kesici takımdünyası®

takım dünyası bir akifsan markasıdır

# YÜKSEK KALİTE KESİCİ TAKIMLAR KATALOĞU

MRK® CUTTING TOOLS

*Metali Marka Yapan Takımlar*

# YÜKSEK KALİTE SERT METAL KARBÜR KESİCİ TAKIMLAR

MRK®
CUTTING TOOLS

**801** ROUTER

**803** ALÜMİNYUM İŞLEME

**804** ÇELİK İŞLEME

**805** MODEL İŞLEME

**807** SLOT İŞLEME

**814** KÜRE İŞLEME

**840** MICRO İŞLEMELER

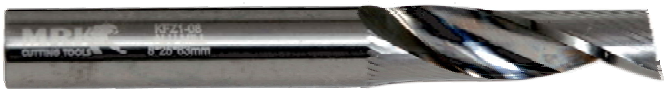
**890** GRAVÜR İŞLEMELER

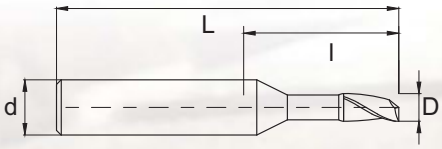
**892** MERMER İŞLEMELER

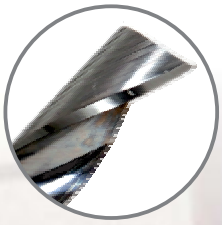
**851** DELİK DELME

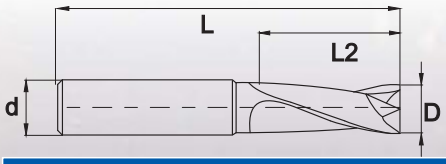
**894** TI-INOX İŞLEMELER

**896** ZOR ÇELİKLER





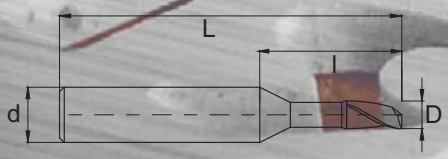


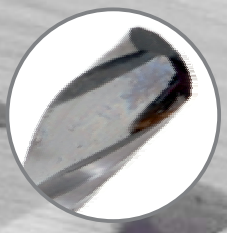
## 801 / TEK AĞIZ STANDART BOY ALU KARBÜR FREZELER

| 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 |



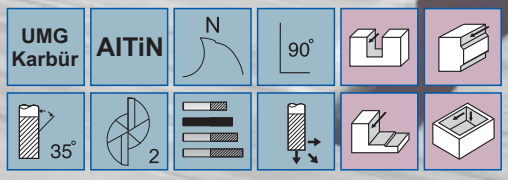
## 811 / TEK AĞIZ PVC KARBÜR FREZELER

| 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 |

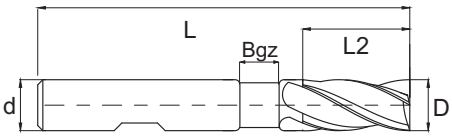
## 802 / İKİ AĞIZ UZUN BOY KARBÜR FREZE - TİALN

| 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

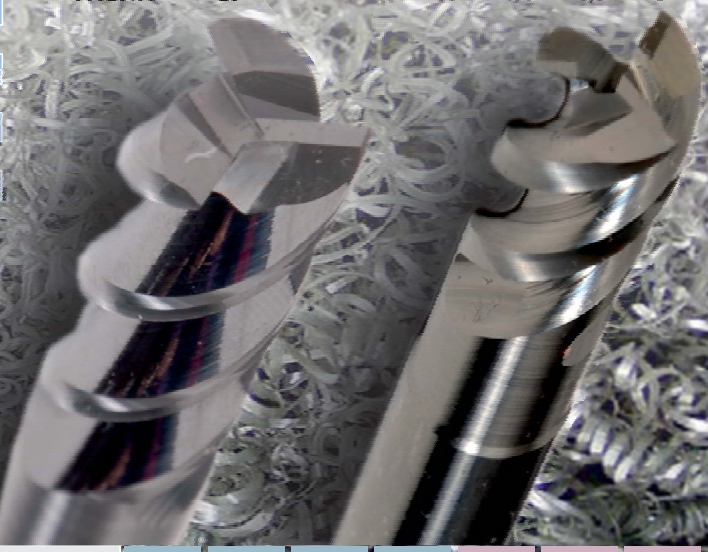


## 803 / ÜÇ AĞIZ UZUN BOY ALU KARBÜR FREZE

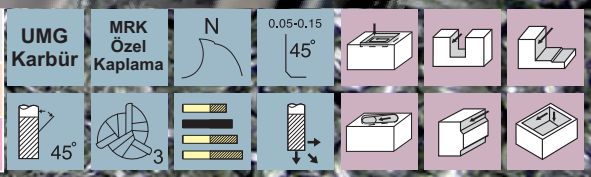
| Kodu | D | d | z | l2 | L | r | Bgz |
|---|---|---|---|---|---|---|---|
| 80301054 | 1 | 4 | 3 | 3 | 50 | 0 | 7 |
| 80301554 | 1,5 | 4 | 3 | 3 | 50 | 0 | 7 |
| 80302054 | 2 | 4 | 3 | 4 | 50 | 0 | 8 |
| 80302075 | 2 | 4 | 3 | 4 | 75 | 0 | 26 |
| 80302554 | 2,5 | 4 | 3 | 4 | 50 | 0 | 8 |
| 80302575 | 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 |

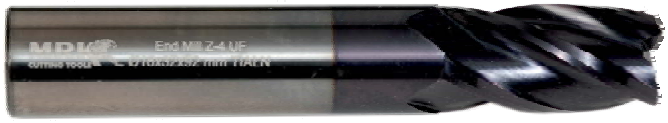
## 803 / ÜÇ AĞIZ STANDART ALU KARBÜR FREZE

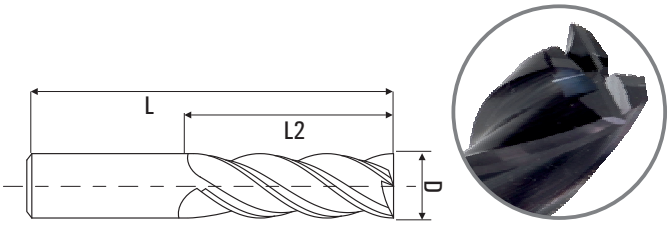
| Kodu | D | d | z | l2 | L | r | Bgz |
|---|---|---|---|---|---|---|---|
| 80301038 | 1 | 3 | 3 | 3 | 38 | 0 | 3 |
| 80301538 | 1,5 | 3 | 3 | 3 | 38 | 0 | 3 |
| 80301534 | 1,5 | 4 | 3 | 3 | 38 | 0 | 3 |
| 80302038 | 2 | 3 | 3 | 3 | 38 | 0 | 3 |
| 80302034 | 2 | 4 | 3 | 3 | 38 | 0 | 3 |
| 80302538 | 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 |

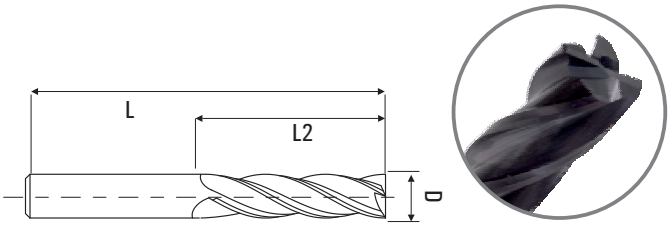


| Teknik Detaylar | | | | | | | |
|---|---|---|---|---|---|---|---|
| S | ● | 1.SINIF ÇELİK | | 2.SINIF ÇELİK | | SERT ÇELİKLER | |
| N | | 1.SINIF PASLANMAZ | | 2.SINIF PASLANMAZ | | TİTANYUM | |
| K | | 1.SINIF ALU-BAKIR | Vc.80-120 | 2.SINIF ALU-BAKIR | Vc.180-220 | DÖKÜM | |
| M | | | | | | | |
|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







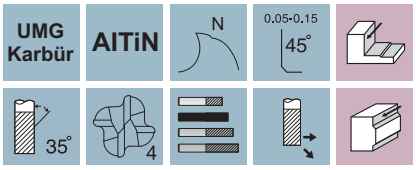

## 804 / DÖRT AĞIZ STANDART BOY KARBÜR FREZE TİALN

| 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 |

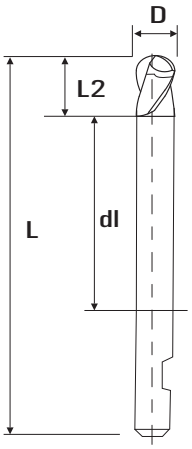
## 804 / DÖRT AĞIZ UZUN BOY KARBÜR FREZE TİALN KAPLI

| 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 |

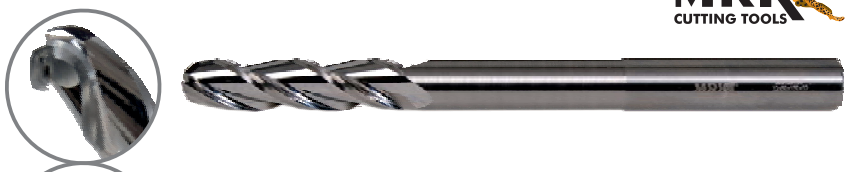
| Teknik Detaylar | | | | | | | |
|---|---|---|---|---|---|---|---|
| S | ○ | 1.SINIF ÇELİK | 20-30 HRC Vc.80-120 | 2.SINIF ÇELİK | 30-38 HRC Vc.60-100 | SERT ÇELİKLER | 38-48 HRC Vc.40-80 |
| N | ○ | | | | | | |
| K | ● | 1.SINIF PASLANMAZ | Vc.60-100 | 2.SINIF PASLANMAZ | Vc.40-60 | TİTANYUM | Vc.60-100 |
| 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

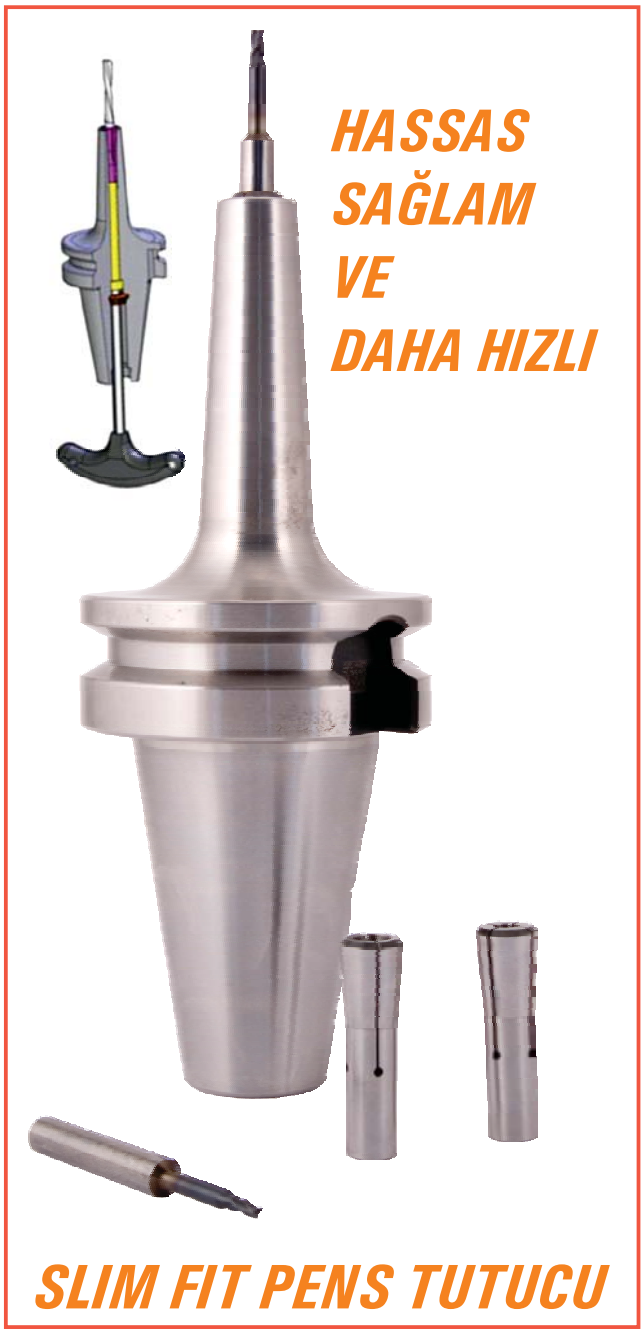
| Kodu | D | d | Z | r | L2 | dl | L |
|---|---|---|---|---|---|---|---|
| 805060150 | 6 | 6 | 3 | _ | 30 | 70 | 150 |
| 805080150 | 8 | 8 | 3 | _ | 30 | 70 | 150 |
| 805100150 | 10 | 10 | 3 | _ | 30 | 70 | 150 |
| 805120150 | 12 | 12 | 3 | _ | 50 | 70 | 150 |
| 805080200 | 8 | 8 | 3 | _ | 50 | 100 | 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 |

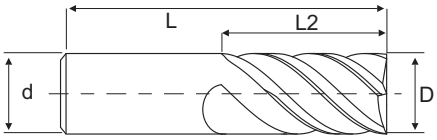
## 805 / ÜÇ AĞIZ KÖŞE RADİUS MODEL FREZE

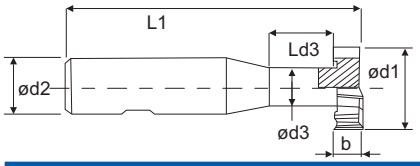
| Kodu | D | d | Z | r | L2 | dl | L |
|---|---|---|---|---|---|---|---|
| 805061150 | 6 | 6 | 3 | 1 | 30 | 50 | 150 |
| 805062150 | 6 | 6 | 3 | 2 | 30 | 50 | 150 |
| 805081150 | 8 | 8 | 3 | 1 | 30 | 50 | 150 |
| 805082150 | 8 | 8 | 3 | 2 | 30 | 50 | 150 |
| 805101150 | 10 | 10 | 3 | 1 | 30 | 50 | 150 |
| 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 |

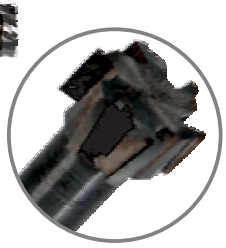



| Teknik Detaylar | | | | | | | |
|---|---|---|---|---|---|---|---|
| S | | 1.SINIF ÇELİK | | 2.SINIF ÇELİK | | SERT ÇELİKLER | |
| N | ● | | | | | | |
| K | ● | 1.SINIF PASLANMAZ | | 2.SINIF PASLANMAZ | | TİTANYUM | |
| M | | | | | | | |
| H | | 1.SINIF ALU-BAKIR | Vc.80-120 | 2.SINIF ALU-BAKIR | Vc.180-220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

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





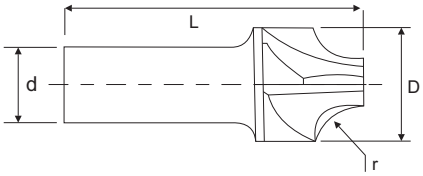



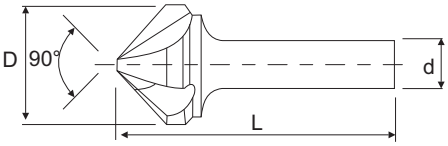
## 806 / ALTI AĞIZ HASSAS KARBÜR FREZE - TİALN

| 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 |





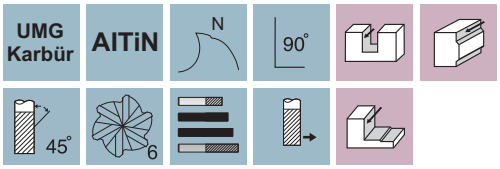

## 808 / KARBÜR KÖŞE YUVARLAMA FREZESİ

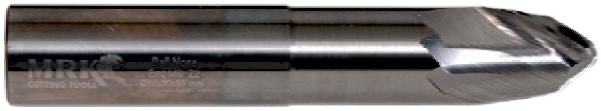
| Kodu | r | D | d | z | L |
|---|---|---|---|---|---|
| 808010063 | 1 | 8 | 8 | 4 | 63 |
| 808015072 | 1,5 | 9 | 10 | 4 | 72 |
| 808020072 | 2 | 10 | 10 | 4 | 72 |
| 808025083 | 2,5 | 11 | 12 | 4 | 83 |
| 808030083 | 3 | 12 | 12 | 4 | 83 |
| 808040083 | 4 | 14 | 14 | 4 | 83 |
| 808050092 | 5 | 16 |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

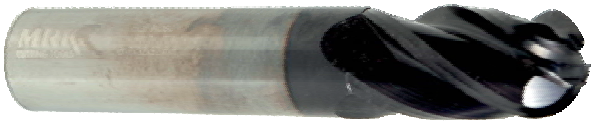
## 809 / KARBÜR HAVŞA FREZE

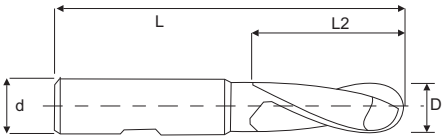
| Kodu | D | d | Z | L |
|---|---|---|---|---|
| 8099010 | 10 | 6 | 3 | 46 |
| 8099012 | 12 | 8 | 3 | 56 |
| 8099016 | 16 | 10 | 3 | 60 |
| 8099020 | 20 | 10 | 3 | 63 |
| 8099025 | 25 | 12 | 3 | 67 |
| 8096010 | 10 | 6 | 3 | 46 |
| 8096012 | 12 | 8 | 3 | 56 |
| 8096016 | 16 | 10 | 3 | 60 |
| 8096020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

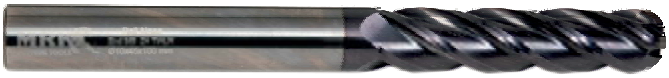
## 814 / DÖRT AĞIZ STANDART BOY KÜRE FREZE - TİALN

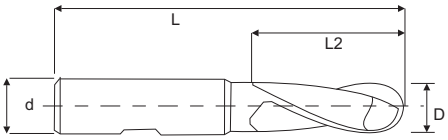
| Kodu | D | d | r | Z | L2 | L |
|---|---|---|---|---|---|---|
| 814010038 | 1 | 3 | 0,5 | 4 | 4 | 38 |
| 814015038 | 1,5 | 3 | 0,75 | 4 | 4 | 38 |
| 814020038 | 2 | 3 | 1,0 | 4 | 4 | 38 |
| 814025038 | 2,5 | 3 | 1,25 | 4 | 4 | 38 |
| 814030050 | 3 | 3 | 1,5 | 4 | 12 | 50 |
| 814036057 | 3 | 6 | 1,5 | 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 ● | | | | | | |
| K ○ | 1.SINIF PASLANMAZ | Vc.60-100 | 2.SINIF PASLANMAZ | Vc.40-60 | TİTANYUM | Vc.60-100 |
| M ● | | | | | | |
| H ● | ALU-BAKIR | Vc.100-140 | METAL OLMAYAN | Vc.180-200 | DÖKÜM | Vc.100-140 |
| P ● | | | | | | |

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 |

## 814 / DÖRT AĞIZ UZUN BOY KÜRE FREZE - TİALN

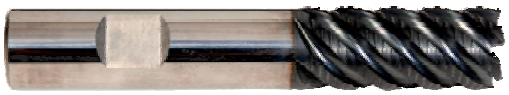
| Kodu | D | d | Z | L2 | Bgz | L |
|---|---|---|---|---|---|---|
| 814010060 | 1 | 3 | 4 | 6 | 20 | 60 |
| 814015060 | 1,5 | 3 | 4 | 6 | 20 | 60 |
| 814020060 | 2 | 3 | 4 | 6 | 20 | 60 |
| 814025060 | 2,5 | 3 | 4 | 6 | 20 | 60 |
| 814030075 | 3 | 3 | 4 | 20 | 20 | 75 |
| 814030100 | 3 | 4 | 4 | 20 | 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 |

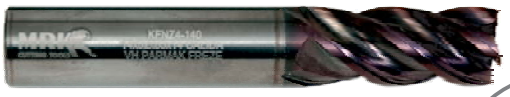
## 813 / ÜÇ AĞIZ UZUN BOY KÜRE FREZE KAPLAMASIZ

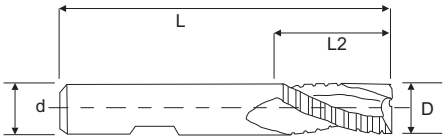
| Kodu | D | d | R | Z | L2 | Bgz | L |
|---|---|---|---|---|---|---|---|
| 813030100 | 3 | 6 | 1,5 | 3 | 20 | 30 | 75 |
| 813040100 | 4 | 6 | 2 | 3 | 20 | 30 | 75 |
| 813050100 | 5 | 6 | 2,5 | 3 | 30 | 30 | 100 |
| 813060100 | 6 | 6 | 3 | 3 | 30 | 30 | 100 |
| 813080100 | 8 | 8 | 4 | 3 | 30 | 30 | 100 |
| 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 |

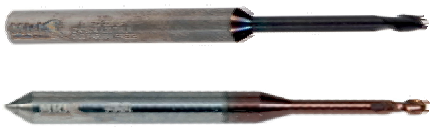
| Teknik Detaylar | | | | | | |
|---|---|---|---|---|---|---|
| S | ○ | 1.SINIF ÇELİK | 20-30 HRC Vc.80-120 | 2.SINIF ÇELİK | 30-38 HRC Vc.60-100 | SERT ÇELİKLER | 38-48 HRC Vc.40-60 |
| N | ● | 1.SINIF PASLANMAZ | Vc.60-100 | 2.SINIF PASLANMAZ | Vc.40-60 | TİTANYUM | Vc.60-100 |
| K | ○ | | | | | |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

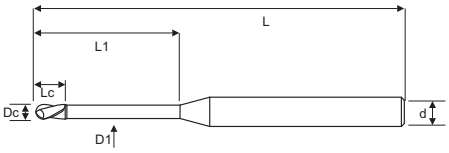
UMG Karbür | AlTiN | N | R | 30° | 2 | 3 | 4









## 824 / DÖRT AĞIZ STANDART BOY KABATALAŞ FREZE

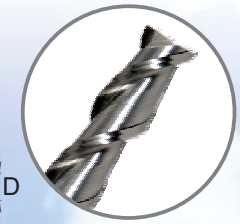
| Kodu | D | d | Z | L2 | L |
|---|---|---|---|---|---|
| 82404057 | 4 | 6 | 4 | 16 | 57 |
| 82405057 | 5 | 6 | 4 | 16 | 57 |
| 82406057 | 6 | 6 | 4 | 19 | 57 |
| 82408063 | 8 | 8 | 4 | 20 | 63 |
| 82410071 | 10 | 10 | 4 | 21 | 71 |
| 82412083 | 12 | 12 | 4 | 25 | 83 |
| 82414083 | 14 | 14 | 4 | 32 |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

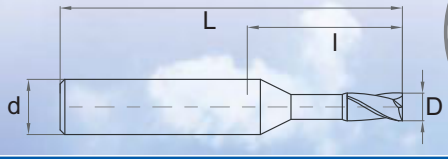
## 840 / İKİ AĞIZ KAPLAMALI MİKRO KARBÜR FREZE

| 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

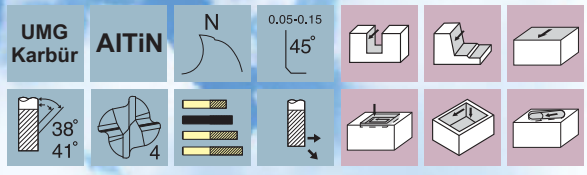
| Kodu | D | d | Z | l | L |
|---|---|---|---|---|---|
| 89105100 | 5 | 5 | 2 | 50 | 100 |
| 89105125 | 5 | 5 | 2 | 50 | 125 |
| 89106100 | 6 | 6 | 2 | 60 | 100 |
| 89106125 | 6 | 6 | 2 | 60 | 125 |

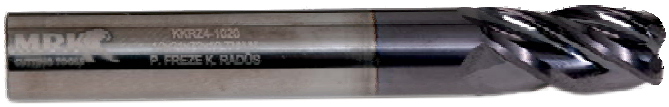
**840 Mikro Frezeler Teknik Detaylar**

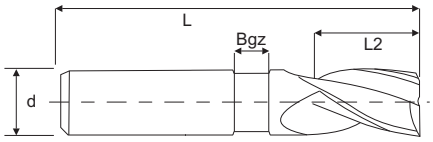
| | | | | | |
|---|---|---|---|---|---|
| UMG Karbür | AlTiN | N | 30° | 90° | |
| S ○ / N ● | 1.SINIF ÇELİK | 20-30 HRC Vc.60-80 | 2.SINIF ÇELİK | 30-38 HRC Vc.40-60 | |
| K ○ / M ○ | PASLANMAZ | Vc.40-60 | TİTANYUM | Vc.40-60 | |
| H ● / P ● | DÖKÜM | Vc.80-100 | SERT ÇELİKLER | 38-48 HRC Vc.30-40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

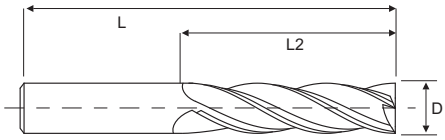
**824 Kaba Frezeler Teknik Detaylar**

| | | | | |
|---|---|---|---|---|
| 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 |







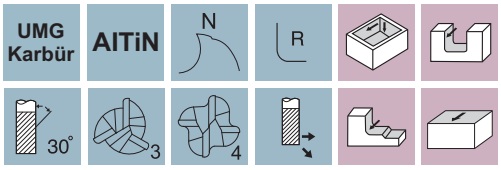
## 833 / ÜÇ AĞIZ KÖŞE (R) FREZE KAPLAMASIZ

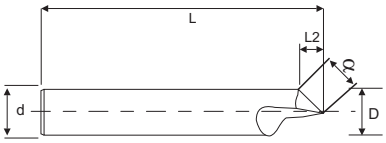
| Kodu | D | d | r | Z | L2 | Bgz | L |
|---|---|---|---|---|---|---|---|
| 833030550 | 3 | 3 | 0,5 | 3 | 6 | 10 | 50 |
| 833040550 | 4 | 4 | 0,5 | 3 | 8 | 10 | 50 |
| 833041050 | 4 | 4 | 1 | 3 | 8 | 10 | 50 |
| 833050550 | 5 | 5 | 0,5 | 3 | 10 | 10 | 50 |
| 833051050 | 5 | 5 | 1 | 3 | 10 | 10 | 50 |
| 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 |

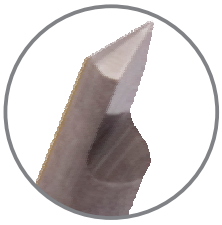
## 834 / DÖRT AĞIZ STANDART BOY KÖŞE RADÜS FREZE - TİALN

| 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 |
| K | ○ | 1.SINIF PASLANMAZ | Vc.60-80 | 2.SINIF PASLANMAZ | Vc.40-60 | TİTANYUM | Vc.40-60 |
| N | ● | 1.SINIF ALU-BAKIR | Vc.120-180 | METAL OLMAYAN | Vc.150-200 | DÖKÜM | Vc.80-100 |
| H | ● | | | | | | |
| P | ● | | | | | | |

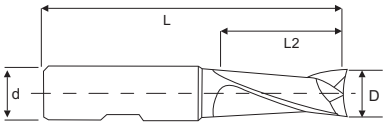


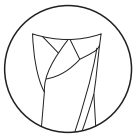


## 890 / GRAVUR VE OYMA FREZESİ

| 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 |



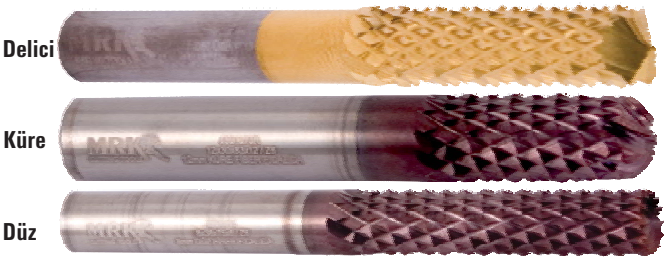



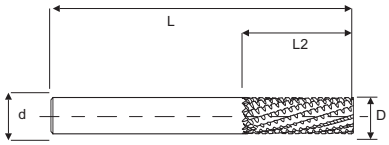
## 893 / MDF-AHŞAP KARBÜR FREZELER

| 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 | 25° | 2 / 90° |
| P ● | | | | |

| 893 Ahşap Freze Teknik Detaylar | | | | |
|---|---|---|---|---|
| S | ÇELİK | | UMG Karbür | |
| N ● | | | | |
| K ○ | PASLANMAZ | | | |
| M ○ | | | | |
| H | METAL OLMAYAN | Vc.100-120 | 25° | 2 / 90° |
| P | | | | |

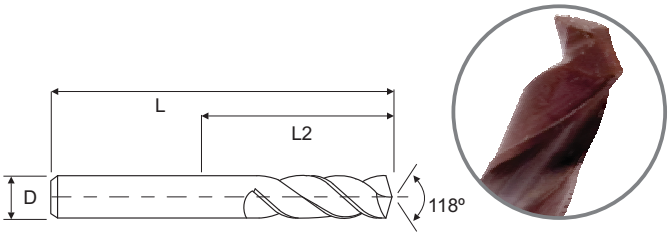



## 892 / MERMER - FİBER KARBÜR FREZE (Düz-Küresel ve Delici Tip)

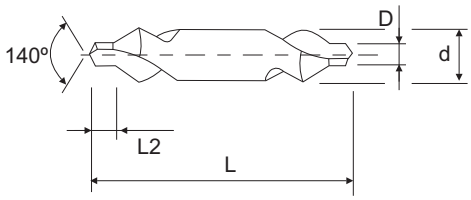
| Kodu | D | d | L2 | L |
|---|---|---|---|---|
| 8920351 | 3 | 3 | 10 | 51 |
| 8920451 | 4 | 4 | 16 | 51 |
| 8920551 | 5 | 5 | 16 | 51 |
| 8920675 | 6 | 6 | 25 | 75 |
| 8920676 | 6 | 6 | 38 | 75 |
| 8920875 | 8 | 8 | 25 | 75 |
| 8920876 | 8 | 8 | 38 | 75 |
| 8921075 | 10 | 10 | 30 | 75 |
| 8921275 | 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 | 6 |
| N ○ | | | | |
| K ● | KOMPOZİT | Vc.250-300 | | |
| M ○ | | | | |
| H ● | MERMER | Vc.180-220 | 25° | 2 / 90° |
| P ● | | | | |



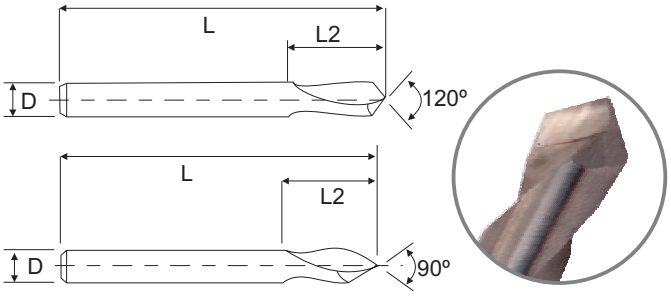

## 850 / MİKRO KARBÜR MATKAP UCU - DIN 6539 KISA TİP

| 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 |



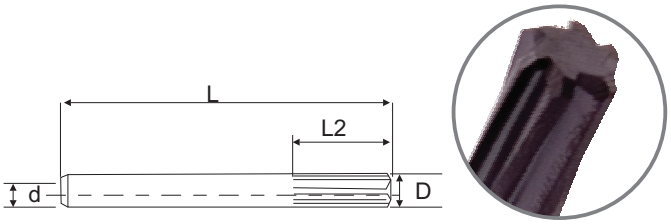

## 862 / KARBÜR PUNTA MATKABI

| 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 |




## 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 |

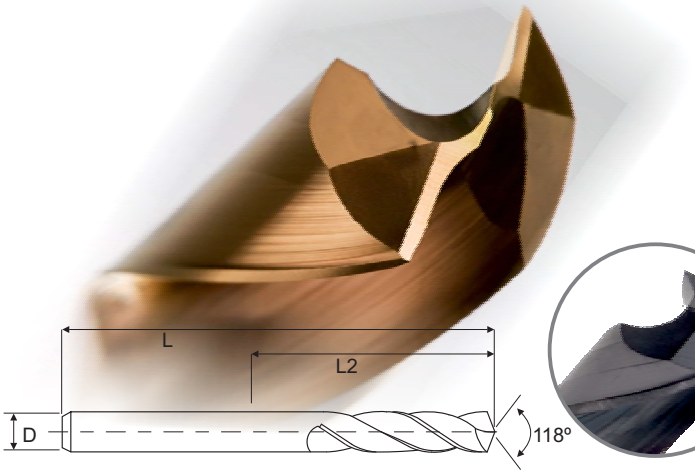


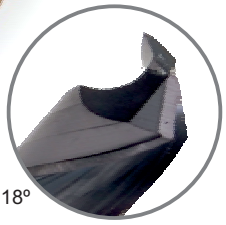

## 886 / KARBÜR RAYBA

| 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 | UMG Karbür | AlTiN | DIN 6539 | DIN 333 | | | |
| 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 | 3XD | D | 2 | 60° | 90° | 118° | 120° |
| P | ● | | | | | | | | | | | | | |

# 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 | | | | |

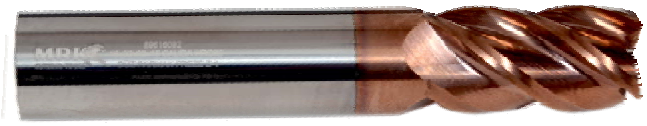
## 852/UZUN KARBÜR MATKAP UÇLARI - DIN 338 UZUN TİP

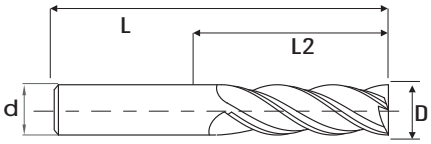
| Kodu | D | L2 | L | Kodu | D | L2 | L |
|---|---|---|---|---|---|---|---|
| 852030 | 3 | 33 | 61 | 852076 | 7,6 | 69 | 109 |
| 852031 | 3,1 | 33 | 75 | 852077 | 7,7 | 69 | 109 |
| 852032 | 3,2 | 33 | 75 | 852078 | 7,8 | 69 | 109 |
| 852033 | 3,3 | 33 | 75 | 852079 | 7,9 | 69 | 109 |
| 852034 | 3,4 | 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 | | | | |

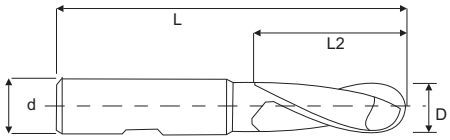
| Teknik Detaylar | | | | | | | |
|---|---|---|---|---|---|---|---|
| S | ○ | 1.SINIF ÇELİK | 20-30 HRC Vc.80-100 | 2.SINIF ÇELİK | 30-38 HRC Vc.60-80 | SERT ÇELİKLER | 38-48 HRC Vc.40-60 |
| K | ● | 1.SINIF PASLANMAZ | Vc.40-60 | 2.SINIF PASLANMAZ | Vc.20-30 | TİTANYUM | Vc.40-60 |
| N | ○ | | | | | | |
| 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

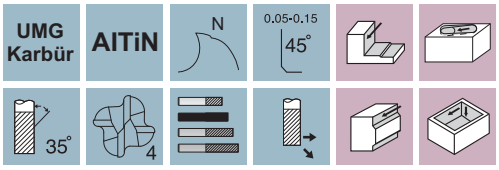
| Kodu | D | d | Z | L2 | L |
|---|---|---|---|---|---|
| 89401054R | 1 | 4 | 4 | 3 | 38 |
| 89401554R | 1,5 | 4 | 4 | 4 | 38 |
| 89402054R | 2 | 4 | 4 | 4 | 38 |
| 89402554R | 2,5 | 4 | 4 | 4 | 38 |
| 89403056R | 3 | 6 | 4 | 10 | 57 |
| 89404056R | 4 | 6 | 4 | 10 | 57 |
| 89405056R | 5 | 6 | 4 | 16 | 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.

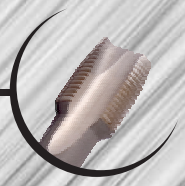
| Teknik Detaylar | | | | | | | |
|---|---|---|---|---|---|---|---|
| S | ○ | 1.SINIF ÇELİK | Vc.80-100 | 2.SINIF ÇELİK | Vc.60-80 | SERT ÇELİKLER | Vc.40-50 |
| N | ● | 1.SINIF PASLANMAZ | Vc.80-100 | 2.SINIF PASLANMAZ | Vc.40-60 | TİTANYUM | Vc.60-80 |
| K | ● | | | | | | |
| M | ● | | | | | | |
|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



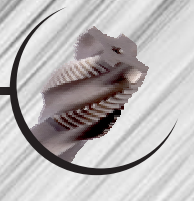
# YÜKSEK HIZ ÇELİĞİ KILAVUZLAR

M KILAVUZLAR

UNC KILAVUZLAR

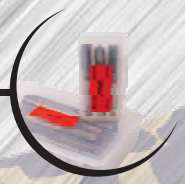


G KILAVUZLAR



AZ KILAVUZLAR

TAKIM KILAVUZ



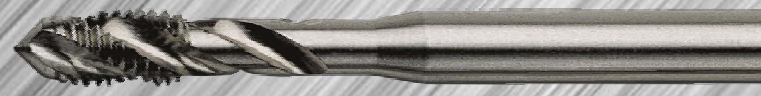
1200 N/mm Kadar

1200 N/mm Kadar

Paslanmaz Çelik

1000 N/mm Kadar

Tin Kaplı Aşınma Direnci



Genel Kullanım

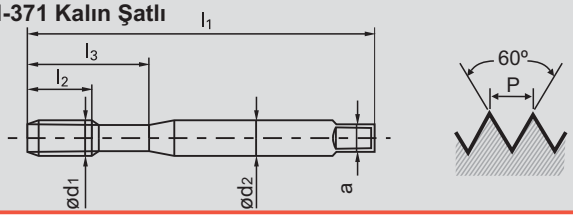
MIRA®

CUTTING TOOLS

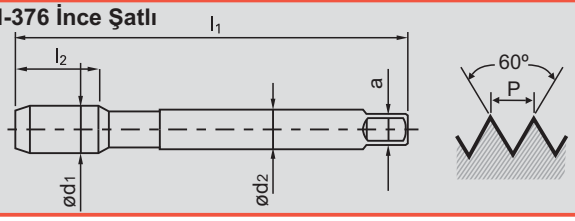
# METRİK STANDART DİŞ MAKİNA KILAVUZLARI

MRK CUTTING TOOLS

**DIN-371 Kalın Şatlı**



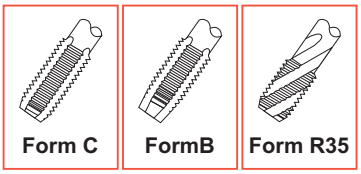

**DIN-376 İnce Şatlı**



## 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 | |

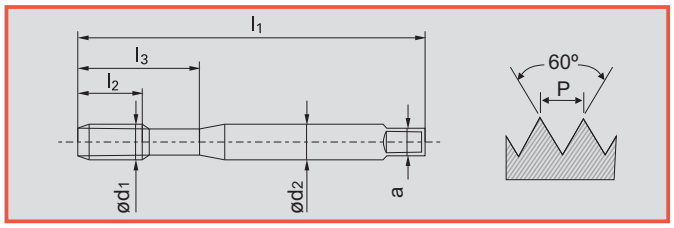
* Bütün ürünlerde sol klavuz mevcuttur.

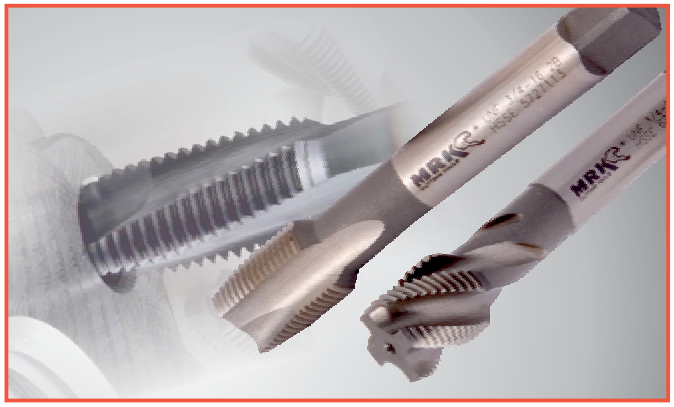
Kaplama Çeşitleri: **Tin** | **Tialn**

| 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 | |

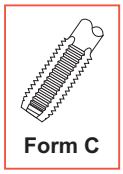
MRK CUTTING TOOLS Yarınların Klavuzu

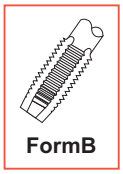
# UNC ve UNF MAKİNA KILAVUZLARI



## 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

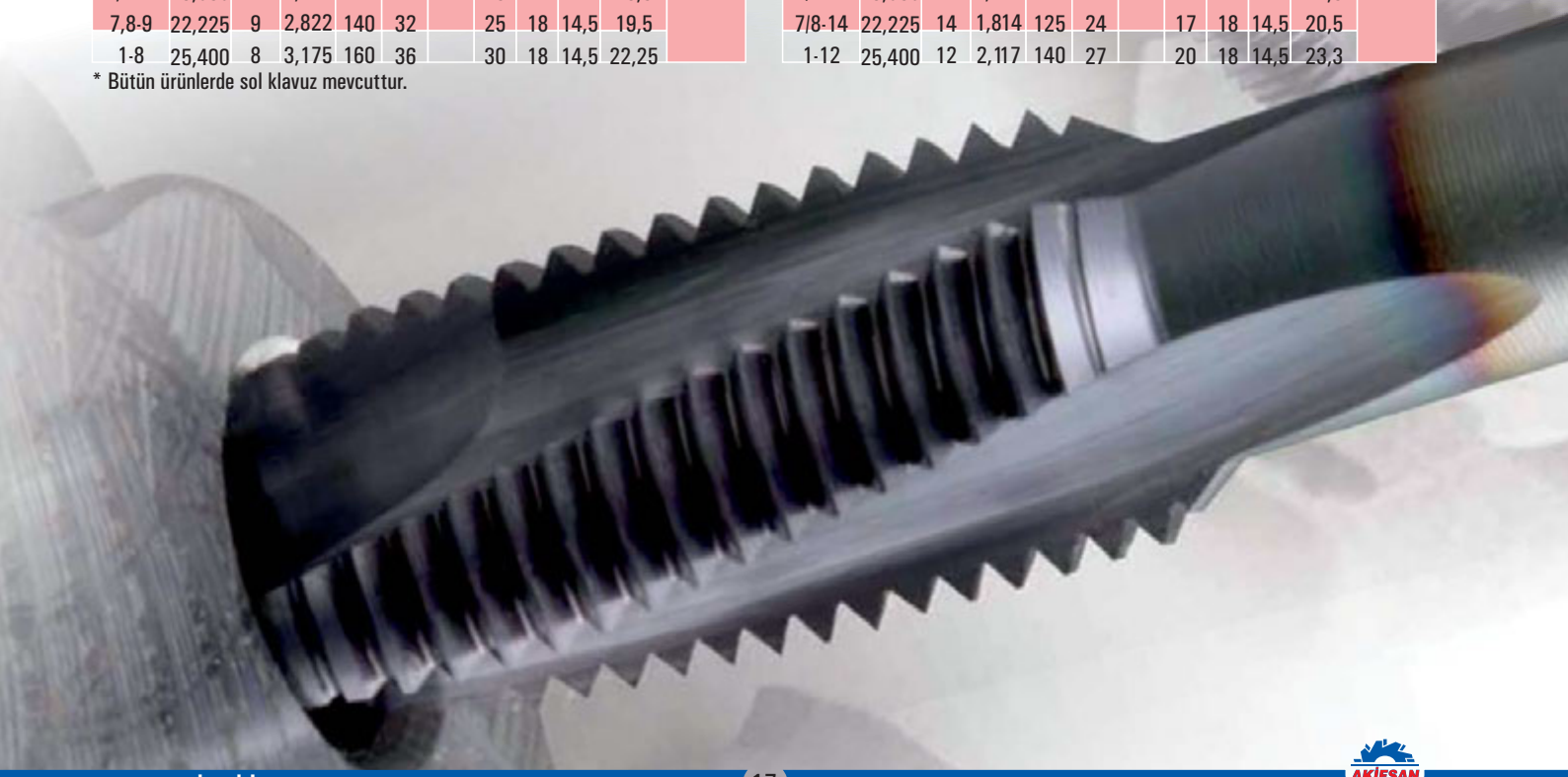
## Uygun Kullanım Yerleri

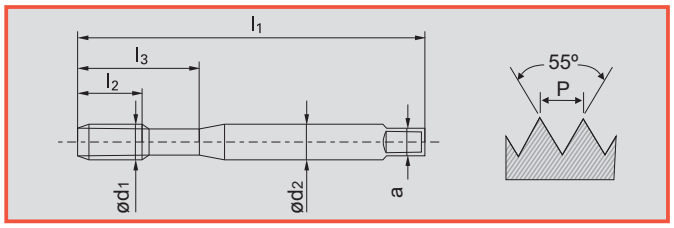
**N800** 800N/mm² Kadar yumuşak çelikler için

| 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 | |

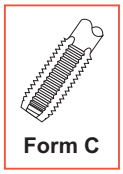
* Bütün ürünlerde sol klavuz mevcuttur.

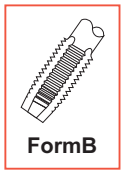
| UNF | UNF İnce Diş Makina Kılavuzları ÖLÇÜ | | | | | | | | | | HSS-E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | ød1 | 1"/P | P | l1 | l2 | l3 | l2 R35 | ød2 | a | dk | |
| No 5-44 | 3,175 | 44 | 0,577 | 56 | 10 | 18 | 5 | 3,5 | 2,7 | 2,7 | DIN-371 |
| No 6-40 | 3,505 | 40 | 0,635 | 56 | 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 | |

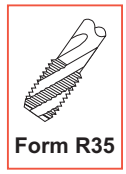




## İş Parçasına Göre Kesme Profilleri


Form C


FormB


Form R35

### Kaplama Çeşitleri

Tialn

Tin

**Form C**
Açık delik klavuz profili

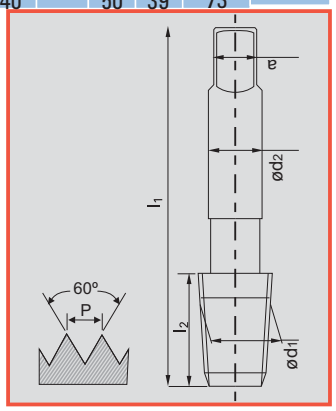
**Form B**
Açık delik makina klavuz profili

**Form R35**
Kapalı delik makina klavuz profili

## Uygun Kullanım Yerleri

**N800** 800N/mm² Kadar yumuşak çelikler için

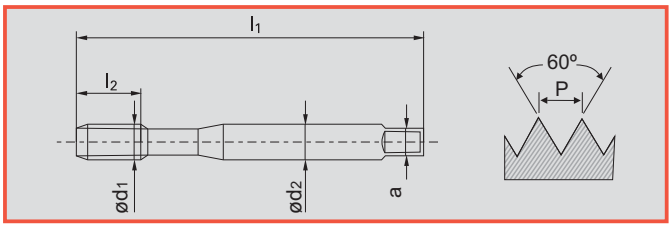
| G | G Boru Diş Makine Kılavuzları ÖLÇÜ | | | | | | | | | HSS-E |
|---|---|---|---|---|---|---|---|---|---|---|
| | ød1 | 1"/P | P | l1 | l2 | l2 R35 | ød2 | a | dk | |
| G-1/16" | 7,723 | 28 | 0,907 | 90 | 17 | 10 | 6 | 4,9 | 6,7 | DIN-5156 |
| G-1/8" | 9,728 | 28 | 0,907 | 90 | 18 | 10 | 7 | 5,5 | 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 | |



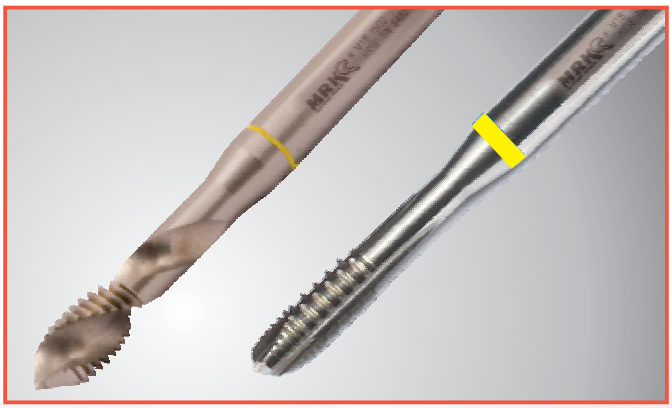

| NPT | NPT-NPTF Konik Kılavuzları ÖLÇÜ | | | | | | HSS-E |
|---|---|---|---|---|---|---|---|
| ød1 | 1"/P | l1 | l2 | ød2 | a | dk | |
| 1/8" | 27 | 59 | 15 | 8 | 6,3 | 8,5 | DIN-5156 |
| 1,4" | 18 | 67 | 22 | 10 | 8 | 11,1 | |
| 3/8" | 18 | 75 | 22 | 12,5 | 10 | 14,7 | |
| 1/2" | 14 | 87 | 27 | 16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

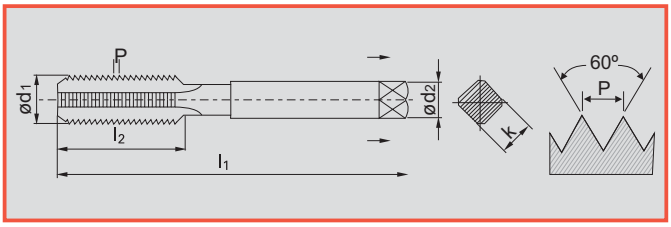



| Uygun Kullanım Yerleri | |
|---|---|
| **N800** | 800N/mm² Kadar yumuşak çelikler için |



| 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 | |




**Kaplama Çeşitleri**

Tin

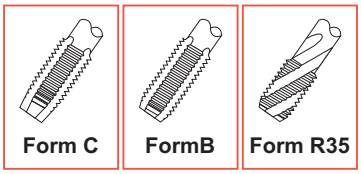
Tialn

## Uygun Kullanım Yerleri

**HSS** Yüksek hız çeliği

**INOX** Paslanmaz ve aside dayanıklı çelik için

## İş Parçasına Göre Kesme Profilleri




**Form C**
Açık delik klavuz profili

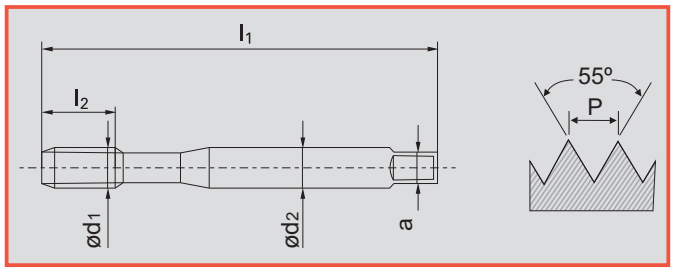
**Form B**
Açık delik makina klavuz profili

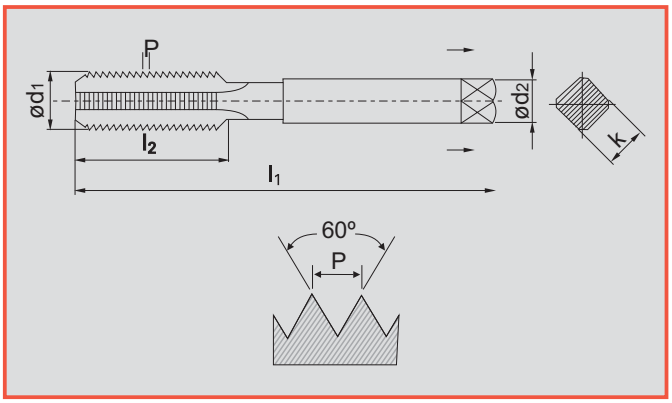
**Form R35**
Kapalı delik makina klavuz profili

| M | Metrik Takım Kılavuzları ÖLÇÜ | | | | | | HSS-E |
|---|---|---|---|---|---|---|---|
| ød1 | P | l1 | l2 | ød2 | k | dk | |
| 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 | dk | |
| 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



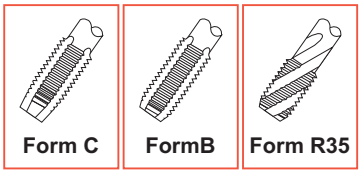
**Kaplama Çeşitleri**

| Tin | Tialn |
|---|---|

## Uygun Kullanım Yerleri

**HSS** Yüksek hız çeliği

## İş Parçasına Göre Kesme Profilleri




**Form C**
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 | |

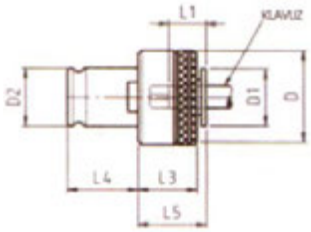
MRK CUTTING TOOLS

*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

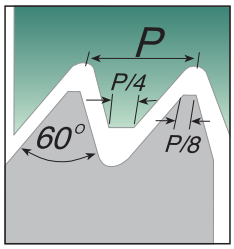
M5-M16 - Huk2016Rh
M5-M24 - Huk2024Rh
M5-M36 - Huk2036Rh

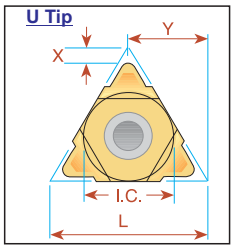
## DELİK DELME VE KILAVUZ ÇEKME MATKAPLARI

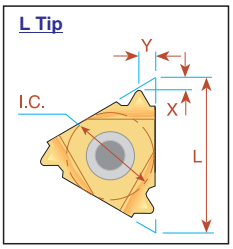
# DİŞ AÇMA SERT METAL VİDA UÇLARI

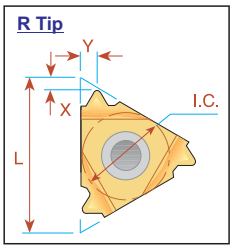
MRK®
CUTTING TOOLS

# AMERİKAN - UN (UNC, UNF, UNEF, UNS)



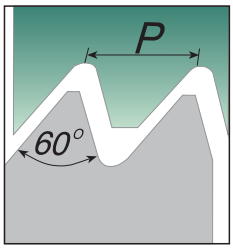



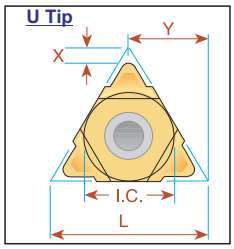



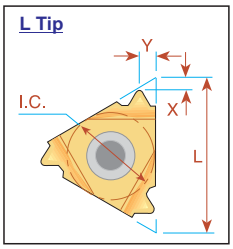



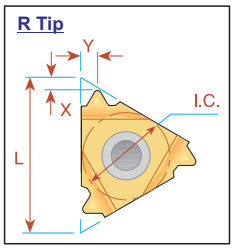

| Diş Adımı Ölçüsü | L | I.C. | DİŞ ÇAP Ürün Açıklaması Sağ Tip | DİŞ ÇAP Ürün Açıklaması Sol Tip | X | Y | İÇ ÇAP Ürün Açıklaması Sağ Tip | İÇ ÇAP Ürün Açıklaması Sol Tip | X | Y |
|---|---|---|---|---|---|---|---|---|---|---|
| 32, 28, 24, 20,18 | 6 | 5/32 | | | | | *06 IR | *06 IL | 0,8 | 0,5 |
| 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 | 1.6 | 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 1R/L 4 UN | | 2.4 | 11.0 |
| | 22U | 1/2U | 22U ER/L 4.5 UN | | 2.0 | 11.0 | | | 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<br>33U ER/L 2 UN | | 2.8 | 16.5 | 33U IR/L 2UN | | 3.6 | 16.9 |

# 60° VİDA PROFİL



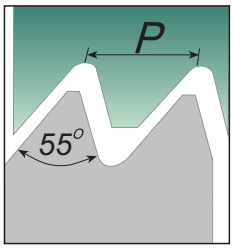



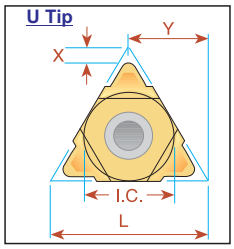



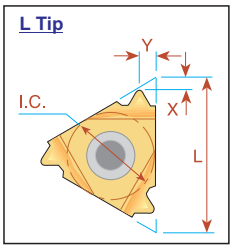



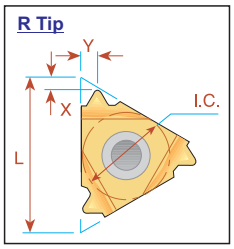

| L | I.C. | Diş Adım Ölçüsü | | DIŞ ÇAP Ürün Açıklaması Sağ Tip | DIŞ ÇAP Ürün Açıklaması Sol Tip | İÇ ÇAP Ürün Açıklaması Sağ Tip | İÇ ÇAP Ürün Açıklaması Sol Tip | X | Y |
|---|---|---|---|---|---|---|---|---|---|
| 6 | 5/32 | 0,5-1,25 | 5/32 | ULTRA MINI → | | *06 IR A60 | *06 IL A60 | 0,6 | 0,6 |
| 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



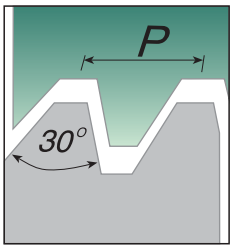



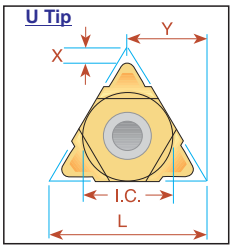



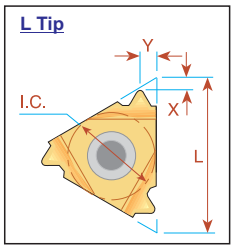



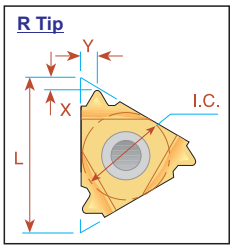

| L | I.C. | Diş Adım Ölçüsü | | DIŞ ÇAP Ürün Açıklaması Sağ Tip | DIŞ ÇAP Ürün Açıklaması Sol Tip | İÇ ÇAP Ürün Açıklaması Sağ Tip | İÇ ÇAP Ürün Açıklaması Sol Tip | X | Y |
|---|---|---|---|---|---|---|---|---|---|
| 6 | 5/32 | 0,5-1,25 | 48-20 | ULTRA MINI | | *06 IR A55 | *06 IL A55 | 0,5 | 0,6 |
| 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



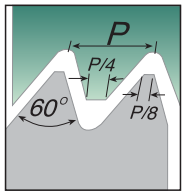



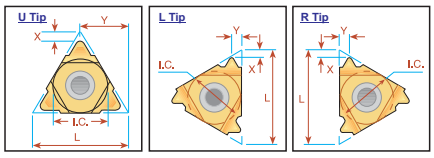



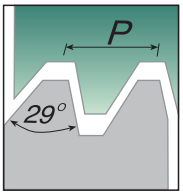

| Diş Adımı Ölçüsü | L | I.C. | DİŞ ÇAP Ürün Açıklaması Sağ Tip | DİŞ ÇAP Ürün Açıklaması Sol Tip | İÇ ÇAP Ürün Açıklaması Sağ Tip | İÇ ÇAP Ürün Açıklaması Sol Tip | X | Y |
|---|---|---|---|---|---|---|---|---|
| 1,5 | 8 | 1,5 | MINIATURE → | | **08 IR 1,5 TR | **08 IL 1,5 TR | 0,6 | 0,6 |
| 2,0 | 8U | 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 |

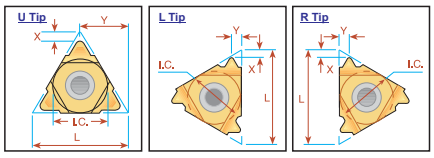
## ISO metric 60°



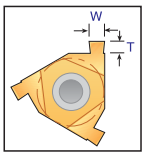

## ACME



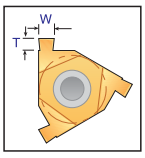




## İç ve Dış Çap Kanal Açma Ucu

IL/ER

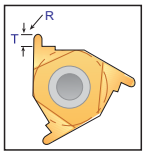



ER/IL

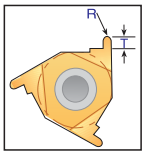



## İç ve Dış Çap Kanal Açma Ucu (Küresel)

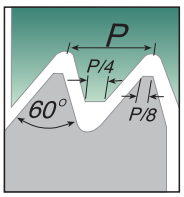
IR / EL

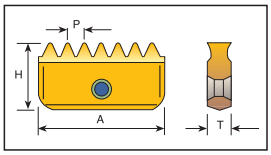



ER / IL

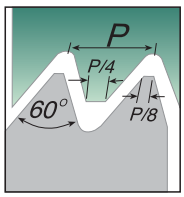


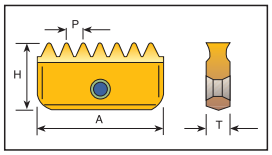

## ISO Diş Açma Tarakları



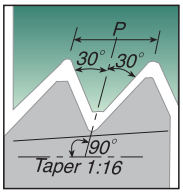



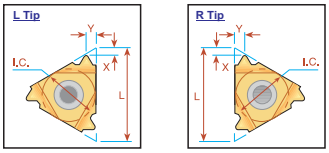

## UN - UNC,UNF, UNEF,UNS Diş Açma Tarakları



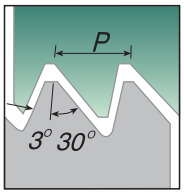



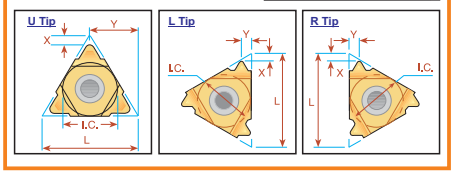
## NPT



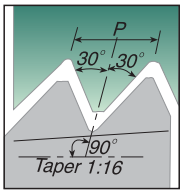



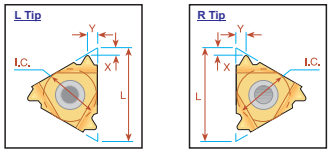

## Sagengewinde DIN 513




## OIL Threads API Round

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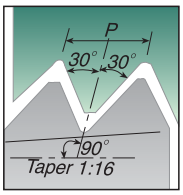
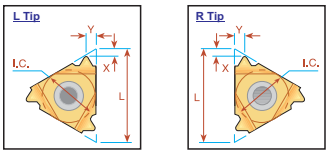
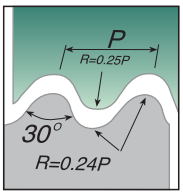
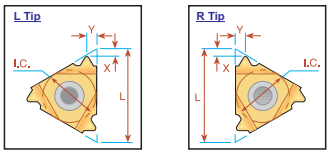


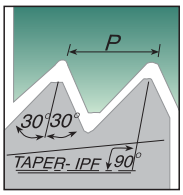



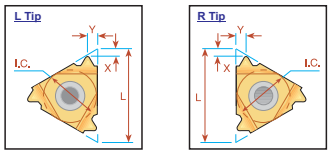

## Round - DIN 405



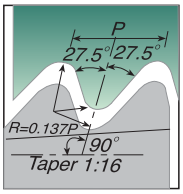



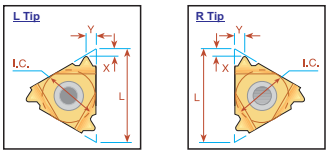

## OIL Threads




## BSPT

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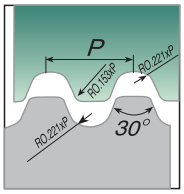
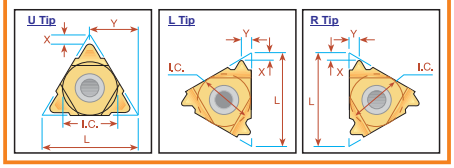
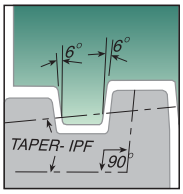
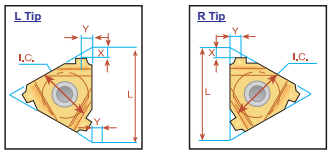


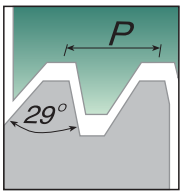



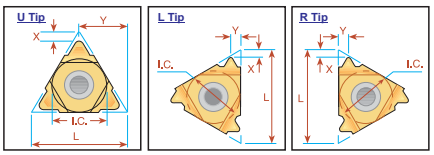

## OIL Threads Extreme Line Casing



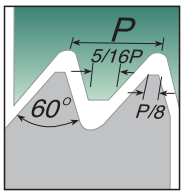

## Stub Acme

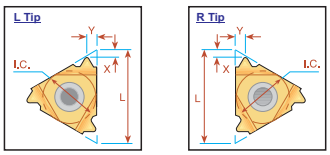


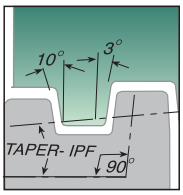

## UNJ

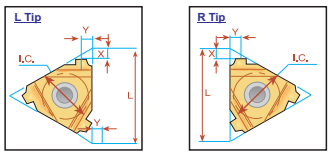
UNJC,UNJF, UNJEF, UNJS



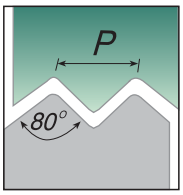



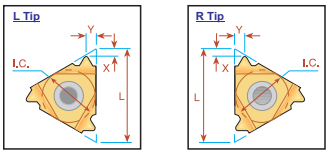

## Buttress Casing



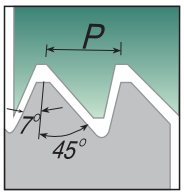



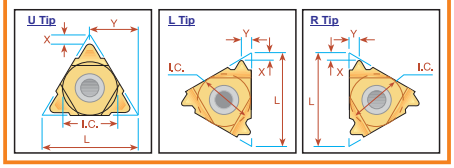

## PG - DIN 40430



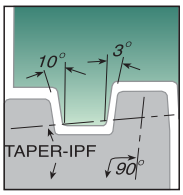



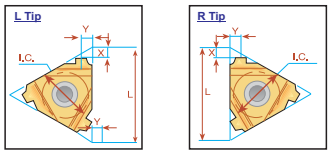

## American Buttress



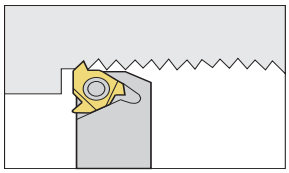

## VAM

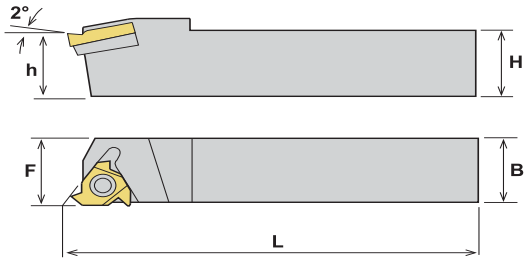


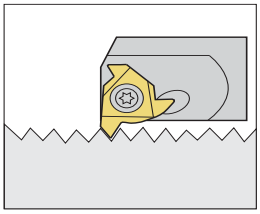
# VİDA AÇMA KATERLERİ

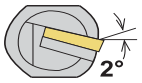
| Takım Kod No *Ordering Code* | Stok *Stock* R | Stok *Stock* L | Kater Ölçüleri (mm) *Dimension (mm)* h=H | B | L | F | Kesici Uç Insert |
|---|---|---|---|---|---|---|---|
| SER/L 0808 E 11 | ○ | ○ | 08 | 08 | 70 | 11 | 11 ER/EL |
| SER/L 1010 E 11 | ● | ○ | 10 | 10 | 70 | 11 | |
| SER/L 1616 H 16C | ● | ● | 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) |

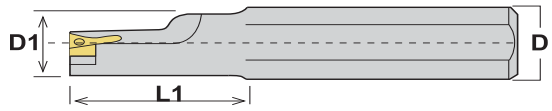


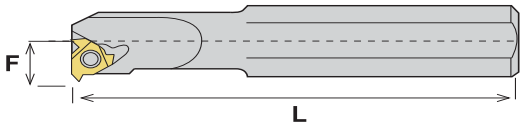


| Takım Kod No *Ordering Code* | Stok *Stock* R | Stok *Stock* L | Kater Ölçüleri (mm) *Dimension (mm)* D | D1 | L | L1 | F | D min | Kesici Uç Insert |
|---|---|---|---|---|---|---|---|---|---|
| SIR/L S16X07M 08 | ● | ● | 16 | 07 | 150 | 18 | 5.3 | 7.8 | 08 IR/L |
| SIR/L S10H 11 | ○ | ○ | 10 | 10 | 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

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# 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

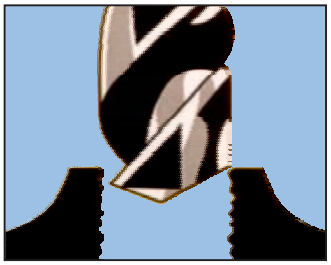
| Çap Ölçüsü | DÜZ TİP MANUEL |
|---|---|
| G (BSP) 1/8-28 | 88080 |
| G (BSP) 1/4-19 | 88081 |
| G (BSP) 3/8-19 | 88082 |
| G (BSP) 1/2-14 | 88083 |
| G (BSP) 5/8-14 | 88084 |

## UNC - UNF YAY TAKMA APARATLARI

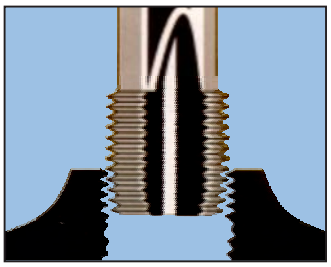
| Çap Ölçüsü | | DÜZ TİP MANUEL |
|---|---|---|
| UNC 2-56 | UNF 2-64 | 88002 |
| UNC 4-40 | UNF 4-48 | 88003 |
| UNC 5-40 | | 88004 |
| UNC 6-32 | UNF 6-40 | 88005 |
| UNC 8-32 | UNF 8-36 | 88006 |
| UNC 10-24 | UNF10-32 | 88007 |
| UNC 12-24 | | 88008 |
| UNC 1/4-20 | UNF 1/4-28 | 88009 |
| UNC 5/16-18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

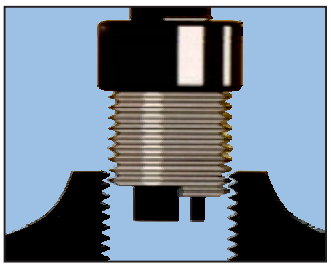
| Çap Ölçüsü | DÜZ TİP MANUEL |
|---|---|
| M2-8 | 87051 |
| M3-10 | 87052 |
| M11-24 | 87053 |
| M20-39 | 87054 |



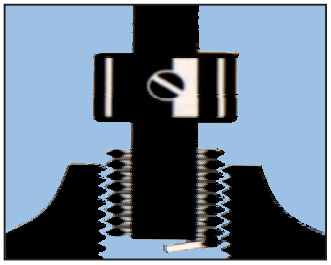
**1. İŞLEM**
TURKCOİL'e uygun matkap ile delik delinir veya uygun çapa büyütülür.



**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.

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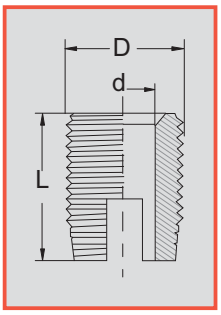
# T-FİX & T-SERT
# İNSERT ve TIRNAKLI ENSERT

## 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"**

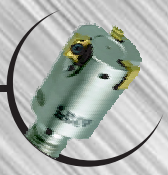
| | | | | |
|---|---|---|---|---|
| BSW 1/4 x 20 | 6.7 mm | No. 9 | No. 9 | 25 |
| BSW 5/16 x 18 | 8.3 mm | No. 10 | No. 11 | 25 |
| BSW 3/8 x 16 | 9.9 mm | No. 12 | No. 12 | 25 |
| BSW 7/16 x 14 | 11.5 mm | No. 14 | No. 14 | 10 |
| BSW 1/2 x 12 | 13.0 mm | No. 15 | No. 15 | 10 |

**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 |

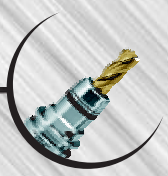
# DİĞER ÜRÜNLERİMİZ

FREZE KAFALARI

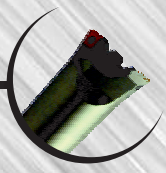


FREZE PENSLERİ

HASSAS TUTUCULAR

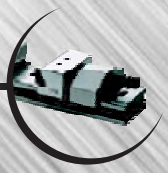


DELİK İŞLEME BARALARI



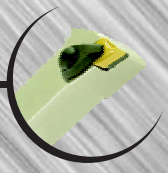
PARÇA BAĞLAMA SİSTEMLERİ

MENGENELER

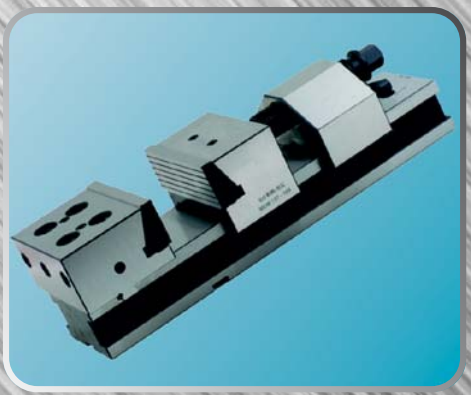


TORNA AYNALARI

TORNA TAKIMLARI



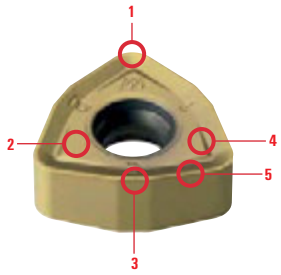
TAKMA UÇLU MATKAPLAR

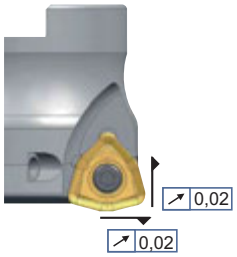


# Özellikler

- 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

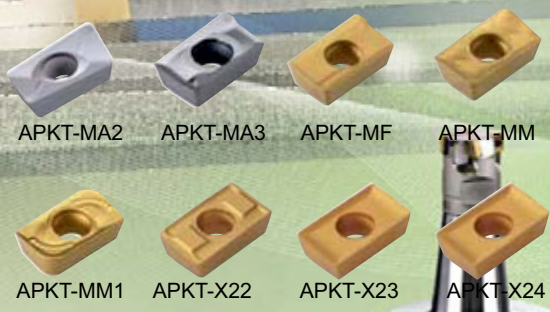
### İçten Soğutma Sistemi
- Talaş boşaltımı ve talaş tahliyesi geliştirilmiştir.
- Düşürülmüş kesme ısı derecesi sayesinde daha uzun tamı ömrü

### 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

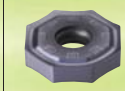
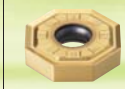
Ekonomik 4 Köşe Kullanımı

### 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

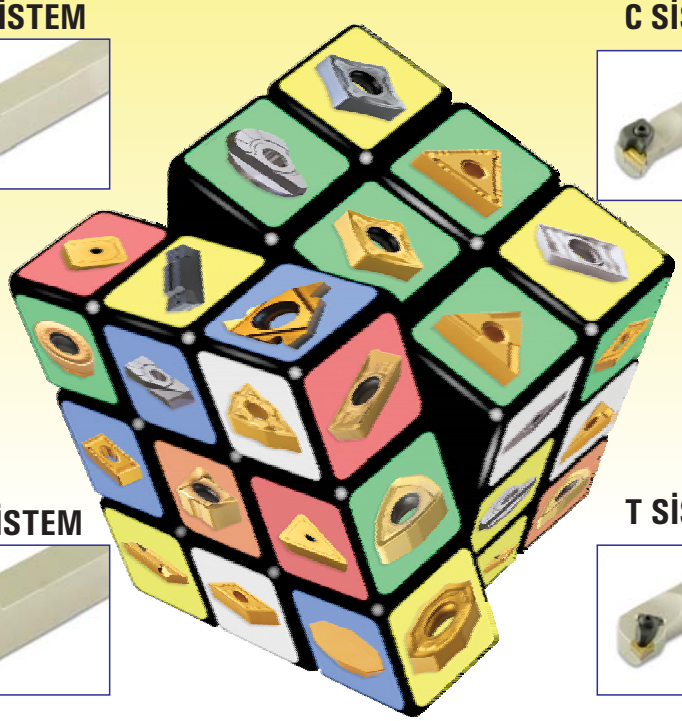
T SİSTEM

M SİSTEM

S SİSTEM

C SİSTEM

P SİSTEM



## DELİK TORNALAMA TAKIMLARI

C SİSTEM

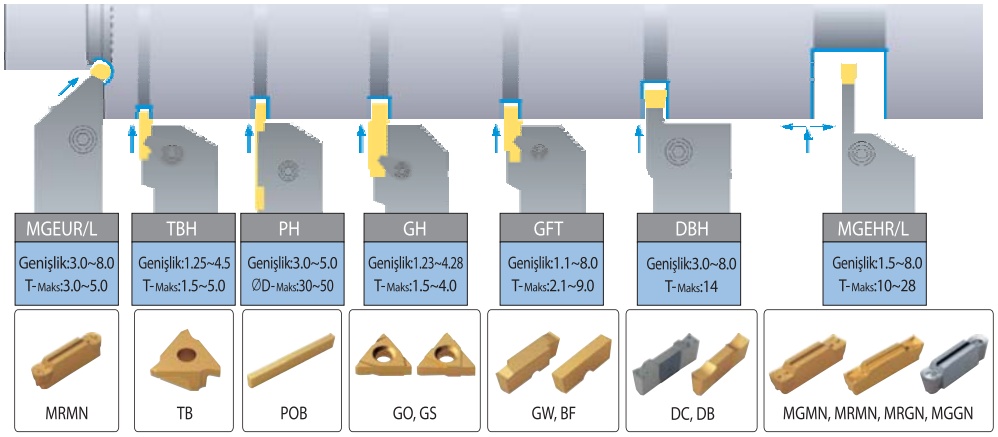
P SİSTEM

S SİSTEM

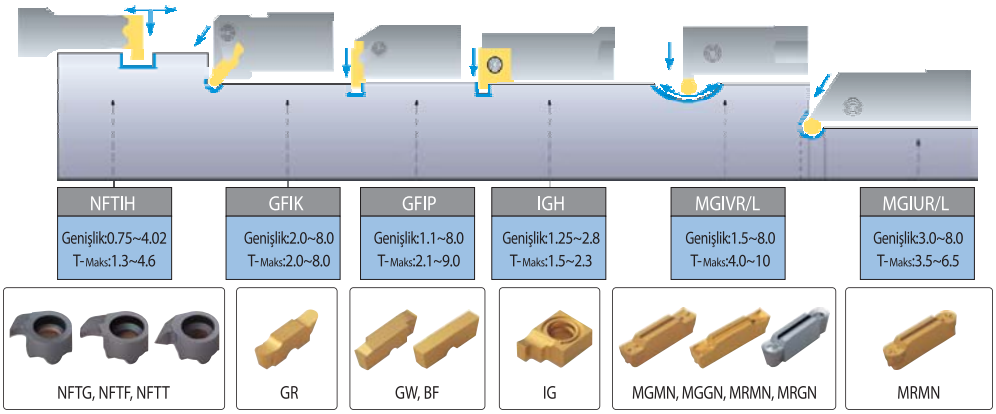
T SİSTEM

M SİSTEM

## ÇAP KANAL TAKIMLARI

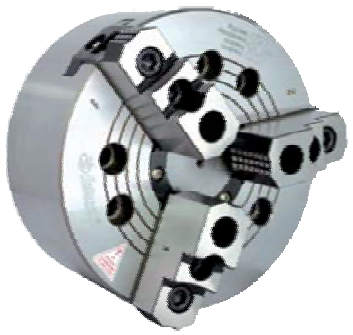


## DELİK KANAL TAKIMLARI

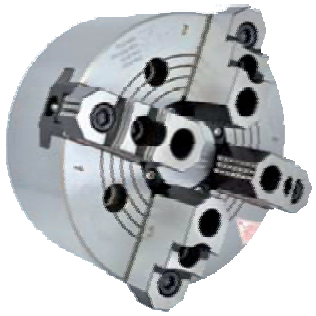



***KING DRILL***
***13-60 mm Çaplarında***
***2-3-4-5 D Boylarında***

### 3 AYAKLI HİDROLİK AYNALAR



### 4 AYAKLI HİDROLİK AYNALAR



### ÜNİVERSAL TORNA

### DEĞİŞİR UÇLU DÖNER PUNTALAR

### DEĞİŞİR UÇ TIRNAKLI PUNTA

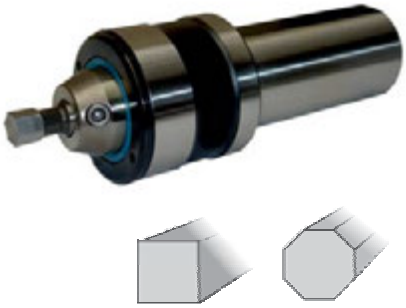
### CNC TORNA DÖNER PUNTALARI

### ŞAPKALI VE SABİT BORU PUNTASI

### SERT-YUMUŞAK YEDEK AYAKLAR

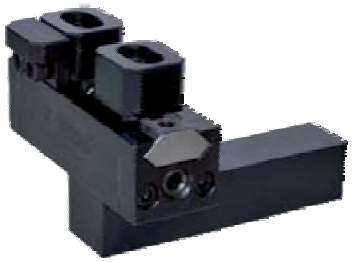
### SABİT PUNTALAR

### KÖŞE BASMA APARATLARI



### MORS VE REDİKSİYON KOVANLAR

### CNC TORNA ÇUBUK SÜRÜCÜ'SÜ



# MENGENE VE PARÇA BAĞLAMA SİSTEMLERİ

MRK CUTTING TOOLS

## ZERO HIZLI BAĞLAMA SİSTEM TABLASI

## YATAY İŞLEME KULESİ

## L TİP PARÇA BAĞL.GÖNYESİ

## ÇİFT AÇILIR 5.EKSEN MENGENESİ

## MEKANİK ÇELİK MENGENE

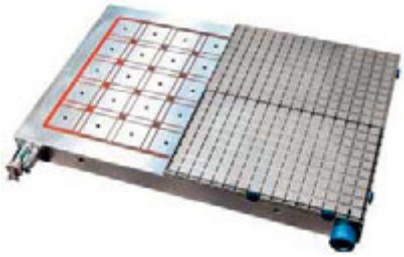
## 2350 PNOMATİK MENGENE

## TAŞLANMIŞ PARALEL SET

## V & X PARÇA BAĞLAMA YATAKLARI

## ÇOK ÇENELİ MENGENELER

## VAKUMLU & MANYETİK TABLA

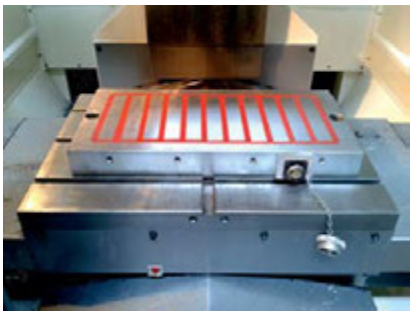


## İŞ PARÇASINI YANDAN SIKMA SETİ

## PARÇA BAĞLAMA PAPUÇ SETLERİ

## DİVİZÖRLER

## ELEKTROMANYETİK TABLA



## DÖNER TABLALAR

# CNC VE UNIVERSAL HASSAS TAKIM TUTUCULAR

MRK CUTTING TOOLS

## MK-ŞAFTLI PENS TUTUCULAR

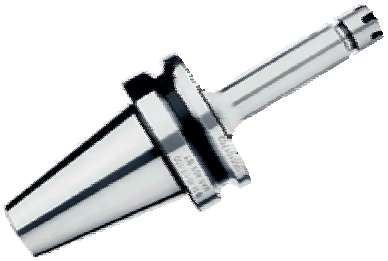
## SİLİNDİRİK SAPLI PENS TUTUCULAR

## İSO/BT/SK PENS TUTUCULAR

## HSK TAKIM TUTUCULAR

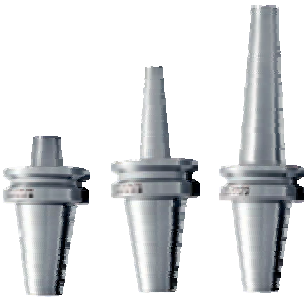
## CAPTO TAKIM VE TUTUCULARI

## BT/SK MİNİ PENS TUTUCULAR



## VELDON ŞAFT TUTUCULAR

## VİDALI TAKIM TUTUCULAR



## KOMBİNE MALAFA TUTUCULAR

## HİDROLİK TAKIM TUTUCULAR

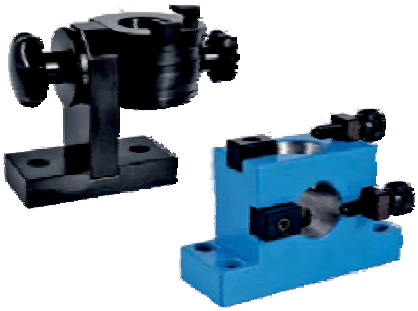
## ISITMALI TAKIM TUTUCULAR

## 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

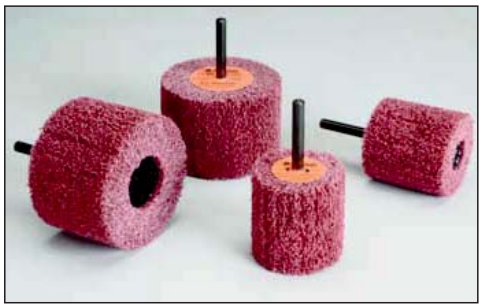
### MİKROSKOPLAR

### SERTLİK ÖLÇME CİHAZI

### ÇABUK DEĞİŞTİRİLEBİLİR DİSK ZIMPARALAR

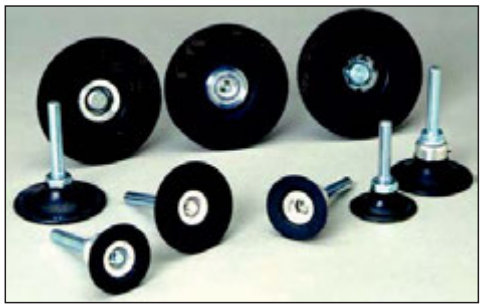
Mevcut olan çap ölçüleri: 25-50-75 mm

### 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

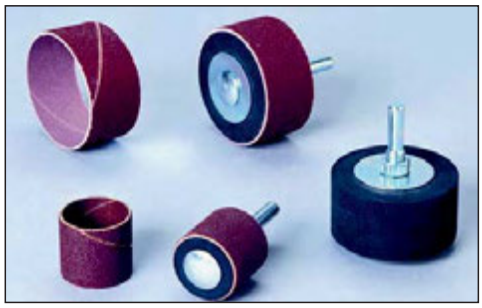
### KONİK VE SARMA ZIMPARALAR

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

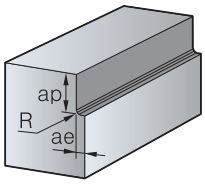
Mevcut olan çap ölçüleri: 10-12-15-20-25-30-40-50-60 mm

### FLANŞLI MOP SKOÇLAR

## • 802 İKİ AĞIZ DÜZ KARBÜR FREZELER İÇİN ÖNERİLEN KESME KOŞULLARI

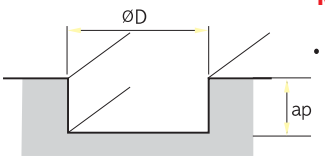
| TAKIM ÇAPI | HRC 30'dan Küçük Genel Çelikler | | | HRC 30-45 arası Çelikler | | | Paslanmaz Çelikler | | |
|---|---|---|---|---|---|---|---|---|---|
| | Devir (Dak$^{-1}$) | İlerleme (mm/dak) | | Devir (Dak$^{-1}$) | İlerleme (mm/dak) | | Devir (Dak$^{-1}$) | İlerleme (mm/dak) | |
| | | Dik Kenar Frezeleme | 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)



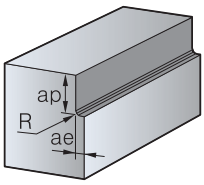

**KANAL AÇMA**

- ap : ≤0.1D (D≤Ø2)
  ≤0.2D (D>Ø2)

## • 804 DÖRT AĞIZ DÜZ KARBÜR FREZELER İÇİN ÖNERİLEN KESME KOŞULLARI

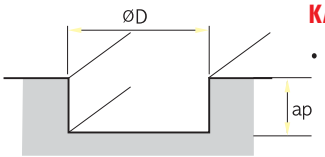
| TAKIM ÇAPI | HRC 30'dan Küçük Genel Çelikler | | | HRC 30-45 arası Çelikler | | | Paslanmaz Çelikler | | |
|---|---|---|---|---|---|---|---|---|---|
| | Devir (Dak$^{-1}$) | İlerleme (mm/dak) | | Devir (Dak$^{-1}$) | İlerleme (mm/dak) | | Devir (Dak$^{-1}$) | İlerleme (mm/dak) | |
| | | Dik Kenar Frezeleme | 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)



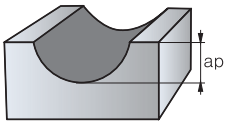

**KANAL AÇMA**

- ap : ≤0.1D (D≤Ø2)
  ≤0.2D (D>Ø2)

## • 814 KÜRESEL KARBÜR FREZELER İÇİN ÖNERİLEN KESME KOŞULLARI

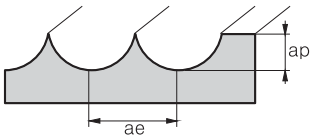
| TAKIM ÇAPI | KARBON ÇELİKLER | | ALAŞIMLI ÇELİKLER | | KALIP ÇELİKLERİ | | DEMİR DIŞI METALLER (Alüminyum) | |
|---|---|---|---|---|---|---|---|---|
| | Devir ($Dak^{-1}$) | İlerleme (mm/dak) | Devir ($Dak^{-1}$) | İlerleme (mm/dak) | Devir ($Dak^{-1}$) | İlerleme (mm/dak) | Devir ($Dak^{-1}$) | İlerleme (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

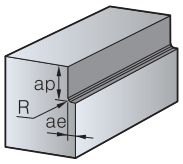
**KANAL AÇMA**

| | |
|---|---|
| ~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

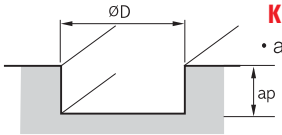
| TAKIM ÇAPI | HRC 30'dan Küçük Genel Çelikler | | | HRC 30-45 arası Çelikler | | | Paslanmaz Çelikler | | |
|---|---|---|---|---|---|---|---|---|---|
| | Devir ($Dak^{-1}$) | İlerleme (mm/dak) | | Devir ($Dak^{-1}$) | İlerleme (mm/dak) | | Devir ($Dak^{-1}$) | İlerleme (mm/dak) | |
| | | Dik Kenar Frezeleme | 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

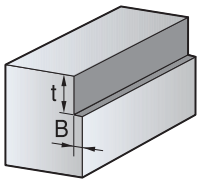
$v_1$=0.2 x 4 x 400 =320 mm/min

## • 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 |

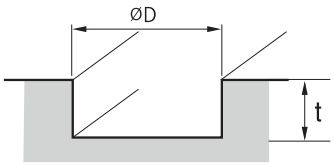
### UYGULAMA ŞEKİLLERİ

**DİK KENAR FREZELEME**




•B≤0.2D(D<3)
•B ≤0.5D(D ≥3)

**KANAL AÇMA**



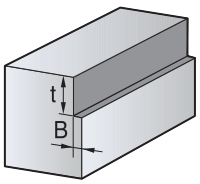

•t≤D(max:12mm)

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

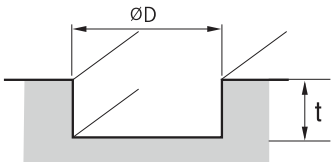
| İŞ PARÇASI / KOŞULLAR / TAKIM ÇAPI | Paslanmaz Çelikler | | Titanyum Alaşımları | | 30 HRC Altındaki Çelikler | | Asıl Çelikler | | Sertleştirilmiş Çelikler HRC 30 - 50 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Devir (Dak$^{-1}$) | İlerleme (mm/dak) | Devir (Dak$^{-1}$) | İlerleme (mm/dak) | 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**



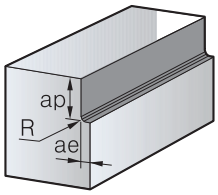
## • 824 NANO DEĞİŞKEN HELİS VE DEĞİŞKEN AĞIZ AÇILI FREZELER İÇİN ÖNERİLEN KESME KOŞULLARI

| 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 |

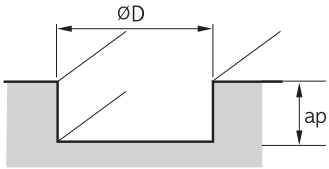
| | NİTELİKLİ GENEL ÇELİKLER | | |
|---|---|---|---|
| | Devir (Dak$^{-1}$) | İlerleme (mm/dak) | ap (mm) |
| | 12,732 | 700 | 2.5 |
| | 10,610 | 700 | 3.0 |
| | 9,095 | 700 | 3.5 |
| | 7,958 | 700 | 4.0 |
| | 6,366 | 700 | 5.0 |
| | 5,305 | 700 | 6.0 |
| | 4,549 | 700 | 7.0 |
| | 3,979 | 700 | 8.0 |
| | 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 |

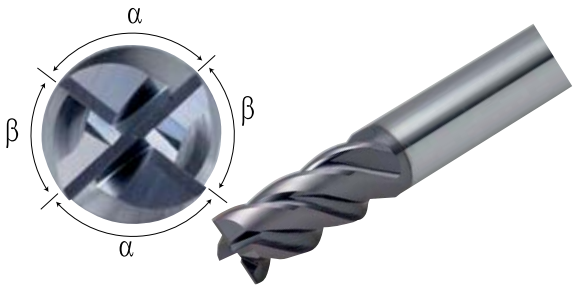
## UYGULAMA ŞEKİLLERİ

### 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 |

# AKİFSAN MAK. HİRD. SAN. TİC. LTD. ŞTİ.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AKİFSAN

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