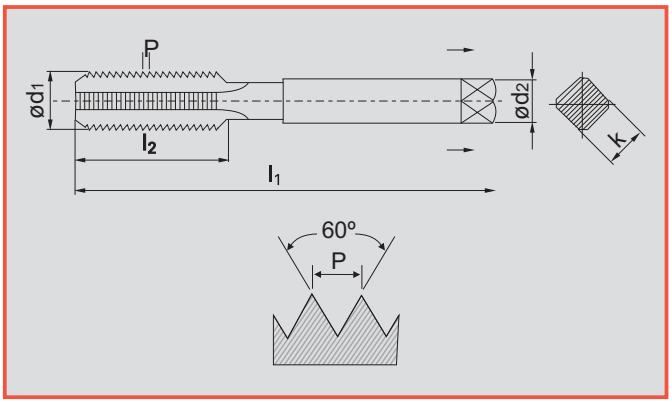
HSS	Yüksek hız çeliği
INOX	Paslanmaz ve aside dayanıklı çelik için

M	Metrik Takım Kılavuzları ÖLÇÜ						HSS-E
ød1	P	l1	l2	ød2	k		
M 3	0,50	40	11	3,50	2,70	2,5	DIN-352
M 3,5	0,60	45	13	4,00	3,00	2,9	
M 4	0,70	45	13	4,50	3,40	3,3	
M 4,5	0,75	50	16	6,00	4,90	3,8	
M 5	0,80	50	16	6,00	4,90	4,2	
M 6	1,00	56	19	6,00	4,90	5,0	
M 7	1,00	56	19	6,00	4,90	6,0	
M 8	1,25	63	22	6,00	4,90	6,8	
M 9	1,25	63	22	7,00	5,50	7,8	
M 10	1,50	70	24	7,00	5,50	8,5	
M 11	1,50	70	24	8,00	6,20	9,5	
M 12	1,75	75	28	9,00	7,00	10,2	
M 14	2,00	80	30	11,00	9,00	12,0	
M 16	2,00	80	32	12,00	9,00	14,0	
M 18	2,50	95	34	14,00	11,00	15,5	
M 20	2,50	95	34	16,00	12,00	17,5	
M 22	2,50	100	34	18,00	14,50	19,5	
M 24	3,00	110	38	18,00	14,50	21,0	
M 27	3,00	110	38	20,00	16,00	24,0	
M 30	3,50	125	45	22,00	18,00	26,5	
M 33	3,50	125	50	25,00	20,00	29,5	
M 36	4,00	150	56	28,00	22,00	32,0	
M 39	4,00	150	60	32,00	24,00	35,0	
M 42	4,50	150	60	32,00	24,00	37,5	
M 45	4,50	160	65	36,00	29,00	40,5	
M 48	5,00	180	70	36,00	29,00	43,0	
M 52	5,00	180	70	40,00	32,00	47,0	

MF	Metrik İnce Diş Takım Kılavuzları ÖLÇÜ						HSS-E
ød1	P	l1	l2	ød2	k		
M 6x0,75	0,75	50	14	6	4,9	5,2	DIN-2181
M 8x0,75	0,75	50	19	6	4,9	7,2	
M 8x1,00	1,00	56	20	6	4,9	7	
M 10x1,00	1,00	63	20	7	5,5	9	
M 10x1,25	1,25	70	22	7	5,5	8,8	
M 12x1,00	1,00	70	22	9	7	11	
M 12x1,25	1,25	70	22	9	7	10,8	
M 12x1,50	1,50	70	22	9	7	10,5	
M 14x1,00	1,00	70	22	11	9	13	
M 14x1,25	1,25	70	22	11	9	12,8	
M 14x1,50	1,50	70	22	11	9	12,5	
M 16x1,00	1,00	80	22	12	9	15	
M 16x1,50	1,50	80	22	12	9	14,5	
M 18x1,50	1,50	80	22	14	11	16,5	
M 18x2,00	2,00	80	22	14	11	16,5	
M 20x1,00	1,00	80	22	16	12	18,5	
M 20x1,50	1,50	80	22	16	12	18,5	
M 20x2,00	2,00	80	22	16	12	18	
M 22x1,50	1,50	80	22	18	14,5	20,5	
M 22x2,00	2,00	80	22	18	14,5	20,5	
M 24x1,50	1,50	90	22	18	14,5	22,5	
M 24x2,00	2,00	90	22	22	14,5	22,5	
M 26x1,50	1,50	90	22	18	14,5	21	
M 27x1,50	1,50	90	22	20	16	24	
M 27x2,00	2,00	90	22	20	16	24	
M 30x1,50	1,50	90	22	22	18	28,5	
M 30x2,00	2,00	90	22	22	18	28	
M 30x3,00	3,00	90	22	22	18	28	
M 32x1,50	1,50	90	22	22	18	30,5	
M 32x2,00	2,00	90	22	22	18	30,5	
M 33x1,50	1,50	100	25	25	20	31,5	
M 33x2,00	2,00	100	25	25	20	31	
M 34x1,50	1,50	100	25	28	22	33	
M 36x1,50	1,50	100	25	28	22	34,5	
M 36x2,00	2,00	25	33	28	22	34	
M 36x3,00	3,00	25	33	28	22	33	

STANDART DİŞ TAKIM KILAVUZLARI





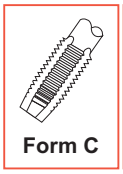
Kaplama Çeşitleri

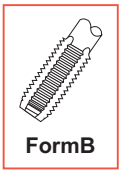
Tin	Tialn

Uygun Kullanım Yerleri

HSS Yüksek hız çeliği

İş Parçasına Göre Kesme Profilleri


Form C


FormB

Form R35

Form C
Açık delik klavuz profili

Form B
Açık delik makina klavuz profili

Form R35
Kapalı delik makina klavuz profili

G	G-Boru Diş Takım Kılavuzları ÖLÇÜ								HSS-E
	ød1	1"/P	P	l1	l2	ød2	a	dk	
G - 1/16"	7,723	28	0,907	52	14	5,6	4,5	6,7	ISO-2484/HSS
G - 1/8"	9,728	28	0,907	59	15	8	6,3	8,8	
G - 1/4"	13,157	19	1,337	67	19	10	8	11,8	
G - 3/8"	16,662	19	1,337	75	21	12,5	10	15,25	
G - 1/2"	20,955	14	1,814	87	26	16	12,5	19,0	
G - 5/8"	22,91	14	1,814	91	26	18	14	21,0	
G - 3/4"	26,441	14	1,814	96	28	20	16	24,5	
G - 7/8"	30,201	14	1,814	102	29	22,4	18	28,25	
G - 1"	33,249	11	2,309	109	33	25	20	30,75	
G - 1,1/8"	37,897	11	2,309	116	35	28	22,4	35,5	
G - 1,1/4"	41,910	11	2,309	119	36	31,5	25	39,5	
G - 1,3/8"	44,323	11	2,309	123	36	31,5	25	42,0	
G - 1,1/2"	47,803	11	2,309	125	37	35,5	28	45,0	
G - 1,3/4"	53,746	11	2,309	132	39	35,5	28	51,0	
G - 2"	59,614	11	2,309	140	41	40	31,5	57,0	

UNC	UNC Kalın Diş Takım Kılavuzları ÖLÇÜ					HSS-E
ød1 x P	l1	l2	ød2	k	dk	
No 6x32	45	13	4	3	2,7	DIN-351
No 8x32	45	13	4,5	3,4	3,5	
No 10x24	50	16	6	4,9	3,8	
No 12x24	50	17	6	4,9	4,5	
1/4"x20	50	19	6	4,9	5,1	
5/16"x18	56	22	6	4,9	6,5	
3/8"x16	70	24	7	5,5	7,9	
7/16"x14	70	24	8	6,2	9,3	
1/2"x13	75	29	9	7	10,7	
9/16"x12	80	30	11	9	12,3	
5/8"x11	80	32	12	9	13,5	
3/4"x10	95	40	14	11	16,5	
7/8"x9	100	40	18	14,5	19,5	
1"x8	110	50	20	16	22,25	
UNF	**UNF İnce Diş Takım Kılavuzları**					DIN-351
No 5x44	40	11	3,5	2,7	2,7	
No 6x40	45	13	4	3	3	
No 8x36	45	13	4,5	3,4	3,5	
No 10x32	50	16	6	4,9	4,1	
No 12,28	50	17	6	4,9	4,65	
1/4x28	50	16	6	4,9	5,5	
5/16x24	56	22	6	4,9	6,9	
3/8x24	63	20	7	5,5	8,5	
7/16x20	63	20	8	6,2	9,9	
1/2x20	70	22	9	7	11,5	
9/16x18	70	22	11	9	13	
5/8x18	70	22	12	9	14,5	
3/4x16	80	22	14	11	17,5	
7/8x14	80	22	18	14,5	20,5	
1x12	90	22	18	14,5	23,3	

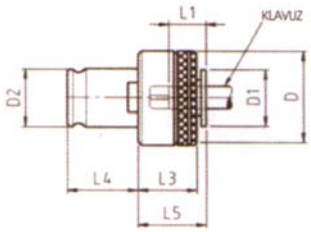
MRK CUTTING TOOLS

PROFOSYONEL MODEL SÜPER HIZLI

Standart Aksesuarlar
1- Klavuz Çekme Aparatı
2- Parelel Kol
3- Masa Montaj Kolonu
4- Hava Şartlandırıcı
5- Altı Adet Kılavuz Adaptörü
6- Radyal Kol Erişimi 500 mm Yükseltir

PNÖMATİK KILAVUZ ÇEKME MAKİNALARI

HAVALI KILAVUZ ÇEKME APARATI				
Kodu	Kapasite	Devir(d-d)	Çalışma Mesafesi (mm)	Ağırlık (kg)
AS-08/11	M2-M8	700	1400-200MM	12
AS-12/11	M3-M12	400	1400-200MM	18
AS-16/11	M3-M16	300	1400-200MM	20
AS-22/11	M4-M22	300	1400-200MM	22



TCS-B KILAVUZ ADAPTÖRÜ								
Kodu	Kılavuz	D	D_1	D_2	L_1	L_3	L_4	L_5
TSCS1B	M2-M8	32	19	19	17	25	21,5	25
TCS2B	M3-M12	50	30	31	30	31	35	33

Emniyetli Klavuz Pensleri

KILAVUZ TUTUCULAR

Silindirik ER Tip

Silindirik Emniyetli Tip

BT/SK Emniyetli Tip

HİDROLİK KILAVUZ ÇEKME MAKİNALARI

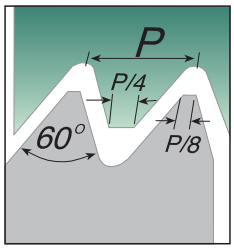
M5-M16 - Huk2016Rh
M5-M24 - Huk2024Rh
M5-M36 - Huk2036Rh

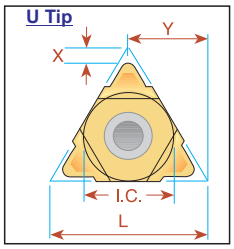
DELİK DELME VE KILAVUZ ÇEKME MATKAPLARI

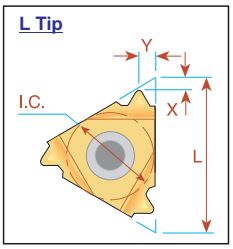
DİŞ AÇMA SERT METAL VİDA UÇLARI

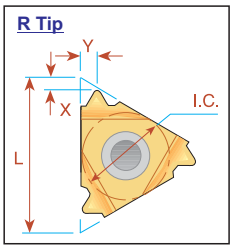
MRK®
CUTTING TOOLS

AMERİKAN - UN (UNC, UNF, UNEF, UNS)



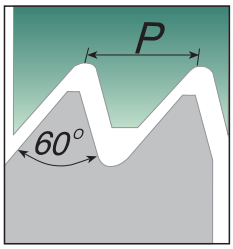


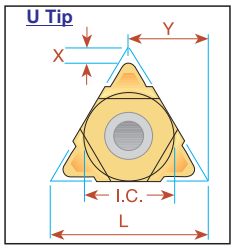


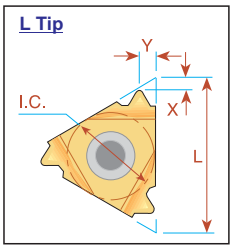


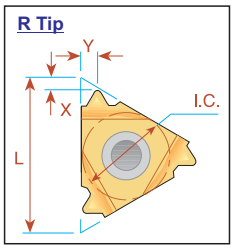
Diş Adımı Ölçüsü	L	I.C.	DİŞ ÇAP Ürün Açıklaması Sağ Tip	DİŞ ÇAP Ürün Açıklaması Sol Tip	X	Y	İÇ ÇAP Ürün Açıklaması Sağ Tip	İÇ ÇAP Ürün Açıklaması Sol Tip	X	Y
32, 28, 24, 20,18	6	5/32					*06 IR	*06 IL	0,8	0,5
32, 28, 24, 20 18, 16, 14	8	3/16	MINI				*08 IR	*08 IL	0,6	0,8
13, 12, 11	8U	3/16U	"U" MINI				*08U IR/L 13 UN		0,9	4,0
72	11	1/4	11 ER 72 UN	11 EL 72 UN	0,8	0,4	11 IR 72 UN	11 IL 72 UN	0,8	0,3
64	11	1/4	11 ER 64 UN	11 EL 64 UN	0,8	0,4	11 IR 64 UN	11 IL 64 UN	0,8	0,4
56	11	1/4	11 ER 56 UN	11 EL 56 UN	0,7	0,4	11 IR 56 UN	11 IL 56 UN	0,7	0,4
48	11	1/4	11 ER 48 UN	11 EL 48 UN	0,6	0,6	11 IR 48 UN	11 IL 48 UN	0,6	0,6
44	11	1/4	11 ER 44 UN	11 EL 44 UN	0,6	0,6	11 IR 44 UN	11 IL 44 UN	0,6	0,6
40	11	1/4	11 ER 40 UN	11 EL 40 UN	0,6	0,6	11 IR 40 UN	11 IL 40 UN	0,6	0,6
36	11	1/4	11 ER 36 UN	11 EL 36 UN	0,6	0,6	11 IR 36 UN	11 IL 36 UN	0,6	0,6
32	11	1/4	11 ER 32 UN	11 EL 32 UN	0,6	0,6	11 IR 32 UN	11 IL 32 UN	0,6	0,6
28	11	1/4	11 ER 28 UN	11 EL 28 UN	0,6	0,7	11 IR 28 UN	11 IL 28 UN	0,6	0,7
27	11	1/4	11 ER 27 UN	11 EL 27 UN	0,7	0,8	11 IR 27 UN	11 IL 27 UN	0,7	0,8
24	11	1/4	11 ER 24 UN	11 EL 24 UN	0,7	0,8	11 IR 24 UN	11 IL 24 UN	0,7	0,8
20	11	1/4	11 ER 20 UN	11 EL 20 UN	0,8	0,9	11 IR 20 UN	11 IL 20 UN	0,8	0,9
18	11	1/4	11 ER 18 UN	11 EL 18 UN	0,8	1,0	11 IR 18 UN	11 IL 18 UN	0,8	1,0
16	11	1/4	11 ER 16 UN	11 EL 16 UN	0,9	1,1	11 IR 16 UN	11 IL 16 UN	0,9	1,1
14	11	1/4	11 ER 14 UN	11 EL 14 UN	0,9	1,1	11 IR 14 UN	11 IL 14 UN	0,9	1,1
13	11	1/4					11 IR 13 UN	11 IL 13 UN	0,8	1,0
12	11	1/4					11 IR 12 UN	11 IL 12 UN	0,9	1,1
11	11	1/4					11 IR 11 UN	11 IL 11 UN	0,8	1,1
72	16	3/8			0,8	0,4	16 IR 72 UN	16 IL 72 UN	0,8	0,3
64	16	3/8	11 ER 72 UN		08	0,4	16 IR 64 UN	16 IL 64 UN	0,8	0,4
56	16	3/8	11 ER 64 UN		0,7	0,4	16 IR 56 UN	16 IL 56 UN	0,7	0,4
48	16	3/8	11 ER 56 UN		0,6	0,6	16 IR 48 UN	16 IL 48 UN	0,6	0,6
44	16	3/8	11 ER 48 UN		0,6	0,6	16 IR 44 UN	16 IL 44 UN	0,6	0,6
40	16	3/8	11 ER 44 UN		0,6	0,6	16 IR 40 UN	16 IL 40 UN	0,6	0,6
36	16	3/8	11 ER 40 UN		0,6	0,6	16 IR 36 UN	16 IL 36 UN	0,6	0,6
32	16	3/8	11 ER 36 UN		0.6	0.6	16 IR 32 UN	16 IL 32 UN	0.6	0.6
28	16	3/8	16 ER 32 UN		0.6	0.7	16 IR 28 UN	16 IL 28 UN	0.6	0.7
27	16	3/8	16 ER 28 UN		0.7	0.8	16 IR 27 UN	16 IL 27 UN	0.7	0.8
24	16	3/8	16 ER 27 UN		0.7	0.8	16 IR 24 UN	16 IL 24 UN	0.7	0.8
20	16	3/8	16 ER 24 UN		0.8	0.9	16 IR 20 UN	16 IL 20 UN	0.8	0.9
18	16	3/8	16 ER 20 UN		0.8	1.0	16 IR 18 UN	16 IL 18 UN	0.8	1.0
16	16	3/8	16 ER 18 UN		0.9	1.1	16 IR 16 UN	16 IL 16 UN	0.9	1.1
14	16	3/8	16 ER 16 UN		1.0	1.2	16 IR 14 UN	16 IL 14 UN	0.9	1.2
13	16	3/8	16 ER 14 UN		1.0	1.3	16 IR 13 UN	16 IL 13 UN	1.0	1.3
12	16	3/8	16 ER 13 UN		1.1	1.4	16 IR 12 UN	16 IL 12 UN	1.1	1.4
11.5	16	3/8	16 ER 12 UN		1.1	1.5	16 IR 11.5 UN	16 IL 11.5 UN	1.1	1.5
11	16	3/8	16 ER 11.5 UN		1.1	1.5	16 IR 11 UN	16 IL 11 UN	1.1	1.5
10	16	3/8	16 ER 11 UN		1.1	1.5	16 IR 10 UN	16 IL 10 UN	1.1	1.5
9	16	3/8	16 ER 10 UN		1.2	1.7	16 IR 9 UN	16 IL 9 UN	1.2	1.7
	16	3/8	16 ER 9 UN		1.2	1.8	16 IR 8 UN	16 IL 8 UN	1.1	1.5
	22	1/2	16 ER 8 UN	16 EL 8 UN	1.6	2.3	221R 7 UN	22 IL 7 UN	1.6	2.3
	22	1/2	22 ER 7 UN	22 EL 7 UN	1.6	2.3	22IR 6 UN	22 IL 6 UN	1.6	2.3
	22	1/2	22 ER 6 UN	22 EL 6 UN	1.7	2.5	22 IR 5 UN	22 IL 5 UN	1.6	2.3
	22U	1/2U	22 ER 5 UN	22 EL 5 UN	2.0	11.0	22U IR/L 4.5 UN		2.4	11.0
	22U	1/2U	22U ER/L 4.5 UN		2.0	11.0	22U 1R/L 4 UN		2.4	11.0
	27	5/8	22U ER/L 4 UN		1.9	2.7	27 IR 4.5 UN	27 IL 4.5 UN	1.7	2.4
	27	5/8	27 ER 4.5 UN	27 EL 4.5 UN	2.1	3.0	27 IR 4 UN	27 IL 4 UN	1.8	2.7
	27U	5/8U	27 ER 4 UN	27 EL 4 UN	2.5	13.7	27U IR/L 3UN		2.7	13.7
2	33U	3/4U	27U ER/L 3 UN 33U ER/L 2 UN		2.8	16.5	33U IR/L 2UN		3.6	16.9

60° VİDA PROFİL



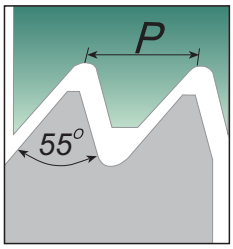


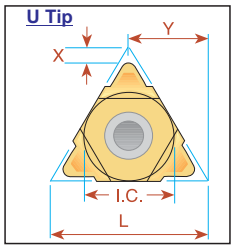


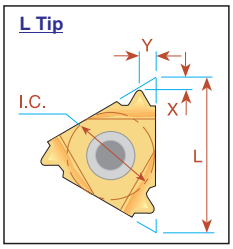


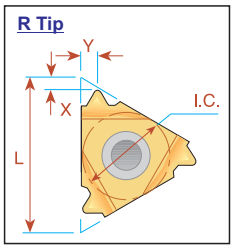
L	I.C.	Diş Adım Ölçüsü		DIŞ ÇAP Ürün Açıklaması Sağ Tip	DIŞ ÇAP Ürün Açıklaması Sol Tip	İÇ ÇAP Ürün Açıklaması Sağ Tip	İÇ ÇAP Ürün Açıklaması Sol Tip	X	Y
6	5/32	0,5-1,25	5/32	ULTRA MINI →		*06 IR A60	*06 IL A60	0,6	0,6
8	3/16	0,5-1,5	3/16	MINI →		*08 IR A60	*08 IL A60	0,6	0,7
8U	3/16U	1,75-2,0	3/16U	"U" MINI →		*08UIR/L U60		0,8	4,0
11	1/4	0,5-1,5	1/4	11 ER A60	11 EL A60	11 IR A60	11 IL A60	0,8	0,9
16	3/8	1,5-1,5	3/8	16 ER A60	16 EL A60	16 IR A60	16 IL A60	0,8	0,9
16	3/8	1,75-3,0	3/8	16 ER G60	16 EL G60	16 IR G60	16 IL G60	1,2	1,7
16	3/8	0,5-3,0	3/8	16 ER Ag60	16 EL Ag60	16 IR AG60	16 IL AG60	1,2	1,7
22	1/2	3,5-5,0	1/2	22 ER N60	22 EL N60	22 IR N60	22 IL N60	1,7	2,5
22U	1/2U	5,5-8,0	1/2U	22U E/I/R/L U60				0,6	11,0
27	5/8	5,5-6,0	5/8	27 ER Q60	27 EL Q60	27 IR Q60	27 IL Q60	2,1	3,1
27U	5/8U	6,5-9,0	5/8U	27U E/I/R/L U60				1,0	13,7

55° VİDA PROFİL



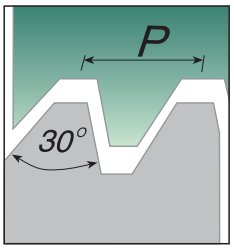


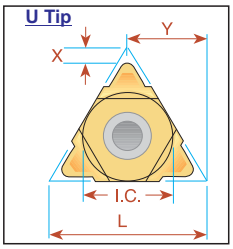


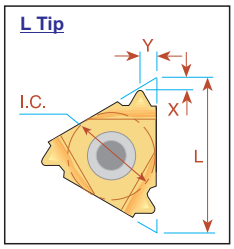


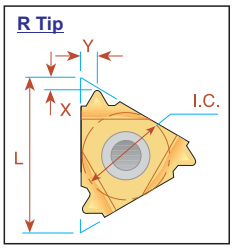
L	I.C.	Diş Adım Ölçüsü		DIŞ ÇAP Ürün Açıklaması Sağ Tip	DIŞ ÇAP Ürün Açıklaması Sol Tip	İÇ ÇAP Ürün Açıklaması Sağ Tip	İÇ ÇAP Ürün Açıklaması Sol Tip	X	Y
6	5/32	0,5-1,25	48-20	ULTRA MINI		*06 IR A55	*06 IL A55	0,5	0,6
8	3/16	0,5-1,5	48-16	MINI		*08 IR A55	*08 IL A55	0,6	0,7
8U	3/16U	1,75-2,0	14-11	"U" MINI		*08UIR/L U55		0,9	40
11	1/4	0,5-1,5	48-16	11 ER A55	11 EL A55	11 IR A55	11 IL A55	0,8	0,9
16	3/8	1,5-1,5	48-16	16 ER A55	16 EL A55	16 IR A55	16 IL A55	0,8	0,9
16	3/8	1,75-3,0	14-8	16 ER G55	16 EL G55	16 IR G55	16 IL G55	1,2	1,7
16	3/8	0,5-3,0	48-8	16 ER AG55	16 EL AG55	16 IR AG55	16 IL AG55	1,2	1,7
22	1/2	3,5-5,0	7-5	22 ER N55	22 EL N55	22 IR N55	22 IL N55	1,7	2,5
22U	1/2U	5,5-8,0	4,5-3,25	22U E/I/R/L U55				0,9	11,0
27	5/8	5,5-6,0	4,5-4	27 ER Q55	27 EL Q55	27 IR Q55	27 IL Q55	2,0	2,9
27U	5/8U	6,5-9,0	4-2,75	27U E/I/R/L U55				1,2	13,7

TRAPEZ VİDA PROFİLİ



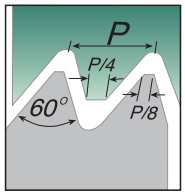


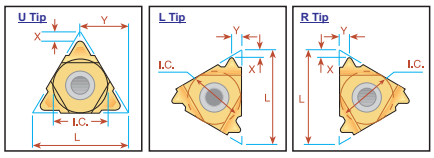




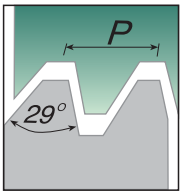
Diş Adımı Ölçüsü	L	I.C.	DİŞ ÇAP Ürün Açıklaması Sağ Tip	DİŞ ÇAP Ürün Açıklaması Sol Tip	İÇ ÇAP Ürün Açıklaması Sağ Tip	İÇ ÇAP Ürün Açıklaması Sol Tip	X	Y
1,5	8	1,5	MINIATURE →		**08 IR 1,5 TR	**08 IL 1,5 TR	0,6	0,6
2,0	8U	2,0	"U" MINIATURE →		*08U IR/L 2 TR		039	4,0
1,5	16	1,5	16 ER 1,5 TR	16 EL 1,5 TR			1,0	1,1
2,0	16	2,0	16 ER 2 TR	16 EL 2 TR	16 IR 2 TR	16 IL 2 TR	1,0	1,3
30	16	30	16 ER 3 TR	16 EL 3 TR	16 IR 3 TR	16 IL 3 TR	1,3	1,5
40	16	40	16 ER 4 TR	16 EL 4 TR	16 IR 4 TR	16 IL 4 TR	1,3	1,5
5,0	16	5,0			***16U IR/L 5TR		2,3	8,2
4,0	22	4,0	22 ER 4 TR	22 EL 4 TR	22 IR 4 TR	22 IL 4 TR	1,8	1,9
5,0	22	5,0	22 ER 5 TR	22 EL 5 TR	22 IR 5 TR	22 IL 5 TR	2,0	2,4
6,0	22	6,0	22 ER 6 TR	22 EL 6 TR	22 IR 6 TR	22 IL 6 TR	2,0	2,4
6,0	22U	6,0	22U ER/L 6 TR		22U IR/L 6 TR		2,0	11,00
7,0	22U	7,0	22UER/L 7 TR		22U IR/L 7 TR		2,3	11,00
7,0	22U	7,0	22U ER/L 8 TR		***22U IR/L 7 TR 40		2,6	11,00
8,0	22U	8,0			22U IR/L 8 TR		2,5	11,00
6,0	27	6,0	27 ER 6 TR	27 EL 6 TR	27 IR 6 TR	27 IL 6 TR	2,3	2,7
7,0	27	7,0	27 ER 7 TR	27 EL 7 TR	27 IR 7 TR	27 IL 7 TR	2,2	2,6
8,0	27U	8,0	22U ER/L 8 TR		27U IR/L 8 TR		2,5	13,7
9,0	27U	9,0	22UER/L 9 TR		27U IR/L 9 TR		3,0	13,7
10,0	27U	10,0	22U ER/L 10 TR		**27U IR/L 10 TR		3,2	13,7
12,0	33U	12,0	33U ER/L 12 TR		33U ID/L 12 TR		3,9	16,9

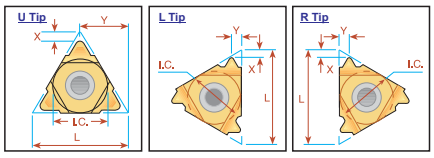
ISO metric 60°





ACME





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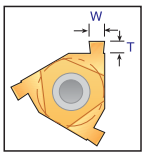
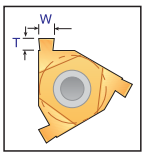
IL/ER



ER/IL



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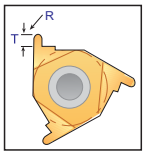
IR / EL



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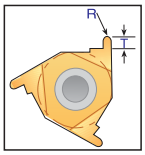
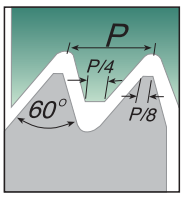
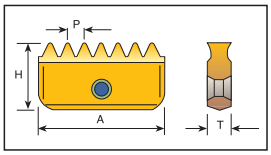


ISO Diş Açma Tarakları





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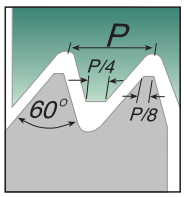
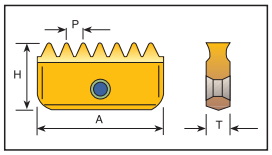
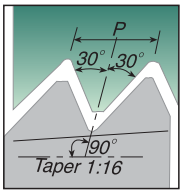
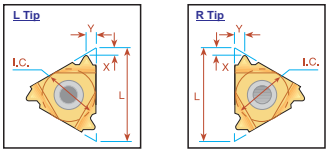


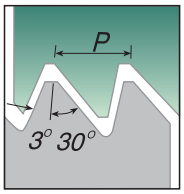


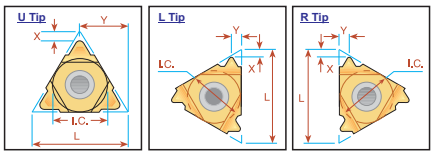
NPT



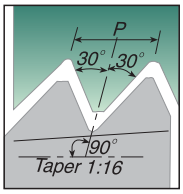


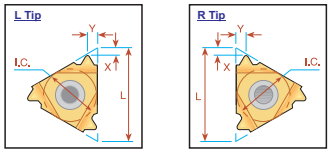
Sagengewinde DIN 513



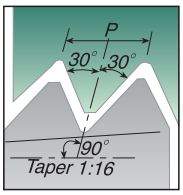


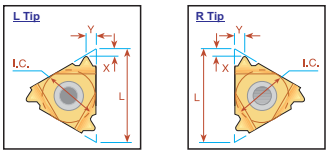
OIL Threads API Round



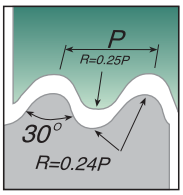


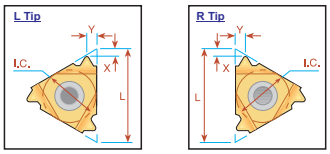
NPTF - Dryseal



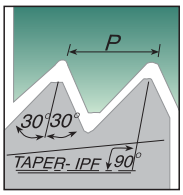


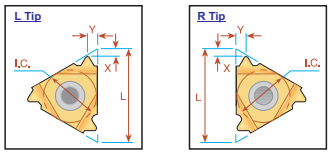
Round - DIN 405



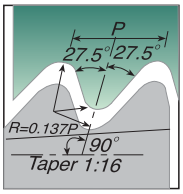


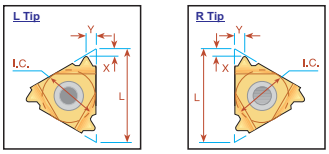
OIL Threads



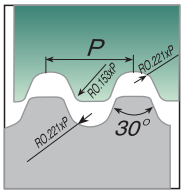


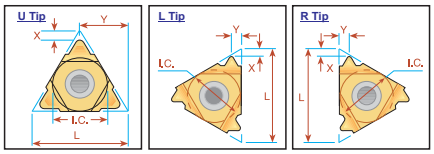
BSPT



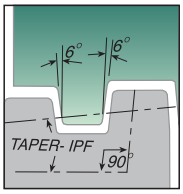


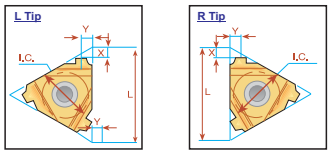
Round DIN 20400



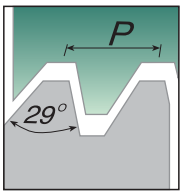


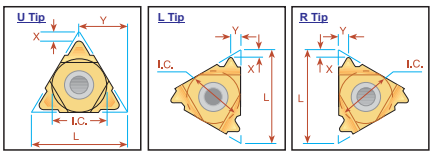
OIL Threads Extreme Line Casing





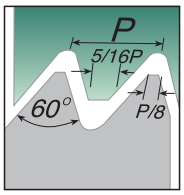
Stub Acme

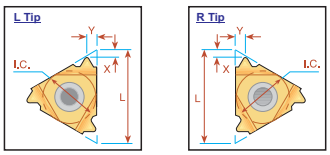




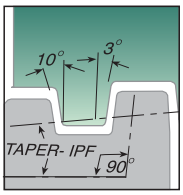
UNJ

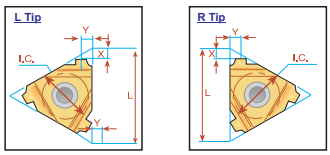
UNJC,UNJF, UNJEF, UNJS



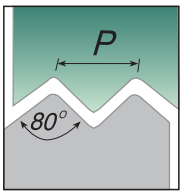


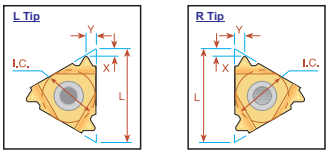
Buttress Casing



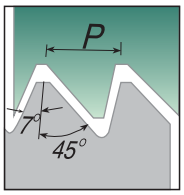


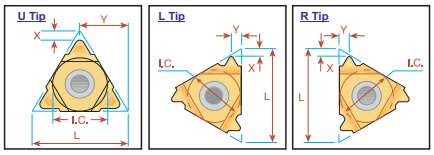
PG - DIN 40430



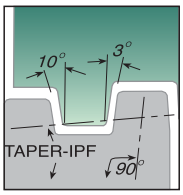


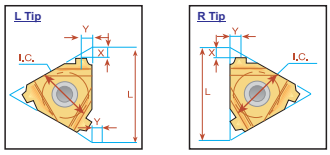
American Buttress





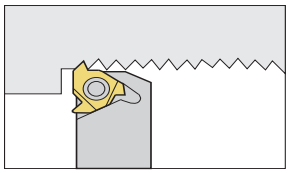
VAM

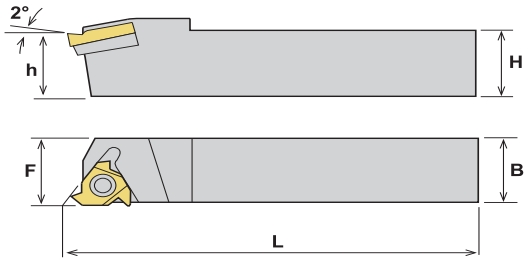




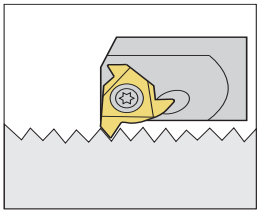
VİDA AÇMA KATERLERİ

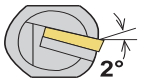
Takım Kod No *Ordering Code*	Stok *Stock* R	Stok *Stock* L	Kater Ölçüleri (mm) *Dimension (mm)* h=H	B	L	F	Kesici Uç Insert
SER/L 0808 E 11	○	○	08	08	70	11	11 ER/EL
SER/L 1010 E 11	●	○	10	10	70	11	
SER/L 1616 H 16C	●	●	16	16	100	16	16 ER/EL
SER/L 2020 K 16C	●	●	20	20	125	20	
SER/L 2525 M 16C	●	●	25	25	150	25	
SER/L 3232 P 16C	●	●	32	32	170	32	
SER/L 2525 M 22C	●	●	25	25	150	25	22 ER/EL
SER/L 3232 P 22C	●	●	32	32	170	32	
SER/L 4040 S 22C	○	○	40	40	250	40	
SER/L 2525 M 16C-T	●	○	25	25	150	25	16 ER/L (1.5-3 TR)
SER/L 2525 M 22C-T	●	○	25	25	150	25	22 ER/L (4-6 TR)

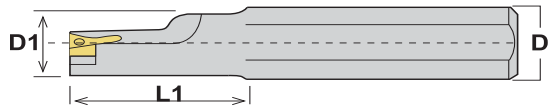


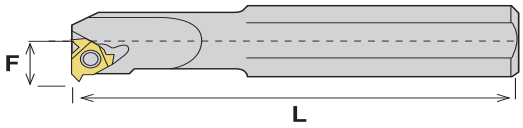


Takım Kod No *Ordering Code*	Stok *Stock* R	Stok *Stock* L	Kater Ölçüleri (mm) *Dimension (mm)* D	D1	L	L1	F	D min	Kesici Uç Insert
SIR/L S16X07M 08	●	●	16	07	150	18	5.3	7.8	08 IR/L
SIR/L S10H 11	○	○	10	10	100	-	7.4	12	11 IR/L
SIR/L S12K 11	●	●	12	12	125	-	8.4	16	
SIR/L S16X10M 11	●	●	16	10	150	25	7.4	12	
SIR/L S16X13M 11	●	●	16	13	150	32	8.9	15	
SIR/L S16X13M 16	○	○	16	13	150	32	10.2	16	16 IR/L
SIR/L S16M 16	●	●	16	16	150	-	11.7	19	
SIR/L S20X16P 16	○	○	20	16	170	40	11.7	19	
SIR/L S20P 16	●	●	20	20	170	-	13.7	24	
SIR/L S25R 16C	●	●	25	25	200	-	16.2	29	
SIR/L S32S 16C	●	●	32	32	250	-	19.7	36	
SIR/L S40T 16C	●	●	40	40	300	-	23.7	44	
SIR/L S50U 16C	○	○	50	50	350	-	28.7	54	
SIR/L S20P 22	●	●	20	20	170	-	14	24	22 IR/L
SIR/L S25R 22C	●	●	25	25	200	-	18.1	29	
SIR/L S32S 22C	●	●	32	32	250	-	21.6	38	
SIR/L S40T 22C	●	●	40	40	300	-	25.6	46	
SIR/L S50U 22C	○	○	50	50	350	-	30.6	58	
SIR/L S25R 16C-T	●	○	25	25	200	-	16.2	29	16 IR/L (1.5-3 TR)
SIR/L S32S 16C-T	○	○	32	32	250	-	19.7	36	
SIR/L S25R 22C-T	●	○	25	25	200	-	18.1	29	22 IR/L (4-6 TR)
SIR/L S32S 22C-T	●	○	32	32	250	-	21.6	38	









HELİCOİL & İNSÖRT

HELİCOİL YAYLAR

YAY KILAVUZLARI

TAKMA APARATLARI

DİŞ TAMİR SETLERİ

İNSÖRTLER

TurkCoil®

HELICOIL ★ INSERT SYSTEMS

TurkCoil®
HELICOIL ⋆ INSERT SYSTEMS

VİDA ve DİŞ TAMİR YAYLARI
Paslanmaz Çelik

MM - UNC - UNF - G (BSP)

METRİK	İSO 2 - (6H) DIN 8140 STANDARTINDA			
Çap Ölçüsü	1D	1.5D	2D	3D
M2*0,40	87202-10	87202-15	87202-20	
M2,5*045	87204-10	87204-15	87204-20	
M3*0,50	87205-10	87205-15	87205-20	
M3,5*0,60	87206-10	87206-15	87206-20	
M4*0,70	87207-10	87207-15	87207-20	
M5*0,80	87208-10	87208-15	87208-20	
M6*1,00	87209-10	87209-15	87209-20	87209-30
M8*1,00	87212-10	87212-15	87212-20	87211-30
M8*1,25	87211-10	87211-15	87211-20	87211-30
M10*1,00	87217-10	87217-15	87217-20	87217-30
M10*1,25	87216-10	87216-15	87216-20	87216-30
M10*1,50	87215-10	87215-15	87215-20	87215-30
M12*1,00	87224-10	87224-15	87224-20	87224-30
M12*1,25	87223-10	87223-15	87223-20	87223-30
M12*1,50	87222-10	87222-15	87222-20	87222-30
M12*1,75	87221-10	87221-15	87221-20	87221-30
M14*1,25	87227-10	87227-15	87227-20	87227-30
M14*1,50	87226-10	87226-15	87226-20	87226-30
M14*2,00	87225-10	87225-15	87225-20	87225-30
M16*1,50	87235-10	87235-15	87235-20	87235-30
M16*2,00	87234-10	87234-15	87234-20	87234-30
M18*1,50	87238-10	87238-15	87238-20	87238-30
M18*2,50	87236-10	87236-15	87236-20	87236-30
M20*1,50	87241-10	87241-15	87241-20	87241-30
M20*2,50	87239-10	87239-15	87239-20	87239-30
M22*1,50	87244-10	87244-15	87244-20	87244-30
M24*1,50	87247-10	87247-15	87247-20	87247-30
M24*3,00	87245-10	87245-15	87245-20	87245-30
M30*3,50	87354-10	87354-15	87354-20	87354-30

UNC	İSO 2 - (6H) DIN 8140 STANDARTINDA		
Çap Ölçüsü	1D	1.5D	2D
UNC 2-56	88200-10	88200-15	88200-20
UNC 4-40	88201-10	88201-15	88201-20
UNC 5-40	88202-10	88202-15	88202-20
UNC 6-32	88203-10	88203-15	88203-20
UNC 8-32	88204-10	88204-15	88204-20
UNC 10-24	88205-10	88205-15	88205-20
UNC 12-24	88206-10	88206-15	88206-20
UNC 1/4-20	88207-10	88207-15	88207-20
UNC 5/16-18	88208-10	88208-15	88208-20
UNC 3/8-16	88209-10	88209-15	88209-20
UNC 7/16-14	88210-10	88210-15	88210-20
UNC 1/2-13	88211-10	88211-15	88211-20

UNF	İSO 2 - (6H) DIN 8140 STANDARTINDA		
Çap Ölçüsü	1D	1.5D	2D
UNF 2-64	88287-10	88287-15	88287-20
UNF 4-48	88290-10	88290-15	88290-20
UNF 6-40	88291-10	88291-15	88291-20
UNF 8-36	88292-10	88292-15	88292-20
UNF10-32	88293-10	88293-15	88293-20
UNF 1/4-28	88225-10	88225-15	88225-20
UNF 5/16-24	88226-10	88226-15	88226-20
UNF 3/8-24	88227-10	88227-15	88227-20
UNF 7/16-20	88228-10	88228-15	88228-20
UNF 1/2-20	88229-10	88229-15	88229-20

G(BSP)	İSO 2 - (6H) DIN 8140 STANDARTINDA		
Çap Ölçüsü	1D	1.5D	2D
G (BSP) 1/8-28	88380-10	88380-15	88380-20
G (BSP) 1/4-19	88381-10	88381-15	88381-20
G (BSP) 3/8-19	88382-10	88382-15	88382-20
G (BSP) 1/2-14	88383-10	88383-15	88383-20
G (BSP) 5/8-14	88384-10	88384-15	88384-20

Bütün Ölçülerde Kilitli Model Yay Mevcuttur.

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DİŞ TAMİR KILAVUZLARI ve TAMİR SETLERİ

MM - UNC - UNF - G (BSP)

METRİK KLAVUZLAR VE TAMİR SETLERİ

Çap Ölçüsü	DÜZ TİP	DÜZ MAK. TİP	HELİS MAK. TİP	TAMİR SETİ
	FORM D	FORM B	FORM C	KLVZ+YAY+APRT
M2*0,40	83001	83501	83701	84001
M2,5*045	83003	83503	83703	84003
M3*0,50	83005	83505	83705	84005
M4*0,70	83007	83507	83707	84007
M5*0,80	83008	83508	83708	84009
M6*1,00	83009	83509	83709	84010
M8*1,25	83011	83511	83711	84012
M10*1,50	83015	83515	83715	84016
M12*1,75	83020	83520	83720	84021
M14*2,00	83027	83527	83727	84028
M16*2,00	83033	83533	83733	84032
M18*2,50	83036	83536	83736	84034
M20*2,50	83038	83538	83738	84037

M20 Üzeri ve diğer ince dişli ürünler için web sitemizi inceleyiniz.

G (BSP) KLAVUZLAR VE TAMİR SETLERİ

Çap Ölçüsü	DÜZ TİP	TAMİR SETİ
	FORM D	KLVZ+YAY+APRT
G (BSP) 1/8-28	83311	84190
G (BSP) 1/4-19	83312	84191
G (BSP) 3/8-19	83313	84192
G (BSP) 1/2-14	83314	84193
G (BSP) 5/8-14	83315	84194

UNC KLAVUZLAR VE TAMİR SETLERİ

Çap Ölçüsü	DÜZ TİP	HELİS MAK. TİP	TAMİR SETİ
	FORM D	FORM C	KLVZ+YAY+APRT
UNC 2-56	83100		84100
UNC 4-40	83101	83921	84101
UNC 5-40	83102		84106
UNC 6-32	83103	83922	84102
UNC 8-32	83104	83923	84103
UNC 10-24	83105	83924	84104
UNC 12-24	83106		84105
UNC 1/4-20	83107	83925	84107
UNC 5/16-18	83108	83926	84108
UNC 3/8-16	83109	83927	84109
UNC 7/16-14	83110	83928	84110
UNC 1/2-13	83111	83929	84111

UNF KLAVUZLAR VE TAMİR SETLERİ

Çap Ölçüsü	DÜZ TİP	HELİS MAK. TİP	TAMİR SETİ
	FORM D	FORM C	KLVZ+YAY+APRT
UNF 2-64	83149		87201
UNF 4-48	83151	83970	84202
UNF 6-40	83152	83971	84121
UNF 8-36	83153	83972	84122
UNF10-32	83154	83973	84123
UNF 1/4-28	83155	83974	84125
UNF 5/16-24	83156	83975	84126
UNF 3/8-24	83157	83976	84127
UNF 7/16-20	83158	83977	84128
UNF 1/2-20	83159	83978	84129

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TURKCOİL YAY APARATLARI

METRİK YAY TAKMA APARATLARI

Çap Ölçüsü	DÜZ TİP MANUEL	ALT KÖŞE BİSTTİP	KOVANLI ÇELİK ADPT.	YAY KIRMA APARATI
M2*0,40	88002		87202	87002
M2,5*045	88003	88090	87203	87003
M3*0,50	88004	88091	87204	87004
M4*0,70	88006	88092	87206	87006
M5*0,80	88008	88093	87208	87008
M6*1,00	88009	88094	87209	87009
M8*1,25	88011	88095	87211	87011
M10*1,50	88013	88096	87213	87013
M12*1,75	88015	88097	87215	87015
M14*2,00	88016		87216	87016
M16*2,00	88018		87218	87018
M18*2,50	88020		87220	87020
M20*2,50	88021		87221	87021

G (BSP) YAY TAKMA APARATI

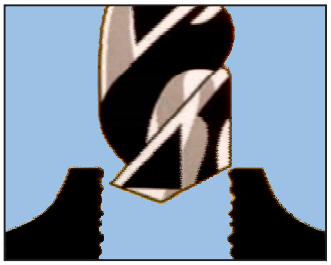
Çap Ölçüsü	DÜZ TİP MANUEL
G (BSP) 1/8-28	88080
G (BSP) 1/4-19	88081
G (BSP) 3/8-19	88082
G (BSP) 1/2-14	88083
G (BSP) 5/8-14	88084

UNC - UNF YAY TAKMA APARATLARI

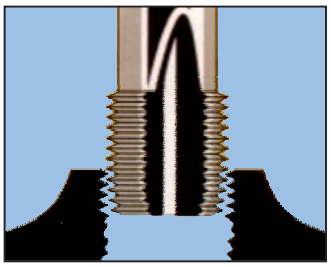
Çap Ölçüsü		DÜZ TİP MANUEL
UNC 2-56	UNF 2-64	88002
UNC 4-40	UNF 4-48	88003
UNC 5-40		88004
UNC 6-32	UNF 6-40	88005
UNC 8-32	UNF 8-36	88006
UNC 10-24	UNF10-32	88007
UNC 12-24		88008
UNC 1/4-20	UNF 1/4-28	88009
UNC 5/16-18	UNF 5/16-24	88010
UNC 3/8-16	UNF 3/8-24	88012
UNC 7/16-14	UNF 7/16-20	88014
UNC 1/2-13	UNF 1/2-20	88015

YAY SÖKME APARATLARI

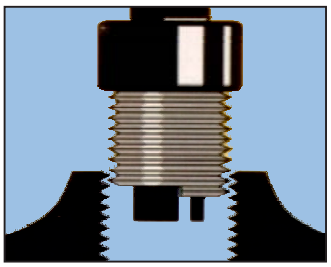
Çap Ölçüsü	DÜZ TİP MANUEL
M2-8	87051
M3-10	87052
M11-24	87053
M20-39	87054



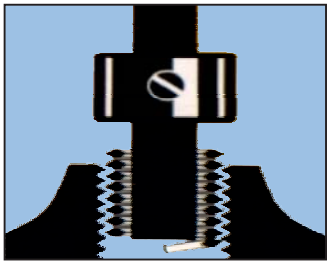
1. İŞLEM
TURKCOİL'e uygun matkap ile delik delinir veya uygun çapa büyütülür.



2. İŞLEM
TURKCOİL'e uygun klavuz ile diş yuvası açılır.



3. İŞLEM
TURKCOİL'e uygun takma aparatı ile yay yuvaya yerleştirilir.



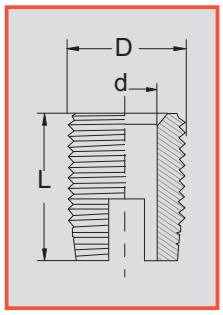
4. İŞLEM
TURKCOİL'e uygun yay kırma aparatı ile yay çeltik kısmından kırılır.

TurkCoil®
HELICOIL ⋆ INSERT SYSTEMS

T-FİX & T-SERT
İNSERT ve TIRNAKLI ENSERT

T-FİX DİŞ TAMİR İNSÖRTLERİ

d İÇ ÇAP ÖLÇÜSÜ	D DIŞ ÇAP ÖLÇÜSÜ	L TAM BOY	DELME ÇAPI	T-FİX SİPARİŞ KODU
M2*0,40	M 4,5*0,5	6 mm	4 mm	81020
M2,5*0,45	M 4,5*0,5	6 mm	4 mm	81025
M3*0,50	M 5,0*0,5	6 mm	4,5 mm	81030
M4*0,70	M 6,5*0,75	8 mm	5,75 mm	81040
M5*0,80	M 8,0*1,0	10 mm	7 mm	81050
M6*1,00	M 10*1,5	14 mm	8,5 mm	81060
M8*1,25	M 12*1,5	15 mm	10,5 mm	81080
M10*1,50	M 14*1,5	18 mm	12,5 mm	81100
M12*1,75	M 16*1,5	22 mm	14,5 mm	81120
M14*2,0	M 18*1,5	24 mm	16,5 mm	81140
M16*2,0	M 20*1,5	22 mm	18,5 mm	81160
M20*2,5	M 26*1,5	27 mm	24,5 mm	81200
M3*0,50 inox	M 5,0*0,5	6 mm	4,5 mm	81143
M4*0,70 inox	M 6,5*0,75	8 mm	5,75 mm	81144
M5*0,80 inox	M 8,0*1,0	10 mm	7 mm	81145
M6*1,00 inox	M 10*1,5	14 mm	8,5 mm	81146
M8*1,25 inox	M 12*1,5	15 mm	10,5 mm	81148
M10*1,50 inox	M 14*1,5	18 mm	12,5 mm	81150
M12*1,75 inox	M 16*1,5	22 mm	14,5 mm	81152



1.İşlem
Delme

2.İşlem
Klavuz Çekme

3.İşlem
Vida yönünde insört yerleştirme

4.İşlem
Vida yönü tersine aparat çıkartma

T-FİX DİŞ TAMİR İNSÖRT SETİ

T-FİX SET ÖLÇÜSÜ	ÜRÜN AÇIKLAMASI	T-FİX SİPARİŞ KODU	TAKMA APARATI SİPARİŞ KODU
M2*0,40	METRİK İNSERT - SET	81001	88101
M2,5*0,45	METRİK İNSERT - SET	81002	88102
M3*0,50	METRİK İNSERT - SET	81003	88104
M4*0,70	METRİK İNSERT - SET	81004	88106
M5*0,80	METRİK İNSERT - SET	81005	88108
M6*1,00	METRİK İNSERT - SET	81006	88109
M8*1,25	METRİK İNSERT - SET	81008	88111
M10*1,50	METRİK İNSERT - SET	81010	88113

Set

Takma Aparatı

T-FİX TIRNAKLI DİŞ TAMİR İNSÖRTLERİ

T-SERT İÇ ÇAP SET ÖLÇÜSÜ	T-SERT DIŞ ÇAP SET ÖLÇÜSÜ	2 TIRNAKLI İNSÖRT	4 TIRNAKLI İNSÖRT	İNSERT
		SİPARİŞ KODU	FORM C	TAKMA APARATI
M3*0,50	M5*0,80	EN203	EN403	En003
M4*0,70	M6*0,75	EN204	EN404	EN004
M5*0,80	M8*1,25	EN205	EN405	EN005
M6*1,00	M10*1,25	EN206	EN406	EN006
M8*1,25	M12*1,25	EN208	EN408	EN008
M10*1,50	M14*1,50	EN210	EN410	EN010
M12*1,75	M16*1,50	EN212	EN412	EN012

Diş Tamir Takımları (Helicoil Takımları)

5 - 12

5 x 0.8	5.2 mm	No. 8	No. 8	25
6 x 1.0	6.3 mm	No. 9	No. 9	25
8 x 1.25	8.3 mm	No. 11	No. 11	25
10 x 1.5	10.4 mm	No. 13	No. 13	25
12 x 1.75	12.4 mm	No. 15	No. 15	10

6 - 14 x 1.25 / NP

6 x 1.0	6.3 mm	No. 9	No. 9	25
8 x 1.25	8.3 mm	No. 11	No. 11	25
10 x 1.5	10.4 mm	No. 13	No. 13	25
12 x 1.75	12.4 mm	No. 15	No. 15	10
14 x 1.25		No. 17		10

6 - 14 x 1.25 / PT (*Spark Plug / Buji Kılavuzu)

6 x 1.0	6.3 mm	No. 9	No. 9	25
8 x 1.25	8.3 mm	No. 11	No. 11	25
10 x 1.5	10.4 mm	No. 13	No. 13	25
12 x 1.75	12.4 mm	No. 15	No. 15	10
14 x 1.25*		No. 17		10

6 - 10

6 x 1.0	6.3 mm	No. 9	No. 9	25
8 x 1.25	8.3 mm	No. 11	No. 11	25
10 x 1.5	10.4 mm	No. 13	No. 13	25

UNC 1/4 - 1/2"

UNC 1/4 x 20	6.7 mm	No. 9	No. 9	25
UNC 5/16 x 18	8.3 mm	No. 10	No. 11	25
UNC 3/8 x 16	9.9 mm	No. 12	No. 12	25
UNC 7/16 x 14	11.6 mm	No. 14	No. 14	10
UNC 1/2 x 13	13.0 mm	No. 15	No. 15	10

UNF 1/4 - 1/2"

UNF 1/4 x 28	6.7 mm	No. 9	No. 9	25
UNF 5/16 x 24	8.3 mm	No. 11	No. 11	25
UNF 3/8 x 24	9.8 mm	No. 13	No. 13	25
UNF 7/16 x 20	11.5 mm	No. 14	No. 14	10
UNF 1/2 x 20	13.0 mm	No. 15	No. 15	10

BSW 1/4 - 1/2"

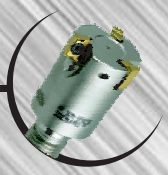
BSW 1/4 x 20	6.7 mm	No. 9	No. 9	25
BSW 5/16 x 18	8.3 mm	No. 10	No. 11	25
BSW 3/8 x 16	9.9 mm	No. 12	No. 12	25
BSW 7/16 x 14	11.5 mm	No. 14	No. 14	10
BSW 1/2 x 12	13.0 mm	No. 15	No. 15	10

BSF 1/4 - 1/2"

BSF 1/4 x 26	6.6 mm	No. 9	No. 9	25
BSF 5/16 x 22	8.3 mm	No. 11	No. 11	25
BSF 3/8 x 20	9.9 mm	No. 12	No. 12	25
BSF 7/16 x 18	11.5 mm	No. 14	No. 14	10
BSF 1/2 x 16	13.0 mm	No. 15	No. 15	10

DİĞER ÜRÜNLERİMİZ

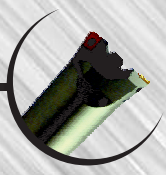
FREZE KAFALARI



FREZE PENSLERİ

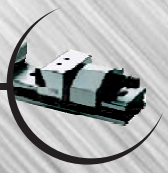
HASSAS TUTUCULAR

DELİK İŞLEME BARALARI



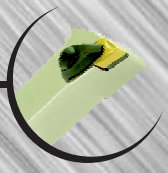
PARÇA BAĞLAMA SİSTEMLERİ

MENGENELER

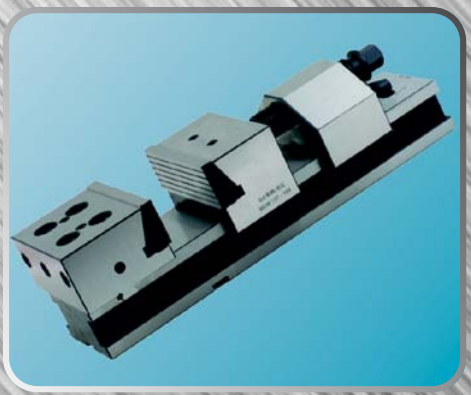


TORNA AYNALARI

TORNA TAKIMLARI



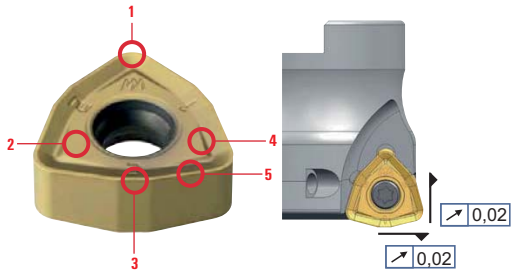
TAKMA UÇLU MATKAPLAR



Özellikler

- WNMX uçların 6 kesme köşesi onu çok daha ekonomik yapar.
- Yüksek eğim açılı kesme köşesi ve talaş kırıcı formu kesme yüklemesini azaldır.
- Negatif geometrisi kesme köşesinin esnemezliğini ve çift taraflı çalışabilmesini sağlar
- Yüksek güçlü baskı parçası sistem üzerindeki basit vida sayesinde gerçekleşir.
- Eşsiz Kesici uç tasarımı yüksek ilerleme ve çok fonksiyonlu işleme yapabilir.
- WNMX kesici ucun simetrik kesme köşesi Sağ tip ve Sol tip işlemelerde kullanılabilir.
- Bu sayede diğer altı köşeyi de kullanabilir ve ucu 12 köşesini kullandığımız ekonomik bir duruma getiririz.

• Kesici Ucun Özellikleri • Kesici Takımın Özellikleri



1) Köşe Radyüsü -R
- Rampalama cep işleminde esnemeyen kenar güvenliği
- Dairesel köşesi yüksek ilerleme için uygundur.
- Sağ ve Sol tip işlemler için uygundur.

2) Baskı Parçası Yüzü
- Sabit Baskı parçası için dizayn edilmiştir.
- Talaş Sürtünmesini engeller.

3) Küçük Kesme Kenarı
- Yüksek ilerlemeli işlemede kaba yüzey işlemesi geliştirilmiştir.
- İtme kuvvetini azaltan özel dizayn
- Sağ ve Sol tip takımları için simetrik kesici uç dizaynı

4) Talaş Kırıcı Formu
- Yüksek eğimli açısı sayesinde kesme yükü azaltılmıştır.
- Bir çok çeşitli uygulamalarda talaş boşaltımı ve talaş tahliyesi geliştirilmiştir.

5) Ana Kesme Kenarı
- Sağ ve Sol tip takımları için simetrik kesici uç dizaynı
- Yüksek eğimli kesme kenarı sayesinde mükemmel kesme performansı
- Yüksek ilerlemede düşük kesme direnci
- İtme kuvvetini azaltan özel tasarım

İçten Soğutma Sistemi
- Talaş boşaltımı ve talaş tahliyesi geliştirilmiştir.
- Düşürülmüş kesme ısı derecesi sayesinde daha uzun tamı ömrü

Alışılmadık 3-Yüzey Sistemi
- Güçlü baskı parçası
- Bir çok çeşitli işlemelerde ve zor kesme koşullarında sabit baskı parçası sistemi vardır.

Basit Vidalı Sıkma Sistemi
- Vidalı sıkma sisteminde güçlü baskı
- Kullanışlı baskı parçası sistemi
- Talaş tahliyesi için geniş talaş cebi

AMS MIL FREZE KAFALARI

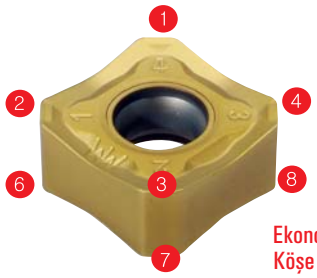
- 10-12-16 mm çaplarında
- 80-120-160 mm boy seçenekleri
- Alüminyum, çelik ve paslanmaz insört seçenekleri

RİCH FREZE RM8

RM8AC4000 45°
Ø 50-200 mm

EC4000 75°
Ø 50-200 mm

QC4000 88°
Ø 50-200 mm



Ekonomik 8 Köşe Kullanımı

Talaş Kırıcı Formu

Kesici Uç		Kesme Kenarı	Özellik
Alüminyum MA			Keskin kesme kenarına bağlı olarak, ve parlak yüzey, iyi talaş akışına ve ve kaynak direncine sahiptir
Finiş işleme MF			Kesme yüküne bağlı olarak, niş işleme ve kesmei zor malzemeler için iyidir

Kesici Uç		Kesme Kenarı	Özellik
Genel işleme MM			Genel frezeleme için uygun tasarım
Wiper W			Mükemmel pürüzsüz operasyonlar için özel kenar tasarımıyla uygundur

RİCH FREZE RM4

RM4PC3000 90°
Ø 50-160 mm

PS3000 90°
Ø 14-63 mm

PM3000 90°
Ø 14-50 mm

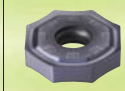
Ekonomik 4 Köşe Kullanımı

Talaş Kırıcı Formu

Kesici uç		Kesme kenarı	Özellik
Alüminyum İşleme MA			Özellikle alüminyum yada düşük kesme kuvvetli işlemlerde keskin kesme kenarı sayesinde daha iyi üretkenlik sağlanmıştır
Finiş İşleme MF			Finiş işleme ve kesimi zor malzemeler için düşük kesme yüküne bağlı olarak , iyi işleme özelliğine sahiptir
Genel İşleme MM			Genel işleme için uygun tasarım

RİCH FREZE RM16

Talaş Kırıcı Formu

Kesici Uçlar		Kesme kenarı	Özellik
Alüminyum Haf İşleme MA			Özellikle alüminyum işleme için keskin kesme kenarı ile daha verimli üretim
Finiş İşleme MF			Düşük keske yüküne bağlı olarak finish işlemelerde ve kesmesi zor malzemeler için iyidir
Genel İşleme MM			Genel işleme için uygun tasarım
Wiper W			MM,MF talaş kırıcılarından iyi yüzey pürüzlüğü vardır

ÇAP TORNALAMA TAKIMLARI

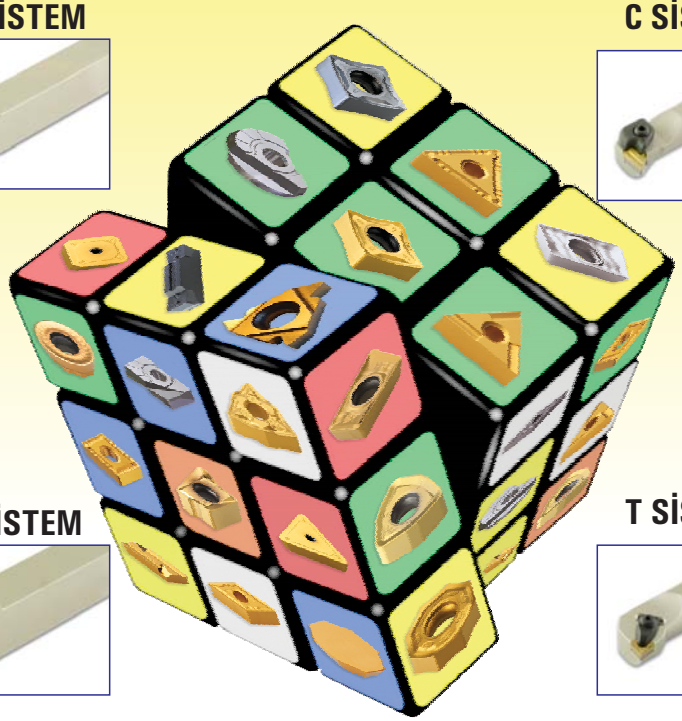
T SİSTEM

M SİSTEM

S SİSTEM

C SİSTEM

P SİSTEM



DELİK TORNALAMA TAKIMLARI

C SİSTEM

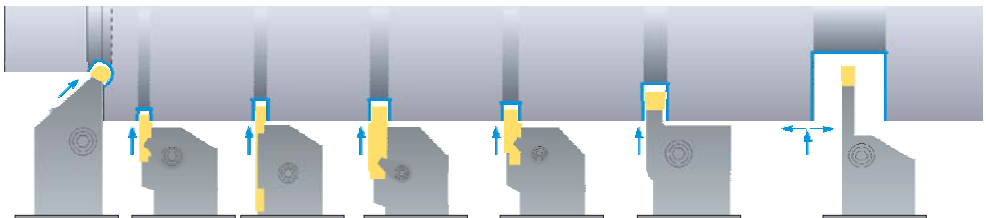
P SİSTEM

S SİSTEM

T SİSTEM

M SİSTEM

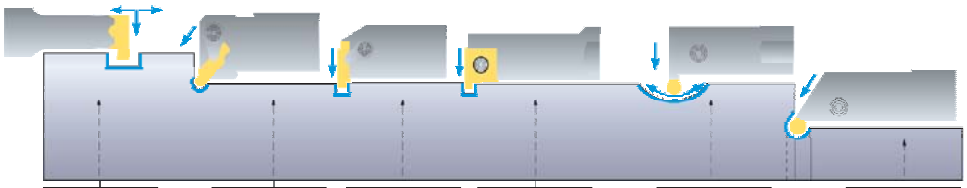
ÇAP KANAL TAKIMLARI



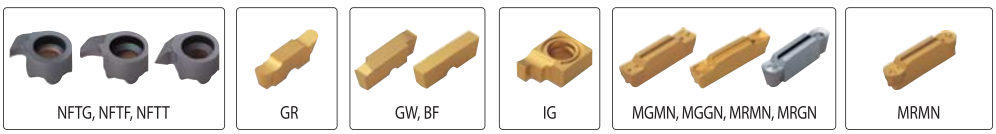
MGEUR/L	TBH	PH	GH	GFT	DBH	MGEHR/L
Genişlik:3.0~8.0	Genişlik:1.25~4.5	Genişlik:3.0~5.0	Genişlik:1.23~4.28	Genişlik:1.1~8.0	Genişlik:3.0~8.0	Genişlik:1.5~8.0
T-Maks:3.0~5.0	T-Maks:1.5~5.0	ØD-Maks:30~50	T-Maks:1.5~4.0	T-Maks:2.1~9.0	T-Maks:14	T-Maks:10~28

MRMN	TB	POB	GO, GS	GW, BF	DC, DB	MGMN, MRMN, MRGN, MGGN

DELİK KANAL TAKIMLARI



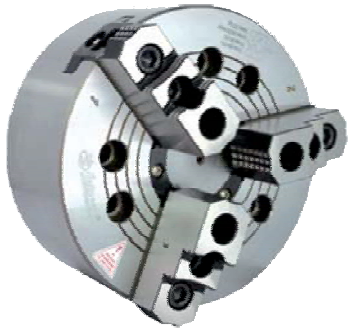
NFTIH	GFIK	GFIP	IGH	MGIVR/L	MGIUR/L
Genişlik:0.75~4.02	Genişlik:2.0~8.0	Genişlik:1.1~8.0	Genişlik:1.25~2.8	Genişlik:1.5~8.0	Genişlik:3.0~8.0
T-Maks:1.3~4.6	T-Maks:2.0~8.0	T-Maks:2.1~9.0	T-Maks:1.5~2.3	T-Maks:4.0~10	T-Maks:3.5~6.5



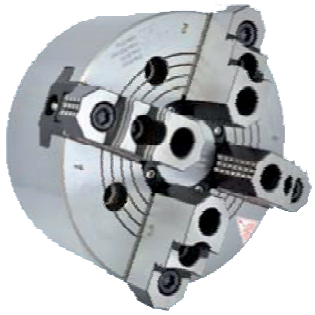
NFTG, NFTF, NFTT	GR	GW, BF	IG	MGMN, MGGN, MRMN, MRGN	MRMN

KING DRILL
13-60 mm Çaplarında
2-3-4-5 D Boylarında

3 AYAKLI HİDROLİK AYNALAR



4 AYAKLI HİDROLİK AYNALAR



ÜNİVERSAL TORNA

DEĞİŞİR UÇLU DÖNER PUNTALAR

DEĞİŞİR UÇ TIRNAKLI PUNTA

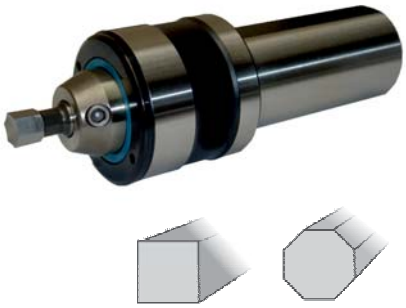
CNC TORNA DÖNER PUNTALARI

ŞAPKALI VE SABİT BORU PUNTASI

SERT-YUMUŞAK YEDEK AYAKLAR

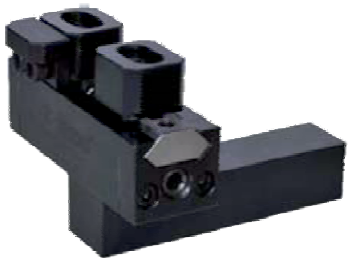
SABİT PUNTALAR

KÖŞE BASMA APARATLARI



MORS VE REDİKSİYON KOVANLAR

CNC TORNA ÇUBUK SÜRÜCÜ'SÜ



ZERO HIZLI BAĞLAMA SİSTEM TABLASI

YATAY İŞLEME KULESİ

L TİP PARÇA BAĞL.GÖNYESİ

ÇİFT AÇILIR 5.EKSEN MENGENESİ

MEKANİK ÇELİK MENGENE

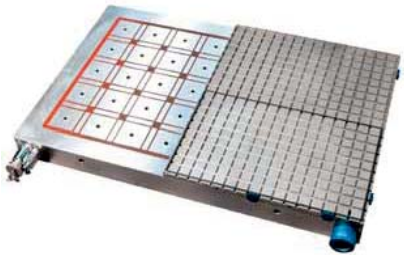
2350 PNOMATİK MENGENE

TAŞLANMIŞ PARALEL SET

V & X PARÇA BAĞLAMA YATAKLARI

ÇOK ÇENELİ MENGENELER

VAKUMLU & MANYETİK TABLA

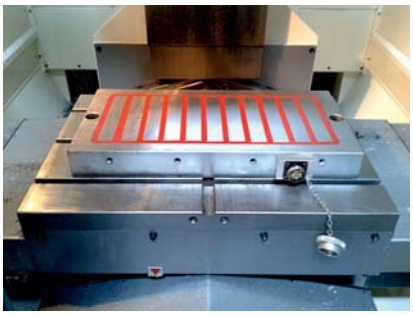


İŞ PARÇASINI YANDAN SIKMA SETİ

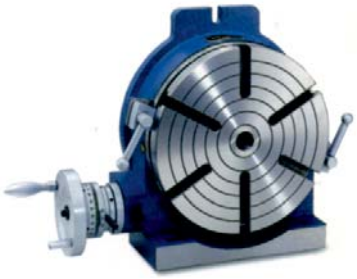
PARÇA BAĞLAMA PAPUÇ SETLERİ

DİVİZÖRLER

ELEKTROMANYETİK TABLA



DÖNER TABLALAR



MRK CUTTING TOOLS

MK-ŞAFTLI PENS TUTUCULAR

SİLİNDİRİK SAPLI PENS TUTUCULAR

İSO/BT/SK PENS TUTUCULAR

HSK TAKIM TUTUCULAR

CAPTO TAKIM VE TUTUCULARI

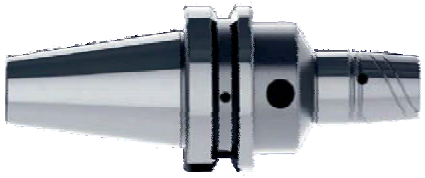
BT/SK MİNİ PENS TUTUCULAR

VELDON ŞAFT TUTUCULAR

VİDALI TAKIM TUTUCULAR

KOMBİNE MALAFA TUTUCULAR

HİDROLİK TAKIM TUTUCULAR



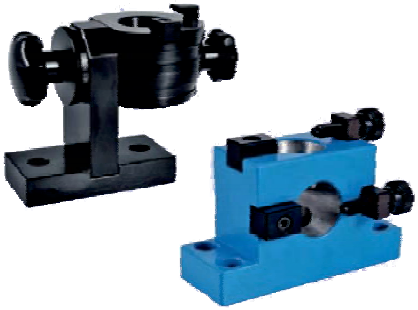
ISITMALI TAKIM TUTUCULAR

MORS KONİKLİ TAKIM TUTUCULAR

ER TİP PENS'LER

HİDROLİK PENS AYNASI

MONTAJ APARATLARI



STANDART MEKANİK KUMPASLAR

DİJİTAL KUMPASLAR

DİJİTAL KANAL KUMPASLARI

ÖLÇÜM MİHENGİRİ

ÖLÇÜM PLEYTİ

ÖLÇÜM MASTARLARI

MEKANİK MİKROMETRELER

DİJİTAL MİKROMETRELER

ÖZEL MİKROMETRELER

KOMPRATÖR SAATLERİ

SALGI SAATLERİ

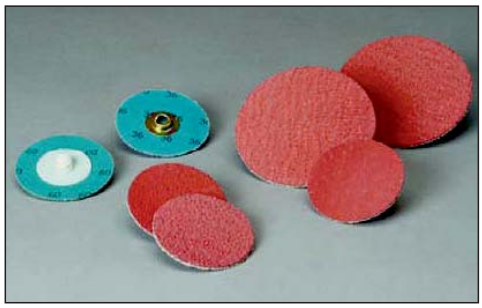
İÇ ÇAP KOMPRATÖRÜ

SİLİNDİR KOMPRATÖRLERİ

MİKROSKOPLAR

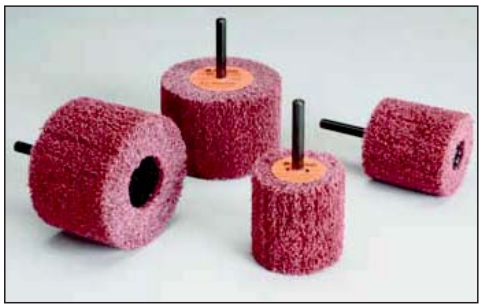
SERTLİK ÖLÇME CİHAZI

ÇABUK DEĞİŞTİRİLEBİLİR DİSK ZIMPARALAR



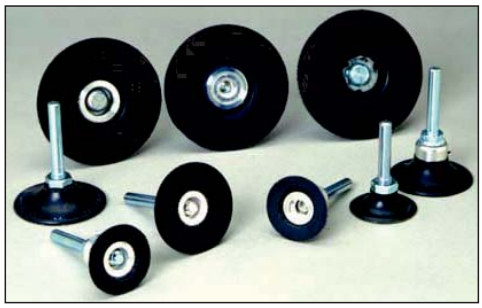
Mevcut olan çap ölçüleri: 25-50-75 mm

SAPLI MOP SKOÇ YÜZEY TEMİZLEYİCİ



Mevcut olan çap ölçüleri:20-25-30-40-50-60-80

ÇABUK DEĞİŞTİRİLEBİLİR DİSK APARATLARI



Mevcut olan çap ölçüleri:25-50-75mm

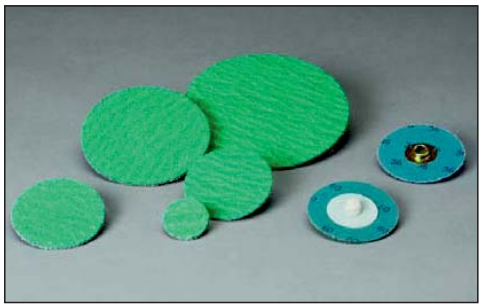
ÇABUK DEGİŞTİRİLEBİLİR DİSK SKOÇLAR

Mevcut olan çap ölçüleri:25-50-75mm

KONİK VE SARMA ZIMPARALAR

Mevcut olan çap ölçüleri:8-10-12-15mm

ZİRKONYUM DİSK ZIMPARALAR



Mevcut olan çap ölçüleri: 25-50-75 mm

SPİROBANT ZIMPARA VE APARATLARI

Mevcut olan çap ölçüleri: 10-12-15-20-25-30-40-50-60 mm

FLANŞLI MOP ZIMPARALAR

SAPLI MOP ZIMPARALAR

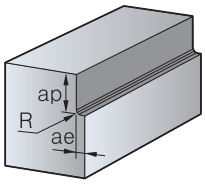
Mevcut olan çap ölçüleri: 10-12-15-20-25-30-40-50-60 mm

FLANŞLI MOP SKOÇLAR

• 802 İKİ AĞIZ DÜZ KARBÜR FREZELER İÇİN ÖNERİLEN KESME KOŞULLARI

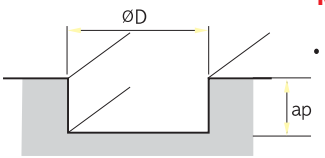
TAKIM ÇAPI	HRC 30'dan Küçük Genel Çelikler			HRC 30-45 arası Çelikler			Paslanmaz Çelikler		
	Devir (Dak^{-1})	İlerleme (mm/dak)		Devir (Dak^{-1})	İlerleme (mm/dak)		Devir (Dak^{-1})	İlerleme (mm/dak)	
		Dik Kenar Frezeleme	Kanal Açma		Dik Kenar Frezeleme	Kanal Açma		Dik Kenar Frezeleme	Kanal Açma
1.0	30,000	600	480	20,000	400	320	12,600	300	180
1.5	20,000	600	480	14,000	400	320	8,400	300	180
2.0	15,000	600	480	10,000	400	400	6,300	300	180
2.5	12,000	600	480	8,200	400	320	5,100	300	180
3.0	10,000	600	480	7,000	400	320	4,200	300	180
4.0	7,500	600	480	5,200	400	320	3,100	300	180
5.0	6,000	600	480	4,200	400	320	2,500	300	180
6.0	5,000	600	480	3,500	400	320	2,100	300	180
8.0	4,000	520	410	2,800	350	280	1,600	260	150
10.0	3,200	450	360	2,200	300	240	1,300	230	130
12.0	2,700	410	320	1,900	270	210	1,100	210	120
16.0	2,000	240	190	1,400	210	160	840	160	100
20.0	1,600	200	160	1,100	170	130	680	140	80

UYGULAMA ŞEKİLLERİ



DİK KENAR FREZELEME

- ap : ≤0.1D (D≤Ø3)
  ≤0.2D (D>Ø3)
- ae : ≤0.1D (D≤Ø2)
  ≤0.2D (D>Ø2)



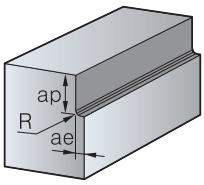
KANAL AÇMA

- ap : ≤0.1D (D≤Ø2)
  ≤0.2D (D>Ø2)

• 804 DÖRT AĞIZ DÜZ KARBÜR FREZELER İÇİN ÖNERİLEN KESME KOŞULLARI

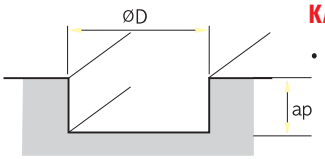
TAKIM ÇAPI	HRC 30'dan Küçük Genel Çelikler			HRC 30-45 arası Çelikler			Paslanmaz Çelikler		
	Devir (Dak^{-1})	İlerleme (mm/dak)		Devir (Dak^{-1})	İlerleme (mm/dak)		Devir (Dak^{-1})	İlerleme (mm/dak)	
		Dik Kenar Frezeleme	Kanal Açma		Dik Kenar Frezeleme	Kanal Açma		Dik Kenar Frezeleme	Kanal Açma
1.0	30,000	900	720	20,000	600	480	12,600	450	270
1.5	20,000	900	720	14,000	600	480	8,400	450	270
2.0	15,000	900	720	10,000	600	480	6,300	450	270
2.5	12,000	900	720	8,200	600	480	5,100	450	270
3.0	10,000	900	720	7,000	600	480	4,200	450	270
4.0	7,500	900	720	5,200	600	480	3,100	450	270
5.0	6,000	900	720	4,200	600	480	2,500	450	270
6.0	5,000	900	720	3,500	600	480	2,100	450	270
8.0	4,000	780	620	2,800	520	410	1,600	390	230
10.0	3,200	680	540	2,200	450	360	1,300	340	200
12.0	2,700	620	490	1,900	410	320	1,100	310	180
16.0	2,000	360	280	1,400	310	240	840	240	140
20.0	1,600	300	240	1,100	250	200	680	210	120

UYGULAMA ŞEKİLLERİ



DİK KENAR FREZELEME

- ap : ≤1.5D (All diameter)
- ae : ≤0.1D (D≤Ø3)
  ≤0.2D (D>Ø3)



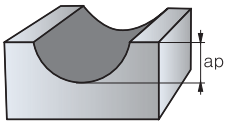
KANAL AÇMA

- ap : ≤0.1D (D≤Ø2)
  ≤0.2D (D>Ø2)

• 814 KÜRESEL KARBÜR FREZELER İÇİN ÖNERİLEN KESME KOŞULLARI

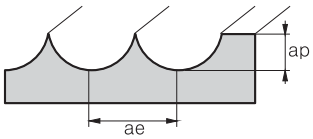
TAKIM ÇAPI	KARBON ÇELİKLER		ALAŞIMLI ÇELİKLER		KALIP ÇELİKLERİ		DEMİR DIŞI METALLER (Alüminyum)	
	Devir (Dak^{-1})	İlerleme (mm/dak)	Devir (Dak^{-1})	İlerleme (mm/dak)	Devir (Dak^{-1})	İlerleme (mm/dak)	Devir (Dak^{-1})	İlerleme (mm/dak)
1.0	40000	1200	38000	1200	29000	900	40000	1000
1.5	30000	1270	25500	1100	19000	700	40000	1360
2.0	24000	1,160	19,000	800	14,300	600	40000	2,000
2.5	19000	1,000	15,300	670	11,500	510	38,000	2,400
3.0	16,000	930	13,000	600	9,600	460	32,000	2,400
3.5	13,700	930	11,400	580	8,200	450	27,300	2,400
4.0	12,000	930	10,000	570	7,200	450	24,000	2,400
5.0	9,600	930	8,000	560	5,700	450	19,000	2,400
6.0	8,000	930	6,400	540	4,800	450	16,000	2,400
8.0	6,000	900	4,800	540	3,600	450	12,000	2,400
10.0	4,800	900	3,800	540	2,900	450	9,600	2,300
12.0	4,000	900	3,200	540	2,400	450	8,000	2,100
14.0	3,400	900	2,750	540	2,050	450	6,800	2,000
16.0	3,000	900	2,400	540	1,800	450	6,000	2,000
20.0	2,400	900	1,900	520	1,450	450	4,800	2,000

UYGULAMA ŞEKİLLERİ



DİK KENAR FREZELEME

• ap : 0.1×R(~45HRC)
0.08×R(~50HRC)



(R0.1~0.5=0.2×R)
0.3×R

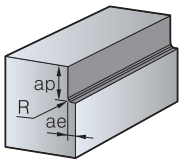
KANAL AÇMA

~0.16×R	R≦0.3(~45HRC)
~0.25×R	R≦3 (~45HRC)
~0.17×R	R≦4 (~45HRC)
~0.05×R	(~50HRC)

• 834 KÖŞE RADYÜSLÜ KARBÜR FREZELER İÇİN ÖNERİLEN KESME KOŞULLARI

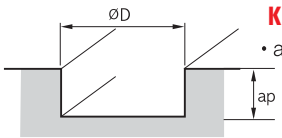
TAKIM ÇAPI	HRC 30'dan Küçük Genel Çelikler			HRC 30-45 arası Çelikler			Paslanmaz Çelikler		
	Devir (Dak^{-1})	İlerleme (mm/dak)		Devir (Dak^{-1})	İlerleme (mm/dak)		Devir (Dak^{-1})	İlerleme (mm/dak)	
		Dik Kenar Frezeleme	Kanal Açma		Dik Kenar Frezeleme	Kanal Açma		Dik Kenar Frezeleme	Kanal Açma
2.0	11,000	180	180	7,200	110	110	6,000	90	90
3.0	8,500	200	160	5,300	130	100	4,400	110	66
4.0	7,200	360	290	4,400	220	180	3,000	180	110
5.0	6,000	380	300	3,600	230	180	2,400	190	110
6.0	5,300	420	340	3,200	240	190	2,200	210	130
8.0	4,000	450	360	2,400	240	190	1,600	220	130
10.0	3,200	390	310	1,900	190	150	1,300	190	110
12.0	2,700	330	260	1,600	160	130	1,000	150	90

UYGULAMA ŞEKİLLERİ



DİK KENAR FREZELEME

• ap : ≤1.5D
• ap : ≤0.1D



KANAL AÇMA

• ap : ≤0.3D

Devir Hesaplama

$$n = \frac{v_c \times 1000}{d_1 \times \pi}$$

v_c=25 m/min
d_1=20 mm

Örnek Hesapla

$$n = \frac{25 \times 1000}{20 \times \pi} = 398\ min^{1}$$

İlerleme Hesaplama

$$v_f = f_z \times Z \times n$$

f_z=0.2 mm
Z = 4
n =400 min^{1}

Örnek Hesaplama

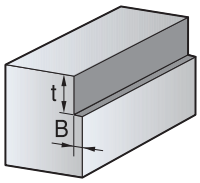
v_1=0.2 x 4 x 400 =320 mm/min

• 803 ÜÇ AĞIZ ALÜMİNYUM KARBÜR FREZELER İÇİN ÖNERİLEN KESME KOŞULLARI

İŞ PARÇASI / KOŞULLAR / TAKIM ÇAPI	Dik Kenar Frezeleme				Kanal Açma			
	Alüminyum Alaşımlar 70....		Alüminyum Alaşımlar Döküm		Alüminyum Alaşımlar 70....		Alüminyum Alaşımlar Döküm	
	Devir (Dak^{-1})	İlerleme (mm/dak)	Devir (Dak^{-1})	İlerleme (mm/dak)	Devir (Dak^{-1})	İlerleme (mm/dak)	Devir (Dak^{-1})	İlerleme (mm/dak)
1	40,000	480	40,000	368	40,000	368	40,000	280
2	40,000	880	38,000	680	38,000	680	32,000	440
3	32,000	1,120	25,000	760	25,000	760	21,000	480
4	24,000	1,200	19,000	800	19,000	800	13,000	520
5	19,000	1,280	15,000	880	15,000	800	13,000	560
6	16,000	1,520	13,000	960	13,000	880	11,000	600
8	12,000	1,520	9,500	960	9,500	960	8,000	640
10	9,500	1,520	7,600	960	7,600	960	6,400	640
12	8,000	1,520	6,400	960	6,400	960	5,300	640
16	6,000	1,520	4,800	960	4,800	800	4,000	576
20	4,800	1,200	3,800	800	3,800	776	3,200	528

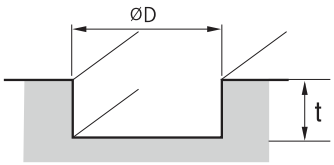
UYGULAMA ŞEKİLLERİ

DİK KENAR FREZELEME



•B≤0.2D(D<3)
•B ≤0.5D(D ≥3)

KANAL AÇMA



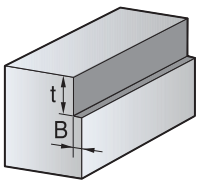
•t≤D(max:12mm)

• 894 - 896 Tİ-İNOX ve HRC 60 KARBÜR FREZELER İÇİN ÖNERİLEN KESME KOŞULLARI

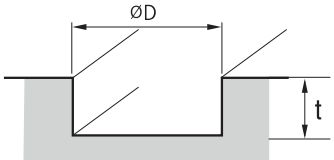
İŞ PARÇASI / KOŞULLAR / TAKIM ÇAPI	Paslanmaz Çelikler		Titanyum Alaşımları		30 HRC Altındaki Çelikler		Asıl Çelikler		Sertleştirilmiş Çelikler HRC 30 - 50	
	Devir (Dak^{-1})	İlerleme (mm/dak)	Devir (Dak^{-1})	İlerleme (mm/dak)	Devir (Dak^{-1})	İlerleme (mm/dak)	Devir (Dak^{-1})	İlerleme (mm/dak)	Devir (Dak^{-1})	İlerleme (mm/dak)
2	5,500	240	2,600	90	9,000	540	6,000	3,200	4,000	240
4	4,000	260	2,000	90	6,600	600	4,500	340	3,000	280
6	3,000	360	1,200	90	4,800	720	3,000	360	2,500	280
8	2,000	390	1,000	100	3,600	750	2,200	460	2,000	300
10	1,700	410	800	120	2,800	750	1,800	460	1,500	300
12	1,500	380	700	100	2,400	710	1,500	410	1,200	280
14	1,200	320	600	95	2,200	660	1,300	370	1,000	270
16	1,000	270	500	90	1,800	490	1,100	320	800	230
20	750	250	400	85	900	270	900	270	600	200

UYGULAMA ŞEKİLLERİ

DİK KENAR FREZELEME



KANAL AÇMA



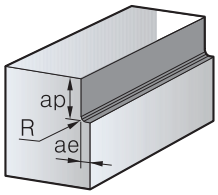
• 824 NANO DEĞİŞKEN HELİS VE DEĞİŞKEN AĞIZ AÇILI FREZELER İÇİN ÖNERİLEN KESME KOŞULLARI

TAKIM ÇAPI	NİTELİKLİ GENEL ÇELİKLER			
	Devir (Dak^{-1})	İlerleme (mm/dak)	ap (mm)	ae (mm)
2.5	12,732	891	3.8	0.3
3.0	10,610	891	4.5	0.3
3.5	9,095	891	5.3	0.4
4.0	7,958	891	6.0	0.4
5.0	6,366	891	7.5	0.5
6.0	5,305	891	9.0	0.6
7.0	4,547	891	10.5	0.7
8.0	3,979	891	12.0	0.8
9.0	3,537	891	13.5	0.9
10.0	3,183	891	15.0	1.0
12.0	2,653	891	18.0	1.2
14.0	2,274	891	21.0	1.4
16.0	1,989	891	24.0	1.6

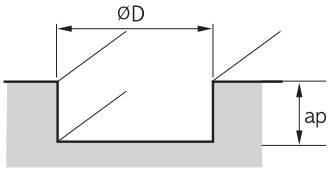
	NİTELİKLİ GENEL ÇELİKLER		
	Devir (Dak^{-1})	İlerleme (mm/dak)	ap (mm)
	12,732	700	2.5
	10,610	700	3.0
	9,095	700	3.5
	7,958	700	4.0
	6,366	700	5.0
	5,305	700	6.0
	4,549	700	7.0
	3,979	700	8.0
	3,537	700	9.0
	3,183	700	10.0
	2,653	700	12.0
	2,274	700	14.0
	1,989	700	16.0

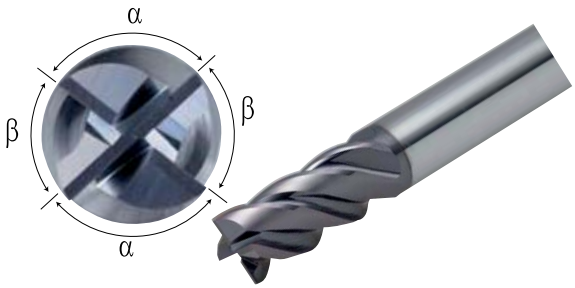
UYGULAMA ŞEKİLLERİ

DİK KENAR FREZELEME



KANAL AÇMA





• 851 KARBÜR MATKAPLAR İÇİN ÖNERİLEN KESME KOŞULLARI

İş Parçası \ Takım Çapı		Ø2.5 ~ Ø5.0		Ø5.1~ Ø8.0		Ø8.1~ Ø10.0		Ø10.1~ Ø12.0		Ø12.1~ Ø14.0		Ø14.1~ Ø20.0	
		vc(mm/dk)	fn(mm/dev)	vc(mm/dk)	fn(mm/dev)	vc(mm/dk)	fn(mm/dev)	vc(mm/dk)	fn(mm/dev)	vc(mm/dk)	fn(mm/dev)	vc(mm/dk)	fn(mm/dev)
Genel Çelikler	SCM440	40~70 (55)	0.15 ~0.25	50~110 (65)	0.20 ~0.35	50~110 (70)	0.20 ~0.35	50~120 (75)	0.25 ~0.35	50~120 (75)	0.25 ~0.35	60~120 (80)	0.25 ~0.40
	SM45C	40~80 (60)	0.15 ~0.25	50~120 (70)	0.20 ~0.30	50~120 (75)	0.20 ~0.30	60~120 (80)	0.20 ~0.30	60~120 (80)	0.25 ~0.35	70~120 (90)	0.30 ~0.40
Yüksek Alaşımlı Çelikler	STD11	15~35 (30)	0.08 ~0.15	20~40 (30)	0.10 ~0.20	20~50 (35)	0.10 ~0.20	20~60 (35)	0.15 ~0.25	20~60 (40)	0.15 ~0.25	30~65 (40)	0.15 ~0.25
Paslanmaz Çelikler	STS	15~30 (25)	0.05 ~0.10	15~45 (25)	0.10 ~0.20	15~50 (30)	0.10 ~0.20	20~60 (35)	0.10 ~0.20	20~65 (35)	0.10 ~0.20	20~70 (40)	0.10 ~0.20
Dökme Demirler	GC	40~90 (70)	0.15 ~0.30	50~120 (80)	0.20 ~0.35	50~120 (80)	0.20 ~0.35	60~130 (90)	0.25 ~0.35	60~130 (95)	0.25 ~0.40	60~140 (95)	0.25 ~0.40
	GCD	40~80 (60)	0.10 ~0.25	50~110 (75)	0.20 ~0.35	50~110 (80)	0.20 ~0.35	50~130 (80)	0.25 ~0.35	50~130 (85)	0.25 ~0.35	60~130 (90)	0.25 ~0.40

DEVİR İLERLEME HESABI

Vc.	S	D	F	Z	fz	FORMÜLLER
Kesme hızı Katalogdan Bakınız	İş Mili Devir Sayısı	Takım Çapı	Tabla İlerlemesi	Ağız Sayısı	Diş Başına Düşen İlerleme Miktarı	Devir Hesabı : S=(Vc x 1000) / (3,14 x D) İlerleme Hesabı : F=S x Z x fz

	S (mm)					T (mm)					R (mm)				
M	1D	1.5D	2D	2.5D	3D	1D	1.5D	2D	2.5D	3D	1D	1.5D	2D	2.5D	3D
M 2 x 0.40	3.80	4.80	5.80	6.80	7.80	3.40	4.40	5.40	6.40	7.40	2.00	3.00	4.00	5.00	6.00
M 2.5 x 0.45	4.52	5.77	7.02	8.27	9.52	4.07	5.32	6.57	7.82	9.07	2.50	3.75	5.00	6.25	7.50
M 3 x 0.50	5.25	6.75	8.25	9.75	11.25	4.75	6.25	7.75	9.25	10.75	3.00	4.50	6.00	7.50	9.00
M 3.5 x 0.60	6.20	7.95	9.70	11.45	13.20	5.60	7.35	9.10	10.85	12.60	3.50	5.25	7.00	8.75	10.50
M 4 x 0.70	7.15	9.15	11.15	13.15	15.15	6.45	8.45	10.45	12.45	14.45	4.00	6.00	8.00	10.00	12.00
M 5 x 0.80	8.60	11.10	13.60	16.10	18.60	7.80	10.30	12.80	15.30	17.80	5.00	7.50	10.00	12.50	15.00
M 6 x 1.00	10.50	13.50	16.50	19.50	22.50	9.50	12.50	15.50	18.50	21.50	6.00	9.00	12.00	15.00	18.00
M 7 x 1.00	11.50	15.00	18.50	22.00	25.50	10.50	14.00	17.50	21.00	24.50	7.00	10.50	14.00	17.50	21.00
M 8 x 1.25	13.62	17.62	21.62	25.62	29.62	12.37	16.37	20.37	24.37	28.37	8.00	12.00	16.00	20.00	24.00
M 8 x 1.00	12.50	16.50	20.50	24.50	28.50	11.50	15.50	19.50	23.50	27.50	8.00	12.00	16.00	20.00	24.00
M 9 x 1.25	14.62	19.12	23.62	28.13	32.62	13.37	17.87	22.37	26.87	31.37	9.00	13.50	18.00	22.50	27.00
M 9 x 1.00	13.50	18.00	22.50	27.00	31.50	12.50	17.00	21.50	26.00	30.50	9.00	13.50	18.00	22.50	27.00
M 10 x 1.50	16.75	21.75	26.75	31.75	36.75	15.25	20.25	25.25	30.25	35.25	10.00	15.00	20.00	25.00	30.00
M 10 x 1.25	15.62	20.62	25.62	30.62	35.62	14.37	19.37	24.37	29.37	34.37	10.00	15.00	20.00	25.00	30.00
M 10 x 1.00	14.50	19.50	24.50	29.50	34.50	13.50	18.50	23.50	28.50	33.50	10.00	15.00	20.00	25.00	30.00
M 11 x 1.50	17.75	23.25	28.75	34.25	39.75	16.25	21.75	27.25	32.75	38.25	11.00	16.50	22.00	27.50	33.00
M 11 x 1.25	16.62	22.12	27.62	33.12	38.62	15.37	20.87	26.37	31.87	37.37	11.00	16.50	22.00	27.50	33.00
M 12 x 1.75	19.87	25.87	31.87	37.87	43.87	18.12	24.12	30.12	36.12	42.12	12.00	18.00	24.00	30.00	36.00
M 12 x 1.50	18.75	24.75	30.75	36.75	42.75	17.25	23.25	29.25	35.25	41.25	12.00	18.00	24.00	30.00	36.00
M 12 x 1.25	17.62	23.62	29.62	35.62	41.62	16.37	22.37	27.37	34.37	40.37	12.00	18.00	24.00	30.00	36.00
M 14 x 2.00	23.00	30.00	37.00	44.00	51.00	21.00	28.00	35.00	42.00	49.00	14.00	21.00	28.00	35.00	42.00
M 14 x 1.50	20.75	27.75	34.75	41.75	48.75	19.25	26.25	33.25	40.25	47.25	14.00	21.00	28.00	35.00	42.00
M 14 x 1.25	19.62	26.62	33.62	40.62	47.62	18.37	25.37	32.37	39.37	46.37	14.00	21.00	28.00	35.00	42.00
M 16 x 2.00	25.00	33.00	41.00	49.00	57.00	23.00	31.00	39.00	47.00	55.00	16.00	24.00	32.00	40.00	48.00
M 16 x 1.50	22.75	30.75	38.75	46.75	54.75	21.25	29.25	37.25	45.25	53.25	16.00	24.00	32.00	40.00	48.00
M 18 x 2.50	29.25	38.25	47.25	56.25	65.25	26.75	35.75	44.75	53.75	62.75	18.00	27.00	36.00	45.00	54.00
M 18 x 2.00	27.00	36.00	45.00	54.00	63.00	25.00	34.00	43.00	52.00	61.00	18.00	27.00	36.00	45.00	54.00
M 20 x 2.50	31.25	41.25	51.25	61.25	71.25	28.75	38.75	48.75	58.75	68.75	20.00	30.00	40.00	50.00	60.00
M 20 x 2.00	29.00	39.00	49.00	59.00	69.00	27.00	37.00	47.00	57.00	67.00	20.00	30.00	40.00	50.00	60.00
M 20 x 1.50	26.75	36.75	46.75	56.75	66.75	25.25	35.25	45.25	55.25	65.25	20.00	30.00	40.00	50.00	60.00
M 22 x 2.50	33.25	44.25	55.25	66.25	77.25	30.75	41.75	52.75	63.75	74.75	22.00	33.00	44.00	55.00	66.00
M 22 x 2.00	31.00	42.00	53.00	64.00	75.00	29.00	40.00	51.00	62.00	73.00	22.00	33.00	44.00	55.00	66.00
M 22 x 1.50	28.75	39.75	50.75	61.75	72.75	27.25	38.25	49.25	60.25	71.25	22.00	33.00	44.00	55.00	66.00
M 24 x 3.00	37.50	49.50	61.50	73.50	85.50	34.50	46.50	58.50	70.50	82.50	24.00	36.00	48.00	60.00	72.00
M 24 x 2.00	33.00	45.00	57.00	69.00	81.00	31.00	43.00	55.00	67.00	79.00	24.00	36.00	48.00	60.00	72.00
M 27 x 3.00	40.50	54.00	67.50	81.00	94.50	37.50	51.00	64.50	78.00	91.50	27.00	40.50	54.00	67.50	81.00
M 27 x 2.00	36.00	49.50	63.00	76.50	90.00	34.00	47.50	61.00	74.50	88.00	27.00	40.50	54.00	67.50	81.00
M 30 x 3.50	45.75	60.75	75.75	90.75	105.75	42.25	57.25	72.25	87.25	102.25	30.00	45.00	60.00	75.00	90.00
M 30 x 3.00	43.50	58.50	73.50	88.50	103.50	40.50	55.50	70.50	85.50	100.50	30.00	45.00	60.00	75.00	90.00
M 33 x 3.50	48.75	65.25	81.75	98.25	114.25	45.25	61.25	78.25	94.75	111.25	33.00	49.50	66.00	82.50	99.00
M 36 x 4.00	54.00	72.00	90.00	108.00	126.00	50.00	68.00	86.00	104.00	122.00	36.00	54.00	72.00	90.00	108.00
M 36 x 3.00	49.50	67.50	85.50	103.50	121.50	46.50	64.50	82.50	100.50	118.50	36.00	54.00	72.00	90.00	108.00
M 39 x 4.00	57.00	76.50	96.00	115.50	135.00	53.00	72.50	92.00	111.50	131.00	39.00	58.50	78.00	97.50	117.00
M 42 x 4.50	62.25	83.25	104.25	125.25	146.25	57.75	78.75	99.75	120.75	141.75	42.00	63.00	84.00	105.00	126.00
M 42 x 3.00	55.50	76.50	97.50	118.50	139.50	52.50	73.50	94.50	115.50	136.50	42.00	63.00	84.00	105.00	126.00

S Delme boyu

T Diş çekme Boyu

R Yay boyu

HELICOIL YAYLAR İÇİN MATKAP ÇAPLARI

TurkCoil®

D	P	Ø
M/MF		mm
M	2 x 0.4	2.10
M	2.5 x 0.45	2.60
M	3 x 0.5	3.20
M	3.5 x 0.6	3.70
M	4 x 0.7	4.20
M	5 x 0.8	5.20
M	6 x 1.0	6.30
M	7 x 1.0	7.30
M	8 x 1.25	8.30
M	8 x 1.0	8.30
M	9 x 1.25	9.30
M	10 x 1.5	10.40
M	10 x 1.25	10.30
M	10 x 1.0	10.30
M	11 x 1.5	11.40
M	12 x 1.75	12.40
M	12 x 1.5	12.40
M	12 x 1.25	12.30
M	12 x 1.0	12.30
M	14 x 2.0	14.50
M	14 x 1.5	14.40
M	14 x 1.25	14.40
M	14 x 1.0	14.30
M	16 x 2.0	16.50
M	16 x 1.5	16.40
M	18 x 2.5	18.60
M	18 x 2.0	18.50
M	18 x 1.5	18.50
M	20 x 2.5	20.60
M	20 x 2.0	20.50
M	20 x 1.5	20.50
M	22 x 2.5	22.60
M	22 x 2.0	22.50
M	22 x 1.5	22.50
M	24 x 3.0	24.75
M	24 x 2.0	24.50
M	24 x 1.5	24.50
M	26 x 1.5	26.50
M	27 x 1.5	27.50
M	27 x 2.0	27.50
M	27 x 3.0	27.75
M	28 x 1.5	28.50
M	30 x 1.5	30.50
M	30 x 2.0	30.50
M	30 x 3.5	31.00
M	33 x 2.0	33.50
M	33 x 3.5	34.00
M	36 x 1.5	36.50
M	36 x 2.0	36.50
M	36 x 3.0	37.00
M	36 x 4.0	37.00

D	P	Ø
UNC		mm
No.	2 x 56	2.4
No.	4 x 40	3.0
No.	5 x 40	3.4
No.	6 x 32	3.7
No.	8 x 32	4.4
No.	10 x 24	5.1
No.	12 x 24	5.7
1/4	x 20	6.7
5/16	x 18	8.3
3/8	x 16	9.9
7/16	x 14	11.60
1/2	x 13	13.00
9/16	x 12	14.80
5/8	x 11	16.50
3/4	x 10	19.75
7/8	x 9	23.00
1"	x 8	26.25
1.1/8	x 7	29.50
1.1/4	x 7	33.00
1.3/8	x 6	36.00
1.1/2	x 6	39.50

UNF		
No.	4 x 48	3.0
No.	6 x 40	3.7
No.	8 x 36	4.4
No.	10 x 32	5.1
1/4	x 28	6.6
5/16	x 24	8.2
3/8	x 24	9.8
7/16	x 20	11.50
1/2	x 20	13.00
9/16	x 18	14.80
5/8	x 18	16.25
3/4	x 16	19.50
7/8	x 14	22.75
1"	x 12	26.00
1.1/8	x 12	29.00
1.1/4	x 12	32.50
1.3/8	x 12	35.50
1.1/2	x 12	38.50

D	P	Ø
BSW		mm
1/8	x 40	3.4
3/16	x 24	5.1
1/4	x 20	6.7
5/16	x 18	8.3
3/8	x 16	9.9
7/16	x 14	11.6
1/2	x 12	13.0
9/16	x 12	14.8
5/8	x 11	16.7
3/4	x 10	20.0
7/8	x 9	23.0
1"	x 8	26.5

BSF		
3/16	x 32	5.0
1/4	x 26	6.6
5/16	x 22	8.3
3/8	x 20	9.9
7/16	x 18	11.6
1/2	x 16	13.0
9/16	x 16	14.8
5/8	x 14	16.4
3/4	x 12	19.5
7/8	x 11	22.7
1"	x 10	26.5

D	P	Ø
G(BSP)		mm
1/8	x 28	10.00
1/4	x 19	13.60
3/8	x 19	17.10
1/2	x 14	21.50
5/8	x 14	23.40
3/4	x 14	27.00
7/8	x 14	30.60
1"	x 11	33.70