



FRESE AD INSERTI

MILLING CUTTERS







REGISTRATI LOG IN

CHI SIAMO



TTE È SOCIETÀ LEADER NELLA DISTRIBUZIONE E COSTRUZIONE DI FRESE, MICROFRESE, PUNTE E MICROPUNTE.



PERCHÈ TTE WHY CHOOSE US

IL CLIENTE NON ACQUISTA UN PRODOTTO MA SOLUZIONI COLLAUDATE
ATTE A MIGLIORARE LA QUALITÀ E L'EFFICIENZA DEL
PROPRIO PROCESSO PRODUTTIVO.

THE CUSTOMER DO NOT BUY A PRODUCT BUT TESTED SOLUTIONS
DESIGNED TO IMPROVE THE QUALITY AND THE EFFICIENCY
OF ITS PRODUCTION PROCESS.

WWW.TTETEC.EU



STRUMENTI TECNICI
TECHNICAL INSTRUMENTS

ABOUT US

TTE IT'S A LEADING MANUFACTURER AND DISTRIBUTOR OF STANDARD AND SPECIAL TOOLS.



DATA MILLING

PROGRAMMA PER IL CALCOLO DEI
PARAMETRI DI TAGLIO

PROGRAM FOR THE CALCULATION
OF CUTTING PARAMETERS



**INDIVIDUA L'UTENSILE PER: MATERIALE, LAVORAZIONE,
GEOMETRIA E DIMENSIONI.**

SCEGLIE L'UTENSILE PIÙ ADATTO.

**CALCOLA I PARAMETRI DI LAVORO SPECIFICI ALLE TUE
ESIGENZE E GENERA UN REPORT PDF CON I TUOI RISULTATI.**

IDENTIFIES THE TOOL FOR: MATERIAL TO BE WORKED,
PROCESSING, GEOMETRY AND DIMENSIONS.

CHOOSES THE MOST SUITABLE TOOL, AND FIGURES SPECIFIC
PROCESSING PARAMETERS ACCORDING TO YOUR NEEDS.

CREATES A PDF REPORT WITH YOUR RESULTS.



LINEE PRODOTTI / PRODUCT LINES

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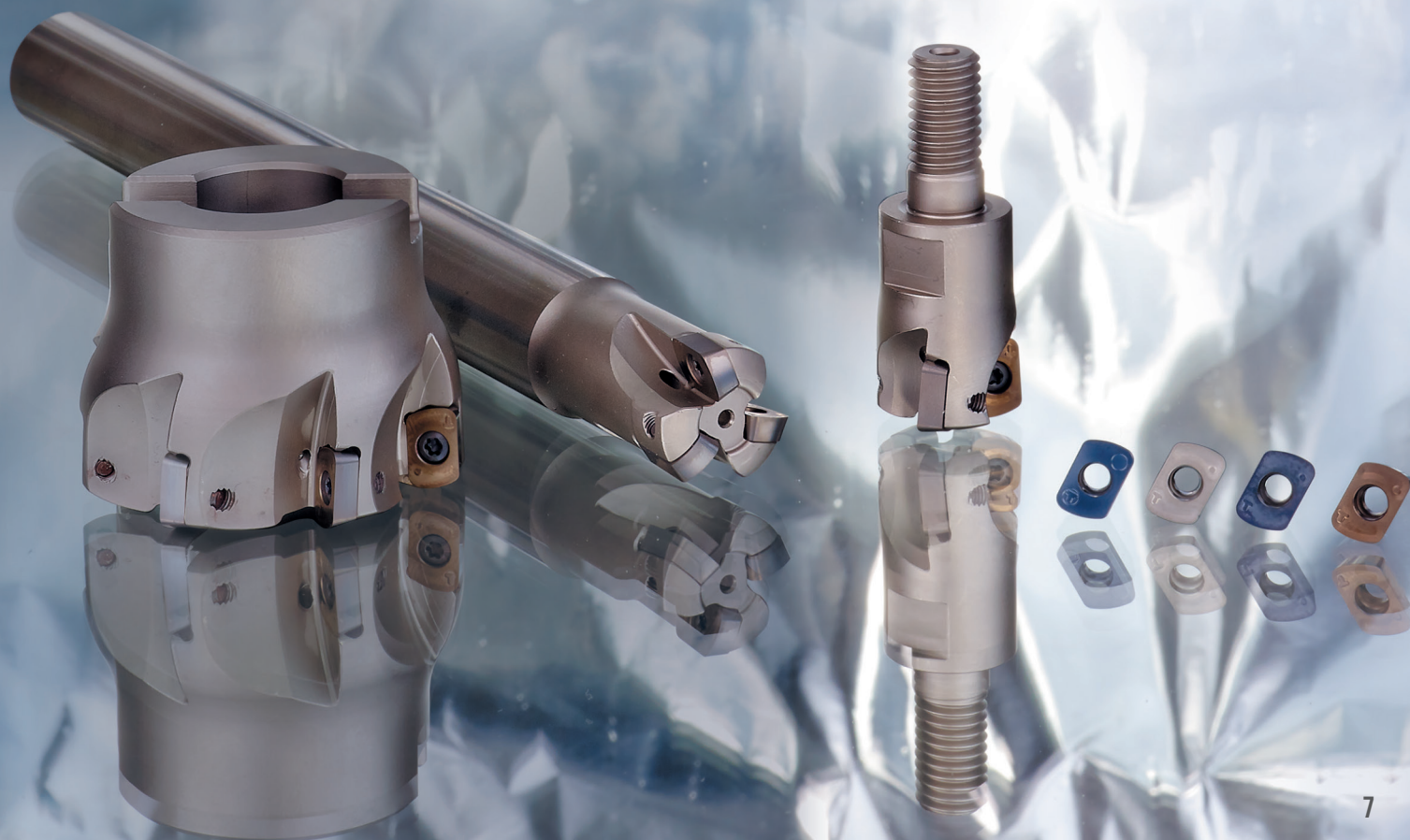


DEVELOPED
& DESIGNED



IN ITALY

C300
EP__ 07



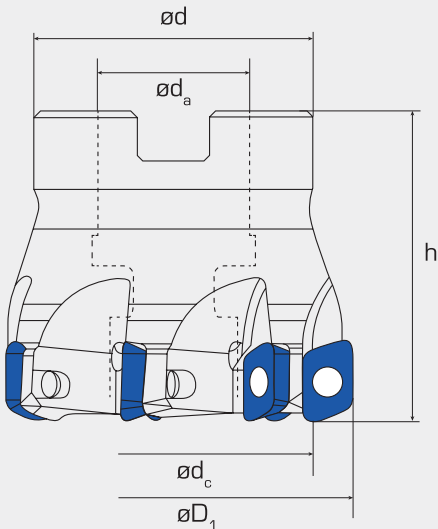
C300A / ATTACCO A MANICOTTO
TIPO A / FACE MILL
TYPE A

FRESA AD ALTO AVANZAMENTO / HIGH FEED CUTTING

FRESA POLIVALENTE PER LAVORAZIONI CON BASSE PROFONDITÀ ED ALTI AVANZAMENTI.
MULTIPURPOSE CUTTER FOR LOW DEPTHS, AND HIGH FEEDS.



Esempio d'ordine / How to order
C300A-40R06-07



ACCIAIO PRETRATTATO
FORI LUBRIFICAZIONE INTERNI
TRATTAMENTO SUPERIORE ANTI USURA

PRE-TREATED STEEL
COOLANT HOLES
TOP ANTI-WEAR TREATMENT

Cod.	ød _c	øD ₁	h	ød	ød _a	z	Inserto / Insert
C300A-40R06-07	29	40	40	35	16	6	EP__ 07
 C300A-50R07-07	39	50	40	41	22	7	
C300A-52R07-07	41	52	40	41	22	7	
 C300A-63R08-07	52	63	50	60	22	8	
C300A-66R08-07	55	66	50	60	27	8	
 C300A-80R09-07	69	80	50	60	27	9	

PARTI DI RICAMBIO / SPARE PARTS

FORZA SERRAGGIO / TIGHTENING FORCE 1,2 Nm

Cod.	M	l	N _m	Tx plus
V0300800	3	8	1,2	TX 08

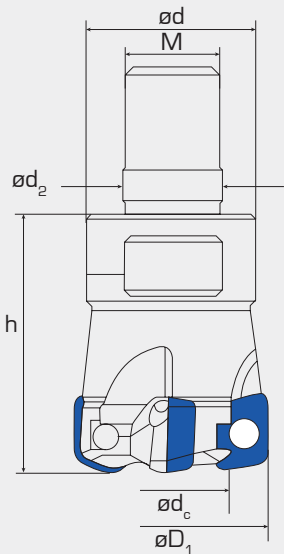
C300G / ATTACCO FILETTATO
TIPO G / THREAD CUTTER
TYPE G

FRESA AD ALTO AVANZAMENTO / HIGH FEED CUTTING

FRESA POLIVALENTE PER LAVORAZIONI CON BASSE PROFONDITÀ ED ALTI AVANZAMENTI.
MULTIPURPOSE CUTTER FOR LOW DEPTHS, AND HIGH FEEDS.



Esempio d'ordine / How to order
C300G-16R02-07



ACCIAIO PRETRATTATO
FORI LUBRIFICAZIONE INTERNI
TRATTAMENTO SUPERIORE ANTI USURA

PRE-TREATED STEEL
COOLANT HOLES
TOP ANTI-WEAR TREATMENT

Cod.	ødc	øD ₁	h	ød	ød ₂	M	z	Inserto / Insert
C300G-16R02-07	5	16	23	13	8,5	8	2	EP__ 07
C300G-20R03-07	9	20	30	18	10,5	10	3	
C300G-25R04-07	14	25	35	21	12,5	12	4	
C300G-32R05-07	21	32	40	29	17	16	5	
C300G-35R05-07	24	35	40	29	17	16	5	
C300G-42R06-07	31	42	40	29	17	16	6	

PARTI DI RICAMBIO / SPARE PARTS

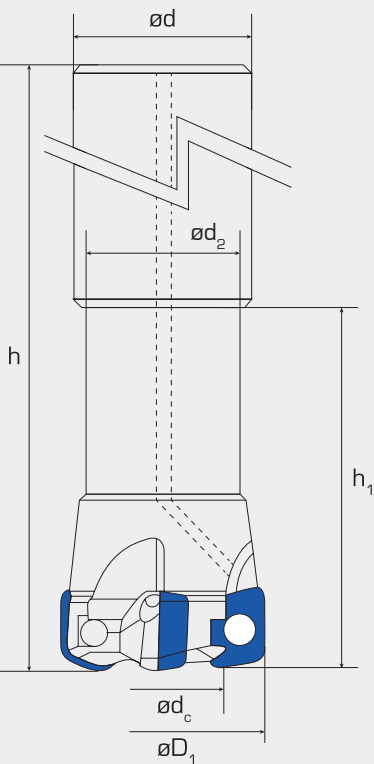
FORZA SERRAGGIO / TIGHTENING FORCE 1,2 Nm

Cod.	M	L	N _m	Tx plus
V0300800	3	8	1,2	TX 08

C300C / ATTACCO CILINDRICO
TIPO C / ENDMILL
TYPE C

FRESA AD ALTO AVANZAMENTO / HIGH FEED CUTTING

FRESA POLIVALENTE PER LAVORAZIONI CON BASSE PROFONDITÀ ED ALTI AVANZAMENTI.
MULTIPURPOSE CUTTER FOR LOW DEPTHS, AND HIGH FEEDS.



Esempio d'ordine / How to order
C300C-16R02-07



ACCIAIO PRETRATTATO
FORI LUBRIFICAZIONE INTERNI
TRATTAMENTO SUPERIORE ANTI USURA

PRE-TREATED STEEL
COOLANT HOLES
TOP ANTI-WEAR TREATMENT

Cod.	ødc	øD ₁	h	ød	ød ₂	h ₁	z	Inserto / Insert
C300C-16R02-07	5	16	160	16	14	30	2	EP__ 07
C300C-20R03-07	9	20	200	20	18	32	3	
C300C-25R04-07	14	25	200	25	23	40	4	
C300C-32R05-07	21	32	250	32	30	51	5	

PARTI DI RICAMBIO / SPARE PARTS

FORZA SERRAGGIO / TIGHTENING FORCE 1,2 Nm

Cod.	M	l	N _m	Tx plus
V0300800	3	8	1,2	TX 08

EP__07

2 TAGLIENTI EFFETTIVI / 2 EFFECTIVE CUTTING EDGES

ROMPITRUCIOLI / CHIP BREAKERS

ST
P
M
ROMPITRUCIOLO PER APPLICAZIONI SU ACCIAI E ACCIAI INOSSIDABILI.
SHARP CUTTING EDGE FOR GENERAL STAINLESS STEEL, AND STEEL APPLICATIONS.

ROMPITRUCIOLO PER APPLICAZIONI SU ACCIAI INOSSIDABILI E SUPER LEGHE.
STRONG CUTTING EDGE FOR GENERAL STAINLESS STEEL AND HEAT RESISTANT ALLOYS.
XT
S
M

TT
H
K
ROMPITRUCIOLO RINFORZATO PER ACCIAI INDURITI.
REINFORCED CUTTING EDGE FOR HARDENED STEELS.

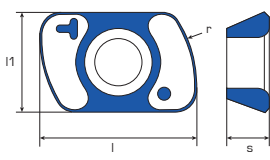
ROMPITRUCIOLO RINFORZATO PER APPLICAZIONI SU ACCIAI.
REINFORCED CUTTING EDGE FOR STEELS.
HTM
P

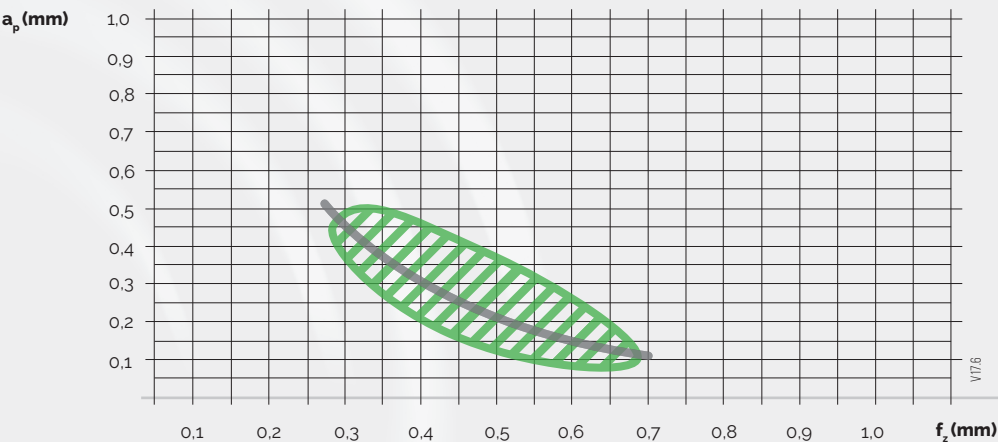
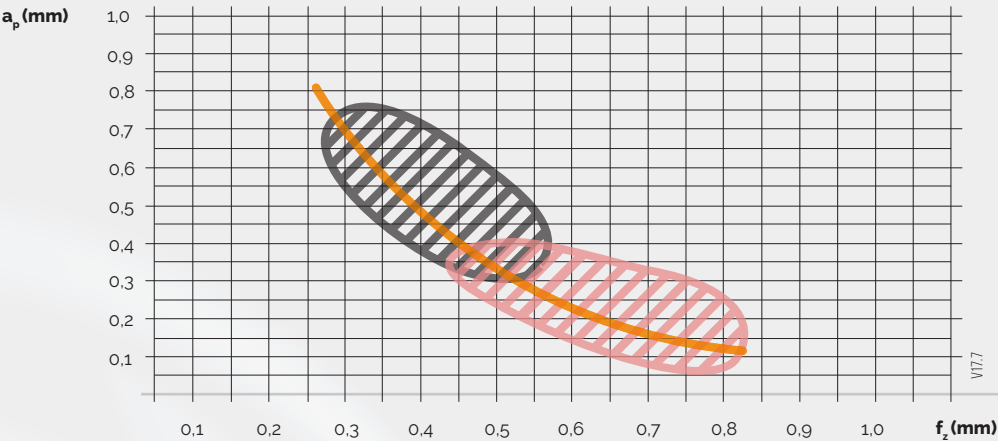
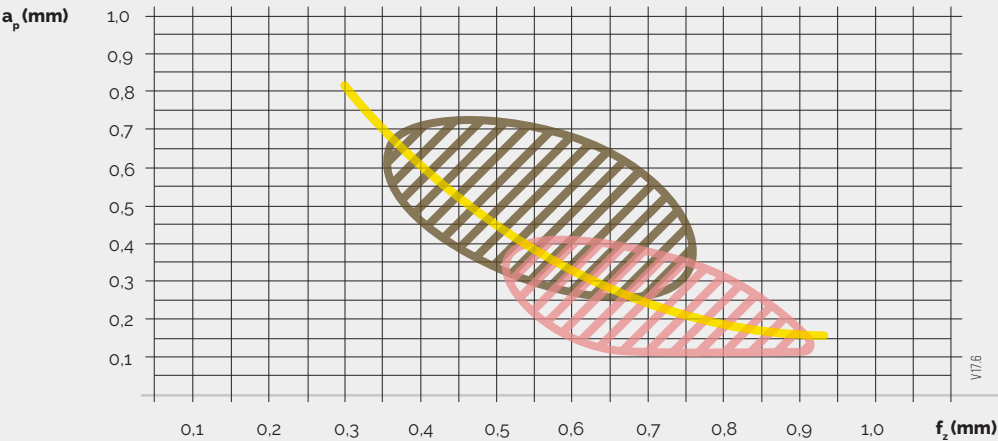
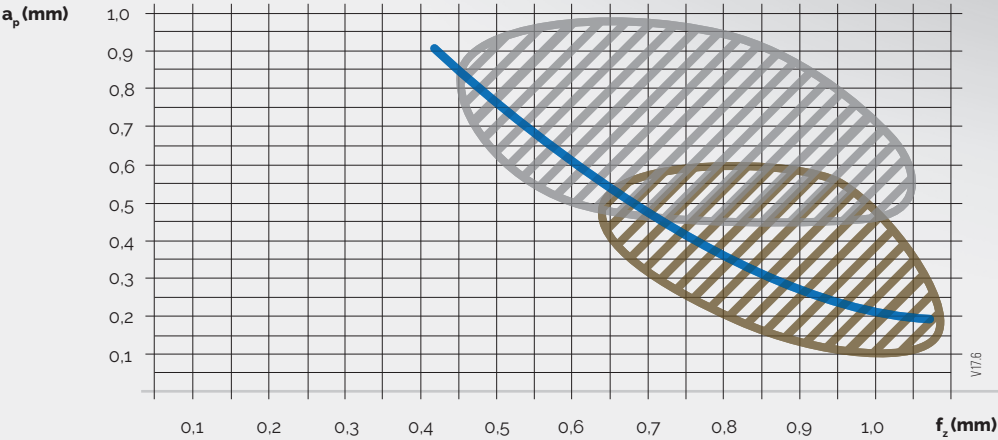
XTM
S
M
ROMPITRUCIOLO RINFORZATO PER APPLICAZIONI SU SUPER LEGHE E ACCIAI INOSSIDABILI.
REINFORCED CUTTING EDGE FOR HEAT RESISTANT ALLOYS AND STAINLESS STEEL.

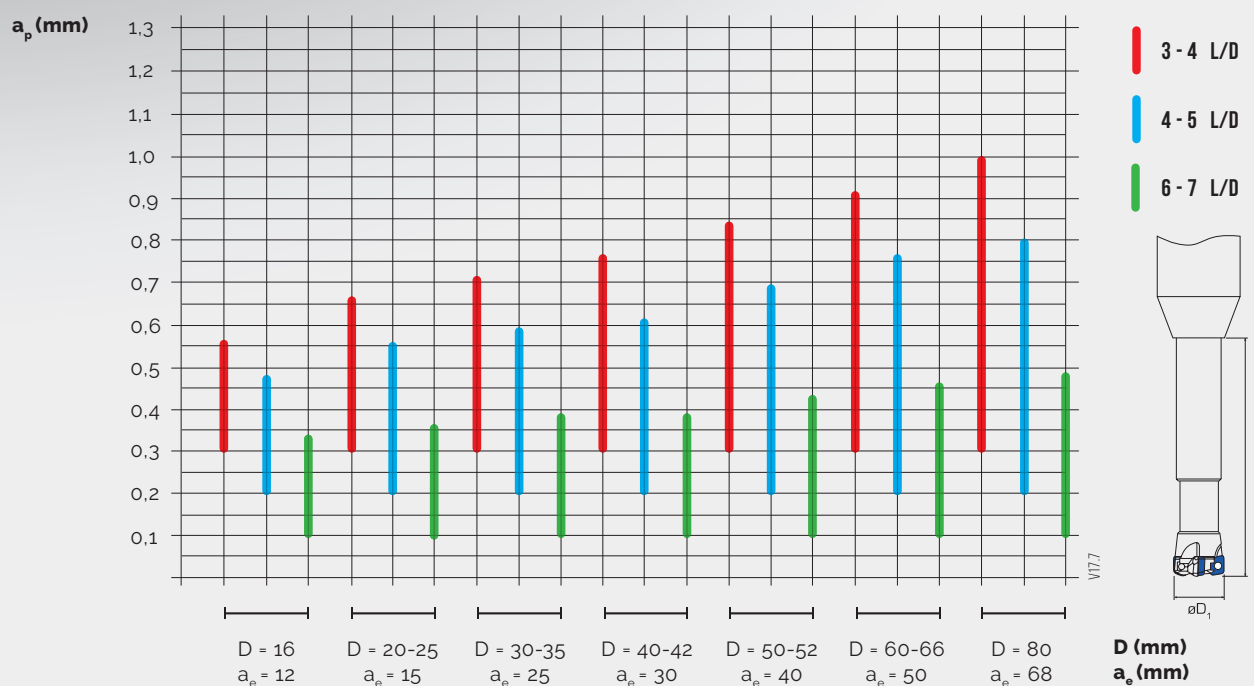


Esempio d'ordine / How to order
EPHW-070315-TT P615



					P	H	M	K	S
Cod.	l	s	r	l ₁	Acciai Steel	Acciai Temprati Hardened Steel	Acciai Inox Stainless Steel	Ghise Cast Iron	Super Leghe Heat Resistant Alloys
EPHW-070315-TT	11	3,35	8,5	7		● P615		● P615	
EPHT-070315-ST	11	3,35	8,5	7	● PP35		● PM40		
EPHT-070315-XT	11	3,35	8,5	7			● C535 ● C540		● C535 ● C540
New EPHT-070315-HTM	11	3,35	8,5	7	● PP35				
New EPHT-070315-XTM	11	3,35	8,5	7			● C540		● C540





N° 168

INFOTECH

RIMANI AGGIORNATO SULLE ULTIME APPLICAZIONI FATTE
GET THE LATEST INFOTECH ON THIS PRODUCTS





C100

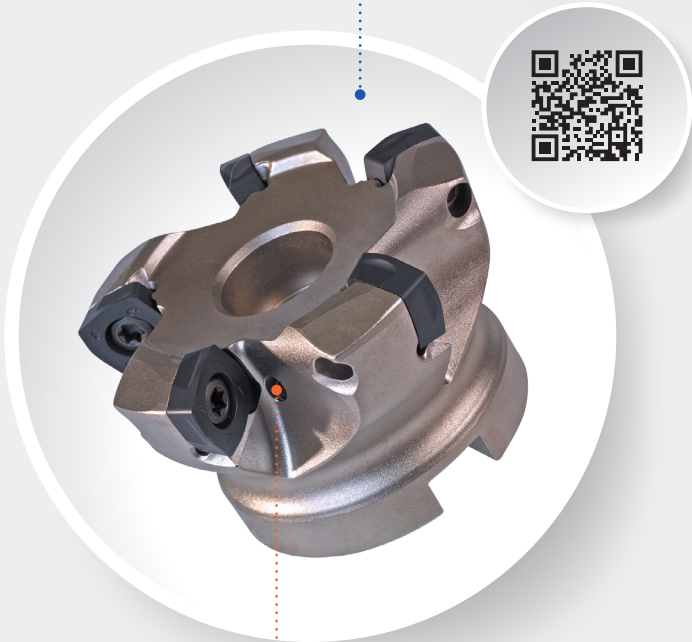
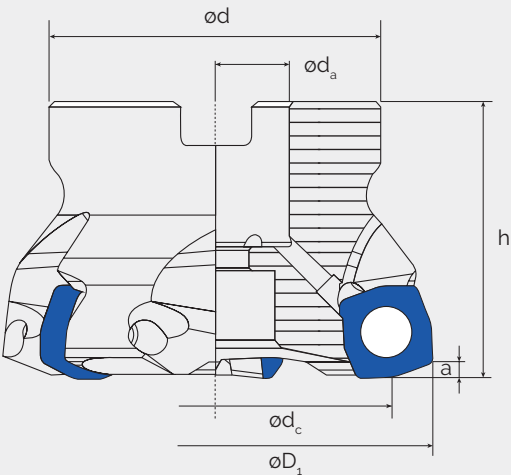
X0__ 13



C100A

FRESA AD ALTO AVANZAMENTO / HIGH FEED CUTTING

FRESA PER SPIANATURA AD ALTA PRODUTTIVITÀ CON INSERTO BIVALENTE
FACEMILL FOR HIGH PRODUCTION WITH BIVALENT INSERT.



Esempio d'ordine / How to order
C100A-50R04-13



ACCIAIO PRETRATTATO
FORI LUBRIFICAZIONE INTERNI
TRATTAMENTO SUPERIORE ANTI USURA

PRE-TREATED STEEL
COOLANT HOLES
TOP ANTI-WEAR TREATMENT

Cod.	ød _c	øD ₁	h	ød	ød _a	z	Inserto / Insert
C100A-50R04-13	33	50	40	43	22	4	X0__ 13
C100A-63R05-13	46	63	40	48	22	5	
C100A-80R07-13	63	80	50	58	27	7	

PARTI DI RICAMBIO / SPARE PARTS

Cod.	Inserto / Insert	Vite / Screw	Torx / Torx
C100A... -13	XOLT 13	V0451050	TX 20

XO__ 13

4 TAGLIENTI EFFETTIVI / 4 EFFECTIVE CUTTING EDGES

DURANTE LA FASE DI MONTAGGIO RISPETTARE LA NUMERAZIONE. PER UNA PRECISIONE MAGGIORE MONTARE GLI INSERTI IN POSIZIONE 1 E POI GIRARLI IN SENSO ORARIO (2-3-4). / WHILE SETTING THE INSERT, PLEASE FOLLOW THE PROGRESSIVE NUMERATION, FROM 1 TO 4, IN ORDER TO GET A BETTER PRECISION.



Esempio d'ordine / How to order

XOLT-130410SR-HT P135

ROMPITRUCIOLI / CHIP BREAKERS



ROMPITRUCIOLO RINFORZATO PER APPLICAZIONI GENERICHE SU ACCIAI E DIFFICILI CONDIZIONI DI LAVORAZIONE.

STRONG CUTTING EDGE FOR GENERAL STEEL APPLICATIONS AND HARD MILLING CONDITIONS.

ROMPITRUCIOLO PER APPLICAZIONI SU ACCIAI INOSSIDABILI E SUPER LEGHE.

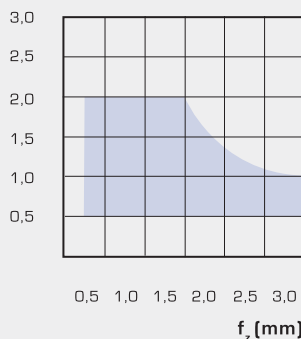
SHARP CUTTING EDGE FOR GENERAL STAINLESS STEEL AND HEAT RESISTANT ALLOYS.



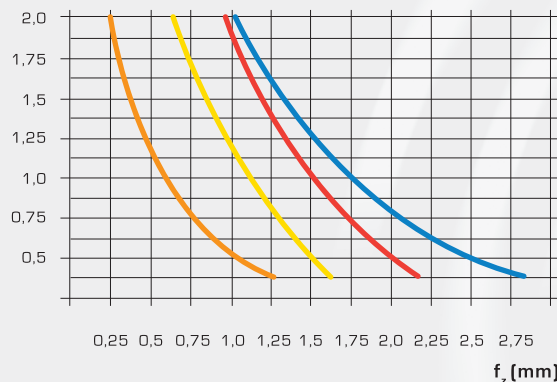
					P	H	M	K	S
Cod.	l	s	r	l ₁	Acciai Steel	Acciai Temprati Hardened Steel	Acciai Inox Stainless Steel	Ghise Cast Iron	Super Leghe Heat Resistant Alloys
XOLT-130410SR-HT	13	4,76	1	8,5	● P135		● P235		
					● C125			● C125	
XOLT-130410ER-ST	13	4,76	1	8,5			● P235		● C535
									● C540

PARAMETRI DI LAVORO XO__ 13 / CUTTING DATA XO__ 13

a_p (mm)



a_p (mm)



Note / Notes

PARAMETRI DI LAVORO A PAGINA 17, 42-43. / FOR CUTTING DATA SEE PAGES 17, 42-43.

C200

RP__ 10

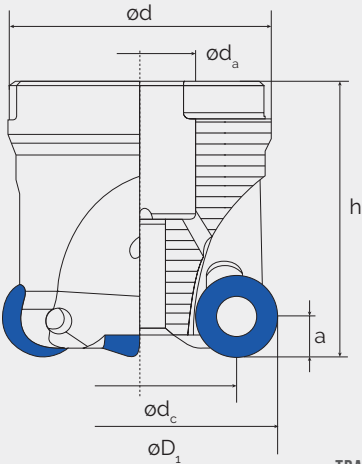
RP__ 12

RP__ 16



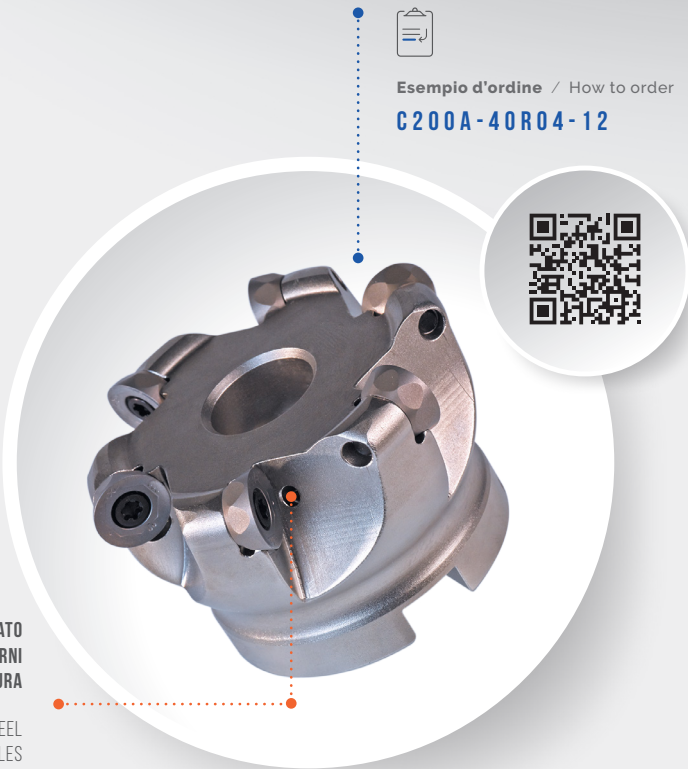
C200A

FRESA A SPIANARE / FACE MILL



ACCIAIO PRETRATTATO
FORI LUBRIFICAZIONE INTERNI
TRATTAMENTO SUPERIORE ANTI USURA

PRE-TREATED STEEL
COOLANT HOLES
TOP ANTI-WEAR TREATMENT



Cod.	ød _c	øD ₁	h	ød	ød _a	z	Inserto / Insert
C200A-40R04-10	30	40	40	38	16	4	RP__ 10
C200A-50R05-10	40	50	40	43	22	5	
C200A-40R04-12	28	40	40	38	16	4	RP__ 12
C200A-50R05-12	38	50	40	43	22	5	
C200A-63R06-12	51	63	40	48	22	6	
C200A-80R08-12	68	80	50	58	27	8	
C200A-100R10-12	88	100	50	78	32	10	
C200A-50R03-16	34	50	40	48	22	3	RP__ 16
C200A-63R05-16	47	63	40	48	22	5	
C200A-80R06-16	64	80	50	58	27	6	
C200A-100R07-16	84	100	50	78	32	7	
C200A-125R08-16	109	125	63	88	40	8	

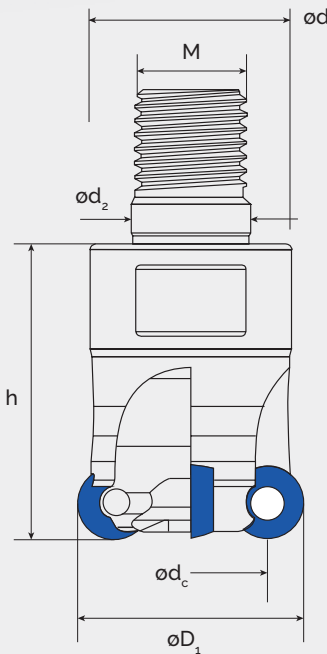
PARTI DI RICAMBIO / SPARE PARTS

Cod.	Inserto / Insert	Vite / Screw	Torx / Torx
C200A...-10	RP__ 10	V0300750	TX10
C200A...-12	RP__ 12	V0401100	TX15
C200A...-16	RP__ 16	V0451300	TX20
C200A-40-10	RP__ 10	PS08030	
C200A-40-12	RP__ 12		
C200A-50-16	RP__ 16	PS10031	

Note / Notes
INFO TECNICHE PER VITI A PAGINA 38. / TECHNICAL INFO FOR SPARE PARTS, SEE PAGE 38.

C200G

FRESA A SPIANARE / FACE MILL



Esempio d'ordine / How to order
C200G-20R02-10



ACCIAIO PRETRATTATO
FORI LUBRIFICAZIONE INTERNI
TRATTAMENTO SUPERIORE ANTI USURA

PRE-TREATED STEEL
COOLANT HOLES
TOP ANTI-WEAR TREATMENT

Cod.	ød _c	øD ₁	h	ød	ød ₂	M	z	Inserto / Insert
C200G-20R02-10	10	20	30	18	10,5	10	2	RP__ 10
C200G-25R03-10	15	25	35	21	12,5	12	3	
C200G-32R04-10	22	32	35	29	17	16	4	
C200G-36R05-10	26	36	40	29	17	16	5	
C200G-25R02-12	13	25	35	21	12,5	12	2	RP__ 12
C200G-32R03-12	20	32	40	29	17	16	3	

PARTI DI RICAMBIO / SPARE PARTS

Cod.	Inserto / Insert	Vite / Screw	Torx / Torx
C200G...-10	RP__ 10	V0300750	TX 10
C200G...-12	RP__ 12	V0401100	TX 15

RP__ 10

ROMPITRUCIOLI / CHIP BREAKERS

ST
M

ROMPITRUCIOLO PER APPLICAZIONI SU ACCIAI E ACCIAI INOSSIDABILI.
SHARP CUTTING EDGE FOR GENERAL STAINLESS STEEL, AND STEEL APPLICATIONS.

ROMPITRUCIOLO PER APPLICAZIONI SU ACCIAI INOSSIDABILI E SUPER LEGHE.
STRONG CUTTING EDGE FOR GENERAL STAINLESS STEEL AND HEAT RESISTANT ALLOYS.

S **XT** **M**

S **XTM** **M**

ROMPITRUCIOLO RINFORZATO PER APPLICAZIONI SU SUPER LEGHE E ACCIAI INOSSIDABILI.
REINFORCED CUTTING EDGE FOR HEAT RESISTANT ALLOYS AND STAINLESS STEEL.

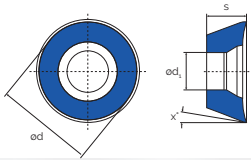
ROMPITRUCIOLO RINFORZATO PER APPLICAZIONI SU ACCIAI.
REINFORCED CUTTING EDGE FOR STEELS.

P **HTM**



Esempio d'ordine / How to order
RPMX-10T3M0-ST P235



					P	H	M	K	S
Cod.	ød	s	ød ₁	x°	Acciai Steel	Acciai Temprati Hardened Steel	Acciai Inox Stainless Steel	Ghise Cast Iron	Super Leghe Heat Resistant Alloys
RPMX-10T3M0-ST	10	3,97	3,4	11°			● P235		
RPHX-10T3M0-XT	10	3,97	3,4	11°			● C535 ● C540		● C535 ● C540
RPHX-10T3M0-XTM	10	3,97	3,4	11°			● C535 ● C540		● C535 ● C540
RPMX-10T3M0SN-HTM	10	3,97	3,4	11°	● PP35				

RP__ 12

ROMPITRUCIOLI / CHIP BREAKERS



ROMPITRUCIOLO RINFORZATO PER APPLICAZIONI SU ACCIAI.
REINFORCED CUTTING EDGE FOR STEELS.

ROMPITRUCIOLO RINFORZATO PER APPLICAZIONI
GENERICHE E DIFFICILI CONDIZIONI DI LAVORAZIONE.
STRONG CUTTING EDGE FOR GENERAL
STEEL APPLICATIONS AND HARD MILLING CONDITIONS.



ROMPITRUCIOLO PER APPLICAZIONI SU
ACCIAI E ACCIAI INOSSIDABILI.
SHARP CUTTING EDGE FOR GENERAL
STAINLESS STEEL, AND STEEL APPLICATIONS.

ROMPITRUCIOLO PER APPLICAZIONI
SU ACCIAI INOSSIDABILI E SUPER LEGHE.
STRONG CUTTING EDGE FOR GENERAL
STAINLESS STEEL AND HEAT RESISTANT ALLOYS.



ROMPITRUCIOLO RINFORZATO PER APPLICAZIONI SU
SUPER LEGHE E ACCIAI INOSSIDABILI.
REINFORCED CUTTING EDGE FOR
HEAT RESISTANT ALLOYS AND STAINLESS STEEL.



Esempio d'ordine / How to order
RPMX-1204M0-HT P135



Cod.	ød	s	ød ₁	x°
RPMX-1204M0SN-HTM	12	4,76	4,4	11°
RPMX-1204M0-HT	12	4,76	4,4	11°
RPMX-1204M0-ST	12	4,76	4,4	11°
RPHX-1204M0-XT	12	4,76	4,4	11°
RPHX-1204M0-XTM	12	4,76	4,4	11°

P	H	M	K	S
Acciai Steel	Acciai Temprati Hardened Steel	Acciai Inox Stainless Steel	Ghise Cast Iron	Super Leghe Heat Resistant Alloys
● PP35				
● P135			● C315	
		● P235		
		● C535		● C535
		● C540		● C540
		● C535		● C535
		● C540		● C540

RP__ 16

ROMPITRUCIOLI / CHIP BREAKERS



ROMPITRUCIOLO RINFORZATO PER APPLICAZIONI
GENERICHE E DIFFICILI CONDIZIONI DI LAVORAZIONE.

STRONG CUTTING EDGE FOR GENERAL
STEEL APPLICATIONS AND HARD MILLING CONDITIONS.

ROMPITRUCIOLO PER APPLICAZIONI SU
ACCIAI E ACCIAI INOSSIDABILI.

SHARP CUTTING EDGE FOR GENERAL
STAINLESS STEEL, AND STEEL APPLICATIONS.



ROMPITRUCIOLO PER APPLICAZIONI SU
ACCIAI INOSSIDABILI E SUPER LEGHE.

STRONG CUTTING EDGE FOR GENERAL
STAINLESS STEEL AND HEAT RESISTANT ALLOYS.



Esempio d'ordine / How to order

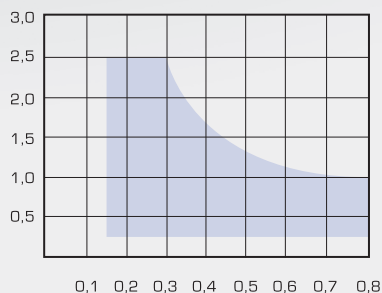
RPMX-1605M0-ST PM40



					P	H	M	K	S
Cod.	ød	s	ød ₁	x°	Acciai Steel	Acciai Temprati Hardened Steel	Acciai Inox Stainless Steel	Ghise Cast Iron	Super Leghe Heat Resistant Alloys
RPMX-1605M0-HT	16	5,56	5,5	11°	● PP35				
RPMX-1605M0-ST	16	5,56	5,5	11°			● PM40		
RPHX-1605M0-XT	16	5,56	5,5	11°			● C535 ● C540		● C535 ● C540

PARAMETRI DI LAVORO RP__ 10 / CUTTING DATA RP__ 10

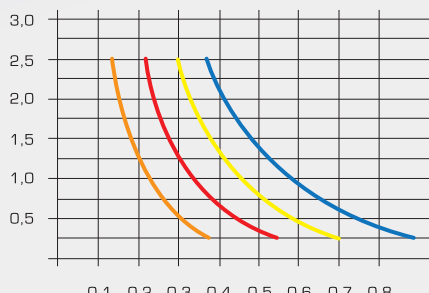
a_p (mm)



$a_p \times 4$ posizioni = 2,5 (mm)

$a_p \times 8$ posizioni = 1,4 (mm)

a_p (mm)



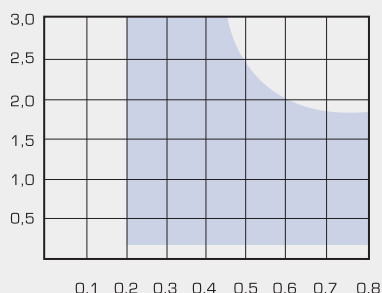
f_z (mm)

f_z (mm)



PARAMETRI DI LAVORO RP__ 12 / CUTTING DATA RP__ 12

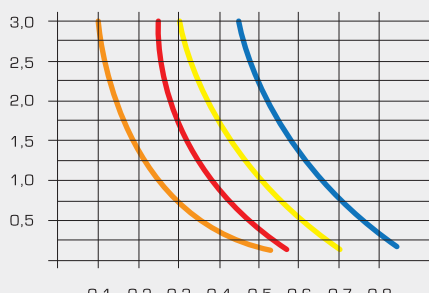
a_p (mm)



$a_p \times 4$ posizioni = 3 (mm)

$a_p \times 8$ posizioni = 1,7 (mm)

a_p (mm)



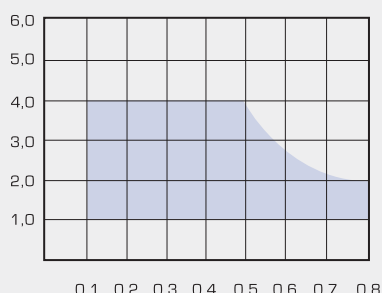
f_z (mm)

f_z (mm)



PARAMETRI DI LAVORO RP__ 16 / CUTTING DATA RP__ 16

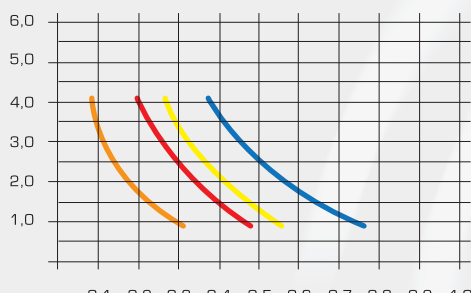
a_p (mm)



$a_p \times 4$ posizioni = 4 (mm)

$a_p \times 8$ posizioni = 2,3 (mm)

a_p (mm)



f_z (mm)

f_z (mm)



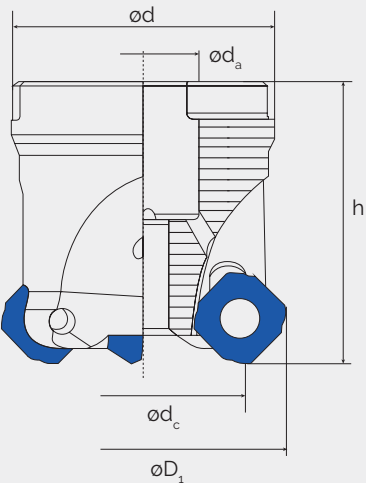


C200 SD__ 12

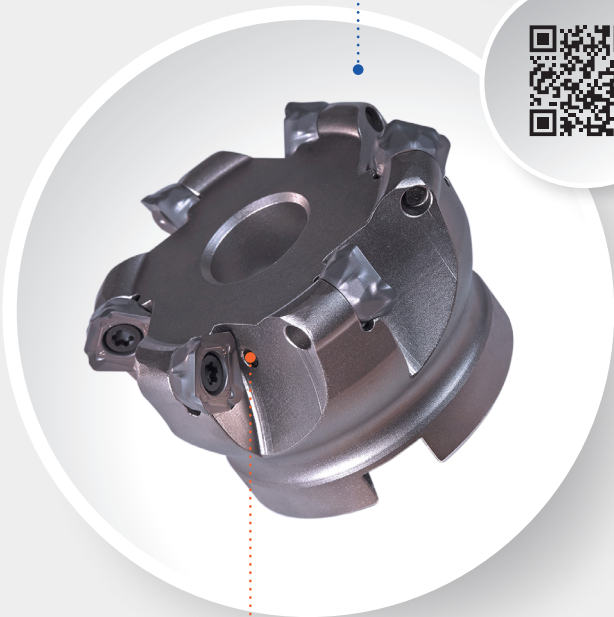


C200A

FRESA A SPIANARE / FACE MILL



Esempio d'ordine / How to order
C200A-40R04-12



ACCIAIO PRETRATTATO
FORI LUBRIFICAZIONE INTERNI
TRATTAMENTO SUPERIORE ANTI USURA

PRE-TREATED STEEL
COOLANT HOLES
TOP ANTI-WEAR TREATMENT

Cod.	ød _c	øD ₁	h	ød	ød _a	z	Inserto / Insert
C200A-40R04-12	32,5	41	40	38	16	4	SD__ 12
C200A-50R05-12	42,5	51	40	43	22	5	
C200A-63R06-12	55,5	64	40	48	22	6	
C200A-80R08-12	72,5	81	50	58	27	8	
C200A-100R10-12	92,5	101	50	78	32	10	

PARTI DI RICAMBIO / SPARE PARTS

Cod.	Inserto / Insert	Vite / Screw	Torx / Torx
C200A...-12	SD__ 12	V0401100	TX 15
C200A-40-12		PS08030	

Note / Notes
INFO TECNICHE PER VITI A PAGINA 38. PARAMETRI DI LAVORO A PAGINA 29, 42-43.
TECHNICAL INFO FOR SPARE PARTS, SEE PAGE 38. FOR CUTTING DATA SEE PAGES 29, 42-43.

SD__ 12

INSERTI 45° / 45° INSERT

ROMPITRUCIOLI / CHIP BREAKERS

HT
K

ROMPITRUCIOLO RINFORZATO PER APPLICAZIONI
GENERICHE E DIFFICILI CONDIZIONI DI LAVORAZIONE.

STRONG CUTTING EDGE FOR GENERAL
STEEL APPLICATIONS AND HARD MILLING CONDITIONS.

ROMPITRUCIOLO PER APPLICAZIONI SU
ACCIAI E ACCIAI INOSSIDABILI.

SHARP CUTTING EDGE FOR GENERAL
STAINLESS STEEL, AND STEEL APPLICATIONS.

ST
M

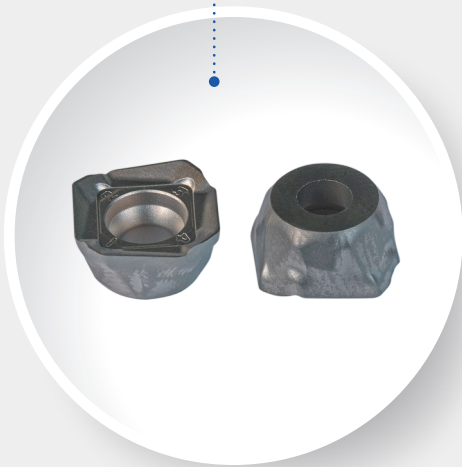
ROMPITRUCIOLO PER APPLICAZIONI SU
ACCIAI INOSSIDABILI E SUPER LEGHE.

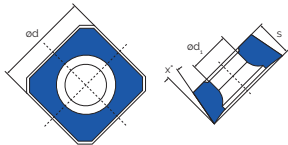
STRONG CUTTING EDGE FOR GENERAL
STAINLESS STEEL AND HEAT RESISTANT ALLOYS.



Esempio d'ordine / How to order

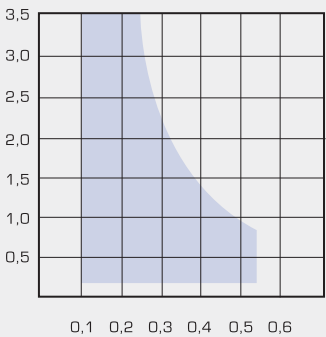
SDMX-1205AEER-HT P135



					P	H	M	K	S
Cod.	ød	s	ød ₁	x°	Acciai Steel	Acciai Temprati Hardened Steel	Acciai Inox Stainless Steel	Ghise Cast Iron	Super Leghe Heat Resistant Alloys
SDMX-1205AEER-HT	11,4	5,9	4,4	15°	● P135			● C315	
SDMX-1205AEER-ST	11,4	5,9	4,4	15°			● P235		
SDMX-1205AEER-XT	11,4	5,9	4,4	15°			● C535		● C535

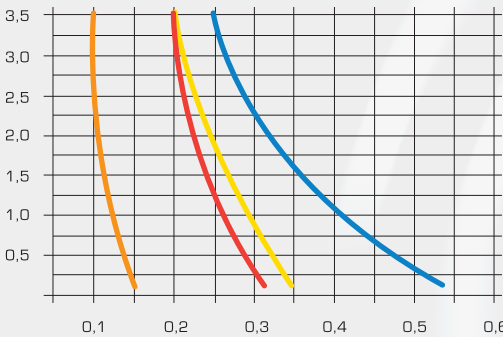
PARAMETRI DI LAVORO SD__ 12 / CUTTING DATA SD__ 12

a_p (mm)



f_z (mm)

a_p (mm)



f_z (mm)



Note / Notes

PARAMETRI DI LAVORO A PAGINA 29, 42-43. / FOR CUTTING DATA SEE PAGES 29, 42-43.



AREA TECNICA

TECHNICAL AREA



P135 QUALITÀ DI MD PER LA FRESATURA DI ACCIAI CARBIDE GRADE RECOMMENDED FOR THE MACHINING OF STEELS

Composizione / Composition

Co 9,0%

Carburi Misti 4,0% - Mixed Carbides 4,0%

Resto WC - WC Balance

Tipo di Rivestimento / Coating Specification

PVD (Ti, AlN + TiN; 4 µm)

Tenacità / Toughness

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

Resistenza all'usura / Wear Resistance

1	2	3	4	5	6	7
---	---	---	---	---	---	---

Dimensione Grana / Grain Size

1 - 1,5 µm

Durezza / Hardness

HV 1510

Lavorazione / Use



Umid
Wet

1	2	3	4
---	---	---	---



Secco
Dry

1	2	3	4
---	---	---	---



P235 QUALITÀ DI MD IBRIDA PER LA FRESATURA DI ACCIAI INOSSIDABILI CARBIDE GRADE RECOMMENDED FOR THE MACHINING OF STAINLESS STEEL

Composizione / Composition

Co 12,5%

Carburi Misti 2,0% - Mixed Carbides 2,0%

Resto WC - WC Balance

Tipo di Rivestimento / Coating Specification

PVD (Ti, AlN + TiN; 4 µm)

Tenacità / Toughness

1	2	3	4	5	6	7	8	9
---	---	---	---	---	---	---	---	---

Resistenza all'usura / Wear Resistance

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

Dimensione Grana / Grain Size

1 µm

Durezza / Hardness

HV 1380

Lavorazione / Use



Umid
Wet

1	2	3	4
---	---	---	---



Secco
Dry

1	2	3	4
---	---	---	---



P615 QUALITÀ DI MD PER LA FRESATURA DI ACCIAI INDURITI CARBIDE GRADE RECOMMENDED FOR THE MACHINING OF HARDENED STEELS

Composizione / Composition

Co 12,0%

Resto WC - WC Balance

Tipo di Rivestimento / Coating Specification

PVD (TiAlN); 4 µm

Tenacità / Toughness

1	2	3	4	5	6
---	---	---	---	---	---

Resistenza all'usura / Wear Resistance

1	2	3	4	5	6	7
---	---	---	---	---	---	---

Dimensione Grana / Grain Size

4 µm

Durezza / Hardness

HV 1730

Lavorazione / Use



Umid
Wet

1	2	3	4
---	---	---	---



Secco
Dry

1	2	3	4
---	---	---	---



C125 QUALITÀ DI MD IBRIDA PER LA FRESATURA DI ACCIAI E GHISA

CARBIDE GRADE RECOMMENDED FOR THE MACHINING OF STEELS AND CAST IRON

Composizione / Composition

Co 9,0%

Carburi Misti 4,0% - Mixed Carbides 4,0%

Resto WC - WC Balance

Tipo di Rivestimento / Coating Specification

CVD $Al_2O_3 + TiN + Ti(C,N)$; 5,5 μm

Tenacità / Toughness

1	2	3	4	5	6
---	---	---	---	---	---

Resistenza all'usura / Wear Resistance

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

Dimensione Grana / Grain Size

1 - 1,5 μm

Durezza / Hardness

HV 1510

Lavorazione / Use



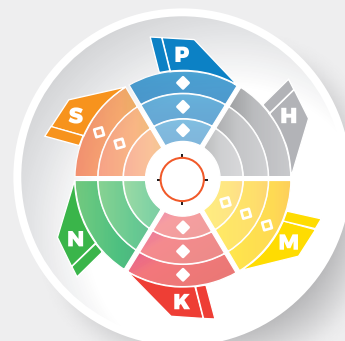
Umid
Wet

1	2	3	4
---	---	---	---



Secco
Dry

1	2	3	4
---	---	---	---



C315 QUALITÀ DI MD SPECIALE PER LA FRESATURA DI GHISA

CARBIDE GRADE RECOMMENDED FOR THE MACHINING OF CAST IRON

Composizione / Composition

Co 6,0%

Carburi Misti 2,0% - Mixed Carbides 2,0%

Resto WC - WC Balance

Tipo di Rivestimento / Coating Specification

CVD $Ti(C,N) + Al_2O_3$; 5 μm

Tenacità / Toughness

1	2	3	4	5	6
---	---	---	---	---	---

Resistenza all'usura / Wear Resistance

1	2	3	4	5	6	7
---	---	---	---	---	---	---

Dimensione Grana / Grain Size

1 μm

Durezza / Hardness

HV 1630

Lavorazione / Use



Umid
Wet

1	2	3	4
---	---	---	---



Secco
Dry

1	2	3	4
---	---	---	---



C535 QUALITÀ DI MD PER LA FRESATURA DI LEGHE RESISTENTI AL CALORE

CARBIDE GRADE RECOMMENDED FOR THE MACHINING OF HEAT RESISTANT ALLOYS

Composizione / Composition

Co 10,0%

Resto WC - WC Balance

Tipo di Rivestimento / Coating Specification

CVD $TiN-Ti(C,N)$; Al_2O_3 ; $Ti(N,B)$; 6 μm

Tenacità / Toughness

1	2	3	4	5
---	---	---	---	---

Resistenza all'usura / Wear Resistance

1	2	3	4	5	6	7
---	---	---	---	---	---	---

Dimensione Grana / Grain Size

2 μm

Durezza / Hardness

HV 1330

Lavorazione / Use



Umid
Wet

1	2	3	4
---	---	---	---



Secco
Dry

1	2	3	4
---	---	---	---



C540 QUALITÀ DI MD PER LA FRESATURA DI LEGHE AL TITANIO

CARBIDE GRADE RECOMMENDED FOR THE MACHINING OF TITANIUM MATERIALS

Composizione / Composition

Co 10,0%

Resto WC - WC Balance

Tipo di Rivestimento / Coating Specification

CVD TiN + TiB₂; 4 µm

Tenacità / Toughness

1	2	3	4	5	6	7
---	---	---	---	---	---	---

Resistenza all'usura / Wear Resistance

1	2	3	4	5	6	7
---	---	---	---	---	---	---

Dimensione Grana / Grain Size

2 µm

Durezza / Hardness

HV 1330

Lavorazione / Use



Umido
Wet

1	2	3	4
---	---	---	---



Secco
Dry

1	2	3	4
---	---	---	---



PP35 QUALITÀ DI MD PER LA FRESATURA DI ACCIAIO

CARBIDE GRADE RECOMMENDED FOR THE MACHINING OF STEELS

Composizione / Composition

Co 10,5%

Carburi Misti 2,0% - Mixed Carbides 2,0%

Resto WC - WC Balance

Tipo di Rivestimento / Coating Specification

PVD TiAlTaN

Tenacità / Toughness

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

Resistenza all'usura / Wear Resistance

1	2	3	4	5	6	7
---	---	---	---	---	---	---

Dimensione Grana / Grain Size

1 - 2 µm

Durezza / Hardness

HV 1400

Lavorazione / Use



Umido
Wet

1	2	3	4
---	---	---	---



Secco
Dry

1	2	3	4
---	---	---	---



PM40 QUALITÀ DI MD PER LA FRESATURA DI ACCIAI INOSSIDABILI

CARBIDE GRADE RECOMMENDED FOR THE MACHINING OF STAINLESS STEEL

Composizione / Composition

Co 12,5%

Carburi Misti 2,0% - Mixed Carbides 2,0%

Resto WC - WC Balance

Tipo di Rivestimento / Coating Specification

PVD TiAlTaN

Tenacità / Toughness

1	2	3	4	5	6	7	8	9
---	---	---	---	---	---	---	---	---

Resistenza all'usura / Wear Resistance

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

Dimensione Grana / Grain Size

1 µm

Durezza / Hardness

HV 1380

Lavorazione / Use



Umido
Wet

1	2	3	4
---	---	---	---



Secco
Dry

1	2	3	4
---	---	---	---



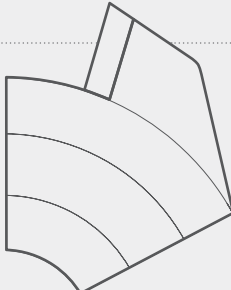
GUIDA ALLA FRESATURA MILLING GUIDE

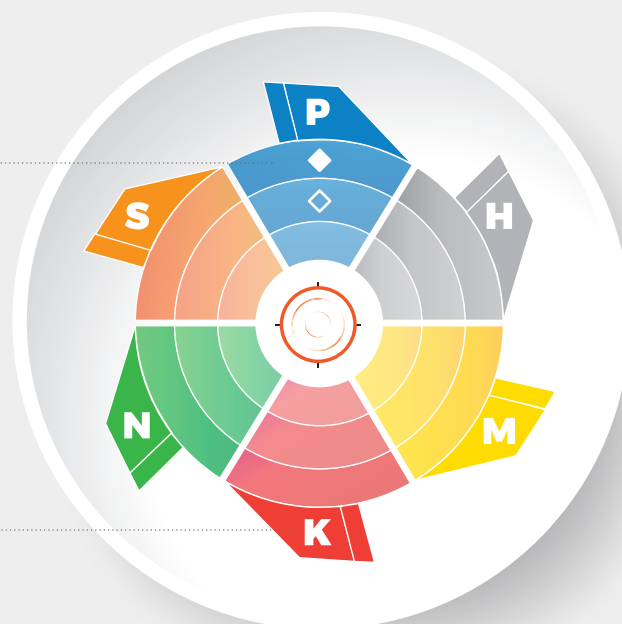
LEGENDA / LEGENDA

TIPI DI IMPIEGO TYPE OF USE

- Impiego Principale**
Main Application 
- Impieghi Vari**
Extended Applications 

TIPI DI LAVORAZIONE OPERATION

- Sgrossatura pesante**
Roughing 
- Sgrossatura media**
Semi-roughing
- Finitura**
Finishing



RIVESTIMENTI / COATINGS



UTILIZZO / USE



Secco
Dry



Emulsione
Wet

MATERIALI LAVORATI / MACHINABLE MATERIALS



Acciai
Steel



Acciai Temprati
Hardened Steel



Acciai Inox
Stainless Steel



Ghise
Cast Iron

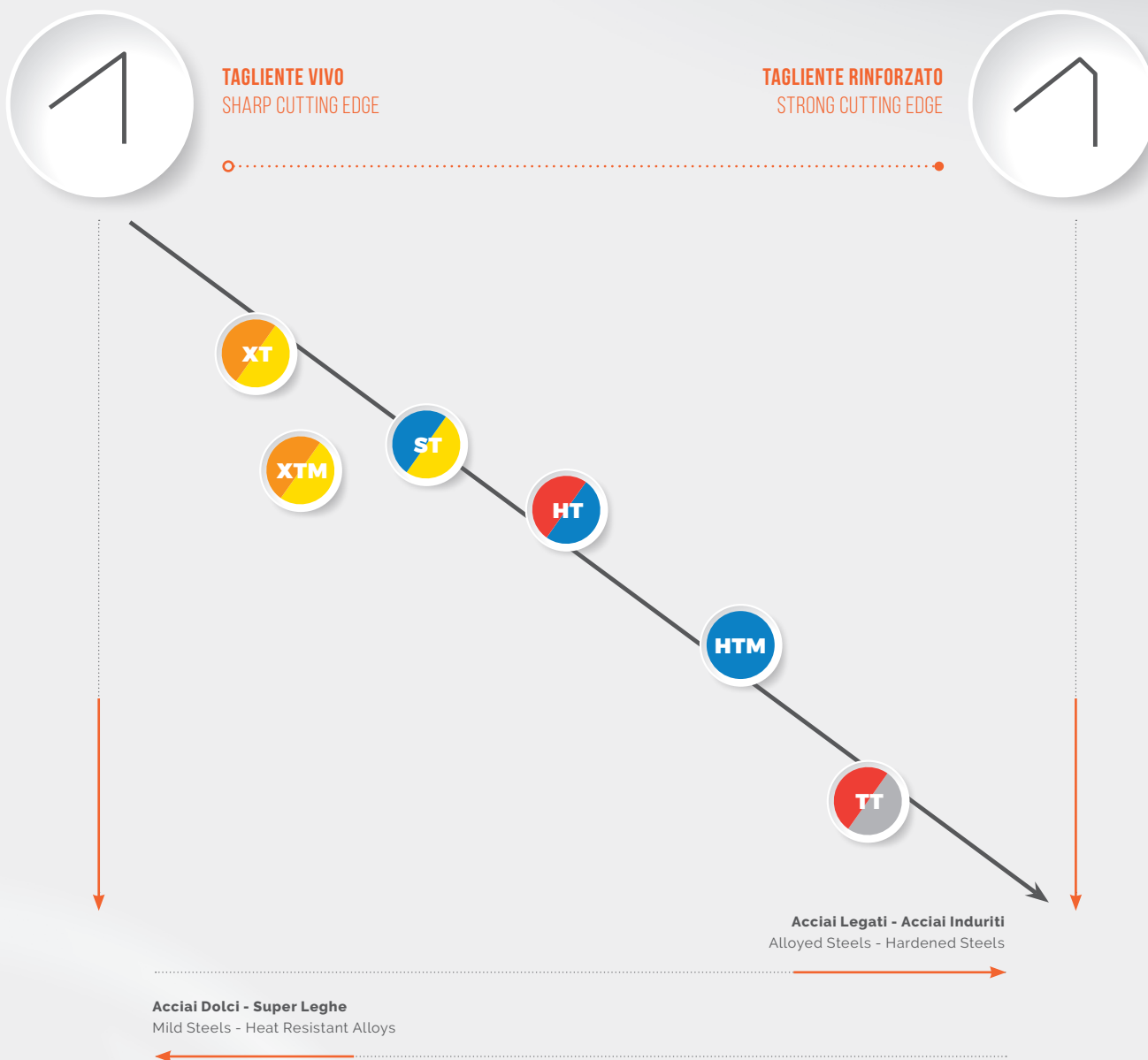


Non Ferrosi
Non Ferrous



Super Leghe
Heat Resistant Alloys

ROMPITRUCIOLI CUTTING EDGES



XT Specifico Super Leghe
Specific Heat Resistant Alloys

XTM Sgrossatura Media
Semi-roughing

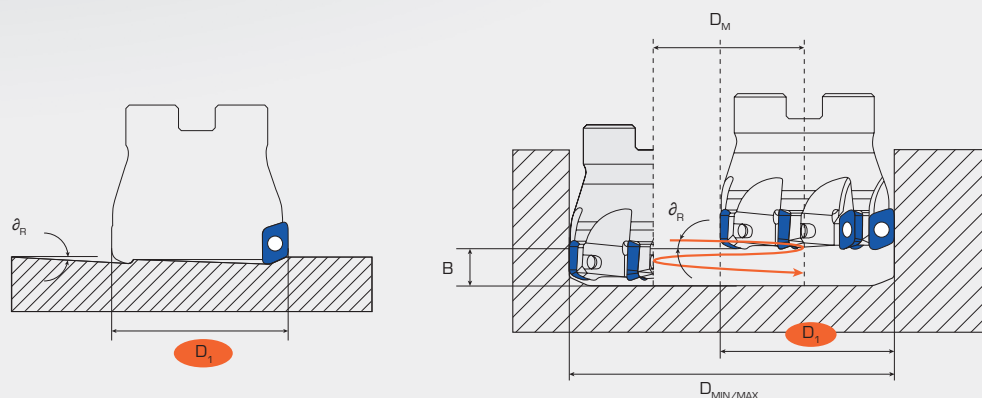
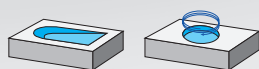
ST Acciai Inossidabili
Stainless Steel

HTM Specifico Acciaio
Specific for Steel

HT Acciai
Steel

TT Specifico Acciai Induriti
Specific Hardened Steel

PENETRAZIONE AD INTERPOLAZIONE ELICOIDALE ELICOIDAL RAMPING



$$D_M [\text{mm}] = D_{MAX} - D_1$$

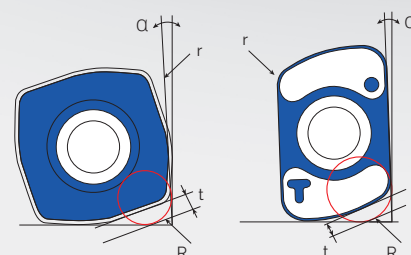
$$B [\text{mm}] = D_M \times \pi \times \tan \partial_R$$

$$D_M [\text{mm}] = D_{MIN} - D_1$$

D_1		16	20	25	32	35/36	40/42	50/52	63/66	80	100	125
EP 07	D_{MIN}	20	28	38	52	58	68	92	120	140		
	D_{MAX}	30	38	48	62	68	85	102	130	160		
	$\partial_R [^\circ]$	2	2	2	2	2	1,5	1,5	1	0,5		
X0 13	D_{MIN}							80	106	140		
	D_{MAX}							98	124	158		
	$\partial_R [^\circ]$							1,3	0,9	0,9		
RP 10	D_{MIN}		26	37	50	58	64	84				
	D_{MAX}		30	40	54	68	70	90				
	$\partial_R [^\circ]$		1,3	1,8	1,5	1,1	1,1	0,9				
RP 12	D_{MIN}			31	46		62	81	107	142	181	
	D_{MAX}			38	52		68	88	114	148	188	
	$\partial_R [^\circ]$			2,2	1,7		1,4	1,1	0,9	0,7	0,5	
RP 16	D_{MIN}							75	101	135	175	245
	D_{MAX}							84	110	144	188	250
	$\partial_R [^\circ]$							1,5	1,1	0,9	0,7	0,5

PROGRAMMA CAM CAM PROGRAM

	r	R	t	α
EP 07	1,2	2	0,69	2°
X0 13	1	3	2	0°



R = raggio di programmazione
program radius

APPROCCI / METODI DI LAVORAZIONI HOW TO APPROACH

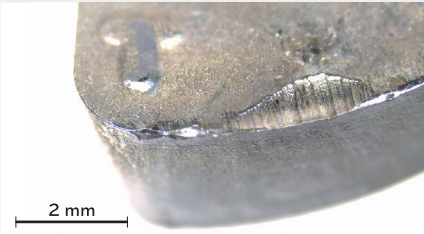
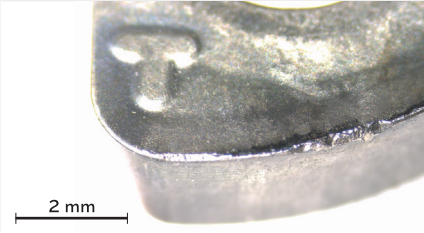
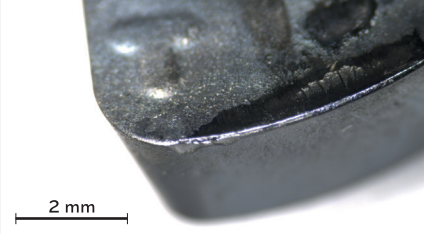
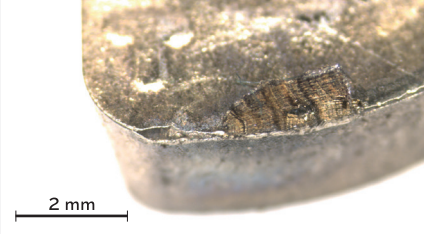
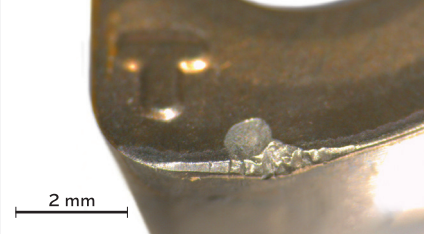
SI RACCOMANDA / IT IS RECOMMENDED

- 1 **INGRESSO E USCITA CON V_f RIDOTTA 50%** / COMPONENT APPROACH, REDUCE FEED 50%
- 2 **LAVORAZIONE CONCORDE** / UP MILLING MACHINING
- 3 **INSERIRE RACCORDI XY RAGGIATI** / USE SMOOTHING MILLING
- 4 **UTILIZZO ARIA O EMULSIONE INTERNA** / USE INTERNAL COOLING OR AIR
- 5 **QUANDO SI LAVORA TITANIO, DUPLEX, SUPER-DUPLEX USARE % OLIO $\geq 10\%$** / WHILE WORKING TITANIUM, DUPLEX, SUPER DUPLEX MUST USE % OF OIL $\geq 10\%$

FORZA CHIUSURA VITI TIGHTENING FORCE N_m

	TX plus	Cod.	Nm	M
EP 07	8	V0300800	1,2	3
X0 13	20	V0451050	6	4,5
RP 10	10	V0300750	1,2	3
RP 12	15	V0401100	6	4
RP 16	20	V0451300	6	4,5
SD 12	15	V0401100	6	4

FORMULE FORMULA COLLECTION

Formule / Formula Collection	Tipi di usure / Wear Type	
VELOCITÀ DI TAGLIO CUTTING SPEED (m/min) $V_c = \frac{D_1 \cdot \pi \cdot n}{1000}$		USURA DI CRATERIZZAZIONE CRATERING WEAR SOLUZIONE SOLUTION: - IMPIEGARE QUALITÀ DI METALLO DURO PIÙ RESISTENTE ALL'USURA - RIDURRE LA VELOCITÀ DI TAGLIO - MUST BE USED CEMENTED CARBIDE GRADE WITH MORE WEAR RESISTANCE - REDUCE CUTTING SPEED
NUMERO DI GIRI DEL MANDRINO RPM (min⁻¹) $n = \frac{V_c \cdot 1000}{D_1 \cdot \pi}$		SCHEGGIATURA ESTERNA EXTERNAL CHIPPING SOLUZIONE SOLUTION: - RIDURRE LA PROFONDITÀ DI TAGLIO MANTENENDO COSTANTE L'AVANZAMENTO - ABBASSARE L'AVANZAMENTO MANTENENDO COSTANTE LA PROFONDITÀ DI TAGLIO - REDUCE DEEP OF CUT, MAINTAINING SAME FEED - REDUCE FEED, MAINTAINING SAME DEEP OF CUT
AVANZAMENTO FEED RATE (mm/min) $V_f = f_z \cdot n \cdot z$		USURA INTERNA INTERNAL WEAR SOLUZIONE SOLUTION: - AUMENTARE L'AVANZAMENTO TAGLIANTE - MUST BE INCREASED FEED RATE
VOLUME TRUCIOLO PER UNITÀ DI TEMPO CHIP VOLUME (cm³/min) $Q = \frac{a_p \cdot a_e \cdot V_f}{1000}$		TAGLIANTE DI RIPORTO BUILT UP EDGE SOLUZIONE SOLUTION: - AUMENTARE LA VELOCITÀ DI TAGLIO - IMPIEGARE QUALITÀ DI METALLO DURO CON RICOPERTURA ANTIFRIZIONE C540 - MUST BE INCREASED CUTTING SPEED - MUST BE USED A CARBIDE GRADE WITH ANTIFRICTION COATING, C540
AVANZAMENTO AL DENTE FEED PER TOOTH (mm) $f_z = h_m \cdot \sqrt{\frac{D_1}{a_p}}$		MICRO FESSURAZIONI A PETTINE PERPENDICULAR MICROCRACKS SOLUZIONE SOLUTION: - NON IMPIEGARE EMULSIONE MA ARIA - DO NOT USE COOLANT, USE AIR

**LE INFORMAZIONI E LE CARATTERISTICHE TECNICHE POSSONO ESSERE SOGGETTE A VARIAZIONI SENZA PREAVVISO.
T.T.E. SRL SI RISERVA IN QUALSIASI MOMENTO, A SUO GIUDIZIO E SENZA PREAVVISO, DI APPORTARE MODIFICHE AI PRODOTTI INSERITI
NEL PROPRIO CATALOGO. I DATI TECNICI CONTENUTI NEL CATALOGO SONO DA CONSIDERARSI SALVO ERRORI E/O OMISSIONI.**

**LA RIPRODUZIONE DEL MATERIALE CONTENUTO NEL PRESENTE CATALOGO È VIETATA
SENZA IL CONSENSO SCRITTO DA PARTE DELLA T.T.E. SRL.**

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INCLUDED IN ITS CATALOG. THE TECHNICAL DATA IN THE CATALOG ARE VALID EXCEPT FOR ERRORS AND/OR OMISSIONS
THE REPRODUCTION OF THE MATERIAL CONTAINED IN THIS CATALOG IS PROHIBITED
WITHOUT THE WRITTEN CONSENT OF THE T.T.E. SRL.



MATERIALI MATERIALS

RIMANI AGGIORNATO SULL'ELENCO COMPLETO
MATERIALI/GRUPPI

GO TO COMPLETE LIST OF MATERIALS
TO WORK





N° 168

INFOTECH

RIMANI AGGIORNATO SULLE ULTIME APPLICAZIONI FATTE
GET THE LATEST INFOTECH ON THIS PRODUCTS



PARAMETRI DI LAVORO CUTTING DATA

Materiale Material			Resistenza Mechanical Strength (N/mm²)	GR	PP35 / P135		PM40 / P235		P615		C535		C540	
					Secco Dry	Emulsione Wet	Secco Dry	Emulsione Wet	Secco Dry	Emulsione Wet	Secco Dry	Emulsione Wet	Secco Dry	Emulsione Wet
					V _c (m/min)		V _c (m/min)		V _c (m/min)		V _c (m/min)		V _c (m/min)	
P	Acciai Steel	Non Legati Non-Alloy	600-800	1-2-3	300 / 160	190 / 140								
		Basso Legati Low-Alloy	800-1000	4-5-6	250 / 120	150 / 100								
		Medio Legati Medium-Alloy	1000-1200	7-9	200 / 100	140 / 80								
		Alto Legati High-Alloy	1200-1300	10	180 / 100	160 / 80								
			1400-1500	11	120 / 80	100 / 60			160 / 80					
M	Acciai Inox Stainless Steel	Martensitico Martensitic		12			300 / 150	180 / 120						
		Austenitico Austenitic		13			250 / 130	150 / 110						
		Inox Duplex Duplex		14				140 / 80			250 / 140		250 / 140	140 / 80
		Inox Super Duplex Super Duplex		14,1				110 / 60			200 / 120		200 / 100	
S	Super Leghe Heat Res. Alloys	Fe	600-900	31-32							85 / 45		80/45	
		Ni-Co	900-1000	34-35									70 / 45	
			1200	36									40 / 20	
		Leghe Titanio Titanium Alloy	α-β	37									85 / 60	
H	Acciai Temprati Hardened Steel		45-50 Hrc	38					200 / 150					
			50-55 Hrc	39					150 / 100					
			> 55 Hrc	40					80 / 60					
K	Ghise Cast Iron		≤ 200 HB	15					250 / 150					

Nome Name		GR	DIN	UNI	AISI / ASTM	N° Materiale N° Material	Note Notes	
P	C 15	1	C 15	C 15		1,0401		
	15 CrMo5	6		15 CrMo5		1,7262		
	C45	3	C45	C45		1,0503		
	38NCD5	9		40NiCrMo6		1,6565		Bonificato Hardened and Tempered Steel
	1,2311	9	40 CrMgMo 7	40 CrMgMo 7		1,23 11		
	1,2312	9						
	1,2714	9						
	1,2738	9		40 CrMnNi Mo 8 6 1		1,2738		Bonificato Hardened and Tempered Steel
	1,2738 HH	11				1,2738 HH		
	1,2343	11				1,2343		
	1,2344	11						
	1,2083 STAVAX	11						
	1,2365	11						
	1,2367	11						
	100Cr 6	9		100Cr6		1,2067		Bonificato Hardened and Tempered Steel
	36 CrNiMo4	9		36 CrNiMo4		1,65 11		
	21 NiCrMo2	9		21 NiCrMo2		1,6523		
	X100CrMoV5 1	11		X100CrMoV5 1		1,2363		
	NIMAX	9				1,2738/P20		
	DAC MAGIC	9						
	W 300	11				1,2343		
	IMPAX	11						
	1,2080	10						
	K110	10				1,2379		
	K720	11				1,2842		
	K390	11						
	K890	11						
	M4- HSS	11			M4			
M	AISI 304	13		X 5Cr Ni 18 10	630	1,4301		
	304LN	14		XCrNiN	304LN	1		
	AISI 316L	13		X 2 Cr Ni Mo 17 12 2	316L	1,4404		
	FA6	13						
	AISI 420	12		X 30Cr 13	420	1,4028		
	AISI 904L	13		X1NiCrMoCu25 20 5	904L	1,4539		
	17- 4PH	14						
	15- 5PH	14						
	F53	14, 1		X 2 Cr Ni Mo 25 7 4	F53	1,4410		
	F51	14						
S	F44	14, 1						
	F55	14, 1						
	NIMONIC 80 A	34				2,4631		
	MONEL K500	34				2,4375		
	INCONEL 625	35				2,4856		
H	INCONEL 718	36				2,4668		
	INCONEL 718 INVECCHIATO / AGED	36				2,4668	Invecchiato / Aged	
	TITANIO / TITANIUM	37	TiAl6V4			3,7165		
	1,2738	38		40 CrMnNi Mo 8 6 1		1,2738		
	1,2738 HH	39				1,2738 HH		
	1,2343	38				1,2343		45 / 50
	1,2344	38						
	1,2083 STAVAX	40				1		
	1,2365	39						50 / 55
	1,2367	39						
	TOOLOX 33	39						33
	TOOLOX 44	39						44
	DAC MAGIC	39						48
	W 300	38				1,2343		45 / 50
	IMPAX	39						50 / 55
	1,2080	39						50 / 60
	K110	40				1,2379		
	K720	40				1,2842		
	K390	40						
	K890	40						
K	M4- HSS	40			M4			58 / 63
	G25- GHISA / G25- CAST IRON	15	G25	G25		0,6025		





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