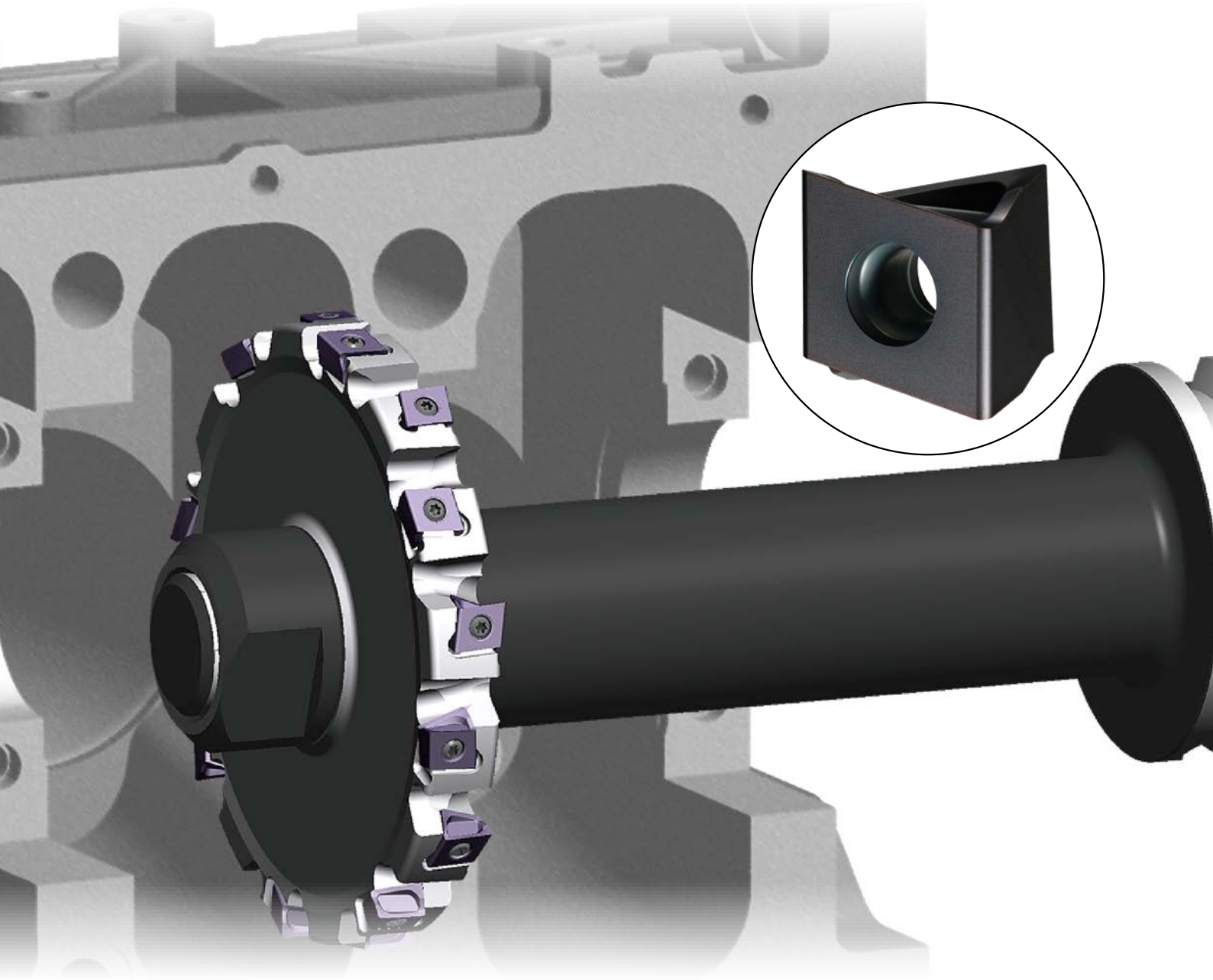
DCV-SERIE

SEITEN- / PLAN- UND NUTFRÄSEN MIT TANGENTIALER DOPPELSEITIGER WSP BEI NIEDRIGEM SCHNITTWIDERSTAND



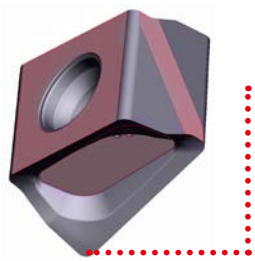
Mplus...

DCV3 / DCV4 / DCV5

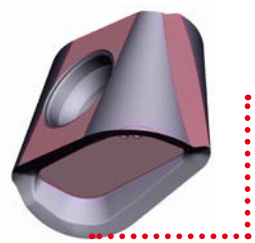
TANGENTIALE WSP

WIRTSCHAFTLICHES WSP-KONZEPT
Tangential-WSP mit vier stabilen Schneidkanten.

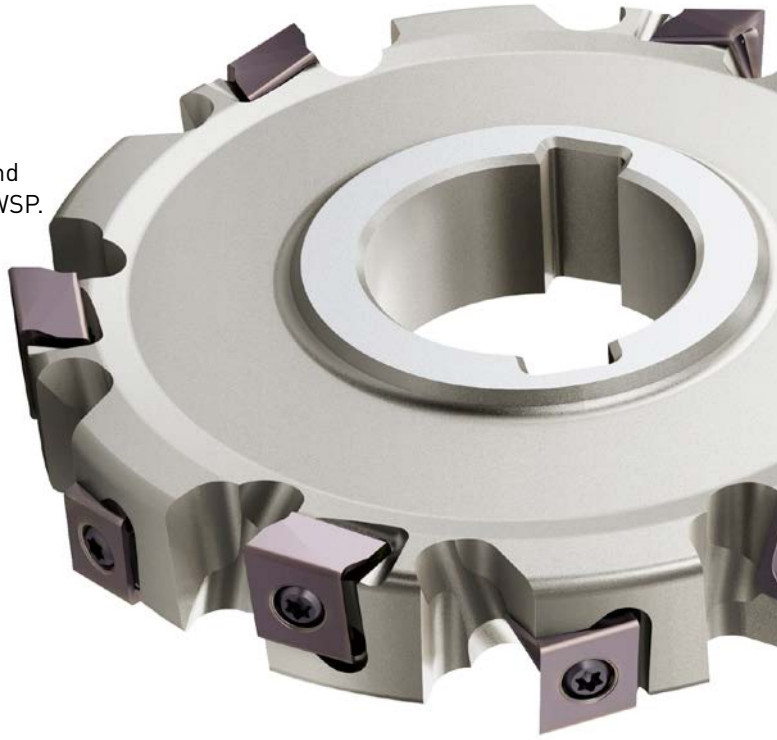
STABILE KLEMMUNG
Das spezielle Design gewährleistet jederzeit eine stabile und sichere Klemmung, auch mit verschiedensten Radien der WSP.



Eckradius R 0.4 mm

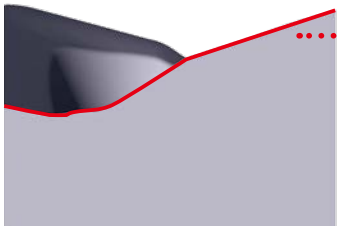


Eckradius max. R 4.0 mm für DCV3
Eckradius max. R 5.0 mm für DCV4
Eckradius max. R 7.0 mm für DCV5

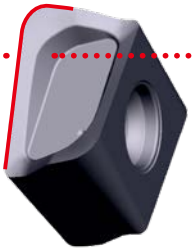


Fräskörper mit WSP: GAMF: +8° GAMP: +3°

GERINGER SCHNITTWIDERSTAND KOMBINIERT MIT HERVORRAGENDER STABILITÄT



Robuste Schneidkante (konvex)

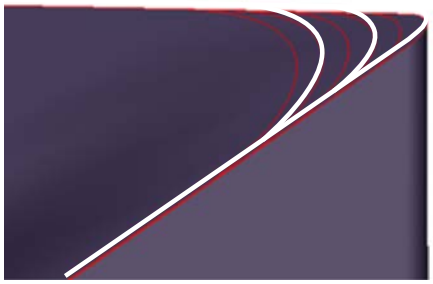


Zweistufig geformter Spanwinkel

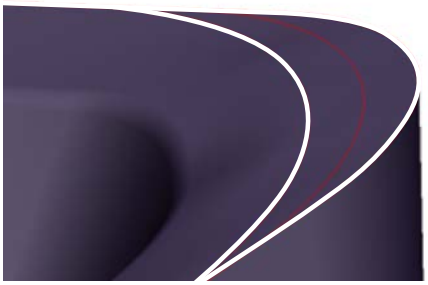
HOCHPRÄZISE ECKRADIEN

DIE GESCHLIFFENE WSP ERREICHT AUCH MIT UNTERSCHIEDLICHSTEN ECKRADIEN EIN PRÄZISES BEARBEITUNGSERGEBNIS.

R 0.4 – R 3.0 mm

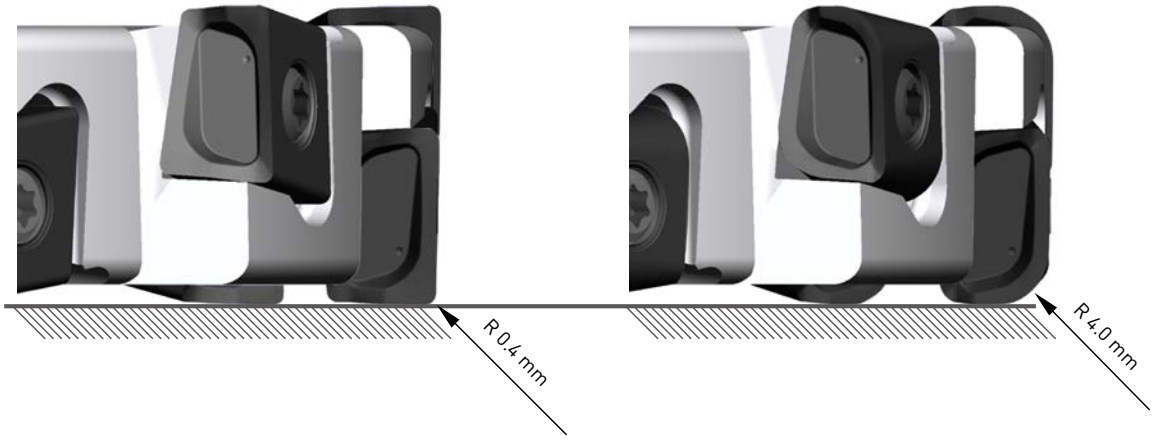


R 3.0 – R 7.0 mm



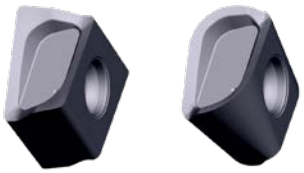
GLEICHBLEIBENDE GEOMETRIE

Keine Änderung des Durchmessers oder der Schnittbreite durch die Verwendung unterschiedlichster Eckradien.

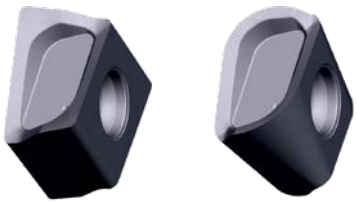


GROSSE AUSWAHL AN STANDARD-ECKRADIEN VERFÜGBAR

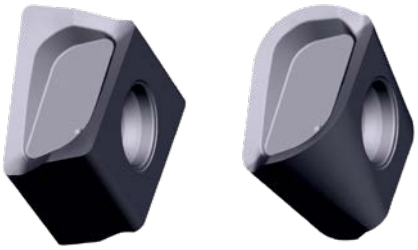
DCV3 = R 0.4 – R 4.0 mm



DCV4 = R 0.4 – R 5.0 mm



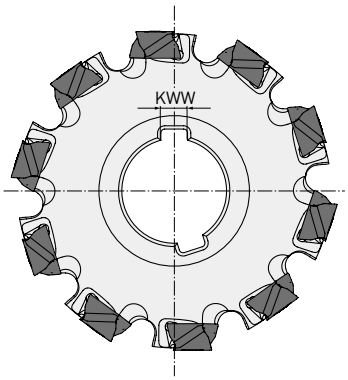
DCV5 = R 0.4 – R 7.0 mm

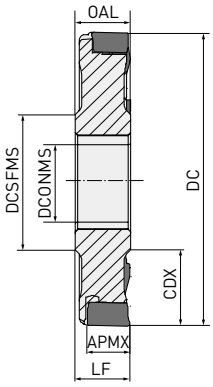


DCV3

90° KAPR

P K





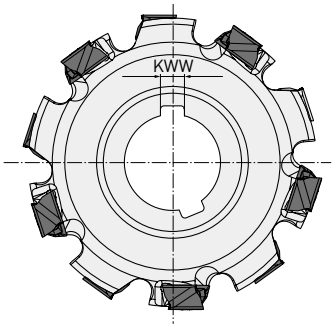
Max. APMX: 8.6 mm

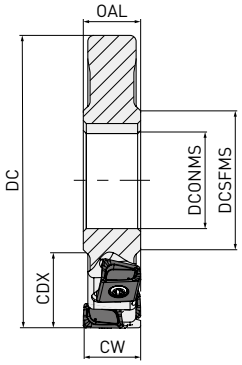
EINSEITIG

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

1/1

15 Vc





Größte Schnittbreite CW: 17.2 mm

BEIDSEITIG

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

1/1

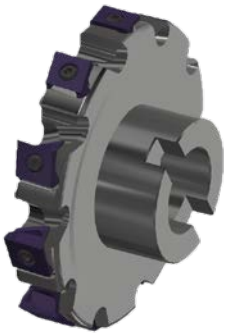
1. Hinsichtlich nicht aufgeführter Geometrien setzen Sie sich bitte mit uns in Verbindung (MMC Hartmetall GmbH - special@mmchg.de).

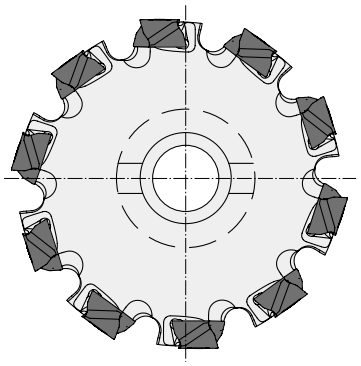
15 Vc

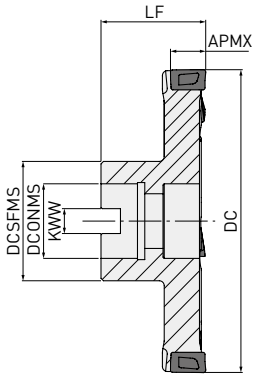
DCV3

90° KAPR

P K







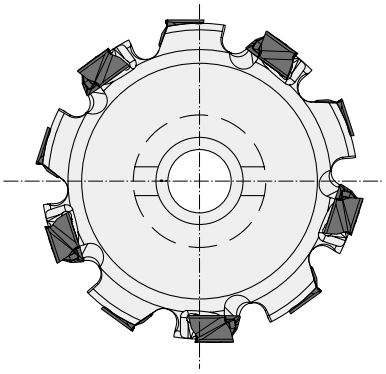
Max. APMX: 8.6 mm

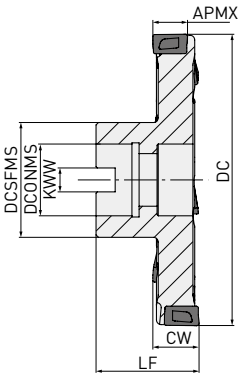
EINSEITIGER AUFSTECKFRÄSER

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 Vc





Größte Schnittbreite CW: 17.2 mm

BEIDSEITIGER AUFSTECKFRÄSER

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. Hinsichtlich nicht aufgeführter Geometrien setzen Sie sich bitte mit uns in Verbindung (MMC Hartmetall GmbH - special@mmchg.de).

15 Vc

DCV3

ERSATZTEILE

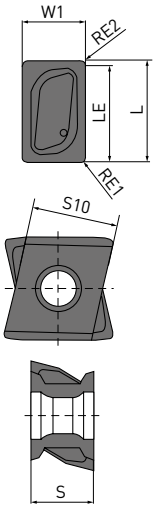
Referenzprodukt	Spannschraube	TQ (Nm) Spannmoment	Schlüssel	Kupferpaste
DCV3 LNGU0906◌◌PNE◌M	TS304	1.5	TKY08W	MK1KS

WSP

Bestellnummer	VP15TF	Ausführung	Klasse	Verfasung	L	LE	S	S10	RE1	W1
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

Form

Geometrie
Abb. zeigt rechte Ausführung



1/1

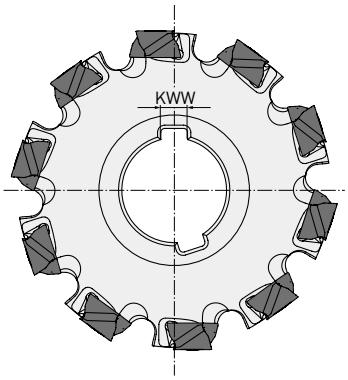
(10 WSP pro VPE)

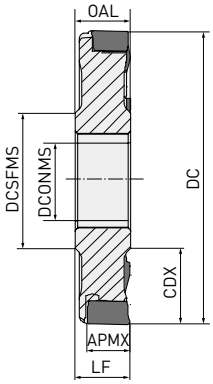
● : Lagerstandard. ☐ : Herstellung nur auf Anfrage.

DCV4

90° KAPR

P K





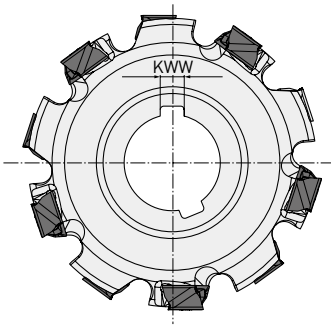
Max. APMX: RE1 < 3.0 mm 12.2 mm
RE1 > 3.0 mm 11.4 mm

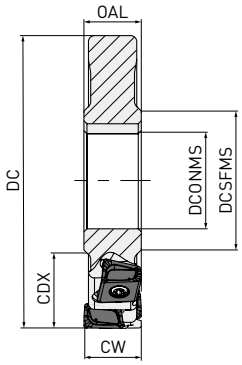
EINSEITIG

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





Größte Schnittbreite CW: 24 mm

BEIDSEITIG

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

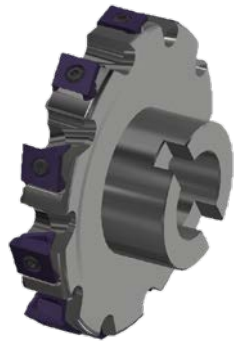
1. Hinsichtlich nicht aufgeführter Geometrien setzen Sie sich bitte mit uns in Verbindung (MMC Hartmetall GmbH - special@mmchg.de).

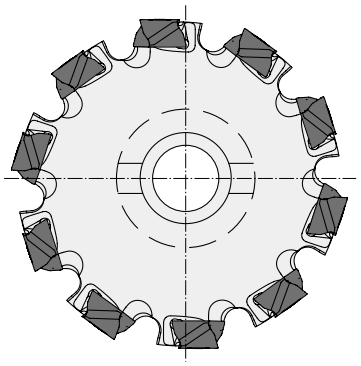
15 Vc

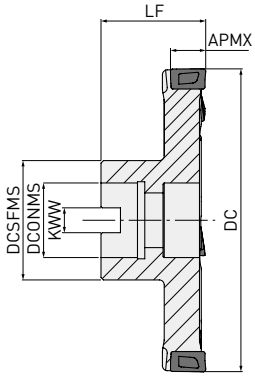
DCV4

90° KAPR

P K







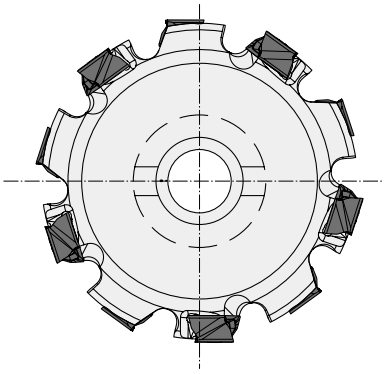
EINSEITIGER AUFSTECKFRÄSER

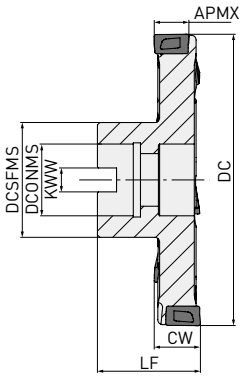
Max. APMX: RE1 < 3.0 mm 12.2 mm
RE1 > 3.0 mm 11.4 mm

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 Vc





Größte Schnittbreite CW: 24 mm

BEIDSEITIGER AUFSTECKFRÄSER

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. Hinsichtlich nicht aufgeführter Geometrien setzen Sie sich bitte mit uns in Verbindung (MMC Hartmetall GmbH - special@mmchg.de).

15 Vc

DCV4

ERSATZTEILE

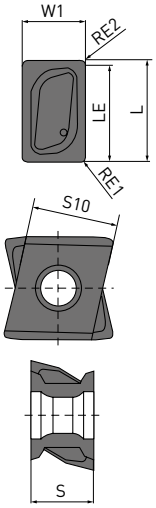
Referenzprodukt		TQ (Nm)		
	Spannschraube	Spannmoment	Schlüssel	Kupferpaste
DCV4 LNGU1308○○PNE○-○	TS406	3.5	TKY15T	MK1KS

WSP

Bestellnummer	MP6120	VP15TF	Ausführung	Klasse	Verfasung	L	LE	S	S10	RE1	RE2	W1
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

Form

Geometrie
Abb. zeigt rechte Ausführung



1/1

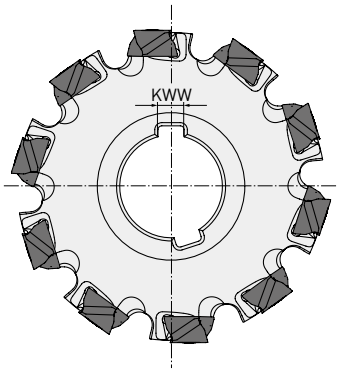
(10 WSP pro VPE)

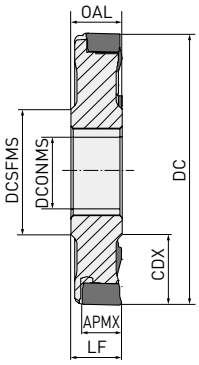
● : Lagerstandard. □ : Herstellung nur auf Anfrage.

DCV5

90° KAPR

P K





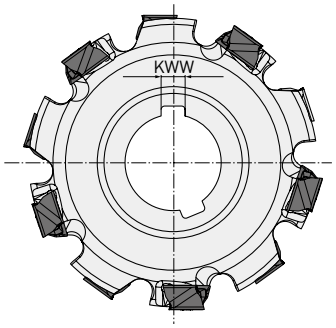
Max. APMX: RE1 < 3.0 mm 16.2 mm
RE1 > 3.0 mm 15.4 mm

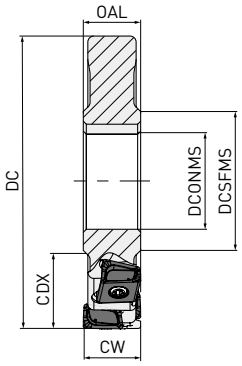
EINSEITIG

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	—	

1/1

15 Vc





Größte Schnittbreite CW: 32 mm

BEIDSEITIG

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

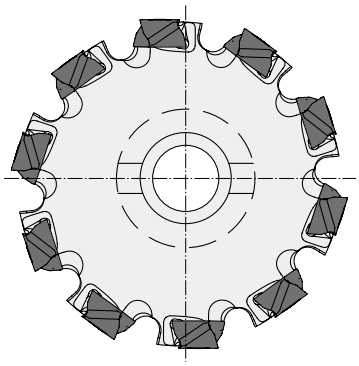
1. Hinsichtlich nicht aufgeführter Geometrien setzen Sie sich bitte mit uns in Verbindung (MMC Hartmetall GmbH - special@mmchg.de).

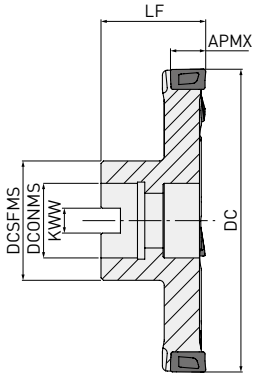
15 Vc

DCV5

90° KAPR

P K



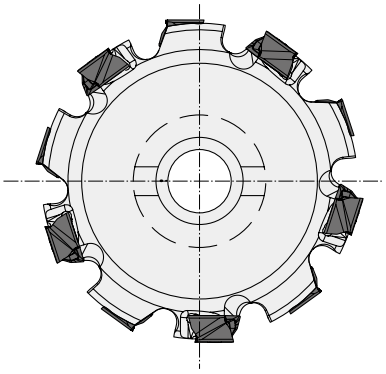


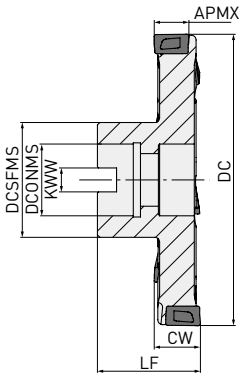
Max. APMX: RE1 < 3.0 mm 16.2 mm
RE1 > 3.0 mm 15.4 mm

EINSEITIGER AUFSTECKFRÄSER

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	—	

1/1





Größte Schnittbreite CW: 32 mm

BEIDSEITIGER AUFSTECKFRÄSER

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. Hinsichtlich nicht aufgeführter Geometrien setzen Sie sich bitte mit uns in Verbindung (MMC Hartmetall GmbH - special@mmchg.de).

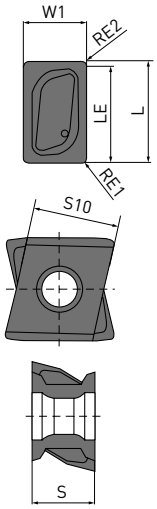
DCV5

ERSATZTEILE

Referenzprodukt	Spannschraube	TQ (Nm) Spannmoment	Schlüssel	Kupferpaste
DCV5 LNGU1710○○PNE○R	TS53	7.5	TKY25T	MK1KS

WSP

Bestellnummer	MP6120	VP15TF	Ausführung	Klasse	Verfasung	L	LE	S	S10	RE1	RE2	W1	D1	Form	Geometrie *Abb. zeigt rechte Ausführung*
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		

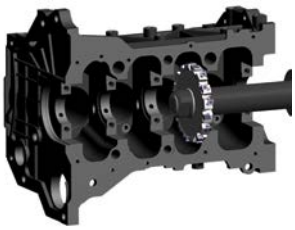


1/1

(10 WSP pro VPE)

● : Lagerstandard. □ : Herstellung nur auf Anfrage.

ANWENDUNGSBEISPIELE

Werkzeug	DCV4 Ø 300 mm	DCV4 Ø 160 mm
WSP (Sorte)	LNGU130804PNER-M (VP15TF)	LNGU130804PNER-M (VP15TF)
Werkstück	Bremssattel (DIN GGG40.3)	Zylinderblock (DIN GG25) 
n (Min^{-1})	120	500
Vc (m/min)	113	201
fz (mm/Zahn)	0.09 – 0.24	0.14
Vf (mm/min)	150 – 400	500
ap (mm)	1.0 – 2.0	1.0
Schnittmodus	Trockenbearbeitung	Trockenbearbeitung
Maschine	Bearbeitungszentrum	Horizontal
Ergebnisse	Bis zu 2x längere Standzeit gegenüber vorangegangener Methode, hervorragende Maßhaltigkeit und Oberflächengüte. Verbesserte Bearbeitungseffizienz führte zu einer 30%igen Senkung der Rüstkosten.	Steigerung der Effizienz um den Faktor 1.5 bei einer Verdoppelung der Standzeit. Stabilste Bearbeitung bei minimalen Bearbeitungsgeräuschen und hoher Oberflächengüte.

1. Bei den oben gezeigten Anwendungsbeispielen handelt es sich um Bearbeitungen beim Kunden, die von den empfohlenen Schnittdaten abweichen können.

EINZIGARTIGE DCV-SERIE

Nutzung modernster Technologien, Werkstoffe und Fräsergeometrien.

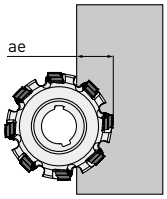
KATEGORISIERUNG

	DCV3	DCV4	DCV5
Material	P K	P K	P K
Niedriger Schnittwiderstand	◎	◎	◎
Zähigkeit	◎	◎	◎
WSP-Form		Tangential	Tangential
ZNF		2	2
ZNP	4	4	4
Einseitig Max. Schnitttiefe CW	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
Beidseitig Max. DC	Ø 300 mm	Ø 400 mm	Ø 660 mm

DCV3 / DCV4 / DCV5

SCHNITTDATENEMPFEHLUNGEN

SCHULTERFRÄSEN

	Material	Eigenschaften	Sorte	Vc	ap	ae	fz	Schnittmodus
P	Baustahl	≤180HB	MP6120 VP15TF	150 (130 – 180)	≤APMX	<10%	0.10 (0.08 – 0.15)	
						<30%		
						≤50%		
	C-Stahl/ Legierter Stahl	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)	
K	Gusseisen	Zugfestigkeit ≤ 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)	
	Grauguss	Zugfestigkeit ≤ 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)	
	Duktiles Gusseisen	Zugfestigkeit ≤ 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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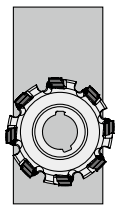
PLANFRÄSEN

	Material	Eigenschaften	Sorte	Vc	ap	fz	Schnittmodus
P	Baustahl	≤180HB	MP6120 VP15TF	150 (130 – 180)	≤APMX	0.10 (0.08 – 0.15)	
	C-Stahl/ Legierter Stahl	180 – 280HB	MP6120 VP15TF	150 (130 – 180)	≤2.0	0.12 (0.08 – 0.20)	
					≤4.0	0.10 (0.08 – 0.15)	
					≤APMX	0.10 (0.08 – 0.12)	
K	Gusseisen	Zugfestigkeit ≤ 350MPa	VP15TF	150 (130 – 180)	≤2.0	0.12 (0.08 – 0.20)	
					≤4.0	0.10 (0.08 – 0.15)	
					≤APMX	0.10 (0.08 – 0.12)	
	Grauguss	Zugfestigkeit ≤ 450MPa	VP15TF	150 (130 – 180)	≤2.0	0.12 (0.08 – 0.20)	
					≤4.0	0.10 (0.08 – 0.15)	
					≤APMX	0.10 (0.08 – 0.12)	
	Duktiles Gusseisen	Zugfestigkeit ≤ 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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