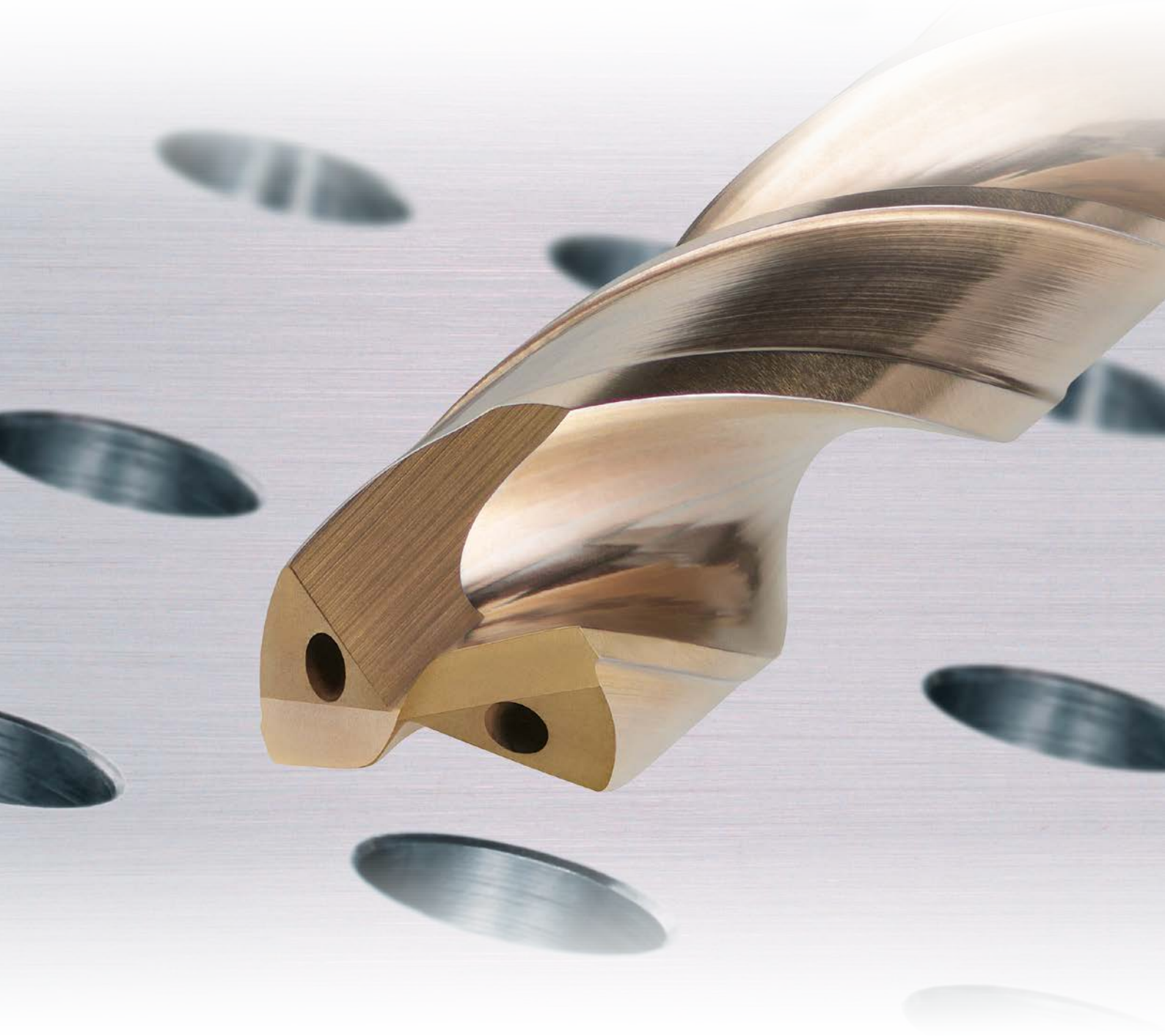


# MINI-MVS

YENİ NESİL YEKPARE KARBÜR MATKAPLAR



# MINI-MVS

DERİN DELİKLERDE UZUN TAKIM ÖMRÜ VE  
OPERASYONUN GÜVENLİĞİ İÇİN İDEAL.

## DÜZ KESME KENARI

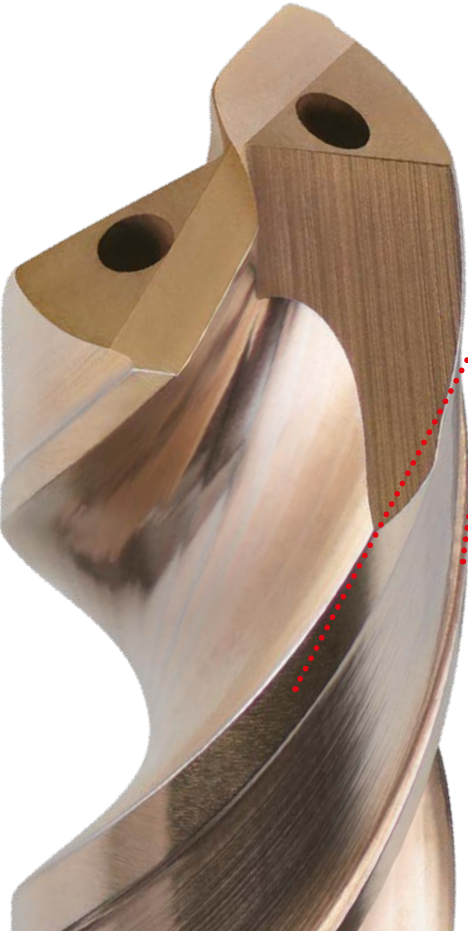
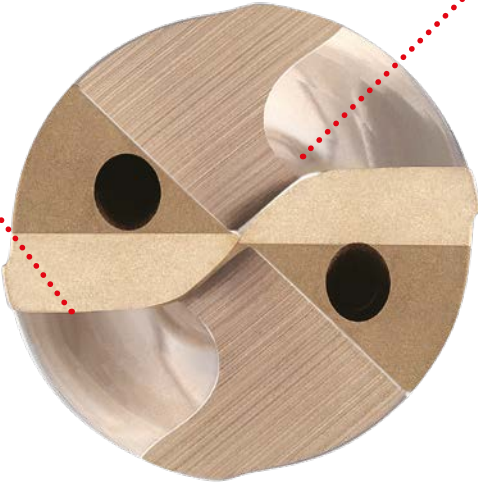
Gliştirilmiş talaş tahliyesi ve güçlendirilmiş kesme kenarı.

## YENİ KESME AĞZI GEOMETRİSİ

Talaş tahliyesini kolaylaştırır.

## ÇİFT ZIRHLI

Yüksek hassasiyet ve dengeli kesme sağlar.



# MINI-MVS

## KESME PERFORMANSI

### İNCE, TEK TİP TALAŞ

Matkap	MVS0250X30S030
İş Parçası	1.4301 (X5CrNi189)
Delik derinliği L/D = 30 (mm)	75
Vc (m/dak.)	40
f (mm/dev)	0.04
Soğutma sıvısı	Emülsiyon



MINI-MVS



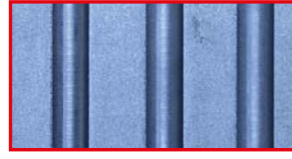
Geleneksel A



Geleneksel B

### YÜKSEK YÜZEY KALITESİ

Matkap	MVS0200X30S030
İş Parçası	DIN 41CrMo4
Delik derinliği L/D = 30 (mm)	60
Vc (m/dak.)	30
f (mm/dev)	0.04
Soğutma sıvısı	Emülsiyon (7 MPa)



MINI-MVS



Geleneksel

# MINI-MVS

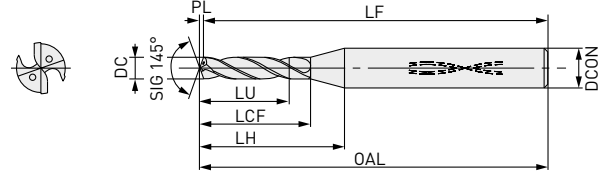


## YENI NESİL SOLID KARBÜR MATKAPLAR

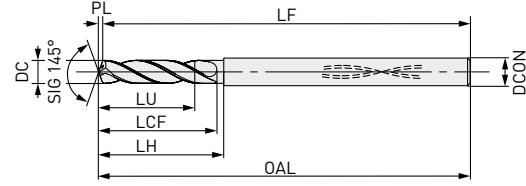
P M K S N



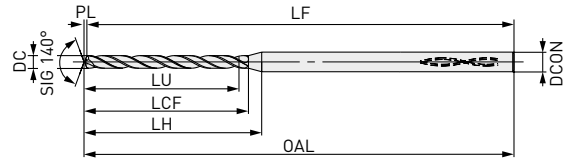
1



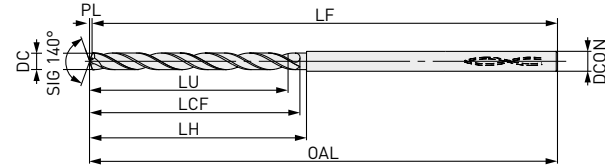
2



3



4



<b>Sipariş Numarası</b>	1<DC<2.9
MVS-X02-	0.014
(pilot matkap)	0
Diğerleri	0
	-0.014



<b>Sipariş Numarası</b>	DCON
MVS	0
	-0.006



- Düz kesme kenarı sayesinde; talaş tahliyesi ve kesme kenarı mukavemeti arasında iyi bir denge kurar.
- Çift zırlı yapı, küçük çaplı delme işlemlerinde optimum denge ve hassasiyet sağlar.

Sipariş No.	DP1020	DC	DCON	L/D	LU	LCF	LH	OAL	LF	PL	Tip
MVS0100X02S030	●	1.0	3	*2	2.2	5.2	8.9	55.2	55	0.2	1
MVS0100X07S030	●		3	7	7.2	10.2	14.2	55.2	55	0.2	3
MVS0100X12S030	●		3	12	12.2	15.2	19.2	55.2	55	0.2	3
MVS0100X20S030	●		3	20	20.2	24.2	28.2	60.2	60	0.2	3
MVS0100X25S030	●		3	25	25.2	28.2	32.2	66.2	66	0.2	3
MVS0100X30S030	●		3	30	30.2	33.2	37.2	72.2	72	0.2	3

\* 2 = Pilot delik matkabı. Tolerans değeri +0.014'tür ve delik derinliği DCx2'dir.



# MINI-MVS

Sipariş No.	DP1020	DC	DCON	L/D	LU	LCF	LH	OAL	LF	PL	Tip
MVS0110X02S030	●	1.1	3	*2	2.4	5.6	9.1	55.2	55	0.2	1
MVS0110X07S030	●		3	7	7.9	11.2	15.2	55.2	55	0.2	3
MVS0110X12S030	●		3	12	13.4	17.2	21.2	55.2	55	0.2	3
MVS0110X20S030	●		3	20	22.2	25.2	29.2	60.2	60	0.2	3
MVS0110X25S030	●		3	25	27.7	31.2	34.2	66.2	66	0.2	3
MVS0110X30S030	●		3	30	33.2	36.2	40.2	72.2	72	0.2	3
MVS0120X02S030	●	1.2	3	*2	2.6	6.2	9.6	55.2	55	0.2	1
MVS0120X07S030	●		3	7	8.6	12.2	15.2	55.2	55	0.2	3
MVS0120X12S030	●		3	12	14.6	18.2	21.2	55.2	55	0.2	3
MVS0120X20S030	●		3	20	24.2	28.2	31.2	60.2	60	0.2	3
MVS0120X25S030	●		3	25	30.2	34.2	37.2	66.2	66	0.2	3
MVS0120X30S030	●		3	30	36.2	40.2	43.2	72.2	72	0.2	3
MVS0130X02S030	●	1.3	3	*2	2.8	6.6	9.8	55.2	55	0.2	1
MVS0130X07S030	●		3	7	9.3	13.2	16.2	55.2	55	0.2	3
MVS0130X12S030	●		3	12	15.8	20.2	23.2	55.2	55	0.2	3
MVS0130X20S030	●		3	20	26.2	30.2	33.2	68.2	68	0.2	3
MVS0130X25S030	●		3	25	32.7	36.2	40.2	74.2	74	0.2	3
MVS0130X30S030	●		3	30	39.2	43.2	46.2	82.2	82	0.2	3
MVS0140X02S030	●	1.4	3	*2	3.0	7.2	10.2	55.2	55	0.2	1
MVS0140X07S030	●		3	7	10.1	14.3	17.3	55.3	55	0.3	3
MVS0140X12S030	●		3	12	17.1	21.3	24.3	55.3	55	0.3	3
MVS0140X20S030	●		3	20	28.3	32.3	35.3	68.3	68	0.3	3
MVS0140X25S030	●		3	25	35.3	39.3	42.3	74.3	74	0.3	3
MVS0140X30S030	●		3	30	42.3	46.3	49.3	82.3	82	0.3	3
MVS0150X02S030	●	1.5	3	*2	3.2	7.6	10.4	55.2	55	0.2	1
MVS0150X07S030	●		3	7	10.8	15.3	18.3	55.3	55	0.3	3
MVS0150X12S030	●		3	12	18.3	23.3	26.3	55.3	55	0.3	3
MVS0150X20S030	●		3	20	30.3	35.3	37.3	68.3	68	0.3	3
MVS0150X25S030	●		3	25	37.8	42.3	45.3	74.3	74	0.3	3
MVS0150X30S030	●		3	30	45.3	50.3	52.3	82.3	82	0.3	3
MVS0160X02S030	●	1.6	3	*2	3.5	8.3	10.9	68.3	68	0.3	1
MVS0160X07S030	●		3	7	11.5	16.3	19.3	68.3	68	0.3	3
MVS0160X12S030	●		3	12	19.5	24.3	27.3	68.3	68	0.3	3
MVS0160X20S030	●		3	20	32.3	37.3	39.3	78.3	78	0.3	3
MVS0160X25S030	●		3	25	40.3	45.3	47.3	86.3	86	0.3	3
MVS0160X30S030	●		3	30	48.3	53.3	55.3	95.3	95	0.3	3
MVS0170X02S030	●	1.7	3	*2	3.7	8.7	11.1	68.3	68	0.3	1
MVS0170X07S030	●		3	7	12.2	17.3	19.3	68.3	68	0.3	3
MVS0170X12S030	●		3	12	20.7	26.3	28.3	68.3	68	0.3	3
MVS0170X20S030	●		3	20	34.3	39.3	42.3	78.3	78	0.3	3
MVS0170X25S030	●		3	25	42.8	48.3	50.3	86.3	86	0.3	3
MVS0170X30S030	●		3	30	51.3	56.3	59.3	95.3	95	0.3	3
MVS0180X02S030	●	1.8	3	*2	3.9	9.3	11.5	68.3	68	0.3	1
MVS0180X07S030	●		3	7	12.9	18.3	20.3	68.3	68	0.3	3
MVS0180X12S030	●		3	12	21.9	27.3	29.3	68.3	68	0.3	3
MVS0180X20S030	●		3	20	36.3	41.3	44.3	84.3	84	0.3	3
MVS0180X25S030	●		3	25	45.3	50.3	53.3	94.3	94	0.3	3
MVS0180X30S030	●		3	30	54.3	59.3	62.3	102.3	102	0.3	3

\* 2 = Pilot delik matkabı. Tolerans değeri +0.014'tür ve delik derinliği DCx2'dir.



# MINI-MVS

Sipariş No.	DP 1020	DC	DCON	L/D	LU	LCF	LH	OAL	LF	PL	Tip
MVS0190X02S030	●	1.9	3	*2	4.1	9.7	11.8	68.3	68	0.3	1
MVS0190X07S030	●		3	7	13.6	19.3	21.3	68.3	68	0.3	3
MVS0190X12S030	●		3	12	23.1	29.3	31.3	68.3	68	0.3	3
MVS0190X20S030	●		3	20	38.3	44.3	46.3	84.3	84	0.3	3
MVS0190X25S030	●		3	25	47.8	53.3	55.3	94.3	94	0.3	3
MVS0190X30S030	●		3	30	57.3	63.3	65.3	102.3	102	0.3	3
MVS0200X02S030	●	2.0	3	*2	4.3	10.3	12.2	68.3	68	0.3	1
MVS0200X07S030	●		3	7	14.4	20.4	22.4	68.4	68	0.4	3
MVS0200X12S030	●		3	12	24.4	30.4	32.4	68.4	68	0.4	3
MVS0200X20S030	●		3	20	40.4	46.4	48.4	84.4	84	0.4	3
MVS0200X25S030	●		3	25	50.4	56.4	58.4	94.4	94	0.4	3
MVS0200X30S030	●		3	30	60.4	66.4	68.4	102.4	102	0.4	3
MVS0210X02S030	●	2.1	3	*2	4.5	10.7	12.4	74.3	74	0.3	1
MVS0210X07S030	●		3	7	15.1	21.4	23.4	74.4	74	0.4	3
MVS0210X12S030	●		3	12	25.6	32.4	34.4	74.4	74	0.4	3
MVS0210X20S030	●		3	20	42.4	48.4	50.4	94.4	94	0.4	3
MVS0210X25S030	●		3	25	52.9	59.4	60.4	107.4	107	0.4	3
MVS0210X30S030	●		3	30	63.4	69.4	71.4	118.4	118	0.4	3
MVS0220X02S030	●	2.2	3	*2	4.7	11.3	12.8	74.3	74	0.3	1
MVS0220X07S030	●		3	7	15.8	22.4	23.4	74.4	74	0.4	3
MVS0220X12S030	●		3	12	26.8	33.4	34.4	74.4	74	0.4	3
MVS0220X20S030	●		3	20	44.4	51.4	52.4	94.4	94	0.4	3
MVS0220X25S030	●		3	25	55.4	62.4	63.4	107.4	107	0.4	3
MVS0220X30S030	●		3	30	66.4	73.4	74.4	118.4	118	0.4	3
MVS0230X02S030	●	2.3	3	*2	5.0	11.8	13.1	74.4	74	0.4	1
MVS0230X07S030	●		3	7	16.5	23.4	24.4	74.4	74	0.4	3
MVS0230X12S030	●		3	12	28.0	35.4	36.4	74.4	74	0.4	3
MVS0230X20S030	●		3	20	46.4	53.4	54.4	94.4	94	0.4	3
MVS0230X25S030	●		3	25	57.9	64.4	66.4	107.4	107	0.4	3
MVS0230X30S030	●		3	30	69.4	76.4	77.4	118.4	118	0.4	3
MVS0240X02S030	●	2.4	3	*2	5.2	12.4	13.5	74.4	74	0.4	1
MVS0240X07S030	●		3	7	17.2	24.4	25.4	74.4	74	0.4	3
MVS0240X12S030	●		3	12	29.2	36.4	37.4	74.4	74	0.4	3
MVS0240X20S030	●		3	20	48.4	55.4	56.4	94.4	94	0.4	3
MVS0240X25S030	●		3	25	60.4	67.4	68.4	107.4	107	0.4	3
MVS0240X30S030	●		3	30	72.4	79.4	80.4	118.4	118	0.4	3
MVS0250X02S030	●	2.5	3	*2	5.4	12.8	13.7	74.4	74	0.4	1
MVS0250X07S030	●		3	7	18.0	25.5	26.5	74.5	74	0.5	3
MVS0250X12S030	●		3	12	30.5	38.5	39.5	74.5	74	0.5	3
MVS0250X20S030	●		3	20	50.5	58.5	59.5	94.5	94	0.5	3
MVS0250X25S030	●		3	25	63.0	70.5	71.5	107.5	107	0.5	3
MVS0250X30S030	●		3	30	75.5	83.5	84.5	118.5	118	0.5	3
MVS0260X02S030	●	2.6	3	*2	5.6	13.4	13.4	81.4	81	0.4	2
MVS0260X07S030	●		3	7	18.7	26.5	26.5	81.5	81	0.5	4
MVS0260X12S030	●		3	12	31.7	39.5	39.5	81.5	81	0.5	4
MVS0260X20S030	●		3	20	52.5	60.5	60.5	103.5	103	0.5	4
MVS0260X25S030	●		3	25	65.5	73.5	73.5	117.5	117	0.5	4
MVS0260X30S030	●		3	30	78.5	86.5	86.5	132.5	132	0.5	4

\* 2 = Pilot delik matkabı. Tolerans değeri +0.014'tür ve delik derinliği DCx2'dir.



# MINI-MVS

Sipariş No.	DP 1020	DC	DCON	L/D	LU	LCF	LH	OAL	LF	PL	Tip
MVS0270X02S030	●	2.7	3	*2	5.8	13.8	13.8	81.4	81	0.4	2
MVS0270X07S030	●		3	7	19.4	27.5	27.5	81.5	81	0.5	4
MVS0270X12S030	●		3	12	32.9	41.5	41.5	81.5	81	0.5	4
MVS0270X20S030	●		3	20	54.5	62.5	62.5	103.5	103	0.5	4
MVS0270X25S030	●		3	25	68.0	76.5	76.5	117.5	117	0.5	4
MVS0270X30S030	●		3	30	81.5	89.5	89.5	132.5	132	0.5	4
MVS0280X02S030	●	2.8	3	*2	6.0	14.4	14.4	81.4	81	0.4	2
MVS0280X07S030	●		3	7	20.1	28.5	28.5	81.5	81	0.5	4
MVS0280X12S030	●		3	12	34.1	42.5	42.5	81.5	81	0.5	4
MVS0280X20S030	●		3	20	56.5	64.5	64.5	103.5	103	0.5	4
MVS0280X25S030	●		3	25	70.5	78.5	78.5	117.5	117	0.5	4
MVS0280X30S030	●		3	30	84.5	92.5	92.5	132.5	132	0.5	4
MVS0290X02S030	●	2.9	3	*2	6.3	14.9	14.9	81.5	81	0.5	2
MVS0290X07S030	●		3	7	20.8	29.5	29.5	81.5	81	0.5	4
MVS0290X12S030	●		3	12	35.3	44.5	44.5	81.5	81	0.5	4
MVS0290X20S030	●		3	20	58.5	67.5	67.5	103.5	103	0.5	4
MVS0290X25S030	●		3	25	73.0	81.5	81.5	117.5	117	0.5	4
MVS0290X30S030	●		3	30	87.5	96.5	96.5	132.5	132	0.5	4

\* 2 = Pilot delik matkabı. Tolerans değeri +0.014'tür ve delik derinliği DCx2'dir.



# MINI-MVS

## ÖNERİLEN KESME KOŞULLARI

Malzeme	DC	L/D	n	f	
P Yumuşak çelik (≤180HB)	1.0	2*,7DC	15900	0.04 (0.02-0.05)	
		≥ 12DC	15900	0.02 (0.01-0.03)	
	1.5	2*,7DC	10600	0.05 (0.03-0.08)	
		≥ 12DC	10600	0.05 (0.02-0.08)	
	2.0	2*,7DC	7900	0.07 (0.04-0.10)	
		≥ 12DC	7900	0.07 (0.04-0.10)	
	2.5	2*,7DC	7600	0.09 (0.05-0.13)	
		≥ 12DC	7600	0.09 (0.06-0.13)	
	Karbon çeliği (180-280HB)	1.0	2*,7DC	15900	0.04 (0.02-0.05)
			≥ 12DC	12700	0.02 (0.01-0.03)
1.5		2*,7DC	10600	0.05 (0.03-0.08)	
		≥ 12DC	8400	0.05 (0.03-0.08)	
2.0		2*,7DC	7900	0.07 (0.04-0.10)	
		≥ 12DC	7900	0.07 (0.04-0.10)	
2.5		2*,7DC	7600	0.09 (0.05-0.13)	
		≥ 12DC	6300	0.09 (0.06-0.13)	
Alaşımlı çelik (280-350HB)		1.0	2*,7DC	12700	0.04 (0.02-0.05)
			≥ 12DC	9500	0.02 (0.01-0.03)
	1.5	2*,7DC	8400	0.05 (0.03-0.08)	
		≥ 12DC	6300	0.05 (0.02-0.08)	
	2.0	2*,7DC	6300	0.07 (0.04-0.10)	
		≥ 12DC	7900	0.07 (0.04-0.10)	
	2.5	2*,7DC	6300	0.09 (0.05-0.13)	
		≥ 12DC	6300	0.08 (0.05-0.13)	
	M Östenitli paslanmaz çelik (≤200HB)	1.0	2*,7DC	9500	0.03 (0.02-0.05)
			≥ 12DC	9500	0.02 (0.01-0.03)
1.5		2*,7DC	6300	0.05 (0.03-0.07)	
		≥ 12DC	6300	0.05 (0.02-0.08)	
2.0		2*,7DC	4700	0.06 (0.04-0.08)	
		≥ 12DC	4700	0.07 (0.04-0.10)	
2.5		2*,7DC	5000	0.08 (0.05-0.10)	
		≥ 12DC	3800	0.08 (0.05-0.12)	
K Gri Dökme Demir (<350 MPa)		1.0	2*,7DC	15900	0.04 (0.02-0.05)
			≥ 12DC	12700	0.02 (0.01-0.03)
	1.5	2*,7DC	10600	0.05 (0.03-0.08)	
		≥ 12DC	8400	0.05 (0.03-0.08)	
	2.0	2*,7DC	7900	0.07 (0.04-0.10)	
		≥ 12DC	7900	0.07 (0.04-0.10)	
	2.5	2*,7DC	7600	0.09 (0.05-0.13)	
		≥ 12DC	6300	0.09 (0.06-0.13)	
	Sünek Dökme Demir (<450 MPa)	1.0	2*,7DC	12700	0.04 (0.02-0.05)
			≥ 12DC	9500	0.02 (0.01-0.03)
1.5		2*,7DC	8400	0.05 (0.03-0.08)	
		≥ 12DC	6300	0.05 (0.02-0.08)	
2.0		2*,7DC	6300	0.07 (0.04-0.10)	
		≥ 12DC	7900	0.07 (0.04-0.10)	
2.5		2*,7DC	6300	0.09 (0.05-0.13)	
		≥ 12DC	6300	0.08 (0.05-0.12)	



# MINI-MVS

## ÖNERİLEN KESME KOŞULLARI

Malzeme	DC	L/D	n	f
N Alüminyum alaşım (Si<5%)	1.0	2*,7DC	19000	0.05 (0.03-0.08)
		≥ 12DC	15900	0.05 (0.03-0.08)
	1.5	2*,7DC	16900	0.07 (0.05-0.12)
		≥ 12DC	14800	0.08 (0.05-0.12)
	2.0	2*,7DC	14300	0.10 (0.06-0.15)
		≥ 12DC	12700	0.11 (0.06-0.15)
2.5	2*,7DC	12700	0.13 (0.08-0.20)	
	≥ 12DC	11400	0.14 (0.08-0.20)	
N Isıya dirençli alaşım	1.0	2*,7DC	3100	0.02 (0.01-0.03)
		≥ 12DC	3100	0.02 (0.01-0.03)
	1.5	2*,7DC	2100	0.03 (0.02-0.04)
		≥ 12DC	2100	0.03 (0.02-0.04)
	2.0	2*,7DC	2300	0.04 (0.03-0.05)
		≥ 12DC	2300	0.04 (0.03-0.05)
	2.5	2*,7DC	1900	0.05 (0.04-0.06)
		≥ 12DC	1900	0.05 (0.04-0.06)

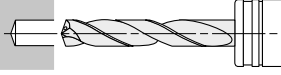
\* 2 = Pilot delik delme. Delme boyu DCx2' dir.

# İŞLEME TEKNİĞİ

## MINI-MVS UZUN TİP MATKAP UCU İÇİN ÇALIŞMA KILAVUZU (L/D>10)

### DÜZ YÜZEY DELME BİR KÖR DELİK DELME

#### 1. Bir pilot deliği delme



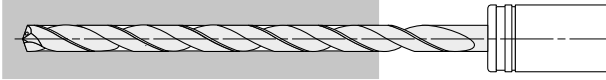
1. Süper uzun tipten daha büyük (düz) uç açılı bir matkap ucu kullanın. Olası en kısa helis kanallıyı kullanın.
2. Yataklama için yüksek hassasiyetli deliğin delindiğinden emin olun.
3. Matkap ucu derinliği: Yaklaşık 1DC veya daha derin. (Pilot Delik Derinliğini süper uzun tip matkap ucu uzunluğuna göre ayarlayın.)

#### 2. Uzun tip matkap ucu ile ilk kesme



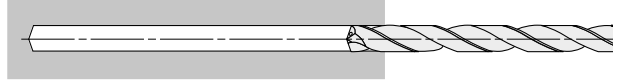
1. Pilot deliğe düşük devirde nüfuz edin. (Devir 1000 dak<sup>-1</sup>, ilerleme oranı 0.2 – 0.3 mm/dev)
2. Uzun tip matkap ucunu pilot delik tabanına 0.5 – 1 mm kala durdurun.

#### 3. Derin deliği delme



1. Önerilen hızda ve ilerleme oranıyla gagalama yapmadan (düz ilerleme) çevrimi ile kesmeye başlayın.

#### 4. Matkap ucunu geriye çekme



1. Deldikten sonra, kesme devrini delik ucundan yaklaşık 0.5 – 1 mm daha gerisinde düşürün (Devir yaklaşık 1000 dak<sup>-1</sup>)
2. 3000 mm/dak ilerleme hızıyla matkap ucunu pilot Delik Derinliği başlangıç noktasına geri çekin.
3. Son olarak, 20 – 30 m/dak kesme hızında ve 0.2 – 0.3 mm/dev ilerleme oranında deliği temizleyin.

# İŞLEME TEKNİĞİ

## MINI-MVS UZUN TİP MATKAP UCU İÇİN ÇALIŞMA KILAVUZU (L/D>10)

### DARBELİ DELME

### ÜZERİNDE DÜZENSİZ VEYA AÇILI YÜZLER BULUNAN PARÇALARI DELME VE BOŞA ÇIKMA

#### 1. Spot yüzey açma



1. Bir parmak frezeyle veya spot yüzeyi açma özellikli spot matkap ucunu kullanarak düz veya düzensiz bir yüzeyi işleyin. İşlenecek derin delik çapı ile aynı çapta bir düz yüzey yapın.

#### 2. Bir pilot deliği delme



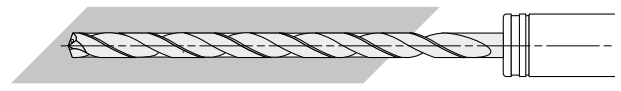
1. Süper uzun tipten daha büyük (düz) bir uç açılı bir matkap ucu kullanın. Olası en kısa helis kanallığı kullanın.
2. Yataklama için yüksek hassasiyetli deliğin delindiğinden emin olun.
3. Matkap ucu derinliği: Yaklaşık 1DC veya daha uzun. (Pilot Delik Derinliğini süper uzun tip matkap ucu uzunluğuna göre ayarlayın.)

#### 3. Uzun tip matkap ucu ile ilk kesme



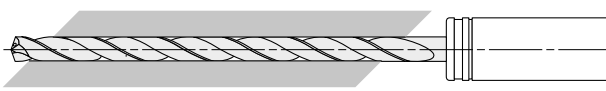
1. Yataklama deliğine düşük devirde nüfuz edin. (Devir 1000dak<sup>-1</sup>, ilerleme oranı 0.2 – 0.3 mm/dev)
2. Uzun tip matkap ucunu pilot delik tabanına 0.5 – 1 mm kala durdurun.

#### 4. Derin deliği delme



1. Önerilen hızda ve ilerleme oranıyla gagalama yapmadan (düz ilerle) çevrimi ile kesmeye başlayın.

#### 5. Boşa çıkma



1. Boşa çıkma işlemi sırasında, kesme kenarı hasar görebilir.
2. Yüzeye yakın ilerleme oranını düşürün.

#### 6. Matkap ucunu geriye çekme



1. Son olarak 20 – 30 m/dak kesme hızında ve 0.2 – 0.3 mm/dev ilerleme oranında deliği temizleyin.
2. 3000 mm/dak ilerleme hızında matkap ucunu pilot Delik Derinliği başlangıç noktasına geri çekin.

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