

Serie/Series 17350

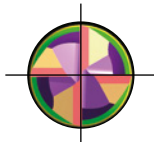
Frese a **FINIRE** con tagliente al centro
Finishing end mills center cutting

17355

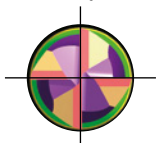
Frese a **FINIRE** con tagliente al centro
Finishing end mills center cutting

MORO S.N.C. **dal 1984**
INDUSTRIAL FORNITURE

Z4÷8



Z4÷8

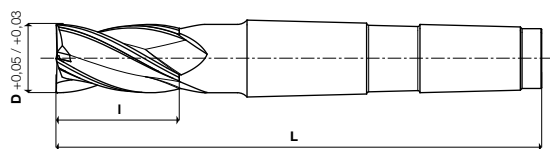


Serie/Series 17350



Serie/Series 17355

Cono Morse
Morse Taper



COATING

Skin

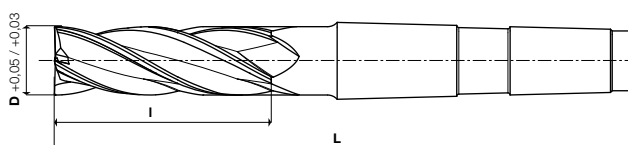
λ°s
32

N

UNI 8244
DIN 844A
ISO 1641/I



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	I	L	MORSE TAPER	Z
173501000 CM	CMX		10	22	92	1	4
173501200 CM	CMX		12	26	96	1	4
173501400 CM	CMX		14	26	111	2	4
173501500 CM	CMX		15	32	117	2	4
173501600 CM	CMX		16	32	117	2	4
173501800 CM	CMX		18	32	117	2	4
173502000 CM	CMX		20	38	140	3	4
173502200 CM	CMX		22	38	140	3	4
173502400 CM	CMX		24	45	147	3	5
173502500 CM	CMX		25	45	147	3	5
173502600 CM	CMX		26	45	147	3	5
173502800 CM	CMX		28	45	147	3	5
173503000 CM	CMX		30	53	155	3	6
173503200 CM	CMX		32	53	178	4	6
173503400 CM	CMX		34	53	178	4	6
173503500 CM	CMX		35	53	178	4	6
173503600 CM	CMX		36	53	178	4	6
173503800 CM	CMX		38	63	188	4	6
173504000 CM	CMX		40	63	188	4	8
173504500 CM	CMX		45	63	188	4	8
173505000 CM	CMX		50	75	200	4	8
173505001 CM	CMX		50	75	233	5	8



COATING

Skin

λ°s
32

N

UNI 8250
DIN 845B
ISO 1641/II

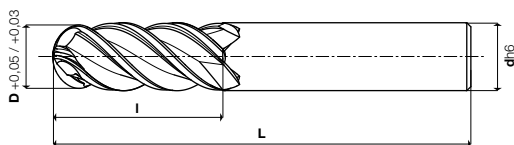


Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	I	L	MORSE TAPER	Z
173551000 CM	CMX		10	45	115	1	4
173551200 CM	CMX		12	53	123	1	4
173551400 CM	CMX		14	53	138	2	4
173551500 CM	CMX		15	63	148	2	4
173551600 CM	CMX		16	63	148	2	4
173551800 CM	CMX		18	63	148	2	4
173552000 CM	CMX		20	75	177	3	4
173552200 CM	CMX		22	75	177	3	4
173552400 CM	CMX		24	90	192	3	5
173552500 CM	CMX		25	90	192	3	5
173552600 CM	CMX		26	90	192	3	5
173552800 CM	CMX		28	90	192	3	5
173553000 CM	CMX		30	90	192	3	6
173553200 CM	CMX		32	106	231	4	6
173553400 CM	CMX		34	106	231	4	6
173553500 CM	CMX		35	106	231	4	6
173553600 CM	CMX		36	106	231	4	6
173553800 CM	CMX		38	125	250	4	6
173554000 CM	CMX		40	125	250	4	8
173554500 CM	CMX		45	125	250	4	8
173555000 CM	CMX		50	150	308	5	8



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
17350	○	○	●	○	○	●	●
17355	○	○	●	○	○	●	●



Serie/Series 17505

Frese a testa semisferica
Ball nosed end mills

17520

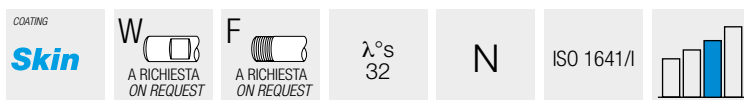
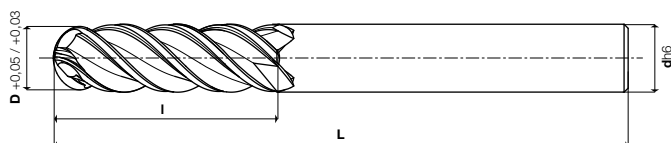
Frese a testa semisferica
Ball nosed end mills



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	I	L	dh6	Z
175050200 CM	CMX	2	7	51	6	4	
175050300 CM	CMX	3	8	52	6	4	
175050400 CM	CMX	4	11	55	6	4	
175050500 CM	CMX	5	13	57	6	4	
175050600 CM	CMX	6	13	57	6	4	
175050800 CM	CMX	8	19	69	10	4	
175051000 CM	CMX	10	22	72	10	4	
175051200 CM	CMX	12	26	83	12	4	
175051400 CM	CMX	14	26	83	12	4	
175051500 CM	CMX	15	32	92	16	4	
175051600 CM	CMX	16	32	92	16	4	
175051800 CM	CMX	18	32	92	16	4	
175052000 CM	CMX	20	38	98	16	4	
175052001 CM	CMX	20	38	104	20	4	
175052200 CM	CMX	22	38	104	20	4	
175052400 CM	CMX	24	45	121	25	5	
175052500 CM	CMX	25	45	121	25	5	
175052600 CM	CMX	26	45	121	25	5	
175052800 CM	CMX	28	45	121	25	5	
175053000 CM	CMX	30	45	121	25	6	
175053200 CM	CMX	32	53	133	32	6	
175053600 CM	CMX	36	53	133	32	6	
175054000 CM	CMX	40	63	143	32	8	
175055000 CM	CMX	50	75	155	32	8	



parametri tecnici a pag. / for technical parameters see page 123



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	I	L	dh6	Z
175200200 CM	CMX	2	10	54	6	4	
175200300 CM	CMX	3	12	56	6	4	
175200400 CM	CMX	4	19	63	6	4	
175200500 CM	CMX	5	24	68	6	4	
175200600 CM	CMX	6	24	68	6	4	
175200800 CM	CMX	10	38	88	6	4	
175201000 CM	CMX	10	45	95	10	4	
175201200 CM	CMX	12	53	110	12	4	
175201400 CM	CMX	14	53	110	12	4	
175201500 CM	CMX	15	63	123	16	4	
175201600 CM	CMX	16	63	123	16	4	
175201800 CM	CMX	18	63	123	16	4	
175202000 CM	CMX	20	75	135	16	4	
175202001 CM	CMX	20	75	141	20	4	
175202200 CM	CMX	22	75	141	20	4	
175202400 CM	CMX	24	90	166	25	5	
175202500 CM	CMX	25	90	166	25	5	
175202600 CM	CMX	26	90	166	25	5	
175202800 CM	CMX	28	90	166	25	5	
175203000 CM	CMX	30	90	166	25	6	
175203200 CM	CMX	32	106	186	32	6	
175203600 CM	CMX	36	106	186	32	6	
175204000 CM	CMX	40	125	205	32	8	



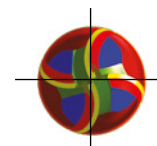
parametri tecnici a pag. / for technical parameters see page 123

MATERIALI LAVORABILI / WORKPIECE MATERIALS

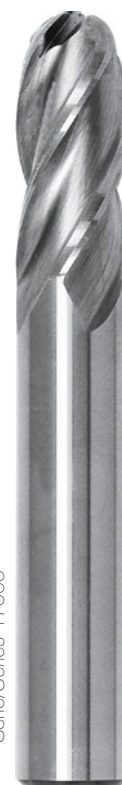
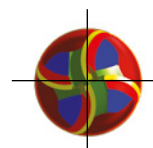
serie	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
17505	○	○	●	○	○	●	●
17520	○	○	●	○	○	●	●

● consigliata/recommended ● accettabile/acceptable ○ non consigliata/not recommended

Z4÷8
BALL-NOSED



Z4÷8
BALL-NOSED

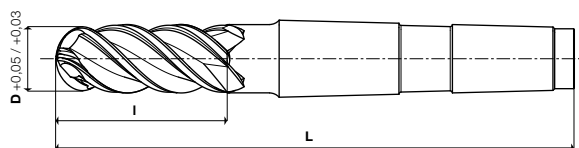


Serie/Series
17550

Frese a testa semisferica
Ball nosed end mills

17555

Frese a testa semisferica
Ball nosed end mills



COATING

Skin

λ° s
32

N

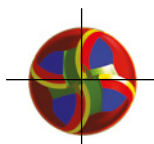
ISO 1641/I



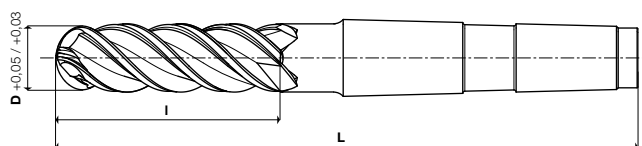
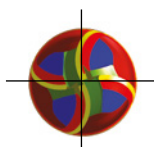
Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	I	L	MORSE TAPER	Z
175501600 CM	CMX		16	32	117	2	4
175502000 CM	CMX		20	38	140	3	4
175502200 CM	CMX		22	38	140	3	4
175502400 CM	CMX		24	45	147	3	5
175502500 CM	CMX		25	45	147	3	5
175502800 CM	CMX		28	45	147	3	5
175503000 CM	CMX		30	53	155	3	6
175503200 CM	CMX		32	53	178	4	6
175503600 CM	CMX		36	53	178	4	6
175504000 CM	CMX		40	63	188	4	8
175505000 CM	CMX		50	75	233	5	8



Z4÷8
BALL-NOSED



Z4÷8
BALL-NOSED



COATING

Skin

λ° s
32

N

UNI
DIN
ISO 1641/II



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	I	L	MORSE TAPER	Z
175551600 CM	CMX		16	63	148	2	4
175552000 CM	CMX		20	75	177	3	4
175552200 CM	CMX		22	75	177	3	4
175552400 CM	CMX		24	90	192	3	5
175552500 CM	CMX		25	90	192	3	5
175552800 CM	CMX		28	90	192	3	5
175553000 CM	CMX		30	90	192	3	6
175553200 CM	CMX		32	106	231	4	6
175553600 CM	CMX		36	106	231	4	6
175554000 CM	CMX		40	125	250	4	8
175555000 CM	CMX		50	150	308	5	8



Cono Morse
Morse Taper

Serie/Series 17550

Serie/Series 17555

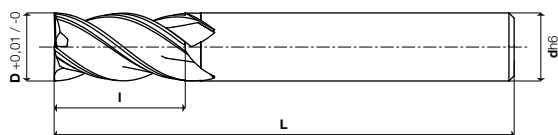
MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
17550	○	○	●	○	○	●	●
17555	○	○	●	○	○	●	●

● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended



COATING

Skin

W

A RICHIESTA
ON REQUEST

F

A RICHIESTA
ON REQUEST

 λ° S

45

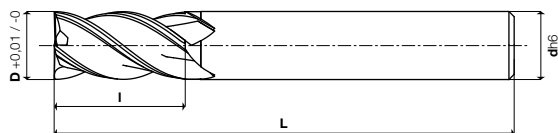
N

UNI 8244
DIN 844A
ISO 1641/1


Cod. Art.	X-105 (PM Co 10,5%)	D +0,01 -0	I	L	dh6	Z
181050600 EMX		6	13	57	6	4
181050800 EMX		8	19	69	10	4
181051000 EMX		10	22	72	10	4
181051200 EMX		12	26	83	12	4
181051400 EMX		14	26	83	12	4
181051600 EMX		16	32	92	16	4
181051800 EMX		18	32	92	16	4
181052000 EMX		20	38	104	20	4
181052200 EMX		22	38	104	20	4



parametri tecnici a pag. / for technical parameters see page 127



COATING

Skin

W

A RICHIESTA
ON REQUEST

F

A RICHIESTA
ON REQUEST

 λ° S

45

N

UNI 8244
DIN 844A
ISO 1641/1


Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,01 -0	I	L	dh6	Z
181050200 CM		CMX	2	7	51	6	4
181050300 CM		CMX	3	8	52	6	4
181050400 CM		CMX	4	11	55	6	4
181050500 CM		CMX	5	13	57	6	4
181050600 CM		CMX	6	13	57	6	4
181050800 CM		CMX	8	19	69	10	4
181051000 CM		CMX	10	22	72	10	4
181051200 CM		CMX	12	26	83	12	4
181051400 CM		CMX	14	26	83	12	4
181051500 CM		CMX	15	32	92	16	4
181051600 CM		CMX	16	32	92	16	4
181051800 CM		CMX	18	32	92	16	4
181052000 CM		CMX	20	38	104	20	4
181052200 CM		CMX	22	38	104	20	4



parametri tecnici a pag. / for technical parameters see page 123

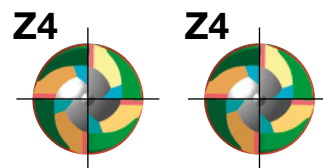
HSS-PM
HSS-PM Line

Serie/Series
18105

Frese per finitura
Finishing end mills

ALTE PRESTAZIONI
HIGH PERFORMANCE

18105

Frese per finitura
Finishing end mills


MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
18105 EMX	●	●	●	●	○	●	●
18105 CM/CMX	●	●	●	●	○	●	●

● consigliata/recommended

● accettabile/acceptable

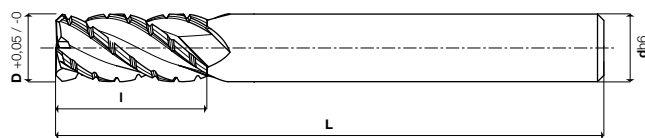
○ non consigliata/not recommended

WWW.UOP.IT

71

Serie/Series
19105

Frese a **SEMIFINIRE** tagliente interrotto
Semi-finishing end mills Interrupted cutting edge



COATING
Skin

W
A RICHIESTA
ON REQUEST

F
A RICHIESTA
ON REQUEST

λ° s
40

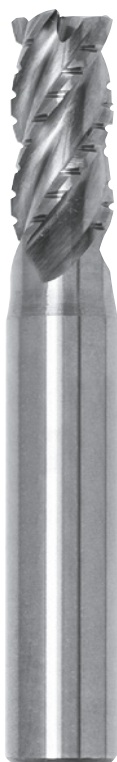
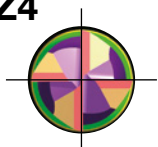
NF

UNI 8244
DIN 844A
ISO 1641/1



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	I	L	dh6	Z
191050600 CM	CMX		6	13	57	6	4
191050700 CM	CMX		7	16	66	10	4
191050800 CM	CMX		8	19	69	10	4
191050900 CM	CMX		9	19	69	10	4
191051000 CM	CMX		10	22	72	10	4
191051100 CM	CMX		11	22	79	12	4
191051200 CM	CMX		12	26	83	12	4
191051300 CM	CMX		13	26	83	12	4
191051400 CM	CMX		14	26	83	12	4
191051500 CM	CMX		15	32	92	16	4
191051600 CM	CMX		16	32	92	16	4
191051700 CM	CMX		17	32	92	16	4
191051800 CM	CMX		18	32	92	16	4
191051900 CM	CMX		19	38	104	20	4
191052000 CM	CMX		20	38	104	20	4
191052200 CM	CMX		22	38	104	20	4
191052400 CM	CMX		24	45	121	25	4
191052500 CM	CMX		25	45	121	25	4

Z4



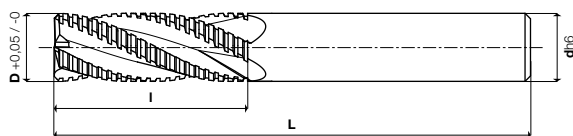
NF



parametri tecnici a pag. 1 / for technical parameters see page 124

MATERIALI LAVORABILI / WORKPIECE MATERIALS





COATING

Skin

W

A RICHIESTA
ON REQUEST

F

A RICHIESTA
ON REQUEST

 $\lambda^{\circ}S$
28

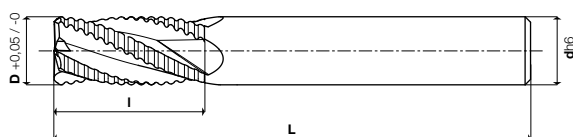
NF

QUALITY
STANDARD
UOP


Cod. Art.	X-85 (PM Co 8,5%)	COATED	D $+0,05$ -0	I	L	dh6	Z
201050601 CM	CMX		6	16	60	6	3
201050801 CM	CMX		8	22	64	10	4
201051001 CM	CMX		10	28	70	10	4
201051201 CM	CMX		12	32	80	12	4
201051401 CM	CMX		14	32	80	12	4
201051601 CM	CMX		16	36	90	16	4
201051801 CM	CMX		18	40	100	16	4
201052001 CM	CMX		20	45	110	20	4
201052501 CM	CMX		25	50	125	25	5
201053201 CM	CMX		32	63	140	25	5
201053601 CM	CMX		36	70	150	32	6
201054001 CM	CMX		40	70	150	32	6



parametri tecnici a pag. / for technical parameters see page 124



COATING

Skin

W

A RICHIESTA
ON REQUEST

F

A RICHIESTA
ON REQUEST

 $\lambda^{\circ}S$
28

NR

QUALITY
STANDARD
UOP


Cod. Art.	X-85 (PM Co 8,5%)	COATED	D $+0,05$ -0	I	L	dh6	Z
201050603 CM	CMX		6	16	60	6	3
201050803 CM	CMX		8	22	64	10	4
201051003 CM	CMX		10	28	70	10	4
201051203 CM	CMX		12	32	80	12	4
201051403 CM	CMX		14	32	80	12	4
201051603 CM	CMX		16	36	90	16	4
201051803 CM	CMX		18	40	100	16	4
201052003 CM	CMX		20	45	110	20	4
201052503 CM	CMX		25	50	125	25	5
201053203 CM	CMX		32	63	140	25	5
201053603 CM	CMX		36	70	150	32	6
201054003 CM	CMX		40	70	150	32	6



parametri tecnici a pag. / for technical parameters see page 124

MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
20105	●	●	●	○	○	●	●
20105	●	●	●	○	○	●	●

● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended

WWW.UOP.IT

73

HSS-PM
HSS-PM Line

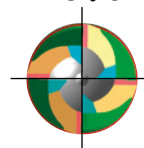
Serie/Series
20105

Frese a SEMIFINIRE
Semi-finishing end mills

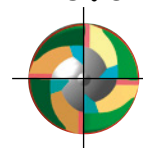
20105

Frese a SGROSSARE
Roughing end mills

Z3÷6



Z3÷6

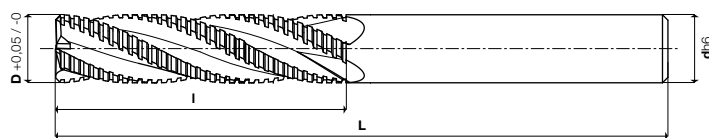


Serie/Series 20120

Frese a **SEMIFINIRE**
Semi-finishing end mills

20120

Frese a **SGROSSARE**
Roughing end mills



COATING

Skin

W
A RICHIESTA
ON REQUEST

F
A RICHIESTA
ON REQUEST

$\lambda^{\circ}s$
28

NF

QUALITY
STANDARD
UOP



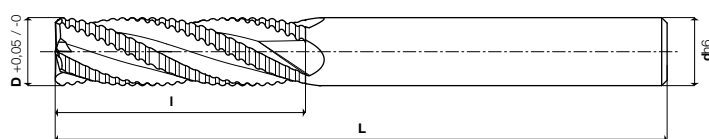
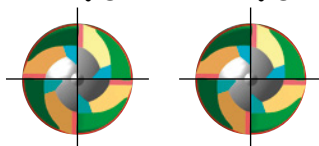
Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	I	L	dh6	Z
201200801	CM	CMX	8	35	85	10	4
201201001	CM	CMX	10	42	90	10	4
201201201	CM	CMX	12	48	95	12	4
201201401	CM	CMX	14	48	100	16	4
201201601	CM	CMX	16	54	104	16	4
201201801	CM	CMX	18	60	120	16	4
201202001	CM	CMX	20	62	128	20	4
201202501	CM	CMX	25	70	145	25	5
201203201	CM	CMX	32	80	160	32	5
201203601	CM	CMX	36	90	170	32	6
201204001	CM	CMX	40	90	170	32	6



parametri tecnici a pag. 1 / for technical parameters see page 124

Z4÷6

Z4÷6



COATING

Skin

W
A RICHIESTA
ON REQUEST

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A RICHIESTA
ON REQUEST

$\lambda^{\circ}s$
28

NR

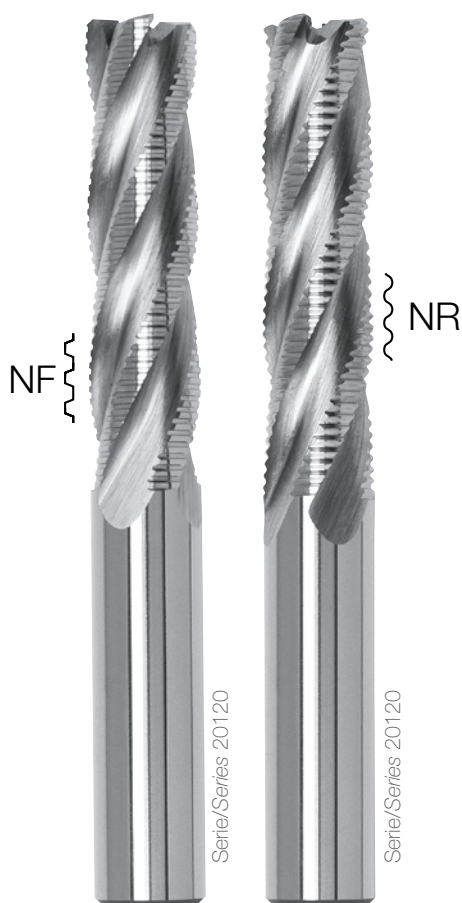
QUALITY
STANDARD
UOP



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	I	L	dh6	Z
201200803	CM	CMX	8	35	85	10	4
201201003	CM	CMX	10	42	90	10	4
201201203	CM	CMX	12	48	95	12	4
201201403	CM	CMX	14	48	100	16	4
201201603	CM	CMX	16	54	104	16	4
201201803	CM	CMX	18	60	120	16	4
201202003	CM	CMX	20	62	128	20	4
201202503	CM	CMX	25	70	145	25	5
201203203	CM	CMX	32	80	160	32	5
201203603	CM	CMX	36	90	170	32	6
201204003	CM	CMX	40	90	170	32	6



parametri tecnici a pag. 1 / for technical parameters see page 124



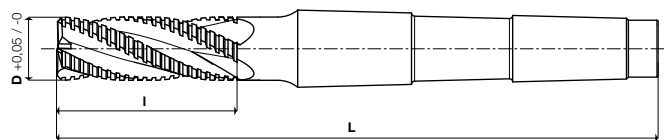
MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
20120	●	●	●	○	○	●	●
20120	●	●	●	○	○	●	●

● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended



COATING

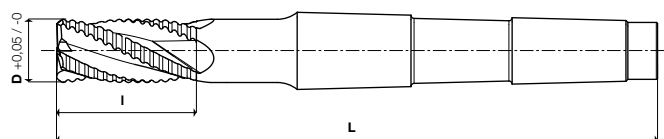
Skin

 $\lambda^{\circ}S$
28

NF

QUALITY
STANDARD
UOP


Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	I	L	MORSE TAPER	Z
201502001 CM	CMX		20	45	125	2	4
201502501 CM	CMX		25	50	150	3	5
201502601 CM	CMX		26	56	155	3	5
201502801 CM	CMX		28	56	155	3	5
201503001 CM	CMX		30	63	165	3	5
201503201 CM	CMX		32	63	188	4	5
201503601 CM	CMX		36	70	195	4	6
201504001 CM	CMX		40	70	195	4	6
201504501 CM	CMX		45	80	205	4	6



COATING

Skin

 $\lambda^{\circ}S$
28

NR

QUALITY
STANDARD
UOP


Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	I	L	MORSE TAPER	Z
201502003 CM	CMX		20	45	125	2	4
201502503 CM	CMX		25	50	150	3	5
201502603 CM	CMX		26	56	155	3	5
201502803 CM	CMX		28	56	155	3	5
201503003 CM	CMX		30	63	165	3	5
201503203 CM	CMX		32	63	188	4	5
201503603 CM	CMX		36	70	195	4	6
201504003 CM	CMX		40	70	195	4	6
201504503 CM	CMX		45	80	205	4	6


HSS-PM
HSS-PM Line

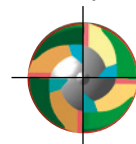
Serie/Series
20150

Frese a SEMIFINIRE
Semi-finishing end mills

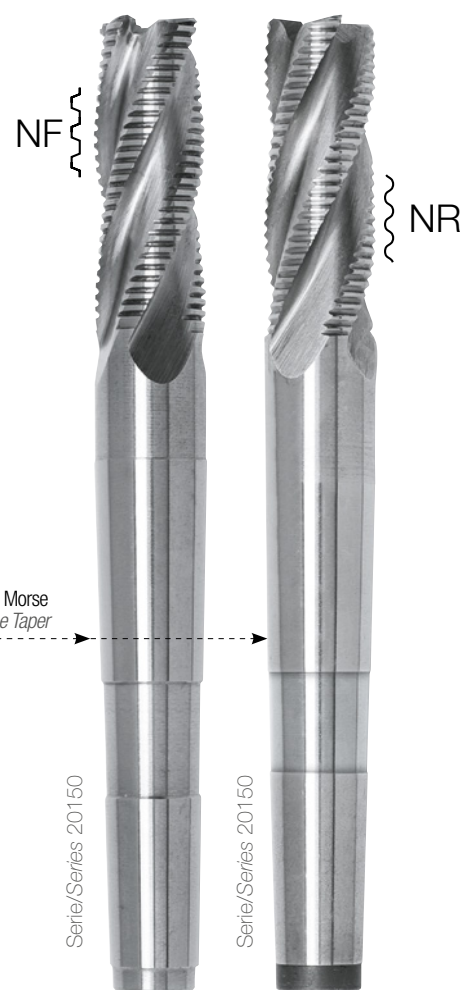
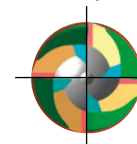
20150

Frese a SGROSSARE
Roughing end mills

Z4÷6



Z4÷6



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
20150	●	●	●	○	○	●	●
20150	●	●	●	○	○	●	●

● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended

WWW.UOP.IT

75

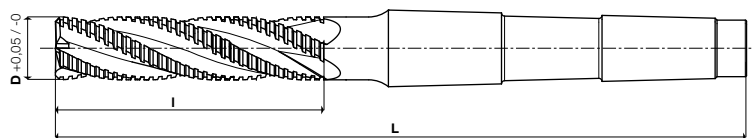
HSS-PM HSS-PM Line

Serie/Series 20155

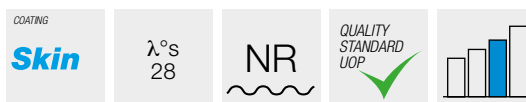
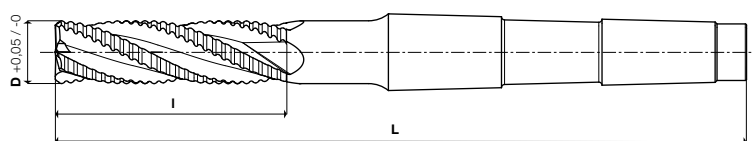
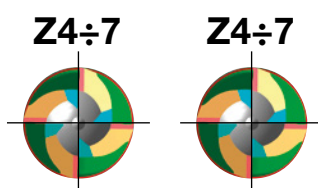
Frese a **SEMIFINIRE**
Semi-finishing end mills

20155

Frese a **SGROSSARE**
Roughing end mills



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	I	L	MORSE TAPER	Z
201552001 CM	CMX	CMX	20	65	148	2	4
201552501 CM	CMX	CMX	25	70	171	3	5
201552601 CM	CMX	CMX	26	70	176	3	5
201552801 CM	CMX	CMX	28	80	186	3	5
201553001 CM	CMX	CMX	30	85	210	4	5
201553201 CM	CMX	CMX	32	90	215	4	5
201553601 CM	CMX	CMX	36	90	215	4	6
201554001 CM	CMX	CMX	40	95	220	4	6
201555001 CM	CMX	CMX	50	110	235	4	7



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	I	L	MORSE TAPER	Z
201552003 CM	CMX	CMX	20	65	148	2	4
201552503 CM	CMX	CMX	25	70	171	3	5
201552603 CM	CMX	CMX	26	70	176	3	5
201552803 CM	CMX	CMX	28	80	186	3	5
201553003 CM	CMX	CMX	30	85	210	4	5
201553203 CM	CMX	CMX	32	90	215	4	5
201553603 CM	CMX	CMX	36	90	215	4	6
201554003 CM	CMX	CMX	40	95	220	4	6
201555003 CM	CMX	CMX	50	110	235	4	7



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
20155	●	●	●	○	○	●	●
20155	●	●	●	○	○	●	●

Serie/Series
20160

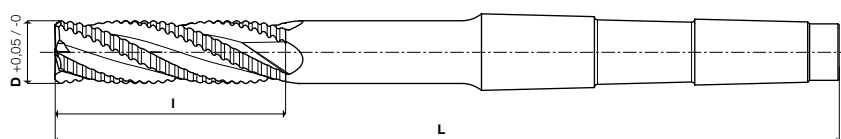
Frese a **SEMIFINIRE**
Semi-finishing end mills

20160

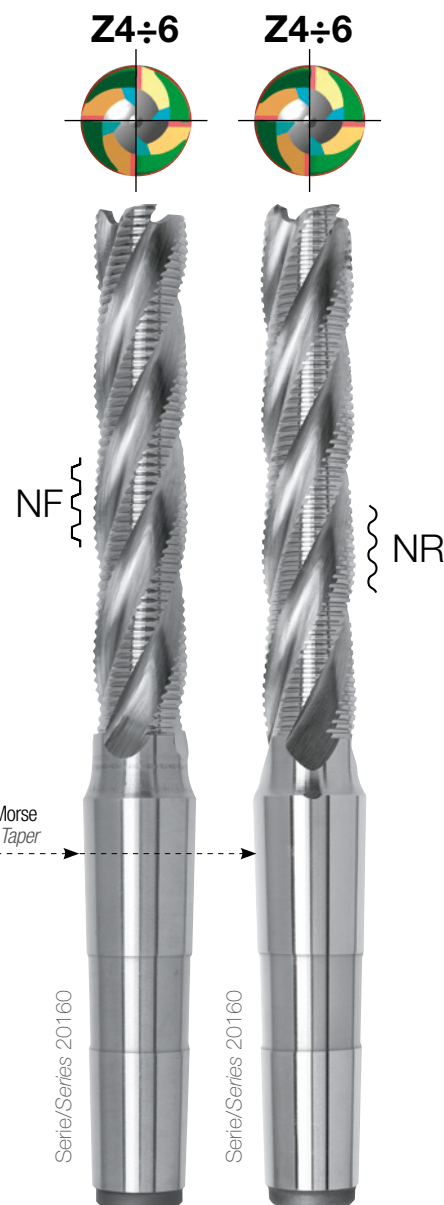
Frese a **SGROSSARE**
Roughing end mills



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	I	L	MORSE TAPER	Z
201602001 CM	CMX	CMX	20	110	212	3	4
201602501 CM	CMX	CMX	25	125	250	4	5
201603001 CM	CMX	CMX	30	140	265	4	5
201603201 CM	CMX	CMX	32	150	275	4	6
201603601 CM	CMX	CMX	36	150	275	4	6
201604001 CM	CMX	CMX	40	180	305	4	6



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	I	L	MORSE TAPER	Z
201602003 CM	CMX	CMX	20	110	212	3	4
201602503 CM	CMX	CMX	25	125	250	4	5
201603003 CM	CMX	CMX	30	140	265	4	5
201603203 CM	CMX	CMX	32	150	275	4	6
201603603 CM	CMX	CMX	36	150	275	4	6
201604003 CM	CMX	CMX	40	180	305	4	6



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
20160	●	●	●	○	○	●	●
20160	●	●	●	○	○	●	●

● consigliata/recommended ○ accettabile/acceptable ○ non consigliata/not recommended

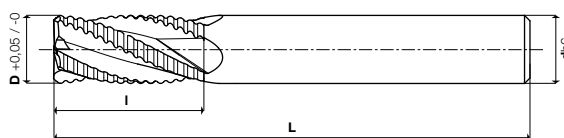
Serie/Series 21105

Frese a **SGROSSARE**
Roughing end mills

ALTE PRESTAZIONI
HIGH PERFORMANCE

21105

Frese a **SEMIFINIRE** tagliente al centro
Semi-finishing end mills center cutting



COATING

Skin

W
A RICHIESTA
ON REQUEST

F
A RICHIESTA
ON REQUEST

$\lambda^{\circ}s$
28

NR

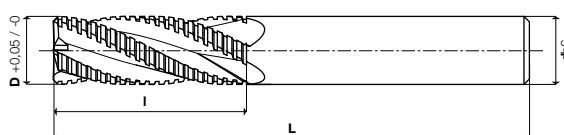
UNI 8244
DIN 844A
ISO 1641/I



Cod. Art.	X-105 (PM Co 10,5%)	D +0,05 -0	I	L	dh6	Z
211050603	EMX	6	13	57	6	3
211050803	EMX	8	19	69	10	4
211051003	EMX	10	22	72	10	4
211051203	EMX	12	26	83	12	4
211051403	EMX	14	26	83	12	4
211051603	EMX	16	32	92	16	4
211051803	EMX	18	32	92	16	4
211052007	EMX	20	38	104	20	4
211052203	EMX	22	38	104	20	4
211052503	EMX	25	45	121	25	5
211052603	EMX	26	45	121	25	5
211052803	EMX	28	45	121	25	5
211053003	EMX	30	45	121	25	5
211053203	EMX	32	53	133	32	5



parametri tecnici a pag. 1 for technical parameters see page 127



COATING

Skin

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A RICHIESTA
ON REQUEST

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ON REQUEST

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NF

UNI 8244
DIN 844A
ISO 1641/I

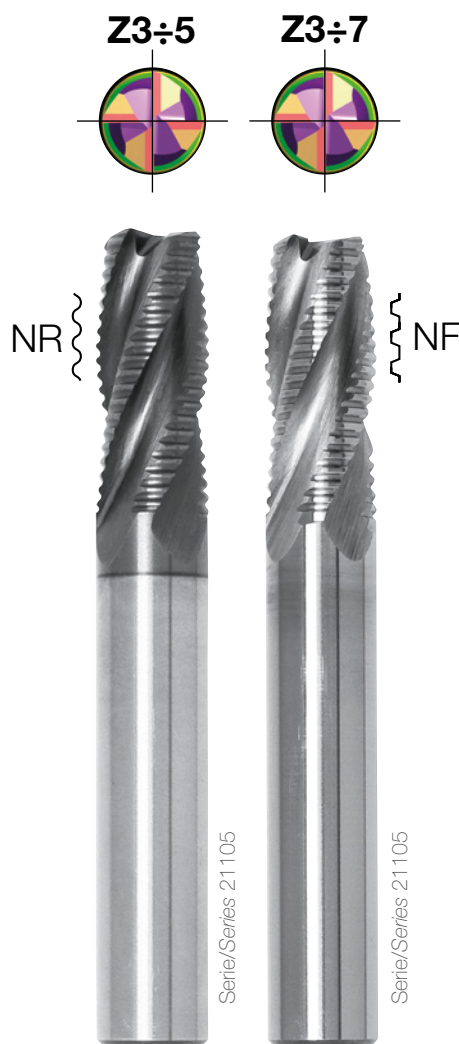


Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	I	L	dh6	Z
211050601	CM	CMX	6	13	57	6	3
211050701	CM	CMX	7	16	66	10	3
211050801	CM	CMX	8	19	69	10	4
211050901	CM	CMX	9	19	69	10	4
211051001	CM	CMX	10	22	72	10	4
211051101	CM	CMX	11	22	79	12	4
211051201	CM	CMX	12	26	83	12	4
211051301	CM	CMX	13	26	83	12	4
211051401	CM	CMX	14	26	83	12	4
211051501	CM	CMX	15	32	92	16	4
211051601	CM	CMX	16	32	92	16	4
211051701	CM	CMX	17	32	92	16	4
211051801	CM	CMX	18	32	92	16	4
211051805	CM	CMX	18	32	98	20	4
211052001	CM	CMX	20	38	98	16	4
211052005	CM	CMX	20	38	104	20	4
211052201	CM	CMX	22	38	104	20	4
211052205	CM	CMX	22	38	114	25	4
211052401	CM	CMX	24	45	121	25	5
211052501	CM	CMX	25	45	121	25	5
211052601	CM	CMX	26	45	121	25	5
211052801	CM	CMX	28	45	121	25	5
211053001	CM	CMX	30	45	121	25	5
211053201	CM	CMX	32	53	133	32	5
211053601	CM	CMX	36	53	133	32	6
211054001	CM	CMX	40	63	143	32	6
211054501	CM	CMX	45	63	143	32	6
211055001	CM	CMX	50	75	155	32	7



parametri tecnici a pag. 1 for technical parameters see page 124

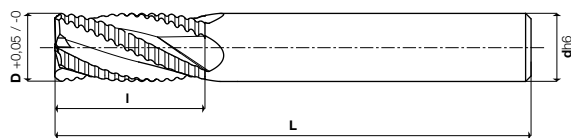
MATERIALI LAVORABILI / WORKPIECE MATERIALS



Serie/Series 21105

Serie/Series 21105

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
21105 EMX	●	●	●	○	○	●	●
21105 CM/CMX	●	●	●	○	○	●	●



COATING

Skin

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ON REQUEST

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NR

UNI 8244
DIN 844A
ISO 1641/I

HSS-PM
HSS-PM Line

Serie/Series
21105

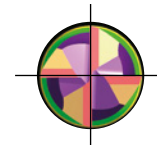
Frese a **SGROSSARE** tagliente al centro
Roughing end mills center cutting

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	I	L	dh6	Z
211050603 CM	CMX		6	13	57	6	3
211050703 CM	CMX		7	16	66	10	3
211050803 CM	CMX		8	19	69	10	4
211050903 CM	CMX		9	19	69	10	4
211051003 CM	CMX		10	22	72	10	4
211051103 CM	CMX		11	22	79	12	4
211051203 CM	CMX		12	26	83	12	4
211051303 CM	CMX		13	26	83	12	4
211051403 CM	CMX		14	26	83	12	4
211051503 CM	CMX		15	32	92	16	4
211051603 CM	CMX		16	32	92	16	4
211051703 CM	CMX		17	32	92	16	4
211051803 CM	CMX		18	32	92	16	4
211051807 CM	CMX		18	32	98	20	4
211052003 CM	CMX		20	38	98	16	4
211052007 CM	CMX		20	38	104	20	4
211052203 CM	CMX		22	38	104	20	4
211052207 CM	CMX		22	38	114	25	4
211052403 CM	CMX		24	45	121	25	5
211052503 CM	CMX		25	45	121	25	5
211052603 CM	CMX		26	45	121	25	5
211052803 CM	CMX		28	45	121	25	5
211053003 CM	CMX		30	45	121	25	5
211053203 CM	CMX		32	53	133	32	5
211053603 CM	CMX		36	53	133	32	6
211054003 CM	CMX		40	63	143	32	6
211054503 CM	CMX		45	63	143	32	6
211055003 CM	CMX		50	75	155	32	7



parametri tecnici a pag. / for technical parameters see page 124

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NR

MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie
series
21105

TITANIO
TITANIUM

HRSA
HRSA

ACCIAI
INOSSIDABILI
STAINLESS
STEELS

MATERIALI
NON FERROSI
NON FERROUS
MATERIALS

LEGHE
LEGGERE
LIGHT ALLOYS

ACCIAI
STEELS

GHISE
CAST IRON

● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended

WWW.UOP.IT

79

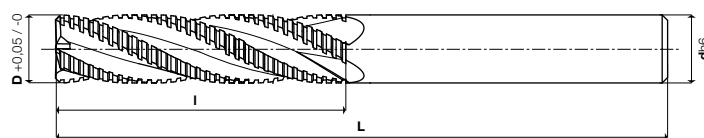
Serie/Series

21120

Frese a **SEMIFINIRE** tagliente al centro
Semi-finishing end mills center cutting

21120

Frese a **SGROSSARE** tagliente al centro
Roughing end mills center cutting



COATING
Skin

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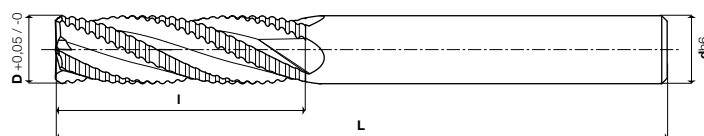
UNI 8244
DIN 844A
ISO 1641/I



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	I	L	dh6	Z
211200801	CM	CMX	8	38	88	10	4
211201001	CM	CMX	10	45	95	10	4
211201201	CM	CMX	12	53	110	12	4
211201401	CM	CMX	14	53	110	12	4
211201501	CM	CMX	15	63	123	16	4
211201601	CM	CMX	16	63	123	16	4
211201801	CM	CMX	18	63	123	16	4
211201805	CM	CMX	18	63	129	20	4
211202001	CM	CMX	20	75	135	16	4
211202005	CM	CMX	20	75	141	20	4
211202201	CM	CMX	22	75	141	20	4
211202205	CM	CMX	22	75	151	25	4
211202401	CM	CMX	24	90	166	25	5
211202501	CM	CMX	25	90	166	25	5
211202801	CM	CMX	28	90	166	25	5
211203001	CM	CMX	30	90	166	25	5
211203201	CM	CMX	32	106	186	32	5
211203601	CM	CMX	36	106	186	32	6
211204001	CM	CMX	40	125	205	32	6
211204501	CM	CMX	45	125	205	32	6
211205001	CM	CMX	50	150	230	32	7



parametri tecnici a pag. 1 for technical parameters see page 124



COATING
Skin

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ON REQUEST

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ON REQUEST

λ° s
28

NR

UNI 8244
DIN 844A
ISO 1641/I



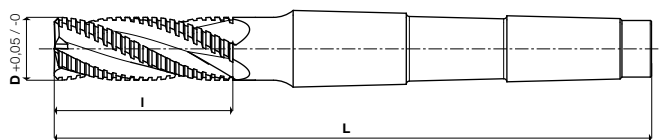
Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	I	L	dh6	Z
211200803	CM	CMX	8	38	88	10	4
211201003	CM	CMX	10	45	95	10	4
211201203	CM	CMX	12	53	110	12	4
211201403	CM	CMX	14	53	110	12	4
211201503	CM	CMX	15	63	123	16	4
211201603	CM	CMX	16	63	123	16	4
211201803	CM	CMX	18	63	123	16	4
211201807	CM	CMX	18	63	129	20	4
211202003	CM	CMX	20	75	135	16	4
211202007	CM	CMX	20	75	141	20	4
211202203	CM	CMX	22	75	141	20	4
211202207	CM	CMX	22	75	151	25	4
211202403	CM	CMX	24	90	166	25	5
211202503	CM	CMX	25	90	166	25	5
211202803	CM	CMX	28	90	166	25	5
211203003	CM	CMX	30	90	166	25	5
211203203	CM	CMX	32	106	186	32	5
211203603	CM	CMX	36	106	186	32	6
211204003	CM	CMX	40	125	205	32	6
211204503	CM	CMX	45	125	205	32	6
211205003	CM	CMX	50	150	230	32	7



parametri tecnici a pag. 1 for technical parameters see page 124

MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
21120	●	●	●	○	○	●	●
21120	●	●	●	○	○	●	●



Serie/Series 21150

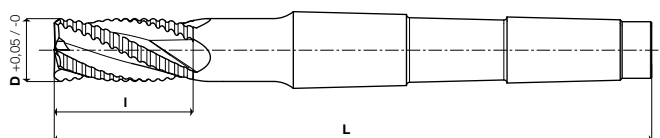
Frese a **SEMIFINIRE** tagliente al centro
Semi-finishing end mills center cutting

21150

Frese a **SGROSSARE** tagliente al centro
Roughing end mills center cutting



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	I	L	MORSE TAPER	Z
211501601 CM	CMX	CMX	16	32	117	2	4
211501801 CM	CMX	CMX	18	32	117	2	4
211502001 CM	CMX	CMX	20	38	140	3	4
211502201 CM	CMX	CMX	22	38	140	3	4
211502401 CM	CMX	CMX	24	45	147	3	5
211502501 CM	CMX	CMX	25	45	147	3	5
211502601 CM	CMX	CMX	26	45	147	3	5
211502801 CM	CMX	CMX	28	45	147	3	5
211503001 CM	CMX	CMX	30	53	155	3	5
211503201 CM	CMX	CMX	32	53	178	4	5
211503401 CM	CMX	CMX	34	53	178	4	5
211503501 CM	CMX	CMX	35	53	178	4	6
211503601 CM	CMX	CMX	36	53	178	4	6
211503801 CM	CMX	CMX	38	63	188	4	6
211504001 CM	CMX	CMX	40	63	188	4	6
211504501 CM	CMX	CMX	45	63	188	4	6
211505001 CM	CMX	CMX	50	75	200	4	7
211505005 CM	CMX	CMX	50	75	233	5	7
211505601 CM	CMX	CMX	56	75	233	5	7
211506301 CM	CMX	CMX	63	90	248	5	8



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	I	L	MORSE TAPER	Z
211501603 CM	CMX	CMX	16	32	117	2	4
211501803 CM	CMX	CMX	18	32	117	2	4
211502003 CM	CMX	CMX	20	38	140	3	4
211502203 CM	CMX	CMX	22	38	140	3	4
211502403 CM	CMX	CMX	24	45	147	3	5
211502503 CM	CMX	CMX	25	45	147	3	5
211502603 CM	CMX	CMX	26	45	147	3	5
211502803 CM	CMX	CMX	28	45	147	3	5
211503003 CM	CMX	CMX	30	53	155	3	5
211503203 CM	CMX	CMX	32	53	178	4	5
211503403 CM	CMX	CMX	34	53	178	4	5
211503503 CM	CMX	CMX	35	53	178	4	6
211503603 CM	CMX	CMX	36	53	178	4	6
211503803 CM	CMX	CMX	38	63	188	4	6
211504003 CM	CMX	CMX	40	63	188	4	6
211504503 CM	CMX	CMX	45	63	188	4	6
211505003 CM	CMX	CMX	50	75	200	4	7
211505007 CM	CMX	CMX	50	75	233	5	7
211505603 CM	CMX	CMX	56	75	233	5	7
211506303 CM	CMX	CMX	63	90	248	5	8



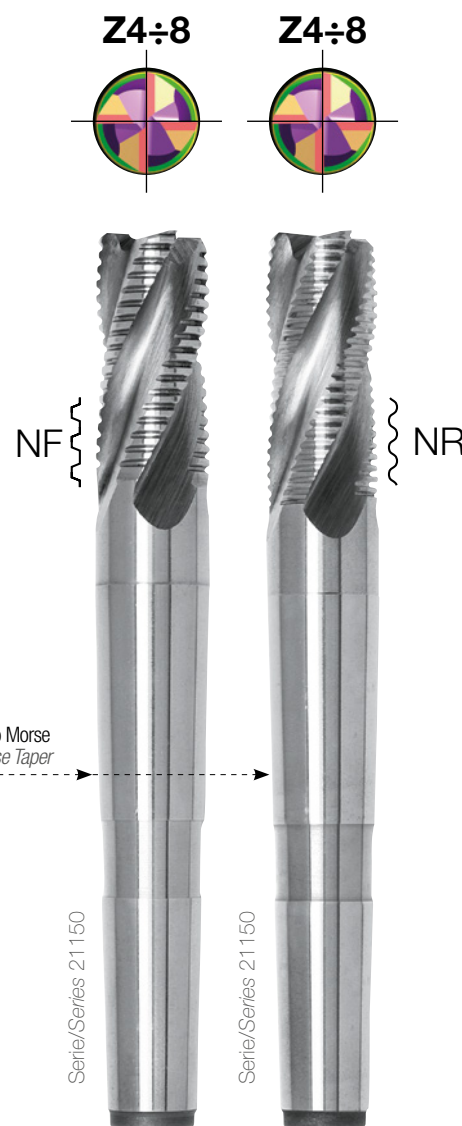
MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
21150	●	●	●	○	○	●	●
21150	●	●	●	○	○	●	●

● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended

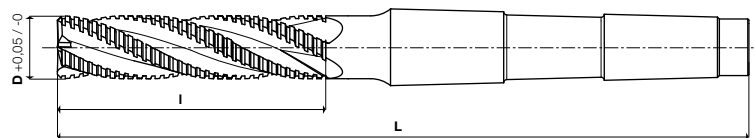


Serie/Series 21155

Frese a **SEMIFINIRE** tagliente al centro
Semi-finishing end mills center cutting

21155

Frese a **SGROSSARE** tagliente al centro
Roughing end mills center cutting



COATING
Skin

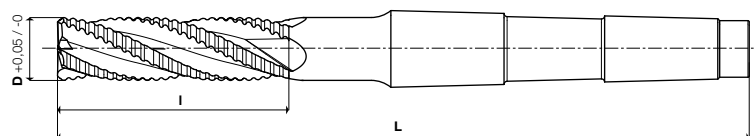
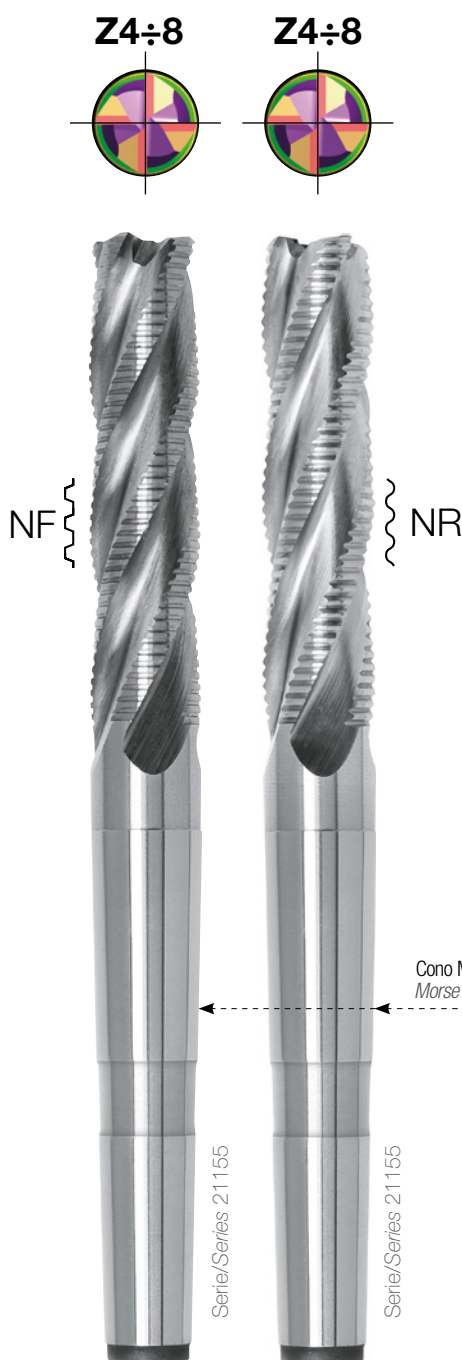
λ° s
28

NF

UNI 8250
DIN 845B
ISO 1641/II



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	I	L	MORSE TAPER	Z
211551601 CM	CMX	CMX	16	63	148	2	4
211551801 CM	CMX	CMX	18	63	148	2	4
211552001 CM	CMX	CMX	20	75	177	3	4
211552201 CM	CMX	CMX	22	75	177	3	4
211552401 CM	CMX	CMX	24	90	192	3	5
211552501 CM	CMX	CMX	25	90	192	3	5
211552601 CM	CMX	CMX	26	90	192	3	5
211552801 CM	CMX	CMX	28	90	192	3	5
211553001 CM	CMX	CMX	30	90	192	3	5
211553201 CM	CMX	CMX	32	106	231	4	5
211553401 CM	CMX	CMX	34	106	231	4	5
211553501 CM	CMX	CMX	35	106	231	4	6
211553601 CM	CMX	CMX	36	106	231	4	6
211553801 CM	CMX	CMX	38	125	250	4	6
211554001 CM	CMX	CMX	40	125	250	4	6
211554501 CM	CMX	CMX	45	125	250	4	6
211555001 CM	CMX	CMX	50	150	275	4	7
211555005 CM	CMX	CMX	50	150	308	5	7
211555601 CM	CMX	CMX	56	150	308	5	7
211556301 CM	CMX	CMX	63	180	338	5	8



COATING
Skin

λ° s
28

NR

UNI 8250
DIN 845B
ISO 1641/II

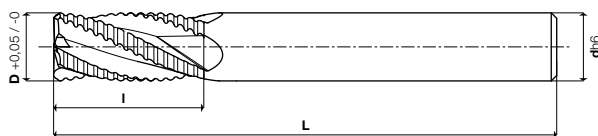


Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	I	L	MORSE TAPER	Z
211551603 CM	CMX	CMX	16	63	148	2	4
211551803 CM	CMX	CMX	18	63	148	2	4
211552003 CM	CMX	CMX	20	75	177	3	4
211552203 CM	CMX	CMX	22	75	177	3	4
211552403 CM	CMX	CMX	24	90	192	3	5
211552503 CM	CMX	CMX	25	90	192	3	5
211552603 CM	CMX	CMX	26	90	192	3	5
211552803 CM	CMX	CMX	28	90	192	3	5
211553003 CM	CMX	CMX	30	90	192	3	5
211553203 CM	CMX	CMX	32	106	231	4	5
211553403 CM	CMX	CMX	34	106	231	4	5
211553503 CM	CMX	CMX	35	106	231	4	6
211553603 CM	CMX	CMX	36	106	231	4	6
211553803 CM	CMX	CMX	38	125	250	4	6
211554003 CM	CMX	CMX	40	125	250	4	6
211554503 CM	CMX	CMX	45	125	250	4	6
211555003 CM	CMX	CMX	50	150	275	4	7
211555007 CM	CMX	CMX	50	150	308	5	7
211555603 CM	CMX	CMX	56	150	308	5	7
211556303 CM	CMX	CMX	63	180	338	5	8



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
21155	●	●	●	○	○	●	●
21155	●	●	●	○	○	●	●



HSS-PM
HSS-PM Line

Serie/Series
21305

Frese a **SGROSSARE**
Roughing end mills

COATING
Skin
Inox

W
A RICHIESTA
ON REQUEST

F
A RICHIESTA
ON REQUEST

λ° s
32

NR

UNI 8244
DIN 844A
ISO 1641/I

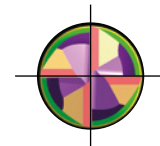


Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	I	L	dh6	Z
213050503 CM		CMX	5	13	57	6	3
213050603 CM		CMX	6	13	57	6	3
213050803 CM		CMX	8	19	69	10	4
213051003 CM		CMX	10	22	72	10	4
213051203 CM		CMX	12	26	83	12	4
213051403 CM		CMX	14	26	83	12	4
213051503 CM		CMX	15	32	92	16	4
213051603 CM		CMX	16	32	92	16	4
213051803 CM		CMX	18	32	92	16	4
213052007 CM		CMX	20	38	104	20	4
213052203 CM		CMX	22	38	104	20	4
213052503 CM		CMX	25	45	121	25	5



parametri tecnici a pag. / for technical parameters see page 125

Z3÷5



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
21305	●	●	●	○	○	●	●

● consigliata/recommended

● accettabile/acceptable

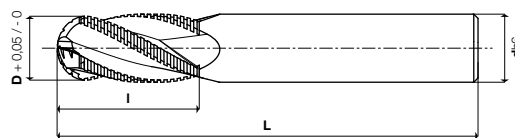
○ non consigliata/not recommended

WWW.UOP.IT

83

Serie/Series
21505

Frese a **SEMIFINIRE**, testa semisferica
Ball nosed semi-finishing end mills



COATING
Skin

W
A RICHIESTA
ON REQUEST

F
A RICHIESTA
ON REQUEST

$\lambda^{\circ}S$
28

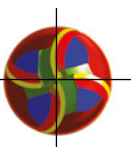
NF

ISO 1641/I



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	I	L	dh6	Z
215050601 CM	CMX	6	13	57	6	3	
215050701 CM	CMX	7	16	66	10	3	
215050801 CM	CMX	8	19	69	10	4	
215050901 CM	CMX	9	19	69	10	4	
215051001 CM	CMX	10	22	72	10	4	
215051101 CM	CMX	11	22	79	12	4	
215051201 CM	CMX	12	26	83	12	4	
215051301 CM	CMX	13	26	83	12	4	
215051401 CM	CMX	14	26	83	12	4	
215051501 CM	CMX	15	32	92	16	4	
215051601 CM	CMX	16	32	92	16	4	
215051801 CM	CMX	18	32	92	16	4	
215051805 CM	CMX	18	32	98	20	4	
215052001 CM	CMX	20	38	98	16	4	
215052005 CM	CMX	20	38	104	20	4	
215052201 CM	CMX	22	38	104	20	4	
215052205 CM	CMX	22	38	114	25	4	
215052401 CM	CMX	24	45	121	25	5	
215052501 CM	CMX	25	45	121	25	5	
215052601 CM	CMX	26	45	121	25	5	
215052801 CM	CMX	28	45	121	25	5	
215053001 CM	CMX	30	45	121	25	5	
215053201 CM	CMX	32	53	133	32	5	
215053601 CM	CMX	36	53	133	32	6	
215054001 CM	CMX	40	63	143	32	6	
215054501 CM	CMX	45	63	143	32	6	
215055001 CM	CMX	50	75	155	32	7	

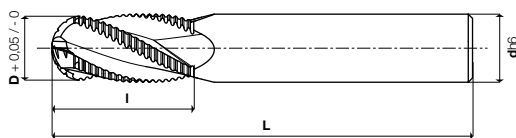
Z3÷7
BALL-NOSED



parametri tecnici a pag. 1 / for technical parameters see page 125

MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie	TITANIO	HRSA	ACCIAI	MATERIALI	LEGHE	ACCIAI	GHISE
series	TITANIUM	HRSA	INOSSIDABILI	NON FERROSI	LEGGERE	STEELS	CAST IRON
21505	●	●	●	○	○	●	●



Serie/Series 21505

Frese a **SGROSSARE**, testa semisferica
Ball nosed roughing end mills

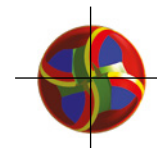


Cod. Art.	X-85 (PM Co 8,5%)	COATED	D ^{+0,05} -0	I	L	dh6	Z
215050603	CM	CMX	6	13	57	6	3
215050703	CM	CMX	7	16	66	10	3
215050803	CM	CMX	8	19	69	10	4
215050903	CM	CMX	9	19	69	10	4
215051003	CM	CMX	10	22	72	10	4
215051103	CM	CMX	11	22	79	12	4
215051203	CM	CMX	12	26	83	12	4
215051303	CM	CMX	13	26	83	12	4
215051403	CM	CMX	14	26	83	12	4
215051503	CM	CMX	15	32	92	16	4
215051603	CM	CMX	16	32	92	16	4
215051803	CM	CMX	18	32	92	16	4
215051807	CM	CMX	18	32	98	20	4
215052003	CM	CMX	20	38	98	16	4
215052007	CM	CMX	20	38	104	20	4
215052203	CM	CMX	22	38	104	20	4
215052207	CM	CMX	22	38	114	25	4
215052403	CM	CMX	24	45	121	25	5
215052503	CM	CMX	25	45	121	25	5
215052603	CM	CMX	26	45	121	25	5
215052803	CM	CMX	28	45	121	25	5
215053003	CM	CMX	30	45	121	25	5
215053203	CM	CMX	32	53	133	32	5
215053603	CM	CMX	36	53	133	32	6
215054003	CM	CMX	40	63	143	32	6
215054503	CM	CMX	45	63	143	32	6
215055003	CM	CMX	50	75	155	32	7



parametri tecnici a pag. / for technical parameters see page 125

Z3÷7
BALL-NOSED



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
21505	●	●	●	○	○	●	●

● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended

Serie/Series 21520

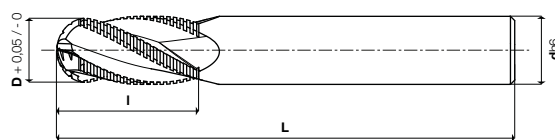
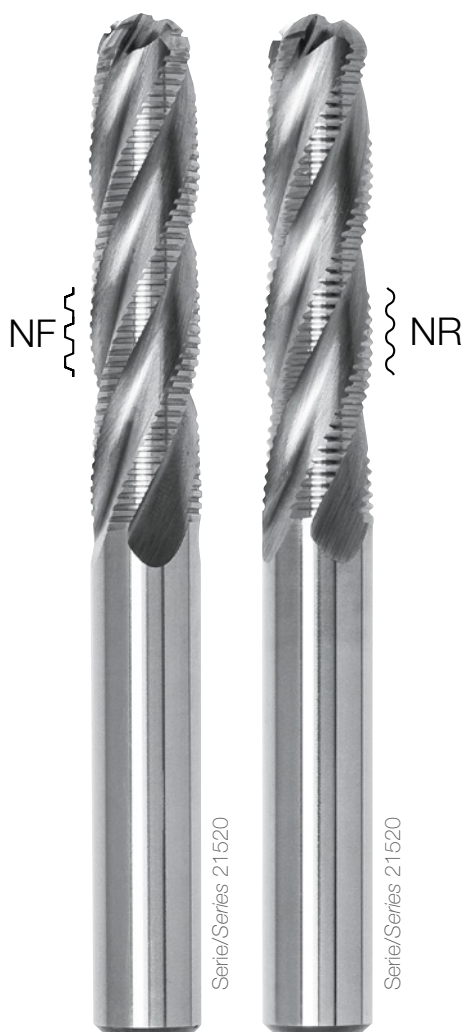
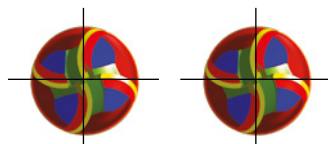
Frese a **SEMIFINIRE**, testa semisferica
Ball nosed semi-finishing end mills

21520

Frese a **SGROSSARE**, testa semisferica
Ball nosed roughing end mills

Z4÷7
BALL-NOSED

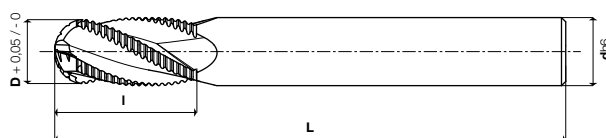
Z4÷7
BALL-NOSED



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	I	L	dh6	Z
215200801	CM	CMX	8	38	88	10	4
215201001	CM	CMX	10	45	95	10	4
215201201	CM	CMX	12	53	110	12	4
215201401	CM	CMX	14	53	110	12	4
215201501	CM	CMX	15	63	123	16	4
215201601	CM	CMX	16	63	123	16	4
215201801	CM	CMX	18	63	123	16	4
215201805	CM	CMX	18	63	129	20	4
215202001	CM	CMX	20	75	135	16	4
215202005	CM	CMX	20	75	141	20	4
215202201	CM	CMX	22	75	141	20	4
215202205	CM	CMX	22	75	151	25	4
215202401	CM	CMX	24	90	166	25	5
215202501	CM	CMX	25	90	166	25	5
215202801	CM	CMX	28	90	166	25	5
215203001	CM	CMX	30	90	166	25	5
215203201	CM	CMX	32	106	186	32	5
215203601	CM	CMX	36	106	186	32	6
215204001	CM	CMX	40	125	205	32	6
215204501	CM	CMX	45	125	205	32	6
215205001	CM	CMX	50	150	230	32	7



parametri tecnici a pag. 1 for technical parameters see page 125



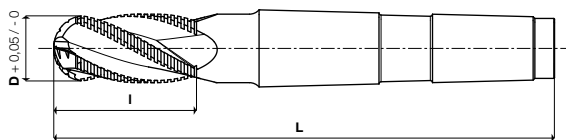
Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	I	L	dh6	Z
215200803	CM	CMX	8	38	88	10	4
215201003	CM	CMX	10	45	95	10	4
215201203	CM	CMX	12	53	110	12	4
215201403	CM	CMX	14	53	110	12	4
215201503	CM	CMX	15	63	123	16	4
215201603	CM	CMX	16	63	123	16	4
215201803	CM	CMX	18	63	123	16	4
215201807	CM	CMX	18	63	129	20	4
215202003	CM	CMX	20	75	135	16	4
215202007	CM	CMX	20	75	141	20	4
215202203	CM	CMX	22	75	141	20	4
215202207	CM	CMX	22	75	151	25	4
215202403	CM	CMX	24	90	166	25	5
215202503	CM	CMX	25	90	166	25	5
215202803	CM	CMX	28	90	166	25	5
215203003	CM	CMX	30	90	166	25	5
215203203	CM	CMX	32	106	186	32	5
215203603	CM	CMX	36	106	186	32	6
215204003	CM	CMX	40	125	205	32	6
215204503	CM	CMX	45	125	205	32	6
215205003	CM	CMX	50	150	230	32	7



parametri tecnici a pag. 1 for technical parameters see page 125

MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie	TITANIO	HRSA	ACCIAI INOSSIDABILI	MATERIALI NON FERROSI	LEGHE LEGGERE	ACCIAI	GHISE
series	TITANIUM	HRSA	STAINLESS STEELS	NON FERROUS MATERIALS	LIGHT ALLOYS	STEELS	CAST IRON
21520	●	●	●	○	○	●	●
21520	●	●	●	○	○	●	●



HSS-PM HSS-PM Line

Serie/Series 21550

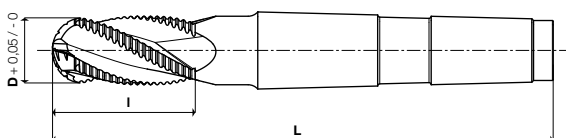
Frese a **SEMIFINIRE**, testa semisferica
Ball nosed semi-finishing end mills

21550

Frese a **SGROSSARE**, testa semisferica
Ball nosed roughing end mills



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	I	L	MORSE TAPER	Z
215501601	CM	CMX	16	32	117	2	4
215501801	CM	CMX	18	32	117	2	4
215502001	CM	CMX	20	38	140	3	4
215502201	CM	CMX	22	38	140	3	4
215502401	CM	CMX	24	45	147	3	5
215502501	CM	CMX	25	45	147	3	5
215502601	CM	CMX	26	45	147	3	5
215502801	CM	CMX	28	45	147	3	5
215503001	CM	CMX	30	53	155	3	5
215503201	CM	CMX	32	53	178	4	5
215503401	CM	CMX	34	53	178	4	5
215503501	CM	CMX	35	53	178	4	6
215503601	CM	CMX	36	53	178	4	6
215503801	CM	CMX	38	63	188	4	6
215504001	CM	CMX	40	63	188	4	6
215504501	CM	CMX	45	63	188	4	6
215505001	CM	CMX	50	75	233	5	7
215505601	CM	CMX	56	75	233	5	7
215506301	CM	CMX	63	90	248	5	8

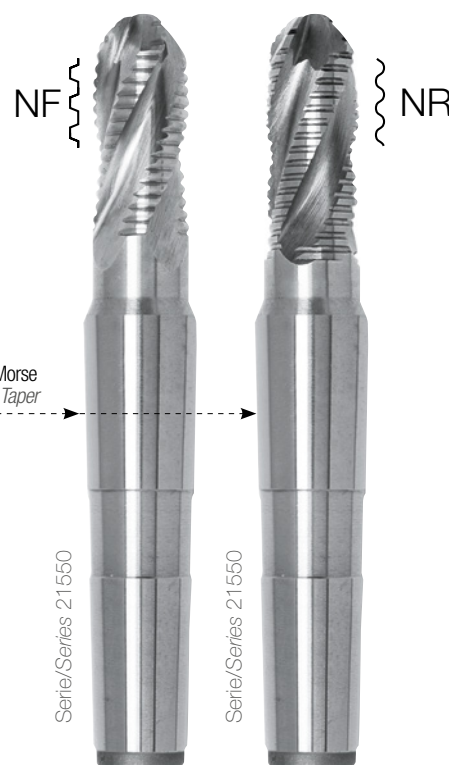
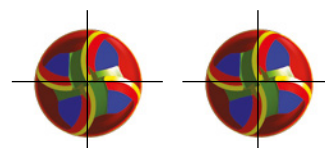


Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	I	L	MORSE TAPER	Z
215501603	CM	CMX	16	32	117	2	4
215501803	CM	CMX	18	32	117	2	4
215502003	CM	CMX	20	38	140	3	4
215502203	CM	CMX	22	38	140	3	4
215502403	CM	CMX	24	45	147	3	5
215502503	CM	CMX	25	45	147	3	5
215502603	CM	CMX	26	45	147	3	5
215502803	CM	CMX	28	45	147	3	5
215503003	CM	CMX	30	53	155	3	5
215503203	CM	CMX	32	53	178	4	5
215503403	CM	CMX	34	53	178	4	5
215503503	CM	CMX	35	53	178	4	6
215503603	CM	CMX	36	53	178	4	6
215503803	CM	CMX	38	63	188	4	6
215504003	CM	CMX	40	63	188	4	6
215504503	CM	CMX	45	63	188	4	6
215505003	CM	CMX	50	75	233	5	7
215505603	CM	CMX	56	75	233	5	7
215506303	CM	CMX	63	90	248	5	8



Z4÷8
BALL-NOSED

Z4÷8
BALL-NOSED



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
21550	●	●	●	○	○	●	●
21550	●	●	●	○	○	●	●

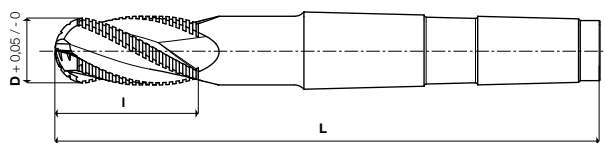
● consigliata/recommended ● accettabile/acceptable ○ non consigliata/not recommended

Serie/Series 21555

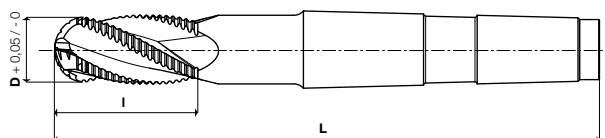
Fresa a **SEMIFINIRE**, testa semisferica
Ball nosed semi-finishing end mills

21555

Fresa a **SGROSSARE**, testa semisferica
Ball nosed roughing end mills



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	I	L	MORSE TAPER	Z
215551601	CM	CMX	16	63	148	2	4
215551801	CM	CMX	18	63	148	2	4
215552001	CM	CMX	20	75	177	3	4
215552201	CM	CMX	22	75	177	3	4
215552401	CM	CMX	24	90	192	3	5
215552501	CM	CMX	25	90	192	3	5
215552601	CM	CMX	26	90	192	3	5
215552801	CM	CMX	28	90	192	3	5
215553001	CM	CMX	30	90	192	3	5
215553201	CM	CMX	32	106	231	4	5
215553401	CM	CMX	34	106	231	4	5
215553501	CM	CMX	35	106	231	4	6
215553601	CM	CMX	36	106	231	4	6
215553801	CM	CMX	38	125	250	4	6
215554001	CM	CMX	40	125	250	4	6
215554501	CM	CMX	45	125	250	4	6
215555001	CM	CMX	50	150	308	5	7
215555601	CM	CMX	56	150	308	5	7
215556301	CM	CMX	63	180	338	5	8

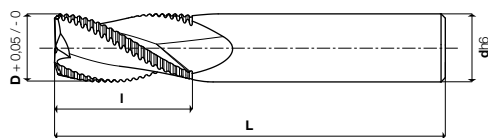


Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	I	L	MORSE TAPER	Z
215551603 CM		CMX	16	63	148	2	4
215551803 CM		CMX	18	63	148	2	4
215552003 CM		CMX	20	75	177	3	4
215552203 CM		CMX	22	75	177	3	4
215552403 CM		CMX	24	90	192	3	5
215552503 CM		CMX	25	90	192	3	5
215552603 CM		CMX	26	90	192	3	5
215552803 CM		CMX	28	90	192	3	5
215553003 CM		CMX	30	90	192	3	5
215553203 CM		CMX	32	106	231	4	5
215553403 CM		CMX	34	106	231	4	5
215553503 CM		CMX	35	106	231	4	6
215553603 CM		CMX	36	106	231	4	6
215553803 CM		CMX	38	125	250	4	6
215554003 CM		CMX	40	125	250	4	6
215554503 CM		CMX	45	125	250	4	6
215555003 CM		CMX	50	150	308	5	7
215555603 CM		CMX	56	150	308	5	7
215556303 CM		CMX	63	180	338	5	8



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
21555	●	●	●	○	○	●	●
21555	●	●	●	○	○	●	●



COATING

Skin

W

A RICHIESTA
ON REQUEST

F

A RICHIESTA
ON REQUEST

 λ° s
32

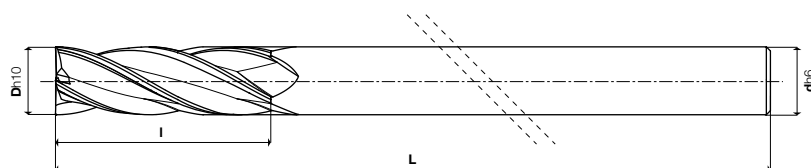
NRF

UNI
DIN
ISO 1641/I


Cod. Art.	X-105 (PM Co 10,5%)	D +0,05 -0	I	L	dh6	Z
221050602	EMX	6	8	52	6	3
221050802	EMX	8	11	61	10	3
221051002	EMX	10	13	63	10	3
221051202	EMX	12	13	73	12	3
221051402	EMX	14	16	73	12	3
221051602	EMX	16	19	79	16	3
221051802	EMX	18	19	79	16	3
221052002	EMX	20	22	88	20	3
221052202	EMX	22	22	88	20	3
221052502	EMX	25	26	102	25	3
221052802	EMX	28	26	102	25	3
221053002	EMX	30	26	102	25	3
221053202	EMX	32	32	112	32	3



parametri tecnici a pag. I for technical parameters see page 127



COATING

Skin

W

A RICHIESTA
ON REQUEST

F

A RICHIESTA
ON REQUEST

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32

N

QUALITY
STANDARD
UOP


Cod. Art.	X-85 (PM Co 8,5%)	COATED	Dh10	I	L	dh6	Z
241051000 CM	CMX		10	30	200	10	4
241051200 CM	CMX		12	30	200	12	4
241051600 CM	CMX		16	35	200	16	4
241052000 CM	CMX		20	35	200	20	4
241052500 CM	CMX		25	40	200	25	4



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
22105	●	●	●	○	○	●	●
24105	●	●	●	○	○	●	●

● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended

WWW.UOP.IT

89

HSS-PM
HSS-PM Line

Serie/Series
22105

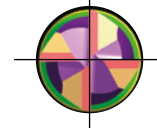
Frese a **SGROSSARE**
Roughing end mills

ALTE PRESTAZIONI
HIGH PERFORMANCE

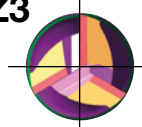
24105

Frese a quattro taglienti
Four flutes end mills

Z4



Z3



Serie/Series 22105

Serie/Series 24105

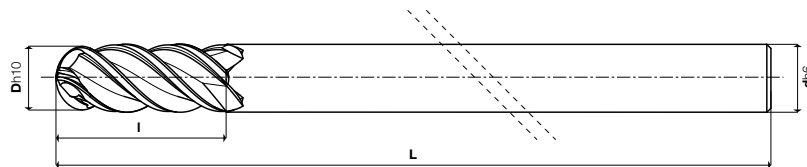
Serie/Series

24110

Frese a quattro taglienti a testa semisferica
Ball nosed end mills

24115

Frese a due taglienti
Two flute end mills



COATING

Skin

W
A RICHIESTA
ON REQUEST

F
A RICHIESTA
ON REQUEST

λ° s
32

N

QUALITY
STANDARD
UOP

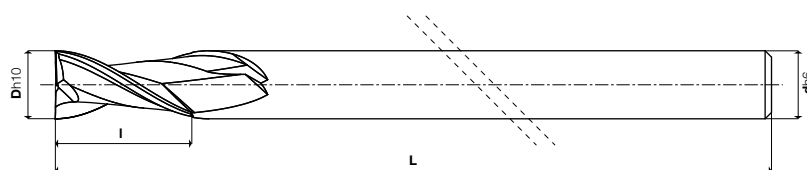
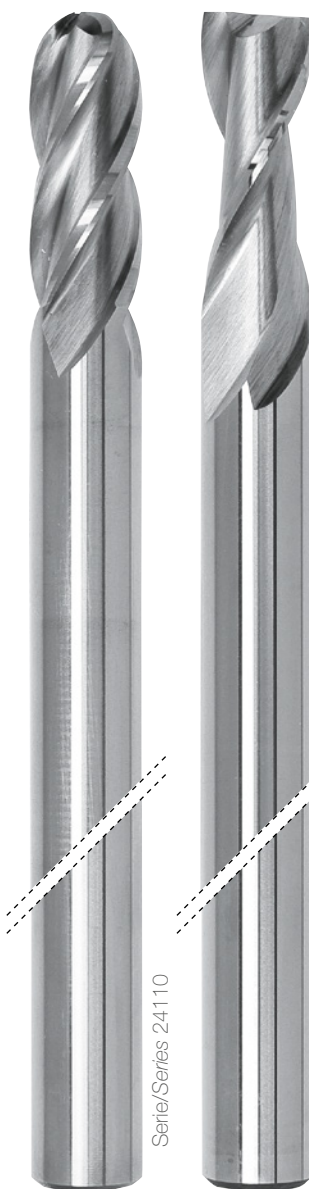
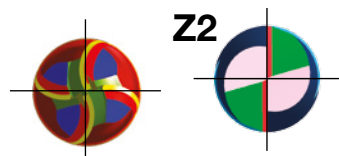


Cod. Art.	X-85 (PM Co 8,5%)	COATED	Dh10	I	L	dh6	Z
241101000 CM		CMX	10	30	200	10	4
241101200 CM		CMX	12	30	200	12	4
241101600 CM		CMX	16	35	200	16	4
241102000 CM		CMX	20	35	200	20	4
241102500 CM		CMX	25	40	200	25	4



Z4
BALL-NOSED

Z2



COATING

Skin

W
A RICHIESTA
ON REQUEST

F
A RICHIESTA
ON REQUEST

λ° s
32

N

QUALITY
STANDARD
UOP



Cod. Art.	X-85 (PM Co 8,5%)	COATED	Dh10	I	L	dh6	Z
241151000 CM		CMX	10	30	200	10	2
241151200 CM		CMX	12	30	200	12	2
241151600 CM		CMX	16	35	200	16	2
241152000 CM		CMX	20	35	200	20	2
241152500 CM		CMX	25	40	200	25	2



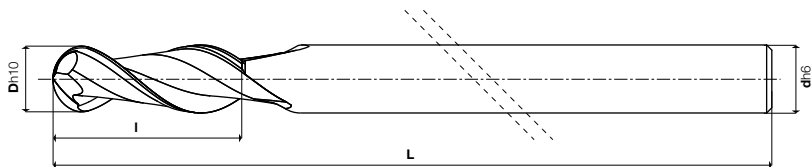
MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
24110	●	●	●	○	○	●	●
24115	●	●	●	○	○	●	●

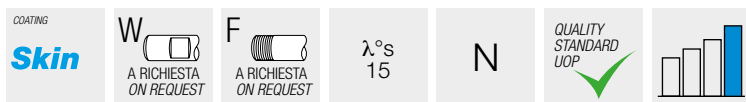
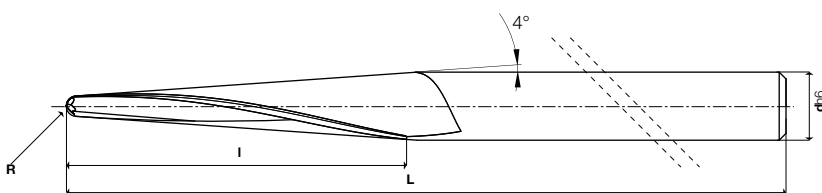
● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended



Cod. Art.	X-85 (PM Co 8,5%)	COATED	Dh10	I	L	dh6	Z
241201000 CM	CMX		10	30	200	10	2
241201200 CM	CMX		12	30	200	12	2
241201600 CM	CMX		16	35	200	16	2
241202000 CM	CMX		20	35	200	20	2
241202500 CM	CMX		25	40	200	25	2



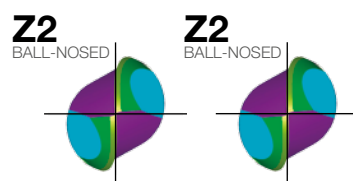
Cod. Art.	X-85 (PM Co 8,5%)	COATED	R	I	L	dh6	Z
241250150 CM	CMX		1,5	50	180	10	2
241250200 CM	CMX		2	45	180	10	2
241250250 CM	CMX		2,5	38	180	10	2
241250300 CM	CMX		3	45	200	12	2
241250350 CM	CMX		3,5	40	200	12	2
241250400 CM	CMX		4	47	200	14	2
241250500 CM	CMX		5	47	200	16	2
241250600 CM	CMX		6	63	200	20	2
241250800 CM	CMX		8	72	200	25	2



HSS-PM Line

Serie/Series
24120
Frese a due taglienti a testa semisferica
Ball-nosed two flute slot drills

24125
Frese coniche a due taglienti a testa semisferica
Conicità 4° laterali
Ball nosed milling cutters Taper 4°



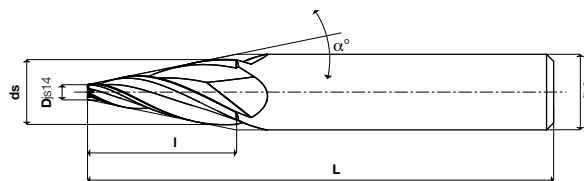
MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
24120	●	●	●	○	○	●	●
24125	●	●	●	○	○	●	●

● consigliata/recommended ○ accettabile/acceptable ○ non consigliata/not recommended

Serie/Series
25105

Frese coniche per stampi
Conicità 9° 28' - 5° 43' - 2° 52'
Tapered end mills



COATING
Skin

W
A RICHIESTA
ON REQUEST

F
A RICHIESTA
ON REQUEST

λ° s
25

N

UNI 8265
DIN 1889EA
ISO

α° 9° 28' conicità 1/3

Cod. Art.	X-85 (PM Co 8,5%)	COATED	Djs14	ds	I	L	dh6	Z
251051050 CM	CMX		2,5	13	31,5	85	12	3
251051100 CM	CMX		4	16	36	96	16	4
251051150 CM	CMX		4	22,7	56	116	16	4
251051200 CM	CMX		4	34	90	170	32	4
251051250 CM	CMX		6	20	42	100	16	4
251051300 CM	CMX		6	27	63	138	25	4
251051350 CM	CMX		6	40	102	182	32	4
251051400 CM	CMX		8	25	50	125	25	4
251051450 CM	CMX		8	32	72	152	32	4
251051500 CM	CMX		8	45,5	112	192	32	4
251051550 CM	CMX		12	32	60	140	32	4

α° 5° 43' conicità 1/5

Cod. Art.	X-85 (PM Co 8,5%)	COATED	Djs14	ds	I	L	dh6	Z
251052050 CM	CMX		2,5	10	37,5	88	10	3
251052100 CM	CMX		4	12	40	97	12	4
251052150 CM	CMX		4	16	60	120	16	4
251052200 CM	CMX		4	22	90	150	16	4
251052250 CM	CMX		6	14	40	97	12	4
251052300 CM	CMX		6	18	60	120	16	4
251052350 CM	CMX		6	26	100	175	25	4
251052400 CM	CMX		8	17	45	105	16	4
251052450 CM	CMX		8	22	70	130	16	4
251052500 CM	CMX		8	28	100	175	25	4
251052550 CM	CMX		12	21	45	105	16	4
251052600 CM	CMX		12	26,2	71	146	25	4
251052650 CM	CMX		12	37	125	205	32	5
251052700 CM	CMX		16	26	50	125	25	4
251052750 CM	CMX		16	32	80	160	32	4
251052800 CM	CMX		16	41	125	205	32	5
251052850 CM	CMX		20	32,6	63	143	32	5
251052900 CM	CMX		20	40	100	180	32	5
251052950 CM	CMX		20	52	160	240	32	5

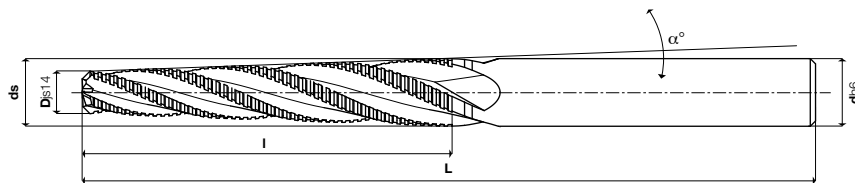
α° 2° 52' conicità 1/10

Cod. Art.	X-85 (PM Co 8,5%)	COATED	Djs14	ds	I	L	dh6	Z
251053050 CM	CMX		4	8	40	90	10	4
251053100 CM	CMX		6	10	40	90	10	4
251053150 CM	CMX		6	12	60	117	12	4
251053200 CM	CMX		8	12,5	45	95	12	4
251053250 CM	CMX		8	16	80	140	16	4
251053300 CM	CMX		12	17	50	110	16	4
251053350 CM	CMX		12	20	80	140	16	4
251053400 CM	CMX		12	25	130	205	25	4
251053450 CM	CMX		16	21,6	56	116	16	4
251053500 CM	CMX		16	25	90	165	25	4
251053550 CM	CMX		16	32	160	240	32	4
251053600 CM	CMX		20	26,3	63	138	25	5
251053650 CM	CMX		20	30	100	175	32	5



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie	TITANIO	HRSA	ACCIAI INOSSIDABILI	MATERIALI NON FERROSI	LEGHE LEGGERE	ACCIAI	GHISE
series	TITANIUM	HRSA	STAINLESS STEELS	NON FERROUS MATERIALS	LIGHT ALLOYS	STEELS	CAST IRON
25105	○	○	●	○	○	●	●



$\alpha^\circ 9^\circ 28'$ conicità 1/3

Cod. Art.	X-85 (PM Co 8,5%)	COATED	Djs14	ds	I	L	dh6	Z
251201401 CM	CMX		8	25	50	125	25	4
251201451 CM	CMX		8	32	72	152	32	4
251201501 CM	CMX		8	45,5	112	192	32	4
251201551 CM	CMX		12	32	60	140	32	4

$\alpha^\circ 5^\circ 43'$ conicità 1/5

Cod. Art.	X-85 (PM Co 8,5%)	COATED	Djs14	ds	I	L	dh6	Z
251202301 CM	CMX		6	18	60	120	16	4
251202401 CM	CMX		8	17	45	105	16	4
251202451 CM	CMX		8	22	70	130	16	4
251202501 CM	CMX		8	28	100	175	25	4
251202551 CM	CMX		12	21	45	105	16	4
251202601 CM	CMX		12	26,2	71	146	25	4
251202651 CM	CMX		12	37	125	205	32	4
251202701 CM	CMX		16	26	50	125	25	4
251202751 CM	CMX		16	32	80	160	32	4
251202801 CM	CMX		16	41	125	205	32	4
251202851 CM	CMX		20	32,6	63	143	32	5
251202901 CM	CMX		20	40	100	180	32	5
251202951 CM	CMX		20	52	160	240	32	5

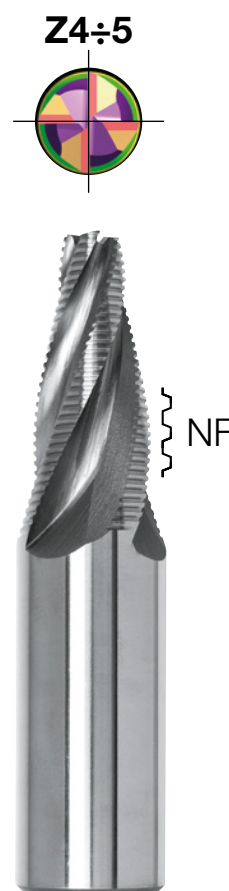
$\alpha^\circ 2^\circ 52'$ conicità 1/10

Cod. Art.	X-85 (PM Co 8,5%)	COATED	Djs14	ds	I	L	dh6	Z
251203201 CM	CMX		8	12,5	45	102	12	4
251203251 CM	CMX		8	16	80	140	16	4
251203301 CM	CMX		12	17	50	110	16	4
251203351 CM	CMX		12	20	80	140	16	4
251203401 CM	CMX		12	25	130	205	25	4
251203451 CM	CMX		16	21,6	56	116	16	4
251203501 CM	CMX		16	25	90	165	25	4
251203551 CM	CMX		16	32	160	240	32	4
251203601 CM	CMX		20	26,3	63	138	25	5
251203651 CM	CMX		20	30	100	175	25	5



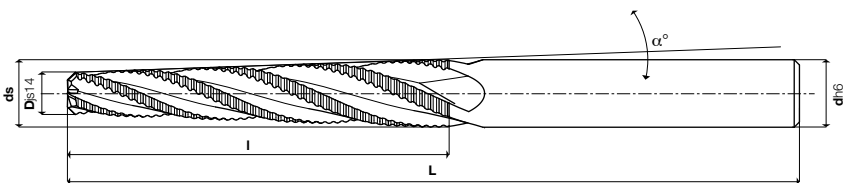
MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
25120	○	○	●	○	○	●	●



Serie/Series
25120

Frese coniche a **SGROSSARE** per stampi
Conicità 9° 28' - 5° 43' - 2° 52'
Tapered end mills



COATING
Skin

W
A RICHIESTA
ON REQUEST

F
A RICHIESTA
ON REQUEST

$\lambda^{\circ}s$
25

NR

UNI 8265
DIN 1889EA
ISO

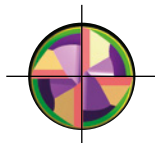
$\alpha^{\circ} 9^{\circ} 28'$ conicità 1/3

Cod. Art.	X-85 (PM Co 8,5%)	COATED	Djs14	ds	I	L	dh6	Z
251201402 CM	CMX		8	25	50	125	25	4
251201452 CM	CMX		8	32	72	152	32	4
251201502 CM	CMX		8	45,5	112	192	32	4
251201552 CM	CMX		12	32	60	140	32	4

$\alpha^{\circ} 5^{\circ} 43'$ conicità 1/5

Cod. Art.	X-85 (PM Co 8,5%)	COATED	Djs14	ds	I	L	dh6	Z
251202302 CM	CMX		6	18	60	120	16	4
251202402 CM	CMX		8	17	45	105	16	4
251202452 CM	CMX		8	22	70	130	16	4
251202502 CM	CMX		8	28	100	175	25	4
251202552 CM	CMX		12	21	45	105	16	4
251202602 CM	CMX		12	26,2	71	146	25	4
251202652 CM	CMX		12	37	125	205	32	4
251202702 CM	CMX		16	26	50	125	25	4
251202752 CM	CMX		16	32	80	160	32	4
251202802 CM	CMX		16	41	125	205	32	4
251202852 CM	CMX		20	32,6	63	143	32	5
251202902 CM	CMX		20	40	100	180	32	5
251202952 CM	CMX		20	52	160	240	32	5

Z4÷5



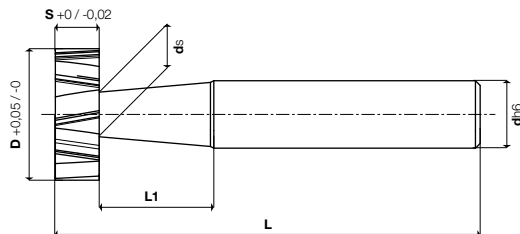
$\alpha^{\circ} 2^{\circ} 52'$ conicità 1/10

Cod. Art.	X-85 (PM Co 8,5%)	COATED	Djs14	ds	I	L	dh6	Z
251203202 CM	CMX		8	12,5	45	102	12	4
251203252 CM	CMX		8	16	80	140	16	4
251203302 CM	CMX		12	17	50	110	16	4
251203352 CM	CMX		12	20	80	140	16	4
251203402 CM	CMX		12	25	130	205	25	4
251203452 CM	CMX		16	21,6	56	116	16	4
251203502 CM	CMX		16	25	90	165	25	4
251203552 CM	CMX		16	32	160	240	32	4
251203602 CM	CMX		20	26,3	63	138	25	5
251203652 CM	CMX		20	30	100	175	25	5



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie	TITANIO	HRSA	ACCIAI INOSSIDABILI	MATERIALI NON FERROSI	LEGHE LEGGERE	ACCIAI	GHISE
series	TITANIUM	HRSA	STAINLESS STEELS	NON FERROUS MATERIALS	LIGHT ALLOYS	STEELS	CAST IRON
25120	○	○	●	○	○	●	●



COATING

Skin

W

A RICHIESTA
ON REQUEST

F

A RICHIESTA
ON REQUEST

H

UNI 8263
DIN 850B
ISO

Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	S +0 -0,02	ds	L1	L	dh6	λ°	Z
271051020 AM	CM	CMX		10,5	2	4	9	50	6	13	8
271051025 AM	CM	CMX		10,5	2,5	4	9	50	6	13	8
271051030 AM	CM	CMX		10,5	3	4,2	8	50	6	13	8
271051302 AM	CM	CMX		13,5	2	4,6	12	56	10	15	8
271051303 AM	CM	CMX		13,5	3	4,6	12	56	10	15	8
271051304 AM	CM	CMX		13,5	4	4,6	12	56	10	15	8
271051603 AM	CM	CMX		16,5	3	4,6	12	56	10	15	8
271051604 AM	CM	CMX		16,5	4	4,6	12	56	10	15	8
271051605 AM	CM	CMX		16,5	5	5	9,5	56	10	15	8
271051606 AM	CM	CMX		16,5	6	5	9,5	56	10	15	8
271051903 AM	CM	CMX		19,5	3	5,6	17,5	63	10	15	10
271051904 AM	CM	CMX		19,5	4	5,6	17,5	63	10	15	10
271051905 AM	CM	CMX		19,5	5	6	16	63	10	15	10
271051906 AM	CM	CMX		19,5	6	6,5	15	63	10	15	10
271052204 AM	CM	CMX		22,5	4	6	17	63	10	13	10
271052205 AM	CM	CMX		22,5	5	6	17	63	10	13	10
271052206 AM	CM	CMX		22,5	6	6,5	13	63	10	13	10
271052208 AM	CM	CMX		22,5	8	6,5	13	63	10	13	10
271052505 AM	CM	CMX		25,5	5	7,5	12	63	10	15	12
271052506 AM	CM	CMX		25,5	6	7,5	12	63	10	15	12
271052507 AM	CM	CMX		25,5	7	7,5	12	63	10	15	12
271052508 AM	CM	CMX		25,5	8	7,5	12	63	10	15	12
271052806 AM	CM	CMX		28,5	6	8,5	10	63	10	13	12
271052807 AM	CM	CMX		28,5	7	8,5	10	63	10	13	12
271052808 AM	CM	CMX		28,5	8	8,5	10	63	10	13	12
271052810 AM	CM	CMX		28,5	10	9,3	13	71	12	13	12
271053206 AM	CM	CMX		32,5	6	8,5	16	71	12	15	12
271053207 AM	CM	CMX		32,5	7	8,5	16	71	12	15	12
271053208 AM	CM	CMX		32,5	8	8,5	16	71	12	15	12
271053210 AM	CM	CMX		32,5	10	9,3	13	71	12	15	12
271054510 AM	CM	CMX		45,5	10	11	13	71	12	13	12



Z8÷12



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie
series
27105

TITANIO
TITANIUM

HRSA
HRSA

ACCIAI
INOSSIDABILI
STAINLESS
STEELS

MATERIALI
NON FERROSI
NON FERROUS
MATERIALS

LEGHE
LEGGERE
LIGHT ALLOYS

ACCIAI
STEELS

GHISE
CAST IRON

● consigliata/recommended

● accettabile/acceptable

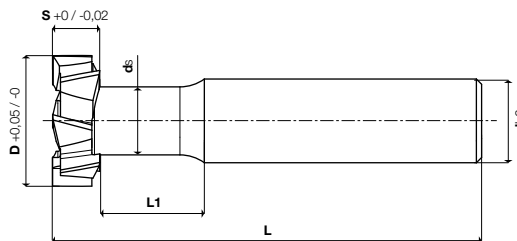
○ non consigliata/not recommended

Serie/Series 27120

Frese per scanalature a T
T-slot cutters

27135

Frese per scanalature a T
T-slot cutters



COATING
Skin

W
A RICHIESTA
ON REQUEST

F
A RICHIESTA
ON REQUEST

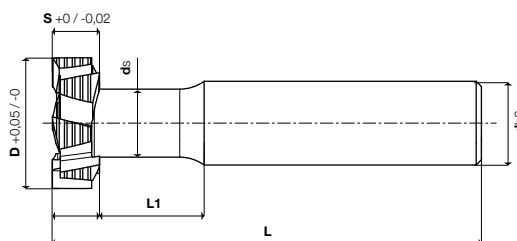
N

UNI 7339A
DIN 851
ISO 3337

Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	S +0 -0,02	ds	L1	L	dh6	λ°	Z
271201256 AM	CM	CMX		12,5	6	5	11	57	10	12	6
271201608 AM	CM	CMX		16	8	7	14	62	10	12	6
271201808 AM	CM	CMX		18	8	8	15	70	12	15	6
271201909 AM	CM	CMX		19	9	8	15	70	12	15	8
271202109 AM	CM	CMX		21	9	10	18	74	12	15	8
271202210 AM	CM	CMX		22	10	10	17	74	12	15	8
271202511 AM	CM	CMX		25	11	12	20	82	16	15	8
271202812 AM	CM	CMX		28	12	13	22	85	16	15	8
271203214 AM	CM	CMX		32	14	15	25	90	16	15	8



parametri tecnici a pag. I for technical parameters see page 129



COATING
Skin

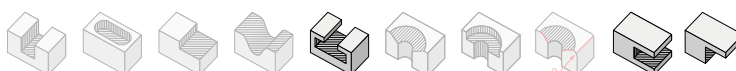
W
A RICHIESTA
ON REQUEST

F
A RICHIESTA
ON REQUEST

NF

UNI 7339A
DIN 851
ISO 3337

Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	S +0 -0,02	ds	L1	L	dh6	Z
271351256 AM	CM	CMX		12,5	6	5	11	57	10	4
271351608 AM	CM	CMX		16	8	7	14	62	10	6
271351808 AM	CM	CMX		18	8	8	15	70	12	6
271351909 AM	CM	CMX		19	9	8	15	70	12	6
271352109 AM	CM	CMX		21	9	10	18	74	12	6
271352210 AM	CM	CMX		22	10	10	17	74	12	6
271352511 AM	CM	CMX		25	11	12	20	82	16	8
271352812 AM	CM	CMX		28	12	13	22	85	16	8
271353214 AM	CM	CMX		32	14	15	25	90	16	8



parametri tecnici a pag. I for technical parameters see page 129

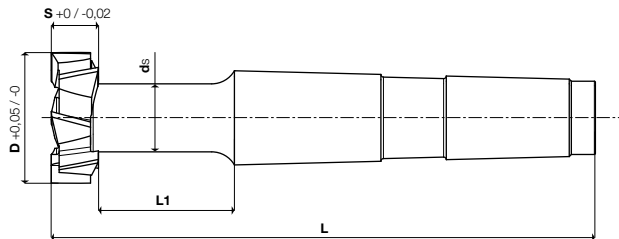


Serie/Series 27120

Serie/Series 27135

MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
27120	●	●	●	○	○	●	●
27135	●	●	●	○	○	●	●

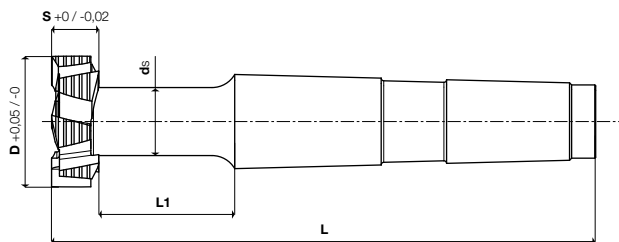


COATING

Skin
N

UNI 7339B
DIN 851B
ISO 3337

Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	S +0 -0,02	ds	L1	L	MORSE TAPER	λ°	Z
271501256 AM	CM	CMX		12,5	6	5	9	72	1	12	8
271501608 AM	CM	CMX		16	8	7	12	77	1	12	8
271501808 AM	CM	CMX		18	8	8	17	82	1	15	8
271501909 AM	CM	CMX		19	9	8	16	82	1	15	8
271502109 AM	CM	CMX		21	9	10	24	102	2	15	8
271502210 AM	CM	CMX		22	10	10	23	102	2	15	8
271502511 AM	CM	CMX		25	11	12	24	104	2	15	8
271502812 AM	CM	CMX		28	12	13	25	106	2	15	8
271503214 AM	CM	CMX		32	14	15	28	111	2	15	8
271503616 AM	CM	CMX		36	16	17	31	133	3	15	8
271504018 AM	CM	CMX		40	18	19	36	140	3	15	8
271504520 AM	CM	CMX		45	20	20	37	143	3	15	8
271505022 AM	CM	CMX		50	22	25	46	177	4	10	10
271505624 AM	CM	CMX		56	24	27	49	182	4	10	10



COATING

Skin
NF

UNI 7339B
DIN 851B
ISO 3337

Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	S +0 -0,02	ds	L1	L	MORSE TAPER	Z
271551256 AM	CM	CMX		12,5	6	5	9	72	1	4
271551608 AM	CM	CMX		16	8	7	12	77	1	6
271551808 AM	CM	CMX		18	8	8	17	82	1	6
271551909 AM	CM	CMX		19	9	8	16	82	1	6
271552109 AM	CM	CMX		21	9	10	24	102	2	6
271552210 AM	CM	CMX		22	10	10	23	102	2	6
271552511 AM	CM	CMX		25	11	12	24	104	2	8
271552812 AM	CM	CMX		28	12	13	25	106	2	8
271553214 AM	CM	CMX		32	14	15	28	111	2	8
271553616 AM	CM	CMX		36	16	17	31	133	3	8
271554018 AM	CM	CMX		40	18	19	36	140	3	8
271554520 AM	CM	CMX		45	20	20	37	143	3	8
271555022 AM	CM	CMX		50	22	25	46	177	4	8
271555624 AM	CM	CMX		56	24	27	49	182	4	8



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
27150	●	●	●	○	○	●	●
27155	●	●	●	○	○	●	●

● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended

WWW.UOP.IT

97

HSS-PM
HSS-PM Line

Serie/Series
27150

Frese per scanalature a T
T-slot cutters

27155

Frese per scanalature a T
T-slot cutters

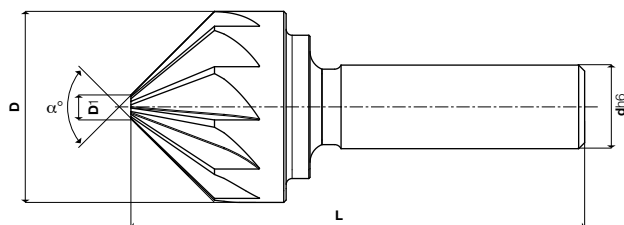
Z8÷10
Z4÷8


Serie/Series
27505

Frese coniche a svasare
Countersinks



Z5÷11



COATING

Skin

N

UNI 6847
DIN
334-335
ISO

Cod. Art.	M-TK (HSS-E)	COATED	D	D1	α°	L	dh6	Z
275051060 AM	AMX	AMX	6,3	1,6	60	45	5	5
275051080 AM	AMX	AMX	8,4	2	60	50	6	5
275051120 AM	AMX	AMX	12,5	2	60	50	8	5
275051160 AM	AMX	AMX	16	3,2	60	60	10	7
275051200 AM	AMX	AMX	20	5	60	63	10	7
275051250 AM	AMX	AMX	25	5	60	72	10	9
275051300 AM	AMX	AMX	30	7	60	80	12	9
275051350 AM	AMX	AMX	35	7	60	85	12	9
275051500 AM	AMX	AMX	50	10	60	100	16	11
275052060 AM	AMX	AMX	6,3	1,6	90	45	5	5
275052080 AM	AMX	AMX	8,4	2	90	50	6	5
275052120 AM	AMX	AMX	12,5	2	90	48	8	5
275052160 AM	AMX	AMX	16	3,2	90	56	10	7
275052200 AM	AMX	AMX	20	5	90	60	10	7
275052250 AM	AMX	AMX	25	5	90	70	10	9
275052300 AM	AMX	AMX	30	7	90	78	12	9
275052450 AM	AMX	AMX	45	9	90	92	16	11

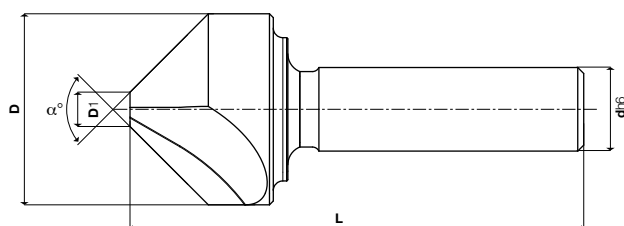


Serie/Series
27505

Frese coniche a svasare
Countersinks



Z1



COATING

Skin

N

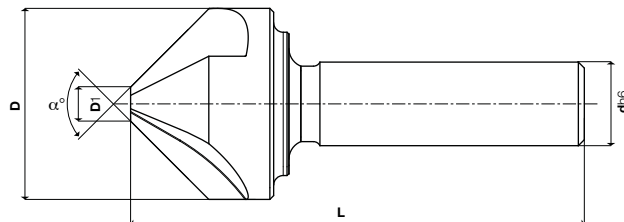
UNI 6847
DIN
334-335
ISO

Cod. Art.	M-TK (HSS-E)	COATED	D	D1	α°	L	dh6	Z
275051061 AM	AMX	AMX	6,3	1,6	60	45	5	1
275051081 AM	AMX	AMX	8,1	2	60	50	6	1
275051121 AM	AMX	AMX	12,5	2	60	50	8	1
275051161 AM	AMX	AMX	16	3,2	60	60	10	1
275051201 AM	AMX	AMX	20	5	60	63	10	1
275051251 AM	AMX	AMX	25	5	60	72	10	1
275051301 AM	AMX	AMX	30	7	60	80	12	1
275051351 AM	AMX	AMX	35	7	60	85	12	1
275051501 AM	AMX	AMX	50	10	60	100	16	1
275052061 AM	AMX	AMX	6,3	1,6	90	45	5	1
275052081 AM	AMX	AMX	8,4	2	90	50	6	1
275052121 AM	AMX	AMX	12,5	2	90	48	8	1
275052161 AM	AMX	AMX	16	3,2	90	56	10	1
275052201 AM	AMX	AMX	20	5	90	60	10	1
275052251 AM	AMX	AMX	25	5	90	70	10	1
275052301 AM	AMX	AMX	30	7	90	78	12	1
275052451 AM	AMX	AMX	45	9	90	92	16	1



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
27505	●	●	●	○	○	●	●
27505	●	●	●	○	○	●	●



COATING

Skin

N

UNI 6847
DIN
334-335
ISO

HSS-PM
HSS-PM Line

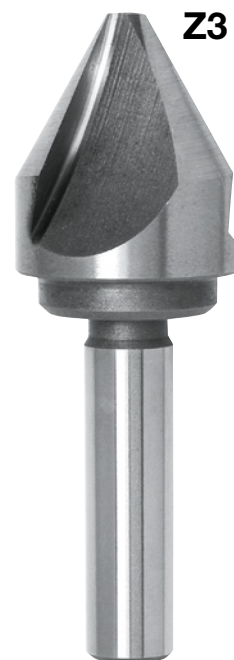
Serie/Series
27505

Frese coniche a svasare
Countersinks

Cod. Art.	M-TK (HSS-E)	COATED	D	D1	α°	L	dh6	Z
275051063 AM	AMX		6,3	1,6	60	45	5	3
275051083 AM	AMX		8,4	2	60	50	6	3
275051123 AM	AMX		12,5	2	60	50	8	3
275051163 AM	AMX		16	3,2	60	60	10	3
275051203 AM	AMX		20	5	60	63	10	3
275051253 AM	AMX		25	5	60	72	10	3
275051303 AM	AMX		30	7	60	80	12	3
275051353 AM	AMX		35	7	60	85	12	3
275051503 AM	AMX		50	10	60	100	16	3
275052063 AM	AMX		6,3	1,6	90	45	5	3
275052083 AM	AMX		8,4	2	90	50	6	3
275052123 AM	AMX		12,5	2	90	48	8	3
275052163 AM	AMX		16	3,2	90	56	10	3
275052203 AM	AMX		20	5	90	60	10	3
275052253 AM	AMX		25	5	90	70	10	3
275052303 AM	AMX		30	7	90	78	12	3
275052453 AM	AMX		45	9	90	92	16	3
275053103 AM	AMX		10,5	1,6	120	50	8	3
275053123 AM	AMX		12,5	1,8	120	60	8	3
275053163 AM	AMX		16,5	2,2	120	65	8	3
275053203 AM	AMX		20,5	2,4	120	65	10	3
275053253 AM	AMX		25	2,7	120	70	10	3



Z3



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
27505	●	●	●	○	○	●	●

● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended

WWW.UOP.IT

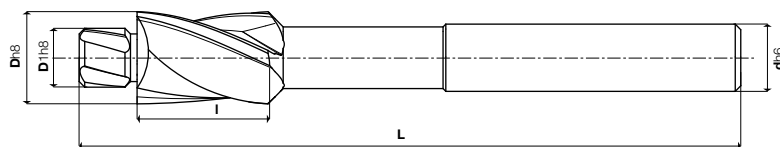
99

Serie/Series
28105

Frese per sedi di viti
Counterbores

28105

Frese per sedi di viti
Counterbores



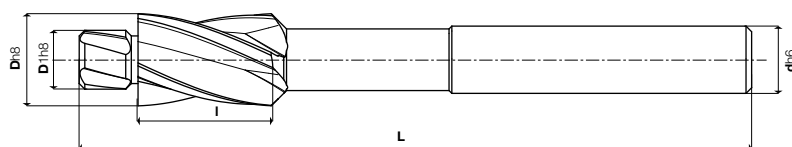
COATING

Skin

N

UNI 6841

Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	SCREW	Dh8	D1h8	I	L	dh6	Z
281050302 AM		CM	CMX	M3	5,9	3,2	12	70	6	2
281050402 AM		CM	CMX	M4	7,4	4,3	12	70	8	2
281050502 AM		CM	CMX	M5	9,4	5,3	14	90	10	2
281050602 AM		CM	CMX	M6	10,4	6,4	16	100	10	2
281050802 AM		CM	CMX	M8	13,5	8,4	20	115	12	2
281051002 AM		CM	CMX	M10	16,5	10,5	25	120	12	2
281051202 AM		CM	CMX	M12	19	13	25	120	16	2
281051402 AM		CM	CMX	M14	23	15	30	130	16	2
281051602 AM		CM	CMX	M16	25	17	35	155	20	2
281051802 AM		CM	CMX	M18	28	19	40	160	20	2
281052002 AM		CM	CMX	M20	31	21	50	180	20	2
281052202 AM		CM	CMX	M22	34	23	50	185	22	2
281052402 AM		CM	CMX	M24	37	25	50	200	22	2



COATING

Skin

N

UNI 6841

Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	SCREW	Dh8	D1h8	I	L	dh6	Z
281050304 AM	CM	CMX	M3	5,9	3,2	12	70	6	4	
281050404 AM	CM	CMX	M4	7,4	4,3	12	70	8	4	
281050504 AM	CM	CMX	M5	9,4	5,3	14	90	10	4	
281050604 AM	CM	CMX	M6	10,4	6,4	16	100	10	4	
281050804 AM	CM	CMX	M8	13,5	8,4	20	115	12	4	
281051004 AM	CM	CMX	M10	16,5	10,5	25	120	12	4	
281051204 AM	CM	CMX	M12	19	13	25	120	16	4	
281051404 AM	CM	CMX	M14	23	15	30	130	16	4	
281051604 AM	CM	CMX	M16	25	17	35	155	20	4	
281051804 AM	CM	CMX	M18	28	19	40	160	20	4	
281052004 AM	CM	CMX	M20	31	21	50	180	20	4	
281052204 AM	CM	CMX	M22	34	23	50	185	22	4	
281052404 AM	CM	CMX	M24	37	25	50	200	22	4	



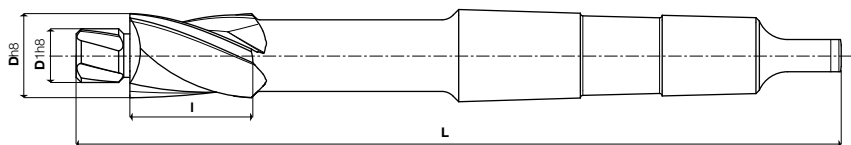
MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
28105	●	●	●	○	○	●	●
28105	●	●	●	○	○	●	●

● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended



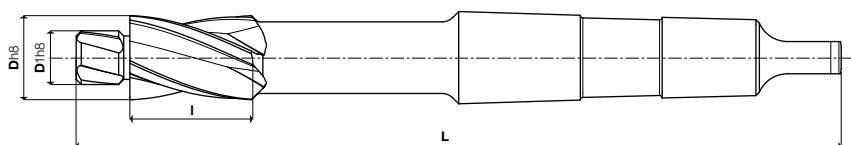
COATING

Skin

N

UNI 6842

Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	SCREW	Dh8	D1h8	I	L	MORSE TAPER	Z
281500302 AM		CM	CMX	M3	5,9	3,2	12	105	1	2
281500402 AM		CM	CMX	M4	7,4	4,3	12	105	1	2
281500502 AM		CM	CMX	M5	9,4	5,3	13	118	1	2
281500602 AM		CM	CMX	M6	10,4	6,4	16	125	1	2
281500802 AM		CM	CMX	M8	13,5	8,4	20	140	1	2
281501002 AM		CM	CMX	M10	16,5	10,5	25	160	2	2
281501202 AM		CM	CMX	M12	19	13	25	160	2	2
281501402 AM		CM	CMX	M14	23	15	32	170	2	2
281501602 AM		CM	CMX	M16	25	17	35	180	2	2
281501802 AM		CM	CMX	M18	28	19	40	180	2	2
281502002 AM		CM	CMX	M20	31	21	50	215	3	2
281502202 AM		CM	CMX	M22	34	23	50	220	3	2
281502402 AM		CM	CMX	M24	37	25	50	230	3	2



COATING

Skin

N

UNI 6842

Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	SCREW	Dh8	D1h8	I	L	MORSE TAPER	Z
281500304 AM		CM	CMX	M3	5,9	3,2	12	105	1	4
281500404 AM		CM	CMX	M4	7,4	4,3	12	105	1	4
281500504 AM		CM	CMX	M5	9,4	5,3	13	118	1	4
281500604 AM		CM	CMX	M6	10,4	6,4	16	125	1	4
281500804 AM		CM	CMX	M8	13,5	8,4	20	140	1	4
281501004 AM		CM	CMX	M10	16,5	10,5	25	160	2	4
281501204 AM		CM	CMX	M12	19	13	25	160	2	4
281501404 AM		CM	CMX	M14	23	15	32	170	2	4
281501604 AM		CM	CMX	M16	25	17	35	180	2	4
281501804 AM		CM	CMX	M18	28	19	40	180	2	4
281502004 AM		CM	CMX	M20	31	21	50	215	3	4
281502204 AM		CM	CMX	M22	34	23	50	220	3	4
281502404 AM		CM	CMX	M24	37	25	50	230	3	4



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie	TITANIO	HRSA	ACCIAI	MATERIALI	LEGHE	ACCIAI	GHISE
series	TITANIUM	HRSA	INOSSIDABILI	NON FERROSI	LEGGERE	STEELS	CAST IRON
			STAINLESS	MATERIALS	LIGHT		
			STEELS		ALLOYS		
28150	●	●	●	○	○	●	●
28150	●	●	●	○	○	●	●

● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended

WWW.UOP.IT

101

HSS-PM
HSS-PM Line

Serie/Series
28150

Frese per sedi di viti
Counterbores

28150

Frese per sedi di viti
Counterbores

Z2

Z4

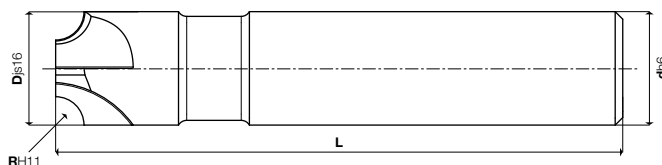
Cono Morse
Morse Taper

Serie/Series 28150

Serie/Series 28150

Serie/Series
28505

Frese di forma ad un quarto di cerchio concavo
Corner-rounding cutters



COATING
Skin

W
A RICHIESTA
ON REQUEST

F
A RICHIESTA
ON REQUEST

N

UNI 8264
DIN 6518A
ISO

Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	RH11	Djs16	L	dh6	Z
285050100 AM		CM	CMX	1	10	60	10	4
285050150 AM		CM	CMX	1,5	10	60	10	4
285050200 AM		CM	CMX	2	10	60	10	4
285050250 AM		CM	CMX	2,5	10	60	10	4
285050300 AM		CM	CMX	3	12	60	12	4
285050400 AM		CM	CMX	4	15	60	12	4
285050500 AM		CM	CMX	5	18	70	16	4
285050600 AM		CM	CMX	6	21	70	16	4
285050700 AM		CM	CMX	7	24	70	16	4
285050800 AM		CM	CMX	8	24	70	16	4
285050900 AM		CM	CMX	9	28	85	20	4
285050901 AM		CM	CMX	9	28	85	25	4
285051000 AM		CM	CMX	10	28	85	20	4
285051001 AM		CM	CMX	10	28	85	25	4
285051100 AM		CM	CMX	11	35	90	20	4
285051101 AM		CM	CMX	11	35	90	25	4
285051200 AM		CM	CMX	12	35	100	20	4
285051201 AM		CM	CMX	12	35	100	25	4
285051250 AM		CM	CMX	12,5	35	100	20	4
285051251 AM		CM	CMX	12,5	35	100	25	4
285051300 AM		CM	CMX	13	42	100	25	4
285051400 AM		CM	CMX	14	42	100	25	4
285051500 AM		CM	CMX	15	48	105	25	5
285051600 AM		CM	CMX	16	48	105	25	5
285051800 AM		CM	CMX	18	52	115	32	5
285052000 AM		CM	CMX	20	60	115	32	6

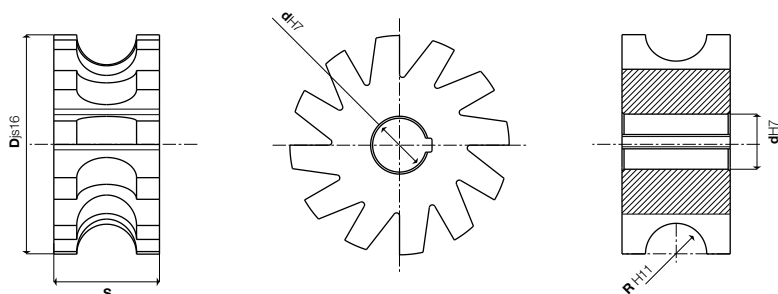


Z4÷6



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie	TITANIO	HRSA	ACCIAI INOSSIDABILI	MATERIALI NON FERROSI	LEGHE LEGGERE	ACCIAI	GHISE
series	TITANIUM	HRSA	STAINLESS STEELS	NON FERROUS MATERIALS	LIGHT ALLOYS	STEELS	CAST IRON
28505	●	●	●	○	○	●	●



COATING

Skin
N

UNI 4499
DIN
ISO

HSS-PM
HSS-PM Line

Serie/Series
29105

Frese a profilo costante concavo
Form relieved concave milling cutters

Cod. Art.	M-TK (HSS-E)	COATED	R H11	Djs16	S	dH7	Z
291050100 AM	AMX		1	56	8	22	14
291050150 AM	AMX		1,5	56	8	22	14
291050200 AM	AMX		2	56	9	22	14
291050250 AM	AMX		2,5	56	10	22	14
291050300 AM	AMX		3	63	12	22	14
291050350 AM	AMX		3,5	63	14	22	14
291050400 AM	AMX		4	63	16	22	14
291050450 AM	AMX		4,5	63	18	22	12
291050500 AM	AMX		5	63	20	22	12
291050550 AM	AMX		5,5	63	22	22	12
291050600 AM	AMX		6	70	24	22	12
291050650 AM	AMX		6,5	70	26	22	12
291050700 AM	AMX		7	70	28	22	12
291050750 AM	AMX		7,5	80	30	27	12
291050800 AM	AMX		8	80	32	27	12
291050850 AM	AMX		8,5	80	34	27	12
291050900 AM	AMX		9	90	36	27	12
291050950 AM	AMX		9,5	90	38	27	12
291051000 AM	AMX		10	90	40	27	12
291051100 AM	AMX		11	100	42	27	12
291051200 AM	AMX		12	100	44	27	12
291051250 AM	AMX		12,5	100	46	27	12
291051300 AM	AMX		13	100	48	27	12
291051400 AM	AMX		14	100	50	27	12
291051500 AM	AMX		15	110	53	32	12
291051600 AM	AMX		16	110	56	32	12
291051700 AM	AMX		17	110	59	32	12
291051800 AM	AMX		18	125	62	32	12
291051900 AM	AMX		19	125	66	32	12
291052000 AM	AMX		20	125	70	32	12

Z12÷14


MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
29105	●	●	●	○	○	●	●

● consigliata/recommended

● accettabile/acceptable

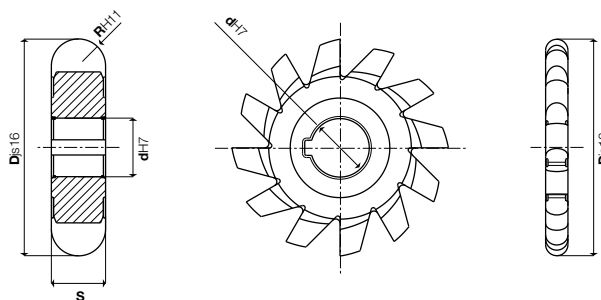
○ non consigliata/not recommended

WWW.UOP.IT

103

Serie/Series
29110

Frese a profilo costante convesso
Form relieved convex milling cutters



COATING

Skin

N

UNI 4498
DIN 856
ISO

Z12÷14

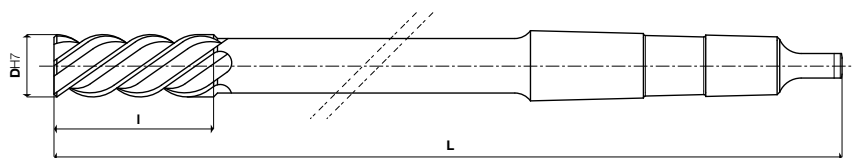


Cod. Art.	M-TK (HSS-E)	COATED	RH11	Djs16	S	dH7	Z
291100100 AM	AMX		1	50	2	22	14
291100150 AM	AMX		1,5	50	3	22	14
291100200 AM	AMX		2	50	4	22	14
291100250 AM	AMX		2,5	56	5	22	14
291100300 AM	AMX		3	56	6	22	14
291100350 AM	AMX		3,5	63	7	22	14
291100400 AM	AMX		4	63	8	22	14
291100450 AM	AMX		4,5	63	9	22	14
291100500 AM	AMX		5	63	10	22	14
291100550 AM	AMX		5,5	70	11	22	14
291100600 AM	AMX		6	70	12	22	14
291100650 AM	AMX		6,5	70	13	22	14
291100700 AM	AMX		7	70	14	22	14
291100750 AM	AMX		7,5	70	15	22	12
291100800 AM	AMX		8	70	16	22	12
291100850 AM	AMX		8,5	90	17	27	12
291100900 AM	AMX		9	90	18	27	12
291100950 AM	AMX		9,5	90	19	27	12
291101000 AM	AMX		10	90	20	27	12
291101100 AM	AMX		11	90	22	27	12
291101200 AM	AMX		12	90	24	27	12
291101250 AM	AMX		12,5	100	25	27	12
291101300 AM	AMX		13	100	26	27	12
291101400 AM	AMX		14	100	28	27	12
291101500 AM	AMX		15	110	30	32	12
291101600 AM	AMX		16	110	32	32	12
291101700 AM	AMX		17	110	34	32	12
291101800 AM	AMX		18	110	36	32	12
291101900 AM	AMX		19	125	38	32	12
291102000 AM	AMX		20	125	40	32	12



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie	TITANIO	HRSA	ACCIAI	MATERIALI	LEGHE	ACCIAI	GHISE
series	TITANIUM	HRSA	INOSSIDABILI	NON FERROSI	LEGGERE	STEELS	CAST IRON
29110	●	●	●	○	○	●	●



COATING

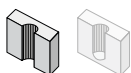
Skin

 λ° S
45

N

UNI
DIN208C
ISO 521

Cod. Art.	X-85 (PM Co 8,5%)	COATED	DH7	I	L	MORSE TAPER	Z
301500500	CM	CMX	5	23	133	1	3
301500600	CM	CMX	6	26	138	1	3
301500700	CM	CMX	7	31	150	1	3
301500800	CM	CMX	8	33	156	1	3
301500900	CM	CMX	9	36	162	1	3
301501000	CM	CMX	10	38	168	1	4
301501100	CM	CMX	11	41	175	1	4
301501200	CM	CMX	12	44	182	1	4
301501300	CM	CMX	13	44	182	1	4
301501400	CM	CMX	14	47	189	1	4
301501500	CM	CMX	15	50	204	2	4
301501600	CM	CMX	16	52	210	2	4
301501700	CM	CMX	17	54	214	2	4
301501800	CM	CMX	18	56	219	2	4
301501900	CM	CMX	19	58	223	2	4
301502000	CM	CMX	20	60	228	2	4
301502100	CM	CMX	21	62	232	2	4
301502200	CM	CMX	22	64	237	2	4
301502300	CM	CMX	23	66	241	2	4
301502400	CM	CMX	24	68	268	3	4
301502500	CM	CMX	25	68	268	3	5
301502600	CM	CMX	26	70	273	3	5
301502700	CM	CMX	27	71	277	3	5
301502800	CM	CMX	28	71	277	3	5
301502900	CM	CMX	29	73	281	3	5
301503000	CM	CMX	30	73	281	3	5
301503100	CM	CMX	31	75	285	3	5
301503200	CM	CMX	32	77	317	4	5
301503300	CM	CMX	33	77	317	4	5
301503400	CM	CMX	34	78	321	4	5
301503500	CM	CMX	35	78	321	4	6
301503600	CM	CMX	36	79	325	4	6
301503700	CM	CMX	37	79	325	4	6
301503800	CM	CMX	38	81	329	4	6
301503900	CM	CMX	39	81	329	4	6
301504000	CM	CMX	40	81	329	4	6


HSS-PM
HSS-PM Line

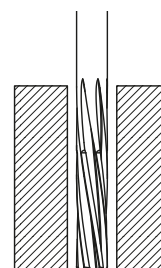
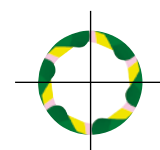
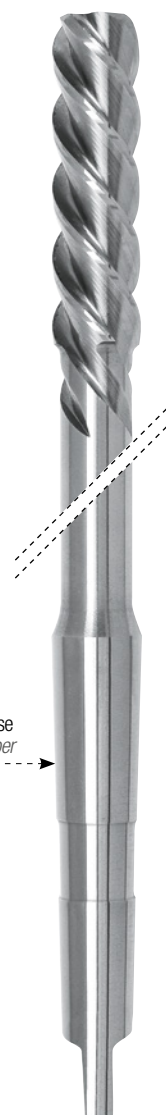
Serie/Series
30150

Alesatori a macchina
Machine reamers

Diametri intermedi e tolleranze
diverse da H7 si forniscono a richiesta

In-between diameters and tolerances
different from H7 are supplied on request

Z3÷6


Cono Morse
Morse Taper


MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie
series
30150

TITANIO
TITANIUM

HRSA
HRSA

ACCIAI
INOSSIDABILI
STAINLESS
STEELS

MATERIALI
NON FERROSI
NON FERROUS
MATERIALS

LEGHE
LEGGERE
LIGHT ALLOYS

ACCIAI
STEELS

GHISE
CAST IRON

● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended

WWW.UOP.IT

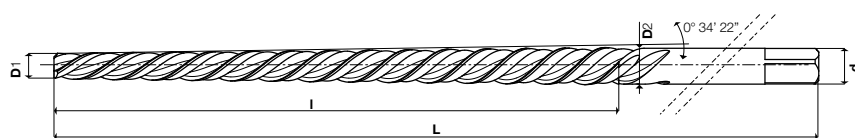
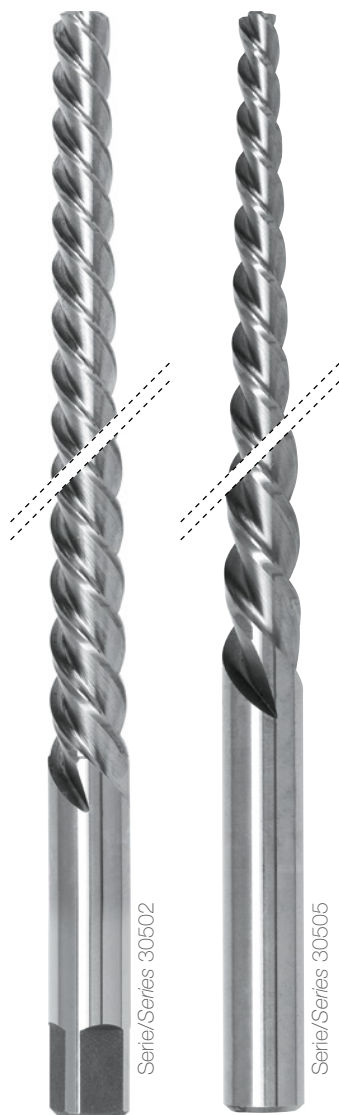
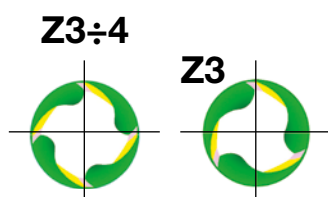
105

Serie/Series 30502

Alesatori conici, conicità 2%
Tapered reamers, taper 2%

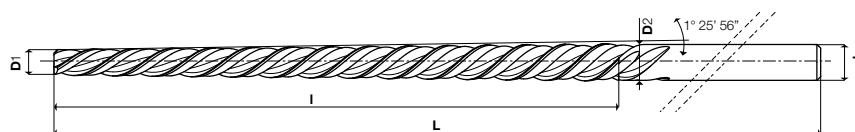
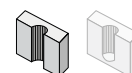
30505

Alesatori conici, conicità 5%
Tapered reamers, taper 5%



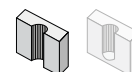
COATING Skin		$\lambda^\circ s$ 45	N	UNI 6857 DIN ISO
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Cod. Art.	X-85 (PM Co 8,5%)	COATED	D _{nom}	D ₁	D ₂	I	L	d	Z
305020200 CM	CMX		2	1,9	2,86	48	65	3,5	3
305020250 CM	CMX		2,5	2,4	3,46	53	75	3,5	3
305020300 CM	CMX		3	2,9	4,16	63	100	4	3
305020400 CM	CMX		4	3,9	5,40	75	115	5	3
305020500 CM	CMX		5	4,9	6,64	87	135	6,5	3
305020600 CM	CMX		6	5,9	8,28	119	170	8,5	3
305020800 CM	CMX		8	7,9	10,72	141	205	10,5	3
305021000 CM	CMX		10	9,9	13,16	163	230	14	4
305021200 CM	CMX		12	11,86	15,74	194	275	18	4
305021600 CM	CMX		16	15,84	21,12	264	355	18	4
305022000 CM	CMX		20	19,8	25,20	270	370	25	4



COATING Skin	$\lambda^\circ s$ 45	W A RICHIESTA ON REQUEST	F A RICHIESTA ON REQUEST	N	QUALITY STANDARD UOP
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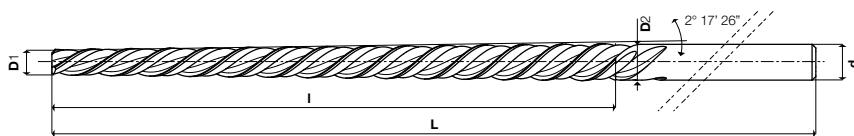
Cod. Art.	X-85 (PM Co 8,5%)	COATED	D _{nom}	D ₁	D ₂	I	L	d	Z
305050600 CM	CMX		6	3	6	60	110	6	3
305050800 CM	CMX		8	4	8	80	130	8	3
305051000 CM	CMX		10	5	10	100	155	10	3
305051200 CM	CMX		12	6	12	120	180	12	3



MATERIALI LAVORABILI / WORKPIECE MATERIALS

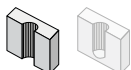
serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
30502	○	○	●	○	○	●	●
30505	○	○	●	○	○	●	●

● consigliata/recommended ● accettabile/acceptable ○ non consigliata/not recommended



COATING Skin	λ° s 45	W A RICHIESTA ON REQUEST	F A RICHIESTA ON REQUEST	N	QUALITY STANDARD UOP
------------------------	-------------------------	--------------------------------	--------------------------------	---	----------------------------

Cod. Art.	X-85 (PM Co 8,5%)	COATED	Dnom	D1	D2	I	L	d	Z
305080600 CM	CMX		6	2	6	50	100	6	3
305080800 CM	CMX		8	3	8	62,5	110	8	3
305081000 CM	CMX		10	4	10	75	130	10	3
305081200 CM	CMX		12	4,8	12	90	150	12	3



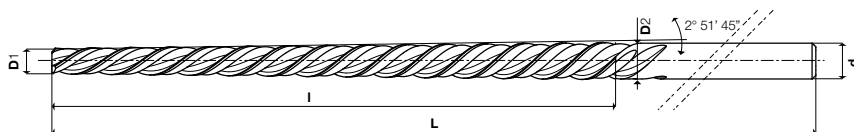
HSS-PM HSS-PM Line

Serie/Series
30508

Alesatori conici, conicità 8%
Tapered reamers, taper 8%

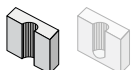
30510

Alesatori conici, conicità 10%
Tapered reamers, taper 10%



COATING Skin	λ° s 45	W A RICHIESTA ON REQUEST	F A RICHIESTA ON REQUEST	N	QUALITY STANDARD UOP
------------------------	-------------------------	--------------------------------	--------------------------------	---	----------------------------

Cod. Art.	X-85 (PM Co 8,5%)	COATED	Dnom	D1	D2	I	L	d	Z
305100600 CM	CMX		6	2	6	40	90	6	3
305100800 CM	CMX		8	3	8	50	100	8	3
305101000 CM	CMX		10	4	10	60	115	10	3
305101200 CM	CMX		12	5	12	70	130	12	3



Z3



Z3



Serie/Series 30508

Serie/Series 30510



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
30508	○	○	●	○	○	●	●
30510	○	○	●	○	○	●	●

● consigliata/recommended

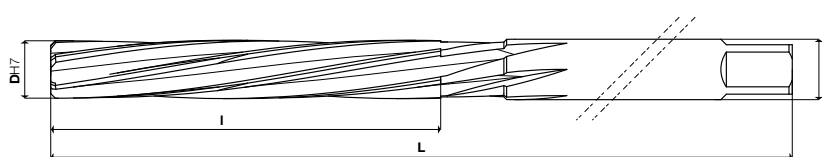
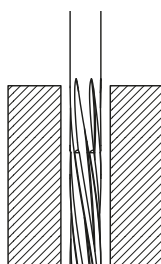
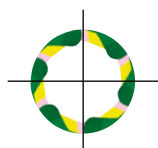
● accettabile/acceptable

○ non consigliata/not recommended

Serie/Series
31105

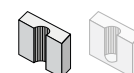
Alesatori fissi a mano
Tapered reamers

Z4÷12



UNI 6852
DIN 206B
ISO 236/1

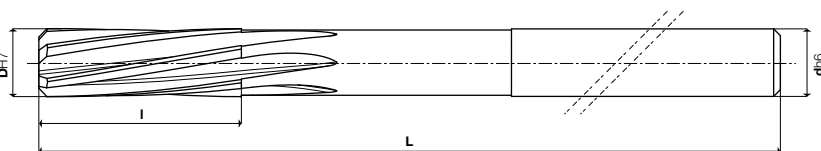
Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	DH7	I	L	dh6	Z
311050300 AM	CM	CMX		3	31	62	3	4
311050400 AM	CM	CMX		4	38	76	4	5
311050500 AM	CM	CMX		5	44	87	5	5
311050600 AM	CM	CMX		6	47	93	6	5
311050700 AM	CM	CMX		7	54	107	7	5
311050800 AM	CM	CMX		8	58	115	8	6
311050900 AM	CM	CMX		9	62	124	9	6
311051000 AM	CM	CMX		10	66	133	10	6
311051100 AM	CM	CMX		11	71	142	11	7
311051200 AM	CM	CMX		12	76	152	12	7
311051300 AM	CM	CMX		13	76	152	13	7
311051400 AM	CM	CMX		14	81	163	14	7
311051500 AM	CM	CMX		15	81	163	15	7
311051600 AM	CM	CMX		16	87	175	16	7
311051700 AM	CM	CMX		17	87	175	17	7
311051800 AM	CM	CMX		18	93	188	18	8
311051900 AM	CM	CMX		19	93	188	19	8
311052000 AM	CM	CMX		20	100	201	20	8
311052100 AM	-	-		21	100	201	21	8
311052200 AM	-	-		22	107	215	22	8
311052300 AM	-	-		23	107	215	23	8
311052400 AM	-	-		24	115	231	24	8
311052500 AM	-	-		25	115	231	25	8
311052600 AM	-	-		26	115	231	26	8
311052700 AM	-	-		27	124	247	27	10
311052800 AM	-	-		28	124	247	28	10
311052900 AM	-	-		29	124	247	29	10
311053000 AM	-	-		30	124	247	30	10
311053200 AM	-	-		32	133	265	32	10
311053400 AM	-	-		34	142	284	34	10
311053500 AM	-	-		35	142	284	35	10
311053600 AM	-	-		36	142	284	36	10
311053800 AM	-	-		38	152	305	38	10
311054000 AM	-	-		40	152	305	40	10
311054500 AM	-	-		45	163	326	45	12
311055000 AM	-	-		50	174	347	50	12



Diametri intermedi e tolleranze diverse da H7 si forniscono a richiesta
In-between diameters and tolerances different from H7 are supplied on request

MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
31105	○	○	●	○	○	●	●



Serie/Series 32105

Alesatori a macchina
Machine reamers

COATING

Skin

W

A RICHIESTA
ON REQUEST

F

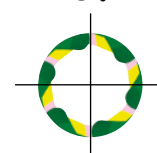
A RICHIESTA
ON REQUEST

N

UNI 6853
DIN 212D
ISO 521

Cod. Art.	X-85 (PM Co 8,5%)	COATED	DH7	I	L	dh6	λ°	Z
321050100 CM	CMX	1	5	37	1	30	3	
321050110 CM	CMX	1,1	7	40	1,1	30	3	
321050120 CM	CMX	1,2	7	40	1,2	30	3	
321050130 CM	CMX	1,3	7	40	1,3	30	3	
321050140 CM	CMX	1,4	8	40	1,4	30	3	
321050150 CM	CMX	1,5	8	40	1,5	30	3	
321050160 CM	CMX	1,6	9	43	1,6	30	3	
321050170 CM	CMX	1,7	9	43	1,7	30	3	
321050180 CM	CMX	1,8	10	46	1,8	30	3	
321050190 CM	CMX	1,9	10	46	1,9	30	3	
321050200 CM	CMX	2	11	49	2	10	5	
321050210 CM	CMX	2,1	11	49	2,1	10	5	
321050220 CM	CMX	2,2	12	53	2,2	10	5	
321050230 CM	CMX	2,3	12	53	2,3	10	5	
321050240 CM	CMX	2,4	14	57	2,4	10	5	
321050250 CM	CMX	2,5	14	57	2,5	10	5	
321050260 CM	CMX	2,6	14	57	2,6	10	5	
321050270 CM	CMX	2,7	15	61	2,7	10	5	
321050280 CM	CMX	2,8	15	61	2,8	10	5	
321050290 CM	CMX	2,9	15	61	2,9	10	5	
321050300 CM	CMX	3	15	61	3	10	5	
321050310 CM	CMX	3,1	16	65	3,1	10	5	
321050320 CM	CMX	3,2	16	65	3,2	10	5	
321050330 CM	CMX	3,3	16	65	3,3	10	5	
321050340 CM	CMX	3,4	18	70	3,4	10	5	
321050350 CM	CMX	3,5	18	70	3,5	10	5	
321050360 CM	CMX	3,6	18	70	3,6	10	5	
321050370 CM	CMX	3,7	18	70	3,7	10	5	
321050380 CM	CMX	3,8	19	75	3,8	10	5	
321050390 CM	CMX	3,9	19	75	3,9	10	5	
321050400 CM	CMX	4	19	75	4	10	5	
321050410 CM	CMX	4,1	19	75	4,1	10	5	
321050420 CM	CMX	4,2	19	75	4,2	10	5	
321050430 CM	CMX	4,3	21	80	4,3	10	5	
321050440 CM	CMX	4,4	21	80	4,4	10	5	
321050450 CM	CMX	4,5	21	80	4,5	10	5	
321050460 CM	CMX	4,6	21	80	4,6	10	5	
321050470 CM	CMX	4,7	21	80	4,7	10	5	
321050480 CM	CMX	4,8	23	86	4,8	10	5	
321050490 CM	CMX	4,9	23	86	4,9	10	5	
321050500 CM	CMX	5	23	86	5	10	5	
321050510 CM	CMX	5,1	23	86	5,1	10	5	
321050520 CM	CMX	5,2	23	86	5,2	10	5	
321050530 CM	CMX	5,3	26	93	5,3	10	5	
321050540 CM	CMX	5,4	26	93	5,4	10	5	
321050550 CM	CMX	5,5	26	93	5,5	10	6	
321050560 CM	CMX	5,6	26	93	5,6	10	6	
321050570 CM	CMX	5,7	26	93	5,7	10	6	
321050580 CM	CMX	5,8	26	93	5,8	10	6	
321050590 CM	CMX	5,9	26	93	5,9	10	6	
321050600 CM	CMX	6	26	93	6	10	6	

Z3÷7



→ continua alla pagina successiva / continued on next page

MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie
series
32105

TITANIO
TITANIUM

HRSA
HRSA

ACCIAI
INOSSIDABILI
STAINLESS
STEELS

MATERIALI
NON FERROSI
NON FERROUS
MATERIALS

LEGHE
LEGGERE
LIGHT ALLOYS

ACCIAI
STEELS

GHISE
CAST IRON

● consigliata/recommended

● accettabile/acceptable

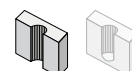
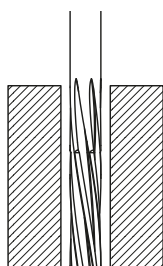
○ non consigliata/not recommended

Serie/Series
32105

Alesatori a macchina
Machine reamers

→ continuazione della pagina precedente / continuation of the previous page

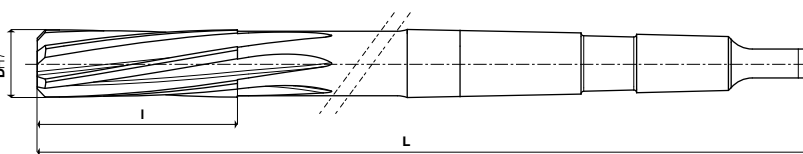
Cod. Art.	X-85 (PM Co 8,5%)	COATED	DH7	I	L	dh6	λ°	Z
321050610 CM	CMX		6,1	28	101	6,1	10	6
321050620 CM	CMX		6,2	28	101	6,2	10	6
321050630 CM	CMX		6,3	28	101	6,3	10	6
321050640 CM	CMX		6,4	28	101	6,4	10	6
321050650 CM	CMX		6,5	28	101	6,5	10	6
321050660 CM	CMX		6,6	28	101	6,6	10	6
321050670 CM	CMX		6,7	31	109	6,7	10	6
321050680 CM	CMX		6,8	31	109	6,8	10	6
321050690 CM	CMX		6,9	31	109	6,9	10	6
321050700 CM	CMX		7	31	109	7	10	6
321050710 CM	CMX		7,1	31	109	7,1	10	6
321050720 CM	CMX		7,2	31	109	7,2	10	6
321050730 CM	CMX		7,3	31	109	7,3	10	6
321050740 CM	CMX		7,4	31	109	7,4	10	6
321050750 CM	CMX		7,5	33	117	7,5	10	6
321050760 CM	CMX		7,6	33	117	7,6	10	6
321050770 CM	CMX		7,7	33	117	7,7	10	6
321050780 CM	CMX		7,8	33	117	7,8	10	6
321050790 CM	CMX		7,9	33	117	7,9	10	6
321050800 CM	CMX		8	33	117	8	10	6
321050810 CM	CMX		8,1	33	117	8,1	10	6
321050820 CM	CMX		8,2	33	117	8,2	10	6
321050830 CM	CMX		8,3	33	117	8,3	10	6
321050840 CM	CMX		8,4	33	117	8,4	10	6
321050850 CM	CMX		8,5	36	125	8,5	10	6
321050860 CM	CMX		8,6	36	125	8,6	10	6
321050870 CM	CMX		8,7	36	125	8,7	10	6
321050880 CM	CMX		8,8	36	125	8,8	10	6
321050890 CM	CMX		8,9	36	125	8,9	10	6
321050900 CM	CMX		9	36	125	9	10	6
321050910 CM	CMX		9,1	36	125	9,1	10	6
321050920 CM	CMX		9,2	36	125	9,2	10	6
321050930 CM	CMX		9,3	36	125	9,3	10	6
321050940 CM	CMX		9,4	36	125	9,4	10	6
321050950 CM	CMX		9,5	38	133	9,5	10	6
321050960 CM	CMX		9,6	38	133	9,6	10	6
321050970 CM	CMX		9,7	38	133	9,7	10	6
321050980 CM	CMX		9,8	38	133	9,8	10	6
321050990 CM	CMX		9,9	38	133	9,9	10	6
321051000 CM	CMX		10	38	133	10	10	6
321051050 CM	CMX		10,5	41	142	10,5	10	7
321051100 CM	CMX		11	41	142	11	10	7
321051150 CM	CMX		11,5	44	151	11,5	10	7
321051200 CM	CMX		12	44	151	12	10	7
321051250 CM	CMX		12,5	44	151	12,5	10	7
321051300 CM	CMX		13	44	151	13	10	7
321051350 CM	CMX		13,5	47	160	13,5	10	7
321051400 CM	CMX		14	47	160	14	10	7
321051450 CM	CMX		14,5	50	162	14,5	10	7
321051500 CM	CMX		15	50	162	15	10	7
321051550 CM	CMX		15,5	52	170	15,5	10	7
321051600 CM	CMX		16	52	170	16	10	7



Diametri intermedi e tolleranze diverse da H7 si forniscono a richiesta
In-between diameters and tolerances different from H7 are supplied on request

MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
32105	○	○	●	○	○	●	●



COATING

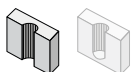
Skin

$\lambda^{\circ}s$
10

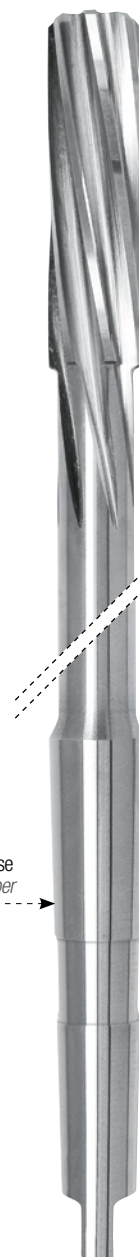
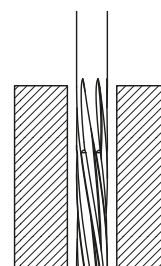
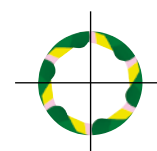
N

UNI 6854
DIN 208B
ISO 521

Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	DH7	I	L	MORSE TAPER	Z
321500500 AM		CM	CMX	5	23	133	1	5
321500600 AM		CM	CMX	6	26	138	1	6
321500700 AM		CM	CMX	7	31	150	1	6
321500800 AM		CM	CMX	8	33	156	1	6
321500900 AM		CM	CMX	9	36	162	1	6
321501000 AM		CM	CMX	10	38	168	1	6
321501100 AM		CM	CMX	11	41	175	1	7
321501200 AM		CM	CMX	12	44	182	1	7
321501300 AM		CM	CMX	13	44	182	1	7
321501400 AM		CM	CMX	14	47	189	1	7
321501500 AM		CM	CMX	15	50	204	2	7
321501600 AM		CM	CMX	16	52	210	2	7
321501700 AM		CM	CMX	17	54	214	2	7
321501800 AM		CM	CMX	18	56	219	2	8
321501900 AM		CM	CMX	19	58	223	2	8
321502000 AM		CM	CMX	20	60	228	2	8
321502100 AM		CM	CMX	21	62	232	2	8
321502200 AM		CM	CMX	22	64	237	2	8
321502300 AM		CM	CMX	23	66	241	2	8
321502400 AM		CM	CMX	24	68	268	3	8
321502500 AM		CM	CMX	25	68	268	3	8
321502600 AM		CM	CMX	26	70	273	3	8
321502700 AM		CM	CMX	27	71	277	3	10
321502800 AM		CM	CMX	28	71	277	3	10
321502900 AM		CM	CMX	29	73	281	3	10
321503000 AM		CM	CMX	30	73	281	3	10
321503100 AM		CM	CMX	31	75	285	3	10
321503200 AM		CM	CMX	32	77	317	4	10
321503300 AM		CM	CMX	33	77	317	4	10
321503400 AM		CM	CMX	34	78	321	4	10
321503500 AM		CM	CMX	35	78	321	4	10
321503600 AM		CM	CMX	36	79	325	4	10
321503700 AM		CM	CMX	37	79	325	4	10
321503800 AM		CM	CMX	38	81	329	4	10
321503900 AM		CM	CMX	39	81	329	4	10
321504000 AM		CM	CMX	40	81	329	4	10



Z5÷10



Cono Morse
Morse Taper

Diametri intermedi e tolleranze diverse da H7 si forniscono a richiesta
In-between diameters and tolerances different from H7 are supplied on request

MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
32150	○	○	●	○	○	●	●

● consigliata/recommended

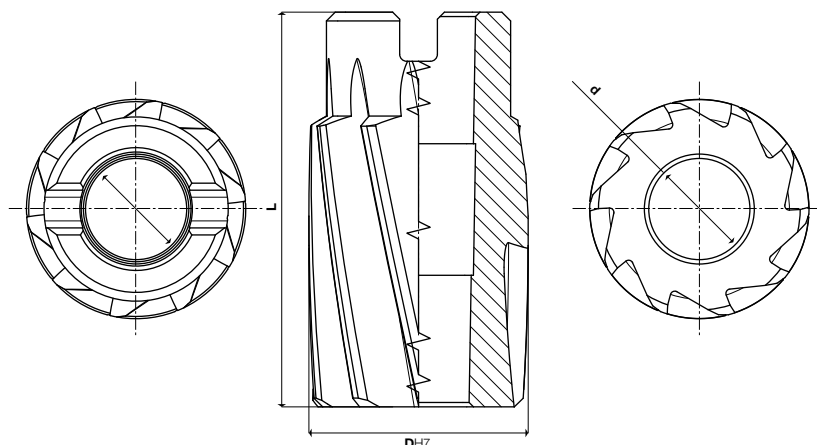
● accettabile/acceptable

○ non consigliata/not recommended

Serie/Series
33105

Alesatori a macchina tipo manicotto foro conico **1:30**
Shell reamers taper hole **1:30**

Diametri intermedi e tolleranze diverse da H7 si forniscono a richiesta
In-between diameters and tolerances different from H7 are supplied on request



COATING

Skin

λ° s
10

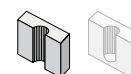
N

UNI 6855
DIN 219B
ISO 2402

Z8÷20



Cod. Art.	M-TK (HSS-E)	COATED	DH7	L	d	Z
331050200 AM		AMX	20	40	10	8
331050210 AM		AMX	21	40	10	8
331050220 AM		AMX	22	40	10	8
331050230 AM		AMX	23	40	10	8
331050240 AM		AMX	24	45	13	10
331050250 AM		AMX	25	45	13	10
331050260 AM		AMX	26	45	13	10
331050270 AM		AMX	27	45	13	10
331050280 AM		AMX	28	45	13	10
331050290 AM		AMX	29	45	13	10
331050300 AM		AMX	30	45	13	10
331050310 AM		AMX	31	50	16	10
331050320 AM		AMX	32	50	16	10
331050330 AM		AMX	33	50	16	10
331050340 AM		AMX	34	50	16	10
331050350 AM		AMX	35	50	16	10
331050360 AM		AMX	36	56	19	12
331050370 AM		AMX	37	56	19	12
331050380 AM		AMX	38	56	19	12
331050390 AM		AMX	39	56	19	12
331050400 AM		AMX	40	56	19	12
331050420 AM		AMX	42	56	19	12
331050440 AM		AMX	44	63	22	12
331050450 AM		AMX	45	63	22	12
331050460 AM		AMX	46	63	22	14
331050470 AM		AMX	47	63	22	14
331050480 AM		AMX	48	63	22	14
331050490 AM		AMX	49	63	22	14
331050500 AM		AMX	50	63	22	14
331050520 AM		AMX	52	71	27	14
331050550 AM		AMX	55	71	27	14
331050580 AM		AMX	58	71	27	14
331050600 AM		AMX	60	71	27	16
331050620 AM		AMX	62	80	32	16
331050650 AM		AMX	65	80	32	16
331050680 AM		AMX	68	80	32	16
331050700 AM		AMX	70	80	32	16
331050720 AM		AMX	72	90	40	16
331050750 AM		AMX	75	90	40	16
331050780 AM		AMX	78	90	40	16
331050800 AM		AMX	80	90	40	20
331050820 AM		AMX	82	90	40	20
331050850 AM		AMX	85	90	40	20
331050880 AM		AMX	88	100	50	20
331050900 AM		AMX	90	100	50	20
331050920 AM		AMX	92	100	50	20
331050950 AM		AMX	95	100	50	20
331050980 AM		AMX	98	100	50	20
331051000 AM		AMX	100	100	50	20



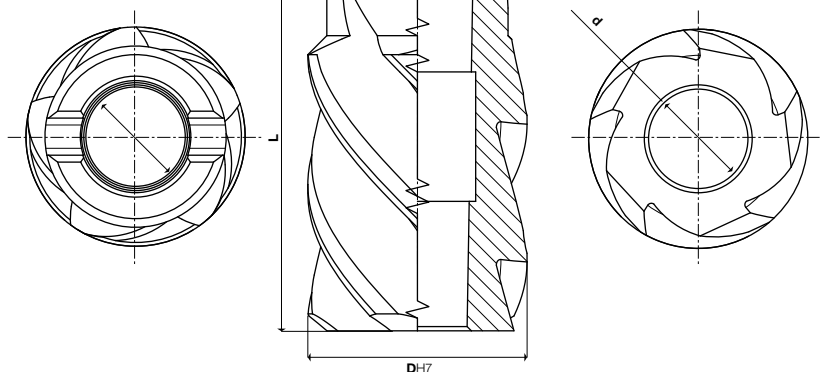
MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie	TITANIO	HRSA	ACCIAI INOSSIDABILI	MATERIALI NON FERROSI	LEGHE LEGGERE	ACCIAI	GHISE
series	TITANIUM	HRSA	STAINLESS STEELS	NON FERROUS MATERIALS	LIGHT ALLOYS	STEELS	CAST IRON
33105	○	○	●	○	○	●	●

Serie/Series 33105

Alesatori a macchina tipo manicotto foro conico **1:30**
Shell reamers taper hole **1:30**

Diametri intermedi e tolleranze diverse da H7 si forniscono a richiesta
In-between diameters and tolerances different from H7 are supplied on request



COATING

Skin

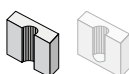
$\lambda^{\circ}s$
45

N

UNI 6855
DIN 219B
ISO 2402

Cod. Art.	M-TK (HSS-E)	COATED	DH7	L	d	Z
331050201	AM	AMX	20	40	10	5
331050211	AM	AMX	21	40	10	5
331050221	AM	AMX	22	40	10	5
331050231	AM	AMX	23	40	10	5
331050241	AM	AMX	24	45	13	5
331050251	AM	AMX	25	45	13	5
331050261	AM	AMX	26	45	13	5
331050271	AM	AMX	27	45	13	5
331050281	AM	AMX	28	45	13	5
331050291	AM	AMX	29	45	13	6
331050301	AM	AMX	30	45	13	6
331050311	AM	AMX	31	50	16	6
331050321	AM	AMX	32	50	16	6
331050331	AM	AMX	33	50	16	7
331050341	AM	AMX	34	50	16	7
331050351	AM	AMX	35	50	16	7
331050361	AM	AMX	36	56	19	8
331050371	AM	AMX	37	56	19	8
331050381	AM	AMX	38	56	19	8
331050391	AM	AMX	39	56	19	8
331050401	AM	AMX	40	56	19	8
331050421	AM	AMX	42	56	19	8
331050441	AM	AMX	44	63	22	8
331050451	AM	AMX	45	63	22	8
331050461	AM	AMX	46	63	22	8
331050471	AM	AMX	47	63	22	8
331050481	AM	AMX	48	63	22	8
331050491	AM	AMX	49	63	22	8
331050501	AM	AMX	50	63	22	8
331050521	AM	AMX	52	71	27	8
331050551	AM	AMX	55	71	27	8
331050581	AM	AMX	58	71	27	10
331050601	AM	AMX	60	71	27	10
331050621	AM	AMX	62	80	32	10
331050651	AM	AMX	65	80	32	10
331050681	AM	AMX	68	80	32	10
331050701	AM	AMX	70	80	32	10
331050721	AM	AMX	72	90	40	10
331050751	AM	AMX	75	90	40	10
331050781	AM	AMX	78	90	40	10
331050801	AM	AMX	80	90	40	12
331050821	AM	AMX	82	90	40	12
331050851	AM	AMX	85	90	40	12
331050881	AM	AMX	88	100	50	12
331050901	AM	AMX	90	100	50	14
331050921	AM	AMX	92	100	50	14
331050951	AM	AMX	95	100	50	14
331050981	AM	AMX	98	100	50	14
331051001	AM	AMX	100	100	50	14

Z5÷14



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie	TITANIO	HRSA	ACCIAI INOSSIDABILI	MATERIALI NON FERROSI	LEGHE LEGGERE	ACCIAI	GHISE
series	TITANIUM	HRSA	STAINLESS STEELS	NON FERROUS MATERIALS	LIGHT ALLOYS	STEELS	CAST IRON
33105	○	○	○	○	○	●	●

● consigliata/recommended

● accettabile/acceptable

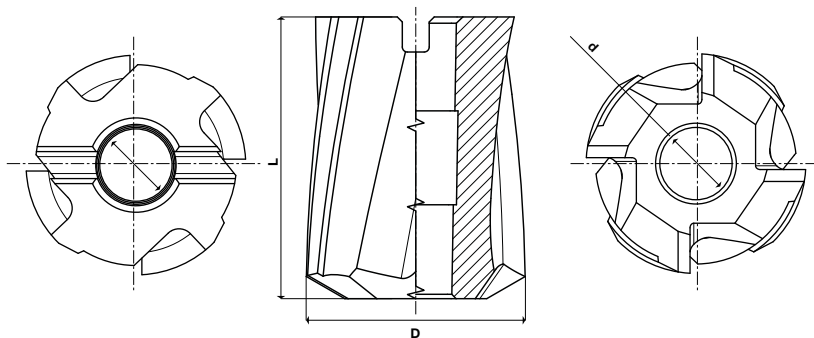
○ non consigliata/not recommended

Serie/Series 34105

Allargatori a manicotto foro conico **1:30**
Shell drills taper hole **1:30**

*Il diametro è nominale ed è ridotto
in rapporto alle dimensioni precisamente:
da 20÷30: -0,3 mm
da 30÷60: -0,4 mm
da 62÷100: -0,5 mm

*Dimension D is reduced as follows:
from 20÷30: -0,3 mm
from 30÷60: -0,4 mm
from 62÷100: -0,5 mm



COATING
Skin

$\lambda^{\circ}\text{s}$
15

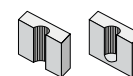
N

UNI 6840
DIN 222
ISO 3314

Z4

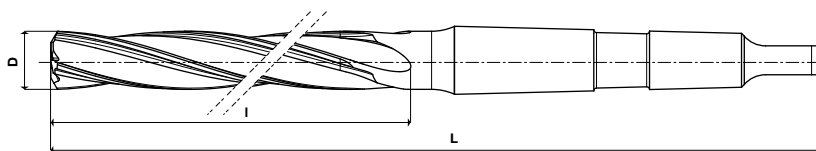


Cod. Art.	M-TK (HSS-E)	COATED	D*	L	d	Z
341050200 AM		AMX	20	40	10	4
341050210 AM		AMX	21	40	10	4
341050220 AM		AMX	22	40	10	4
341050230 AM		AMX	23	40	10	4
341050240 AM		AMX	24	45	13	4
341050250 AM		AMX	25	45	13	4
341050260 AM		AMX	26	45	13	4
341050270 AM		AMX	27	45	13	4
341050280 AM		AMX	28	45	13	4
341050290 AM		AMX	29	45	13	4
341050300 AM		AMX	30	45	13	4
341050310 AM		AMX	31	45	13	4
341050320 AM		AMX	32	45	13	4
341050330 AM		AMX	33	45	13	4
341050340 AM		AMX	34	45	13	4
341050350 AM		AMX	35	45	13	4
341050360 AM		AMX	36	50	16	4
341050370 AM		AMX	37	50	16	4
341050380 AM		AMX	38	50	16	4
341050390 AM		AMX	39	50	16	4
341050400 AM		AMX	40	50	16	4
341050420 AM		AMX	42	50	16	4
341050440 AM		AMX	44	50	16	4
341050450 AM		AMX	45	50	16	4
341050460 AM		AMX	46	56	19	4
341050470 AM		AMX	47	56	19	4
341050480 AM		AMX	48	56	19	4
341050490 AM		AMX	49	56	19	4
341050500 AM		AMX	50	56	19	4
341050520 AM		AMX	52	56	19	4
341050550 AM		AMX	55	63	22	4
341050580 AM		AMX	58	63	22	4
341050600 AM		AMX	60	63	22	4
341050620 AM		AMX	62	63	22	4
341050650 AM		AMX	65	71	27	4
341050680 AM		AMX	68	71	27	4
341050700 AM		AMX	70	71	27	4
341050720 AM		AMX	72	71	27	4
341050750 AM		AMX	75	71	27	4
341050780 AM		AMX	78	80	32	4
341050800 AM		AMX	80	80	32	4
341050820 AM		AMX	82	80	32	4
341050850 AM		AMX	85	80	32	4
341050880 AM		AMX	88	80	32	4
341050900 AM		AMX	90	80	32	4
341050920 AM		AMX	92	90	40	4
341050950 AM		AMX	95	90	40	4
341050980 AM		AMX	98	90	40	4
341051000 AM		AMX	100	90	40	4



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie	TITANIO	HRSA	ACCIAI INOSSIDABILI	MATERIALI NON FERROSI	LEGHE LEGGERE	ACCIAI	GHISE
series	TITANIUM	HRSA	STAINLESS STEELS	NON FERROUS MATERIALS	LIGHT ALLOYS	STEELS	CAST IRON
34105	○	○	●	○	○	●	●



COATING

Skin

 $\lambda^{\circ}\text{S}$
20

N

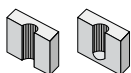
UNI 6829
DIN 343
ISO 7079

HSS-PM
HSS-PM Line

Serie/Series
34150

Allargatori
Core drills

Cod. Art.	M-TK (HSS-E)	COATED	D*	I	L	MORSE TAPER	Z
341500900 AM	AMX		9	81	162	1	4
341501000 AM	AMX		10	87	168	1	4
341501100 AM	AMX		11	94	175	1	4
341501200 AM	AMX		12	101	182	1	4
341501300 AM	AMX		13	101	182	1	4
341501400 AM	AMX		14	108	189	1	4
341501500 AM	AMX		15	114	212	2	4
341501600 AM	AMX		16	120	218	2	4
341501700 AM	AMX		17	125	223	2	4
341501800 AM	AMX		18	130	228	2	4
341501900 AM	AMX		19	135	233	2	4
341502000 AM	AMX		20	140	238	2	4
341502100 AM	AMX		21	145	243	2	4
341502200 AM	AMX		22	150	248	2	4
341502300 AM	AMX		23	155	253	2	4
341502400 AM	AMX		24	160	281	3	4
341502500 AM	AMX		25	160	281	3	4
341502600 AM	AMX		26	165	286	3	4
341502700 AM	AMX		27	170	291	3	4
341502800 AM	AMX		28	170	291	3	4
341502900 AM	AMX		29	175	296	3	4
341503000 AM	AMX		30	175	296	3	4
341503100 AM	AMX		31	180	301	3	4
341503200 AM	AMX		32	185	334	4	4
341503300 AM	AMX		33	185	334	4	4
341503400 AM	AMX		34	190	339	4	4
341503500 AM	AMX		35	190	339	4	4
341503600 AM	AMX		36	195	344	4	4
341503700 AM	AMX		37	195	344	4	4
341503800 AM	AMX		38	200	349	4	4
341503900 AM	AMX		39	200	349	4	4
341504000 AM	AMX		40	200	349	4	4



*Il diametro è nominale ed è ridotto in rapporto alle dimensioni precisamente:

da 9÷12: -0,2 mm

da 13÷19: -0,25 mm

da 20÷30: -0,3 mm

da 31÷40: -0,4 mm

*Dimension D is reduced as follows:

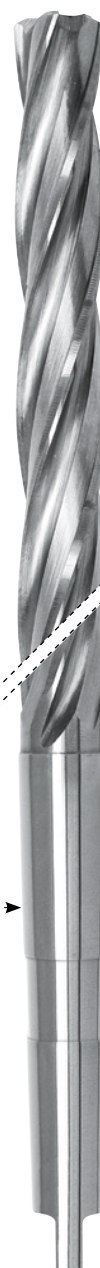
from 9÷12: -0,2 mm

from 13÷19: -0,25 mm

from 20÷30: -0,3 mm

from 31÷40: -0,4 mm

from 62÷100: -0,5 mm

Z4

Cono Morse
Morse Taper

MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie
series
34150

TITANIO
TITANIUM

HRSA
HRSA

ACCIAI
INOSSIDABILI
STAINLESS
STEELS

MATERIALI
NON FERROSI
NON FERROUS
MATERIALS

LEGHE
LEGGERE
LIGHT ALLOYS

ACCIAI
STEELS

GHISE
CAST IRON

● consigliata/recommended

● accettabile/acceptable

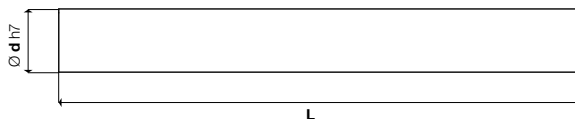
○ non consigliata/not recommended

WWW.UOP.IT

115

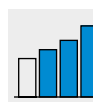
Serie/Series
08105

Barrette tonde
Round toolbits



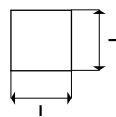
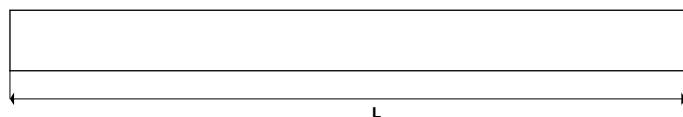
UNI 3868
DIN
ISO

QUALITY
STANDARD
UOP



Cod. Art.	X-85 (PM Co 8,5%)	X-105 (PM Co 10,5%)	dh7	L
081050310	CM	-	3	100
081050410	CM	-	4	100
081050415	CM	-	4	150
081050420	CM	-	4	200
081050510	CM	-	5	100
081050515	CM	-	5	150
081050520	CM	-	5	200
081050610	CM	EM	6	100
081050615	CM	EM	6	150
081050620	CM	EM	6	200
081050810	CM	EM	8	100
081050815	CM	EM	8	150
081050820	CM	EM	8	200
081051010	CM	EM	10	100
081051015	CM	EM	10	150
081051020	CM	EM	10	200
081051210	CM	EM	12	100
081051215	CM	EM	12	150
081051220	CM	EM	12	200
081051410	CM	EM	14	100
081051415	CM	EM	14	150
081051420	CM	EM	14	200
081051610	CM	EM	16	100
081051615	CM	EM	16	150
081051620	CM	EM	16	200
081051810	CM	EM	18	100
081051815	CM	EM	18	150
081051820	CM	EM	18	200
081052010	CM	EM	20	100
081052015	CM	EM	20	150
081052020	CM	EM	20	200
081052510	CM	EM	25	100
081052515	CM	EM	25	150
081052520	CM	EM	25	200
081053010	CM	EM	30	100
081053015	CM	EM	30	150
081053020	CM	EM	30	200
081053030	CM	EM	30	300





HSS-PM
HSS-PM Line

Serie/Series
08110

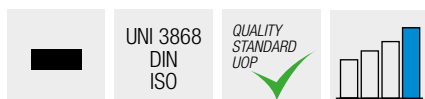
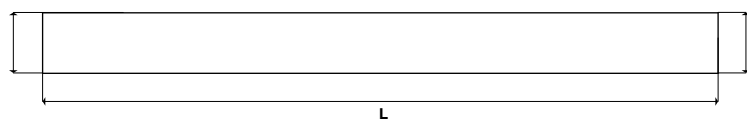
Barrette quadre
Square toolbits

08115

Barrette rettangolari
Flat toolbits



Cod. Art.	X-105 (PM Co 10,5%)	I h14	L
081100615	EM	6	150
081100620	EM	6	200
081100715	EM	7	150
081100720	EM	7	200
081100815	EM	8	150
081100820	EM	8	200
081101015	EM	10	150
081101020	EM	10	200
081101215	EM	12	150
081101220	EM	12	200
081101420	EM	14	200
081101520	EM	15	200
081101620	EM	16	200
081101820	EM	18	200
081102020	EM	20	200
081102520	EM	25	200

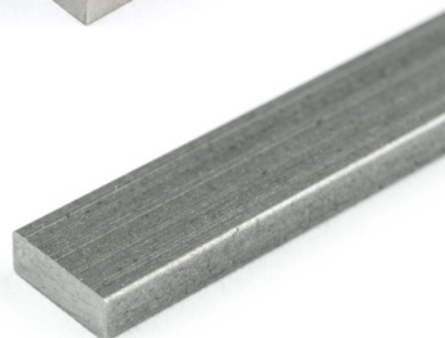


Cod. Art.	X-105 (PM Co 10,5%)	B h14	S h14	L
081151208	EM	12	8	200
081151503	EM	15	3	200
081151610	EM	16	10	200
081151804	EM	18	4	200
081152003	EM	20	3	200
081152004	EM	20	4	200
081152012	EM	20	12	200
081152504	EM	25	4	200
081152515	EM	25	15	200

Serie/Series 08110



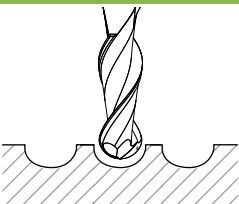
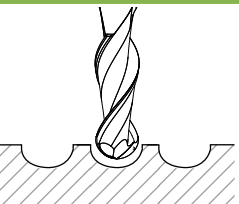
Serie/Series 08115



Parametri tecnici

Technical parameters

Parametri di taglio/Cutting parameters

		10102 - 10105 10110 - 10125*	10140 - 10155*	12505 - 12520*			
Materiali Materials		Cava Slotting $ap = 0,5\phi$ $ae = 1\phi$	Sgrossatura Roughing $ap = 0,4\phi$ $ae = 0,9\phi$	Sgrossatura Roughing $ap = 0,4\phi$ $ae = 0,9\phi$			
							
Gruppo e descrizione Group and description		Vc (mt / min.)		Vc (mt / min.)			
		X-85 NON RIVESTITA UNCOATED	X-85 Skin	X-85 NON RIVESTITA UNCOATED	X-85 Skin	X-85 NON RIVESTITA UNCOATED	X-85 Skin Alu
Ghisa Cast Iron	Grigia e sferoidale Grey and spheroidal	20 - 25	45 - 50	20 - 25	45 - 50	—	—
	Basso contenuto di C Low carbon content	30 - 35	60 - 70	30 - 35	60 - 70	—	—
	Medio contenuto di C Medium carbon content	25 - 30	50 - 60	25 - 30	50 - 60	—	—
Acciaio Steel	Basso legato Low alloyed	25 - 30	50 - 60	25 - 30	50 - 60	—	—
	Alto legato High alloyed	20 - 25	40 - 50	20 - 25	40 - 50	—	—
	Acciaio da stampi e utensili Die/tool steel	15 - 20	30 - 40	15 - 20	30 - 40	—	—
Materiali non ferrosi Leghe leggere Non ferrous materials Light alloys	Alluminio non legato Unalloyed aluminium	—	—	—	—	110 - 120	250 - 260
	Alluminio Si < 6% si < 6% aluminium	—	—	—	—	70 - 80	170 - 180
	Materiali termoplastici Thermoplastic materials	—	—	—	—	130 - 140	270 - 280
	Rame/Ottone Copper/Brass	30 - 35	75 - 80	30 - 35	75 - 80	30 - 35	75 - 80

D	Avanzamento fz mm/tagliente FEED mm/tooth		
3	0,009	0,009	0,006
4	0,013	0,012	0,010
5	0,015	0,016	0,015
6	0,018	0,018	0,020
8	0,025	0,025	0,035
10	0,030	0,035	0,050
12	0,040	0,050	0,070
16	0,065	0,090	0,120
20	0,090	0,110	0,145

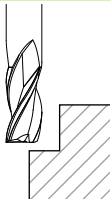
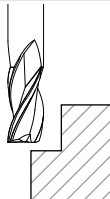
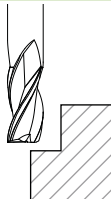
* series 10125; series 10155; series 12520 fz consigliato | RECOMMENDED -50%

Parametri di taglio/Cutting parameters

	11405 12105 12120*	11405 12105 12120*	11405 12105 12120*	11405 12105 12120*
Materiali <i>Materials</i>	Cava <i>Slotting</i> $ap = 1\phi \quad ae = 1\phi$	Sgrossatura <i>Roughing</i> $ap = 0,5\phi \quad ae = 0,1\phi$	Sgrossatura <i>Roughing</i> $ap = 1,5\phi \quad ae = 0,5\phi$	Contornatura leggera <i>Light shouldering</i> $ap = 1,5\phi \quad ae = 0,15\phi$
				
Gruppo e descrizione <i>Group and description</i>	Vc (mt /min.)		Vc (mt /min.)	
	X-85 NON RIVESTITA UNCOATED	X-85 <i>Skin Alu</i>	X-85 NON RIVESTITA UNCOATED	X-85 <i>Skin Alu</i>
Alluminio non legato <i>Unalloyed aluminium</i>	110 - 120	250 - 260	110 - 120	250 - 260
Alluminio Si < 6% <i>si < 6% aluminium</i>	70 - 80	170 - 180	70 - 80	170 - 180
Materiali termoplastici <i>Thermoplastic materials</i>	130 - 140	270 - 280	130 - 140	270 - 280
Rame/Ottone <i>Copper/Brass</i>	30 - 35	75 - 80	30 - 35	75 - 80
	Avanzamento fz mm/tagliente FEED mm/tooth			
D				
3	0,007	0,007	0,007	0,007
4	0,008	0,010	0,008	0,010
5	0,010	0,016	0,010	0,016
6	0,012	0,020	0,012	0,020
8	0,016	0,032	0,016	0,030
10	0,022	0,045	0,022	0,040
12	0,030	0,060	0,024	0,050
16	0,036	0,100	0,030	0,080
20	0,045	0,120	0,036	0,105

* series **12120** fz consigliato | RECOMMENDED -50%

Parametri di taglio/Cutting parameters

		14105 14120* 14135**		14505 14520*		14505 14520*	
		Contornatura Shouldering <i>ap = 1,5ø ae = 0,15ø</i>		Contornatura Shouldering <i>ap = 1,5ø ae = 0,15ø</i>		Contornatura Shouldering <i>ap = 1,5ø ae = 0,5ø</i>	
							
		Vc (mt /min.)		Vc (mt /min.)		Vc (mt /min.)	
		X-85 NON RIVESTITA UNCOATED	X-85 Skin	X-85 NON RIVESTITA UNCOATED	X-85 Skin	X-85 NON RIVESTITA UNCOATED	X-85 Skin
Ghisa Cast Iron	Grigia e sferoidale Grey and spheroidal	20 - 25	45 - 50	20 - 25	45 - 50	20 - 25	45 - 50
	Basso contenuto di C Low carbon content	30 - 35	60 - 70	30 - 35	60 - 70	30 - 35	60 - 70
Acciaio Steel	Medio contenuto di C Medium carbon content	25 - 30	50 - 60	25 - 30	50 - 60	25 - 30	50 - 60
	Basso legato Low alloyed	25 - 30	50 - 60	25 - 30	50 - 60	25 - 30	50 - 60
	Alto legato High alloyed	20 - 25	40 - 50	20 - 25	40 - 50	20 - 25	40 - 50
	Acciaio da stampi e utensili Die/tool steel	15 - 20	30 - 40	15 - 20	30 - 40	15 - 20	30 - 40
Materiali non ferrosi Leghe leggere Non ferrous materials Light alloys	Alluminio non legato Unalloyed aluminium	—	—	—	—	—	—
	Alluminio Si < 6% si < 6% aluminium	—	—	—	—	—	—
	Materiali termoplastici Thermoplastic materials	—	—	—	—	—	—
	Rame/Ottone Copper/Brass	30 - 35	75 - 80	30 - 35	75 - 80	30 - 35	75 - 80
	D	Avanzamento fz mm/tagliente FEED mm/tooth					
	3	0,010				0,010	
	4	0,015				0,015	
	5	0,020				0,020	
	6	0,025				0,023	
	8	0,035				0,024	
	10	0,045				0,030	
	12	0,056				0,035	
	16	0,090				0,054	
	20	0,120				0,070	

* series 14120; series 14120 fz consigliato | RECOMMENDED -30%

** series 14135 fz consigliato | RECOMMENDED -50%

Parametri di taglio/Cutting parameters

	14805 14820*		14805 14820*		14805 14820*	
Materiali <i>Materials</i>	Cava <i>Shouldering</i> $ap = 1\phi \quad ae = 1\phi$		Contornatura <i>Shouldering</i> $ap = 1,5\phi \quad ae = 0,15\phi$		Contornatura <i>Shouldering</i> $ap = 1,5\phi \quad ae = 0,5\phi$	
Gruppo e descrizione <i>Group and description</i>	Vc (mt /min.)		Vc (mt /min.)		Vc (mt /min.)	
	X-85 NON RIVESTITA UNCOATED	X-85 <i>Skin</i> Alu	X-85 NON RIVESTITA UNCOATED	X-85 <i>Skin</i> Alu	X-85 NON RIVESTITA UNCOATED	X-85 <i>Skin</i> Alu
Alluminio non legato <i>Unalloyed aluminium</i>	110 - 120	250 - 260	110 - 120	250 - 260	110 - 120	250 - 260
Alluminio Si < 6% <i>si < 6% aluminium</i>	70 - 80	170 - 180	70 - 80	170 - 180	70 - 80	170 - 180
Materiali termoplastici <i>Thermoplastic materials</i>	130 - 140	270 - 280	130 - 140	270 - 280	130 - 140	270 - 280
Rame/Ottone <i>Copper/Brass</i>	30 - 35	75 - 80	30 - 35	75 - 80	30 - 35	75 - 80
Avanzamento fz mm/tagliente FEED mm/tooth						
D						
3	0,007		0,007		0,007	
4	0,008		0,008		0,010	
5	0,010		0,010		0,016	
6	0,012		0,012		0,020	
8	0,016		0,016		0,030	
10	0,022		0,022		0,040	
12	0,030		0,024		0,050	
16	0,036		0,030		0,080	
20	0,045		0,036		0,105	

* series **14820** fz consigliato | RECOMMENDED -50%

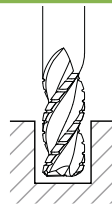
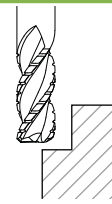
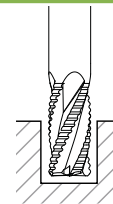
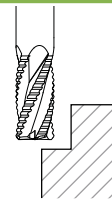
Parametri di taglio/Cutting parameters

		17105 - 17120* 17135** - 17305 17320		18105		17505 17520*	
Materiali Materials		Contornatura Shouldering $ap = 1,5\phi$ $ae = 0,15\phi$		Contornatura Shouldering $ap = 1,5\phi$ $ae = 0,15\phi$		Sgrossatura Roughing $ap = 0,4\phi$ $ae = 0,9\phi$	
Gruppo e descrizione Group and description		Vc (mt/min.)		Vc (mt/min.)		Vc (mt/min.)	
		X-85 NON RIVESTITA UNCOATED	X-85 Skin	X-85 NON RIVESTITA UNCOATED	X-85 Skin	X-85 NON RIVESTITA UNCOATED	X-85 Skin
Ghisa Cast Iron	Grigia e sferoidale Grey and spheroidal	20 - 25	45 - 50	20 - 25	45 - 50	20 - 25	45 - 50
	Basso contenuto di C Low carbon content	30 - 35	60 - 70	30 - 35	60 - 70	30 - 35	60 - 70
	Medio contenuto di C Medium carbon content	25 - 30	50 - 60	25 - 30	50 - 60	25 - 30	50 - 60
Acciaio Steel	Basso legato Low alloyed	25 - 30	50 - 60	25 - 30	50 - 60	25 - 30	50 - 60
	Alto legato High alloyed	20 - 25	40 - 50	20 - 25	40 - 50	20 - 25	40 - 50
	Acciaio da stampi e utensili Die/tool steel	15 - 20	30 - 40	15 - 20	30 - 40	15 - 20	30 - 40
Acciaio inossidabile Stainless Steel	AISI 304 - 416 - 420	-	-	-	15 - 20	-	-
	AISI 316 - 440	-	-	-	15 - 20	-	-
	17-4 ph 15-5 ph	-	-	-	10 - 15	-	-
	Leghe Cr - Co Cr - Co alloys	-	-	-	10 - 15	-	-
	Duplex F51	-	-	-	5 - 10	-	-
	Super Duplex F55	-	-	-	5 - 10	-	-
Superleghe resistenti al calore Heat Resistant Super Alloys	HRSA Hastelloy	-	-	-	5 - 10	-	-
	HRSA Inconel 625	-	-	-	5 - 10	-	-
	HRSA Inconel 718	-	-	-	5 - 10	-	-
	HRSA Nimonic	-	-	-	5 - 10	-	-
	Titanio - Titanium	-	-	-	10 - 15	-	-
Ti	Leghe di titanio Titanium alloys	-	-	-	10 - 15	-	-
D		Avanzamento fz mm/tagliente FEED mm/tooth					
3		0,010		0,007			
4		0,015		0,009			
5		0,020		0,012			
6		0,025		0,014			
8		0,035		0,021			
10		0,045		0,028			
12		0,056		0,038			
16		0,090		0,065			
20		0,120		0,090			

* series 17120; series 17520 fz consigliato | RECOMMENDED -30%

** series 17135 fz consigliato | RECOMMENDED -50%

Parametri di taglio/Cutting parameters

		15105 15120* WF 	15105 15120* WF 	21105 21120* NF NR 	19105 - 20105 20120* - 21105 21120* NF NR 			
Materiali Materials		Cava Slotting $ap = 1\phi \quad ae = 1\phi$	Sgrossatura Roughing $ap = 1,5\phi \quad ae = 0,5\phi$	Cava Slotting $ap = 1\phi \quad ae = 1\phi$	Sgrossatura Roughing $ap = 1,5\phi \quad ae = 0,5\phi$			
								
Gruppo e descrizione Group and description		Vc (mt /min.)		Vc (mt /min.)		Vc (mt /min.)		
		X-85 NON RIVESTITA UNCOATED	X-85 Skin Alu	X-85 NON RIVESTITA UNCOATED	X-85 Skin Alu	X-85 NON RIVESTITA UNCOATED	X-85 Skin Alu	
Ghisa Cast Iron	Grigia e sferoidale Grey and spheroidal	—	—	—	—	20 - 25	45 - 50	
	Basso contenuto di C Low carbon content	—	—	—	—	30 - 35	60 - 70	
	Medio contenuto di C Medium carbon content	—	—	—	—	30 - 35	50 - 60	
Acciaio Steel	Basso legato Low alloyed	—	—	—	—	25 - 30	50 - 60	
	Alto legato High alloyed	—	—	—	—	20 - 30	40 - 50	
	Acciaio da stampi e utensili Die/tool steel	—	—	—	—	15 - 20	30 - 40	
Acciaio inossidabile Stainless Steel	AISI 304 - 416 - 420	—	—	—	—	—	15 - 20	
	AISI 316 - 440	—	—	—	—	—	15 - 20	
	17-4 ph 15-5 ph	—	—	—	—	—	10 - 15	
	Leghe Cr - Co Cr - Co alloys	—	—	—	—	—	10 - 15	
	Duplex F51	—	—	—	—	—	5 - 10	
Superleghe resistenti al calore Heat Resistant Super Alloys	Super Duplex F55	—	—	—	—	—	5 - 10	
	HRSA Hastelloy	—	—	—	—	—	5 - 10	
	HRSA Inconel 625	—	—	—	—	—	5 - 10	
	HRSA Inconel 718	—	—	—	—	—	5 - 10	
	HRSA Nimonic	—	—	—	—	—	5 - 10	
Ti	Titanio - Titanium	—	—	—	—	—	10 - 15	
	Leghe di titanio Titanium alloys	—	—	—	—	—	10 - 15	
Materiali non ferrosi Leghe leggere Non ferrous materials Light alloys	Alluminio non legato Unalloyed aluminium	110 - 120	250 - 260	110 - 120	250 - 260	—	—	
	Alluminio Si < 6% si < 6% aluminium	70 - 80	170 - 180	70 - 80	170 - 180	—	—	
	Materiali termoplastici Thermoplastic materials	130 - 140	270 - 280	130 - 140	270 - 280	—	—	
	Rame/Ottone Copper/Brass	30 - 35	75 - 80	30 - 35	75 - 80	—	—	
D		Avanzamento fz mm/tagliente FEED mm/tooth						
6		0,012		0,025		0,012		0,020
8		0,016		0,035		0,016		0,026
10		0,022		0,045		0,022		0,030
12		0,026		0,055		0,026		0,040
16		0,036		0,070		0,036		0,060
20		0,045		0,085		0,045		0,080

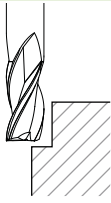
* series **fz** consigliato | RECOMMENDED -50%

Parametri di taglio/Cutting parameters

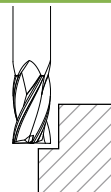
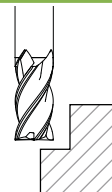
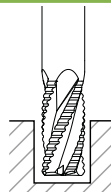
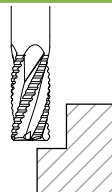
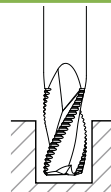
	21305 NR 	21305 NR 	21505 21520* NF NR
Materiali Materials	Cava Slotting $ap = 1\phi \quad ae = 1\phi$ 	Sgrossatura Roughing $ap = 1,5\phi \quad ae = 0,5\phi$ 	Sgrossatura Roughing $ap = 0,4\phi \quad ae = 0,9\phi$
Gruppo e descrizione Group and description	Vc (mt /min.)		Vc (mt /min.)
	X-85 NON RIVESTITA UNCOATED	X-85 Skin Inox	X-85 NON RIVESTITA UNCOATED
Ghisa Cast Iron	Grigia e sferoidale Grey and spheroidal	45 - 50	45 - 50
	Basso contenuto di C Low carbon content	60 - 70	60 - 70
	Medio contenuto di C Medium carbon content	50 - 60	50 - 60
Acciaio Steel	Basso legato Low alloyed	50 - 60	50 - 60
	Alto legato High alloyed	40 - 50	40 - 50
	Acciaio da stampi e utensili Die/tool steel	30 - 40	30 - 40
Acciaio inossidabile Stainless Steel	AISI 304 - 416 - 420	15 - 20	15 - 20
	AISI 316 - 440	15 - 20	15 - 20
	17-4 ph 15-5 ph	10 - 15	10 - 15
	Leghe Cr - Co Cr - Co alloys	10 - 15	10 - 15
	Duplex F51	5 - 10	5 - 10
	Super Duplex F55	5 - 10	5 - 10
Superleghe resistenti al calore Heat Resistant Super Alloys	HRSA Hastelloy	5 - 10	5 - 10
	HRSA Inconel 625	5 - 10	5 - 10
	HRSA Inconel 718	5 - 10	5 - 10
	HRSA Nimonic	5 - 10	5 - 10
Ti	Titanio - Titanium	10 - 15	10 - 15
	Leghe di titanio Titanium alloys	10 - 15	10 - 15
Materiali non ferrosi Leghe leggere Non ferrous materials Light alloys	Alluminio non legato Unalloyed aluminium	-	-
	Alluminio Si < 6% si < 6% aluminium	-	-
	Materiali termoplastici Thermoplastic materials	-	-
	Rame/Ottone Copper/Brass	-	-
	-	-	-
Avanzamento fz mm/tagliente FEED mm/tooth			
D	0,013	0,022	0,014
6	0,016	0,028	0,020
8	0,022	0,035	0,030
10	0,026	0,045	0,040
12	0,038	0,070	0,065
16	0,050	0,090	0,090

* series fz consigliato | RECOMMENDED -50%

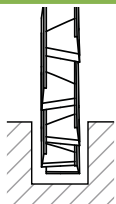
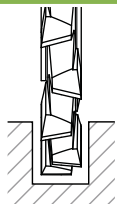
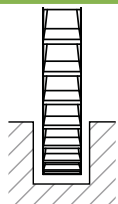
Parametri di taglio/Cutting parameters

		10110	14105
Materiali Materials		Cava Slotting $ap = 0,5\phi$ $ae = 1\phi$	Contornatura Shouldering $ap = 1,5\phi$ $ae = 0,15\phi$
			
Gruppo e descrizione Group and description		Vc (mt /min.)	Vc (mt /min.)
		X-105 Skin	X-105 Skin
Ghisa Cast Iron	Grigia e sferoidale Grey and spheroidal	45 - 50	45 - 50
	Basso contenuto di C Low carbon content	70 - 80	70 - 80
	Medio contenuto di C Medium carbon content	70 - 80	70 - 80
Acciaio Steel	Basso legato Low alloyed	65 - 75	65 - 75
	Alto legato High alloyed	50 - 60	50 - 60
	Acciaio da stampi e utensili Die/tool steel	30 - 40	30 - 40
Acciaio inossidabile Stainless Steel	AISI 304 - 416 - 420	15 - 20	15 - 20
	AISI 316 - 440	15 - 20	15 - 20
	17-4 ph 15-5 ph	10 - 15	10 - 15
Superleghe resistenti al calore Heat Resistant Super Alloys	Leghe Cr - Co Cr - Co alloys	10 - 15	10 - 15
	Duplex F51	5 - 10	5 - 10
	Super Duplex F55	5 - 10	5 - 10
Ti	HRSA Hastelloy	5 - 10	5 - 10
	HRSA Inconel 625	5 - 10	5 - 10
	HRSA Inconel 718	5 - 10	5 - 10
Materiali non ferrosi Leghe leggere Non ferrous materials Light alloys	Titanio - Titanium	15 - 20	15 - 20
	Leghe di titanio Titanium alloys	15 - 20	15 - 20
	Alluminio non legato Unalloyed aluminium	-	-
	Alluminio Si < 6% si < 6% aluminium	-	-
	Materiali termoplastici Thermoplastic materials	-	-
	Rame/Ottone Copper/Brass	75 - 85	75 - 85
D		Avanzamento fz mm/tagliente FEED mm/tooth	
6		0,018	0,025
8		0,024	0,035
10		0,030	0,045
12		0,040	0,060
16		0,066	0,090
20		0,090	0,120

Parametri di taglio/Cutting parameters

		17305	18105	21105 NR 	21105 NR 	22105 NRF 
Materiali Materials		Contornatura Shouldering <i>ap = 1,5ø ae = 0,15ø</i>	Contornatura Shouldering <i>ap = 1,5ø ae = 0,15ø</i>	Cava Slotting <i>ap = 1ø ae = 1ø</i>	Sgrossatura Roughing <i>ap = 1,5ø ae = 0,5ø</i>	Cava Slotting <i>ap = 1ø ae = 1ø</i>
						
Gruppo e descrizione Group and description		Vc (mt /min.)	Vc (mt /min.)	Vc (mt /min.)	Vc (mt /min.)	Vc (mt /min.)
		X-105 Skin	X-105 Skin	X-105 Skin	X-105 Skin	X-105 Skin
Ghisa Cast Iron	Grigia e sferoidale Grey and spheroidal	45 - 50	45 - 50	45 - 50	45 - 50	45 - 50
	Basso contenuto di C Low carbon content	70 - 80	70 - 80	70 - 80	70 - 80	70 - 80
	Medio contenuto di C Medium carbon content	70 - 80	70 - 80	70 - 80	70 - 80	70 - 80
Acciaio Steel	Basso legato Low alloyed	65 - 75	65 - 75	65 - 75	65 - 75	65 - 75
	Alto legato High alloyed	50 - 60	50 - 60	50 - 60	50 - 60	50 - 60
	Acciaio da stampi e utensili Die/tool steel	30 - 40	30 - 40	30 - 40	30 - 40	30 - 40
	AISI 304 - 416 - 420	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20
Acciaio Inossidabile Stainless Steel	AISI 316 - 440	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20
	17-4 ph 15-5 ph	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15
	Leghe Cr - Co Cr - Co alloys	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15
	Duplex F51	5 - 10	5 - 10	5 - 10	5 - 10	5 - 10
	Super Duplex F55	5 - 10	5 - 10	5 - 10	5 - 10	5 - 10
Superleghe resistenti al calore Heat Resistant Super Alloys	HRSA Hastelloy	5 - 10	5 - 10	5 - 10	5 - 10	5 - 10
	HRSA Inconel 625	5 - 10	5 - 10	5 - 10	5 - 10	5 - 10
	HRSA Inconel 718	5 - 10	5 - 10	5 - 10	5 - 10	5 - 10
	HRSA Nimonic	5 - 10	5 - 10	5 - 10	5 - 10	5 - 10
Ti	Titanio - Titanium	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20
	Leghe di titanio Titanium alloys	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20
Materiali non ferrosi Leghe leggere Non ferrous materials Light alloys	Alluminio non legato Unalloyed aluminium	-	-	-	-	-
	Alluminio Si < 6% si < 6% aluminium	-	-	-	-	-
	Materiali termoplastici Thermoplastic materials	-	-	-	-	-
	Rame/Ottone Copper/Brass	75 - 85	75 - 85	75 - 85	75 - 85	75 - 85
D Avanzamento fz mm/tagliente FEED mm/tooth						
6		0,025	0,025	0,012	0,025	0,015
8		0,035	0,035	0,016	0,035	0,020
10		0,045	0,045	0,022	0,045	0,025
12		0,060	0,060	0,026	0,055	0,030
16		0,090	0,090	0,036	0,070	0,040
20		0,120	0,120	0,045	0,085	0,050

Parametri di taglio/Cutting parameters

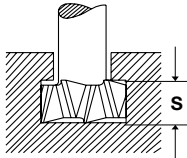
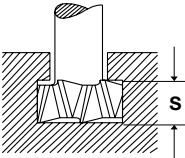
		04110*		04105*		04105**	
Materiali Materials		Cava Slotting $ap = 0,1\sigma \quad ae = S$		Cava Slotting $ap = 0,1\sigma \quad ae = S$		Cava Slotting $ap = 0,1\sigma \quad ae = S$	
							
Gruppo e descrizione Group and description		Vc (mt /min.)		Vc (mt /min.)		Vc (mt /min.)	
		X-85 NON RIVESTITA UNCOATED	X-85 Skin	X-85 NON RIVESTITA UNCOATED	X-85 Skin	X-85 NON RIVESTITA UNCOATED	X-85 Skin
Ghisa Cast Iron	Grigia e sferoidale Grey and spheroidal	20 - 25	45 - 50	20 - 25	45 - 50	20 - 25	45 - 50
	Basso contenuto di C Low carbon content	30 - 35	70 - 80	30 - 35	70 - 80	30 - 35	70 - 80
	Medio contenuto di C Medium carbon content	30 - 35	70 - 80	30 - 35	70 - 80	30 - 35	70 - 80
	Basso legato Low alloyed	25 - 30	70 - 75	25 - 30	70 - 75	25 - 30	70 - 75
	Alto legato High alloyed	20 - 30	60 - 70	20 - 30	60 - 70	20 - 30	60 - 70
Acciaio Steel	Acciaio da stampi e utensili Die/tool steel	15 - 20	30 - 40	15 - 20	30 - 40	15 - 20	30 - 40
	AISI 304 - 416 - 420	—	15 - 20	—	15 - 20	—	15 - 20
	AISI 316 - 440	—	15 - 20	—	15 - 20	—	15 - 20
	17-4 ph 15-5 ph	—	10 - 15	—	10 - 15	—	10 - 15
	Leghe Cr - Co Cr - Co alloys	—	10 - 15	—	10 - 15	—	10 - 15
Acciaio inossidabile Stainless Steel	Duplex F51	—	5 - 10	—	5 - 10	—	5 - 10
	Super Duplex F55	—	5 - 10	—	5 - 10	—	5 - 10

D	S	Avanzamento fz mm/tagliente FEED mm/tooth					
63	1,6÷3,5	0,035 ÷ 0,038	0,035 ÷ 0,038	—	—	—	—
80	2÷3,5	0,041 ÷ 0,044	0,041 ÷ 0,044	—	—	—	—
100	2÷3,5	0,047 ÷ 0,050	0,047 ÷ 0,050	—	—	—	—
125	2÷4	0,055 ÷ 0,060	0,055 ÷ 0,060	—	—	—	—
160	3÷5	0,065	0,065	—	—	—	—
200	÷6	0,070	0,070	—	—	—	—
250	6÷12	0,075	0,075	—	—	—	—
50	4÷10	—	—	0,040	0,040	0,025 ÷ 0,030	0,025 ÷ 0,030
63	4÷20	—	—	0,050 ÷ 0,060	0,050 ÷ 0,060	0,035 ÷ 0,040	0,035 ÷ 0,040
80	4÷20	—	—	0,065 ÷ 0,070	0,065 ÷ 0,070	0,042 ÷ 0,046	0,042 ÷ 0,046
100	4÷25	—	—	0,075 ÷ 0,085	0,075 ÷ 0,085	0,048 ÷ 0,054	0,048 ÷ 0,054
125	5÷28	—	—	0,090 ÷ 0,100	0,090 ÷ 0,100	0,056 ÷ 0,060	0,056 ÷ 0,060
160	6÷32	—	—	0,105 ÷ 0,115	0,105 ÷ 0,115	0,066 ÷ 0,078	0,066 ÷ 0,078
200	8÷32	—	—	0,120 ÷ 0,125	0,120 ÷ 0,125	0,084 ÷ 0,096	0,084 ÷ 0,096
250	14÷32	—	—	0,128 ÷ 0,140	0,128 ÷ 0,140	0,105	0,105

* frese a disco a 3 tagli elicoidali alternati | SIDE AND FACE MILLING CUTTERS STAGGERED TEETH

** frese a disco a 3 tagli dritti | SIDE AND FACE MILLING CUTTERS STRAIGHT TEETH

Parametri di taglio/Cutting parameters

		27120		27135	
				NF	
					
Materiali Materials		Cava Slotting $ap = S \quad ae = 1a$		Cava Slotting $ap = S \quad ae = 1a$	
					
Gruppo e descrizione Group and description		Vc (mt /min.)		Vc (mt /min.)	
		X-85 NON RIVESTITA UNCOATED	X-85 Skin	X-85 NON RIVESTITA UNCOATED	X-85 Skin
Ghisa Cast Iron	Grigia e sferoidale Grey and spheroidal	20 - 25	45 - 50	20 - 25	45 - 50
	Basso contenuto di C Low carbon content	30 - 35	70 - 80	30 - 35	70 - 80
	Medio contenuto di C Medium carbon content	30 - 35	70 - 80	30 - 35	70 - 80
Acciaio Steel	Basso legato Low alloyed	25 - 30	70 - 75	25 - 30	70 - 75
	Alto legato High alloyed	20 - 30	60 - 70	20 - 30	60 - 70
	Acciaio da stampi e utensili Die/tool steel	15 - 20	30 - 40	15 - 20	30 - 40
Acciaio Inossidabile Stainless Steel	AISI 304 - 416 - 420	–	15 - 20	–	15 - 20
	AISI 316 - 440	–	15 - 20	–	15 - 20
	17-4 ph 15-5 ph	–	10 - 15	–	10 - 15
	Leghe Cr - Co Cr - Co alloys	–	10 - 15	–	10 - 15
	Duplex F51	–	5 - 10	–	5 - 10
	Super Duplex F55	–	5 - 10	–	5 - 10

D	S	Avanzamento fz mm/tagliente FEED mm/tooth			
12,5	6	0,035	0,035	0,039	0,039
16	8	0,040	0,040	0,045	0,045
18	8	0,045	0,045	0,050	0,050
19	9	0,050	0,050	0,056	0,056
21	9	0,055	0,055	0,062	0,062
22	10	0,060	0,060	0,067	0,067
25	11	0,064	0,064	0,072	0,072
28	12	0,068	0,068	0,076	0,076
32	14	0,072	0,072	0,081	0,081
36	16	0,076	0,076	0,085	0,085
40	18	0,080	0,080	0,090	0,090
45	20	0,083	0,083	0,093	0,093
50	22	0,086	0,086	0,096	0,096
56	24	0,090	0,090	0,101	0,101