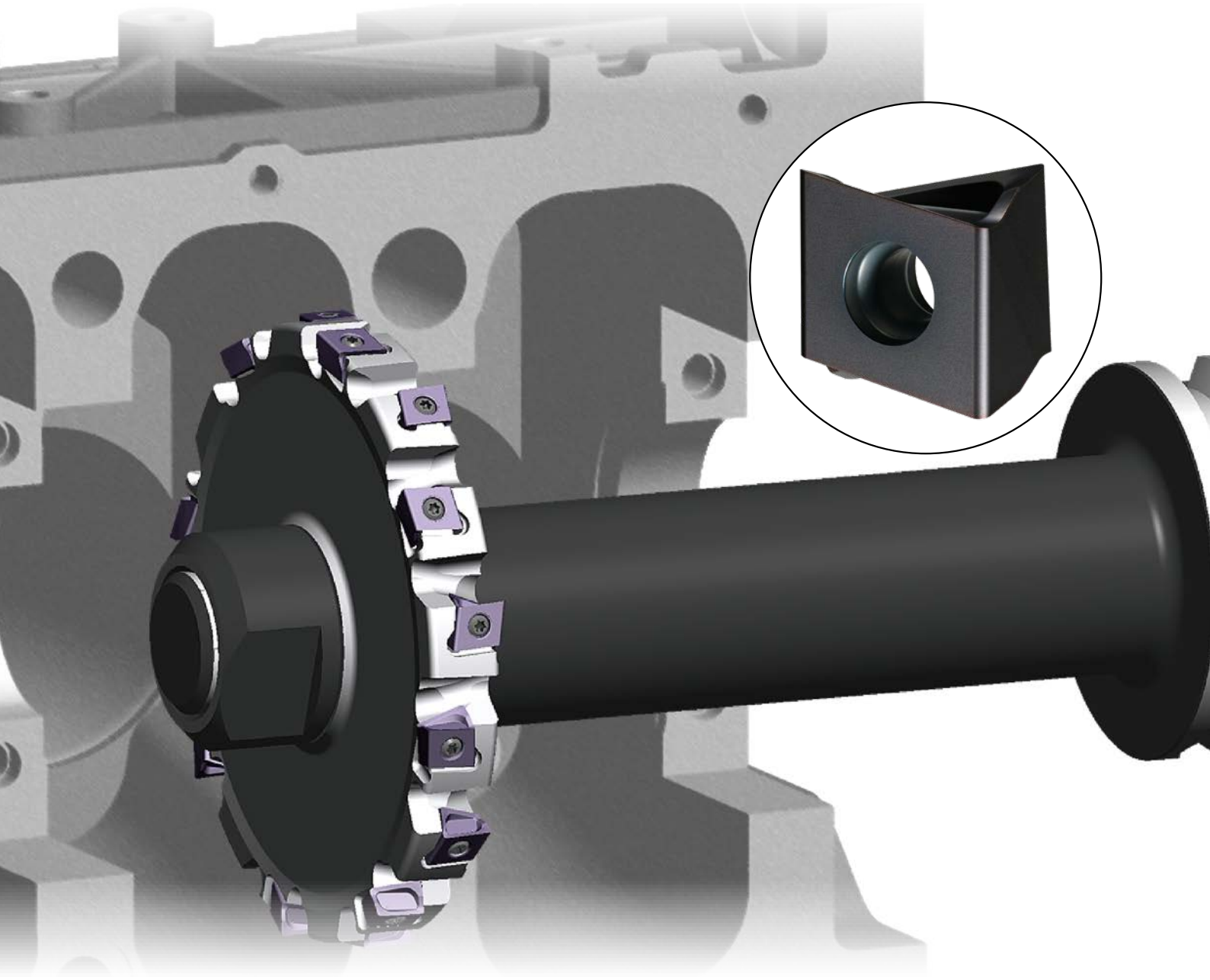


YAN KENAR VE YÜZEY FREZELEME KESİCİLERİ SERİSİ

YAN KENAR VE YÜZEY İŞLEME İÇİN ÇİFT TARAFLI DİKEY
MONTAJ EDİLMİŞ, DÜŞÜK KESME DİRENÇLİ UÇLARI İLE
DCV SERİSİ



*M*plus...

DCV3 / DCV4 / DCV5

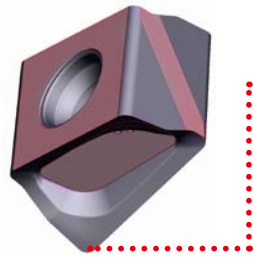
DEĞİŞTİRİLEBİLİR KESİCİ UÇLAR

EKONOMİK KESİCİ UÇ TASARIMI

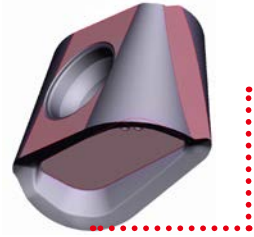
4 kesme kenarlı teğetsel tip kesici uç.

GÜVENLİ SIKMA

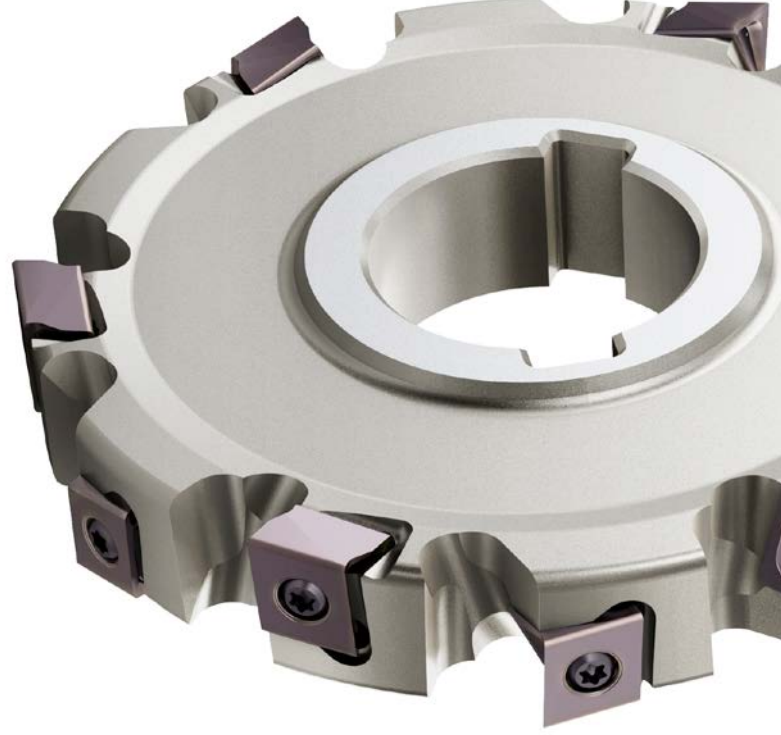
Özel uç yuvası yüzeyleri, bir çok farklı radyus boyutlarında kesici uçların güvenli bir şekilde bağlanmasını sağlar.



Köşe radyusu R 0.4 mm

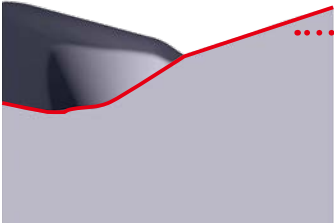


DCV3 için köşe radyusu R 4.0 mm
DCV4 için köşe radyusu R 5.0 mm
DCV5 için köşe radyusu R 7.0 mm

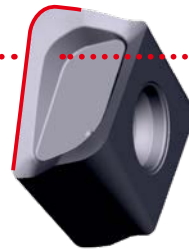


Freze gövdesi ve kesici uçlar: GAMF: +8° GAMP: +3°

DÜŞÜK KESME DİRENÇLİ KESİCİ UÇ → FAVORİ KESKİNLİK



Dayanıklı Kesme Kenarı
(Dış bükümlü Kavisli)

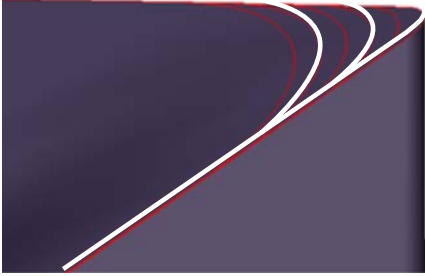


Çift fazlı Helisel Dalma
Açısı

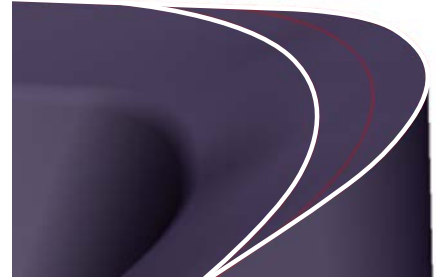
YÜKSEK HASSASIYETLİ KÖŞE RADYUSU

İŞ PARÇASINDA HATASIZ KÖŞE RADYUSU OLUŞTURMAK İÇİN HASSAS KESİCİ UÇLAR.

R 0.4 – R 3.0 mm

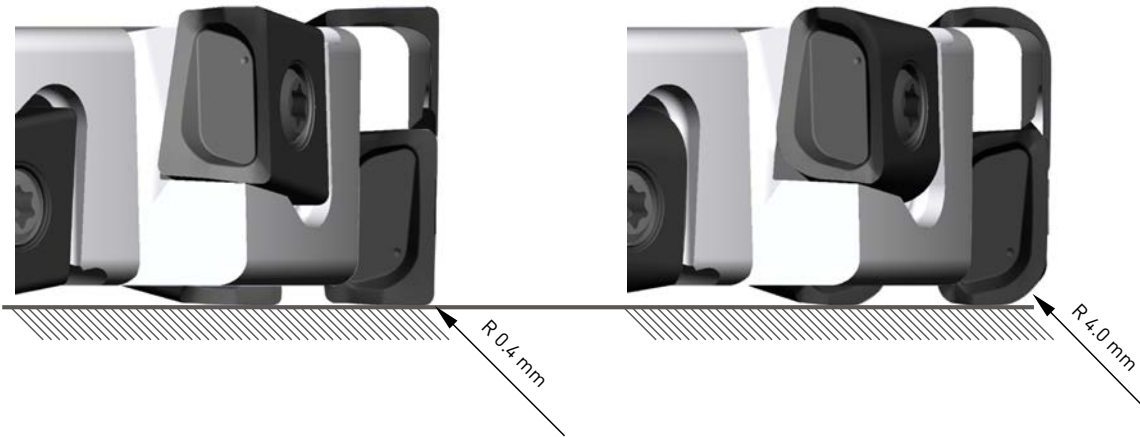


R 3.0 – R 7.0 mm



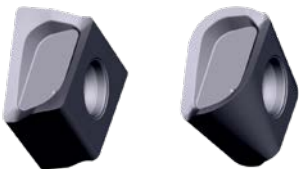
İSTİKRARLI GEOMETRİ

Farklı köşe radyuslu uçlar kullanılsa bile kesme genişliği ve çap değişmez.

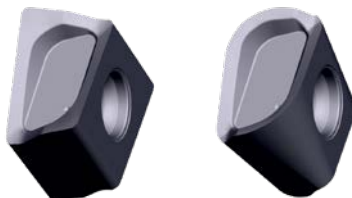


ÇOK ÇEŞİTLİ KÖŞE RADYUSU MEVCUTTUR

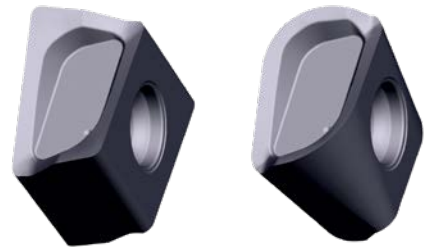
DCV3 = R 0.4 – R 4.0 mm



DCV4 = R 0.4 – R 5.0 mm



DCV5 = R 0.4 – R 7.0 mm

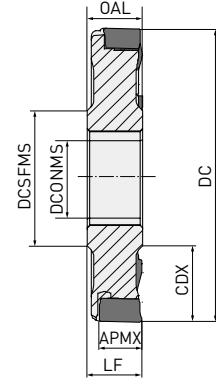
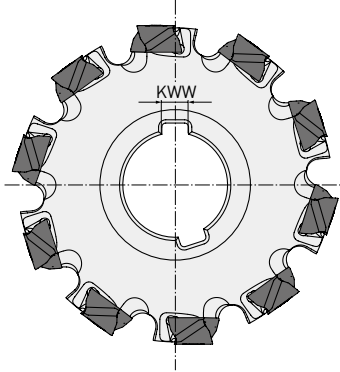


DCV3



P

K



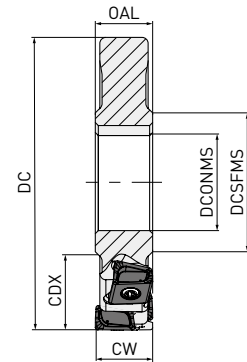
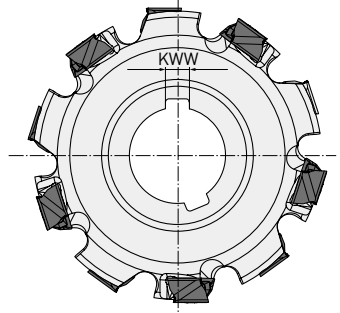
Maks. APMX: 8.6 mm

YARIM KENARLI

DC	ZNF	LF = OAL	CDX	DCONMS	DCSFMS	KWW		
80 – 99.9	8	≥12	20.0	27	40	7	—	LNGU09
100 – 124.9	10		27.0	32	46	8	—	
125 – 160.0	12		35.0	40	55	10	—	

1/1

15 Vc



Azami Genişlik CW: 17.2 mm

TAM KENARLI

DC	ZNF	ZNP	LF = OAL	CW	CDX	DCONMS	DCSFMS	KWW	
80 – 99.9	4	8	≥12	12-17.2	20.0	27	40	7	LNGU09
100 – 124.9	5	10		12-17.2	27.0	32	46	8	
125 – 160.0	6	12		12-17.2	35.0	40	55	10	

1/1

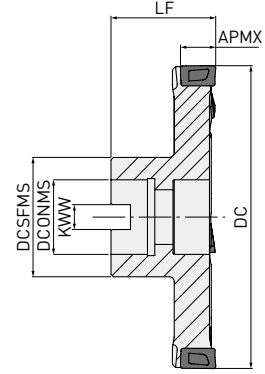
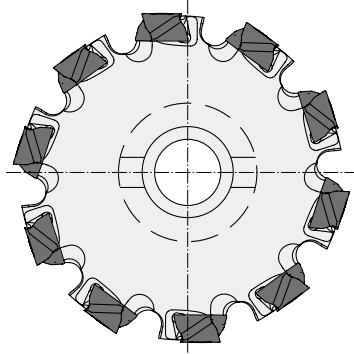
1. Her bir ölçü için birden çok seviyeli tasarımlar mevcuttur. Detayları verilmeyen geometriler için lütfen teknik departmanımız ile iletişime geçiniz. (MMC Hartmetall GmbH - huseyin.sakizlioglu@mmchg.com.tr)

15 Vc

DCV3



P K



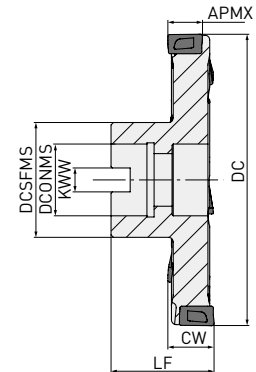
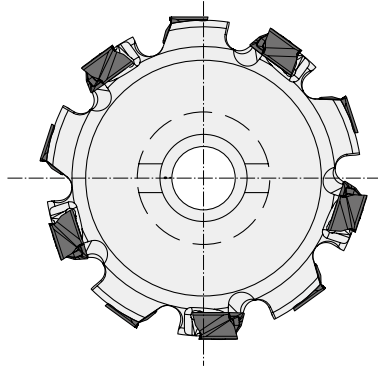
Maks. APMX: 8.6 mm

YARIM KENARLI MALAFA TİP

DC	ZEFP	LF	CDX	DCONMS	DCSFMS	KWW		
80 – 99.9	8	50	20.0	27	40	12.4	—	LNGU09
100 – 124.9	10	60	27.0	32	46	14.4	—	
125 – 160.0	12	60	35.0	40	55	16.4	—	

1/1

15



Azami Genişlik CW: 17.2 mm

TAM KENARLI MALAFA TİP

DC	ZEFP	LF	CW	CDX	DCONMS	DCSFMS	KWW		
80 – 99.9	8	50	12-17.2	20.0	27	40	12.4	—	LNGU09
100 – 124.9	10	60	12-17.2	27.0	32	46	14.4	—	
125 – 160.0	12	60	12-17.2	35.0	40	55	16.4	—	

1/1

1. Her bir ölçü için birden çok seviyeli tasarımlar mevcuttur. Detayları verilmeyen geometriler için lütfen teknik departmanımız ile iletişime geçiniz. (MMC Hartmetall GmbH - huseyin.sakizlioglu@mmchg.com.tr)

15

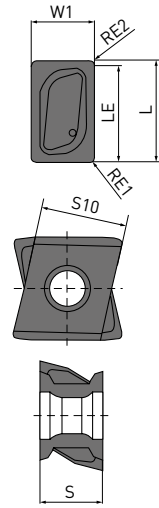
DCV3

YEDEK PARÇALAR

Takım Tutucu Tipi		TQ (Nm)		
	Uç Vidası	Sıkma Torku	Anahtar	Sıkışma Önleyici Yağlayıcı
DCV3 LNU090600PNEOM	TS304	1.5	TKY08W	MK1KS

KESİCİ UÇ

Sipariş No.	VP15TF	Kesme yönü	Sınıf	Honlama	L	LE	S	S10	RE1	W1	Biçim	Geometri
												Sağ keme yönlü uç gösterilmektedir
LNGU090604PNER-M	●	R	G	E	9	8.6	6	8.5	0.4	6		
LNGU090608PNER-M	●	R	G	E	9	8.6	6	8.5	0.8	6		
LNGU090612PNER-M	●	R	G	E	9	8.6	6	8.5	1.2	6		
LNGU090616PNER-M	●	R	G	E	9	8.6	6	8.5	1.6	6		
LNGU090620PNER-M	●	R	G	E	9	8.6	6	8.5	2	6		
LNGU090624PNER-M	●	R	G	E	9	8.6	6	8.5	2.4	6		
LNGU090630PNER-M	●	R	G	E	9	8.6	6	8.5	3	6		
LNGU090640PNER-M	●	R	G	E	9	8.6	6	8.5	4	6		
LNGU090604PNEL-M	●	L	G	E	9	8.6	6	8.5	0.4	6		
LNGU090608PNEL-M	●	L	G	E	9	8.6	6	8.5	0.8	6		
LNGU090612PNEL-M	●	L	G	E	9	8.6	6	8.5	1.2	6		
LNGU090616PNEL-M	●	L	G	E	9	8.6	6	8.5	1.6	6		
LNGU090620PNEL-M	●	L	G	E	9	8.6	6	8.5	2	6		
LNGU090624PNEL-M	●	L	G	E	9	8.6	6	8.5	2.4	6		
LNGU090630PNEL-M	●	L	G	E	9	8.6	6	8.5	3	6		
LNGU090640PNEL-M	●	L	G	E	9	8.6	6	8.5	4	6		



1/1

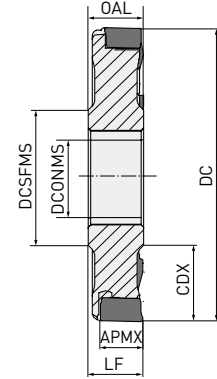
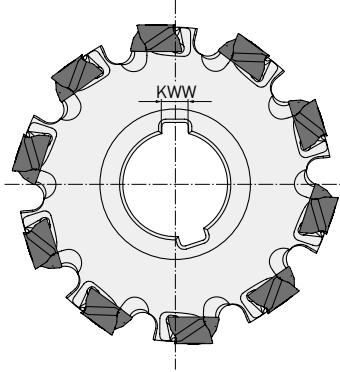
(bir kutuda 10 kesici uç)

DCV4



P

K



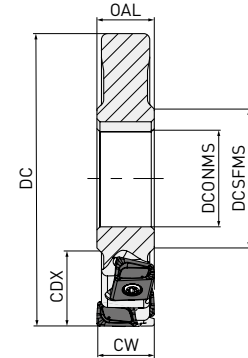
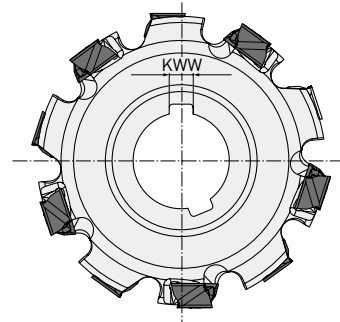
Maks. APMX: RE1 < 3.0 mm 12.2 mm
RE1 > 3.0 mm 11.4 mm

YARIM KENARLI

DC	ZEFP	LF = OAL	CDX	DCONMS	DCSFMS	KWW		
80 – 99.9	8	18	20.0	27	40	7	—	LNGU13
100 – 124.9	10		27.0	32	46	8	—	
125 – 159.9	12		35.0	40	55	10	—	
160 – 200	14		52.5	40	55	10	—	

1/1

15 Vc



Azami Genişlik CW: 24 mm

TAM KENARLI

DC	ZEFP	CW	CDX	DCONMS	DCSFMS	KWW		
80 – 99.9	4	18–24	20.0	27	40	7	—	LNGU13
100 – 124.9	5	18–24	27.0	32	46	8	—	
125 – 159.9	6	18–24	35.0	40	55	10	—	
160 – 200	7	18–24	52.5	40	55	10	—	

1/1

1. Her bir ölçü için birden çok seviyeli tasarımlar mevcuttur. Detayları verilmeyen geometriler için lütfen teknik departmanımız ile iletişime geçiniz. (MMC Hartmetall GmbH - huseyin.sakizlioglu@mmchg.com.tr)

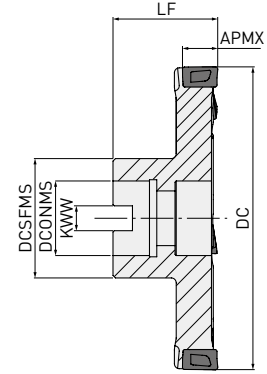
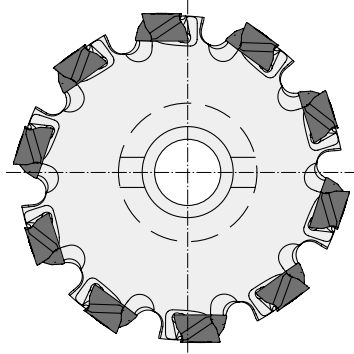
15 Vc

DCV4



P

K



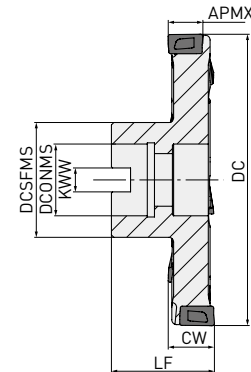
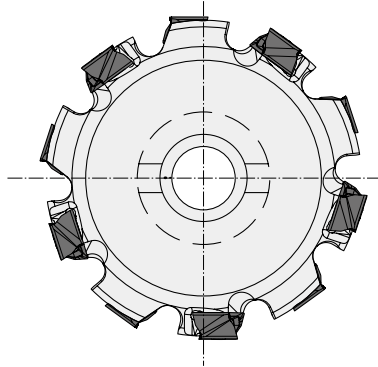
YARIM KENARLI MALAFA TİP

Maks. APMX: RE1 < 3.0 mm 12.2 mm
RE1 > 3.0 mm 11.4 mm

DC	ZEFP	LF	CDX	DCONMS	DCSFMS	KWW		
80 – 99.9	8 – 10	50	20	27	40	12.4	—	LNGU13
100 – 124.9	10 – 12	60	27	32	46	14.4	—	
125 – 159.9	12 – 14	60	35	40	55	16.4	—	
160 – 200	14 – 20	70	52.5	40	55	16.4	—	

1/1

15



Azami Genişlik CW: 24 mm

TAM KENARLI MALAFA TİP

DC	ZEFP	LF	CW	CDX	DCONMS	DCSFMS	KWW		
80 – 99.9	8 – 10	50	18-24	20	27	40	12.4	—	LNGU13
100 – 124.9	10 – 12	60	18-24	27	32	46	14.4	—	
125 – 159.9	12 – 14	60	18-24	35	40	55	16.4	—	
160 – 200	14 – 20	70	18-24	52.5	40	55	16.4	—	

1/1

1. Her bir ölçü için birden çok seviyeli tasarımlar mevcuttur. Detayları verilmeyen geometriler için lütfen teknik departmanımız ile iletişime geçiniz. (MMC Hartmetall GmbH - huseyin.sakizlioglu@mmchg.com.tr)

15

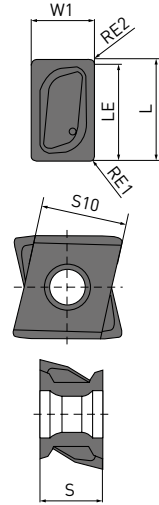
DCV4

YEDEK PARÇALAR

Takım Tutucu Tipi		TQ (Nm)		
	Uç Vidası	Sıkma Torku	Anahtar	Sıkıştırma Önleyici Yağlayıcı
DCV4 LNGU13080PNE	TS406	3.5	TKY15T	MK1KS

KESİCİ UÇ

Sipariş No.	MP6120 VP15TF	Kesme yönü	Sınıf	Montaj	L	LE	S	S10	RE1	RE2	W1	Biçim	Geometri Sağ keme yönlü uç gösterilmektedir
LNGU130804PNER-M	●	R	G	E	13.0	12.2	8.0	11.0	0.4	0.8	8.0		
LNGU130804PNEL-M	●	L	G	E	13.0	12.2	8.0	11.0	0.4	0.8	8.0		
LNGU130808PNER-M	●	R	G	E	13.0	12.2	8.0	11.0	0.8	0.8	8.0		
LNGU130808PNEL-M	●	L	G	E	13.0	12.2	8.0	11.0	0.8	0.8	8.0		
LNGU130812PNER-M	●	R	G	E	13.0	12.2	8.0	11.0	1.2	0.8	8.0		
LNGU130812PNEL-M	●	L	G	E	13.0	12.2	8.0	11.0	1.2	0.8	8.0		
LNGU130816PNER-M	●	R	G	E	13.0	12.2	8.0	11.0	1.6	0.8	8.0		
LNGU130816PNEL-M	●	L	G	E	13.0	12.2	8.0	11.0	1.6	0.8	8.0		
LNGU130820PNER-M	●	R	G	E	13.0	12.2	8.0	11.0	2.0	0.8	8.0		
LNGU130820PNEL-M	●	L	G	E	13.0	12.2	8.0	11.0	2.0	0.8	8.0		
LNGU130824PNER-M	●	R	G	E	13.0	12.2	8.0	11.0	2.4	0.8	8.0		
LNGU130824PNEL-M	●	L	G	E	13.0	12.2	8.0	11.0	2.4	0.8	8.0		
LNGU130830PNER-M	●	R	G	E	13.0	11.4	8.0	11.0	3.0	1.6	8.0		
LNGU130830PNEL-M	●	L	G	E	13.0	11.4	8.0	11.0	3.0	1.6	8.0		
LNGU130840PNER-M	●	R	G	E	13.0	11.4	8.0	11.0	4.0	1.6	8.0		
LNGU130840PNEL-M	●	L	G	E	13.0	11.4	8.0	11.0	4.0	1.6	8.0		
LNGU130850PNER-M	●	R	G	E	13.0	11.4	8.0	11.0	5.0	1.6	8.0		
LNGU130850PNEL-M	●	L	G	E	13.0	11.4	8.0	11.0	5.0	1.6	8.0		
LNGU130804PNER-R	●	R	G	E	13.0	12.2	8.0	11.0	0.4	0.8	8.0		
LNGU130804PNEL-R	●	L	G	E	13.0	12.2	8.0	11.0	0.4	0.8	8.0		
LNGU130808PNER-R	●	R	G	E	13.0	12.2	8.0	11.0	0.8	0.8	8.0		
LNGU130808PNEL-R	●	L	G	E	13.0	12.2	8.0	11.0	0.8	0.8	8.0		
LNGU130812PNER-R	●	R	G	E	13.0	12.2	8.0	11.0	1.2	0.8	8.0		
LNGU130812PNEL-R	●	L	G	E	13.0	12.2	8.0	11.0	1.2	0.8	8.0		
LNGU130816PNER-R	●	R	G	E	13.0	12.2	8.0	11.0	1.6	0.8	8.0		
LNGU130816PNEL-R	●	L	G	E	13.0	12.2	8.0	11.0	1.6	0.8	8.0		
LNGU130820PNER-R	●	R	G	E	13.0	12.2	8.0	11.0	2.0	0.8	8.0		
LNGU130820PNEL-R	●	L	G	E	13.0	12.2	8.0	11.0	2.0	0.8	8.0		
LNGU130824PNER-R	●	R	G	E	13.0	12.2	8.0	11.0	2.4	0.8	8.0		
LNGU130824PNEL-R	●	L	G	E	13.0	12.2	8.0	11.0	2.4	0.8	8.0		
LNGU130830PNER-R	●	R	G	E	13.0	11.4	8.0	11.0	3.0	1.6	8.0		
LNGU130830PNEL-R	●	L	G	E	13.0	11.4	8.0	11.0	3.0	1.6	8.0		
LNGU130840PNER-R	●	R	G	E	13.0	11.4	8.0	11.0	4.0	1.6	8.0		
LNGU130840PNEL-R	●	L	G	E	13.0	11.4	8.0	11.0	4.0	1.6	8.0		
LNGU130850PNER-R	●	R	G	E	13.0	11.4	8.0	11.0	5.0	1.6	8.0		
LNGU130850PNEL-R	●	L	G	E	13.0	11.4	8.0	11.0	5.0	1.6	8.0		



(bir kutuda 10 kesici uç)

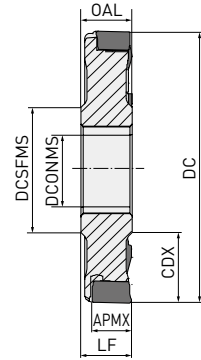
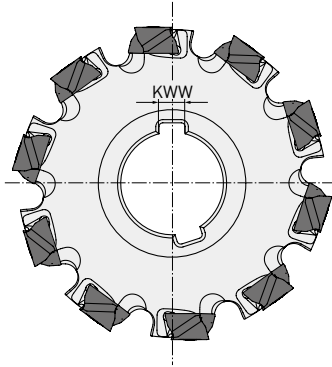
● : Avrupa da standart stok. □ : Sadece sipariş üzerine üretilir.

DCV5



P

K



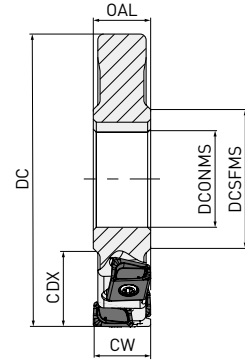
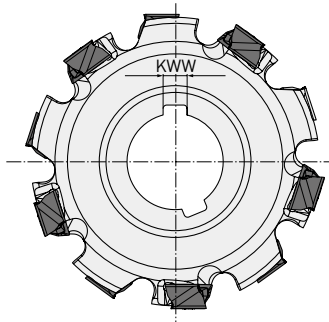
Maks. APMX: RE1 < 3.0 mm 16.2 mm
RE1 > 3.0 mm 15.4 mm

YARIM KENARLI

DC	ZEFP	LF = OAL	CDX	DCONMS	DCSFMS	KWW		
100 – 124.9	8	23	27.0	32	46	8	—	LNGU17
125 – 159.9	10		35.0	40	55	10	—	
160 – 199.9	12		52.5	40	55	10	—	
200 – 250	16		65.0	50	70	12	—	

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15



Azami Genişlik CW: 32 mm

TAM KENARLI

DC	ZEFP	CW	CDX	DCONMS	DCSFMS	KWW		
100 – 124.9	8	23 – 32	27.0	32	46	8	—	LNGU17
125 – 159.9	10		35.0	40	55	10	—	
160 – 199.9	12		52.5	40	55	10	—	
200 – 250	16		65.0	50	70	12	—	

1/1

1. Her bir ölçü için birden çok seviyeli tasarımlar mevcuttur. Detayları verilmeyen geometriler için lütfen teknik departmanımız ile iletişime geçiniz. (MMC Hartmetall GmbH - huseyin.sakizlioglu@mmchg.com.tr)

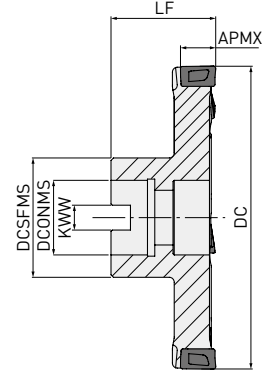
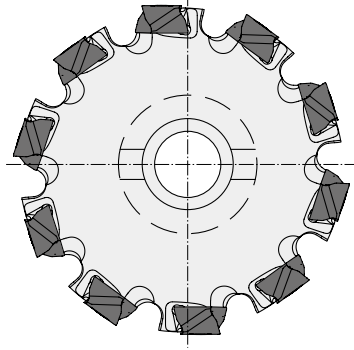
15

DCV5



P

K

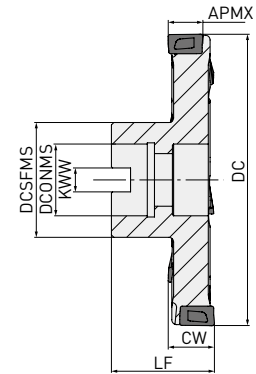
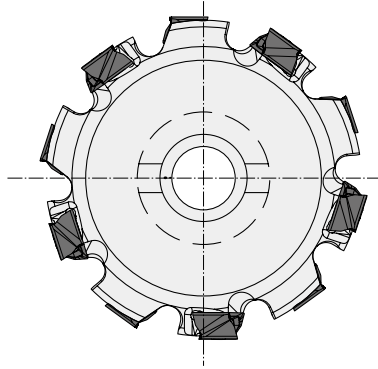


Maks. APMX: RE1 < 3.0 mm 16.2 mm
RE1 > 3.0 mm 15.4 mm

YARIM KENARLI MALAFA TİP

DC	ZEFP	LF	CDX	DCONMS	DCSFMS	KWW		
100 – 124.9	8 – 10	50	27	32	46	14.4	—	LNGU17
125 – 159.9	10 – 12	60	35	40	55	16.4	—	
160 – 199.9	12 – 14	60	52.5	40	55	16.4	—	
200 – 250.0	14 – 20	70	65	40	70	16.4	—	

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Azami Genişlik CW: 32 mm

TAM KENARLI MALAFA TİP

DC	ZEFP	LF	CW	CDX	DCONMS	DCSFMS	KWW		
100 – 124.9	8 – 10	60	23 – 32	27	32	46	14.4	—	LNGU17
125 – 159.9	10 – 12	60		35	40	55	16.4	—	
160 – 199.9	12 – 14	70		52.5	40	55	16.4	—	
200 – 250.0	14 – 20	70		65	40	70	16.4	—	

1/1

1. Her bir ölçü için birden çok seviyeli tasarımlar mevcuttur. Detayları verilmeyen geometriler için lütfen teknik departmanımız ile iletişime geçiniz. (MMC Hartmetall GmbH - huseyin.sakizlioglu@mmchg.com.tr)

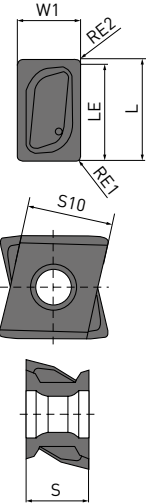
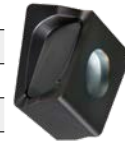
DCV5

YEDEK PARÇALAR

Takım Tutucu Tipi	Uç Vidası	TQ (Nm)	Anahtar	Sıkışma Önleyici Yağlayıcı
DCV5 LNGU17100PNEOR	TS53	7.5	TKY25T	MK1KS

KESİCİ UÇ

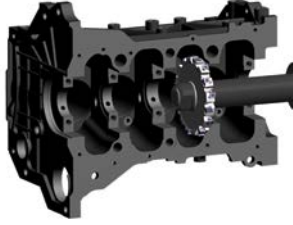
Sipariş No.	MP6120	VP15TF	Kesme yönü	Sınıf	Honlama	L	LE	S	S10	RE1	RE2	W1	D1	Biçim	Geometri Sağ keme yönlü uç gösterilmektedir
LNGU171004PNER-R	●	●	R	G	E	17.0	16.2	10.0	13.0	0.4	0.8	10.0	5.5		
LNGU171004PNEL-R	●	●	L	G	E	17.0	16.2	10.0	13.0	0.4	0.8	10.0	5.5		
LNGU171008PNER-R	●	●	R	G	E	17.0	16.2	10.0	13.0	0.8	0.8	10.0	5.5		
LNGU171008PNEL-R	●	●	L	G	E	17.0	16.2	10.0	13.0	0.8	0.8	10.0	5.5		
LNGU171012PNER-R	●	●	R	G	E	17.0	16.2	10.0	13.0	1.2	0.8	10.0	5.5		
LNGU171012PNEL-R	●	●	L	G	E	17.0	16.2	10.0	13.0	1.2	0.8	10.0	5.5		
LNGU171016PNER-R	●	●	R	G	E	17.0	16.2	10.0	13.0	1.6	0.8	10.0	5.5		
LNGU171016PNEL-R	●	●	L	G	E	17.0	16.2	10.0	13.0	1.6	0.8	10.0	5.5		
LNGU171020PNER-R	●	●	R	G	E	17.0	16.2	10.0	13.0	2.0	0.8	10.0	5.5		
LNGU171020PNEL-R	●	●	L	G	E	17.0	16.2	10.0	13.0	2.0	0.8	10.0	5.5		
LNGU171024PNER-R	●	●	R	G	E	17.0	16.2	10.0	13.0	2.4	0.8	10.0	5.5		
LNGU171024PNEL-R	●	●	L	G	E	17.0	16.2	10.0	13.0	2.4	0.8	10.0	5.5		
LNGU171030PNER-R	●	●	R	G	E	17.0	15.4	10.0	13.0	3.0	1.6	10.0	5.5		
LNGU171030PNEL-R	●	●	L	G	E	17.0	15.4	10.0	13.0	3.0	1.6	10.0	5.5		
LNGU171040PNER-R	●	●	R	G	E	17.0	15.4	10.0	13.0	4.0	1.6	10.0	5.5		
LNGU171040PNEL-R	●	●	L	G	E	17.0	15.4	10.0	13.0	4.0	1.6	10.0	5.5		
LNGU171050PNER-R	●	●	R	G	E	17.0	15.4	10.0	13.0	5.0	1.6	10.0	5.5		
LNGU171050PNEL-R	●	●	L	G	E	17.0	15.4	10.0	13.0	5.0	1.6	10.0	5.5		
LNGU171060PNER-R	●	●	R	G	E	17.0	15.4	10.0	13.0	6.0	1.6	10.0	5.5		
LNGU171060PNEL-R	●	●	L	G	E	17.0	15.4	10.0	13.0	6.0	1.6	10.0	5.5		
LNGU171070PNER-R	●	●	R	G	E	17.0	15.4	10.0	13.0	7.0	1.6	10.0	5.5		
LNGU171070PNEL-R	●	●	L	G	E	17.0	15.4	10.0	13.0	7.0	1.6	10.0	5.5		



(bir kutuda 10 kesici uç)

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UYGULAMA ÖRNEKLERİ

Takım	DCV4 Ø 300 mm	DCV4 Ø 160 mm
Kesici Uç (Kalite)	LNGU130804PNER-M (VP15TF)	LNGU130804PNER-M (VP15TF)
	Fren Kaliperi (DIN GGG40.3)	Cylinder Block (DIN GG25)
İş Parçası		
n (dk ⁻¹)	120	500
Vc (m/dk)	113	201
fz (mm/diş)	0.09 – 0.24	0.14
Vf (mm/dk)	150 – 400	500
ap (mm)	1.0 – 2.0	1.0
Kesme Modu	Kuru Kesme	Kuru Kesme
Makine	İşleme Merkezi	Yatay

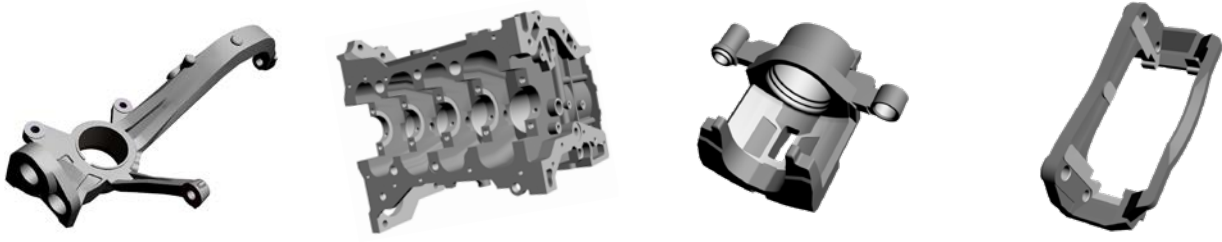
Sonuçlar

Geleneksel ürünlerden yaklaşık 2 kat daha uzun takım ömrü. Mükemmel boyutsal hassasiyet ve yüzey kalitesi. Geliştirilmiş işleme verimliliği, takım maliyetlerinde %30 düşüş sağlamıştır

Geleneksel ürünlerden 1.5 kat daha iyi işleme verimliliği. Yaklaşık 2 kat takım ömrü. Minimum sesle istikrarlı kesme ve iyi yüzey kalitesi. Geliştirilmiş işleme verimliliği ve daha uzun takım ömrü.

1. Yukarıdaki uygulama örnekleri müşterinin uygulama örnekleridir ve önerilen koşullardan farklı olabilir.

MÜKEMMEL KENAR FREZE SERİSİ



En son teknolojiden, malzemelerden ve kesici geometrisinden yararlanın.

BİLGİ

	DCV3	DCV4	DCV5
Malzeme	P K	P K	P K
Düşük Kesme Direnci	◎	◎	◎
Dayanıklılık	◎	◎	◎
Kesici Uç Biçimi		Dikey	Dikey
ZNF		Çift Taraflı Kesici Uç	Çift Taraflı Kesici Uç
ZNP	4	4	4
Yarım Kenarlı Maks. Kesme Derinliği APMX	RE < 4.0 mm 8.6 mm	RE < 3.0 mm 12.2 mm	RE < 3.0 mm 16.2 mm
	RE ≥ 3.0mm 11.4 mm	RE ≥ 3.0mm 11.4 mm	RE ≥ 3.0 mm 15.4 mm
Tam Kenarlı Max. DC	Ø 300 mm	Ø 400 mm	Ø 660 mm

DCV3 / DCV4 / DCV5

ÖNERİLEN KESME KOŞULLARI

KÖŞE FREZELEME

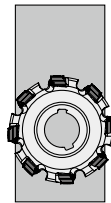
P	Çelik	≤180HB	MP6120 VP15TF	150 (130 – 180)	≤APMX	<10%	0.10 (0.08 – 0.15)
						<30%	
						≤50%	
K	Karbon Çeliği/ Alaşımlı Çelik	180 – 280HB	MP6120 VP15TF	150 (130 – 180)	≤2.0	≤50%	0.12 (0.08 – 0.20)
					≤4.0	<10%	0.12 (0.08 – 0.20)
					≤4.0	≤50%	0.10 (0.08 – 0.15)
					≤APMX	<10%	0.10 (0.08 – 0.15)
					≤APMX	≤50%	0.10 (0.08 – 0.12)
	Dökme Demir	Çekme Mukavemeti ≤ 350MPa	VP15TF	150 (130 – 180)	≤2.0	≤50%	0.12 (0.08 – 0.20)
					≤4.0	<10%	0.12 (0.08 – 0.20)
					≤4.0	≤50%	0.10 (0.08 – 0.15)
					≤APMX	<10%	0.10 (0.08 – 0.15)
					≤APMX	≤50%	0.10 (0.08 – 0.12)
	Gri Dökme Demir	Çekme Mukavemeti ≤ 450MPa	VP15TF	130 (110 – 160)	≤2.0	≤50%	0.12 (0.08 – 0.20)
					≤4.0	<10%	0.12 (0.08 – 0.20)
					≤4.0	≤50%	0.10 (0.08 – 0.15)
					≤APMX	<10%	0.10 (0.08 – 0.15)
					≤APMX	≤50%	0.10 (0.08 – 0.12)
	Duktil Dökme Demir	Çekme Mukavemeti ≤ 800MPa	VP15TF	130 (110 – 160)	≤2.0	≤50%	0.12 (0.08 – 0.20)
					≤4.0	<10%	0.12 (0.08 – 0.20)
					≤4.0	≤50%	0.10 (0.08 – 0.15)
					≤APMX	<10%	0.10 (0.08 – 0.15)
					≤APMX	≤50%	0.10 (0.08 – 0.12)

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YÜZEY FREZELEME

P	Çelik	≤180HB	MP6120 VP15TF	150 (130 – 180)	≤APMX	0.10 (0.08 – 0.15)
	Karbon Çeliği/ Alaşımlı Çelik	180 – 280HB	MP6120 VP15TF	150 (130 – 180)	≤2.0	0.12 (0.08 – 0.20)
					≤4.0	0.10 (0.08 – 0.15)
K	Dökme Demir	Çekme Mukavemeti ≤ 350MPa	VP15TF	150 (130 – 180)	≤APMX	0.10 (0.08 – 0.12)
					≤2.0	0.12 (0.08 – 0.20)
					≤4.0	0.10 (0.08 – 0.15)
					≤APMX	0.10 (0.08 – 0.12)
					≤2.0	0.12 (0.08 – 0.20)
					≤4.0	0.10 (0.08 – 0.15)
	Gri Dökme Demir	Çekme Mukavemeti ≤ 450MPa	VP15TF	150 (130 – 180)	≤APMX	0.10 (0.08 – 0.12)
					≤2.0	0.12 (0.08 – 0.20)
					≤4.0	0.10 (0.08 – 0.15)
Duktil Dökme Demir	Çekme Mukavemeti ≤ 800MPa	VP15TF	130 (110 – 160)	≤2.0	0.12 (0.08 – 0.20)	
				≤4.0	0.10 (0.08 – 0.15)	
				≤APMX	0.10 (0.08 – 0.12)	



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