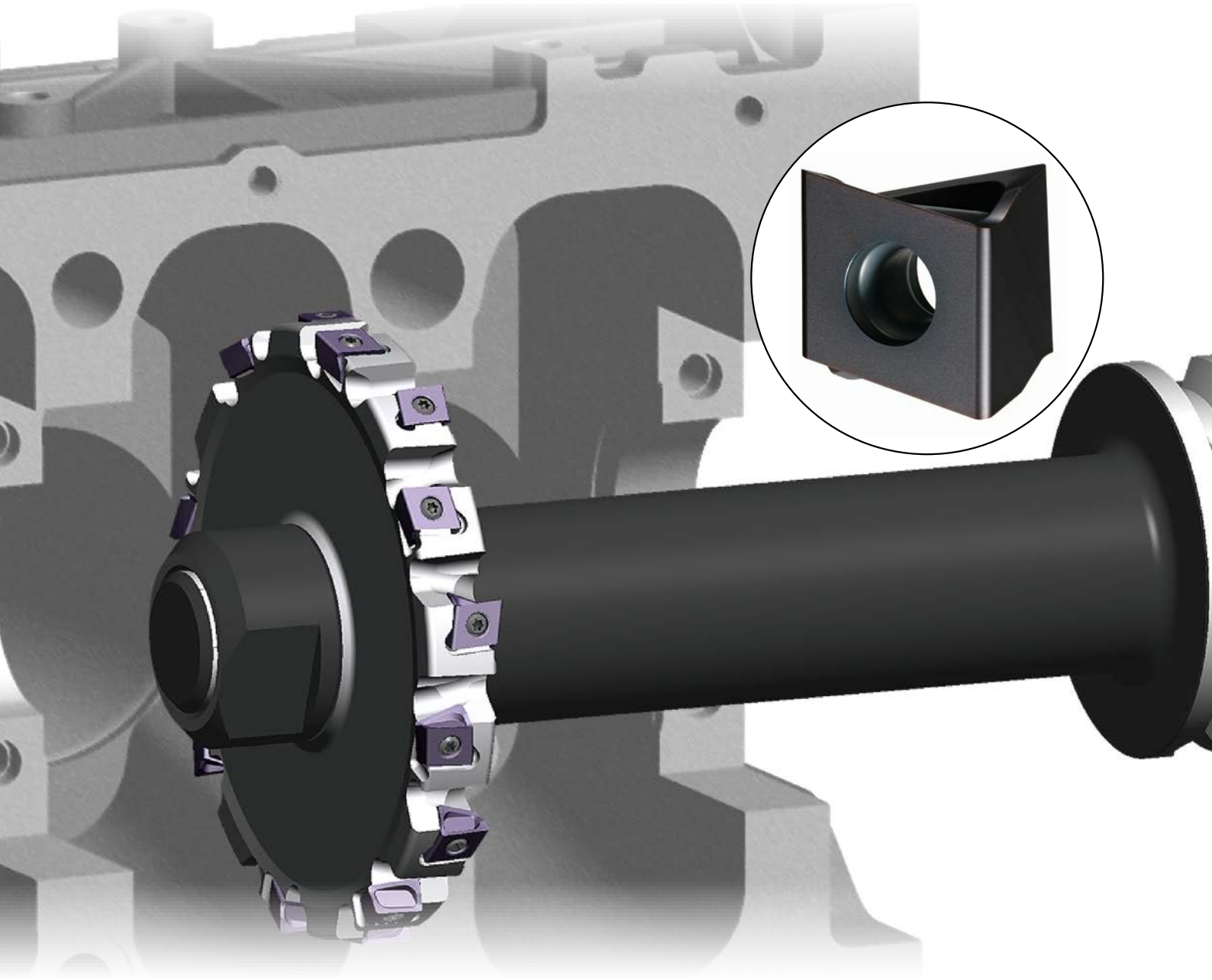

SERIE DI FRESE A DISCO

LAVORAZIONI LATERALI E FRONTALI
CON INSERTI TANGENZIALI A BASSA RESISTENZA
PER LA SERIE DCV DI FRESE A DISCO



*M*plus...

DCV3 / DCV4 / DCV5

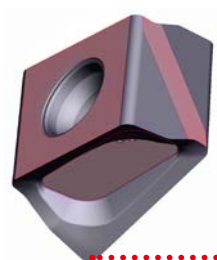
INSERTI INTERCambiabili

DESIGN ECONOMICO DEGLI INSERTI

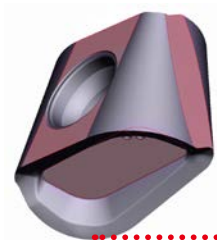
Inserto di tipo tangenziale con 4 taglienti.

BLOCCAGGIO SICURO

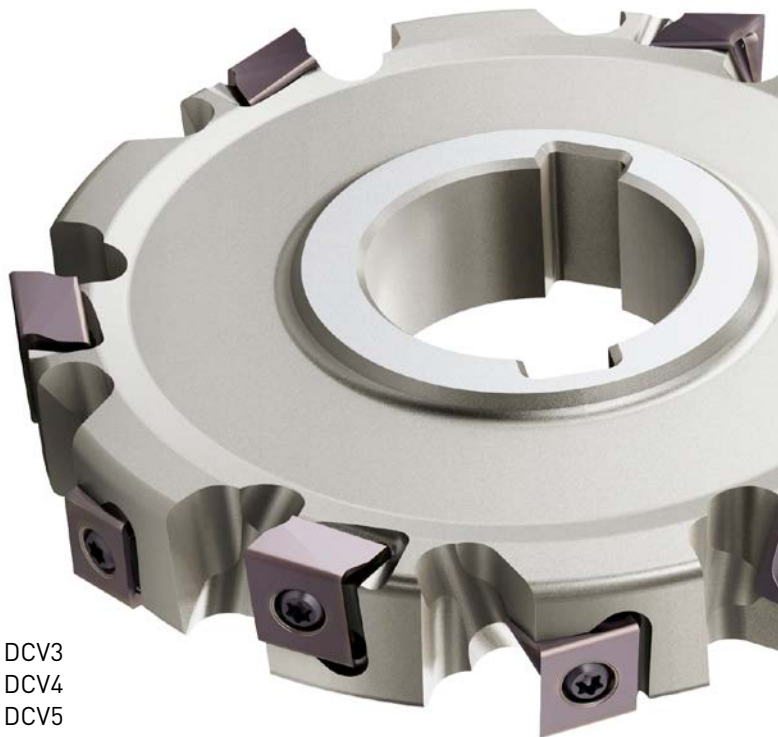
Grazie alle speciali superfici di alloggiamento, tutti gli inserti (con vari raggi) vengono fissati saldamente.



Raggio angolare R 0.4 mm

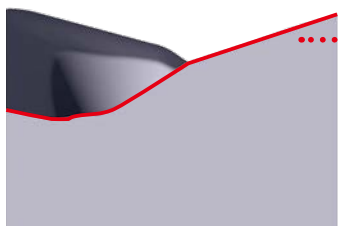


NEW Raggio angolare R 4.0 mm per DCV3
Raggio angolare R 5.0 mm per DCV4
Raggio angolare R 7.0 mm per DCV5

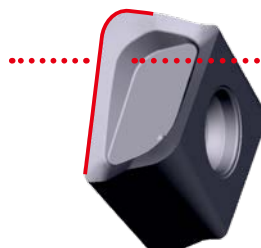


Corpo fresa con inserti: GAMF: + 8° GAMP: + 3°

INSERTO A BASSA RESISTENZA DI TAGLIO → AFFILATURA PREFERITA



Tagliente resistente
(curva convessa)

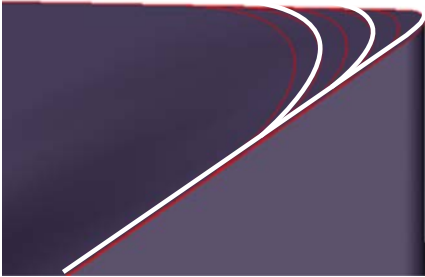


Angoli di spoglia
elicoidali a doppia fase

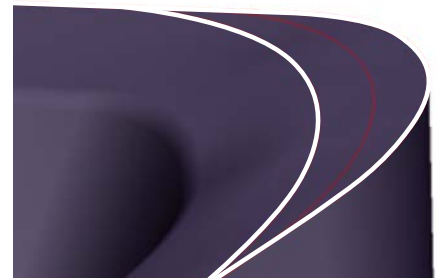
RAGGIO ANGOLARE AD ALTA PRECISIONE

INSERTI RETTIFICATI PER OTTENERE RAGGI ANGOLARI PRECISI NEL PARTICOLARI LAVORATI.

R 0.4 – R 3.0 mm

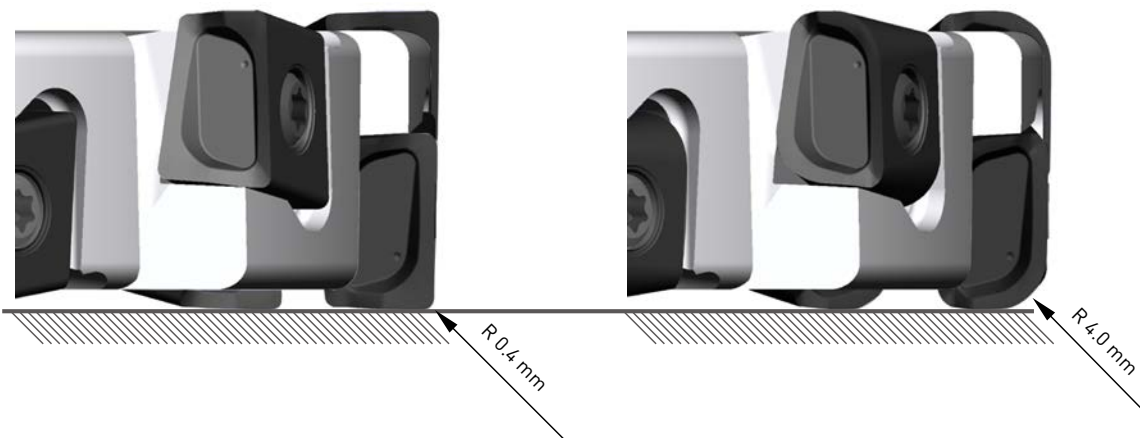


R 3.0 – R 7.0 mm



GEOMETRIA COSTANTE

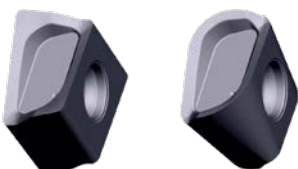
La larghezza e il diametro di taglio non cambiano nemmeno quando si utilizzano inserti con raggio angolare diverso.



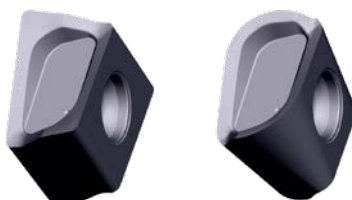
GRANDE VARIETÀ DI RAGGI ANGOLARI DISPONIBILE

NEW

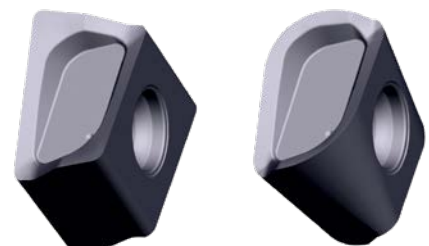
DCV3 = R 0.4 – R 4.0 mm



DCV4 = R 0.4 – R 5.0 mm

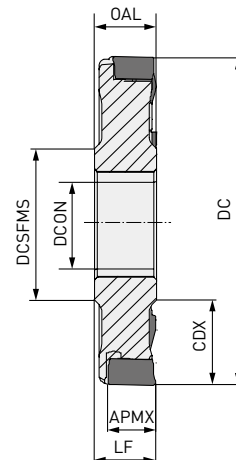
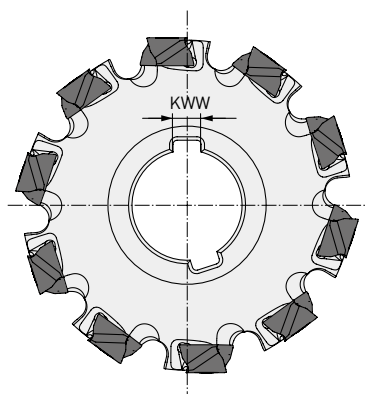


DCV5 = R 0.4 – R 7.0 mm




NEW

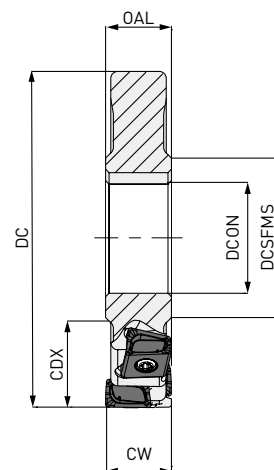
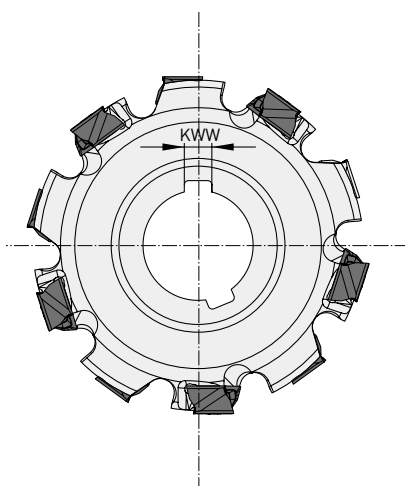
DCV3

**P** **K**

Max. APMX: 8.6 mm


TAGLIO FRONTALE

DC	ZNF	LF = OAL	CDX	DCON	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	

15 

Ampiezza max. CW: 17.2 mm

TAGLIO COMPLETO

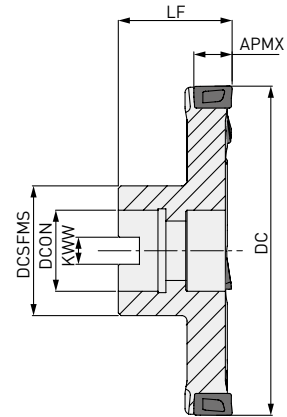
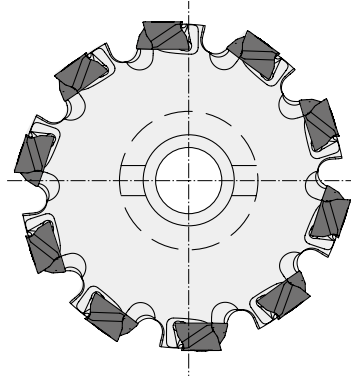
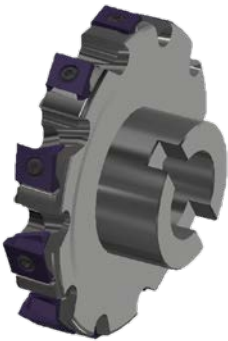
DC	ZNF	ZNP	LF = OAL	CW	CDX	DCON	DCSFMS	KWW	
80 - 99.9	4	8		12-17.2	20.0	27	40	7	
100 - 124.9	5	10	≥12	12-17.2	27.0	32	46	8	LNGU09
125 - 160.0	6	12		12-17.2	35.0	40	55	10	

1. Per ogni misura sono disponibili design multilivello. Si prega di contattare l'ufficio tecnico di MMC Italia (info@mmc-italia.it) per i dettagli di qualsiasi geometria non indicata.

15 


NEW*Mplus...*

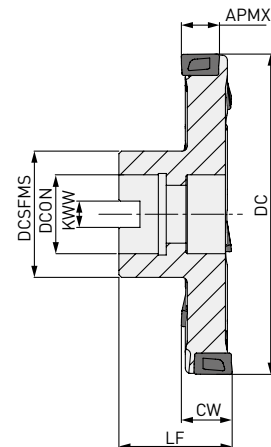
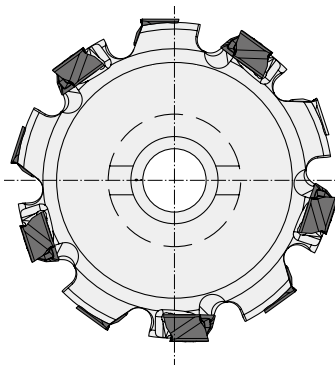
DCV3

90°
KAPR**P** **K**

Max. APMX: 8.6 mm


TAGLIO FRONTALE

DC	ZEFP	LF	CDX	DCON	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	

15 

Ampiezza max. CW: 17.2 mm

TAGLIO COMPLETO




DC	ZEFP	LF	CW	CDX	DCON	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. Per ogni misura sono disponibili design multilivello. Si prega di contattare l'ufficio tecnico di MMC Italia (info@mmc-italia.it) per i dettagli di qualsiasi geometria non indicata.


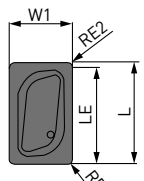
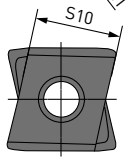
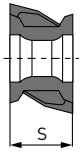
15 

DCV3

RICAMBI

Tipo portautensili		TQ (Nm)		
	Vite di serraggio	Coppia di serraggio	Chiave	Lubrificante anti-grippaggio
DCV3 LNGU090600PNEOM	TS304	1.5	TKY08W	MK1KS

INSERTI

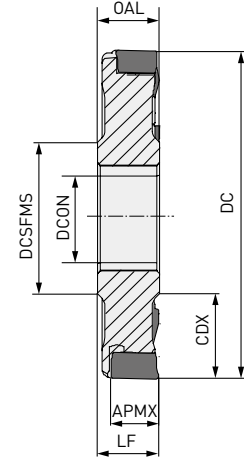
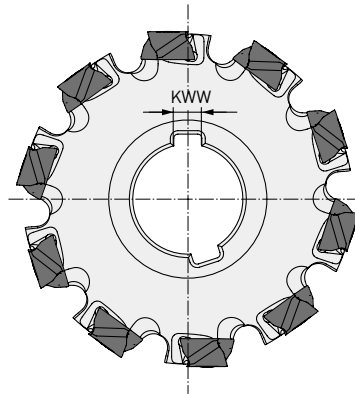
Codice ordinazione	VP15TF	Direzione	Classe	Onatura	L	LE	S	S10	RE1	W1	Forma	Geometria
NEW LNGU090604PNER-M	●	R	G	E	9	8.6	6	8.5	0.4	6	   	
NEW LNGU090608PNER-M	●	R	G	E	9	8.6	6	8.5	0.8	6		
NEW LNGU090612PNER-M	●	R	G	E	9	8.6	6	8.5	1.2	6		
NEW LNGU090616PNER-M	●	R	G	E	9	8.6	6	8.5	1.6	6		
NEW LNGU090620PNER-M	●	R	G	E	9	8.6	6	8.5	2	6		
NEW LNGU090624PNER-M	●	R	G	E	9	8.6	6	8.5	2.4	6		
NEW LNGU090630PNER-M	●	R	G	E	9	8.6	6	8.5	3	6		
NEW LNGU090640PNER-M	●	R	G	E	9	8.6	6	8.5	4	6		
NEW LNGU090604PNEL-M	●	L	G	E	9	8.6	6	8.5	0.4	6		
NEW LNGU090608PNEL-M	●	L	G	E	9	8.6	6	8.5	0.8	6		
NEW LNGU090612PNEL-M	●	L	G	E	9	8.6	6	8.5	1.2	6		
NEW LNGU090616PNEL-M	●	L	G	E	9	8.6	6	8.5	1.6	6		
NEW LNGU090620PNEL-M	●	L	G	E	9	8.6	6	8.5	2	6		
NEW LNGU090624PNEL-M	●	L	G	E	9	8.6	6	8.5	2.4	6		
NEW LNGU090630PNEL-M	●	L	G	E	9	8.6	6	8.5	3	6		
NEW LNGU090640PNEL-M	●	L	G	E	9	8.6	6	8.5	4	6		

[10 inserti in un astuccio]

DCV4




P **K**

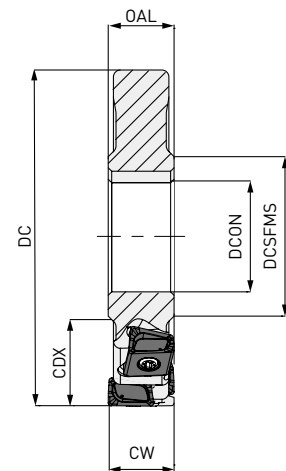
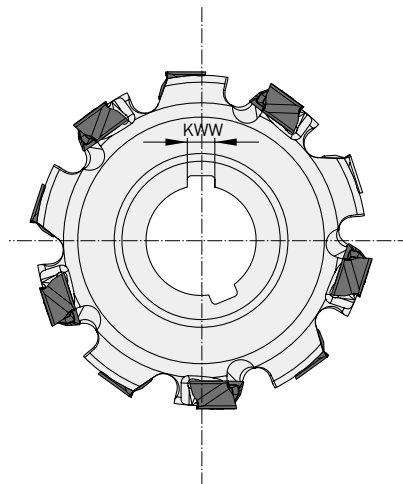


Max. APMX: RE1 < 3.0 mm 12.2 mm
RE1 > 3.0 mm 11.4 mm

TAGLIO FRONTALE


DC	ZEFP	LF = OAL	CDX	DCON	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	

15 



Ampiezza max. CW: 24 mm

TAGLIO COMPLETO

DC	ZEFP	CW	CDX	DCON	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	

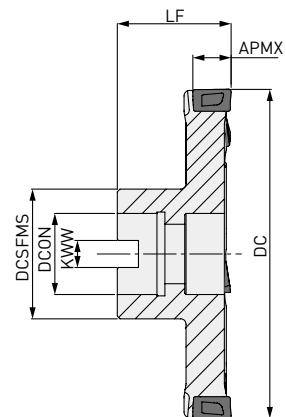
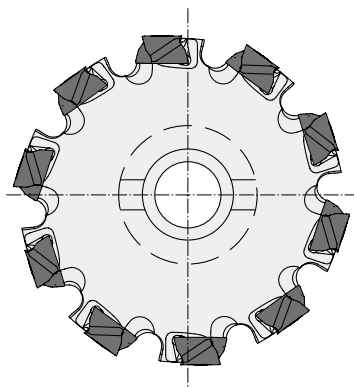
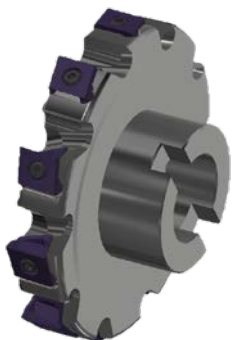
1. Per ogni misura sono disponibili design multilivello. Si prega di contattare l'ufficio tecnico di MMC Italia (info@mmc-italia.it) per i dettagli di qualsiasi geometria non indicata.

15 

DCV4




P K

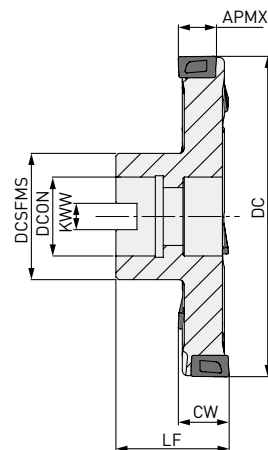
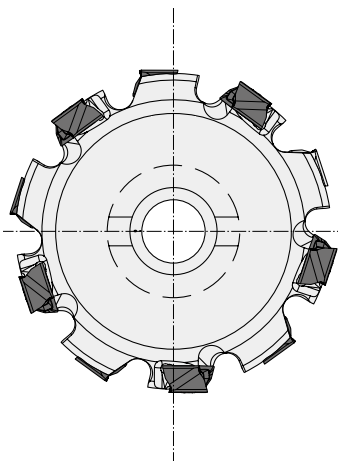
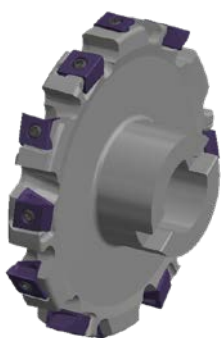


Max. APMX: RE1 < 3.0 mm 12.2 mm
RE1 > 3.0 mm 11.4 mm

TAGLIO FRONTALE


DC	ZEFP	LF	CDX	DCON	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	

15 



Ampiezza max. CW: 24 mm

TAGLIO COMPLETO

DC	ZEFP	LF	CW	CDX	DCON	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. Per ogni misura sono disponibili design multilivello. Si prega di contattare l'ufficio tecnico di MMC Italia (info@mmc-italia.it) per i dettagli di qualsiasi geometria non indicata.


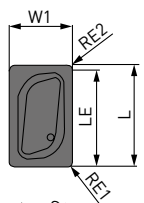
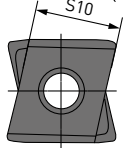
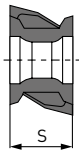
15 

DCV4

RICAMBI

Tipo portautensili	TQ (Nm)			
	Vite di serraggio	Coppia di serraggio	Chiave	Lubrificante anti-grippaggio
DCV4 LNGU13080PNE	TS406	3.5	TKY15T	MK1KS

INSERTI

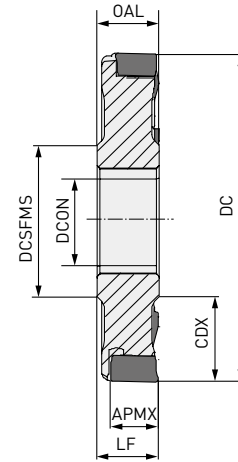
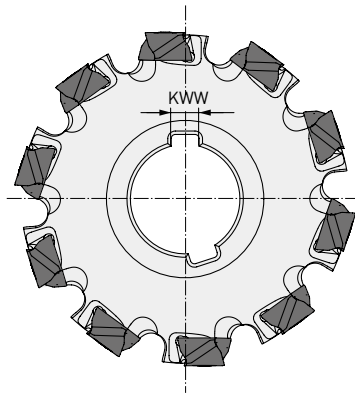
Codice ordinazione	MP6120	VP15TF	Direzione	Classe	Onatura	L	LE	S	S10	RE1	RE2	W1	Forma	Geometria
LNGU130804PNER-M	●		R	G	E	13.0	12.2	8.0	11.0	0.4	0.8	8.0	   	
LNGU130804PNEL-M	●		L	G	E	13.0	12.2	8.0	11.0	0.4	0.8	8.0		
LNGU130808PNER-M	●		R	G	E	13.0	12.2	8.0	11.0	0.8	0.8	8.0		
LNGU130808PNEL-M	●		L	G	E	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		

(10 inserti in un astuccio)

DCV5




P K

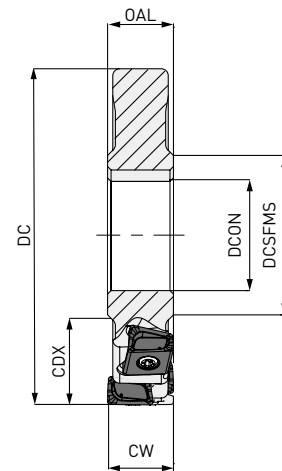
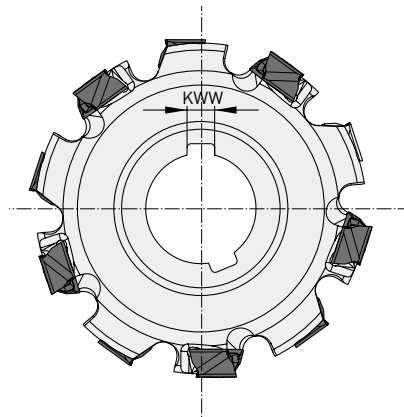


Max. APMX: RE1 < 3.0 mm 16.2 mm
RE1 > 3.0 mm 15.4 mm

TAGLIO FRONTALE


DC	ZEFP	LF = OAL	CDX	DCON	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	

15 



Ampiezza max. CW: 32 mm

TAGLIO COMPLETO

DC	ZEFP	CW	CDX	DCON	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	

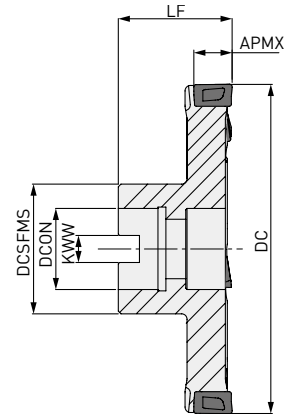
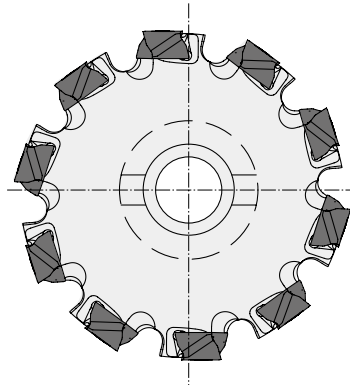
1. Per ogni misura sono disponibili design multilivello. Si prega di contattare l'ufficio tecnico di MMC Italia (info@mmc-italia.it) per i dettagli di qualsiasi geometria non indicata.

15 

DCV5




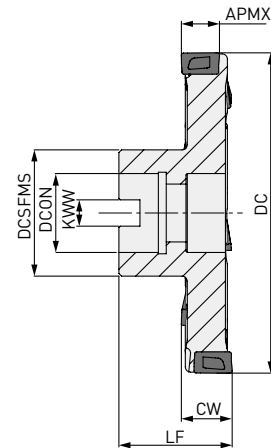
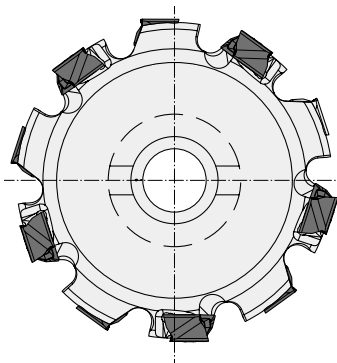
P K



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


TAGLIO FRONTALE

DC	ZEFP	LF	CDX	DCON	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	14 - 20	70	65	40	70	16.4	



Ampiezza max. CW: 32 mm





TAGLIO COMPLETO

DC	ZEFP	LF	CW	CDX	DCON	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. Per ogni misura sono disponibili design multilivello. Si prega di contattare l'ufficio tecnico di MMC Italia (info@mmc-italia.it) per i dettagli di qualsiasi geometria non indicata.

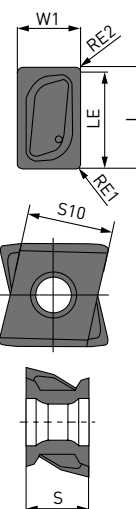
DCV5

RICAMBI

Tipo portautensili	TQ (Nm)			
	 Vite di serraggio	 Coppia di serraggio	 Chiave	 Lubrificante anti-grippaggio
DCV5 LNGU17100PNEOR	TS53	7.5	TKY25T	MK1KS

INSERTI

Codice ordinazione	MP6120	VP15TF	Direzione	Classe	Onatura	L	LE	S	S10	RE1	RE2	W1	D1	Forma	Geometria
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		

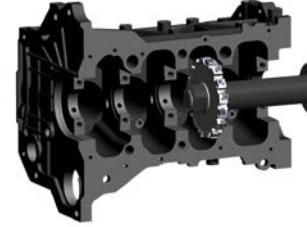


[10 inserti in un astuccio]

ESEMPI DI APPLICAZIONE

Utensile	DCV4 Ø 300 mm	DCV4 Ø 160 mm
Inserito (grado)	LNGU130804PNER-M (VP15TF)	LNGU130804PNER-M (VP15TF)
	Pinza freno (DIN GGG40.3)	Monoblocco (DIN GG25)

Pezzo da lavorare



n (min ⁻¹)	120	500
Vc (m/min.)	113	201
fz (mm/dente)	0.09-0.24	0.14
Vf (mm/min.)	150-400	500
ap (mm)	1.0-2.0	1.0
Modalità di taglio	Taglio a secco	Taglio a secco
Macchina	Centro di lavoro	Orizzontale

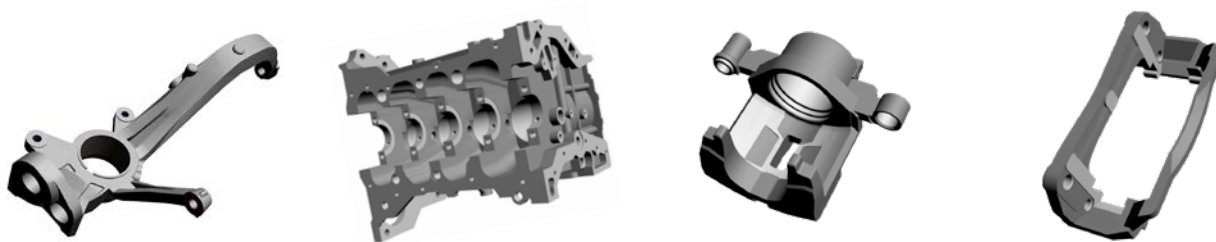
Risultati

Durata dell'utensile all'incirca 2 volte maggiore rispetto ai prodotti convenzionali. Eccellente precisione dimensionale e straordinaria finitura superficiale. Una maggiore efficienza di lavorazione ha determinato una riduzione del 30% dei costi di lavorazione.

Efficienza di lavorazione 1,5 volte superiore rispetto ai prodotti convenzionali. Durata dell'utensile all'incirca doppia. Taglio stabile con rumorosità minima e buona finitura superficiale. Maggiore efficienza di lavorazione e maggiore durata dell'utensile.

1. Gli esempi che precedono sono applicazioni di clienti reali e dunque possono non rispettare le condizioni raccomandate.

SERIE DI FRESE A DISCO UNICA NEL SUO GENERE



Vantaggi offerti dalle ultime novità in fatto di tecnologie, materiali e geometrie delle frese.

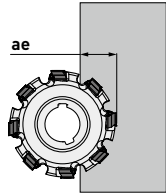
SPECIFICHE

	DCV3	DCV4	DCV5
Materiale	P K	P K	P K
Bassa resistenza di taglio	☉	☉	☉
Robustezza	☉	☉	☉
Forma inserto		Tangenziale	Tangenziale
ZNF		Inserto bilaterale	Inserto bilaterale
ZNP	4	4	4
Taglio frontale	RE ≤ 4.0 mm 8.6 mm	RE ≤ 3.0 mm 12.2 mm	RE ≤ 3.0 mm 16.2 mm
Profondità di taglio max. APMX	RE ≥ 3.0mm 11.4 mm	RE ≥ 3.0mm 11.4 mm	RE ≥ 3.0 mm 15.4 mm
Taglio completo Max. DC	Ø 300 mm	Ø 400 mm	Ø 660 mm

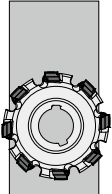
DCV3 / DCV4 / DCV5

CONDIZIONI DI TAGLIO RACCOMANDATE

FRESATURA IN SPALLAMENTO

Materiale	Durezza	Grado	Vc	ap	ae	fz	Modalità di taglio	
P Acciaio	≤180HB	MP6120 VP15TF	150 (130-180)	≤APMX	<10% <30% ≤50%	0.10 (0.08-0.15)		
				≤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)
P Acciaio al carbonio/ acciaio legato	180-280HB	MP6120 VP15TF	150 (130-180)	≤APMX	<10%	0.10 (0.08-0.15)		
				≤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)
K Ghisa	Resistenza alla trazione ≤ 350MPa	VP15TF	150 (130-180)	≤APMX	<10%	0.10 (0.08-0.15)		
				≤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)
K Ghisa grigia	Resistenza alla trazione ≤ 450MPa	VP15TF	130 (110-160)	≤APMX	<10%	0.10 (0.08-0.15)		
				≤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)
K Ghisa sferoidale	Resistenza alla trazione ≤ 800MPa	VP15TF	130 (110-160)	≤APMX	<10%	0.10 (0.08-0.15)		
				≤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)

FRESATURA FRONTALE

Materiale	Durezza	Grado	Vc	ap	fz	Modalità di taglio	
P Acciaio	≤180HB	MP6120 VP15TF	150 (130-180)	≤APMX	0.10 (0.08-0.15)		
				≤2.0			0.12 (0.08-0.20)
				≤4.0			0.10 (0.08-0.15)
P Acciaio al carbonio/ acciaio legato	180-280HB	MP6120 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)
K Ghisa	Resistenza alla trazione ≤ 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)
K Ghisa grigia	Resistenza alla trazione ≤ 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)
K Ghisa sferoidale	Resistenza alla trazione ≤ 800MPa	VP15TF	130 (110-160)	≤APMX	0.10 (0.08-0.12)		
				≤2.0			0.12 (0.08-0.20)
				≤4.0			0.10 (0.08-0.15)



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