

# FRESATURA

## Milling



# Settori di competenza

## Competence fields

### **DIVERSE INDUSTRIE, DIVERSE SFIDE.**

Different industries, different challenges

Con le nostre conoscenze nel campo dell'asportazione truciolo, studiamo e sviluppiamo soluzioni e applicazioni per i vari settori industriali che vanno dall'automobilistico alla meccanica generale. Abbiamo le necessarie competenze per affrontare le differenti problematiche di lavorazione e soddisfare ogni esigenze produttiva che il nostro cliente richiede.

Due to our knowledge of the machining process, we study and develop solutions and applications for many industrial sectors ranging from the automotive to the general machining. We have the necessary skills to face different finishing problems and satisfy any production requirements.



**STAMPI**  
Moulding



Angelo Ghezzi & C SpA

# INDICE DI SEZIONE

## SECTION INDEX



### INTRODUZIONE | INTRODUCTION

<b>SISTEMA CODIFICA INSERTO</b> <b>INSERT DESIGNATION SYSTEM</b>	<b>364-365</b>
<b>SISTEMA CODIFICA QUALITÀ</b> · GRADE DESIGNATION SYSTEM	<b>366-367</b>
<b>DESCRIZIONE QUALITÀ</b> · GRADE DESCRIPTION	<b>368</b>
<b>APPLICAZIONE QUALITÀ</b> · GRADE APPLICATION	<b>369~371</b>
<b>DESIGNAZIONE CORPO FRESA</b> · MILLING TOOL DESIGNATION	<b>373</b>
<b>TIPI DI CENTRAGGIO</b> · COUPLING TYPES	<b>374</b>
<b>GUIDA ALLA SELEZIONE DELL'UTENSILE</b> · TOOL SELECTION GUIDE	<b>375</b>
	<b>376~391</b>



### FRESE PER SPIANATURA | FACE MILLING CUTTERS

<b>36° PENTAGONALE POSITIVO</b> · 36° PENTA POSITIVE	<b>392-393</b>
<b>45° QUADRO NEGATIVO</b> · 45° SQUARE NEGATIVE	<b>394-395</b>
<b>45° QUADRO POSITIVO</b> · 45° SQUARE POSITIVE	<b>396-397</b>

### FRESE PER SPALLAMENTO | SHOULDER MILLING CUTTERS

<b>90° QUADRO POSITIVO</b> · 90° SQUARE POSITIVE	<b>398-399</b>
<b>90° RETTANGOLARE POSITIVO 10</b> · 90° RECTANGULAR POSITIVE 10	<b>400~403</b>
<b>90° RETTANGOLARE POSITIVO 16</b> · 90° RECTANGULAR POSITIVE 16	<b>404~407</b>
 <b>FRESE PER LAMATURA</b> · COUNTERBORING MILLS	<b>408-409</b>
 <b>FRESE A ELICA ESTESA</b> · SHELL TYPE MILLS	<b>410-411</b>

### FRESE PER PROFILATURA | PROFILING MILLING CUTTERS

<b>95° ROMBICO POSITIVO 4-6-10</b> · 95° ROMBIC POSITIVE 4-6-10	<b>412~415</b>
<b>TONDO POSITIVO 10-12</b> · ROUND POSITIVE 10-12	<b>416~419</b>
<b>TONDO POSITIVO 12-16</b> · ROUND POSITIVE 12-16	<b>420~423</b>
<b>FRESE A COPIARE 3000</b> · COPY MILL 3000	<b>424-427</b>
 <b>FRESE PER SMUSSI</b> · CHAMFERING MILLS	<b>428-429</b>
 <b>FRESE PER PROFILATURA MULTIFUNZIONE</b> · PROFILING MULTIFUNCTION MILLS	<b>430-431</b>


### FRESE A TUFFO E PER SPIANATURA | FACE AND PLUNGE MILLING CUTTERS

<b>ALTO AVANZAMENTO SP..08</b> · HIGH FEED SP..08	<b>432~435</b>
<b>ALTO AVANZAMENTO SP..13</b> · HIGH FEED SP..13	<b>436~439</b>
<b>ALTO AVANZAMENTO WN..12</b> · HIGH FEED WN..12	<b>440-441</b>
<b>ALTO AVANZAMENTO WD..12</b> · HIGH FEED WD..12	<b>442-443</b>

### FRESE PER ALLUMINIO | ALUMINUM CUTTERS

<b>FRESE PER ALLUMINIO</b> · ALUMINUM CUTTERS	<b>444-445</b>
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### ADATTATORI FILETTATI | THREADED ADAPTORS

<b>BARRE ANTI-VIBRANTI</b> · ANTI-VIBRATION BARS	<b>446</b>
<b>BARRE IN ACCIAIO</b> · STEEL BARS	<b>447</b>
<b>ESTENSIONE BARRE IN ACCIAIO</b> · EXTENSION FOR STEEL BARS	<b>448</b>
<b>RIDUZIONE BARRE IN ACCIAIO</b> · STEEL REDUCTION BARS	<b>449</b>
 <b>BARRE IN ACCIAIO AD ATTACCO FILETTATO</b> · SCREWED TOOL HOLDERS	<b>451</b>

# SISTEMA CODIFICA ISO INSERTO



FRESATURA  
Milling

INTRODUZIONE  
Introduction

FRESE PER SPANATURA  
Face Milling Cutters

FRESE PER SPALLAMENTO  
Shoulder Milling Cutters

FRESE PER PROFILATURA  
Profiling Milling Cutters

FRESE A TUFO/SPANATURA  
Face and Plunge Cutters

FRESE PER ALLUMINIO  
Alu Cutters

ADATTATORI FILETTATI  
Threaded Adaptors

H		M	
O		V	
P		W	
<b>S</b>		L	
T		A	
C		B	
D		K	
E		R	
F		X	Speciale

**1 - Forma inserto**

Simbolo	m (mm)	d (mm)	s (mm)
A	±0.005	±0.025	±0.025
F	±0.005	±0.013	±0.025
C	±0.013	±0.025	±0.025
<b>H</b>	<b>±0.013</b>	<b>±0.013</b>	<b>±0.025</b>
E	±0.025	±0.025	±0.025
G	±0.025	±0.025	±0.13
J	±0.005	±0.05~±0.13	±0.025
K*	±0.013	±0.05~±0.13	±0.025
L*	±0.025	±0.05~±0.13	±0.025
M*	±0.08~±0.20	±0.05~±0.13	±0.13
N*	±0.08~±0.20	±0.05~±0.13	±0.025
U*	±0.13~±0.38	±0.08~±0.25	±0.13

\*Come regola questi inserti sono uguali a quelli sinterizzati. Differiscono per l'accuratezza della classe di tol M. Riferirsi alla tavola a destra.

Inserti triangolari con una sfaccettatura (tagliente secondario)

Dimensione dettagliata dell'inserto della classe M  
Tolleranze di altezza dell'inserto (mm)

Cerchio inscritto	T	S	C	D	V
6.35	±0.08	-	-	-	-
9.525	±0.08	±0.08	±0.11	±0.10	±0.13
12.70	±0.13	±0.13	±0.13	±0.15	-
15.875	±0.15	±0.15	±0.15	±0.18	-
19.05	±0.15	±0.15	±0.15	±0.18	-
25.40	-	±0.18	-	-	-
31.75	-	±0.25	-	-	-

Tolleranza cerchio inscritto (mm)

Cerchio inscritto	T	S	C	D	V
6.35	±0.05	-	-	-	-
9.525	±0.05	±0.05	±0.05	±0.05	±0.05
12.70	±0.08	±0.08	±0.08	±0.08	±0.08
15.875	±0.10	±0.10	±0.10	±0.10	±0.10
19.05	-	-	-	-	±0.10
25.40	-	±0.13	-	-	±0.10
31.75	-	±0.20	-	-	±0.12

**3 - Tolleranza**

A	B	C	D	<b>E</b>
F	G	N	P	O
				Altri tipi di angoli

**2 - Angolo di spoglia**

ISO **S E H T**

**4 - Forma e fissaggio**

Simbolo	Tipo	Tipo foro	Rompitruciolo	Forma	Simbolo	Tipo	Tipo foro	Rompitruciolo	Forma	Simbolo	Tipo	Tipo foro	Rompitruciolo	Forma	
W	con foro	Foro tondo / singola svasatura (40°~60°)	Senza rompitrucolo		H	con foro	Foro tondo / doppia svasatura (70°~90°)	Rompitrucolo su un lato		G	senza foro	Foro Tondo	Rompitrucolo su entrambi i lati		
T			Rompitrucolo su un lato		C			Senza rompitrucolo		N			-	Senza rompitrucolo	
Q	con foro	Foro tondo / doppia svasatura (40°~60°)	Senza rompitrucolo		J	con foro	Foro tondo	Rompitrucolo su entrambi i lati		R	senza foro	-	Rompitrucolo su un lato		
U			Rompitrucolo su entrambi i lati		A			Senza rompitrucolo		F			-	Rompitrucolo su entrambi i lati	
B			Senza rompitrucolo		M			Rompitrucolo su un lato		X			-	-	-

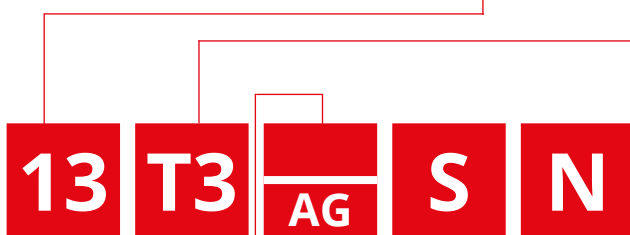
R's	35° V's	55° D's	80° C's	90° S's	60° T's	80° W's	Ø CI mm
-	06	04	-	03	06	02	3,97
-	08	05	04	04	08	L3	4,76
-	09	06	05	05	09	03	5,56
06**	-	-	-	-	-	-	6,00
06*	11	07	06	06	11	04	6,35
07*	13	09	08	07	13	05	7,94
08*	-	-	-	-	-	-	8,00
09*	16	11	09	09	16	06	9,525
10**	-	-	-	-	-	-	10,00
12**	-	-	-	-	-	-	12,00
12*	22	15	12	12	22	08	12,70
15*	27	19	16	15	27	10	15,875
16**	-	-	-	-	-	-	16,00
19*	33	23	19	19	33	13	19,05
20**	-	-	-	-	-	-	20,00
25**	-	-	-	-	-	-	25,00
25*	44	31	25	25	44	17	25,40
31*	54	38	32	31	54	21	31,75
32**	-	-	-	-	-	-	32,00

\*\* Solo designazione metrica (La designazione del raggio è M0)

Secondo la norma internazionale ISO 1832 - 2012(E)

"Inserti modulari per utensili da taglio - Designazione"

5 - Dimensione inserto



ISO	mm
01	1.59
T1	1.98
02	2.38
03	3.18
T3	3.97
04	4.76
05	5.56
06	6.35
07	7.94
09	9.52
12	12.70

6 - Spessore inserto

7 - Raggio spigolo inserto	
ISO	mm
00	Spigolo vivo
01	0.10
02	0.20
04	0.40
08	0.80
12	1.2
16	1.6
20	2.0
24	2.4
28	2.8
32	3.2
00 (M0/metrico)	Inserto Tondo

7.1* - Configurazione inserto			
Per gli inserti con bordi secondari si utilizzano due cifre:			
La prima cifra è il bordo secondario		La seconda cifra è angolo di rilievo dei bordi secondari	
<b>A</b>	45°	A	3°
D	60°	B	5°
E	75°	C	7°
F	85°	D	15°
P	90°	E	20°
Z	speciale	F	25°
		<b>G</b>	30°
		N	0°
		P	11°
		Z	speciale

\*Solo quando richiesto.

8* - Preparazione tagliente		
Forma	Onatura	Simbolo
	Senza onatura	F
	Con onatura	E
	Smussato senza onatura	T
	Smussato con onatura	<b>S</b>

\*Solo quando richiesto.

9 - Direzione taglio		
Forma	Direzione	Symbol
	Destro	R
	Sinistro	L
	Neutro	<b>N</b>

# INSERT DESIGNATION ISO SYSTEM



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ADATTATORI FILETTATI  
Threaded Adaptors

H		M	
O		V	
P		W	
<b>S</b>		L	
T		A	
C		B	
D		K	
E		R	
F		X	Speciale

**1 - Insert shape symbol**

Triangular inserts with a facet  
(secondary cutting edge)

Symbol	m (mm)	d (mm)	s (mm)
A	±0.005	±0.025	±0.025
F	±0.005	±0.013	±0.025
C	±0.013	±0.025	±0.025
<b>H</b>	<b>±0.013</b>	<b>±0.013</b>	<b>±0.025</b>
E	±0.025	±0.025	±0.025
G	±0.025	±0.025	±0.13
J	±0.005	±0.05~±0.13	±0.025
K*	±0.013	±0.05~±0.13	±0.025
L*	±0.025	±0.05~±0.13	±0.025
M*	±0.08~±0.20	±0.05~±0.13	±0.13
N*	±0.08~±0.20	±0.05~±0.13	±0.025
U*	±0.13~±0.38	±0.08~±0.25	±0.13

Detailed dimension of M class insert Insert height Tolerances (mm)					
Inscribed circle	T	S	C	D	V
6.35	±0.08	-	-	-	-
9.525	±0.08	±0.08	±0.11	±0.10	±0.13
12.70	±0.13	±0.13	±0.13	±0.15	-
15.875	±0.15	±0.15	±0.15	±0.18	-
19.05	±0.15	±0.15	±0.15	±0.18	-
25.40	-	±0.18	-	-	-
31.75	-	±0.25	-	-	-

Inscribed circle Tolerances (mm)					
Inscribed circle	T	S	C	D	V
6.35	±0.05	-	-	-	-
9.525	±0.05	±0.05	±0.05	±0.05	±0.05
12.70	±0.08	±0.08	±0.08	±0.08	±0.08
15.875	±0.10	±0.10	±0.10	±0.10	±0.10
19.05	-	-	-	-	±0.10
25.40	-	±0.13	-	-	±0.10
31.75	-	±0.20	-	-	±0.12

\*As a rule, the sides of these inserts are as sintered. Tolerance differs with insert size, for the accuracy of class M, refer to the table on the right.

**3 - Tolerances symbol**

A	B	C	D	<b>E</b>
F	G	N	P	O
				Altri tipi di angoli

**2 - Normal clearance symbol**

ISO **S E H T**

4 - Insert symbol														
symbol	Type	Hole type	Chipbreaker	Shape	symbol	Type	Hole type	Chipbreaker	Shape	symbol	Type	Hole type	Chipbreaker	Shape
W	with hole	Round hole / one countersink (40°~60°)	Without chipbreaker		H	with hole	Round hole / one countersink (70°~90°)	Chipbreaker on one side		G	without hole	with hole	Round hole	Chipbreaker on both sides
T			Chipbreaker on one side		C		Round hole / double countersink (70°~90°)	Without chipbreaker		N		-	Without chipbreaker	
Q	without hole	Round hole / double countersink (40°~60°)	Without chipbreaker		J	without hole	Round hole	Chipbreaker on both sides		R	without hole	-	Chipbreaker on one side	
U			Chipbreaker on both sides		A			Without chipbreaker		F		-	Chipbreaker on both sides	
B			Without chipbreaker		M			Chipbreaker on one side		X		-	-	-

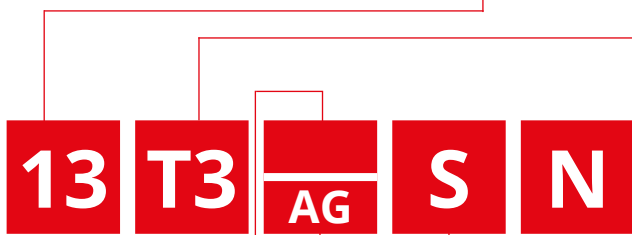
R's	35° V's	55° D's	80° C's	90° S's	60° T's	80° W's	Ø CI
							mm
-	06	04	-	03	06	02	3,97
-	08	05	04	04	08	L3	4,76
-	09	06	05	05	09	03	5,56
06**	-	-	-	-	-	-	6,00
06*	11	07	06	06	11	04	6,35
07*	13	09	08	07	13	05	7,94
08*	-	-	-	-	-	-	8,00
09*	16	11	09	09	16	06	9,525
10**	-	-	-	-	-	-	10,00
12**	-	-	-	-	-	-	12,00
12*	22	15	<b>12</b>	12	22	08	<b>12,70</b>
15*	27	19	16	15	27	10	15,875
16**	-	-	-	-	-	-	16,00
19*	33	23	19	19	33	13	19,05
20**	-	-	-	-	-	-	20,00
25**	-	-	-	-	-	-	25,00
25*	44	31	25	25	44	17	25,40
31*	54	38	32	31	54	21	31,75
32**	-	-	-	-	-	-	32,00

\*\* Metric designation only (Radius Designation is M0)

According to International Standard ISO 1832 - 2012(E)

"Indexable inserts for cutting tools - Designation"

**5 - Insert size symbol**



ISO	mm
01	1.59
T1	1.98
02	2.38
03	3.18
T3	3.97
04	4.76
05	5.56
06	6.35
07	7.94
09	9.52
12	12.70

**6 - Insert thickness symbol**

**7 - Insert corner symbol**

ISO	mm	inch	ANSI
00	Sharp nose		0
01	0.10	.004	0.2
02	0.20	.008	0.5
04	0.40	.015	1
08	0.80	.032	2
12	1.2	.047	3
16	1.6	.062	4
20	2.0	.078	5
24	2.4	.094	6
28	2.8	.109	7
32	3.2	.125	8
00 (inch or M0/metric)	Round insert		0

**7.1\* - Insert edges symbol**

For inserts having secondary edges two digits are used:

1 <sup>st</sup> digit is secondary edge		2 <sup>nd</sup> digit is secondary edges relief angle	
A	45°	A	3°
D	60°	B	5°
E	75°	C	7°
F	85°	D	15°
P	90°	E	20°
Z	special	F	25°
		G	30°
		N	0°
		P	11°
		Z	special

\*only when required.

**8\* - Cutting edge information**

Shape	Honing	Symbol
	No honing	F
	With honing	E
	Chamfered No honing	T
	Chamfered with honing	S

\*only when required.

**9 - Cutting direction**

Shape	Hand	Symbol
	Right	R
	Left	L
	None	N

# SISTEMA CODIFICA QUALITÀ

## Grade Designation System

**T C M 7 20**

### MARCHIO | BRAND

<b>T</b>	<b>Talcarb</b>
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### MATERIALE INSERTO | INSERT MATERIAL

<b>C</b>	<b>Metallo Duro</b>   Solide Carbide
B	<b>Riporto di nitruro cubico di Boro</b>   Polycrystalline-Cubic-Boron-Nitride tips
P	<b>Riporto di diamante</b>   Polycrystalline Tip

### GRUPPO MATERIALI | MATERIALS GROUP

	<b>P</b>	<b>ACCIAIO</b>   STEEL
<b>M</b>	<b>M</b>	<b>ACCIAIO INOSSIDABILE</b>   STAINLESS STEEL
	<b>K</b>	<b>GHISA</b>   CAST IRON
	<b>N</b>	<b>NON FERROSI</b>   NON FERROUS
	<b>S</b>	<b>LEGHE RESISTENTI AL CALORE</b>   HEAT RESISTANT ALLOYS
	<b>H</b>	<b>ACCIAIO TEMPRATO</b>   HARDENED MATERIALS
	<b>U</b>	<b>LAVORAZIONI UNIVERSALI</b>   UNIVERSAL MACHINING
	<b>F</b>	<b>LAVORAZIONI DI FILETTATURA</b>   THREADING MACHINING

### TIPO DI RIVESTIMENTO | COATING TYPE

	<b>0</b>	<b>NON RIVESTITO</b>   UNCOATED
	<b>5</b>	<b>MT-CVD-<math>Al_2O_3</math></b>
	<b>6</b>	<b>PVD TIAIN</b>
<b>7</b>	<b>7</b>	<b>PVD AITIN</b>
	<b>8</b>	<b>DIAMANTE</b>   DIAMOND

### CAMPO APPLICAZIONE | APPLICATION RANGE

	<b>5</b>	<b>RESISTENTE</b>	<b>FINITURA FINE</b>   FINE FINISHING
	<b>10</b>	<b>HARDEST</b>	<b>FINITURA</b>   FINISHING
	<b>15</b>		
<b>20</b>	<b>20</b>		<b>DA MEDIA A SGROSSATURA</b>   MEDIUM TO ROUGHING
	<b>25</b>		
	<b>30</b>		<b>SGROSSATURA</b>   ROUGHING
	<b>35</b>		
	<b>40</b>		
	<b>45</b>	<b>TENACE</b>	<b>SGROSSATURA PESANTE</b>   HEAVY ROUGHING
	<b>50</b>	<b>TOUGHEST</b>	





## DESCRIZIONE QUALITÀ

Grade Description

PVD		
QUALITÀ   Grade	DESCRIZIONE   Description	
<b>TCP605</b> <b>P01-P15</b> <b>H10-H20</b>	<p><b>Qualità sub-micrograna in metallo duro rivestita PVD adatto per operazioni di finitura su acciai e acciai temprati. Questa è la prima scelta per la finitura su acciai per stampi.</b></p> <p>PVD coated sub micro-grain grade suitable for light finishing operations on steels &amp; hardened steels. This is the first choice for finishing on mould steel.</p>	
<b>TCU610</b> <b>P05-P10</b> <b>K05-K10</b>	<p><b>Qualità in metallo duro rivestita PVD TiAlN substrato in micrograna molto dura per fresatura leggera di acciaio, ghise e alcuni acciai temprati.</b></p> <p>TiAlN PVD coated carbide grade with a very hard micro grain substrate for light milling of steels, cast iron and some hardened steels.</p>	
<b>TCU620</b> <b>P10-P35</b> <b>M10-M25</b> <b>K10-K30</b> <b>S10-S30</b>	<p><b>Avanzata qualità in metallo duro rivestita PVD TiAlN su un substrato sub-micro resistenza all'usura per la lavorazione di uso generale degli acciai inossidabili e leghe di titanio.</b></p> <p>An advanced TiAlN PVD coated grade over a tough wear resistance sub-micro substrate for general purpose machining of stainless steels &amp; titanium alloys.</p>	
<b>TCU630</b> <b>P20-P40</b> <b>M20-M30</b> <b>K20-K40</b>	<p><b>Qualità di metallo duro micro-grano adatto per applicazioni con condizioni di instabilità. Ottima soluzione per applicazioni a velocità di taglio medie.</b></p> <p>Micro-grain carbide grade suitable for applications with instability conditions. Excellent solution for medium cutting speed applications.</p>	
<b>TCU640</b> <b>P30-P50</b> <b>M30-M50</b> <b>K10-K30</b> <b>S30-S40</b>	<p><b>Qualità in metallo duro rivestita PVD TiAlN con spessore maggiore per applicazioni di sgrossatura pesanti. Adatto su tutti i tipi di materiali e ottima resistenza alle vibrazioni.</b></p> <p>TiAlN PVD large thickness coated grade for heavy roughing applications. Can work on all type of materials and endures a lot of vibration.</p>	
<b>TCK610</b> <b>K10-K30</b>	<p><b>Qualità in metallo duro rivestita PVD TiAlN su un substrato duro e superficie molto liscia. Ideale per alte velocità di taglio su ghise.</b></p> <p>TiAlN PVD coated carbide grade with a hard substrate and very smooth surface. Ideal for high speed cutting of cast irons.</p>	

FRESATURA  
MillingINTRODUZIONE  
IntroductionFRESE PER SPIANATURA  
Face Milling CuttersFRESE PER SPALLAMENTO  
Shoulder Milling CuttersFRESE PER PROFILATURA  
Profiling Milling CuttersFRESE A TUFFO-SPIANATURA  
Face and Plunge CuttersFRESE PER ALLUMINIO  
Alu CuttersADATTATORI FILETTATI  
Threaded Adaptors



## DESCRIZIONE QUALITÀ

### Grade Description

FRESATURA  
MillingINTRODUZIONE  
IntroductionFRESE PER SPIANATURA  
Face Milling CuttersFRESE PER SPALLAMENTO  
Shoulder Milling CuttersFRESE PER PROFILATURA  
Profiling Milling CuttersFRESE A TUFFO-SPIANATURA  
Face and Plunge CuttersFRESE PER ALLUMINIO  
Alu CuttersADATTATORI FILETTATI  
Threaded Adaptors

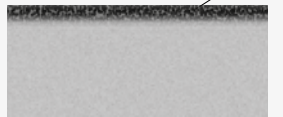
## PVD

QUALITÀ   Grade	DESCRIZIONE   Description	
<b>TCP625</b>  <b>P20-P30</b>	<p><b>Qualità in metallo duro rivestita PVD per fresatura pesante (umido e secco) su acciaio ad elevata temperatura (ad esempio in acciai temprati o acciai pre-temprati). Eccellente grado di fresatura su acciai per stampi ad alta produttività.</b></p> <p>PVD coated carbide grade for light to heavy milling (wet and dry) in steel at elevates temperature (e.g. in hardened steels or prehardened steels). Excellent grade to milling of mould steels at high productivity.</p>	
<b>TCP635</b>  <b>P30-P40</b>	<p><b>Qualità in metallo duro rivestita PVD substrato molto tenace per operazioni impegnative nella fresatura degli acciai. Eccellente soluzione in condizioni instabili e PER APPLICAZIONI sia ad umido che a secco.</b></p> <p>PVD coated carbide four toughness demanding operations in milling of steels. Excellent solutions for instable applications and can be apply in wet or dry.</p>	
<b>TCK625</b>  <b>K10-K30</b>	<p><b>Qualità in metallo duro rivestita AlTiN PVD progettata per medie sgrossature di ghise grigie e nodulari con eccellente durata dell'utensile a basse e medie velocità di taglio.</b></p> <p>TiAlN PVD coated carbide grade designed for medium to roughing of grey and nodular cast irons with excellent tool life at low to medium cutting speeds.</p>	
<b>TCP710</b>  <b>P05-P10</b> <b>K05-K10</b>	<p><b>Qualità altamente resistente all'usura grado AlTiN PVD principalmente per lavorazioni leggera e semi-finitura su acciai e acciai temprati.</b></p> <p>A highly wear-resistant AlTiN PVD coated grade primarily for light machining and semi-finishing in steels and hardened steels.</p>	
<b>TCM720</b>  <b>P10-P35</b> <b>M10-M25</b> <b>K10-K30</b> <b>S10-S30</b>	<p><b>Avanzata qualità di metallo duro sub-micro rivestita AlTiN PVD per una elevata resistenza all'usura per la lavorazione di acciai, acciai inossidabili e ghise ad alte velocità di taglio.</b></p> <p>Advanced AlTiN PVD coated carbide over a tough wear resistance submicro subbstrate for general puporse machining of steels and cast irons at high cutting speeds.</p>	
<b>TCM730</b>  <b>P20-P40</b> <b>M20-M30</b> <b>K20-K40</b> <b>S25-S35</b>	<p><b>Metallo duro rivestito AlTiN PVD sviluppato per fornire migliori prestazioni in lavorazione generale acciai, acciai inossidabili e leghe resistenti al calore. Ottima resistenza alla rottura e all'usura.</b></p> <p>AlTiN PVD coated carbide developed to provide better performance in general machining of stainless-steels and high-temp alloys. Resistant to breakage and offer improved wear resistance and increased strength.</p>	



## DESCRIZIONE QUALITÀ

### Grade Description

PVD		
QUALITÀ   Grade	DESCRIZIONE   Description	
<p><b>TCU740</b></p> <p><b>P30-P50</b> <b>M30-M50</b> <b>K30-K40</b> <b>S30-S40</b></p>	<p><b>Qualità in metallo duro estremamente tenace rivestito AlTiN PVD per le applicazioni da medie a pesanti e in condizioni di instabilità. Consigliato per leghe alta temperatura, tutti gli acciai e ghise. Può essere utilizzato sia a umido che a secco.</b></p> <p>Very tough, general-purpose AlTiN PVD-coated carbide grade for medium to heavy milling applications and on instable conditions. Recommended for high-temp alloys, all steels and cast irons. Can be used either wet or dry.</p>	
NON RIVESTITO   Uncoated		
<p><b>TCN010</b></p> <p><b>K01-K10</b> <b>N01-N20</b></p>	<p><b>Metallo duro micrograna non rivestito combina una buona resistenza all'usura da abrasione e tenacità. Adatto sia a sgrossare che finire su LEGHE RESISTENTI AL CALORE, leghe di titanio, ghise e leghe di alluminio.</b></p> <p>Uncoated carbide micro-grain grade combining a good abrasive wear resistance and toughness. Suitable for rough to finish operations of HRSA, Titanium alloys, cast irons and Aluminium alloys.</p>	

FRESATURA  
Milling

INTRODUZIONE  
Introduction

FRESE PER SPIANATURA  
Face Milling Cutters

FRESE PER SPALLAMENTO  
Shoulder Milling Cutters

FRESE PER PROFILATURA  
Profiling Milling Cutters

FRESE A TUFFO-SPIANATURA  
Face and Plunge Cutters

FRESE PER ALLUMINIO  
Alu Cutters

ADATTATORI FILETTATI  
Threaded Adaptors

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# APPLICAZIONE QUALITÀ

## Grade Application

PVD		
QUALITÀ   Grade	APPLICAZIONE   Application	ISO
TCP605	<b>ACCIAIO / MATERIALI DURI</b> Steel / Hard materials	<b>P (01-05), H (10-20)</b>
TCU610	<b>ACCIAIO / GHISA</b> Steel / Cast Iron	<b>P (05-10), K (05-10)</b>
TCU620	<b>ACCIAIO / INOSSIDABILE / GHISA ACCIAIO SPECIALE</b> Steel / Stainless Steel / Cast Iron / Super Alloy	<b>P(10-35), M(10-25), K(10-30), S(10-30)</b>
TCU630	<b>ACCIAIO / INOSSIDABILE / GHISA</b> Steel / Stainless / Cast Iron	<b>P (20-40), M (20-30), K (20-40)</b>
TCU640	<b>ACCIAIO / INOSSIDABILE GHISA / SUPERLEGHE</b> Steel / Stainless / Cast Iron / Hrsa	<b>P(30-50), M(30-50), K(30-40), S(30-40)</b>
TCK610	<b>GHISA - Cast Iron</b>	<b>K (05-15)</b>
TCP625	<b>ACCIAIO - Steel</b>	<b>P (20-30)</b>
TCP635	<b>ACCIAIO - Steel</b>	<b>P (30-40)</b>
TCK625	<b>GHISA - Cast Iron</b>	<b>K (10-30)</b>
TCP710	<b>ACCIAIO / GHISA</b> Steel / Cast Iron	<b>P(05-10), K(05-10)</b>
TCM720	<b>ACCIAIO / INOSSIDABILE GHISA / SUPERLEGHE</b> Steel / Stainless / Cast Iron / Hrsa	<b>P(10-35), M(10-25), K(10-30), S(10-30)</b>
TCM730	<b>ACCIAIO / INOSSIDABILE GHISA / SUPERLEGHE</b> Steel / Stainless / Cast Iron / Hrsa	<b>P(20-40), M(20-30), K(20-40), S(25-35)</b>
TCU740	<b>ACCIAIO / INOSSIDABILE GHISA / SUPERLEGHE</b> Steel / Stainless / Cast Iron / Hrsa	<b>P(30-50), M(30-50), K(30-40), S(30-40)</b>

NON RIVESTITO   Uncoated		
QUALITÀ   Grade	APPLICAZIONE   Application	ISO
TCN010	<b>ALLUMINIO / NON FERROSI</b> Aluminium / Non Ferrous	<b>N (01-20)</b>

FRESATURA  
MillingINTRODUZIONE  
IntroductionFRESE PER SPIANATURA  
Face Milling CuttersFRESE PER SPALLAMENTO  
Shoulder Milling CuttersFRESE PER PROFILATURA  
Profiling Milling CuttersFRESE A TUFFO-SPIANATURA  
Face and Plunge CuttersFRESE PER ALLUMINIO  
Alu CuttersADATTATORI FILETTATI  
Threaded Adaptors

# DESIGNAZIONE CORPO FRESA

## Milling Tools Designation

FRESATURA  
Milling

INTRODUZIONE  
Introduction

FRESE PER SPIANATURA  
Face Milling Cutters

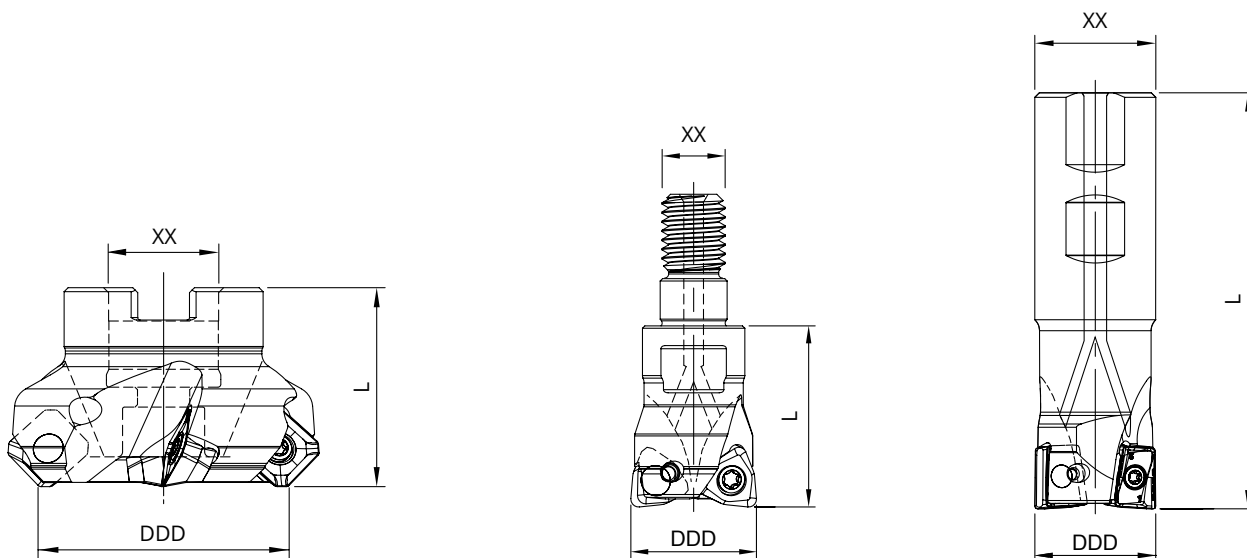
FRESE PER SPALLAMENTO  
Shoulder Milling Cutters

FRESE PER PROFILATURA  
Profiling Milling Cutters

FRESE A TUFFO-SPIANATURA  
Face and Plunge Cutters

FRESE PER ALLUMINIO  
Alu Cutters

ADATTATORI FILETTATI  
Threaded Adaptors



D	D	D				-			X	X	L	-						
0	8	0	A	0	7	R	4	5	2	7		S	N	1	2	0	6	

**Diametro Utensile**  
Diameter Tool

**Tipo di centraggio**  
Coupling Type

**Numero di denti**  
Number of teeth

**Rotazione Fresa**  
Cutter rotation

**Angolo di registrazione**  
Lead angle

**Diametro di centraggio**  
Coupling diameter

**Lunghezza totale**  
(solo per attacchi cilindrici)  
Total length (only cylindrical shank)

**Tipo di inserto**  
Insert type

# TIPI DI CENTRAGGIO

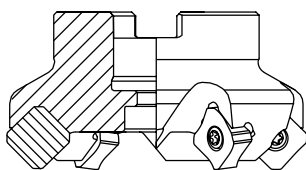
## Coupling Types

SIMBOLO Symbol	TIPO DI CENTRAGGIO Couplin type	BLOCCAGGIO INSERTO Inserts fixation type
<b>A</b>	<b>MONTAGGIO A MANICOTTO</b> Arbor mounting	<b>INSERTO VITE</b> Insert screw
<b>C</b>		<b>VITE, VITE CON RONDELLA E VITE CUNEO</b> Insert screw and washer, Screw clamp or clamp
<b>R</b>	<b>ATTACCO FILETTATO</b> Threaded coupling	<b>QUALSIASI TIPO</b> Any type
<b>W</b>	<b>ATTACCO WELDON</b> Weldon shank	<b>QUALSIASI TIPO</b> Any type

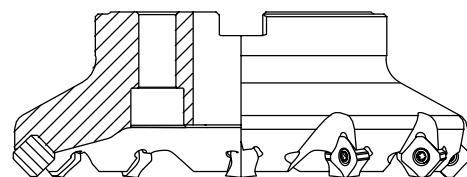
# TIPI DI MONTAGGI A MANICOTTO

## Arbour mounting types

**MANICOTTO (TIPO A)**  
Arbor mounting (type A)



**MANICOTTO (TIPO C)**  
Arbor mounting (type C)



FRESATURA  
Milling

INTRODUZIONE  
Introduction

FRESE PER SPIANATURA  
Face Milling Cutters

FRESE PER SPALLAMENTO  
Shoulder Milling Cutters

FRESE PER PROFILATURA  
Profiling Milling Cutters

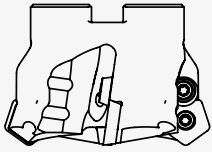
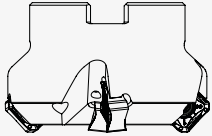
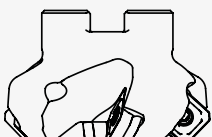
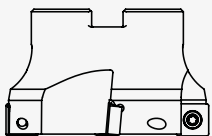
FRESE A TUFFO-SPIANATURA  
Face and Plunge Cutters

FRESE PER ALLUMINIO  
Alu Cutters

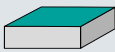
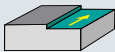
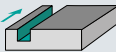

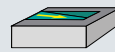

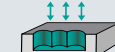

ADATTATORI FILETTATI  
Threaded Adaptors

# GUIDA ALLA SELEZIONE DELL'UTENSILE

## Application Selection Guide

PAGINA Page	DEFINIZIONE Designation	INSERTO Insert	Kr	Ø GAMMA (D <sub>1</sub> , mm) Ø Range (D <sub>1</sub> , mm)	a <sub>p</sub> max (mm)	CARATTERISTICHE Features
392	 <b>36° PENTAGONALE POSITIVO</b> 36° Penta Positive	PD... 1204	36°	66 - 160	5,5	<ul style="list-style-type: none"> <li>• <b>Spoglia assiale positiva e basse forze di taglio.</b></li> <li>• <b>Adduzione refrigerante interna.</b></li> <li>• High rake angle and low cutting forces.</li> <li>• Internal coolant supply.</li> </ul>
394	 <b>45° QUADRO NEGATIVO</b> 45° Square Negative	SN... 1206	45°	50 - 125	6	<ul style="list-style-type: none"> <li>• <b>Alto avanzamento con equilibrato rapporto costo/efficienza.</b></li> <li>• <b>Ampio formatruciolo per garantire l'efficiente evacuazione del truciolo.</b></li> <li>• <b>Inserto negativo bilaterale.</b></li> <li>• <b>Adduzione refrigerante interna.</b></li> <li>• High feed rates &amp; cost/efficiency.</li> <li>• Large chipbreaker ensures the efficient chip evacuation.</li> <li>• Negative insert double size.</li> <li>• Internal coolant supply.</li> </ul>
396	 <b>45° QUADRO POSITIVO</b> Square Positive	SE... 13T3	45°	50 - 100	6	<ul style="list-style-type: none"> <li>• <b>Basse forze di taglio.</b></li> <li>• <b>Indicata per lavorazione ad alte velocità di taglio.</b></li> <li>• <b>Eccellente evacuazione truciolo. Inserto stabile grazie al supporto in metallo duro.</b></li> <li>• Low cutting forces.</li> <li>• Suitable for high-speed machining.</li> <li>• Excellent chip flow.</li> <li>• High rigidity due to carbide shim.</li> </ul>
398	 <b>90° QUADRO POSITIVO</b> 90° Square Positive	SPMT 120408	90°	40 - 100	11	<ul style="list-style-type: none"> <li>• <b>Quattro taglienti per inserto.</b></li> <li>• <b>Perfette finiture superficiali.</b></li> <li>• <b>Minore assorbimento di potenza.</b></li> <li>• Four cutting edges per insert.</li> <li>• Excellent surface finishes.</li> <li>• Low power requirements.</li> </ul>




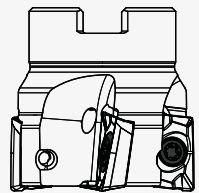

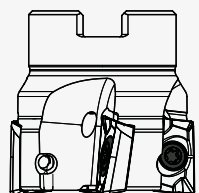
 <b>FRESATURA A SPIANARE</b> Face Milling	 <b>FRESATURA A SPALLAMENTO</b> Shouldering	 <b>FRESATURA A SCANALARE</b> Slotting	 <b>FRESATURA SPALLAMENTO INCLINATO E SMUSSO</b> Slanted Shoulder & Chamfer	 <b>FRESATURA IN RAMPA</b> Ramp Down	 <b>FRESATURA A INTERPOLAZIONE ELICOIDALE</b> Helical Interpolation	 <b>FRESATURA A TUFFO</b> Plunging	 <b>FRESATURA A PROFILARE</b> Profiling	<b>GRUPPO MATERIALI</b> Materials Group
●	-	-	●	●	●	-	-	P K
●	-	-	●	-	-	-	-	P M K S
●	-	-	●	-	-	-	-	P M K N
●	●	-	-	-	-	-	-	P M K S

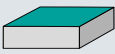
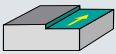
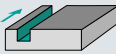

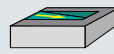

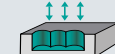
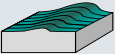
FRESATURA Milling	INTRODUZIONE Introduction	FRESE PER SPIANATURA Face Milling Cutters	FRESE PER SPALLAMENTO Shoulder Milling Cutters	FRESE PER PROFILATURA Profiling Milling Cutters	FRESE A TUFFO-SPIANATURA Face and Plunge Cutters	FRESE PER ALLUMINIO Alu Cutters	ADATTATORI FILETTATI Threaded Adaptors
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# GUIDA ALLA SELEZIONE DELL'UTENSILE

## Application Selection Guide

FRESATURA  
MillingINTRODUZIONE  
IntroductionFRESE PER SPIANATURA  
Face Milling CuttersFRESE PER SPALLAMENTO  
Shoulder Milling CuttersFRESE PER PROFILATURA  
Profiling Milling CuttersFRESE A TUFO-SPIANATURA  
Face and Plunge CuttersFRESE PER ALLUMINIO  
Alu CuttersADATTATORI FILETTATI  
Threaded Adaptors

PAGINA Page	DEFINIZIONE Designation	INSERTO Insert	Kr	Ø GAMMA (D <sub>1</sub> , mm) Ø Range (D <sub>1</sub> , mm)	a <sub>p</sub> max (mm)	CARATTERISTICHE Features
400	 <b>90° RETTANGOLARE POSITIVO 10</b> Rectangular Positive 10	AP... 1003	90°	16 - 25	9-10	<ul style="list-style-type: none"> <li>• <b>Innovativo profilo del tagliente curvilineo e del disegno formatruciolo assicura un ideale angolo di 90 gradi.</b></li> <li>• <b>Miglioramento della vita utensile su differenti condizioni di lavoro.</b></li> <li>• <b>Le particolari geometrie di taglio riducono le forze e migliorano l'evacuazione del truciolo.</b></li> <li>• <b>Adduzione refrigerante interna.</b></li> </ul>
400	 <b>90° RETTANGOLARE POSITIVO 10</b> 90° Rectangular Positive 10	AP... 1003	90°	40 - 80	9-10	
404	 <b>90° RETTANGOLARE POSITIVO 16</b> 90° Rectangular Positive 16	AP... 1604	90°	25 - 40	16	
404	 <b>90° RETTANGOLARE POSITIVO 16</b> 90° rectangular Positive 16	AP... 1604	90°	40 - 100	16	

 <b>FRESATURA A SPIANARE</b> Face Milling	 <b>FRESATURA A SPALLAMENTO</b> Shouldering	 <b>FRESATURA A SCANALARE</b> Slotting	 <b>FRESATURA SPALLAMENTO INCLINATO E SMUSSO</b> Slanted Shoulder & Chamfer	 <b>FRESATURA IN RAMPA</b> Ramp Down	 <b>FRESATURA A INTERPOLAZIONE ELICOIDALE</b> Helical Interpolation	 <b>FRESATURA A TUFFO</b> Plunging	 <b>FRESATURA A PROFILARE</b> Profiling	<b>GRUPPO MATERIALI</b> Materials Group
●	●	●	-	●	●	-	-	P M K N
●	●	●	-	●	●	-	-	P M K N
●	●	●	-	●	●	-	-	P M K N
●	●	●	-	●	●	-	-	P M K N

FRESATURA  
Milling

INTRODUZIONE  
Introduction

FRESE PER SPIANATURA  
Face Milling Cutters

FRESE PER SPALLAMENTO  
Shoulder Milling Cutters

FRESE PER PROFILATURA  
Profiling Milling Cutters

FRESE A TUFFO-SPIANATURA  
Face and Plunge Cutters

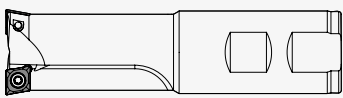
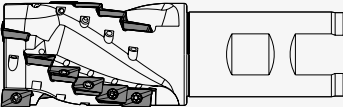
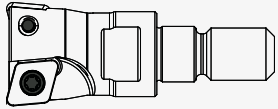
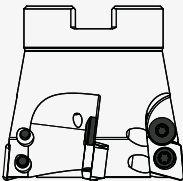
FRESE PER ALLUMINIO  
Alu Cutters

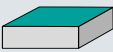
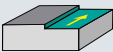
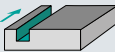

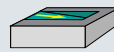

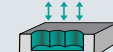

ADATTATORI FILETTATI  
Threaded Adaptors

# GUIDA ALLA SELEZIONE DELL'UTENSILE

## Application Selection Guide

FRESATURA  
MillingINTRODUZIONE  
IntroductionFRESE PER SPIANATURA  
Face Milling CuttersFRESE PER SPALLAMENTO  
Shoulder Milling CuttersFRESE PER PROFILATURA  
Profiling Milling CuttersFRESE A TUFO-SPIANATURA  
Face and Plunge CuttersFRESE PER ALLUMINIO  
Alu CuttersADATTATORI FILETTATI  
Threaded Adaptors

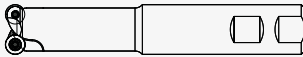
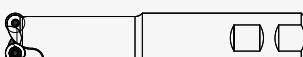
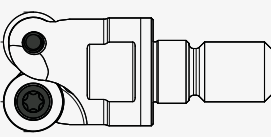
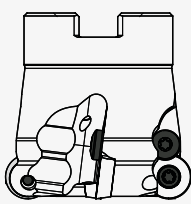
PAGINA Page	DEFINIZIONE Designation	INSERTO Insert	Kr	Ø GAMMA (D <sub>1</sub> , mm) Ø Range (D <sub>1</sub> , mm)	a <sub>p</sub> max (mm)	CARATTERISTICHE Features
408	 <b>FRESA PER LAMATURA</b> Counterboring Mill	CC.. 060204	-	18-33	-	<ul style="list-style-type: none"> <li>• <b>Fresa per l'esecuzione di sedi viti a testa piatta (180°).</b></li> <li>• Mill for counterboring holes for flat head screws (180°).</li> </ul>
410	 <b>FRESA A ELICA ESTESA</b> Shell Type Mill	AP.. 1003..	-	25-32	-	<ul style="list-style-type: none"> <li>• <b>Fresa a riccio, angolo di attacco a 90°, inserto positivo, indicato per lavorazioni di contornatura e spallamento.</b></li> <li>• Shell type mill, entering angle 90°, positive insert, suitable for contour milling and shouldering.</li> </ul>
412	 <b>95° ROMBICO POSITIVO 4-6-10</b> 95° Rhombic Positive 4-6-10	XD... 040110 060210 10T310	95°	10 - 35	0,8-1	<ul style="list-style-type: none"> <li>• <b>Fresa a finire nelle profilature.</b></li> <li>• <b>Basso consumo di potenza.</b></li> <li>• <b>Adduzione refrigerante interna.</b></li> <li>• Designed for Finishing and profile milling.</li> <li>• Low energy consumption.</li> <li>• Internal coolant supply.</li> </ul>
412	 <b>95° ROMBICO POSITIVO 4-6-10</b> 95° Rhombic Positive 4-6-10	XD... 10T310	95°	52-66	1	<ul style="list-style-type: none"> <li>• <b>Fresa a finire nelle profilature.</b></li> <li>• <b>Basso consumo di potenza.</b></li> <li>• <b>Adduzione refrigerante interna.</b></li> <li>• Designed for Finishing and profile milling.</li> <li>• Low energy consumption.</li> <li>• Internal coolant supply.</li> </ul>

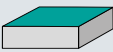
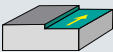
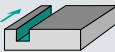

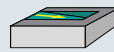

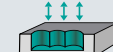

 <b>FRESATURA A SPIANARE</b> Face Milling	 <b>FRESATURA A SPALLAMENTO</b> Shouldering	 <b>FRESATURA A SCANALARE</b> Slotting	 <b>FRESATURA SPALLAMENTO INCLINATO E SIMUSSO</b> Slanted Shoulder & Chamfer	 <b>FRESATURA IN RAMPA</b> Ramp Down	 <b>FRESATURA A INTERPOLAZIONE ELICOIDALE</b> Helical Interpolation	 <b>FRESATURA A TUFFO</b> Plunging	 <b>FRESATURA A PROFILARE</b> Profiling	<b>GRUPPO MATERIALI</b> Materials Group
-	-	-	-	-	-	●	-	P M K N S H
-	-	●	-	-	●	-	-	P M K N S H
●	-	●	-	●	●	-	●	P K H
●	-	●	-	●	●	-	●	P K H

FRESATURA Milling	INTRODUZIONE Introduction	FRESE PER SPIANATURA Face Milling Cutters	FRESE PER SPALLAMENTO Shoulder Milling Cutters	FRESE PER PROFILATURA Profiling Milling Cutters	FRESE A TUFFO-SPIANATURA Face and Plunge Cutters	FRESE PER ALLUMINIO Alu Cutters	ADATTATORI FILETTATI Threaded Adaptors
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# GUIDA ALLA SELEZIONE DELL'UTENSILE

## Application Selection Guide

PAGINA Page	DEFINIZIONE Designation	INSERTO Insert	Kr	Ø GAMMA (D <sub>1</sub> , mm) Ø Range (D <sub>1</sub> , mm)	a <sub>p</sub> max (mm)	CARATTERISTICHE Features
416	 <p><b>TONDO POSITIVO 10</b> Round Positive 10</p>	RD...1003	-	20-32	5	<ul style="list-style-type: none"> <li>• <b>Principalmente adatto per i settori degli stampi, matrici e per la meccanica generale.</b></li> <li>• <b>Fresa a manicotto, codolo Weldon e cilindrico e corpi fresa screw-on.</b></li> <li>• <b>Disponibilità di diverse qualità; ampia gamma di materiali e applicazioni.</b></li> <li>• <b>Adduzione refrigerante interna.</b></li> <li>• Dressed to the die and mould and general engineering markets, mainly.</li> <li>• Arbor mill, Weldon and straight shank, and Screw-On body cutters.</li> <li>• Multiple grades available; wide range of workpieces and applications.</li> <li>• Internal coolant supply.</li> </ul>
416	 <p><b>TONDO POSITIVO 12</b> Round Positive 12</p>	RD... 12T3	-	25-40	5-6	
416	 <p><b>TONDO POSITIVO 10-12</b> Round Positive 10-12</p>	RD... 1003 RD... 12T3	- -	20-42 25-42	5 5	
418	 <p><b>TONDO POSITIVO 10</b> Round Positive 10</p>	RD... 1003	-	40-63	5	

 <b>FRESATURA A SPIANARE</b> Face Milling	 <b>FRESATURA A SPALLAMENTO</b> Shouldering	 <b>FRESATURA A SCANALARE</b> Slotting	 <b>FRESATURA SPALLAMENTO INCLINATO E SIMUSSO</b> Slanted Shoulder & Chamfer	 <b>FRESATURA IN RAMPA</b> Ramp Down	 <b>FRESATURA A INTERPOLAZIONE ELICOIDALE</b> Helical Interpolation	 <b>FRESATURA A TUFFO</b> Plunging	 <b>FRESATURA A PROFILARE</b> Profiling	<b>GRUPPO MATERIALI</b> Materials Group
●	-	-	-	●	●	-	●	P K H
●	-	-	-	●	●	-	●	P K H
●	-	-	-	●	●	-	●	P K H
●	-	-	-	●	●	-	●	P K H

FRESATURA  
Milling

INTRODUZIONE  
Introduction

FRESE PER SPIANATURA  
Face Milling Cutters

FRESE PER SPALLAMENTO  
Shoulder Milling Cutters

FRESE PER PROFILATURA  
Profiling Milling Cutters

FRESE A TUFFO-SPIANATURA  
Face and Plunge Cutters

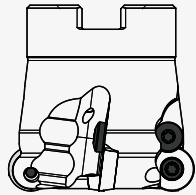
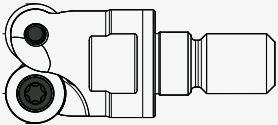
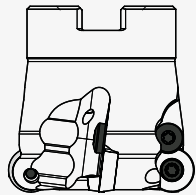
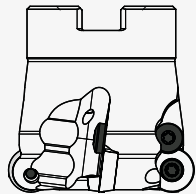
FRESE PER ALLUMINIO  
Alu Cutters

ADATTATORI FILETTATI  
Threaded Adaptors

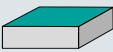
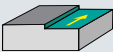
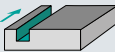

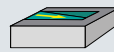

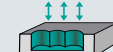

# GUIDA ALLA SELEZIONE DELL'UTENSILE

## Application Selection Guide

FRESATURA  
MillingINTRODUZIONE  
IntroductionFRESE PER SPIANATURA  
Face Milling CuttersFRESE PER SPALLAMENTO  
Shoulder Milling CuttersFRESE PER PROFILATURA  
Profiling Milling CuttersFRESE A TUFFO-SPIANATURA  
Face and Plunge CuttersFRESE PER ALLUMINIO  
Alu CuttersADATTATORI FILETTATI  
Threaded Adaptors

PAGINA Page	DEFINIZIONE Designation	INSERTO Insert	Kr	Ø GAMMA (D <sub>1</sub> , mm) Ø Range (D <sub>1</sub> , mm)	a <sub>p</sub> max (mm)	CARATTERISTICHE Features
418	 <p><b>TONDO POSITIVO 12</b> Round Positive 12</p>	RD... 12T3	-	40-100	6	<ul style="list-style-type: none"> <li>• <b>Principalmente adatto per i settori degli stampi, matrici e per la meccanica generale.</b></li> <li>• <b>Fresa a manicotto, codolo Weldon e cilindrico e corpi fresa screw-on.</b></li> <li>• <b>Disponibilità di diverse qualità; ampia gamma di materiali e applicazioni.</b></li> <li>• <b>Adduzione refrigerante interna.</b></li> </ul>
420	 <p><b>TONDO POSITIVO 12</b> Round Positive 12</p>	RD... 1604	-	35	8	<ul style="list-style-type: none"> <li>• Dressed to the die and mould and general engineering markets, mainly.</li> <li>• Arbor mill, Weldon and straight shank, and Screw-On body cutters.</li> <li>• Multiple grades available; wide range of workpieces and applications.</li> <li>• Internal coolant supply.</li> </ul>
420	 <p><b>TONDO POSITIVO 12</b> Round Positive 12</p>	RD... 12T3	-	52-80	6	<ul style="list-style-type: none"> <li>• <b>Principalmente adatto per i settori degli stampi, matrici e per la meccanica generale.</b></li> <li>• <b>Fresa a manicotto, codolo Weldon e cilindrico e corpi fresa screw-on.</b></li> <li>• <b>Disponibilità di diverse qualità; ampia gamma di materiali e applicazioni.</b></li> <li>• <b>Adduzione refrigerante interna.</b></li> </ul>
420	 <p><b>TONDO POSITIVO 16</b> Round Positive 16</p>	RD... 1604	-	52-80	8	<ul style="list-style-type: none"> <li>• Dressed to the die and mould and general engineering markets mainly.</li> <li>• Arbor mill, Weldon and straight shank, and Screw-On body cutters.</li> <li>• Multiple grades available; wide range of workpieces and applications.</li> <li>• Internal coolant supply.</li> </ul>



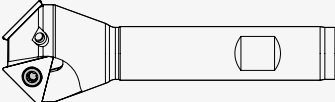

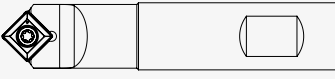



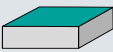
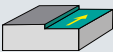
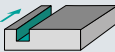

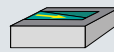

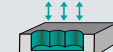

 <b>FRESATURA A SPIANARE</b> Face Milling	 <b>FRESATURA A SPALLAMENTO</b> Shouldering	 <b>FRESATURA A SCANALARE</b> Slotting	 <b>FRESATURA SPALLAMENTO INCLINATO E SIMUSSO</b> Slanted Shoulder & Chamfer	 <b>FRESATURA IN RAMPA</b> Ramp Down	 <b>FRESATURA A INTERPOLAZIONE ELICOIDALE</b> Helical Interpolation	 <b>FRESATURA A TUFFO</b> Plunging	 <b>FRESATURA A PROFILARE</b> Profiling	<b>GRUPPO MATERIALI</b> Materials Group
●	-	-	-	●	●	-	●	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="background-color: #4a7ebb; color: white; padding: 2px 5px; margin-bottom: 2px;">P</div> <div style="background-color: #c0392b; color: white; padding: 2px 5px; margin-bottom: 2px;">K</div> <div style="background-color: #7f7f7f; color: white; padding: 2px 5px;">H</div> </div>
●	-	-	-	●	●	-	●	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="background-color: #4a7ebb; color: white; padding: 2px 5px; margin-bottom: 2px;">P</div> <div style="background-color: #f1c40f; color: white; padding: 2px 5px; margin-bottom: 2px;">M</div> <div style="background-color: #c0392b; color: white; padding: 2px 5px; margin-bottom: 2px;">K</div> <div style="background-color: #f39c12; color: white; padding: 2px 5px; margin-bottom: 2px;">S</div> <div style="background-color: #7f7f7f; color: white; padding: 2px 5px;">H</div> </div>
●	-	●	-	●	●	-	●	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="background-color: #4a7ebb; color: white; padding: 2px 5px; margin-bottom: 2px;">P</div> <div style="background-color: #f1c40f; color: white; padding: 2px 5px; margin-bottom: 2px;">M</div> <div style="background-color: #c0392b; color: white; padding: 2px 5px; margin-bottom: 2px;">K</div> <div style="background-color: #f39c12; color: white; padding: 2px 5px; margin-bottom: 2px;">S</div> <div style="background-color: #7f7f7f; color: white; padding: 2px 5px;">H</div> </div>
●	-	●	-	●	●	-	●	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="background-color: #4a7ebb; color: white; padding: 2px 5px; margin-bottom: 2px;">P</div> <div style="background-color: #f1c40f; color: white; padding: 2px 5px; margin-bottom: 2px;">M</div> <div style="background-color: #c0392b; color: white; padding: 2px 5px; margin-bottom: 2px;">K</div> <div style="background-color: #f39c12; color: white; padding: 2px 5px; margin-bottom: 2px;">S</div> <div style="background-color: #7f7f7f; color: white; padding: 2px 5px;">H</div> </div>

FRESATURA Milling	INTRODUZIONE Introduction	FRESE PER SPIANATURA Face Milling Cutters	FRESE PER SPALLAMENTO Shoulder Milling Cutters	FRESE PER PROFILATURA Profiling Milling Cutters	FRESE A TUFFO-SPIANATURA Face and Plunge Cutters	FRESE PER ALLUMINIO Alu Cutters	ADATTATORI FILETTATI Threaded Adaptors
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# GUIDA ALLA SELEZIONE DELL'UTENSILE

## Application Selection Guide

PAGINA Page	DEFINIZIONE Designation	INSERTO Insert	Kr	Ø GAMMA (D <sub>1</sub> , mm) Ø Range (D <sub>1</sub> , mm)	a <sub>p</sub> max (mm)	CARATTERISTICHE Features
424	 <b>FRESE A COPIARE 3000</b> Copy Mill 3000	BCEG .. BCEA ..	-	12-32	6-16	<ul style="list-style-type: none"> <li>• La vasta gamma di diametri, da 8 a 32mm, ne consente l'applicazione in una vasta gamma di condizioni di lavorazione.</li> <li>• Molti materiali lavorabili, dall'acciaio temprato all'alluminio.</li> <li>• Ampia offerta di tipologie: utensili in acciaio, cilindrici e conici.</li> </ul> <ul style="list-style-type: none"> <li>• Wide diameter range, from 8–32mm, enables it to be applied in a wide range of machining conditions.</li> <li>• Many workpiece materials are possible, from hardened steel to aluminium.</li> <li>• Large holder style offering: cylindrical, and tapered steel.</li> </ul>
 428	 <b>FRESA PER SMUSSI</b> Chamfering Mill	TC.T 16T304	-	20-41	10.8-13.3	<ul style="list-style-type: none"> <li>• Fresa per l'esecuzione di smussi a 30° o 45°. Inserto positivo.</li> <li>• Mill for chamfering 30° and 45°. Positive insert.</li> </ul>
 430	 <b>FRESA PER PROFILATURA MULTIFUNZIONE</b> Profiling Multifunction Mill	SOMT 11T308	-	13	-	<ul style="list-style-type: none"> <li>• Fresa multifunzione adatta per profilare, smussare, contornare e svasare.</li> <li>• Multifunction mill suitable for profiling, chamfering, contour milling and countersinking.</li> </ul>
432	 <b>ALTO AVANZAMENTO SP.. 08</b> High Feed SP..08	SP... 08T308	10°	20-25	1,2	<ul style="list-style-type: none"> <li>• Alto avanzamento con ridotte forze di taglio.</li> <li>• Addizione refrigerante interna.</li> </ul> <ul style="list-style-type: none"> <li>• High feed cutting with low cutting load.</li> <li>• Internal coolant supply.</li> </ul>

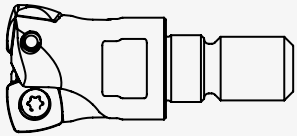
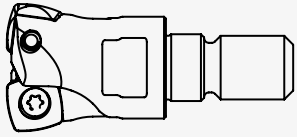
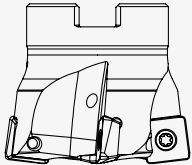
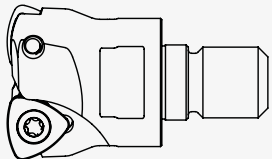
 <b>FRESATURA A SPIANARE</b> Face Milling	 <b>FRESATURA A SPALLAMENTO</b> Shouldering	 <b>FRESATURA A SCANALARE</b> Slotting	 <b>FRESATURA SPALLAMENTO INCLINATO E SIMUSSO</b> Slanted Shoulder & Chamfer	 <b>FRESATURA IN RAMPA</b> Ramp Down	 <b>FRESATURA A INTERPOLAZIONE ELICOIDALE</b> Helical Interpolation	 <b>FRESATURA A TUFFO</b> Plunging	 <b>FRESATURA A PROFILARE</b> Profiling	<b>GRUPPO MATERIALI</b> Materials Group
-	-	-	-	-	-	-	●	P M K N
-	-	-	●	-	-	-	-	P M K N S H
●	●	●	●	●	●	●	●	P M K N S H
●	-	-	-	●	●	●	●	P M K S

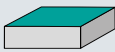
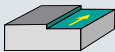
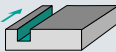

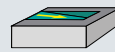

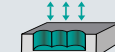

FRESATURA Milling	INTRODUZIONE Introduction	FRESE PER SPIANATURA Face Milling Cutters	FRESE PER SPALLAMENTO Shoulder Milling Cutters	FRESE PER PROFILATURA Profiling Milling Cutters	FRESE A TUFFO-SPIANATURA Face and Plunge Cutters	FRESE PER ALLUMINIO Alu Cutters	ADATTATORI FILETTATI Threaded Adaptors
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# GUIDA ALLA SELEZIONE DELL'UTENSILE

## Application Selection Guide

FRESATURA  
MillingINTRODUZIONE  
IntroductionFRESE PER SPIANATURA  
Face Milling CuttersFRESE PER SPALLAMENTO  
Shoulder Milling CuttersFRESE PER PROFILATURA  
Profiling Milling CuttersFRESE A TUFFO-SPIANATURA  
Face and Plunge CuttersFRESE PER ALLUMINIO  
Alu CuttersADATTATORI FILETTATI  
Threaded Adaptors

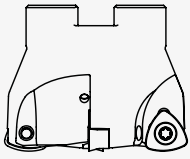
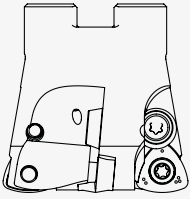
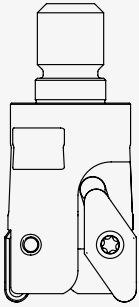
PAGINA Page	DEFINIZIONE Designation	INSERTO Insert	Kr	Ø GAMMA (D <sub>1</sub> , mm) Ø Range (D <sub>1</sub> , mm)	a <sub>p</sub> max (mm)	CARATTERISTICHE Features
432	 <b>ALTO AVANZAMENTO SP.. 08</b> High Feed SP..08	SP... 08T308	10°	25-42	1,2	<ul style="list-style-type: none"> <li>• <b>Alto avanzamento con ridotte forze di taglio.</b></li> <li>• <b>Adduzione refrigerante interna.</b></li> <li>• High feed rate with low cutting forces.</li> <li>• Internal coolant supply.</li> </ul>
436	 <b>ALTO AVANZAMENTO SP.. 13</b> High Feed SP..13	SP... 1305	10°	32-42	2	
436	 <b>ALTO AVANZAMENTO SP.. 13</b> High Feed SP..13	SP... 1305	10°	50-80	2	
440	 <b>ALTO AVANZAMENTO WN.. 12</b> High Feed WN..12	WN... 1207	7°	35	1,8	<ul style="list-style-type: none"> <li>• <b>Alto avanzamento con ridotte forze di taglio.</b></li> <li>• <b>Eccellente nelle lavorazioni a sbalzo.</b></li> <li>• <b>Adduzione refrigerante interna.</b></li> <li>• High feed rate with low cutting forces.</li> <li>• Excellent in high overhang.</li> <li>• Internal coolant supply.</li> </ul>

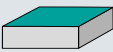
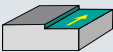
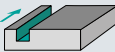

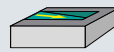

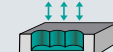

 <b>FRESATURA A SPIANARE</b> Face Milling	 <b>FRESATURA A SPALLAMENTO</b> Shouldering	 <b>FRESATURA A SCANALARE</b> Slotting	 <b>FRESATURA SPALLAMENTO INCLINATO E SIMUSSO</b> Slanted Shoulder & Chamfer	 <b>FRESATURA IN RAMPA</b> Ramp Down	 <b>FRESATURA A INTERPOLAZIONE ELICOIDALE</b> Helical Interpolation	 <b>FRESATURA A TUFFO</b> Plunging	 <b>FRESATURA A PROFILARE</b> Profiling	<b>GRUPPO MATERIALI</b> Materials Group
●	-	-	-	●	●	●	●	P M K S
●	-	-	-	●	●	●	●	P M K S
●	-	-	-	●	●	●	●	P M K S
●	-	-	-	●	●	●	●	K

<b>FRESATURA</b> Milling	<b>INTRODUZIONE</b> Introduction	<b>FRESE PER SPIANATURA</b> Face Milling Cutters	<b>FRESE PER SPALLAMENTO</b> Shoulder Milling Cutters	<b>FRESE PER PROFILATURA</b> Profiling Milling Cutters	<b>FRESE A TUFFO-SPIANATURA</b> Face and Plunge Cutters	<b>FRESE PER ALLUMINIO</b> Alu Cutters	<b>ADATTATORI FILETTATI</b> Threaded Adaptors
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# GUIDA ALLA SELEZIONE DELL'UTENSILE

## Application Selection Guide

PAGINA Page	DEFINIZIONE Designation	INSERTO Insert	Kr	Ø GAMMA (D <sub>1</sub> , mm) Ø Range (D <sub>1</sub> , mm)	a <sub>p</sub> max (mm)	CARATTERISTICHE Features
440	 <b>ALTO AVANZAMENTO WN.. 12</b> High Feed WN..12	WN... 1207	7°	52-80	1,8	<ul style="list-style-type: none"> <li>• <b>Alto avanzamento con ridotte forze di taglio.</b></li> <li>• <b>Eccellente nelle lavorazioni a sbalzo.</b></li> <li>• <b>Adduzione refrigerante interna.</b></li> </ul>
442	 <b>ALTO AVANZAMENTO WD.. 12</b> High Feed WD..12	WD... 1204	7°	52-80	1,5	<ul style="list-style-type: none"> <li>• High feed rate with low cutting forces.</li> <li>• Excellent in high overhang.</li> <li>• Internal coolant supply.</li> </ul>
444	 <b>FRESE PER ALLUMINIO</b> Alu Cutter	VC... 2205	90°	32	15	<ul style="list-style-type: none"> <li>• <b>Eccellente evacuazione del truciolo.</b></li> <li>• <b>Adduzione refrigerante interna.</b></li> <li>• Excellent chip flow.</li> <li>• Internal coolant supply.</li> </ul>

								
<b>FRESATURA A SPIANARE</b> Face Milling	<b>FRESATURA A SPALLAMENTO</b> Shouldering	<b>FRESATURA A SCANALARE</b> Slotting	<b>FRESATURA SPALLAMENTO INCLINATO E SIMUSSO</b> Slanted Shoulder & Chamfer	<b>FRESATURA IN RAMPA</b> Ramp Down	<b>FRESATURA A INTERPOLAZIONE ELICOIDALE</b> Helical Interpolation	<b>FRESATURA A TUFFO</b> Plunging	<b>FRESATURA A PROFILARE</b> Profiling	<b>GRUPPO MATERIALI</b> Materials Group
●	-	-	-	●	●	●	●	K
●	-	-	-	●	●	●	●	P M K
●	●	●	-	●	●	-	●	N

FRESATURA  
Milling

INTRODUZIONE  
Introduction

FRESE PER SPIANATURA  
Face Milling Cutters

FRESE PER SPALLAMENTO  
Shoulder Milling Cutters

FRESE PER PROFILATURA  
Profiling Milling Cutters

FRESE A TUFFO-SPIANATURA  
Face and Plunge Cutters

FRESE PER ALLUMINIO  
Alu Cutters

ADATTATORI FILETTATI  
Threaded Adaptors



# 36° PENTAGONALE POSITIVO

## 36° Penta Positive

FRESATURA  
Milling

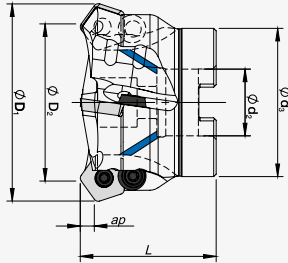
p. 369-371



p. 455



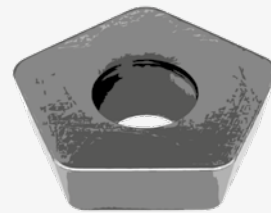
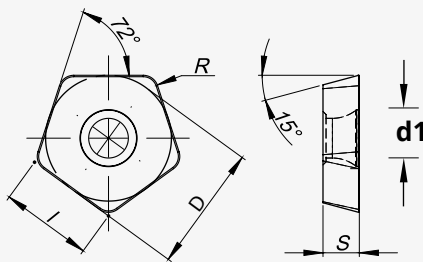
p. 473

INTRODUZIONE  
IntroductionFRESE PER SPIANATURA  
Face Milling CuttersFRESE PER SPALLAMENTO  
Shoulder Milling CuttersFRESE PER PROFILATURA  
Profiling Milling CuttersFRESE A TUFO-SPIANATURA  
Face and Plunge CuttersFRESE PER ALLUMINIO  
Alu CuttersADATTATORI FILETTATI  
Threaded Adaptors**03** ATTACCO A MANICOTTO | Arbor Mounting

CODICE Code	∅ D <sub>1</sub> (mm)	∅ D <sub>2</sub> (mm)	∅ d <sub>2</sub> (mm)	∅ d <sub>3</sub> (mm)	L (mm)	a <sub>p</sub> (mm)		Kg
<b>066C05R3627PD1204</b>	<b>66</b>	47,5	27	48	55	5,5	5	0,520
<b>080C06R3627PD1204</b>	<b>80</b>	61,5	27	60	55	5,5	6	0,940
<b>03 100C07R3632PD1204</b>	<b>100</b>	81,5	32	70	55	5,5	7	1,400
<b>125C08R3640PD1204</b>	<b>125</b>	106,5	40	90	55	5,5	8	2,420
<b>160C09R3640PD1204</b>	<b>160</b>	141,5	40	120	55	5,5	9	4,590

Esempio d'ordine: (Codice + ∅ D<sub>1</sub>) | Ordering example: (Code + ∅ D<sub>1</sub>)

## PD..1204 INSERTO | Insert



CODICE INSERTO Insert Code	Dimensioni   Dimension:						QUALITÀ   Grades																					
	D	S	I	R	d1	F	P	M	K	N	S	H	TCU610	TCU620	TCP635	TCU620	TCU630	TCU640	TCU610	TCU620	TCU630	TCN010	TCU610	TCU620	TCU630	TCP605		
<b>PDMW120420T</b>	16,52	4,76	12	2	5,2	-	-	-	●	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>PDHW120420T</b>	16,52	4,76	12	2	5,2	-	-	●	●	-	-	-	-	-	-	●	-	-	-	-	-	-	-	-	-	-	-	

Esempio d'ordine: (Codice Inserto + Qualità) | Ordering example: (Insert Code + Grade)





INSERTO Insert	VITE INSERTO Insert Screw	CHIAVE (Torx) Wrench (Torx)	Nm	RONDELLA Washer	VITE RONDELLA Washer Screw	CODICE Code	
PD... 1204	TVTF 007	TCTF 005	5	TRF 001	TVTF 007	<b>066C05R3627PD1204</b>	<b>03</b>
PD... 1204	TVTF 007	TCTF 005	5	TRF 001	TVTF 007	<b>080C06R3627PD1204</b>	
PD... 1204	TVTF 007	TCTF 007	5	TRF 001	TVTF 007	<b>100C07R3632PD1204</b>	
PD... 1204	TVTF 007	TCTF 007	5	TRF 001	TVTF 007	<b>125C08R3640PD1204</b>	
PD... 1204	TVTF 007	TCTF 007	5	TRF 001	TVTF 007	<b>160C09R3640PD1204</b>	

## PARAMETRI DI TAGLIO | CUTTING DATA

ISO	MATERIALE Material	TCU620	TCP635	AVANZAMENTO $f_z$ (mm/d) Feed $f_z$ (mm/t)
		Vc (m/min)		
P	< 800 N/mm <sup>2</sup>	150-230	150-180	0,25-0,50
	700-1000 N/mm <sup>2</sup>	140-220	140-170	0,25-0,50
	1000-1300 N/mm <sup>2</sup>	130-180	120-150	0,25-0,40
K	<b>GHISA GRIGIA</b> Grey Cast Iron	130-230	-	0,25-0,60
	<b>GHISA SFEROIDALE</b> Nodular Cast Iron	80-190	-	0,25-0,60

# 45° QUADRO NEGATIVO

## 45° Square Negative

**FRESATURA**  
Milling

**INTRODUZIONE**  
Introduction

**FRESE PER SPIANATURA**  
Face Milling Cutters

**FRESE PER SPALLAMENTO**  
Shoulder Milling Cutters

**FRESE PER PROFILATURA**  
Profiling Milling Cutters

**FRESE A TUFO-SPIANATURA**  
Face and Plunge Cutters

**FRESE PER ALLUMINIO**  
Alu Cutters

**ADATTATORI FILETTATI**  
Threaded Adaptors

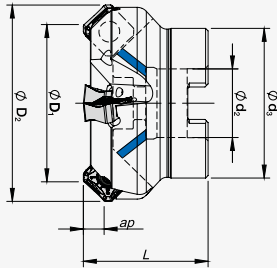

p. 369-371



p. 455



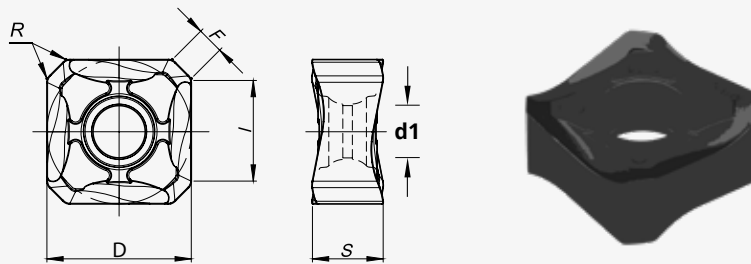
p. 473


**03** **ATTACCO A MANICOTTO** | Arbor Mounting

CODICE Code	Ø D <sub>1</sub> (mm)	Ø D <sub>2</sub> (mm)	Ø d <sub>2</sub> (mm)	Ø d <sub>3</sub> (mm)	L (mm)	a <sub>p</sub> (mm)		Kg	INSERTO Insert
<b>050A04R4522SN1206</b>	<b>50</b>	63	22	48	42	6	4	0,424	SN... 1206
<b>063A06R4522SN1206</b>	<b>63</b>	76	22	52	42	6	6	0,575	SN... 1206
<b>03</b> <b>080A07R4527SN1206</b>	<b>80</b>	93	27	60	52	6	7	0,966	SN... 1206
<b>100A08R4532SN1206</b>	<b>100</b>	113	32	80	52	6	8	1,667	SN... 1206
<b>*125A11R4540SN1206</b>	<b>125</b>	138	40	80	65	6	11	1,823	SN... 1206

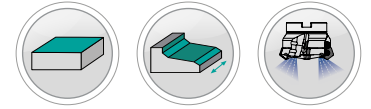
**Esempio d'ordine:** (Codice + Ø D,) | **Ordering example:** (Code + Ø D,) \* **Senza fori di lubrificazione interna** | Without internal coolant holes

## SN..1206 INSERTO | Insert



CODICE INSERTO Insert Code	Dimensioni   Dimension:						QUALITÀ   Grades													
	D	S	I	R	d1	F	P		M		K		N	S		H				
							TCU610	TCU620	TCU640	TCU620	TCU630	TCU640	TCU610	TCU620	TCU640	TCN010	TCU610	TCU620	TCU640	TCP605
<b>SNKX1206ANSNMM</b>	12,7	6,35	9,3	0,8	4,5	2	●	●	●	●	-	●	●	●	●	-	●	●	●	-

**Esempio d'ordine:** (Codice Inserto + Qualità) | **Ordering example:** (Insert Code + Grade) ● **Fino ad esaurimento scorta** | Discontinued items



VITE INSERTO Insert Screw	CHIAVE (Torx) Wrench (Torx)	Nm	VITE BLOCCO FRESA Lock Screw Mill	CODICE Code
TVTF 011	TCTF 004	3	TBDF 004*	<b>050A04R4522SN1206</b>
TVTF 011	TCTF 004	3	TBDF 004*	<b>063A06R4522SN1206</b>
TVTF 011	TCTF 004	3	TBDF 005*	<b>080A07R4527SN1206</b>
TVTF 011	TCTF 004	3	TBDF 006*	<b>100A08R4532SN1206</b>
TVTF 011	TCTF 004	3	-	<b>125A11R4540SN1206</b>

\* Ordinare separatamente | Order Separately

## PARAMETRI DI TAGLIO | CUTTING DATA

ISO	MATERIALE Material	TCU610	TCU620	TCU640	AVANZAMENTO $f_z$ (mm/d) Feed $f_z$ (mm/t)
		Vc (m/min)			
P	< 800 N/mm <sup>2</sup>	180-250	150-230	100-200	0,10-0,35
	700-1000 N/mm <sup>2</sup>	170-210	140-220	130-200	0,10-0,35
	1000-1300 N/mm <sup>2</sup>	160-200	130-180	120-170	0,10-0,35
M	<b>AUSTENITICO</b> Austenitic	-	110-170	90-150	0,10-0,30
	<b>DUPLEX</b>	-	100-150	80-130	0,10-0,30
K	<b>GHISA GRIGIA</b> Grey Cast Iron	150-250	130-230	130-200	0,10-0,35
	<b>GHISA SFEROIDALE</b> Nodular Cast Iron	90-210	80-190	80-170	0,10-0,35
S	<b>LEGHE RESISTENTI AL CALORE</b> Heat Resistant Super Alloys	-	40-60	40-60	0,08-0,25

FRESATURA  
MillingINTRODUZIONE  
IntroductionFRESE PER SPIANATURA  
Face Milling CuttersFRESE PER SPALLAMENTO  
Shoulder Milling CuttersFRESE PER PROFILATURA  
Profiling Milling CuttersFRESE A TUFFO-SPIANATURA  
Face and Plunge CuttersFRESE PER ALLUMINIO  
Alu CuttersADATTATORI FILETATI  
Threaded Adaptors

# 45° QUADRO POSITIVO

## 45° Square Positive

**FRESATURA**  
Milling

**INTRODUZIONE**  
Introduction

**FRESE PER SPIANATURA**  
Face Milling Cutters

**FRESE PER SPALLAMENTO**  
Shoulder Milling Cutters

**FRESE PER PROFILATURA**  
Profiling Milling Cutters

**FRESE A TUFO/SPIANATURA**  
Face and Plunge Cutters

**FRESE PER ALLUMINIO**  
Alu Cutters

**ADATTATORI FILETTATI**  
Threaded Adaptors

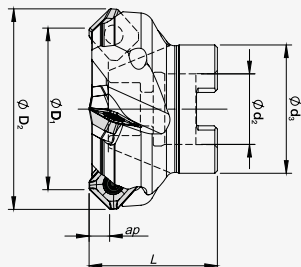

p. 369-371



p. 455



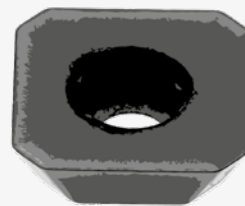
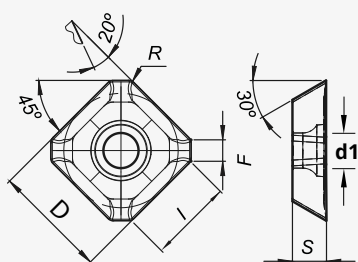
p. 473


**03** **ATTACCO A MANICOTTO** | Arbor Mounting

	<b>CODICE</b> Code	$\varnothing D_1$ (mm)	$\varnothing D_2$ (mm)	$\varnothing d_2$ (mm)	$\varnothing d_3$ (mm)	<b>L</b> (mm)	$a_p$ (mm)		<b>Kg</b>	<b>INSERTO</b> Insert
	<b>050A05R4522SE13T3</b>	<b>50</b>	63	22	40	40	6	5	0,350	SE... 13T3
<b>03</b>	<b>063A06R4522SE13T3</b>	<b>63</b>	76	22	48	40	6	6	0,566	SE... 13T3
	<b>080A08R4527SE13T3</b>	<b>80</b>	93	27	60	50	6	8	0,999	SE... 13T3
	<b>100A10R4532SE13T3</b>	<b>100</b>	113	32	70	50	6	10	1,317	SE... 13T3

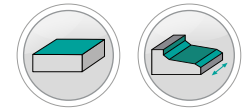
**Esempio d'ordine:** (Codice +  $\varnothing D_1$ ) | **Ordering example:** (Code +  $\varnothing D_1$ )

## SE..13T3 INSERTO | Insert



	<b>QUALITÀ</b>   Grades																			
	<b>Dimensioni</b>   Dimension:						<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>								
<b>CODICE INSERTO</b> Insert Code	D	S	I	R	d1	F	TCU610	TCU620	TCU640	TCU620	TCU630	TCU640	TCU610	TCU620	TCU640	TCN010	TCU610	TCU620	TCU640	TCP605
<b>SEHT13T3AGSN</b>	13,35	3,97	10	-	4,1	2,0	-	●	●	●	-	●	-	●	●	-	-	-	-	-
<b>SEHT13T3AGFNLN</b>	13,35	3,97	10	-	4,1	2,3	-	-	-	-	-	-	-	-	-	●	-	-	-	-

**Esempio d'ordine:** (Codice Inserto + Qualità) | **Ordering example:** (Insert Code + Grade)



VITE INSERTO Insert screw	SUPPORTO Clamp	VITE SUPPORTO Wedge Clamp	CHIAVE (Torx) Wrench (Torx)	Nm	VITE BLOCCO FRESA Lock Screw Mill	CODICE Code
TVTF 012	TSSF 002	TVSF 002	TCTF 004	-	TBDF 004*	<b>050A05R4522SE13T3</b>
TVTF 012	TSSF 002	TVSF 002	TCTF 004	-	TBDF 004*	<b>063A06R4522SE13T3</b>
TVTF 012	TSSF 002	TVSF 002	TCTF 004	-	TBDF 005*	<b>080A08R4527SE13T3</b>
TVTF 012	TSSF 002	TVSF 002	TCTF 004	-	TBDF 006*	<b>100A10R4532SE13T3</b>

\* Ordinare separatamente | Order Separately

## PARAMETRI DI TAGLIO | CUTTING DATA

ISO	MATERIALE Material	TCN010	TCU620	TCU640	AVANZAMENTO $f_z$ (mm/d) Feed $f_z$ (mm/t)
		Vc (m/min)			
P	< 800 N/mm <sup>2</sup>	-	150-230	130-160	0,10-0,30
	700-1000 N/mm <sup>2</sup>	-	140-220	120-150	0,10-0,25
	1000-1300 N/mm <sup>2</sup>	-	130-180	100-130	0,10-0,20
M	AUSTENITICO Austenitic	-	100-150	80-110	0,10-0,25
	DUPLEX	-	70-110	70-100	0,10-0,25
K	GHISA GRIGIA Grey Cast Iron	-	130-230	110-220	0,10-0,35
	GHISA SFEROIDALE Nodular Cast Iron	-	80-190	80-170	0,10-0,30
N	ALLUMINIO E NON FERROSI Aluminium and Non Ferrous	350-1000	-	-	0,10-0,30

FRESE PER SPIANATURA  
MillingINTRODUZIONE  
IntroductionFRESE PER SPIANATURA  
Face Milling CuttersFRESE PER SPALLAMENTO  
Shoulder Milling CuttersFRESE PER PROFILATURA  
Profiling Milling CuttersFRESE A TUFO-SPIANATURA  
Face and Plunge CuttersFRESE PER ALLUMINIO  
Alu CuttersADATTATORI FILETTATI  
Threaded Adaptors

# 90° QUADRO POSITIVO

## 90° Square Positive

**FRESATURA**  
Milling


p. 369-371



p. 455



p. 473

**INTRODUZIONE**  
Introduction

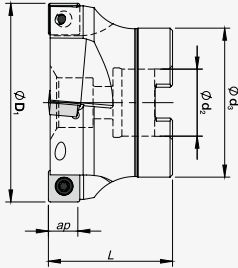
**FRESE PER SPIANATURA**  
Face Milling Cutters

**FRESE PER SPALLAMENTO**  
Shoulder Milling Cutters

**FRESE PER PROFILATURA**  
Profiling Milling Cutters

**FRESE A TUFFO-SPIANATURA**  
Face and Plunge Cutters

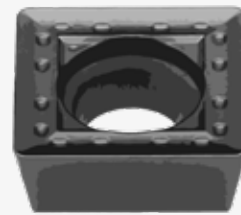
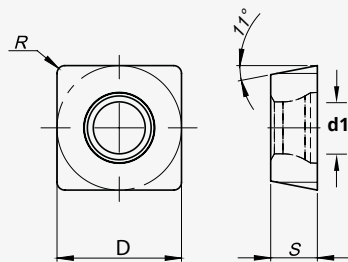
**FRESE PER ALLUMINIO**  
Alu Cutters

**ADATTATORI FILETTATI**  
Threaded Adaptors

**03** ATTACCO A MANICOTTO | Arbor Mounting

CODICE Code	Ø D <sub>1</sub> (mm)	Ø D <sub>2</sub> (mm)	Ø d <sub>2</sub> (mm)	Ø d <sub>3</sub> (mm)	L (mm)	a <sub>p</sub> (mm)		Kg
<b>040A03R9016SP1204</b>	<b>40</b>	-	16	39	40	11	3	0,20
<b>050A04R9022SP1204</b>	<b>50</b>	-	22	49	40	11	4	0,35
<b>03</b> <b>063A05R9027SP1204</b>	<b>63</b>	-	27	60	50	11	5	0,70
<b>080A06R9027SP1204</b>	<b>80</b>	-	27	64	50	11	6	1,15
<b>100A08R9032SP1204</b>	<b>100</b>	-	32	78	50	11	8	1,75

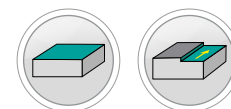
**Esempio d'ordine:** (Codice + Ø D<sub>1</sub>) | **Ordering example:** (Code + Ø D<sub>1</sub>)

## SP.. 1204 INSERTO | Insert



CODICE INSERTO Insert Code	Dimensioni   Dimension:						QUALITÀ   Grades													
	D	S	I	R	d1	F	P		M		K		N	S		H				
							TCU610	TCU620	TCU640	TCU620	TCU630	TCU640	TCU610	TCU620	TCU640	TCN010	TCU610	TCU620	TCU640	TCP605
<b>SPMT120408MP</b>	12,7	4,76	-	0,8	5,5	-	-	●	●	●	-	●	-	●	●	-	-	●	●	-

**Esempio d'ordine:** (Codice Inserto + Qualità) | **Ordering example:** (Insert Code + Grade)



INSERTO Insert	VITE INSERTO Insert Screw	CHIAVE (Torx) Wrench (Torx)	Nm	CODICE Code
SPMT 120408	TVTF 009	TCTF 007	5	<b>040A03R9016SP1204</b>
SPMT 120408	TVTF 009	TCTF 007	5	<b>050A04R9022SP1204</b>
SPMT 120408	TVTF 009	TCTF 007	5	<b>063A05R9027SP1204</b>
SPMT 120408	TVTF 009	TCTF 007	5	<b>080A06R9027SP1204</b>
SPMT 120408	TVTF 009	TCTF 007	5	<b>100A08R9032SP1204</b>

03

## PARAMETRI DI TAGLIO | CUTTING DATA

ISO	MATERIALE Material	TCU620	TCU640	AVANZAMENTO $f_z$ (mm/d) Feed $f_z$ (mm/t)
		Vc (m/min)		
P	< 800 N/mm <sup>2</sup>	150-230	130-160	0,08-0,20
	700-1000 N/mm <sup>2</sup>	140-220	120-150	0,08-0,20
	1000-1300 N/mm <sup>2</sup>	130-180	100-130	0,08-0,15
M	<b>AUSTENITICO</b> Austenitic	100-150	80-110	0,08-0,15
	<b>DUPLEX</b>	70-110	70-100	0,07-0,13
K	<b>GHISA GRIGIA</b> Grey Cast Iron	130-230	110-220	0,08-0,25
	<b>GHISA SFEROIDALE</b> Nodular Cast Iron	80-190	80-170	0,08-0,25
S	<b>LEGHE RESISTENTI AL CALORE</b> Heat Resistant Super Alloys	30-60	25-50	0,07-0,13

# 90° RETTANGOLARE POSITIVO 10

## 90° Rectangular Positive 10



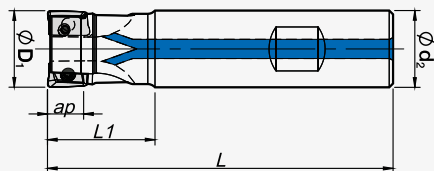
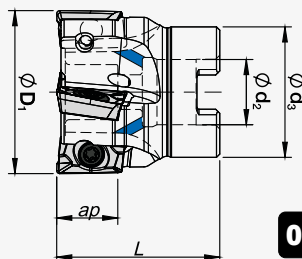
p. 369-371



p. 455



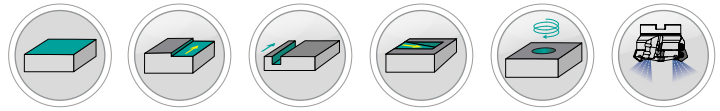
p. 473


**01** ATTACCO WELDON | Weldon Shank

**03** ATTACCO A MANICOTTO  
Arbor Mounting

	CODICE Code	$\varnothing D_1$ (mm)	$\varnothing d_2/M$ (mm)	$\varnothing d_3$ (mm)	L (mm)	L1 (mm)	$a_p$ (mm)		Kg
<b>01</b>	016W02R9016100AP1003	16	16	-	100	30	10	2	0,167
	016W02R9016150AP1003	16	16	-	150	26	9	2	0,187
	018W02R9018100AP1003	18	18	-	100	30	10	2	0,190
	018W02R9018150AP1003	18	18	-	150	50	10	2	0,190
	020W03R9020090AP1003	20	20	-	90	28	9	3	0,189
	020W03R9020100AP1003	20	20	-	100	28	9	3	0,189
	*020W03R9020150AP1003	20	20	-	150	28	9	3	0,317
	025W04R9025095AP1003	25	25	-	100	30	9	4	0,302
*025W04R9025150AP1003	25	25	-	150	50	10	3	0,302	
<b>03</b>	040A05R9016AP1003	40	16	39	40	-	10	5	0,207
	050A07R9022AP1003	50	22	40	40	-	9	6	0,311
	063A08R9022AP1003	63	22	48	50	-	9	7	0,550
	080A08R9027AP1003	80	27	-	50	-	10	8	0,733

 Esempio d'ordine: (Codice +  $\varnothing D_1$ ) | Ordering example: (Code +  $\varnothing D_1$ ) \* Senza fori di lubrificazione interna | Without internal coolant holes





INSERTO Insert	VITE INSERTO Insert Screw	CHIAVE (Torx) Wrench (Torx)	VITE BLOCK FRESA Lock Screw Mill	Nm	CODICE Code	
AP.. 1003	TVTF 013	TCTF 002	-	1,2	<b>016W02R9016100AP1003</b>	<b>01</b>
AP... 1003	TVTF 013	TCTF 002	-	1,2	<b>016W02R9016150AP1003</b>	
AP.. 1003	TVTF 014	TCTF 002	-	1,2	<b>018W02R9018100AP1003</b>	
AP.. 1003	TVTF 014	TCTF 002	-	1,2	<b>018W02R9018150AP1003</b>	
AP.. 1003	TVTF 014	TCTF 002	-	1,2	<b>020W03R9020090AP1003</b>	
AP... 1003	TVTF 014	TCTF 002	-	1,2	<b>020W03R9020100AP1003</b>	
AP... 1003	TVTF 014	TCTF 002	-	1,2	<b>*020W03R9020150AP1003</b>	
AP... 1003	TVTF 014	TCTF 002	-	1,2	<b>025W04R9025095AP1003</b>	
AP.. 1003	TVTF 014	TCTF 002	-	1,2	<b>*025W04R9025150AP1003</b>	
AP... 1003	TVTF 014	TCTF 002	TBDF 003*	1,2	<b>040A05R9016AP1003</b>	<b>03</b>
AP... 1003	TVTF 014	TCTF 002	TBDF 004*	1,2	<b>050A07R9022AP1003</b>	
AP... 1003	TVTF 014	TCTF 002	TBDF 004*	1,2	<b>063A08R9022AP1003</b>	
AP... 1003	TVTF 014	TCTF 002	TBDF 005*	1,2	<b>080A08R9027AP1003</b>	

\* Ordinare separatamente | Order Separately

Inserti e parametri di taglio alla pagina successiva  
Inserts and cutting parameters on the next page



# 90° RETTANGOLARE POSITIVO 10

## 90° Rectangular Positive 10



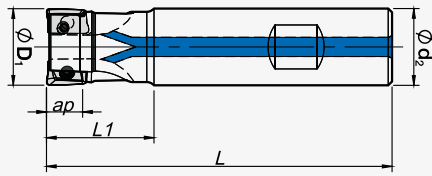
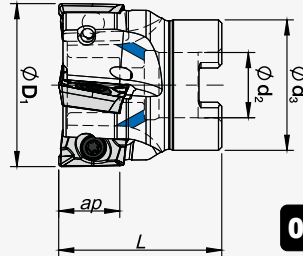
p. 369-371



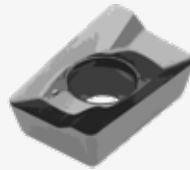
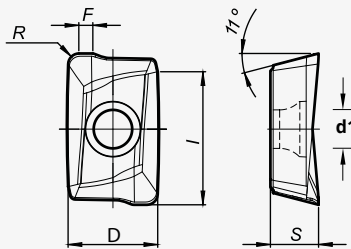
p. 455

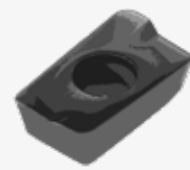


p. 473


**01** **ATTACCO WELDON** | Weldon Shank

**03** **ATTACCO A MANICOTTO**  
Arbor Mounting

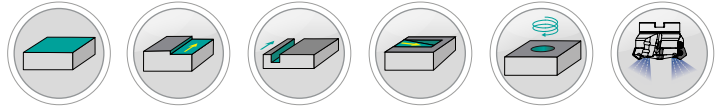
## AP..1003.. INSERTO | Insert


**APKT 1003... X1**

**APET 1003... LN**

**APKT 1003... X**

CODICE INSERTO Insert Code	Dimensioni   Dimension:						QUALITÀ   Grades													
	D	S	I	R	d1	F	P			M			K		N	S		H		
							TCU610	TCU620	TCU630	TCU620	TCU630	TCU640	TCU610	TCU620	TCU630	TCN010	TCU610	TCU620	TCU640	TCP605
<b>APET100305PDFRLN</b>	6,7	3,5	10	-	2,8	1,2	-	-	-	-	-	-	-	-	-	●	-	-	-	-
<b>APKT100305PDERX1</b>	6,7	3,5	10	0,5	2,8	1,2	-	●	●	-	●	-	-	●	●	-	-	-	-	-
<b>APKT100305PDSRX1</b>	6,7	3,5	10	0,5	2,8	1,2	-	●	●	-	●	-	-	●	●	-	-	-	-	-
<b>APKT100308PDERX</b>	6,7	3,5	10	0,8	2,8	0,9	-	●	●	-	●	-	-	●	●	-	-	-	-	-
<b>APKT100308PDSRX</b>	6,7	3,5	10	0,8	2,8	0,9	-	●	-	-	-	-	-	●	-	-	-	-	-	-
<b>APKT100312PDERX</b>	6,7	3,5	10	1,2	2,8	-	-	●	●	-	●	-	-	●	●	-	-	-	-	-
<b>APKT100312PDSRX</b>	6,7	3,5	10	1,2	2,8	-	-	●	-	-	-	-	-	●	-	-	-	-	-	-

**Esempio d'ordine:** (Codice Inserto + Qualità) | **Ordering example:** (Insert Code + Grade)



## PARAMETRI DI TAGLIO | CUTTING DATA

		TCN010	TCU620	TCU630
ISO	MATERIALE Material	Vc (m/min)		
P	< 800 N/mm <sup>2</sup>	-	150-230	150-180
	700-1000 N/mm <sup>2</sup>	-	140-220	140-170
	1000-1300 N/mm <sup>2</sup>	-	130-180	120-150
M	<b>AUSTENITICO</b> Austenitic	-	-	80-130
	<b>DUPLEX</b>	-	-	70-100
K	<b>GHISA GRIGIA</b> Grey Cast Iron	-	130-230	120-225
	<b>GHISA SFEROIDALE</b> Nodular Cast Iron	-	80-190	80-180
N	<b>ALLUMINIO E NON FERROSI</b> Aluminium and Non Ferrous	350-1000	-	-

APKT10..PDER	APKT10..PDSR	APET10..PDFR
AVANZAMENTO $f_z$ (mm/d) Feed $f_z$ (mm/t)		
0,07-0,15	0,10-0,25	-
0,07-0,10	0,10-0,20	-
0,07-0,10	0,10-0,20	-
0,07-0,10	0,10-0,20	-
0,07-0,15	0,10-0,25	-
0,07-0,15	0,10-0,20	-
-	-	0,07-0,20

FRESATURA  
MillingINTRODUZIONE  
IntroductionFRESE PER SPIANATURA  
Face Milling CuttersFRESE PER SPALLAMENTO  
Shoulder Milling CuttersFRESE PER PROFILATURA  
Profiling Milling CuttersFRESE A TUFO-SPIANATURA  
Face and Plunge CuttersFRESE PER ALLUMINIO  
Alu CuttersADATTATORI FILETTATI  
Threaded Adaptors

# 90° RETTANGOLARE POSITIVO 16

## 90° Rectangular Positive 16



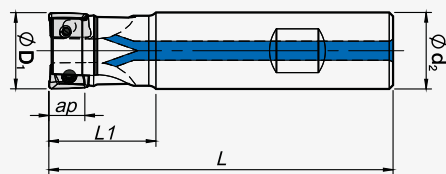
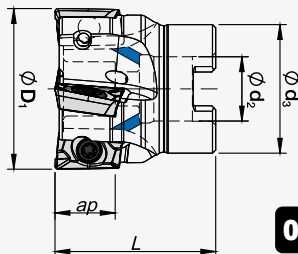
p. 369-371



p. 455

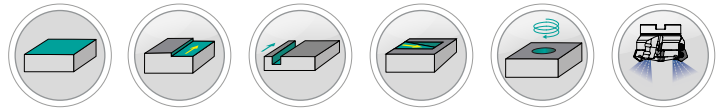


p. 473


**01** ATTACCO WELDON | Weldon Shank

**03** ATTACCO A MANICOTTO  
Arbor Mounting

	CODICE Code	$\varnothing D_1$ (mm)	$\varnothing d_2/M$ (mm)	$\varnothing d_3$ (mm)	L (mm)	L1 (mm)	$a_p$ (mm)		Kg
<b>01</b>	025W02R9025200AP1604	25	25	-	200	60	16	2	0,658
	032W03R9032150AP1604	32	32	-	150	50	16	3	1,022
	032W03R9032200AP1604	32	32	-	200	60	16	3	1,081
	040W04R9032115AP1604	40	40	-	110	40	16	4	0,555
	*040W04R9032150AP1604	40	32	-	150	40	16	4	0,656
	040W04R9040200AP1604	40	40	-	200	40	16	4	1,171
<b>03</b>	040A04R9016AP1604	40	16	32	40	-	16	4	0,165
	050A05R9022AP1604	50	22	42	40	-	16	5	0,280
	063A06R9022AP1604	63	22	52	40	-	16	6	0,519
	080A07R9027AP1604	80	27	60	50	-	16	7	0,903
	100A08R9032AP1604	100	32	-	50	-	16	8	0,980

 Esempio d'ordine: (Codice +  $\varnothing D_1$ ) | Ordering example: (Code +  $\varnothing D_1$ ) \* Senza fori di lubrificazione interna | Without internal coolant holes



INSERTO Insert	VITE INSERTO Insert Screw	CHIAVE (Torx) Wrench (Torx)	Nm	VITE BLOCK FRESA Lock Screw Mill	CODICE Code
AP... 1604	TVTF 005	TCTF 004	3	-	<b>025W02R9025200AP1604</b>
AP... 1604	TVTF 015	TCTF 004	3	-	<b>032W03R9032150AP1604</b>
AP... 1604	TVTF 015	TCTF 004	3	-	<b>032W03R9032200AP1604</b>
AP... 1604	TVTF 015	TCTF 004	3	-	<b>040W04R9032115AP1604</b>
AP... 1604	TVTF 015	TCTF 004	3	-	<b>040W04R9032150AP1604</b>
AP... 1604	TVTF 005	TCTF 004	3	-	<b>040W04R9040200AP1604</b>
AP... 1604	TVTF 011	TCTF 004	3	TBDF 003*	<b>040A04R9016AP1604</b>
AP... 1604	TVTF 011	TCTF 004	3	TBDF 004*	<b>050A05R9022AP1604</b>
AP... 1604	TVTF 011	TCTF 004	3	TBDF 004*	<b>063A06R9022AP1604</b>
AP... 1604	TVTF 011	TCTF 004	3	TBDF 005*	<b>080A07R9027AP1604</b>
AP... 1604	TVTF 011	TCTF 004	3	TBDF 006*	<b>100A08R9032AP1604</b>

\* **Ordinare separatamente** | Order Separately

**Inserti e parametri di taglio alla pagina successiva**  
Inserts and cutting parameters on the next page



# 90° RETTANGOLARE POSITIVO 16

## 90° Rectangular Positive 16



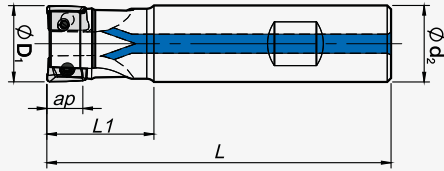
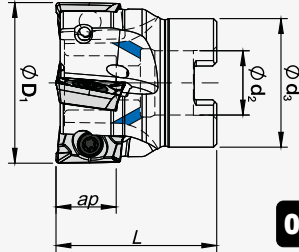
p. 369-371



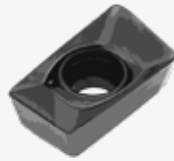
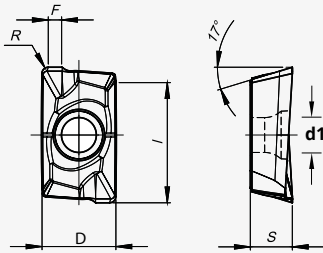
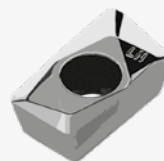
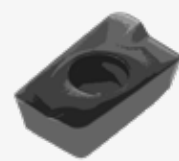
p. 455



p. 473

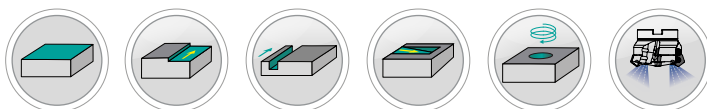

**01** **ATTACCO WELDON** | Weldon Shank

**03** **ATTACCO A MANICOTTO**  
Arbor Mounting

## AP..1604.. INSERTO | Insert


**APKT 1604...**  
X1

**APKT 1604...**  
LN

**APKT 1604...**  
X

CODICE INSERTO Insert Code	Dimensioni   Dimension:						QUALITÀ   Grades													
	D	S	I	R	d1	F	P	M	K	N	S	H								
							TCU610	TCU620	TCU630	TCU620	TCU630	TCU640	TCU610	TCU620	TCU630	TCN010	TCU610	TCU620	TCU630	TCP605
<b>APKT160408PDFRLN</b>	9,45	5,35	16	0,8	4,4	1,8	-	-	-	-	-	-	-	-	-	●	-	-	-	-
<b>APKT160408PDERX1</b>	9,45	5,35	16	0,8	4,4	1,8	-	●	●	-	●	-	-	●	●	-	-	-	●	-
<b>APKT160408PDSRX1</b>	9,45	5,35	16	0,8	4,4	1,8	-	●	●	-	●	-	-	●	●	-	-	-	●	-
<b>APKT160416PDERX</b>	9,45	5,35	16	1,6	4,4	1,2	-	●	-	-	-	-	-	●	-	-	-	-	-	-
<b>APKT160416PDSRX</b>	9,45	5,35	16	1,6	4,4	1,2	-	●	●	-	●	-	-	●	●	-	-	-	●	-
<b>APKT160432PDERX</b>	9,45	5,35	16	3,2	4,4	-	-	●	-	-	-	-	-	●	-	-	-	-	-	-
<b>APKT160432PDSRX</b>	9,45	5,35	16	3,2	4,4	-	-	●	-	-	-	-	-	●	-	-	-	-	-	-

**Esempio d'ordine:** (Codice Inserto + Qualità) | **Ordering example:** (Insert Code + Grade)



## PARAMETRI DI TAGLIO | CUTTING DATA

		TCN010	TCU620	TCU630
ISO	MATERIALE Material	Vc (m/min)		
P	< 800 N/mm <sup>2</sup>	-	150-230	150-180
	700-1000 N/mm <sup>2</sup>	-	140-220	140-170
	1000-1300 N/mm <sup>2</sup>	-	130-180	120-150
M	<b>AUSTENITICO</b> Austenitic	-	-	80-130
	<b>DUPLEX</b>	-	-	70-100
K	<b>GHISA GRIGIA</b> Grey Cast Iron	-	130-230	120-225
	<b>GHISA SFEROIDALE</b> Nodular Cast Iron	-	80-190	80-180
N	<b>ALLUMINIO E NON FERROSI</b> Aluminium and Non Ferrous	350-1000	-	-

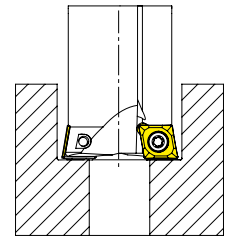
APKT16..PDER	APKT16..PDSR	APKT16..PDFR
AVANZAMENTO $f_z$ (mm/d) Feed $f_z$ (mm/t)		
0,07-0,15	0,10-0,25	-
0,07-0,10	0,10-0,20	-
0,07-0,10	0,10-0,20	-
0,07-0,10	0,10-0,20	-
0,07-0,15	0,10-0,25	-
0,07-0,15	0,10-0,20	-
-	-	0,07-0,20

FRESATURA  
MillingINTRODUZIONE  
IntroductionFRESE PER SPIANATURA  
Face Milling CuttersFRESE PER SPALLAMENTO  
Shoulder Milling CuttersFRESE PER PROFILATURA  
Profiling Milling CuttersFRESE A TUFO-SPIANATURA  
Face and Plunge CuttersFRESE PER ALLUMINIO  
Alu CuttersADATTATORI FILETTATI  
Threaded Adaptors



# FRESE PER LAMATURA

## Counterboring Mills



p. 369-371

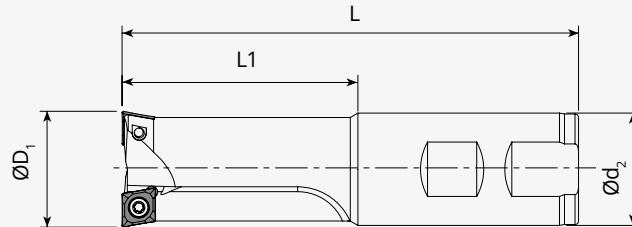


p. 455



p. 473

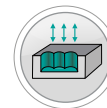
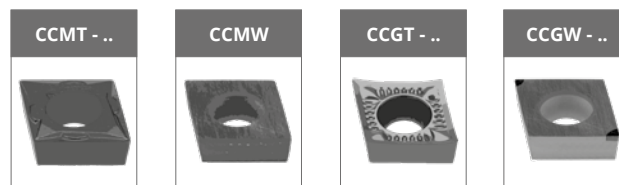
### 01 ATTACCO WELDON | Weldon Shank



CODICE Code	Ø D <sub>1</sub> (mm)	Ø d <sub>2</sub> (mm)	L1 (mm)	L (mm)	VITE Screw
<b>018W02R9016100CC06</b>	<b>18</b>	16	32	100	M10
<b>018W02R9016160CC06</b>	<b>18</b>	16	32	160	M10
<b>020W02R9020100CC06</b>	<b>20</b>	20	40	100	M12
<b>020W02R9020160CC06</b>	<b>20</b>	20	38	160	M12
<b>026W02R9025130CC09</b>	<b>26</b>	25	50	130	M16
<b>026W02R9025200CC09</b>	<b>26</b>	25	50	200	M16
<b>033W02R9032130CC09</b>	<b>33</b>	32	65	130	M20
<b>033W02R9031200CC09</b>	<b>33</b>	32	65	200	M20

**Esempio d'ordine:** (Codice + Ø D<sub>1</sub>) | **Ordering example:** (Code + Ø D<sub>1</sub>)




**FORME E INSERTI COMPATIBILI**  
 Suitable forms and inserts


PER MAGGIORI DETTAGLI VEDI PAGINE 100-109  
 For more details see pages 100-109



INSERTO Insert	VITE INSERTO Insert screw	CHIAVE (Torx) Wrench (Torx)	Nm	CODICE Code
CC.. 060204	TVTF 014	TCTF 002		<b>018W02R9016100CC06</b>
CC.. 060204	TVTF 014	TCTF 002		<b>018W02R9016160CC06</b>
CC.. 060204	TVTF 014	TCTF 002		<b>020W02R9020100CC06</b>
CC.. 060204	TVTF 014	TCTF 002		<b>020W02R9020160CC06</b>
CC.. 09T304	TVTF 016	TCTF 004		<b>026W02R9025130CC09</b>
CC.. 09T304	TVTF 016	TCTF 004		<b>026W02R9025200CC09</b>
CC.. 09T304	TVTF 016	TCTF 004		<b>033W02R9032130CC09</b>
CC.. 09T304	TVTF 016	TCTF 004		<b>033W02R9031200CC09</b>

**01**

 FRESATURA  
 Milling

 INTRODUZIONE  
 Introduction

 FRESE PER SPIANATURA  
 Face Milling Cutters

 FRESE PER SPALLAMENTO  
 Shoulder Milling Cutters

 FRESE PER PROFILATURA  
 Profiling Milling Cutters

 FRESE A TUFFO-SPIANATURA  
 Face and Plunge Cutters

 FRESE PER ALLUMINIO  
 Alu Cutters

 ADATTATORI FILETTATI  
 Threaded Adaptors



# FRESE A ELICA ESTESA

## Shell Type Mills



p. 369-371

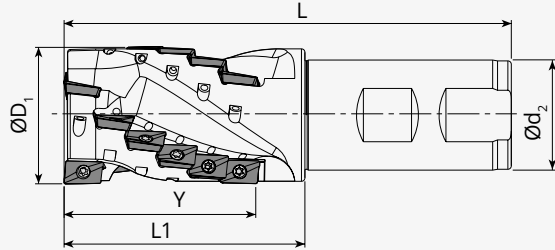


p. 455



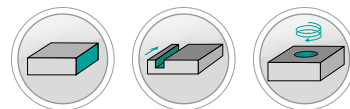
p. 473

### 01 ATTACCO WELDON | Weldon Shank



CODICE Code	Ø D <sub>1</sub> (mm)	Ø d <sub>2</sub> (mm)	Y (mm)	L1 (mm)	L (mm)	Z
<b>025W02R9025105AP1003</b>	<b>25</b>	25	37	50	105	2
<b>032W03R9032115AP1003</b>	<b>32</b>	32	46	55	115	3

**Esempio d'ordine:** (Codice + Ø D<sub>1</sub>) | **Ordering example:** (Code + Ø D<sub>1</sub>)



**FORME E INSERTI COMPATIBILI**  
Suitable forms and inserts



**PER MAGGIORI DETTAGLI VEDI PAGINE 402-403**  
For more details see pages 402-403



INSERTO Insert	VITE INSERTO Insert screw	CHIAVE (Torx) Wrench (Torx)	Nm	CODICE Code
AP.. 1003..	TVTF 014	TCTF 002		<b>025W02R9025105AP1003</b>
AP.. 1003..	TVTF 014	TCTF 002		<b>032W03R9032115AP1003</b>

**01**

FRESATURA  
Milling

INTRODUZIONE  
Introduction

FRESE PER SPIANATURA  
Face Milling Cutters

FRESE PER SPALLAMENTO  
Shoulder Milling Cutters

FRESE PER PROFILATURA  
Profiling Milling Cutters

FRESE A TUFFO-SPIANATURA  
Face and Plunge Cutters

FRESE PER ALLUMINIO  
Alu Cutters

ADATTATORI FILETTATI  
Threaded Adaptors

# 95° ROMBICO POSITIVO 4-6-10

## 95° Rombic Positive 4-6-10



ADATTATORI  
Adaptors

p. 446...



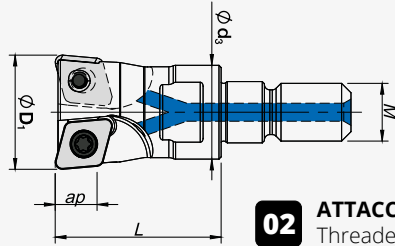
p. 369-371



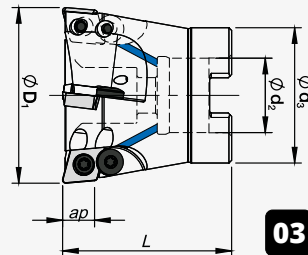
p. 455



p. 473



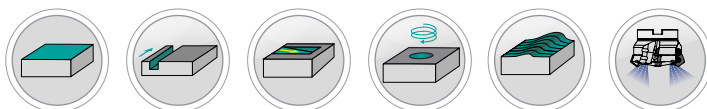
**02** ATTACCO FILETTATO  
Threaded Shank



**03** ATTACCO A MANICOTTO  
Arbor Mounting

CODICE Code	$\varnothing D_1$ (mm)	$\varnothing d_2/M$ (mm)	$\varnothing d_3$ (mm)	L (mm)	L1 (mm)	$a_p$ (mm)		Kg
<b>010R02R95M06XD0401</b>	10	M6	9,8	20	-	0,8	2	0,010
<b>016R02R95M08XD0602</b>	16	M8	13	23	-	1	2	0,022
<b>02</b> <b>020R03R95M10XD0602</b>	20	M10	18	28	-	1	3	0,050
<b>025R03R95M12XD0602</b>	25	M12	21	30	-	1	3	0,081
<b>035R03R95M16XD10T3</b>	35	M16	29	43	-	1	3	0,200
<b>052C05R9522XD10T3</b>	52	22	40	50	-	1	5	0,342
<b>03</b> <b>066C06R9527XD10T3</b>	66	27	48	50	-	1	6	0,565

Esempio d'ordine: (Codice +  $\varnothing D_1$ ) | Ordering example: (Code +  $\varnothing D_1$ )



INSERTO Insert	VITE INSERTO Insert Screw	CHIAVE (Torx) Wrench (Torx)	Nm	VITE FISSAGGIO INSERTO Screw Clamping insert	CODICE Code	
XD... 040110	TVTF 001	TCTF 001	0,3	-	<b>010R02R95M06XD0401</b>	
XD... 060210	TVTF 002	TCTF 002	1,2	-	<b>016R02R95M08XD0602</b>	
XD... 060210	TVTF 002	TCTF 002	1,2	-	<b>020R03R95M10XD0602</b>	<b>02</b>
XD... 060210	TVTF 002	TCTF 002	1,2	-	<b>025R03R95M12XD0602</b>	
XD... 10T310	TVTF 004	TCTF 004	3	-	<b>035R03R95M16XD10T3</b>	
XD... 10T310	TVTF 004	TCTF 004	3	TFF 001	<b>052C05R9522XD10T3</b>	
XD... 10T310	TVTF 004	TCTF 004	3	TFF 001	<b>066C06R9527XD10T3</b>	<b>03</b>

Inserti e parametri di taglio alla pagina successiva  
Inserts and cutting parameters on the next page



# 95° ROMBICO POSITIVO 4-6-10

## 95° Rombic Positive 4-6-10


**ADATTATORI**  
Adaptors

p. 446...



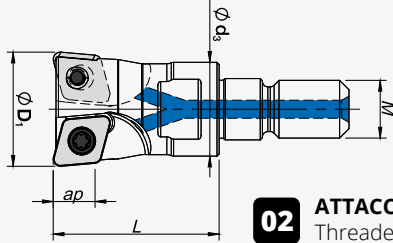
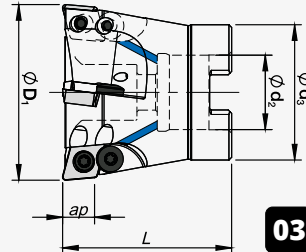
p. 369-371



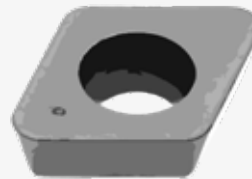
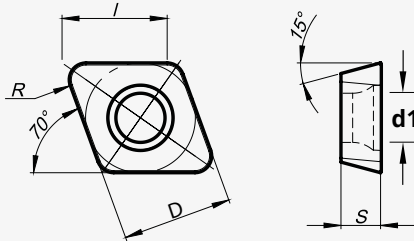
p. 455



p. 473


**02** **ATTACCO FILETTATO**  
Threaded Shank

**03** **ATTACCO A MANICOTTO**  
Arbor Mounting

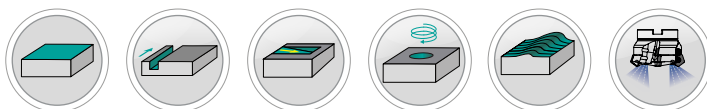
## XD.. INSERTO | Insert



CODICE INSERTO Insert Code	Dimensioni   Dimension:						QUALITÀ   Grades														
	D	S	I	R	d1	F	P			M			K			N	S		H		
							TCP605	TCU610	TCU630	TCU620	TCU630	TCU640	TCU610	TCU620	TCU630	TCN010	TCU610	TCU620	TCU630	TCP605	
<b>XDHW040110</b>	4	1,59	4	1	2	-	●	●	-	-	-	-	●	-	-	-	-	-	-	-	●
<b>XDHW060210</b>	6,5	2,38	6,2	1	2,9	-	●	●	-	-	-	-	●	-	-	-	-	-	-	-	●
<b>XDHW10T310</b>	10	3,97	9,9	1	4,1	-	●	●	-	-	-	-	●	-	-	-	-	-	-	-	●

**Esempio d'ordine:** (Codice Inserto + Qualità) | **Ordering example:** (Insert Code + Grade)

FRESATURA Milling  
 INTRODUZIONE Introduction  
 FRESE PER SPANATURA Face Milling Cutters  
 FRESE PER SPALLAMENTO Shoulder Milling Cutters  
 FRESE PER PROFILATURA Profiling Milling Cutters  
 FRESE A TUFO/SPANATURA Face and Plunge Cutters  
 FRESE PER ALLUMINIO Alu Cutters  
 ADATTATORI FILETTATI Threaded Adaptors



## PARAMETRI DI TAGLIO | CUTTING DATA

		TCP605	TCU610
ISO	MATERIALE Material	Vc (m/min)	
P	< 800 N/mm <sup>2</sup>	180-300	180-250
	700-1000 N/mm <sup>2</sup>	180-250	170-210
	1000-1300 N/mm <sup>2</sup>	180-230	160-200
K	<b>GHISA GRIGIA</b> Grey Cast Iron	-	150-250
	<b>GHISA SFEROIDALE</b> Nodular Cast Iron	-	90-210
H	<b>ACCIAIO TEMPRATO</b> Hardened Steels (40-55HRC)	120-220	-

		AVANZAMENTO $f_z$ (mm/d) Feed $f_z$ (mm/t)		$a_p$ (mm)
INSERTO Insert	SGROSSATURA Roughing	FINITURA Finishing		
XD..04	0,10-0,20	0,10-0,15	0,10-0,50	
	0,15-0,30	0,10-0,25	0,20-0,80	
	0,15-0,35	0,10-0,30	0,20-0,80	
-	-	-	-	
-	-	-	-	
-	-	-	-	

FRESATURA  
MillingINTRODUZIONE  
IntroductionFRESE PER SPIANATURA  
Face Milling CuttersFRESE PER SPALLAMENTO  
Shoulder Milling CuttersFRESE PER PROFILATURA  
Profiling Milling CuttersFRESE A TUFFO-SPIANATURA  
Face and Plunge CuttersFRESE PER ALLUMINIO  
Alu CuttersADATTATORI FILETTATI  
Threaded Adaptors

# TONDO POSITIVO 10-12

## Round Positive 10-12

FRESATURA  
MillingINTRODUZIONE  
IntroductionFRESE PER SPIANATURA  
Face Milling CuttersFRESE PER SPALLAMENTO  
Shoulder Milling CuttersFRESE PER PROFILATURA  
Profiling Milling CuttersFRESE A TUFO/SPIANATURA  
Face and Plunge CuttersFRESE PER ALLUMINIO  
Alu CuttersADATTATORI FILETTATI  
Threaded AdaptorsADATTATORI  
Adaptors

p. 446...



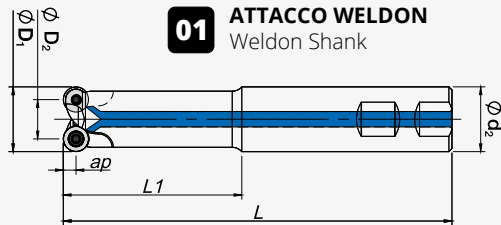
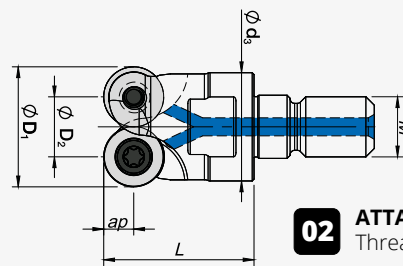
p. 369-371



p. 455



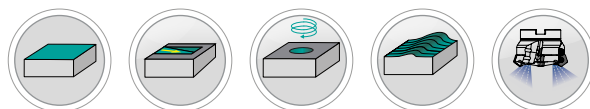
p. 473


**01** ATTACCO WELDON  
Weldon Shank

**02** ATTACCO FILETTATO  
Threaded Shank

	CODICE Code	Ø D <sub>1</sub> (mm)	Ø D <sub>2</sub> (mm)	Ø d <sub>2</sub> /M (mm)	Ø d <sub>3</sub> (mm)	L (mm)	L1 (mm)	a <sub>p</sub> (mm)		Kg
<b>01</b>	*020W02R0020160RD1003	20	10	20	-	150	60	5	2	0,322
	020W02R0025220RD1003	20	10	25	-	220	120	5	2	0,610
	*032W03R0032150RD1003	32	22	32	-	150	60	5	3	1,100
<b>01</b>	*025W02R0025220RD12T3	25	13	25	-	200	100	6	2	0,678
	025W02R0032230RD12T3	25	13	32	-	230	130	6	2	1,015
	*032W03R0032150RD12T3	32	20	32	-	150	60	5	3	1,100
	*040W04R0040150RD12T3	40	28	40	-	150	50	6	4	1,250
<b>02</b>	020R02R00M10RD1003	20	10	M10	18	25	-	5	2	0,041
	030R04R00M16RD1003	30	20	M16	29	35	-	5	4	0,190
	035R05R00M16RD1003	35	25	M16	29	43	-	5	5	0,240
	042R05R00M16RD1003	42	32	M16	29	40	-	5	5	0,243
<b>02</b>	024R02R00M12RD12T3	24	12	M12	21	32	-	6	2	0,072
	035R03R00M16RD12T3	35	23	M16	29	42	-	6	3	0,205
	042R04R00M16RD12T3	42	30	M16	29	42	-	6	4	0,232

Esempio d'ordine: (Codice + Ø D<sub>1</sub>) | Ordering example: (Code + Ø D<sub>1</sub>) \* Senza fori di lubrificazione interna | Without internal coolant holes





INSERTO Insert	VITE INSERTO Insert Screw	CHIAVE (Torx) Wrench (Torx)	Nm	STAFFA Clamp	VITE STAFFA Clamp Screw	CODICE Code	
RD... 1003	TVTF 016	TCTF 004	3	TWRT 003	TVTF 017	<b>*020W02R0020160RD1003</b>	
RD... 1003	TVTF 004	TCTF 004	3	-	-	<b>020W02R0025220RD1003</b>	<b>01</b>
RD... 1003	TVTF 016	TCTF 004	3	TWRT 003	TVTF 017	<b>*032W03R0032150RD1003</b>	
RD... 12T3	TVTF 016	TCTF 004	3	TWRT 003	TVTF 017	<b>*025W02R0025220RD12T3</b>	
RD... 12T3	TVTF 004	TCTF 004	3	-	-	<b>025W02R0032230RD12T3</b>	<b>01</b>
RD... 12T3	TVTF 016	TCTF 004	3	TWRT 003	TVTF 017	<b>*032W03R0032150RD12T3</b>	
RD... 12T3	TVTF 016	TCTF 004	3	TWRT 003	TVTF 017	<b>*040W04R0040150RD12T3</b>	
RD... 1003	TVTF 004	TCTF 004	3	-	-	<b>020R02R00M10RD1003</b>	
RD... 1003	TVTF 004	TCTF 004	3	-	-	<b>030R04R00M16RD1003</b>	<b>02</b>
RD... 1003	TVTF 004	TCTF 004	3	-	-	<b>035R05R00M16RD1003</b>	
RD... 1003	TVTF 004	TCTF 004	3	-	-	<b>042R05R00M16RD1003</b>	
RD... 12T3	TVTF 004	TCTF 004	3	-	-	<b>024R02R00M12RD12T3</b>	
RD... 12T3	TVTF 004	TCTF 004	3	-	-	<b>035R03R00M16RD12T3</b>	<b>02</b>
RD... 12T3	TVTF 004	TCTF 004	3	-	-	<b>042R04R00M16RD12T3</b>	

Inserti e parametri di taglio alle pagine 422-423  
Inserts and cutting parameters on pages 422-423

FRESATURA  
MillingINTRODUZIONE  
IntroductionFRESE PER SPIANATURA  
Face Milling CuttersFRESE PER SPALLAMENTO  
Shoulder Milling CuttersFRESE PER PROFILATURA  
Profiling Milling CuttersFRESE A TUFFO-SPIANATURA  
Face and Plunge CuttersFRESE PER ALLUMINIO  
Alu CuttersADATTATORI FILETTATI  
Threaded Adaptors

# TONDO POSITIVO 10-12

## Round Positive 10-12

FRESATURA  
MillingINTRODUZIONE  
IntroductionFRESE PER SPIANATURA  
Face Milling CuttersFRESE PER SPALLAMENTO  
Shoulder Milling CuttersFRESE PER PROFILATURA  
Profiling Milling CuttersFRESE A TUFO/SPIANATURA  
Face and Plunge CuttersFRESE PER ALLUMINIO  
Alu CuttersADATTATORI FILETTATI  
Threaded AdaptorsADATTATORI  
Adaptors

p. 446...



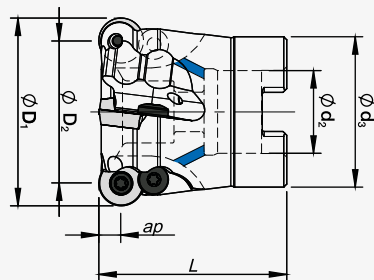
p. 369-371



p. 455

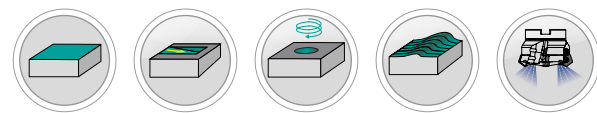


p. 473


**03** ATTACCO A MANICOTTO  
Arbor Mounting

	CODICE Code	Ø D <sub>1</sub> (mm)	Ø D <sub>2</sub> (mm)	Ø d <sub>2</sub> /M (mm)	Ø d <sub>3</sub> (mm)	L (mm)	a <sub>p</sub> (mm)		INSERTO Insert
	<b>040A04R0016RD1003</b>	<b>40</b>	40	-	-	40	5	4	RD... 1003
<b>03</b>	<b>042A6R0016RD1003</b>	<b>42</b>	32	16	36	44	5	6	RD... 1003
	<b>*052A05R0022RD1003</b>	<b>52</b>	52	-	-	50	5	5	RD... 1003
	<b>063A06R0022RD1003</b>	<b>63</b>	63	-	-	50	5	6	RD... 1003
	<b>040A04R0016RD12T3</b>	<b>40</b>	40	-	-	40	6	4	RD... 12T3
<b>03</b>	<b>100A08R0032RD12T3</b>	<b>100</b>	100	-	-	50	6	8	RD... 12T3

Esempio d'ordine: (Codice + Ø D<sub>1</sub>) | Ordering example: (Code + Ø D<sub>1</sub>) \* Senza fori di lubrificazione interna | Without internal coolant holes



VITE INSERTO Insert Screw	CHIAVE (Torx) Wrench (Torx)	Nm	STAFFA Clamp	VITE STAFFA Clamp Screw	VITE BLOCK FRESA Lock Screw Mill	CODICE Code	
TVTF 017	TCTF 004	3	TWRT 003	TVTF 017	TBDF 003*	<b>040A04R0016RD1003</b>	<b>03</b>
TVTF 004	TCTF 004	3	-	-	-	<b>042A6R0016RD1003</b>	
TVTF 017	TCTF 004	3	TWRT 003	TVTF 017	TBDF 004*	<b>052A05R0022RD1003</b>	
TVTF 017	TCTF 004	3	TWRT 003	TVTF 017	TBDF 004*	<b>063A06R0022RD1003</b>	
TVTF 017	TCTF 004	3	TWRT 003	TVTF 017	TBDF 003*	<b>040A04R0016RD12T3</b>	<b>03</b>
TVTF 017	TCTF 004	3	TWRT 003	TVTF 017	TBDF 006*	<b>100A08R0032RD12T3</b>	

Inserti e parametri di taglio alle pagine 422-423  
 Inserts and cutting parameters on pages 422-423



FRESATURA  
Milling

INTRODUZIONE  
Introduction

FRESE PER SPIANATURA  
Face Milling Cutters

FRESE PER SPALLAMENTO  
Shoulder Milling Cutters

FRESE PER PROFILATURA  
Profiling Milling Cutters

FRESE A TUFFO-SPIANATURA  
Face and Plunge Cutters

FRESE PER ALLUMINIO  
Alu Cutters

ADATTATORI FILETTATI  
Threaded Adaptors

# TONDO POSITIVO 12-16

## Round Positive 12-16

FRESATURA  
MillingADATTATORI  
Adaptors

p. 446...



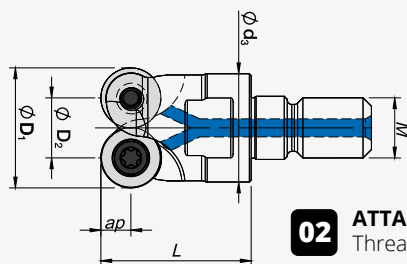
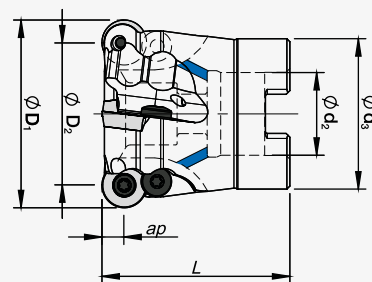
p. 369-371



p. 455



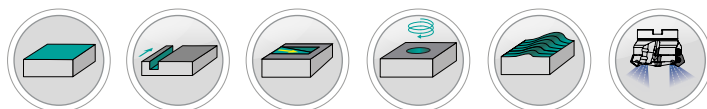
p. 473

INTRODUZIONE  
IntroductionFRESE PER SPIANATURA  
Face Milling CuttersFRESE PER SPALLAMENTO  
Shoulder Milling CuttersFRESE PER PROFILATURA  
Profiling Milling CuttersFRESE A TUFO/SPIANATURA  
Face and Plunge CuttersFRESE PER ALLUMINIO  
Alu CuttersADATTATORI FILETTATI  
Threaded Adaptors**02** ATTACCO FILETTATO  
Threaded Shank**03** ATTACCO A MANICOTTO  
Arbor Mounting

	CODICE Code	Ø D <sub>1</sub> (mm)	Ø D <sub>2</sub> (mm)	Ø d <sub>2</sub> /M (mm)	Ø d <sub>3</sub> (mm)	L (mm)	a <sub>p</sub> (mm)		Kg	INSERTO Insert
<b>02</b>	<b>035R03R00M16RD1604</b>	<b>35</b>	19	M16	29	42	8	3	0,230	RD... 1604
	<b>052C05R0022RD12T3</b>	<b>52</b>	40	22	40	50	6	5	0,337	RD... 12T3
<b>03</b>	<b>052C05R002207RD12T3*</b>	<b>52</b>	40	22	40	50	6	5	0,337	RD... 12T3
	<b>066C06R0027RD12T3</b>	<b>66</b>	54	27	48	50	6	6	0,550	RD... 12T3
	<b>080C07R0027RD12T3</b>	<b>80</b>	68	27	60	50	6	7	1,000	RD... 12T3
	<b>052C04R0022RD1604</b>	<b>52</b>	36	22	40	50	8	4	0,305	RD... 1604
<b>03</b>	<b>066C05R0027RD1604</b>	<b>66</b>	50	27	48	50	8	5	0,550	RD... 1604
	<b>080C06R0027RD1604</b>	<b>80</b>	64	27	60	52	8	6	0,910	RD... 1604

Esempio d'ordine: (Codice + Ø D<sub>1</sub>) | Ordering example: (Code + Ø D<sub>1</sub>)

\* Angolo Assiale +7° | Axial rake angle +7°



VITE INSERTO Insert Screw	CHIAVE (Torx) Wrench (Torx)	Nm	VITE FISSAGGIO Screw Clamping	STAFFA Clamp	VITE STAFFA Clamp Screw	CODICE Code	
TVTF 007	TCTF 005	5	-	-	-	<b>035R03R00M16RD1604</b>	<b>02</b>
TVTF 004	TCTF 004	3	TFF 001	-	-	<b>052C05R0022RD12T3</b>	<b>03</b>
TVTF 004	TCTF 004	3	TFF 001	-	-	<b>052C05R002207RD12T3*</b>	
TVTF 004	TCTF 004	3	TFF 001	-	-	<b>066C06R0027RD12T3</b>	
TVTF 004	TCTF 004	3	TFF 001	-	-	<b>080C07R0027RD12T3</b>	
TVTF 007	TCTF 005	5	-	TWRT 001	TVTF 007	<b>052C04R0022RD1604</b>	<b>03</b>
TVTF 007	TCTF 005	5	-	TWRT 001	TVTF 007	<b>066C05R0027RD1604</b>	
TVTF 004	TCTF 004	3	TFF 001	-	-	<b>080C06R0027RD1604</b>	

Inserti e parametri di taglio alle pagine 422-423  
Inserts and cutting parameters on pages 422-423



# RD.. INSERTO | Insert


**ADATTATORI**  
Adaptors

p. 446...



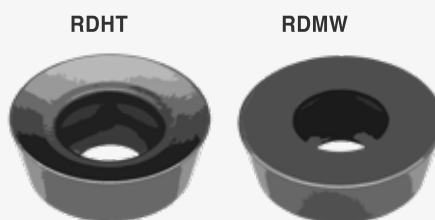
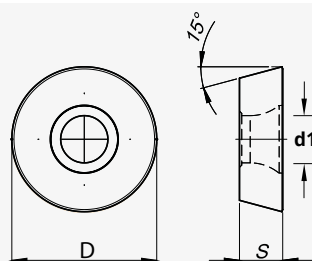
p. 369-371



p. 455

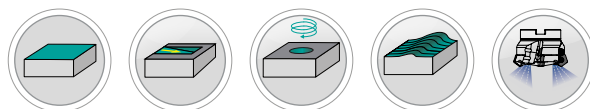


p. 473



	Dimensioni   Dimension:						QUALITÀ   Grades													
	D	S	I	R	d1	F	P		M		K	N		S		H				
<b>CODICE INSERTO</b> Insert Code	D	S	I	R	d1	F	TCP605	TCU610	TCU620	TCP625	TCP635	TCU610	TCU620	TCU610	TCU620	TCN010	TCU610	TCU620	TCU630	TCP605
<b>RDHW1003M0T</b>	10	3,18	-	-	4,1	-	●	●	●	-	●	-	●	●	●	-	●	●	-	●
<b>RDHW12T3M0T</b>	12	3,97	-	-	4,1	-	●	●	●	-	●	-	●	●	●	-	●	●	-	●
<b>RDHW1604M0T</b>	16	4,76	-	-	5,2	-	●	●	●	-	●	-	●	-	-	●	●	-	●	
<b>RDHT1003M0T</b>	10	3,18	-	-	4,1	-	-	-	-	●	●	-	-	-	-	-	-	-	-	-
<b>RDHT12T3M0T</b>	12	3,97	-	-	4,1	-	-	-	-	●	●	-	-	-	-	-	-	-	-	-
<b>RDHT1604M0T</b>	16	4,76	-	-	5,2	-	-	-	-	●	●	-	-	-	-	-	-	-	-	-
<b>RDMT1003M0T</b>	10	3,18	-	-	4,1	-	-	-	-	●	●	-	-	-	-	-	-	-	-	-
<b>RDMT12T3M0T</b>	12	3,97	-	-	4,1	-	-	-	-	●	●	-	-	-	-	-	-	-	-	-
<b>RDMT1604M0T</b>	16	4,76	-	-	5,2	-	-	-	-	●	●	-	-	-	-	-	-	-	-	-
<b>RDMW1003M0T</b>	10	3,18	-	-	4,1	-	-	-	●	●	●	-	●	-	●	-	-	-	-	-
<b>RDMW12T3M0T</b>	12	3,97	-	-	4,1	-	-	-	●	●	●	-	●	-	●	-	-	-	-	-
<b>RDMW1604M0T</b>	16	4,76	-	-	5,2	-	-	-	●	-	●	-	●	-	●	-	-	-	-	-

**Esempio d'ordine:** (Codice Inserto + Qualità) | **Ordering example:** (Insert Code + Grade)



## PARAMETRI DI TAGLIO | CUTTING DATA

ISO	MATERIALE Material	TCP605	TCU610	TCU620	TCP625	TCP635
		Vc (m/min)				
P	< 800 N/mm <sup>2</sup>	180-300	180-250	150-230	160-190	150-180
	700-1000 N/mm <sup>2</sup>	180-250	170-210	140-220	140-180	140-170
	1000-1300 N/mm <sup>2</sup>	180-230	160-200	130-180	130-160	120-150
M	<b>AUSTENITICO</b> Austenitic	-	-	100-130	-	-
	<b>DUPLEX</b>	-	-	90-100	-	-
K	<b>GHISA GRIGIA</b> Grey Cast Iron	-	150-250	130-230	-	-
	<b>GHISA SFEROIDALE</b> Nodular Cast Iron	-	90-210	80-190	-	-
S	<b>LEGHE RESISTENTI AL CALORE</b> Heat Resistant Super Alloys	-	60-90	40-70	-	-
H	<b>ACCIAIO TEMPRATO (40-55 HRC)</b> Hardened Steels (40-55 HRC)	120-200	-	-	-	-

## AVANZAMENTO PER DENTE $f_z$ | FEED FOR TOOTH $f_z$

DIMENSIONE INSERTO Insert Dimension				PERCENTUALE FASCIA DI LAVORO DELLA FRESA ( $a_e$ ) Radial Working Engagement ( $a_e$ )						
				10%	20%	30%	40%	50%	75%	
RD..10	RD..12	RD..16	$a_p = 1,0$	-	1,50	1,22	1,06	0,95	0,82	
RD..10	RD..12	RD..16	$a_p = 2,0$	1,50	1,06	0,87	0,75	0,67	0,57	
RD..10	RD..12	RD..16	$a_p = 3,0$	1,22	0,87	0,71	0,61	0,55	0,50	
-	RD..12	RD..16	$a_p = 4,0$	1,06	0,75	0,61	0,53	0,47	0,42	
-	-	RD..16	$a_p = 5,0$	0,95	0,67	0,55	0,47	0,42	0,38	
-	-	RD..16	$a_p = 6,0$	0,87	0,61	0,50	0,43	0,39	0,35	

# FRESE A COPIARE 3000

## Copy Mills 3000



ADATTATORI  
Adaptors

p. 446...



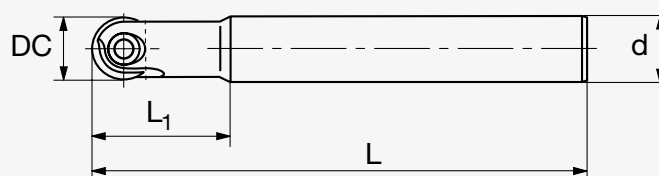
p. 369-371



p. 455



p. 473



CODICE Code	∅ DC (mm)	∅ d (mm)	Φ	L (mm)	L1 (mm)	a <sub>p</sub> (mm)		Kg
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### Attacco cilindrico | Cylindrical Shank

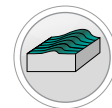
<b>3000 12x130</b>	12	12	-	130	32	6	1	0,103
<b>3000 12x150</b>	12	12	-	150	46	6	1	0,118
<b>3000 16x140</b>	16	16	-	140	36	8	1	0,198
<b>3000 16x160</b>	16	16	-	160	53	8	1	0,222
<b>3000 20x160</b>	20	20	-	160	45	10	1	0,353
<b>3000 20x175</b>	20	20	-	175	61	10	1	0,353
<b>3000 25x160</b>	25	25	-	160	45	12,5	1	0,545
<b>3000 25x190</b>	25	25	-	190	70	12,5	1	0,646
<b>3000 32x175</b>	32	32	-	175	56	16	1	0,968
<b>3000 32x210</b>	32	32	-	210	80	16	1	1,159

### Attacco Ribassato | Lowered Shank

<b>3000 8x140</b>	8	12	3°	140	48,5	4	1	0,103
<b>3000 10x150</b>	10	12	3°	150	35	5	1	0,117
<b>3000 12x160</b>	12	16	3°	160	58,5	6	1	0,21
<b>3000 16x175</b>	16	20	3°	175	65	8	1	0,362
<b>3000 20x190</b>	20	25	3°	190	76	10	1	0,61
<b>3000 25x210</b>	25	32	3°	210	98	12,5	1	1,072
<b>3000 32x240</b>	32	40	3°	240	121	16	1	1,9

Esempio d'ordine: (3000 + 12x130) | Ordering example: (3000 + 12x130)





INSERTO Insert	VITE INSERTO Insert Screw	CHIAVE (Torx) Wrench (Torx)	Nm	CODICE Code	
BCEG/A - 12	GWS 12	TX 15	4	<b>3000</b>	<b>12x130</b>
BCEG/A - 12	GWS 12	TX 15	4	<b>3000</b>	<b>12x150</b>
BCEG/A - 16	GWS 16	TX 15	5	<b>3000</b>	<b>16x140</b>
BCEG/A - 16	GWS 16	TX 15	5	<b>3000</b>	<b>16x160</b>
BCEG/A - 20	GWS 20	TX 20	6	<b>3000</b>	<b>20x160</b>
BCEG/A - 20	GWS 20	TX 20	6	<b>3000</b>	<b>20x175</b>
BCEG/A - 25	GWS 25	TX 25	6,5	<b>3000</b>	<b>25x160</b>
BCEG/A - 25	GWS 25	TX 25	6,5	<b>3000</b>	<b>25x190</b>
BCEG/A - 32	GWS 32	TX 25	6,5	<b>3000</b>	<b>32x175</b>
BCEG/A - 32	GWS 32	TX 25	6,5	<b>3000</b>	<b>32x210</b>
BCEG/A - 08	GWS 8	TX 08	2	<b>3000</b>	<b>8x140</b>
BCEG/A - 10	GWS 10	TX 10	3	<b>3000</b>	<b>10x150</b>
BCEG/A - 12	GWS 12	TX 15	4	<b>3000</b>	<b>12x160</b>
BCEG/A - 16	GWS 16	TX 15	5	<b>3000</b>	<b>16x175</b>
BCEG/A - 20	GWS 20	TX 20	6	<b>3000</b>	<b>20x190</b>
BCEG/A - 25	GWS 25	TX 25	6,5	<b>3000</b>	<b>25x210</b>
BCEG/A - 32	GWS 32	TX 25	6,5	<b>3000</b>	<b>32x240</b>

Inserti e parametri di taglio alla pagina successiva  
Inserts and cutting parameters on the next page



# BCE.. INSERTO | Insert


**ADATTATORI**  
Adaptors

p. 446...



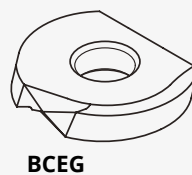
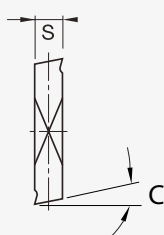
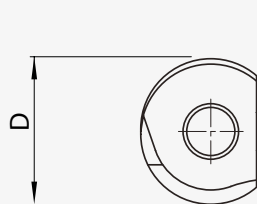
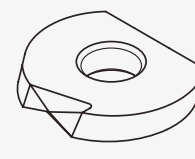
p. 369-371



p. 455

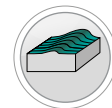


p. 473


**BCEG**

**BCEA**

CODICE INSERTO Insert Code	Dimensioni Dimension:				QUALITÀ   Grades													
	D	S	R	C	P			M			K			N				
					T10	T14	TR58	TR60	TR90	T10	TR90	TR58	T10	TR90	TR58	T10	TR90	TR58
<b>BCEG8</b>	8	2	4	7°	●	-	●	-	-	-	●	-	-	-	-	-	-	-
<b>BCEA10</b>	10	2,5	5	7°	●	●	●	●	●	●	●	●	●	●	●	●	●	●
<b>BCEG10</b>	10	2,5	5	7°	●	●	●	●	●	●	●	●	●	●	●	●	●	●
<b>BCEA12</b>	12	2,5	6	7°	●	●	●	●	●	●	●	●	●	●	●	●	●	●
<b>BCEG12</b>	12	2,5	6	7°	●	●	●	●	●	●	●	●	●	●	●	●	●	●
<b>BCEA16</b>	16	3	8	7°	●	●	●	●	●	●	●	●	●	●	●	●	●	●
<b>BCEG16</b>	16	3	8	7°	●	●	●	●	●	●	●	●	●	●	●	●	●	●
<b>BCEA20</b>	20	3	10	7°	●	●	●	●	●	●	●	●	●	●	●	●	●	●
<b>BCEG20</b>	20	3	10	7°	●	●	●	●	●	●	●	●	●	●	●	●	●	●
<b>BCEA25</b>	25	4	12,5	7°	●	●	●	●	●	●	●	●	●	●	●	●	●	●
<b>BCEG25</b>	25	4	12,5	7°	●	●	●	●	●	●	●	●	●	●	●	●	●	●
<b>BCEA32</b>	32	5	16	7°	●	●	●	●	●	●	●	●	●	●	●	●	●	●
<b>BCEG32</b>	32	5	16	7°	●	●	●	●	●	●	●	●	●	●	●	●	●	●

**Esempio d'ordine:** (Codice Inserto + Qualità) | **Ordering example:** (Insert Code + Grade)



## PARAMETRI DI TAGLIO | CUTTING DATA

ISO	MATERIALE Material	APPLICAZIONI Application	T10	T14	TR58	TR60	TR90	AVANZAMENTO $f_z$ (mm/d) Feed $f_z$ (mm/t)	
			Vc (m/min)					D 8÷12	D 16÷32
P	ACCIAIO AL CARBONIO LEGATO PER STAMPI E PER UTENSILI Carbon steel, alloyed tool steel	FINITURA Finishing	90-170	-	-	-	-	0,1±0,2	0,25±0,4
		FINITURA Finishing	-	-	120-210	-	-	0,1±0,2	0,25±0,4
		FINITURA Finishing	-	-	-	-	120-210	0,1±0,2	0,25±0,4
		SGROSSATURA Roughing	-	90-140	-	-	-	0,15±0,35	0,4±0,6
		SGROSSATURA Roughing	-	-	-	100-180	-	0,15±0,35	0,4±0,6
M	AUSTENITICO   Austenitic (BCEG INSERTO/Insert)	-	70-100	-	90-110	-	90-110	0,1±0,15	0,2±0,4
K	GHISA GRIGIA GHISA SFEROIDALE Grey Cast Iron Nodular Cast Iron	-	100-170	-	120-200	-	120-200	0,2±0,3	0,4±0,5
N	ALLUMINIO   Aluminium (BCEG INSERTO/Insert)	-	200-460	-	> 300	-	> 300	0,3±0,5	0,6±0,8
	RAME, OTTONE, BRONZO Copper, Brass, Bronze (BCEG INSERTO/Insert)	-	120-180	-	140-240	-	140-240	0,2±0,4	0,5±0,7
	GRAFITE   Graphite	-	200-400	-	300-460	-	300-460	0,2±0,35	0,4±0,6

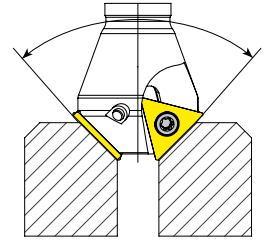
TIPO INSERTO Insert Type	CARATTERISTICHE Features	APPLICAZIONI Application
BCEG	Con Rompitruciolo / With chipbraker	Acciai non legati - Inossidabili - Non ferrosi Unalloyed Steel - Stainless Steel - Non Ferrous
BCEA	Senza Rompitruciolo / Without chipbraker	Acciai alto legati   High Steel

QUALITÀ Insert Type	CARATTERISTICHE Features	APPLICAZIONI Application
T10	K10-20 non rivestito / K10-20 Uncoated	Non ferrosi   Non ferrous
T14	P15-30 non rivestito / KP15-30 Uncoated	Acciai medio e alto legati   Medium and High Steel
TR58	K10-20 rivestito TiAlN / KK10-20 TiAlN Coated	Semifinitura/finitura acciai e non ferrosi Semifinish/ Finished Steel and Non Ferrous
TR60	P15-30 rivestito TiAlN / KP15-30 TiAlN Coated	Sgrossatura acciai e non ferrosi Steel Roughing and Non Ferrous
TR90	K10-20 rivestito TiCN / KK10-20 TiAlN Coated	Semisgrossatura acciai   Semi Roughing Steel

NEW

# FRESE PER SMUSSI

## Chamfering Mills


**ADATTATORI**  
Adaptors

p. 446...



p. 369-371

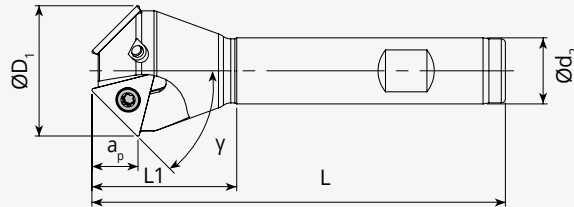


p. 455



p. 473

### 01 ATTACCO WELDON | Weldon Shank

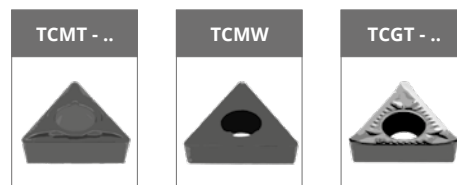


CODICE Code	Ø D <sub>1</sub> (mm)	Ø d <sub>2</sub> (mm)	L (mm)	L1 (mm)	a <sub>p</sub> (mm)		γ
<b>020W01R3016100TC16</b>	<b>20,0</b>	16	100	30	13,3	1	30°
<b>030W01R3016100TC16</b>	<b>30,0</b>	16	100	30	13,3	1	30°
<b>032W02R3020100TC16</b>	<b>32,5</b>	20	100	30	13,3	2	30°
<b>035W02R3020100TC16</b>	<b>35,0</b>	16	100	35	13,3	2	30°
<b>026W01R4516100TC16</b>	<b>26,0</b>	16	100	30	10,8	1	45°
<b>031W02R4516100TC16</b>	<b>31,0</b>	16	100	35	10,8	2	45°
<b>031W02R4520100TC16</b>	<b>31,0</b>	20	100	35	10,8	2	45°
<b>039W02R4516100TC16</b>	<b>39,0</b>	16	100	40	10,8	2	45°
<b>039W02R4520100TC16</b>	<b>39,0</b>	20	100	40	10,8	2	45°
<b>041W02R4520100TC16</b>	<b>41,0</b>	20	100	40	10,8	2	45°

**Esempio d'ordine:** (Codice + Ø D<sub>1</sub>) | **Ordering example:** (Code + Ø D<sub>1</sub>)



**FORME E INSERTI COMPATIBILI**  
Suitable forms and inserts



**PER MAGGIORI DETTAGLI VEDI PAGINE 126-139**  
For more details see pages 126-139



INSERTO Insert	VITE INSERTO Insert screw	CHIAVE (Torx) Wrench (Torx)	Nm	CODICE Code
TC.. 16T304	TVTF 016	TCTF 004		<b>020W01R3016100TC16</b>
TC.. 16T304	TVTF 016	TCTF 004		<b>030W01R3016100TC16</b>
TC.. 16T304	TVTF 016	TCTF 004		<b>032W02R3020100TC16</b>
TC.. 16T304	TVTF 016	TCTF 004		<b>035W02R3020100TC16</b>
TC.. 16T304	TVTF 016	TCTF 004		<b>026W01R4516100TC16</b>
TC.. 16T304	TVTF 016	TCTF 004		<b>031W02R4516100TC16</b>
TC.. 16T304	TVTF 016	TCTF 004		<b>031W02R4520100TC16</b>
TC.. 16T304	TVTF 016	TCTF 004		<b>039W02R4516100TC16</b>
TC.. 16T304	TVTF 016	TCTF 004		<b>039W02R4520100TC16</b>
TC.. 16T304	TVTF 016	TCTF 004		<b>041W02R4520100TC16</b>

01

FRESATURA  
MillingINTRODUZIONE  
IntroductionFRESE PER SPIANATURA  
Face Milling CuttersFRESE PER SPALLAMENTO  
Shoulder Milling CuttersFRESE PER PROFILATURA  
Profiling Milling CuttersFRESE A TUFFO-SPIANATURA  
Face and Plunge CuttersFRESE PER ALLUMINIO  
Alu CuttersADATTATORI FILETTATI  
Threaded Adaptors



# FRESE PER PROFILATURA MULTIFUNZIONE

## Profiling Multifunction Mills

**FRESATURA**  
Milling

**ADATTATORI**  
Adaptors

p. 446...



p. 369-371



p. 455



p. 473

**INTRODUZIONE**  
Introduction

**FRESE PER SPIANATURA**  
Face Milling Cutters

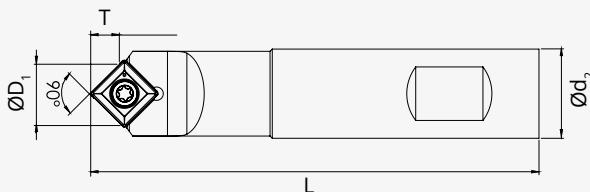
**FRESE PER SPALLAMENTO**  
Shoulder Milling Cutters

**FRESE PER PROFILATURA**  
Profiling Milling Cutters

**FRESE A TUFFO-SPIANATURA**  
Face and Plunge Cutters

**FRESE PER ALLUMINIO**  
Alu Cutters

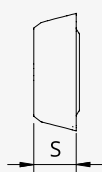
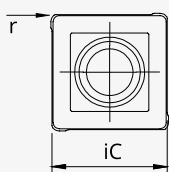
**ADATTATORI FILETTATI**  
Threaded Adaptors

**01** **ATTACCO WELDON** | Weldon Shank


CODICE Code	Ø D1 max (mm)	Ø T max (mm)	Ø Ød2 (mm)	L (mm)	γ	
<b>013W01R4516100SO11</b>	<b>13</b>	6,5	16	100	45	1
<b>013W01R4516150SO11</b>	<b>13</b>	6,5	16	150	45	1

**Esempio d'ordine:** (Codice + Ø D,) | **Ordering example:** (Code + Ø D,)

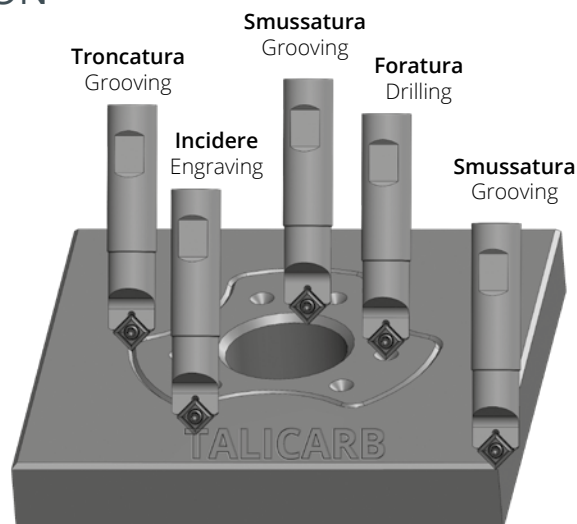
## SOMT 11T308... INSERTO

 | Insert


CODICE INSERTO Insert Code	QUALITÀ   Grades																	
	Dimensioni   Dimension:					P		M		K		N		S		H		
iC	S	I	r	F	TCU610	TCU620	TCM720	TCU620	TCU630	TCM720	TCU610	TCU620	TCM720	TCN010	TCU610	TCU620	TCM720	TCP605
<b>SOMT11T308</b>	6,7	3,5	10	-	2,8	-	-	●	-	-	●	-	-	●	-	-	-	-

**Esempio d'ordine:** (Codice Inserto + Qualità) | **Ordering example:** (Insert Code + Grade)

## SELEZIONE UTENSILE | TOOL SELECTION



INSERTO Insert	VITE INSERTO Insert screw	CHIAVE (Torx) Wrench (Torx)	Nm	CODICE Code
SOMT 11T308	TVTF 004	TCTF 004	3,0	<b>013W01R4516100SO11</b>
SOMT 11T308	TVTF 004	TCTF 004	3,0	<b>013W01R4516150SO11</b>

01

## PARAMETRI DI TAGLIO | CUTTING DATA

ISO	MATERIALE Material	TCM720	Vc (m/min)
P	< 800 N/mm <sup>2</sup>	-	120-150
	700-1000 N/mm <sup>2</sup>	-	100-120
	1000-1300 N/mm <sup>2</sup>	-	60-100
M	<b>FERRITICO-MARTENSITICO</b> Ferritic / Martensitic	-	100-150
	<b>AUSTENITICO</b> Austenitic	-	80-120
	<b>AUSTENITICO-FERRITICO</b> Austenitic-ferritic (Duplex)	-	50-90
K	<b>GHISA MALLEABILE</b> Malleable Cast Iron	-	90-150
	<b>GHISA GRIGIA</b> Grey Cast Iron	-	80-120
	<b>GHISA SFEROIDALE</b> Nodular Cast Iron	-	70-110

SOMT 11T308
AVANZAMENTO $f_z$ (mm/d) Feed $f_z$ (mm/t)
0,04-0,08
0,03-0,07
0,03-0,06
0,04-0,07
0,03-0,06
0,03-0,06
0,05-0,10
0,05-0,08
0,04-0,08

# ALTO AVANZAMENTO SP..08

## High Feed SP..08



ADATTATORI  
Adaptors

p. 446...



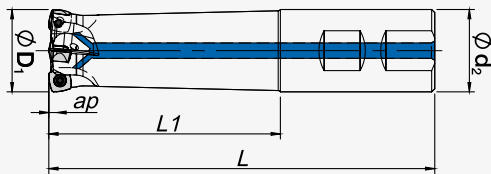
p. 369-371



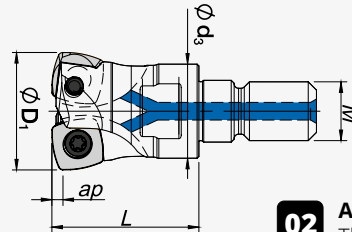
p. 455



p. 473



**01** ATTACCO WELDON | Weldon Shank

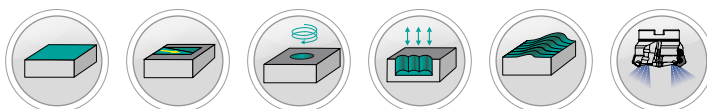


**02** ATTACCO FILETTATO  
Threaded Shank

	CODICE Code	$\varnothing D_1$ (mm)	$\varnothing d_2/M$ (mm)	$\varnothing d_3$ (mm)	L (mm)	L1 (mm)	$a_p$ (mm)		Kg
<b>01</b>	020W02R0020190SP08T3	20	20	-	190	110	1,2	2	0,380
	025W03R0025200SP08T3	25	25	-	200	130	1,2	3	0,611
<b>02</b>	025R03R00M12SP08T3	25	M12	21	28	-	1,2	3	0,071
	032R04R00M16SP08T3	32	M16	29	35	-	1,2	4	0,162
	035R04R00M16SP08T3	35	M16	29	35	-	1,2	4	0,176
	042R05R00M16SP08T3	42	M16	29	35	-	1,2	5	0,215

Esempio d'ordine: (Codice +  $\varnothing D_1$ ) | Ordering example: (Code +  $\varnothing D_1$ )





INSERTO Insert	VITE INSERTO Insert Screw	CHIAVE (Torx) Wrench (Torx)	Nm	CODICE Code	
SP... 08T308	TVTF 003	TCTF 003	1,4	<b>020W02R0020190SP08T3</b>	
SP... 08T308	TVTF 003	TCTF 003	1,4	<b>025W03R0025200SP08T3</b>	<b>01</b>
SP... 08T308	TVTF 003	TCTF 003	1,4	<b>025R03R00M12SP08T3</b>	
SP... 08T308	TVTF 003	TCTF 003	1,4	<b>032R04R00M16SP08T3</b>	
SP... 08T308	TVTF 003	TCTF 003	1,4	<b>035R04R00M16SP08T3</b>	<b>02</b>
SP... 08T308	TVTF 003	TCTF 003	1,4	<b>042R05R00M16SP08T3</b>	

Inserti e parametri di taglio alla pagina successiva  
Inserts and cutting parameters on the next page

FRESATURA  
MillingINTRODUZIONE  
IntroductionFRESE PER SPIANATURA  
Face Milling CuttersFRESE PER SPALLAMENTO  
Shoulder Milling CuttersFRESE PER PROFILATURA  
Profiling Milling CuttersFRESE A TUFFO-SPIANATURA  
Face and Plunge CuttersFRESE PER ALLUMINIO  
Alu CuttersADATTATORI FILETTATI  
Threaded Adaptors

# ALTO AVANZAMENTO SP..08

## High Feed SP..08



ADATTATORI  
Adaptors

p. 446...



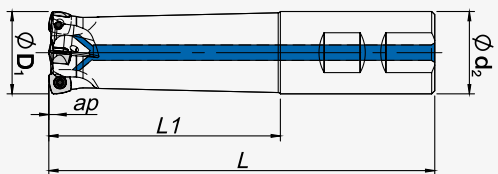
p. 369-371



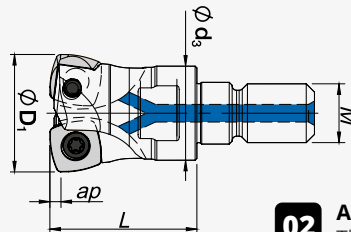
p. 455



p. 473

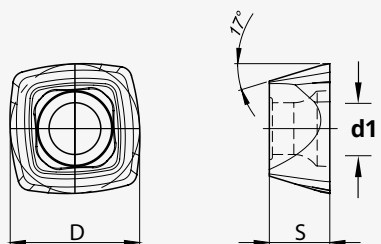


**01** ATTACCO WELDON | Weldon Shank



**02** ATTACCO FILETTATO  
Threaded Shank

## SP..08T3 INSERTO | Insert



SPKW



SPKT

CODICE INSERTO Insert Code	Dimensioni   Dimension:						QUALITÀ   Grades														
	D	S	I	R	d1	F	P			M			K		N	S		H			
							TCU610	TCU620	TCU640	TCU620	TCU630	TCU640	TCU610	TCU620	TCU640	TCN010	TCU610	TCU620	TCU640	TCP605	
SPKW08T308E	8,5	3,97	-	-	3,4	-	-	●	-	●	-	-	-	●	-	-	-	-	●	-	-
SPKW08T308S	8,5	3,97	-	-	3,4	-	-	●	-	-	-	-	-	●	-	-	-	-	-	-	-
SPKT08T308E	8,5	3,97	-	-	3,4	-	-	●	-	●	-	-	-	●	-	-	-	-	●	-	-

Esempio d'ordine: (Codice Inserto + Qualità) | Ordering example: (Insert Code + Grade)

FRESATURA  
Milling

INTRODUZIONE  
Introduction

FRESE PER SPIANATURA  
Face Milling Cutters

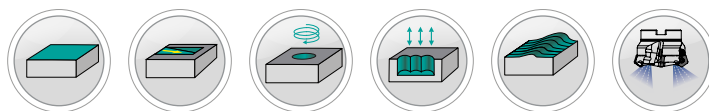
FRESE PER SPALLAMENTO  
Shoulder Milling Cutters

FRESE PER PROFILATURA  
Profiling Milling Cutters

FRESE A TUFFO-SPIANATURA  
Face and Plunge Cutters

FRESE PER ALLUMINIO  
Alu Cutters

ADATTATORI FILETTATI  
Threaded Adaptors



## PARAMETRI DI TAGLIO | CUTTING DATA

ISO	MATERIALE Material	TCU620	
		Vc (m/min)	AVANZAMENTO $f_z$ (mm/d) Feed $f_z$ (mm/t)
P	< 800 N/mm <sup>2</sup>	150-230	0,30-1,50
	700-1000 N/mm <sup>2</sup>	140-220	0,30-1,50
	1000-1300 N/mm <sup>2</sup>	130-180	0,30-1,30
M	<b>AUSTENITICO</b> Austenitic	100-150	0,30-1,40
	<b>DUPLEX</b>	70-110	0,30-1,20
K	<b>GHISA GRIGIA</b> Grey Cast Iron	130-230	0,30-1,50
	<b>GHISA SFEROIDALE</b> Nodular Cast Iron	80-190	0,30-1,40
S	<b>LEGHE RESISTENTI AL CALORE</b> Heat Resistant Super Alloys	70-110	0,30-1,20

FRESATURA  
MillingINTRODUZIONE  
IntroductionFRESE PER SPIANATURA  
Face Milling CuttersFRESE PER SPALLAMENTO  
Shoulder Milling CuttersFRESE PER PROFILATURA  
Profiling Milling CuttersFRESE A TUFFO-SPIANATURA  
Face and Plunge CuttersFRESE PER ALLUMINIO  
Alu CuttersADATTATORI FILETTATI  
Threaded Adaptors

# ALTO AVANZAMENTO SP..13

## High Feed SP..13

FRESATURA  
MillingINTRODUZIONE  
IntroductionFRESE PER SPIANATURA  
Face Milling CuttersFRESE PER SPALLAMENTO  
Shoulder Milling CuttersFRESE PER PROFILATURA  
Profiling Milling CuttersFRESE A TUFFO-SPIANATURA  
Face and Plunge CuttersFRESE PER ALLUMINIO  
Alu CuttersADATTATORI FILETTATI  
Threaded AdaptorsADATTATORI  
Adaptors

p. 446...



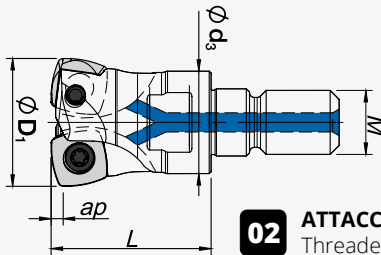
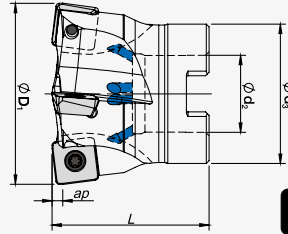
p. 369-371



p. 455

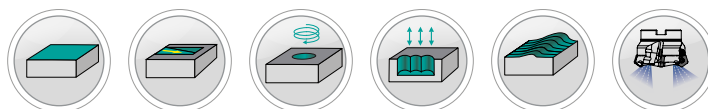


p. 473


**02** ATTACCO FILETTATO  
Threaded Shank

**03** ATTACCO A MANICOTTO  
Arbor Mounting

	CODICE Code	$\varnothing D_1$ (mm)	$\varnothing d_2/M$ (mm)	$\varnothing d_3$ (mm)	L (mm)	L1 (mm)	$a_p$ (mm)		Kg
<b>02</b>	032R03R00M16SP1305	32	M16	29	35	-	2	3	0,145
	035R03R00M16SP1305	35	M16	29	35	-	2	3	0,163
	042R04R00M16SP1305	42	M16	29	35	-	2	4	0,194
<b>03</b>	050A04R0022SP1305	50	22	40	45	-	2	4	0,274
	052A04R0022SP1305	52	22	40	45	-	2	4	0,290
	063A05R0027SP1305	63	27	48	50	-	2	5	0,500
	066A05R0027SP1305	66	27	48	50	-	2	5	0,550
	080A06R0027SP1305	80	27	60	50	-	2	6	0,955

Esempio d'ordine: (Codice +  $\varnothing D_1$ ) | Ordering example: (Code +  $\varnothing D_1$ )



INSERTO Insert	VITE INSERTO Insert Screw	CHIAVE (Torx) Wrench (Torx)	Nm	CODICE Code	
SP.. 1305	TVTF 006	TCTF 004	3	<b>032R03R00M16SP1305</b>	
SP.. 1305	TVTF 006	TCTF 004	3	<b>035R03R00M16SP1305</b>	<b>02</b>
SP.. 1305	TVTF 006	TCTF 004	3	<b>042R04R00M16SP1305</b>	
SP.. 1305	TVTF 006	TCTF 004	3	<b>050A04R0022SP1305</b>	
SP.. 1305	TVTF 006	TCTF 004	3	<b>052A04R0022SP1305</b>	
SP.. 1305	TVTF 006	TCTF 004	3	<b>063A05R0027SP1305</b>	<b>03</b>
SP.. 1305	TVTF 006	TCTF 004	3	<b>066A05R0027SP1305</b>	
SP.. 1305	TVTF 006	TCTF 004	3	<b>080A06R0027SP1305</b>	

Inserti e parametri di taglio alla pagina successiva  
Inserts and cutting parameters on the next page

FRESATURA  
MillingINTRODUZIONE  
IntroductionFRESE PER SPIANATURA  
Face Milling CuttersFRESE PER SPALLAMENTO  
Shoulder Milling CuttersFRESE PER PROFILATURA  
Profiling Milling CuttersFRESE A TUFFO-SPIANATURA  
Face and Plunge CuttersFRESE PER ALLUMINIO  
Alu CuttersADATTATORI FILETTATI  
Threaded Adaptors

# ALTO AVANZAMENTO SP..13

## High Feed SP..13



ADATTATORI  
Adaptors

p. 446...



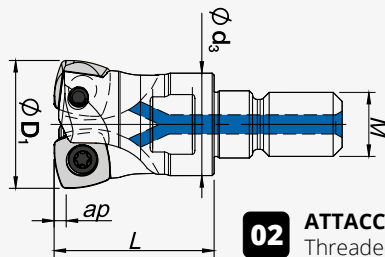
p. 369-371



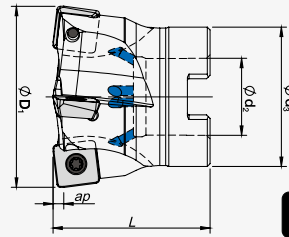
p. 455



p. 473

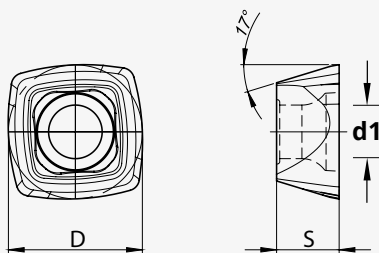


**02** ATTACCO FILETTATO  
Threaded Shank



**03** ATTACCO A MANICOTTO  
Arbor Mounting

## SP..1305 INSERTO | Insert



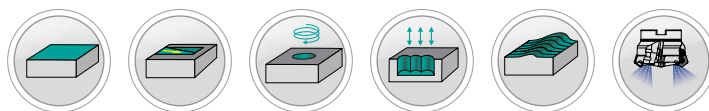
SPKW



SPKT

CODICE INSERTO Insert Code	Dimensioni   Dimension:						QUALITÀ   Grades													
	D	S	I	R	d1	F	P			M			K		N	S		H		
							TCU610	TCU620	TCU640	TCU620	TCU630	TCU640	TCU610	TCU620	TCU640	TCN010	TCU610	TCU620	TCU640	TCP605
SPKW130510S	13	5,56	-	-	4,5	-	-	●	-	●	-	-	-	●	-	-	-	●	-	-
SPKW130510E	13	5,56	-	-	4,5	-	-	●	-	●	-	-	-	●	-	-	-	●	-	-
SPKT130510E	13	5,56	-	-	4,5	-	-	●	-	●	-	-	-	●	-	-	-	●	-	-

**Esempio d'ordine:** (Codice Inserto + Qualità) | **Ordering example:** (Insert Code + Grade)



## PARAMETRI DI TAGLIO | CUTTING DATA

ISO	MATERIALE Material	TCU620	
		Vc (m/min)	AVANZAMENTO $f_z$ (mm/d) Feed $f_z$ (mm/t)
P	< 800 N/mm <sup>2</sup>	150-230	0,50-2,20
	700-1000 N/mm <sup>2</sup>	140-220	0,50-2,20
	1000-1300 N/mm <sup>2</sup>	130-180	0,50-2,20
M	<b>AUSTENITICO</b> Austenitic	110-170	0,50-1,80
	<b>DUPLEX</b>	60-120	0,50-1,50
K	<b>GHISA GRIGIA</b> Grey Cast Iron	140-260	0,50-2,20
	<b>GHISA SFEROIDALE</b> Nodular Cast Iron	100-220	0,50-2,20
S	<b>LEGHE RESISTENTI AL CALORE</b> Heat Resistant Super Alloys	70-110	0,30-1,20

FRESATURA  
MillingINTRODUZIONE  
IntroductionFRESE PER SPIANATURA  
Face Milling CuttersFRESE PER SPALLAMENTO  
Shoulder Milling CuttersFRESE PER PROFILATURA  
Profiling Milling CuttersFRESE A TUFFO-SPIANATURA  
Face and Plunge CuttersFRESE PER ALLUMINIO  
Alu CuttersADATTATORI FILETTATI  
Threaded Adaptors

# ALTO AVANZAMENTO WN..12

## High Feed WN..12



ADATTATORI  
Adaptors

p. 446...



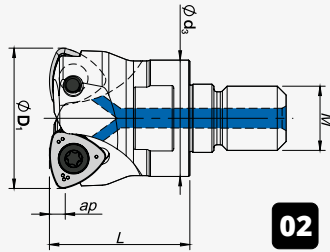
p. 369-371



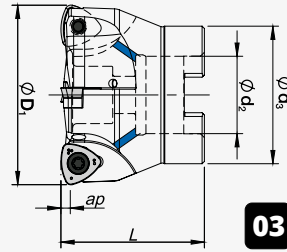
p. 455



p. 473



**02** ATTACCO FILETTATO  
Threaded Shank

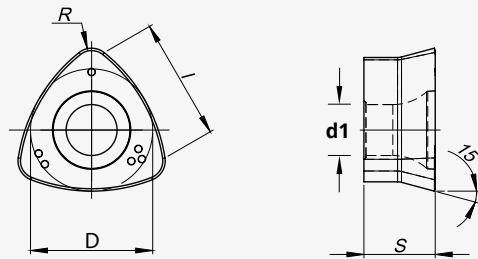


**03** ATTACCO A MANICOTTO  
Arbor Mounting

	CODICE Code	$\varnothing D_1$ (mm)	$\varnothing d_2/M$ (mm)	$\varnothing d_3$ (mm)	L (mm)	L1 (mm)	$a_p$ (mm)		Kg
<b>02</b>	<b>035R02R00M16WN1207</b>	<b>35</b>	M16	29	35	-	1,8	2	0,166
	<b>052A03R0022WN1207</b>	<b>52</b>	22	40	45	-	1,8	3	0,320
<b>03</b>	<b>066A04R0027WN1207</b>	<b>66</b>	27	48	50	-	1,8	4	0,597
	<b>066A05R0027WN1207</b>	<b>66</b>	27	48	50	-	1,8	5	0,610
	<b>080A05R0027WN1207</b>	<b>80</b>	27	60	50	-	1,8	5	1,000

Esempio d'ordine: (Codice +  $\varnothing D_1$ ) | Ordering example: (Code +  $\varnothing D_1$ )

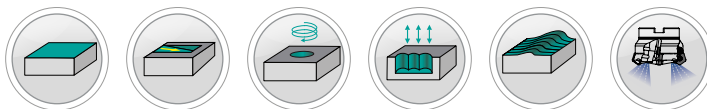
## WN..1207 INSERTO | Insert



CODICE INSERTO Insert Code	Dimensioni   Dimension:						QUALITÀ   Grades												
	D	S	I	R	d1	F	P	M	K	N	S	H							
<b>WNMW1207SP</b>	12	7	11,9	2	5	-	-	-	-	-	-	-	-	●	-	-	-	-	-

Esempio d'ordine: (Codice Inserto + Qualità) | Ordering example: (Insert Code + Grade)





INSERTO Insert	VITE INSERTO Insert Screw	CHIAVE (Torx) Wrench (Torx)	Nm	CODICE Code	
WN... 1207	TVTF 008	TCTF 005	5	<b>035R02R00M16WN1207</b>	<b>02</b>
WN... 1207	TVTF 008	TCTF 005	5	<b>052A03R0022WN1207</b>	<b>03</b>
WN... 1207	TVTF 008	TCTF 005	5	<b>066A04R0027WN1207</b>	
WN... 1207	TVTF 008	TCTF 005	5	<b>066A05R0027WN1207</b>	
WN... 1207	TVTF 008	TCTF 005	5	<b>080A05R0027WN1207</b>	

## PARAMETRI DI TAGLIO | CUTTING DATA

ISO	MATERIALE Material	TCM720	AVANZAMENTO $f_z$ (mm/d) Feed $f_z$ (mm/t)
		Vc (m/min)	
<b>K</b>	<b>GHISA GRIGIA</b> Grey Cast Iron	140-220	0,30-1,50
	<b>GHISA SFEROIDALE</b> Nodular Cast Iron	100-160	0,30-1,50

FRESE A TUFFO  
MillingINTRODUZIONE  
IntroductionFRESE PER SPIANATURA  
Face Milling CuttersFRESE PER SPALLAMENTO  
Shoulder Milling CuttersFRESE PER PROFILATURA  
Profiling Milling CuttersFRESE A TUFFO-SPIANATURA  
Face and Plunge CuttersFRESE PER ALLUMINIO  
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Threaded Adaptors

# ALTO AVANZAMENTO WD..12

## High Feed WD..12



ADATTATORI  
Adaptors

p. 446...



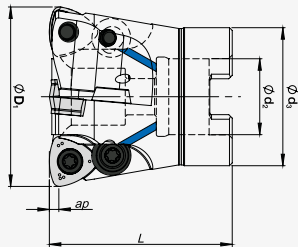
p. 369-371



p. 455



p. 473



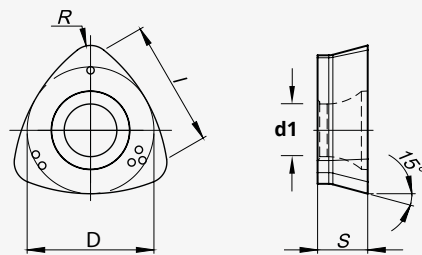
### 03 ATTACCO A MANICOTTO

Arbor Mounting

	CODICE Code	$\varnothing D_1$ (mm)	$\varnothing d_2/M$ (mm)	$\varnothing d_3$ (mm)	L (mm)	L1 (mm)	$a_p$ (mm)		Kg
	<b>052C04R0022WD1204</b>	<b>52</b>	22	-	40	53	1,5	4	0,39
<b>03</b>	<b>066C05R0027WD1204</b>	<b>66</b>	27	-	48	53	1,5	5	0,64
	<b>080C06R0027WD1204</b>	<b>80</b>	27	-	60	53	1,5	6	1,06

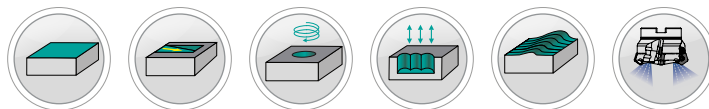
Esempio d'ordine: (Codice +  $\varnothing D_1$ ) | Ordering example: (Code +  $\varnothing D_1$ )

## WD..1204 INSERTO | Insert



CODICE INSERTO Insert Code	Dimensioni   Dimension:						QUALITÀ   Grades												
	D	S	I	R	d1	F	P		M		K		N		S		H		
<b>WDMW120420T</b>	12	4,76	11,9	2	4,7	-	-	-	●	-	-	●	-	-	●	-	-	-	-

Esempio d'ordine: (Codice Inserto + Qualità) | Ordering example: (Insert Code + Grade)



INSERTO Insert	VITE INSERTO Insert Screw	CHIAVE (Torx) Wrench (Torx)	Nm	RONDELLA Washer	VITE RONDELLA Washer Screw	CODICE Code	
WD... 1204	TVTF 007	TCTF 005	5	TRF 001	TVTF 007	<b>052C04R0022WD1204</b>	
WD... 1204	TVTF 007	TCTF 005	5	TRF 001	TVTF 007	<b>066C05R0027WD1204</b>	<b>03</b>
WD... 1204	TVTF 007	TCTF 005	5	TRF 001	TVTF 007	<b>080C06R0027WD1204</b>	

## PARAMETRI DI TAGLIO | CUTTING DATA

ISO	MATERIALE Material	TCM720	
		Vc (m/min)	AVANZAMENTO $f_z$ (mm/d) Feed $f_z$ (mm/t)
P	< 800 N/mm <sup>2</sup>	150-230	0,30-1,30
	700-1000 N/mm <sup>2</sup>	140-220	0,30-1,30
	1000-1300 N/mm <sup>2</sup>	130-180	0,30-1,30
M	<b>AUSTENITICO</b> Austenitic	120-180	0,30-1,30
	<b>DUPLEX</b>	70-120	0,30-1,30
K	<b>GHISA GRIGIA</b> Grey Cast Iron	140-260	0,30-1,50
	<b>GHISA SFEROIDALE</b> Nodular Cast Iron	100-220	0,30-1,50

FRESE A TUFFO  
MillingINTRODUZIONE  
IntroductionFRESE PER SPIANATURA  
Face Milling CuttersFRESE PER SPALLAMENTO  
Shoulder Milling CuttersFRESE PER PROFILATURA  
Profiling Milling CuttersFRESE A TUFFO-SPIANATURA  
Face and Plunge CuttersFRESE PER ALLUMINIO  
Alu CuttersADATTATORI FILETTATI  
Threaded Adaptors

# FRESA PER ALLUMINIO

## Alu Cutter

**FRESATURA**  
Milling

**INTRODUZIONE**  
Introduction

**FRESE PER SPIANATURA**  
Face Milling Cutters

**FRESE PER SPALLAMENTO**  
Shoulder Milling Cutters

**FRESE PER PROFILATURA**  
Profiling Milling Cutters

**FRESE A TUFFO-SPIANATURA**  
Face and Plunge Cutters

**FRESE PER ALLUMINIO**  
Alu Cutters

**ADATTATORI FILETTATI**  
Threaded Adaptors

**ADATTATORI**  
Adaptors

p. 446...



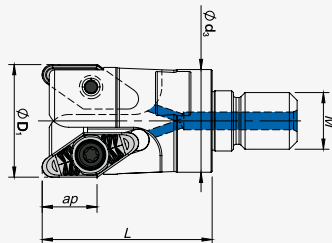
p. 369-371



p. 455



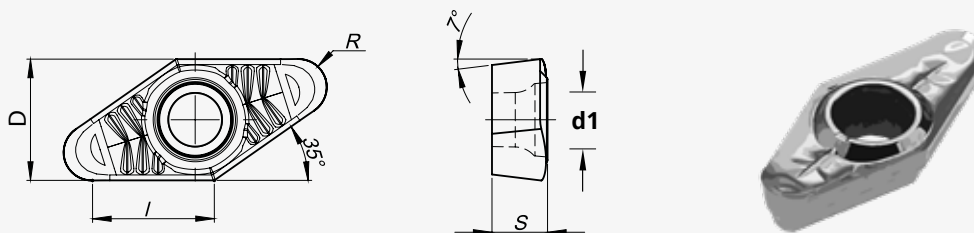
p. 473


**02** **ATTACCO FILETTATO**  
Threaded Shank

CODICE Code	Ø D <sub>1</sub> (mm)	Ø d <sub>2</sub> /M (mm)	Ø d <sub>3</sub> (mm)	L (mm)	a <sub>p</sub> (mm)		Kg
<b>032R02R90M16VC2205</b>	<b>32</b>	M16	29	48	15	2	0,19

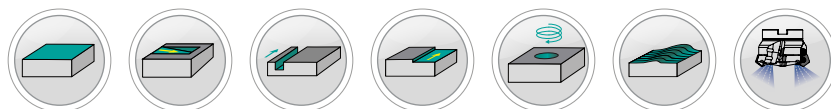
**Esempio d'ordine:** (Codice + Ø D,) | **Ordering example:** (Code + Ø D,)

## VCGX 220530 INSERTO | Insert



CODICE INSERTO Insert Code	Dimensioni   Dimension:						QUALITÀ   Grades												
	D	S	I	R	d1	F	P		M		K		N		S		H		
<b>VCGX220530LN</b>	12,7	5,6	12,7	3	5,5	-	-	-	-	-	-	-	-	-	●	-	-	-	-

**Esempio d'ordine:** (Codice Inserto + Qualità) | **Ordering example:** (Insert Code + Grade)



INSERTO Insert	VITE INSERTO Insert Screw	CHIAVE (Torx) Wrench (Torx)	Nm	CODICE Code
VC... 2205	TVTF 007	TCTF 005	5	<b>032R02R90M16VC2205</b>
				<b>02</b>

## PARAMETRI DI TAGLIO | CUTTING DATA

ISO	MATERIALE Material	TCN010	
		Vc (m/min)	AVANZAMENTO $f_z$ (mm/d) Feed $f_z$ (mm/t)
<b>N</b>	<b>ALLUMINIO E NON FERROSI</b> Aluminium and Non Ferrous	350-1000	0,20-0,50

FRESATURA  
MillingINTRODUZIONE  
IntroductionFRESE PER SPIANATURA  
Face Milling CuttersFRESE PER SPALLAMENTO  
Shoulder Milling CuttersFRESE PER PROFILATURA  
Profiling Milling CuttersFRESE A TUFFO-SPIANATURA  
Face and Plunge CuttersFRESE PER ALLUMINIO  
Alu CuttersADATTATORI FILETTATI  
Threaded Adaptors

# BARRE ANTI-VIBRANTI

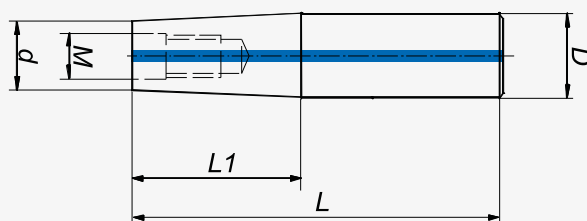
## Anti-Vibration Bars



p. 473



**Barre in acciaio con tungsteno e adduzione interna refrigerante**  
Steel bars with tungsten and Internal coolant supply



CODICE Code		Ø D (mm)	Ø L1 (mm)	L (mm)	Ø d (mm)	M (mm)
<b>BAVD12M06</b>	<b>L090</b>	12	40	90	9,8	6
<b>BAVD12M06</b>	<b>L110</b>	12	60	110	9,8	6
<b>BAVD12M06</b>	<b>L130</b>	12	80	130	9,8	6
<b>BAVD16M08</b>	<b>L095</b>	16	40	95	12,8	8
<b>BAVD16M08</b>	<b>L115</b>	16	60	115	12,8	8
<b>BAVD16M08</b>	<b>L135</b>	16	80	135	12,8	8
<b>BAVD16M08</b>	<b>L155</b>	16	100	155	12,8	8
<b>BAVD16M08</b>	<b>L175</b>	16	120	175	12,8	8
<b>BAVD20M10</b>	<b>L100</b>	20	40	100	15,8	10
<b>BAVD20M10</b>	<b>L120</b>	20	60	120	15,8	10
<b>BAVD20M10</b>	<b>L140</b>	20	80	140	15,8	10
<b>BAVD20M10</b>	<b>L140M*</b>	20	80	140	17,8	10
<b>BAVD20M10</b>	<b>L160</b>	20	100	160	15,8	10
<b>BAVD20M10</b>	<b>L160M*</b>	20	100	160	17,8	10
<b>BAVD20M10</b>	<b>L180</b>	20	120	180	15,8	10
<b>BAVD20M10</b>	<b>L180M*</b>	20	120	180	17,8	10
<b>BAVD25M12</b>	<b>L125</b>	25	60	125	20,8	12
<b>BAVD25M12</b>	<b>L145</b>	25	80	145	20,8	12
<b>BAVD25M12</b>	<b>L165</b>	25	100	165	20,8	12

Esempio d'ordine: (BAVD12M06 + L090) | Ordering example: (BAVD12M06 + L090) \* M = "d" Maggiorato | Oversize

# BARRE IN ACCIAIO

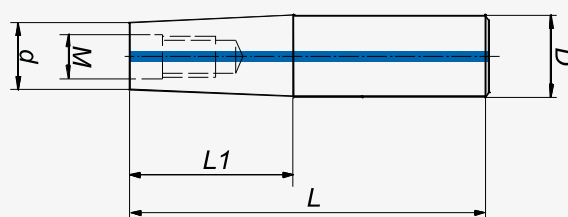
## Steel Bars



p. 473



**Barre in acciaio e adduzione interna refrigerante**  
Steel bars and Internal coolant supply



CODICE Code		Ø D (mm)	Ø L1 (mm)	L (mm)	Ø d (mm)	M (mm)
<b>BCS12M06</b>	<b>L065</b>	12	20	65	9,8	6
<b>BCS16M08</b>	<b>L088</b>	16	40	88	12,8	8
<b>BCS20M10</b>	<b>L095</b>	20	45	95	17,8	10
<b>BCS25M12</b>	<b>L106</b>	25	50	106	20,8	12
<b>BCS32M16</b>	<b>L110</b>	32	50	110	28,8	16

**Esempio d'ordine:** (BCS12M06 + L065) | **Ordering example:** (BCS12M06 + L065)

FRESATURA  
MillingINTRODUZIONE  
IntroductionFRESE PER SPIANATURA  
Face Milling CuttersFRESE PER SPALLAMENTO  
Shoulder Milling CuttersFRESE PER PROFILATURA  
Profiling Milling CuttersFRESE A TUFFO-SPIANATURA  
Face and Plunge CuttersFRESE PER ALLUMINIO  
Alu CuttersADATTATORI FILETTATI  
Threaded Adaptors

# ESTENSIONE BARRE IN ACCIAIO

## Steel Extension Bars

 FRESATURA  
Milling


p. 473

 INTRODUZIONE  
Introduction

 FRESE PER SPIANATURA  
Face Milling Cutters

 FRESE PER SPALLAMENTO  
Shoulder Milling Cutters

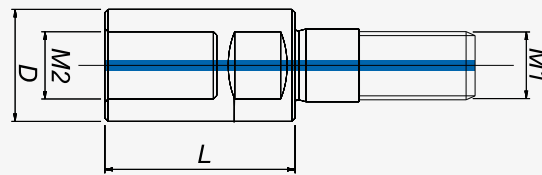
 FRESE PER PROFILATURA  
Profiling Milling Cutters

 FRESE A TUFFO-SPIANATURA  
Face and Plunge Cutters

 FRESE PER ALLUMINIO  
Alu Cutters

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Threaded Adaptors


**Barre in acciaio e adduzione interna refrigerante**  
Steel bars and Internal coolant supply



CODICE Code		M1 (mm)	M2 (mm)	Ø D (mm)	L (mm)
<b>BEM08L040</b>	<b>M08</b>	8	8	13,8	40
<b>BEM10L060</b>	<b>M10</b>	10	10	18	60
<b>BEM12L060</b>	<b>M12</b>	12	12	21	60
<b>BEM16L060</b>	<b>M16</b>	16	16	29	60

**Esempio d'ordine:** (BEM08L040 + M08) | **Ordering example:** (BEM08L040 + M08)



# RIDUZIONE BARRE IN ACCIAIO

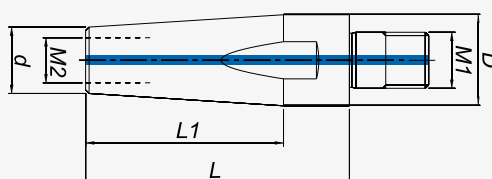
## Steel Reduction Bars



p. 473



**Barre in acciaio e adduzione interna refrigerante**  
Steel bars and Internal coolant supply



CODICE Code		M1 (mm)	M2 (mm)	Ø D (mm)	Ø d (mm)	L (mm)	L1 (mm)
<b>BMM08L040</b>	<b>M06</b>	8	6	13,8	10,0	40	25
<b>BMM12L040</b>	<b>M10</b>	12	10	21,0	18,0	40	15
<b>BMM16L040</b>	<b>M12</b>	16	12	29,0	21,0	40	19

**Esempio d'ordine:** (BMM08L040 + M06) | **Ordering example:** (BMM08L040 + M06)

FRESATURA  
Milling

INTRODUZIONE  
Introduction

FRESE PER SPIANATURA  
Face Milling Cutters

FRESE PER SPALLAMENTO  
Shoulder Milling Cutters

FRESE PER PROFILATURA  
Profiling Milling Cutters

FRESE A TUFFO-SPIANATURA  
Face and Plunge Cutters

FRESE PER ALLUMINIO  
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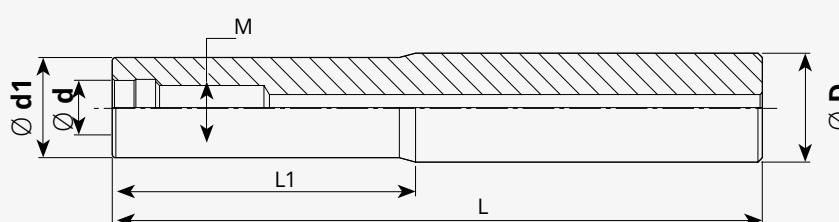


# BARRE IN ACCIAIO AD ATTACCO FILETTATO

## Screwed tool holders



p. 473



CODICE Code		Ø D (mm)	M (mm)	Ø d (mm)	Ø d1 (mm)	L (mm)	Ø L1 (mm)
<b>BAF13M08</b>	<b>L100</b>	16	M08	8,5	13	100	40
<b>BAF15M08</b>	<b>L130</b>	16	M08	8,5	13	130	70

**Esempio d'ordine:** (BAF13M08 + L100) | **Ordering example:** (BAF13M08 + L100)

FRESATURA  
MillingINTRODUZIONE  
IntroductionFRESE PER SPIANATURA  
Face Milling CuttersFRESE PER SPALLAMENTO  
Shoulder Milling CuttersFRESE PER PROFILATURA  
Profiling Milling CuttersFRESE A TUFFO-SPIANATURA  
Face and Plunge CuttersFRESE PER ALLUMINIO  
Alu CuttersADATTATORI FILETTATI  
Threaded Adaptors