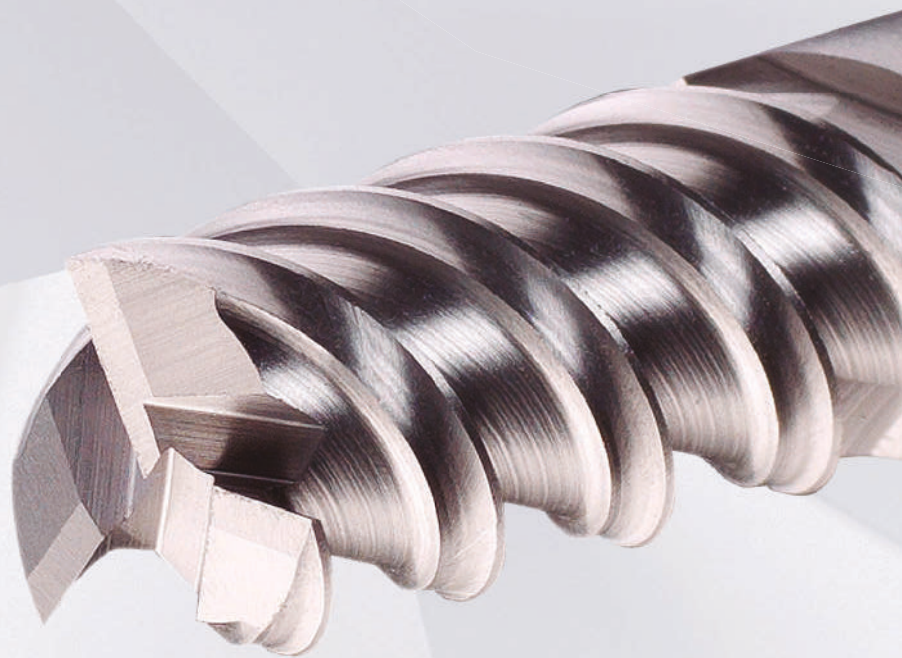


# FRESE



**BLUE-MASTER<sup>®</sup>**  
*by celesa*

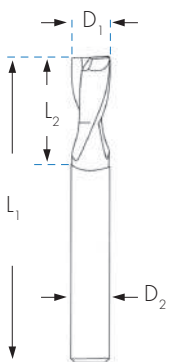
CUTTING TECHNOLOGIES

**FRESE FRONTALI SERIE CORTA A 2 TAGLIENTI DIN 327 E DIN 844**
**2Z**


Ref. FFAL



SERIE CORTA







Consultare dimensioni DIN844 nelle pagine successive



DIN 327	MATERIALE				FF01	FF02	FF60	FT02	FF92	FP05	FT12	FP08	FT01	DIN 844	FFAL
	FINITURA				HSS	HSSCo 8%	HSSCo 8%	HSSCo 8%	HSSCo 8%	ASP 60	ASP 60	ASP 60	ASP 60		HSSCo 8%
	QUALITÀ				BRILLANTE	BRILLANTE	TiAIN	TiAlSiN	BRILLANTE	BRILLANTE	TiAlSiN	BRILLANTE	TiAlSiN		BRILLANTE
D1 mm	L1 mm	L2 mm	D2 mm	TOL e8	TOL e8	TOL e8	TOL e8	TOL h10	TOL e8	TOL e8	TOL h10	TOL h10	TOL e8	TOL e8	
€	€	€	€	€	€	€	€	€	€	€	€	€	€	€	
1,00	47	2,5	6							24,90	30,15	36,32	39,88		
2,00	48	4,0	6	11,32	12,30	17,09	22,99	21,31	21,01	26,80	32,07	36,26		17,35	
2,50	49	5,0	6	11,32*	12,30	17,09	22,99	22,35						17,70	
3,00	49	5,0	6	11,32	12,30	17,09	22,99	21,42	21,01	26,80	32,07	36,26		17,30	
3,50	50	6,0	6		13,08	18,00	27,46	22,35						18,36	
4,00	51	7,0	6	11,10	12,30	17,11	27,45	21,42	19,10	26,74	32,07	36,26		17,82	
4,50	52	8,0	6	11,32*	13,22	18,99	30,44	22,35						19,49	
5,00	52	8,0	6	11,10	12,30	17,11	27,45	21,42	19,10	26,74	32,07	36,26		17,82	
5,50	52	8,0	6		13,07	19,47	31,22	22,35						21,82	
6,00	52	8,0	6	11,10	12,30	17,11	27,45	21,42	19,10	26,74	32,07	36,26		19,31	
6,50	60	10,0	10	16,57*	17,50	25,49	37,26							28,54	
7,00	60	10,0	10	16,57	16,98	24,95	38,30	27,15	28,82	37,17	42,42	51,60		25,96	
7,50	61	11,0	10		18,52	26,51	38,05							30,42	
8,00	61	11,0	10	13,48	16,73	23,57	33,85	27,16	28,82	37,17	42,42	51,60		23,49	
8,50	61	11,0	10		18,55	29,49	42,33							32,08	
9,00	61	11,0	10	17,23	17,16	27,86	40,00	27,09	30,82	40,14	42,42	53,15		29,09	
9,50	63	13,0	10		18,35	28,84	41,39								
10,00	63	13,0	10	14,18	16,63	24,40	35,02	27,24	27,89	37,70	42,42	53,15		25,39	
10,50	70	13,0	12		25,67	35,81	51,39								
11,00	70	13,0	12		23,25	33,23	47,70	35,54						35,06	
12,00	73	16,0	12	18,51	20,93	30,43	43,67	35,51	35,59	47,69	57,76	67,55		31,83	
13,00	73	16,0	12		27,46	39,95	58,81	40,14						45,38	
14,00	73	16,0	12	26,35	27,46	39,95	58,81	40,14	43,37	56,02	65,27	74,74		43,91	
15,00	73	16,0	12		32,43	42,93	66,64	44,86						48,93	
16,00	79	19,0	16	27,51	30,21	42,60	61,16	46,15	54,30	67,67	76,32	87,21		47,67	
17,00	79	19,0	16		39,17	54,38	78,07							66,32	
18,00	79	19,0	16	36,01	39,17	54,45	78,16	56,89	68,75	81,10	96,73	118,27		59,54	
19,00	79	19,0	16		51,24	65,93	94,64							80,30	
20,00	88	22,0	16		47,53	63,46	91,07								
20,00	88	22,0	20	42,22	47,53	63,46	91,07	65,46	80,99	101,94	112,76	131,80		68,84	
22,00	88	22,0	20	57,93	59,59	84,08	120,68	73,72	103,15	136,17	133,90	157,66		95,82	
24,00	102	26,0	25	72,70	77,57	121,80	149,84	98,47						144,00	
25,00	102	26,0	25	72,71	75,57	114,46	143,69	97,64	137,72	164,08	175,56	199,53		121,97	
26,00	102	26,0	25		86,37	159,46	196,17							191,51	
28,00	102	26,0	25	91,09	103,39	159,90	196,27							148,39	
30,00	102	26,0	25	104,80	104,86	167,76	206,39	157,17						170,78	
32,00	112	32,0	32	108,68	132,97	170,85	210,19							180,88	
36,00	112	32,0	32	139,92	177,87	219,47	270,01								
40,00	130	38,0	40	170,10	218,42	271,35	333,84								

\*Fino ad esaurimento scorte

**FRESE FRONTALI SERIE LUNGA A 2 TAGLIENTI DIN 327 E DIN 844/L**

**2Z**    **INOX** **Al** **TOL D2 h6** Ref. FFLAL 

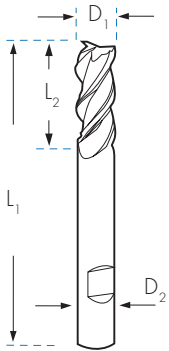
SERIE LUNGA



DIN 327/L				MATERIALE FINITURA QUALITÀ					DIN 844/L			
D1 mm	L1 mm	L2 mm	D2 mm	FF06 HSSCo 8% BRILLANTE ★★ TOL e8 €	FF67 HSSCo 8% TiAlN ★★★ TOL e8 €	FT06 HSSCo 8% TiAlSiN ★★★★ TOL e8 €	FF15 HSSCo 8% BRILLANTE ★★ TOL h10 €	FP21 ASP 60 BRILLANTE Premium Quality TOL h10 €	L1 mm	L2 mm	D2 mm	FFLAL HSSCo 8% BRILLANTE Al TOL e8 €
2,00	54	7	6	15,79	24,94	29,07	28,42	37,65	54	10	6	26,14
2,50	56	8	6	15,79	24,94	29,07	28,46		56	12	6	
3,00	56	8	6	16,02	24,99	29,14	28,46	38,80	56	12	6	26,27
3,50	59	10	6	17,95	29,69	34,64			59	15	6	
4,00	63	11	6	15,88	24,99	29,14	28,46	38,80	63	19	6	26,44
4,50	63	11	6	17,70	25,52	29,77			63	19	6	
5,00	68	13	6	15,88	24,99	29,14	30,14	41,07	68	24	6	26,56
5,50	68	13	6	17,95	29,69	34,64			68	24	6	
6,00	68	13	6	15,88	24,99	29,14	27,23	37,11	68	24	6	27,57
6,50	80	16	10	29,78	48,72	56,02			68	24	6	
7,00	80	16	10	26,21	36,60	42,68	34,34	46,37	80	30	10	
7,50	88	19	10						80	30	10	
8,00	88	19	10	23,07	33,42	39,00	34,34	46,81	88	38	10	37,69
8,50	88	19	10	35,32	48,05	56,03			88	38	10	
9,00	88	19	10	31,05	42,33	49,34	37,69	50,89	88	38	10	39,73
10,00	95	22	10	25,42	35,39	45,13	37,52	51,38	95	45	10	37,69
11,00	102	22	12	40,07	49,41	63,03	49,97		102	45	12	52,82
12,00	110	26	12	36,54	45,75	59,61	49,01	66,48	110	53	12	44,66
13,00	110	26	12						110	53	12	
14,00	110	26	12	42,63	57,12	72,86	65,02	83,35	110	53	12	51,10
15,00	123	32	16						110	53	12	
16,00	123	32	16	51,57	77,11	89,93	74,02	99,44	123	63	16	63,03
17,00	123	32	16						123	63	16	
18,00	123	32	16	63,09	90,50	105,52	88,95	119,50	123	63	16	73,26
20,00	141	38	20	72,53	99,29	115,78	96,44	129,55	141	75	20	84,57
22,00	141	38	20	99,45	134,71	157,09	119,53	160,63	141	75	20	
24,00	166	45	25	129,11	171,39	197,05	160,82		166	90	25	
25,00	166	45	25	131,18	181,27	211,38	147,03	197,54	166	90	25	
26,00	166	45	25	169,97	201,83	232,05			166	90	25	
28,00	166	45	25	172,89	220,69	257,37			166	90	25	
30,00	166	45	25	192,19	237,58	277,05	219,02		166	90	25	
32,00	186	53	32	265,89	309,69	361,14	285,38		186	106	32	
36,00	186	53	32	300,83	352,12	410,62			186	106	32	
40,00	196	63	32	394,20	475,74	554,79			196	125	40	

**FRESE FRONTALI SERIE CORTA A 3 TAGLIANTI DIN 844 E DIN 327**
**3Z**

**TOL D<sub>2</sub>  
h6**

**SERIE CORTA**


DIN 844				MATERIALE						DIN 327			FP06		FT03
				HSSCo 8%		HSSCo 8%		HSSCo 8%					HSSCo 8%		HSSCo 8%
FINITURA				BRILLANTE		TiAlN		TiAlSiN		BRILLANTE		BRILLANTE		TiAlSiN	
QUALITÀ				★★		★★★		★★★★		★★		★★★		★★★★	
SGROSSATURA				NR		NR		NR		NR		NR		NR	
TOL k10				TOL k10		TOL k10		TOL k12		TOL k12		TOL k12		TOL e8	
D <sub>1</sub> mm	L <sub>1</sub> mm	L <sub>2</sub> mm	D <sub>2</sub> mm	€	€	€	€	€	€	€	€	€	€	€	
1,00	49	3	6							47	2,5	6	26,77	33,35	
2,00	51	7	6	14,41	21,26	28,93				48	4,0	6	21,75	32,57	
2,50	52	8	6	14,41	21,26	28,93				49	5,0	6			
3,00	52	8	6	14,41	21,26	28,93				49	5,0	6	21,75	32,57	
3,50	55	11	6	14,84	21,65	29,61				50	6,0	6			
4,00	55	11	6	14,40	21,26	28,93				51	7,0	6	21,75	32,57	
4,50	57	13	6	15,87	22,47	30,58				52	8,0	6			
5,00	57	13	6	14,40	21,36	29,07				52	8,0	6	21,75	32,57	
5,50	57	13	6	19,58	29,23	39,77				52	8,0	6			
6,00	57	13	6	13,37	23,31	30,94	44,97	54,31	62,43	52	8,0	6	21,75	32,57	
6,50	66	16	10	27,19	39,09	52,45				60	10,0	10			
7,00	66	16	10	21,19	28,71	39,23	53,19	64,83	74,54	60	10,0	10	29,28	39,70	
7,50	69	19	10	27,39	39,51	53,01				61	11,0	10			
8,00	69	19	10	18,92	26,50	36,07	46,08	53,68	62,60	61	11,0	10	29,28	39,70	
8,50	69	19	10	28,89	40,81	54,74				61	11,0	10			
9,00	69	19	10	23,64	31,78	43,23	54,68	64,19	74,84	61	11,0	10			
9,50	72	22	10	31,21	42,88	57,51				63	13,0	10			
10,00	72	22	10	19,24	28,77	39,12	46,35	57,06	66,53	63	13,0	10	31,04	41,04	
11,00	79	22	12	26,79	39,89	60,91	66,91	77,09	89,89	70	13,0	12			
12,00	83	26	12	25,14	34,33	46,72	55,78	65,66	76,57	73	16,0	12	40,05	51,91	
13,00	83	26	12	32,91	45,88	70,82	72,88	84,89	99,01	73	16,0	12			
14,00	83	26	12	30,92	45,03	61,28	63,66	74,89	87,35	73	16,0	12	51,89	63,23	
15,00	83	26	12	40,49	54,78	73,49	80,58	88,20	97,22	73	16,0	12			
16,00	92	32	16	36,86	50,26	68,37	81,85	93,07	108,55	79	19,0	16	61,02	72,80	
17,00	92	32	16	47,11	61,63	84,19				79	19,0	16			
18,00	92	32	16	42,64	61,36	83,47	84,43	102,44	119,46	79	19,0	16	75,08	89,02	
19,00	92	31	16	54,74	71,73	95,79				79	19,0	16			
20,00	104	38	20	51,61	69,16	94,11	103,02	120,51	140,54	88	22,0	20	89,30	106,57	
22,00	104	38	20	76,96	104,41	140,07				88	22,0	20	119,20	152,48	
25,00	121	45	25	95,81	108,55	185,47	156,05	178,32	207,94	102	26,0	25	149,64	171,95	
28,00	121	45	25	109,93	144,47	207,37				102	26,0	25			
30,00	121	45	25	114,96	152,72	243,56	194,05	228,95	267,00	102	26,0	25			
32,00	133	53	32	172,05	195,95	262,86				112	32,0	32			

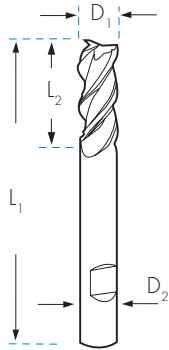


**FRESE FRONTALI SERIE LUNGA A 3 TAGLIANTI DIN 844/L**

**3Z**



SERIE LUNGA



DIN 844/L		MATERIALE		FINITURA		
				FF83	FF86	FT83
QUALITÀ		HSSCo 8%	HSSCo 8%	HSSCo 8%		
		BRILLANTE	TiAIN	TiAISIN		
D1 mm		L1 mm		L2 mm		
		D2 mm		€	€	€
1,00	52	7	6			
2,00	54	10	6	21,80	27,54	36,26
2,50	56	12	6	21,65	27,51	36,22
3,00	56	12	6	21,24	27,46	36,15
3,50	59	15	6	23,77	29,45	38,78
4,00	63	19	6	21,24	27,46	36,15
4,50	63	19	6	23,77	29,45	38,78
5,00	68	24	6	21,24	27,46	36,15
5,50	68	24	6	21,00	29,45	38,78
6,00	68	24	6	21,03	28,72	37,83
6,50	68	24	6			
7,00	80	30	10	29,16	38,46	50,63
7,50	80	30	10			
8,00	88	38	10	26,11	34,69	45,67
8,50	88	38	10			
9,00	88	38	10	29,56	41,15	54,19
9,50	88	38	10			
10,00	95	45	10	26,27	38,14	50,23
11,00	102	45	12	39,09	51,95	68,41
12,00	110	53	12	34,14	46,50	61,23
13,00	110	53	12			
14,00	110	53	12	43,41	56,87	74,88
15,00	110	53	12			
16,00	123	63	16	50,09	68,54	90,26
17,00	123	63	16			
18,00	123	63	16	59,84	83,63	106,68
19,00	123	63	16			
20,00	141	75	20	70,26	95,69	122,06
22,00	141	75	20	89,87	123,39	157,39
25,00	166	90	25	130,99	163,01	207,92
28,00	166	90	25	145,82	195,22	249,00
30,00	166	90	25	162,34	208,53	265,96
32,00	186	106	32	193,16	256,86	299,55

Frese

Rosa

**FRESE FRONTALI SERIE CORTA E LUNGA MULTITAGLIANTI DIN 844 E DIN 844/L**

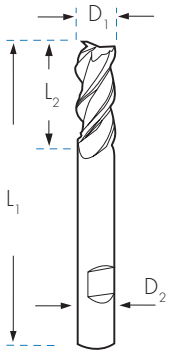
Frese

Rosa

**4-6 Z**


INOX

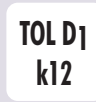
Al

TOL D1  
k10TOL D2  
h6
**SERIE CORTA**

**SERIE LUNGA**

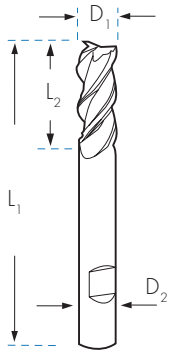

DIN 844					FF18		FF20		FT18		FP07		FT09		DIN 844/L				
MATERIALE					HSSCo 8%	HSSCo 8%	HSSCo 8%	ASP 60	ASP 60	MATERIALE					HSSCo 8%	HSSCo 8%	HSSCo 8%	ASP 60	
FINITURA					BRILLANTE	TiAIN	TiAlSiN	BRILLANTE	TiAlSiN	FINITURA					BRILLANTE	TiAIN	TiAlSiN	BRILLANTE	
QUALITÀ					★★	★★★	★★★★	Premium Quality	Premium Quality	QUALITÀ					★★	★★★	★★★★	Premium Quality	
D1	L1	L2	D2	Z	€	€	€	€	€	L1	L2	D2	Z	€	€	€	€		
mm	mm	mm	mm							mm	mm	mm							
1,00	49	3	6	4					29,68	52	7	6	4						
2,00	51	7	6	4	14,75	21,35	27,07	21,70	29,74	54	10	6	4	19,20	28,25	32,93	30,82		
2,50	52	8	6	4	14,75	21,35	27,07			56	12	6	4	19,20	28,25	33,10			
3,00	52	8	6	4	14,75	21,35	26,52	21,70	29,74	56	12	6	4	18,11	26,51	31,08	30,82		
3,50	55	11	6	4	15,19	21,75	28,16			59	15	6	4	25,38	34,25	39,93			
4,00	55	11	6	4	14,75	21,35	25,97	21,70	29,74	63	19	6	4	18,11	28,26	32,95	30,82		
4,50	57	13	6	4	15,37	22,54	29,15			63	19	6	4	25,38	34,25	39,93			
5,00	57	13	6	4	14,75	21,35	25,97	21,70	29,74	68	24	6	4	18,11	26,51	31,08	30,82		
5,50	57	13	6	4	16,10	29,27	37,87			68	24	6	4	25,21	34,25	39,93			
6,00	57	13	6	4	15,39	21,33	26,49	21,70	29,74	68	24	6	4	19,29	26,91	32,95	30,82		
6,50	66	16	10	4	23,53	33,12	39,44			80	30	10	4						
7,00	66	16	10	4	21,33	31,27	37,19	29,49	42,42	80	30	10	4	29,28	39,29	45,84	45,98		
7,50	69	16	10	4	27,87	37,22	44,30			80	30	10	4						
8,00	69	19	10	4	19,04	28,97	34,49	29,35	42,01	88	38	10	4	26,60	35,41	41,28	45,98		
8,50	69	19	10	4	29,07	39,37	49,19			88	38	10	4						
9,00	69	19	10	4	21,18	34,64	43,30	34,68	45,82	88	38	10	4	30,31	41,27	48,14	45,98		
9,50	69	19	10	4	30,76	40,95	51,17			88	38	10	4						
10,00	72	22	10	4	20,82	31,45	39,31	31,18	43,06	95	45	10	4	26,71	37,22	45,57	45,98		
11,00	79	22	12	4	28,96	40,93	51,13			102	45	12	4	37,96	51,49	60,06			
12,00	83	26	12	4	26,28	36,36	45,43	41,18	57,02	110	53	12	4	34,96	48,92	57,05	66,66		
13,00	83	26	12	4	34,79	50,56	63,17			110	53	12	4						
14,00	83	26	12	4	32,84	46,76	61,63	51,16	60,73	110	53	12	4	45,75	59,64	69,55	76,96		
15,00	83	26	12	4	39,96	55,13	68,88			110	53	12	4						
16,00	92	32	16	4	39,00	54,21	68,70	59,96	71,93	123	63	16	4	50,01	70,16	81,83	95,36		
17,00	92	32	16	4	46,98	65,85	82,26			123	63	16	4						
18,00	92	32	16	4	48,03	65,92	83,56	73,13	89,96	123	63	16	4	61,08	83,52	97,41	122,01		
19,00	92	31	16	4	56,88	75,67	94,56			123	63	16	4						
20,00	104	38	20	4	56,88	75,67	94,56	86,01	116,86	141	75	20	4	71,54	96,47	112,52	149,62		
22,00	104	38	20	4	65,10	104,91	131,09	113,33	137,83	141	75	20	5	99,20	127,15	148,30	167,83		
24,00	121	45	25	5	81,39	113,65	154,45			141	75	25	5						
25,00	121	45	25	5	80,91	120,12	153,74	146,22	181,76	166	90	25	5	122,20	162,40	189,37	243,78		
26,00	121	45	25	5	101,55	139,30	189,31			166	90	25	5						
28,00	121	45	25	5	111,65	149,68	193,44			166	90	25	5	147,13	193,18	225,27			
30,00	121	45	25	6	129,79	166,14	217,93			166	90	25	6	166,07	212,22	247,50			
32,00	133	53	32	6	133,08	169,97	222,94			186	106	32	6	167,43	213,73	249,23			
36,00	133	53	32	6	201,54	244,03	320,05			186	106	32	6	239,98	288,12	335,97			
40,00	155	63	32	6	242,28	296,75	389,21			217	125	32	6	265,99	343,52	402,49			

**FRESE FRONTALI DI SGROSSATURA MULTITAGLIENTI DIN 844 E DIN 844/L**

**4-6 Z**



**SERIE CORTA**



**SERIE LUNGA**



DIN 844		MATERIALE			FINITURA			QUALITÀ			SGROSSATURA								
D1 mm	L1 mm	L2 mm	D2 mm	Z	HSSCo 8%	BRILLANTE	★★	NR	HSSCo 8%	TiAIN	★★★	NR	HSSCo 8%	TiAISIN	★★★★	NR	€	€	€
6,00	57	13	6	4	HSSCo 8%	BRILLANTE	★★	NR	HSSCo 8%	TiAIN	★★★	NR	HSSCo 8%	TiAISIN	★★★★	NR	33,35	38,91	56,98
7,00	66	16	10	4	HSSCo 8%	BRILLANTE	★★	NR	HSSCo 8%	TiAIN	★★★	NR	HSSCo 8%	TiAISIN	★★★★	NR	35,73	51,60	68,01
8,00	69	19	10	4	HSSCo 8%	BRILLANTE	★★	NR	HSSCo 8%	TiAIN	★★★	NR	HSSCo 8%	TiAISIN	★★★★	NR	34,82	43,65	60,56
9,00	69	19	10	4	HSSCo 8%	BRILLANTE	★★	NR	HSSCo 8%	TiAIN	★★★	NR	HSSCo 8%	TiAISIN	★★★★	NR	40,94	54,10	71,31
10,00	72	22	10	4	HSSCo 8%	BRILLANTE	★★	NR	HSSCo 8%	TiAIN	★★★	NR	HSSCo 8%	TiAISIN	★★★★	NR	34,80	44,58	59,96
11,00	79	22	12	4	HSSCo 8%	BRILLANTE	★★	NR	HSSCo 8%	TiAIN	★★★	NR	HSSCo 8%	TiAISIN	★★★★	NR	39,67	65,18	85,90
12,00	83	26	12	4	HSSCo 8%	BRILLANTE	★★	NR	HSSCo 8%	TiAIN	★★★	NR	HSSCo 8%	TiAISIN	★★★★	NR	34,49	55,45	73,10
13,00	83	26	12	4	HSSCo 8%	BRILLANTE	★★	NR	HSSCo 8%	TiAIN	★★★	NR	HSSCo 8%	TiAISIN	★★★★	NR	45,78	64,71	99,20
14,00	83	26	12	4	HSSCo 8%	BRILLANTE	★★	NR	HSSCo 8%	TiAIN	★★★	NR	HSSCo 8%	TiAISIN	★★★★	NR	41,59	64,33	84,80
15,00	83	26	12	4	HSSCo 8%	BRILLANTE	★★	NR	HSSCo 8%	TiAIN	★★★	NR	HSSCo 8%	TiAISIN	★★★★	NR	51,96	76,99	109,14
16,00	92	32	16	4	HSSCo 8%	BRILLANTE	★★	NR	HSSCo 8%	TiAIN	★★★	NR	HSSCo 8%	TiAISIN	★★★★	NR	44,42	75,81	99,92
17,00	92	32	16	4	HSSCo 8%	BRILLANTE	★★	NR	HSSCo 8%	TiAIN	★★★	NR	HSSCo 8%	TiAISIN	★★★★	NR	79,00	100,21	132,08
18,00	92	32	16	4	HSSCo 8%	BRILLANTE	★★	NR	HSSCo 8%	TiAIN	★★★	NR	HSSCo 8%	TiAISIN	★★★★	NR	63,07	83,52	110,09
19,00	92	31	16	4	HSSCo 8%	BRILLANTE	★★	NR	HSSCo 8%	TiAIN	★★★	NR	HSSCo 8%	TiAISIN	★★★★	NR	92,71	116,15	153,11
20,00	104	38	20	4	HSSCo 8%	BRILLANTE	★★	NR	HSSCo 8%	TiAIN	★★★	NR	HSSCo 8%	TiAISIN	★★★★	NR	79,06	94,88	134,49

SENZA TAGLIO AL CENTRO					FF05	FF74	FT05
22,00	104	38	20	6	103,05	126,89	
24,00	121	45	25	6	129,80	150,47	176,31
25,00	121	45	25	6	128,58	149,60	175,29
26,00	121	45	25	6	148,90	183,06	214,48
28,00	121	45	25	6	162,43	199,16	233,35
30,00	121	45	25	6	174,49	217,98	255,41
32,00	133	53	32	6	197,68	234,46	274,70
36,00	133	53	32	6	234,29	270,17	316,57
40,00	155	63	32	6	263,39	312,85	366,58








DIN 844/L		MATERIALE			FINITURA			QUALITÀ			SGROSSATURA							
L1 mm	L2 mm	D2 mm	Z	HSSCo 8%	BRILLANTE	★★	NR	HSSCo 8%	TiAIN	★★★	NR	HSSCo 8%	TiAISIN	★★★★	NR	€	€	€
68	24	6	4	HSSCo 8%	BRILLANTE	★★	NR	HSSCo 8%	TiAIN	★★★	NR	HSSCo 8%	TiAISIN	★★★★	NR	36,76	52,97	76,02
80	30	10	4	HSSCo 8%	BRILLANTE	★★	NR	HSSCo 8%	TiAIN	★★★	NR	HSSCo 8%	TiAISIN	★★★★	NR	49,84	66,91	86,44
88	38	10	4	HSSCo 8%	BRILLANTE	★★	NR	HSSCo 8%	TiAIN	★★★	NR	HSSCo 8%	TiAISIN	★★★★	NR	44,45	61,93	80,00
88	38	10	4	HSSCo 8%	BRILLANTE	★★	NR	HSSCo 8%	TiAIN	★★★	NR	HSSCo 8%	TiAISIN	★★★★	NR	54,82	67,86	87,64
95	45	10	4	HSSCo 8%	BRILLANTE	★★	NR	HSSCo 8%	TiAIN	★★★	NR	HSSCo 8%	TiAISIN	★★★★	NR	43,86	57,67	74,51
102	45	12	4	HSSCo 8%	BRILLANTE	★★	NR	HSSCo 8%	TiAIN	★★★	NR	HSSCo 8%	TiAISIN	★★★★	NR	71,09	87,47	113,00
110	53	12	4	HSSCo 8%	BRILLANTE	★★	NR	HSSCo 8%	TiAIN	★★★	NR	HSSCo 8%	TiAISIN	★★★★	NR	51,85	69,71	90,05
110	53	12	4	HSSCo 8%	BRILLANTE	★★	NR	HSSCo 8%	TiAIN	★★★	NR	HSSCo 8%	TiAISIN	★★★★	NR			
110	53	12	4	HSSCo 8%	BRILLANTE	★★	NR	HSSCo 8%	TiAIN	★★★	NR	HSSCo 8%	TiAISIN	★★★★	NR	56,57	78,75	101,75
110	53	12	4	HSSCo 8%	BRILLANTE	★★	NR	HSSCo 8%	TiAIN	★★★	NR	HSSCo 8%	TiAISIN	★★★★	NR			
123	63	16	4	HSSCo 8%	BRILLANTE	★★	NR	HSSCo 8%	TiAIN	★★★	NR	HSSCo 8%	TiAISIN	★★★★	NR	67,79	95,57	123,44
123	63	16	4	HSSCo 8%	BRILLANTE	★★	NR	HSSCo 8%	TiAIN	★★★	NR	HSSCo 8%	TiAISIN	★★★★	NR			
123	63	16	4	HSSCo 8%	BRILLANTE	★★	NR	HSSCo 8%	TiAIN	★★★	NR	HSSCo 8%	TiAISIN	★★★★	NR	76,26	110,63	144,35
123	63	16	4	HSSCo 8%	BRILLANTE	★★	NR	HSSCo 8%	TiAIN	★★★	NR	HSSCo 8%	TiAISIN	★★★★	NR			
141	75	20	4	HSSCo 8%	BRILLANTE	★★	NR	HSSCo 8%	TiAIN	★★★	NR	HSSCo 8%	TiAISIN	★★★★	NR	87,51	118,57	170,19

				FF08	FF58	FT08
141	75	20	6	119,72	169,99	199,17
141	75	25	6			
166	90	25	6	151,21	201,38	235,96
166	90	25	6			
166	90	25	6	170,50	231,52	271,27
166	90	25	6	221,08	276,55	324,05
186	106	32	6	231,21	282,73	331,28
186	106	32	6	277,64	337,62	395,59
217	125	40	6	328,26	420,23	492,40

**FRESE FRONTALI, SENZA TAGLIO AL CENTRO, MULTITAGLIENTI DIN 844 E DIN 844/L**

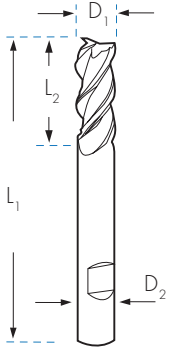
Frese

Rosa

**4-6 Z**   **30° N**  **WELDON**  **34 HRc**  **INOX**  **Al** **TOL D1 k10** **TOL D2 h6** 

**SERIE CORTA**

**SERIE LUNGA**



DIN 844					FF03	FF04	FF54	FT04	DIN 844/L						
					HSS	HSSCo 8%	HSSCo 8%	HSSCo 8%							
					★	★★	★★★	★★★★							
D1 mm	L1 mm	L2 mm	D2 mm	Z	€	€	€	€	L1 mm	L2 mm	D2 mm	Z	€	€	€
2,00	51	7	6	4	11,33	14,85	23,90	27,89	54	10	6	4	18,57	28,74	33,68
2,50	52	8	6	4	11,33	14,85	23,90	27,89	56	12	6	4	18,57	28,74	33,68
3,00	52	8	6	4	11,33	14,85	23,90	27,89	56	12	6	4	18,57	28,74	33,68
3,50	55	11	6	4	11,68	15,32	24,44	28,48	59	15	6	4	24,43	35,88	42,04
4,00	55	11	6	4	11,33	14,85	23,90	27,89	63	19	6	4	18,57	29,90	35,04
4,50	57	13	6	4	11,68	15,31	24,44	28,48	63	19	6	4	24,43	35,88	42,04
5,00	57	13	6	4	11,33	14,85	23,90	27,89	68	24	6	4	18,57	29,90	35,04
5,50	57	13	6	4	17,61	23,11	32,12	37,46	68	24	6	4	24,43	35,88	42,04
6,00	57	13	6	4	11,33	14,85	23,90	27,89	68	24	6	4	18,57	29,90	35,04
6,50	66	16	10	4	17,61*	23,11	33,24	38,78	80	30	10	4	28,11	41,25	48,35
7,00	66	16	10	4	16,62	21,81	32,03	37,36	80	30	10	4	28,11	41,25	48,35
7,50	69	16	10	4	20,82	27,28	37,24	43,42	88	38	10	4	25,80	38,87	45,54
8,00	69	19	10	4	12,91	16,75	27,16	31,67	88	38	10	4	25,80	38,87	45,54
8,50	69	19	10	4	21,70	28,52	39,45	46,00	88	38	10	4	25,80	38,87	45,54
9,00	69	19	10	4	17,37	22,78	34,02	39,68	88	38	10	4	29,18	43,51	50,97
9,50	72	22	10	4	23,56	30,13	41,42	48,30	88	38	10	4	29,18	43,51	50,97
10,00	72	22	10	4	15,77	20,66	32,05	37,38	95	45	10	4	26,08	41,37	48,48
11,00	79	22	12	4	21,74	28,52	41,36	48,22	102	45	12	4	35,10	52,22	61,18
12,00	83	26	12	4	18,74	24,66	37,19	43,37	110	53	12	4	32,59	49,64	58,19
13,00	83	26	12	4	27,95	36,81	50,68	59,08	110	53	12	4	32,59	49,64	58,19
14,00	83	26	12	4	26,44	34,61	48,74	56,84	110	53	12	4	42,60	60,24	70,59
15,00	83	26	12	4	30,15	39,50	56,13	65,46	110	53	12	4	42,60	60,24	70,59
16,00	92	32	16	4	29,40	38,52	55,21	64,39	123	63	16	4	46,57	71,20	83,45
17,00	92	32	16	4	36,23	47,70	66,02	76,98	123	63	16	4	46,57	71,20	83,45
18,00	92	32	16	4	36,19	47,49	66,02	76,98	123	63	16	4	56,88	84,61	99,14
19,00	92	31	16	4	42,87	55,88	75,76	88,34	123	63	16	4	56,88	84,61	99,14
20,00	104	38	20	4	42,87	55,88	75,76	88,34	141	75	20	4	66,62	97,11	113,77
22,00	104	38	20	5	58,89	77,55	104,85	122,27	141	75	20	5	92,38	127,63	149,56
24,00	121	45	25	5	73,15	96,36	123,24	143,73	141	75	25	5	92,38	127,63	149,56
25,00	121	45	25	5	73,15	96,36	123,24	143,73	166	90	25	5	122,52	163,42	191,47
26,00	121	45	25	5	91,45	120,47	155,80	181,68	166	90	25	5	122,52	163,42	191,47
28,00	121	45	25	5	91,89	121,04	160,01	186,57	166	90	25	5	149,77	201,22	235,81
30,00	121	45	25	6	106,02	138,88	178,42	208,08	166	90	25	6	171,41	223,10	261,38
32,00	133	53	32	6	109,03*	142,45	182,57	212,92	186	106	32	6	171,15	224,66	263,24
36,00	133	53	32	6	142,69	187,92	228,60	266,59	186	106	32	6	244,08	308,70	361,71
40,00	143	63	32	6	171,06	225,90	280,54	327,14	217	125	40	6	271,32	414,88	486,12

\*Fino ad esaurimento scorte

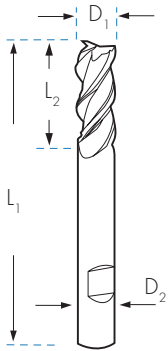


FRESE FRONTALI DI SGROSSATURA MULTITAGLIENTI DIN 844 E DIN 844/L

**3-5 Z**   **30° N**  **WELDON**  **34 HRC**  **INOX**  **Al** **TOL D1 k12** **TOL D2 h6**

SERIE CORTA

SERIE LUNGA



DIN 844		MATERIALE			FINITURA				SGROSSATURA				QUALITÀ							
D1 mm	L1 mm	L2 mm	D2 mm	Z	ASP 60	ASP 60	ASP 60	ASP 60	BRILLANTE	TiAlSiN	BRILLANTE	TiAlSiN	BRILLANTE	TiAlSiN	BRILLANTE	TiAlSiN	BRILLANTE	TiAlSiN	BRILLANTE	TiAlSiN
D1 mm	L1 mm	L2 mm	D2 mm	Z	€	€	€	€	NF	NF	NR	NR	NF	NF	NR	NR	NF	NF	NR	NR
2,00	51	7	6	3																
2,50	52	8	6	3																
3,00	52	8	6	3																
3,50	55	11	6	3																
4,00	55	11	6	3																
4,50	57	13	6	3																
5,00	57	13	6	3																
5,50	57	13	6	3																
6,00	57	13	6	3	50,70	58,18	46,97	54,01												
6,50	66	16	10	3																
7,00	66	16	10	3	65,00	70,77	58,98	67,11												
7,50	69	19	10	3																
8,00	69	19	10	3	55,99	65,20	51,32	59,29												
8,50	69	19	10	3																
9,00	69	19	10	3	67,43	73,83	61,34	70,18												
9,50	72	22	10	3																
10,00	72	22	10	4	53,37	63,26	48,39	60,09												
11,00	79	22	12	4																
12,00	83	26	12	4	70,21	79,53	64,03	73,26												
13,00	83	26	12	4																
14,00	83	26	12	4	85,27	96,94	77,30	87,91												
15,00	83	26	12	4																
16,00	92	32	16	4	104,52	115,26	95,30	107,38												
17,00	92	32	16	4																
18,00	92	32	16	4	114,76	125,32	103,41	117,45												
19,00	92	31	16	4																
20,00	104	38	20	4	142,37	156,96	128,69	147,22												
22,00	104	38	20	5	175,49	193,36	159,16	180,88												
24,00	121	45	25	5																
25,00	121	45	25	5	208,04	231,17	188,69	214,10												
26,00	121	45	25	5																
28,00	121	45	25	5																
30,00	121	45	25	5																
32,00	133	53	32	5																
36,00	133	53	32	5																
40,00	155	63	40	5																

DIN 844/L		MATERIALE			FINITURA				SGROSSATURA				QUALITÀ							
L1 mm	L2 mm	D2 mm	Z	ASP 60	ASP 60	ASP 60	ASP 60	BRILLANTE	TiAlSiN	BRILLANTE	TiAlSiN	BRILLANTE	TiAlSiN	BRILLANTE	TiAlSiN	BRILLANTE	TiAlSiN	BRILLANTE	TiAlSiN	
L1 mm	L2 mm	D2 mm	Z	€	€	€	€	NF	NF	NR	NR	NF	NF	NR	NR	NF	NF	NR	NR	
54	10	6	3																	
56	12	6	3																	
56	12	6	3																	
59	15	6	3																	
63	19	6	3																	
63	19	6	3																	
68	24	6	3																	
68	24	6	3																	
68	24	6	3		79,54	84,04	70,57	81,49												
68	24	6	3																	
80	30	10	3	89,91	102,37	81,65	95,36													
80	30	10	3																	
88	38	10	3	83,67	89,05	74,04	84,94													
88	38	10	3																	
88	38	10	3	88,24	100,98	81,65	95,96													
88	38	10	3																	
95	45	10	4	75,27	83,71	67,07	77,31													
102	45	12	4																	
110	53	12	4	95,39	104,20	84,24	95,39													
110	53	12	4																	
110	53	12	4	111,80	128,29	100,55	113,54													
110	53	12	4																	
123	63	16	4	133,74	146,89	119,33	135,55													
123	63	16	4																	
123	63	16	4	149,60	174,19	136,29	155,29													
123	63	16	4																	
141	75	20	4	194,46	213,30	172,28	198,34													
141	75	20	5	297,09	317,49	260,16	297,70													
141	75	25	5																	
166	90	25	5	298,32	327,55	263,15	305,25													
166	90	25	5																	
166	90	25	5																	
166	90	25	5																	
186	106	32	5																	
186	106	32	5																	
217	125	40	5																	

**FRESE SERIE SUPER CORTA E EXTRA CORTA A 3 TAGLIENTI**
**3Z**

**INOX**
**Al**
**TOL D1**  
e8

**TOL D2**  
h6

**SERIE SUPER CORTA**
**SERIE EXTRA CORTA**

MATERIALE FINITURA					FF51 HSSCo 8% BRILLANTE
D1 mm	L1 mm	L2 mm	D2 mm	Z	€
1,00	34	2	6	3	13,66
1,50	34	3	6	3	13,66
2,00	35	4	6	3	13,66
2,50	36	5	6	3	13,66
3,00	36	5	6	3	13,66
3,50	37	6	6	3	13,66
4,00	38	7	6	3	13,66
4,50	38	7	6	3	13,66
5,00	39	8	6	3	13,66
5,50	39	8	6	3	13,66
6,00	39	8	6	3	13,66
6,50	42	10	8	3	18,79
7,00	42	10	8	3	18,79
7,50	42	10	8	3	18,79
8,00	43	11	8	3	18,79
8,50	48	11	10	3	21,52
9,00	48	11	10	3	21,52
9,50	48	11	10	3	21,52
10,00	50	13	10	3	21,52



MATERIALE FINITURA					FF53 HSSCo 8% BRILLANTE
D1 mm	L1 mm	L2 mm	D2 mm	Z	€
2,00	38	7	6	3	15,85
2,50	39	8	6	3	15,85
3,00	39	8	6	3	15,85
3,50	41	10	6	3	15,85
4,00	42	11	6	3	15,85
4,50	42	11	6	3	15,85
5,00	44	13	6	3	15,85
5,50	44	13	6	3	15,85
6,00	44	13	6	3	15,85
6,50	48	16	8	3	21,81
7,00	48	16	8	3	21,81
8,00	51	19	8	3	21,81
8,50	56	19	10	3	24,94
9,00	56	19	10	3	24,94
10,00	59	22	10	3	24,94


**3Z**

**DIN**  
844N

**HSS**  
PM

**Al**
**Cu**
**TOL D1**  
k10

**TOL D2**  
h6

Migliora  
l'estrazione di  
truciolo


	D1 mm	L1 mm	L2 mm	D2 mm	Z	FP22 €
FP220600	6,00	57	13	6	3	36,59*
FP220700	7,00	66	16	10	3	49,43*
FP220800	8,00	69	19	10	3	49,43*
FP220900	9,00	69	19	10	3	49,43*
FP221000	10,00	72	22	10	3	49,43*
FP221200	12,00	83	26	12	3	68,04*
FP221400	14,00	83	26	12	3	77,56*
FP221500	15,00	83	26	12	3	94,74*
FP221600	16,00	92	32	16	3	94,74*
FP221800	18,00	92	32	16	3	132,82*
FP222000	20,00	104	38	20	3	158,51*

\*Fino ad esaurimento scorte



**FRESE IN METALLO DURO PER MATERIALI COMPOSTI: FIBRA DI CARBONIO, PANNELLO FENOLICO, ECC...**

**MD**



**GIRI E AVANZAMENTO**

D <sub>1</sub> mm	RPM rev./min	AVANZ. mm/min
1,50	60.000	3.000
2,00	50.000	2.500
3,00	32.000	1.600
5,00	20.000	1.200
6,00	16.000	1.000
6,35	14.000	1.000
8,00	9.000	700
10,00	7.000	550
12,00	6.000	450



D <sub>1</sub> mm	L <sub>1</sub> mm	L <sub>2</sub> mm	D <sub>2</sub> mm		RFC €	RF €	RFC TL TiAlN €	RFTL TiAlN €			
1,50	38	5	3,00	RFC0150	18,53	RF0150	17,57	RFC0150TL	28,02	RF0150TL	27,05
2,00	38	10	3,00	RFC0200	18,53	RF0200	17,57	RFC0200TL	28,02	RF0200TL	27,05
3,00	38	12	3,00	RFC0300	18,53	RF0300	17,57	RFC0300TL	28,02	RF0300TL	27,05
5,00	50	16	5,00	RFC0500	36,78	RF0500	33,40	RFC0500TL	46,27	RF0500TL	42,89
6,00	63	25	6,00	RFC0600	41,13	RF0600	37,28	RFC0600TL	51,96	RF0600TL	48,15
6,35	75	30	6,35	RFC0635	48,57	RF0635	44,46	RFC0635TL	60,12	RF0635TL	56,01
8,00	63	25	8,00	RFC0800	61,92	RF0800	56,19	RFC0800TL	71,17	RF0800TL	65,47
10,00	63	25	10,00	RFC1000	69,39	RF1000	63,10	RFC1000TL	77,99	RF1000TL	71,68
12,00	75	25	12,00	RFC1200	81,43	RF1200	74,06	RFC1200TL	91,35	RF1200TL	83,96

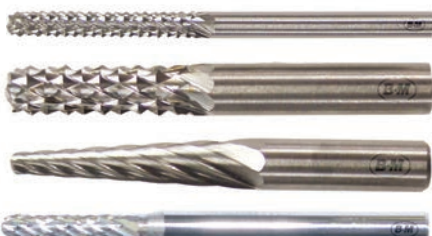
**FRESA IN METALLO DURO PER LA RIPARAZIONE DELLE FORATURA NEGLI PNEUMATICI**

**MD**



	D <sub>1</sub> mm	L <sub>1</sub> mm	L <sub>2</sub> mm	D <sub>2</sub> mm	RN €
RN0300	3,00	50	25	3	18,04
RN0600	6,00	80	50	6	43,52
RN0800	8,00	110	50	8	49,02
RN1000	10,00	110	60	10	76,93

**FRESE IN METALLO DURO, ACCESSORI ROTOZIP**



Ref.: RR0317

Ref.: RR0635

Ref.: RR0435

Ref.: RR0247

		D <sub>1</sub> mm	L <sub>1</sub> mm	L <sub>2</sub> mm	D <sub>2</sub> mm	RR €
RR0317	Taglio piastrelle	3,17	50	25	3,17	20,79*
RR0635	Taglio piastrelle	6,35	50	25	6,35	34,85*
RR0435	Lavorazione intonaco	6,35	52	32	6,35	43,62*
RR0247	Malta	2,47	38	14	3,17	15,28*

\*Fino ad esaurimento scorte

**FRESE A 1 DENTE HSSCo**
**HSSCo**
**Al**
**PVC**
**TOL D1  
k12**
**TOL D2  
h6**
**SERIE CORTA**

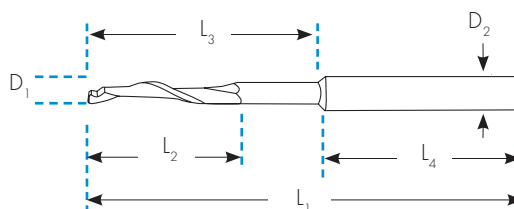
**FF13**

	D1 mm	L1 mm	L2 mm	D2 mm	HSSCo €	TiN €
FF1381	1,0	60	12	8	43,64	61,47
FF1382	2,0	60	12	8	43,64	61,47
FF1383	3,0	60	12	8	16,94	24,71
FF1384	4,0	60	12	8	16,94	24,71
FF1385	5,0	60	13	8	16,94	24,71
FF1386	6,0	60	16	8	17,56	25,60
FF1387	7,0	60	16	8	18,29	25,72
FF1388	8,0	80	16	8	18,29	25,72
FF131010	10,0	80	15	10	21,83	30,12
FF1361	1,0	45	6	6	30,45	40,39
FF13615	1,5	45	6	6	30,45	40,39
FF1362	2,0	45	6	6	30,45	40,39
FF1363	3,0	60	12	6	16,94	23,67
FF1364	4,0	60	12	6	16,94	23,67
FF1365	5,0	60	12	6	16,94	23,67
FF1366	6,0	60	14	6	16,94	23,67

**SERIE LUNGA**

**FF14**

	D1 mm	L1 mm	L2 mm	L3 mm	D2 mm	HSSCo €	TiN €
FF1483	3	80	16	45	8	30,53	38,76
FF1484	4	80	16	45	8	26,00	34,42
FF1485	5	80	16	45	8	26,00	34,42
FF1486	6	90	16	45	8	26,00	34,42
FF1487	7	90	20	50	8	33,66	42,45
FF1488	8	100	30	70	8	30,43	39,14
FF1465	5	80	14	45	6	26,00	34,42
FF1466	6	80	14	45	6	26,00	34,42


**SERIE EXTRA LUNGA**

**FF14-E**

	D1 mm	L1 mm	L2 mm	L3 mm	D2 mm	L4 mm	HSSCo €	TiN €
FF1485-E	5	100	30	55	8	45	26,18	33,46
FF1485-EL	5	100	50	-	8	50	30,47	43,27

**ALLUMINIO LACCATO**

**FF50**

	D1 mm	L1 mm	L2 mm	L3 mm	D2 mm	HSSCo €	TiN €
FF5084	4	80	16	35	8	23,67	32,31
FF5085	5	80	18	35	8	23,67	32,31

**MISURE SPECIALI**

**FF14 Speciali**

	D1 mm	L1 mm	L2 mm	L3 mm	D2 mm	HSSCo €
FF148412020	4	120	20	-	8	24,12
FF14856018	5	60	18	-	8	19,87
FF14859025	5	90	25	-	8	25,94
FF148510025	5	100	25	-	8	24,11
FF148512014	5	120	14	-	8	24,11
FF14851001817	5	100	18	35	8	24,49
FF14851201461	5	120	14	75	8	32,98
FF14851201817	5	120	18	35	8	32,98
FF1486801421	6	80	14	35	8	27,35
FF14861001835	6	100	18	35	8	27,35
FF14861201461	6	120	14	75	8	39,54

**FF14 Speciali**

	D1 mm	L1 mm	L2 mm	L3 mm	D2 mm	HSSCo €
FF14861003045	6	100	30	45	8	33,16
FF14861006040	6	100	60	-	8	42,57
FF14888025	8	80	25	-	8	20,64
FF148810014	8	100	14	-	8	22,81
FF148812014	8	120	14	-	8	24,78
FF14881201476	8	120	14	90	8	29,89
FF14898014	9	80	14	-	8	23,93
FF148108014	10	80	14	-	8	25,49
FF1410101003040	10	100	30	70	10	31,09
FF1410101201481	10	120	14	95	10	33,11
FF14101012014	10	120	14	-	10	26,70
FF148128014	12	80	14	-	8	28,89



FRESE A 1 DENTE IN METALLO DURO

MD

Al

PVC

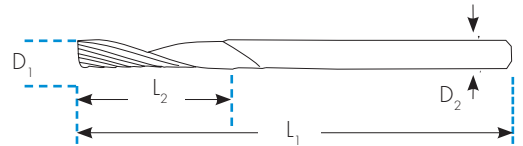
TOL  
h10

TOL D<sub>2</sub>  
h6

ELICA A - SERIE CORTA



A	D <sub>1</sub> mm	L <sub>1</sub> mm	L <sub>2</sub> mm	D <sub>2</sub> mm	FMGA13	
					MD	€
FMGA13305	0,5	39	1,5	3		54,24
FMGA1331	1,0	39	3,0	3		37,02
FMGA13315	1,5	39	4,0	3		33,31
FMGA1322	2,0	40	10,0	2		28,07
FMGA1333	3,0	40	12,0	3		25,43
FMGA1336	3,0	64	12,0	6		43,65
FMGA1338	3,0	64	12,0	8		60,24
FMGA1344	4,0	50	16,0	4		27,96
FMGA1346	4,0	64	16,0	6		44,11
FMGA1348	4,0	64	16,0	8		70,09
FMGA135550	5,0	50	16,0	5		29,02
FMGA1355	5,0	64	16,0	5		31,79
FMGA1356	5,0	64	16,0	6		49,64
FMGA1358	5,0	64	16,0	8		71,68
FMGA136650	6,0	50	16,0	6		39,02
FMGA1366	6,0	64	20,0	6		42,98
FMGA1368	6,0	64	20,0	8		72,78
FMGA1378	7,0	64	20,0	8		81,59
FMGA138816	8,0	66	16,0	8		44,26
FMGA1388	8,0	76	38,0	8		58,68
FMGA131010	10,0	76	30,0	10		73,55



ELICA A - SERIE LUNGA



A	D <sub>1</sub> mm	L <sub>1</sub> mm	L <sub>2</sub> mm	D <sub>2</sub> mm	FMGA13E	
					MD	€
FMGA1355E	5	80	38	5		52,37
FMGA1366E	6	85	40	6		57,84
FMGA1388E	8	90	38	8		74,35
FMGA1388EX	8	110	43	8		83,51
FMGA131010E	10	100	40	10		106,60
FMGA131010EL	10	120	60	10		155,25

ELICA B



B	D <sub>1</sub> mm	L <sub>1</sub> mm	L <sub>2</sub> mm	D <sub>2</sub> mm	FMGA13HI	
					MD	€
FMGA1333HI	3	50	8	3		34,08
FMGA1344HI	4	64	12	4		34,09
FMGA1355HI	5	64	16	5		36,91
FMGA1366HI	6	64	20	6		55,73
FMGA1388HI	8	76	38	8		73,74
FMGA131010HI	10	76	35	10		85,38

ELICA C



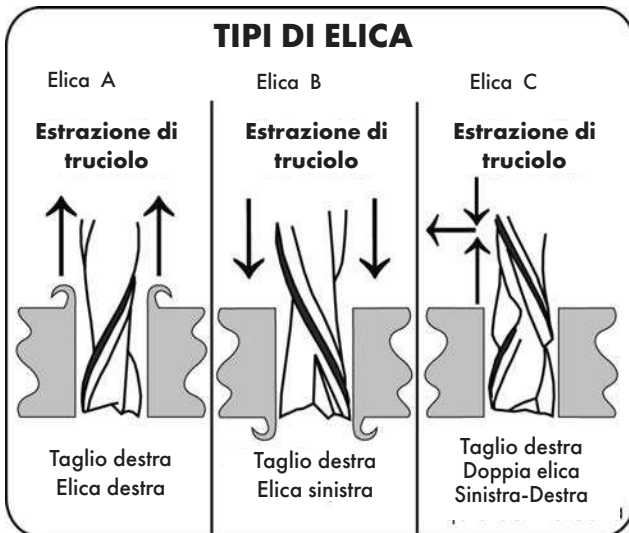
C	D <sub>1</sub> mm	L <sub>1</sub> mm	L <sub>2</sub> mm	D <sub>2</sub> mm	FMGA13CO	
					MD	€
FMGA1366CO	6	64	25	6		125,06
FMGA1388CO	8	64	25	8		172,92
FMGA131010CO	10	76	35	10		203,23
FMGA131212CO	12	76	35	12		269,63

CANALE DRITTO



R	D <sub>1</sub> mm	L <sub>1</sub> mm	L <sub>2</sub> mm	D <sub>2</sub> mm	FMGA13R	
					MD	€
FMGA1346R	4	64	16	6		46,25
FMGA1356R	5	64	20	6		46,25
FMGA1366R	6	64	25	6		53,85
FMGA1388R	8	64	25	8		79,63
FMGA131010R	10	88	35	10		104,23
FMGA131212R	12	88	35	12		150,42

TIPI DI ELICA



VELOCITÀ DI TAGLIO

D <sub>1</sub> mm	HSSCo		MD	
	Aluminio (R.P.M.)	PVC (R.P.M.)	Aluminio (R.P.M.)	PVC (R.P.M.)
3,00	12000	12000	19000	19000
4,00	11000	11000	18000	18000
5,00	10000	10000	18000	18000
6,00	10000	10000	17000	17000
7,00	9000	9000	17000	17000
8,00	9000	9000	16000	16000
9,00	9000	9000	16000	16000
10,00	9000	9000	16000	16000

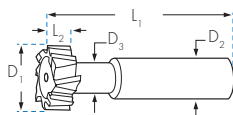
NOTA: Per la serie lunga conviene ridurre le RPM del 15%.

**FRESE PER SCANALARE**

Frese

Rosa

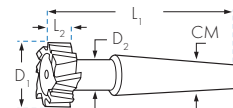
Ref. FF17

**SCANALARE**  
**A "T"**  
**DIN**  
**851A**

**TOL D1**  
**d11**
**TOL D2**  
**h6**

FF17

D1 x L2 mm	D2 mm	D3 mm	Z	L1 mm	FF17	
					HSSCo €	TiAIN €
11,0x4,0	10	4	4	53,5	81,87	101,08
12,5x6,0	10	5	6	57,0	83,15	104,43
16,0x8,0	10	7	6	62,0	86,96	110,86
18,0x8,0	12	8	8	70,0	90,72	117,37
21,0x9,0	12	10	8	74,0	97,41	137,46
25,0x11,0	16	12	8	82,0	113,39	154,41
32,0x14,0	16	15	10	90,0	149,46	208,25
40,0x18,0	25	19	10	108,0	240,35	334,97
50,0x22,0	32	25	10	124,0	335,58	440,10
60,0x28,0	32	30	10	139,0	350,81	460,08
72,0x35,0	32	35	10	153,0	366,05	480,08

Ref. FF17C

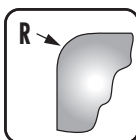
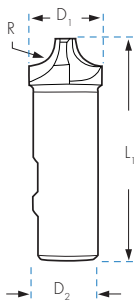
**SCANALARE**  
**A "T"**  
**DIN**  
**851B**

**TOL D2**  
**h12**

FF17C

D1 x L2 mm	CM	FILETTO	D2 mm	L1 mm	FF17C	
					HSSCo €	TiAIN €
18,0x8,0	1	M6	8	70	99,30	123,13
21,0x9,0	2	M10	10	74	106,30	131,80
25,0x11,0	2	M10	12	82	114,32	141,76
32,0x14,0	2	M10	16	90	158,54	196,59
40,0x18,0	3	M12	20	108	231,28	286,79
50,0x22,0	4	M16	25	124	356,38	441,90
60,0x28,0	4	M16	31	139	471,54	584,72
72,0x35,0	5	M20	36	153	640,05	793,65

**FRESA A ¼ DI CERCHIO**  
**PER SMUSSARE GLI SPIGOLI**

4 Z

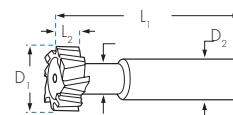
**HSSCo**  
**8%**
**DIN**  
**6518N**
**WELDON**


FF1/4R

	TOL H11		js 15 D1 mm	TOL h6		L1 mm	€
	R	D1 mm		D2 mm	L1 mm		
FF1/4R1	1,0	8	10	60	61,13		
FF1/4R1.50	1,5	9	10	60	69,62		
FF1/4R2	2,0	10	10	60	58,57		
FF1/4R2.50	2,5	11	10	60	67,37		
FF1/4R3	3,0	12	12	60	67,13		
FF1/4R3.50	3,5	13	12	60	87,44		
FF1/4R4	4,0	14	12	60	74,54		
FF1/4R4.50	4,5	15	12	60	101,45		
FF1/4R5	5,0	16	12	60	82,68		
FF1/4R5.50	5,5	19	16	67	101,45		
FF1/4R6	6,0	20	16	67	85,21		
FF1/4R6.50	6,5	21	16	71	129,13		
FF1/4R7	7,0	22	16	71	112,57		
FF1/4R7.50	7,5	23	16	71	140,57		
FF1/4R8	8,0	24	16	71	112,57		
FF1/4R8.50	8,5	25	25	85	172,18		
FF1/4R9	9,0	26	25	85	139,54		
FF1/4R9.50	9,5	27	25	85	180,96		
FF1/4R10	10,0	28	25	85	140,97		
FF1/4R10.50	10,5	31	25	90	210,83		
FF1/4R11	11,0	32	25	90	166,63		
FF1/4R12	12,0	34	25	90	166,94		
FF1/4R12.50	12,5	41	25	100	216,79		
FF1/4R13	13,0	42	25	100	251,14		
FF1/4R14	14,0	44	25	100	250,19		
FF1/4R15	15,0	46	25	100	311,45		
FF1/4R16	16,0	48	25	100	308,46		
FF1/4R18	18,0	52	32	112	369,24		
FF1/4R20	20,0	56	32	112	407,58		

**FRESA PER SCANALARE**  
**"WOODRUFF"**

Ref. FF16

**TIPO**  
**WOODRUFF**
**DIN**  
**850B**
**TOL D1**  
**h12**
**TOL D2**  
**h6**


FF16

D1 x L2 mm	D2 mm	Z	L1 mm	FF16	
				HSSCo €	TiAIN €
4,5x1,0	6	6	50	53,11	63,11
7,5x1,5	6	6	50	40,65	49,11
7,5x2,0	6	6	50	40,65	49,11
10,5x2,0	6	6	50	52,11	63,12
10,5x2,5	6	6	50	52,11	63,12
10,5x3,0	6	6	50	52,11	63,12
13,5x3,0	10	6	56	51,64	64,78
13,5x4,0	10	6	56	54,90	68,90
16,5x3,0	10	6	56	59,36	79,05
16,5x4,0	10	6	56	59,36	79,05
16,5x5,0	10	6	56	59,36	76,49
19,5x4,0	10	8	63	75,06	99,64
19,5x5,0	10	8	63	75,06	95,47
19,5x6,0	10	8	63	75,06	95,47
22,5x5,0	10	8	63	78,13	105,14
22,5x6,0	10	8	63	73,20	98,99
22,5x8,0	10	8	63	73,20	98,99
25,5x6,0	10	10	63	96,29	137,75
28,5x6,0	10	10	63	97,96	139,39
28,5x8,0	10	10	63	97,96	139,39
28,5x10,0	12	10	71	97,96	139,39
32,5x7,0	12	10	71	119,04	163,48
32,5x8,0	12	10	71	119,04	163,48
32,5x10,0	12	10	71	108,11	148,48
45,5x10,0	12	12	71	151,82	216,87

**FRESE CONICHE ANGOLARI, CON CODOLO CILINDRICO HSSCo**



Ref. FF98  
Ref. FF99

**HSSCo**

**DIN 1833A**

**TOL D1 js16**

**TOL D2 h6**



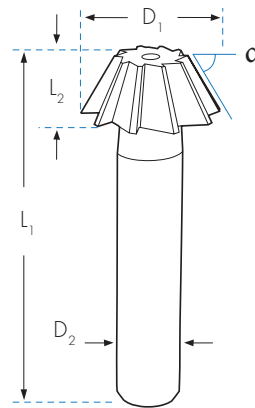
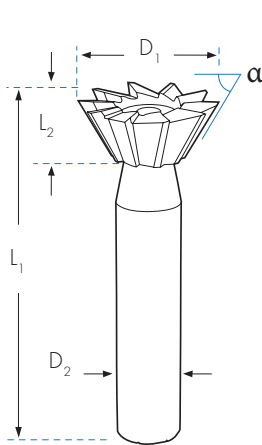
Ref. FF97  
Ref. FF95

**HSSCo**

**DIN 1833B**

**TOL D1 js16**

**TOL D2 h6**



FF98							
45°	D1 mm	α	D2 mm	L1 mm	L2 mm	Z	€
FF981600	16	45°	12	60	4,0	8	57,60
FF982000	20	45°	12	63	5,0	10	72,80
FF982500	25	45°	12	67	6,3	12	90,50
FF983200	32	45°	16	71	8,0	14	117,46

FF97							
45°	D1 mm	α	D2 mm	L1 mm	L2 mm	Z	€
FF971600	16	45°	12	60	4,0	8	55,00
FF972000	20	45°	12	63	5,0	10	69,89
FF972500	25	45°	12	67	6,3	12	87,47
FF973200	32	45°	16	71	8,0	12	113,51

FF99							
60°	D1 mm	α	D2 mm	L1 mm	L2 mm	Z	€
FF991600	16	60°	12	60	6,3	8	57,38
FF992000	20	60°	12	63	8,0	10	72,89
FF992500	25	60°	12	67	10,0	12	90,49
FF993200	32	60°	16	71	12,5	14	117,74

FF95							
60°	D1 mm	α	D2 mm	L1 mm	L2 mm	Z	€
FF951600	16	60°	12	60	6,3	8	54,78
FF952000	20	60°	12	63	8,0	10	69,74
FF952500	25	60°	12	67	10,0	12	87,67
FF953200	32	60°	16	71	12,5	12	113,22

MISURE SPECIALI							FF99
FF991600-50	16	50°	12	60	5,0	8	80,29
FF992000-50	20	50°	12	63	6,3	10	85,56
FF992500-50	25	50°	12	67	8,0	12	105,73
FF991600-55	16	55°	12	60	5,6	8	80,29
FF992000-55	20	55°	12	63	7,1	10	85,56
FF992500-55	25	55°	12	67	9,0	12	105,73
FF991600-75	16	75°	12	60	8,0	8	80,29
FF992500-75	25	75°	12	67	10,0	12	105,73
FF991600-80	16	80°	12	60	8,0	8	80,29
FF992500-80	25	80°	12	67	10,0	12	105,73
FF991600-85	16	85°	12	60	8,0	8	80,29
FF992500-85	25	85°	12	67	10,0	12	105,73

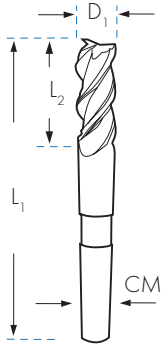
MISURE SPECIALI							FF95
FF951600-50	16	50°	12	60	5,0	8	67,02
FF952000-50	20	50°	12	63	6,3	10	85,56
FF952500-50	25	50°	12	67	8,0	12	106,74
FF951600-55	16	55°	12	60	5,6	8	67,02
FF952000-55	20	55°	12	63	7,1	10	85,56
FF952500-55	25	55°	12	67	9,0	12	106,74
FF951600-75	16	75°	12	60	8,0	8	67,02
FF952500-75	25	75°	12	67	10,0	12	106,74

Fresa

Rosa

**FRESE FRONTALI CON CODOLO CONICO SERIE CORTA**
**4-8 Z**

**INOX**
**Al**
**2 Z**

**SERIE CORTA**


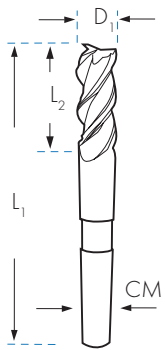
DIN 845B		MATERIALE					FF09	FF35	FF39	FF10	FF46	FF48	DIN 326			FF55		
		FINITURA															HSSCo 8%	HSSCo 8%
D1 mm		QUALITÀ					BRILLANTE	TIN	TiAIN	BRILLANTE	TIN	TiAIN	L1 mm			L2 mm	Z	€
		SGROSSATURA					★★	★★★	★★★	★★	★★★	★★★						
L1 mm		FILETTO					TOL k10	TOL k10	TOL k10	TOL k12	TOL k12	TOL k12						
							€	€	€	€	€	€						
10,00	92	22	4	1	M6	42,80	66,01	69,26	83,61	104,72	107,77	83	13	2	67,34			
12,00	111	26	4	2	M6	58,15	82,83	86,10	85,23	106,91	111,07	86	16	2	69,91			
14,00	111	26	4	2	M10	64,45	90,73	95,15	96,82	119,46	125,28	101	16	2	72,53			
15,00	111	26	4	2	M10	66,02	94,81	103,19	120,96	146,07	153,16							
16,00	117	32	4	2	M10	53,70	78,84	86,99	84,43	126,62	131,52	104	19	2	64,98			
18,00	117	32	4	2	M10	57,06	82,28	90,77	92,66	135,60	142,20	104	19	2	78,93			
20,00	123	38	4	2	M10	75,97	103,63	108,63	107,39	150,79	158,13	107	22	2	87,19			
22,00	123	38	5	2	M10	76,23	106,77	119,27	118,24	162,03	169,88	107	22	2	102,67			
24,00	147	45	6	3	M12	90,21	114,96	133,87	139,61	212,66	222,98	128	26	2	132,86			
25,00	154	45	5	3	M12	91,14	124,49	149,46	149,74	220,25	230,96	128	26	2	118,69			
26,00	147	45	6	3	M12	108,33	152,16	168,14	160,80	237,06	248,61	128	26	2	133,26			
28,00	154	50	5	3	M12	113,55	159,50	183,08	168,26	243,83	265,20	128	26	2	142,44			
30,00	154	50	6	3	M12	150,01	219,07	225,38	210,57	283,11	296,89	128	26	2	174,63			
32,00	178	53	6	4	M16	161,05	229,75	261,68	234,25	350,20	367,22	157	32	2	196,19			
36,00	178	53	6	4	M16	194,23	269,42	292,68	283,78	380,14	398,61	157	32	2	250,25			
40,00	188	63	6	4	M16	215,80	298,21	369,71	360,75	465,48	488,10	163	38	2	288,40			
45,00	188	63	6	4	M16	306,82	417,19	468,40	410,03	568,85	596,53	163	38	2	416,52			
50,00	233	75	6	5	M20	376,66	491,26	541,30	525,64	620,28	650,41	203	45	2	523,27			
56,00	233	75	8	5	M20	509,91	627,12	704,14	748,48	801,71	840,69							
63,00	241	90	8	5	M20	640,19	761,82	855,38	905,92	978,20	1.025,71							



**FRESE FRONTALI CON CODOLO CONICO SERIE LUNGA DIN 845B/L**

**4-8 Z**     

SERIE LUNGA



DIN 845B/L		MATERIALE				FF11	FF61	FF71	FF12	FF33	FF43
		FINITURA				HSSCo 8%	HSSCo 8%	HSSCo 8%	HSSCo 8%	HSSCo 8%	HSSCo 8%
		QUALITÀ				BRILLANTE	TIN	TiAIN	BRILLANTE	TIN	TiAIN
		SGROSSATURA				★★	★★★	★★★	★★	★★★	★★★
						NR	NR	NR	NR	NR	NR
						TOL k10	TOL k10	TOL k10	TOL k12	TOL k12	TOL k12
D1 mm	L1 mm	L2 mm	Z	CM	FILETTO	€	€	€	€	€	€
10,00	115	45	4	1	M6	89,52	121,52	129,34	128,39	171,17	176,99
12,00	138	53	4	2	M6	91,72	125,10	132,99	130,66	173,42	180,98
14,00	138	53	4	2	M10	96,54	135,88	141,81	164,60	212,83	222,12
15,00	138	53	4	2	M10	105,96	142,46	148,65	189,30	244,54	255,24
16,00	148	63	4	2	M10	97,55	138,90	144,95	136,92	186,74	194,89
18,00	148	63	4	2	M10	98,91	152,48	159,09	142,12	192,51	200,92
20,00	160	75	4	2	M10	129,56	170,56	177,97	139,66	220,89	230,52
22,00	160	75	5	2	M10	149,62	187,67	196,72	160,11	227,79	237,72
24,00	192	90	5	3	M12	166,90	243,02	255,98	189,27	297,18	312,14
25,00	184	80	5	3	M12	167,77	250,77	263,51	189,85	301,46	314,60
26,00	192	90	5	3	M12	201,49	270,75	284,53	250,29	326,91	341,19
28,00	192	90	5	3	M12	204,17	286,51	301,77	250,29	326,91	341,19
30,00	192	90	5	3	M12	232,74	321,71	338,03	276,35	391,57	408,67
32,00	229	100	6	4	M16	262,06	380,93	400,28	317,35	467,48	487,89
36,00	231	106	6	4	M16	353,05	427,15	448,83	354,52	525,95	548,92
40,00	250	125	6	4	M16	392,29	480,62	505,05	386,02	582,31	607,75
45,00	250	125	6	4	M16	528,72	639,06	673,16	527,55	813,32	848,86
50,00	268	110	6	5	M20	645,25	748,73	788,68	552,99	986,32	1.029,39
56,00	308	150	8	5	M20	679,02	781,73	824,79	919,51	1.130,23	1.190,65
63,00	338	180	8	5	M20	898,17	997,00	1.050,01	1.157,62	1.392,96	1.467,40

## ASSORTIMENTI DI FRESE CON TAGLIO AL CENTRO IN SCATOLE DI PLASTICA

2Z

DIN  
327

4Z

DIN  
844

REFERENZA	PTF20	PTF60
N° FRESE	8	8
TIPO	Ref. FFO2	Ref. FF60
QUALITÀ	HSSCo 8%	TiAIN
CONTENUTO Ø mm	<u>6</u> <u>8</u> <u>10</u> <u>12</u> 2 2 2 2	<u>6</u> <u>8</u> <u>10</u> <u>12</u> 2 2 2 2
P.V.P. €	143,98	222,86

REFERENZA	PTF24	PTF64
N° FRESE	8	8
TIPO	Ref. FF18	Ref. FF20
QUALITÀ	HSSCo 8%	TiAIN
CONTENUTO Ø mm	<u>6</u> <u>8</u> <u>10</u> <u>12</u> 2 2 2 2	<u>6</u> <u>8</u> <u>10</u> <u>12</u> 2 2 2 2
P.V.P. €	174,72	253,08

2Z

DIN  
327

4Z

DIN  
844

REFERENZA	PTF21	PTF61
N° FRESE	6	6
TIPO	Ref. FFO2	Ref. FF60
QUALITÀ	HSSCo 8%	TiAIN
CONTENUTO Ø mm	<u>6</u> - <u>8</u> - <u>10</u> - <u>12</u> - <u>16</u> - <u>20</u>	<u>6</u> - <u>8</u> - <u>10</u> - <u>12</u> - <u>16</u> - <u>20</u>
P.V.P. €	158,83	235,16

REFERENZA	PTF25	PTF65
N° FRESE	6	6
TIPO	Ref. FF18	Ref. FF20
QUALITÀ	HSSCo 8%	TiAIN
CONTENUTO Ø mm	<u>6</u> - <u>8</u> - <u>10</u> - <u>12</u> - <u>16</u> - <u>20</u>	<u>6</u> - <u>8</u> - <u>10</u> - <u>12</u> - <u>16</u> - <u>20</u>
P.V.P. €	190,08	265,71

2Z

DIN  
327

4Z

DIN  
844

REFERENZA	PTF22	PTF62
N° FRESE	6	6
TIPO	Ref. FFO2	Ref. FF60
QUALITÀ	HSSCo 8%	TiAIN
CONTENUTO Ø mm	<u>4</u> - <u>5</u> - <u>6</u> - <u>8</u> - <u>10</u> - <u>12</u>	<u>4</u> - <u>5</u> - <u>6</u> - <u>8</u> - <u>10</u> - <u>12</u>
P.V.P. €	99,18	151,35

REFERENZA	PTF26	PTF66
N° FRESE	6	6
TIPO	Ref. FF18	Ref. FF20
QUALITÀ	HSSCo 8%	TiAIN
CONTENUTO Ø mm	<u>4</u> - <u>5</u> - <u>6</u> - <u>8</u> - <u>10</u> - <u>12</u>	<u>4</u> - <u>5</u> - <u>6</u> - <u>8</u> - <u>10</u> - <u>12</u>
P.V.P. €	118,97	172,29

**ASSORTIMENTI DI FRESE CON TAGLIO AL CENTRO IN SCATOLE METALLICHE**

**2Z**  **DIN 327**



REFERENZA	<b>FF010787</b>	<b>FF020787</b>	<b>FT020787</b>	<b>FF600787</b>
N° FRESE	6	6	6	6
TIPO	Ref. FFO1	Ref. FFO2	Ref. FTO2	Ref. FF60
QUALITÀ	<b>HSS</b>	<b>HSSCo 8%</b>	<b>TiAlSiN</b>	<b>TiAlN</b>
CONTENUTO Ø mm	4 - 5 - 6 - 8 - 10 - 12	4 - 5 - 6 - 8 - 10 - 12	4 - 5 - 6 - 8 - 10 - 12	4 - 5 - 6 - 8 - 10 - 12
P.V.P. €	97,00	122,82	194,85	176,42

REFERENZA	<b>FF010447</b>	<b>FF020447</b>	<b>FT020447</b>	<b>FF600447</b>
N° FRESE	6	6	6	6
TIPO	Ref. FFO1	Ref. FFO2	Ref. FTO2	Ref. FF60
QUALITÀ	<b>HSS</b>	<b>HSSCo 8%</b>	<b>TiAlSiN</b>	<b>TiAlN</b>
CONTENUTO Ø mm	6 - 8 - 10 - 12 - 16 - 20	6 - 8 - 10 - 12 - 16 - 20	6 - 8 - 10 - 12 - 16 - 20	6 - 8 - 10 - 12 - 16 - 20
P.V.P. €	145,09	182,52	292,20	263,33

REFERENZA	<b>FF010801</b>	<b>FF020801</b>
N° FRESE	14	14
TIPO	Ref. FFO1	Ref. FFO2
QUALITÀ	<b>HSS</b>	<b>HSSCo 8%</b>
CONTENUTO Ø mm	3 - 4 - 5 - 6 - 7 - 8 - 9 - 10 12 - 14 - 15 - 16 - 18 - 20	3 - 4 - 5 - 6 - 7 - 8 - 9 - 10 12 - 14 - 15 - 16 - 18 - 20
P.V.P. €	312,74*	404,55*

\*Fino ad esaurimento scorte

**SCATOLE METALLICHE VUOTE PER FRESE**

**2-4Z**  **DIN 327**



REFERENZA	<b>EV0787</b>	<b>EV0847</b>
N° FRESE	6	6
CONTENUTO Ø mm	4 - 5 - 6 - 8 - 10 - 12	6 - 8 - 10 - 12 - 16 - 20
P.V.P. €	30,25	33,79

Frese

Rosa

**ASSORTIMENTI DI FRESE IN SCATOLE METALLICHE**

Frese

Rosa

4 Z

DIN  
844

REFERENZA	<b>FF030787</b>	<b>FF040787</b>	<b>FT040787</b>	<b>FF540787</b>
N° FRESE	6	6	6	6
TIPO	Ref. FF03	Ref. FF04	Ref. FT04	Ref. FF54
QUALITÀ	<b>HSS</b>	<b>HSSCo 8%</b>	<b>TiAlSiN</b>	<b>TiAlN</b>
CONTENUTO Ø mm	4 - 5 - 6 - 8 - 10 - 12	4 - 5 - 6 - 8 - 10 - 12	4 - 5 - 6 - 8 - 10 - 12	4 - 5 - 6 - 8 - 10 - 12
P.V.P. €	95,40	125,81	196,06	191,73

REFERENZA	<b>FF030847</b>	<b>FF040847</b>	<b>FT040847</b>	<b>FF540847</b>
N° FRESE	6	6	6	6
TIPO	Ref. FF03	Ref. FF04	Ref. FT04	Ref. FF54
QUALITÀ	<b>HSS</b>	<b>HSSCo 8%</b>	<b>TiAlSiN</b>	<b>TiAlN</b>
CONTENUTO Ø mm	6 - 8 - 10 - 12 - 16 - 20	6 - 8 - 10 - 12 - 16 - 20	6 - 8 - 10 - 12 - 16 - 20	6 - 8 - 10 - 12 - 16 - 20
P.V.P. €	142,98	191,25	293,03	275,42



REFERENZA	<b>FF030764</b>	<b>FF040764</b>
N° FRESE	14	14
TIPO	Ref. FF03	Ref. FF04
QUALITÀ	<b>HSS</b>	<b>HSSCo 8%</b>
CONTENUTO Ø mm	3 - 4 - 5 - 6 - 7 - 8 - 9 - 10 12 - 14 - 15 - 16 - 18 - 20	3 - 4 - 5 - 6 - 7 - 8 - 9 - 10 12 - 14 - 15 - 16 - 18 - 20
P.V.P. €	303,66*	381,53*

\*Fino ad esaurimento scorte

4 Z

DIN  
844

NR

REFERENZA	<b>FF250847</b>	<b>FT250847</b>	<b>FF270847</b>
N° FRESE	6	6	6
TIPO	Ref. FF25	Ref. FT25	Ref. FF27
QUALITÀ	<b>HSSCo 8%</b>	<b>TiAlSiN</b>	<b>TiAlN</b>
CONTENUTO Ø mm	6 - 8 - 10 - 12 - 16 - 20	6 - 8 - 10 - 12 - 16 - 20	6 - 8 - 10 - 12 - 16 - 20
P.V.P. €	295,30	460,76	390,80



**ASSORTIMENTI DI FRESE IN SCATOLE METALLICHE**

**4 Z**  **DIN 844**

REFERENZA	<b>FF180787</b>	<b>FT180787</b>	<b>FF200787</b>
N° FRESE	6	6	6
TIPO	Ref. FF18	Ref. FT18	Ref. FF20
QUALITÀ	<b>HSSCo 8%</b>	<b>TiAlSiN</b>	<b>TiAlN</b>
CONTENUTO Ø mm	4 - 5 - 6 - 8 - 10 - 12	4 - 5 - 6 - 8 - 10 - 12	4 - 5 - 6 - 8 - 10 - 12
P.V.P. €	133,95	197,64	188,42



Ref. FF180787

REFERENZA	<b>FF180847</b>	<b>FT180847</b>	<b>FF200847</b>
N° FRESE	6	6	6
TIPO	Ref. FF18	Ref. FT18	Ref. FF20
QUALITÀ	<b>HSSCo 8%</b>	<b>TiAlSiN</b>	<b>TiAlN</b>
CONTENUTO Ø mm	6 - 8 - 10 - 12 - 16 - 20	6 - 8 - 10 - 12 - 16 - 20	6 - 8 - 10 - 12 - 16 - 20
P.V.P. €	210,09	308,95	286,91



Ref. FF180847

REFERENZA	<b>FF180764</b>
N° FRESE	14
TIPO	Ref. FF18
QUALITÀ	<b>HSSCo 8%</b>
CONTENUTO Ø mm	3 - 4 - 5 - 6 - 7 - 8 - 9 - 10 12 - 14 - 15 - 16 - 18 - 20
P.V.P. €	409,22*



Ref. FF180764

\*Fino ad esaurimento scorte







**ESPOSITORE IN METACRILATO**

Ref. MF-01

MF-01

Contenuto: 163 Frese



Ref. FF13	<b>1 Z</b>	<b>HSSCo</b>	<b>Al</b>	<b>SERIE CORTA</b>	Ø / Q.tà	5 x 8 / 5	Codolo x 8 / 5	Codolo
Ref. FF14	<b>1 Z</b>	<b>HSSCo</b>	<b>Al</b>	<b>SERIE LARGA</b>	Ø / Q.tà	5 x 8 / 5	Codolo x 8 / 5	Codolo
Ref. FFO2	<b>2 Z</b>		<b>HSSCo</b>	<b>DIN 327N</b>		Ø / Q.tà	2 3 4 5 6 7 8 9 10 12 14 16 / 5 5 5 5 5 5 5 5 5 5 5 5 3	
Ref. FF18	<b>4 Z</b>		<b>HSSCo</b>	<b>DIN 844N</b>		Ø / Q.tà	2 3 4 5 6 7 8 9 10 12 14 16 / 5 5 5 5 5 5 5 5 5 5 5 5 3	
Ref. FF25	<b>4 Z</b>		<b>HSSCo</b>	<b>DIN 844N</b>	 	Ø / Q.tà	6 7 8 9 10 11 12 14 16 / 3 3 3 3 3 3 3 3 3	

Dimensioni: larghezza 245 x profondità 210 x altezza 350 mm  
NOTA: Composizioni speciali su richiesta

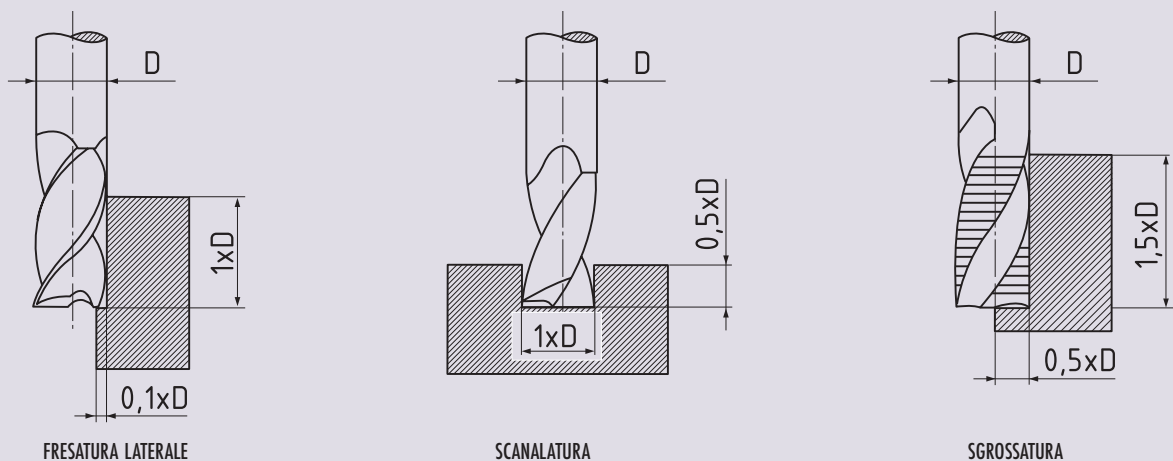
P.V.P. 3.625,83 €

**PARAMETRI DI TAGLIO INDICATIVI FRESE HSSCo 8%**

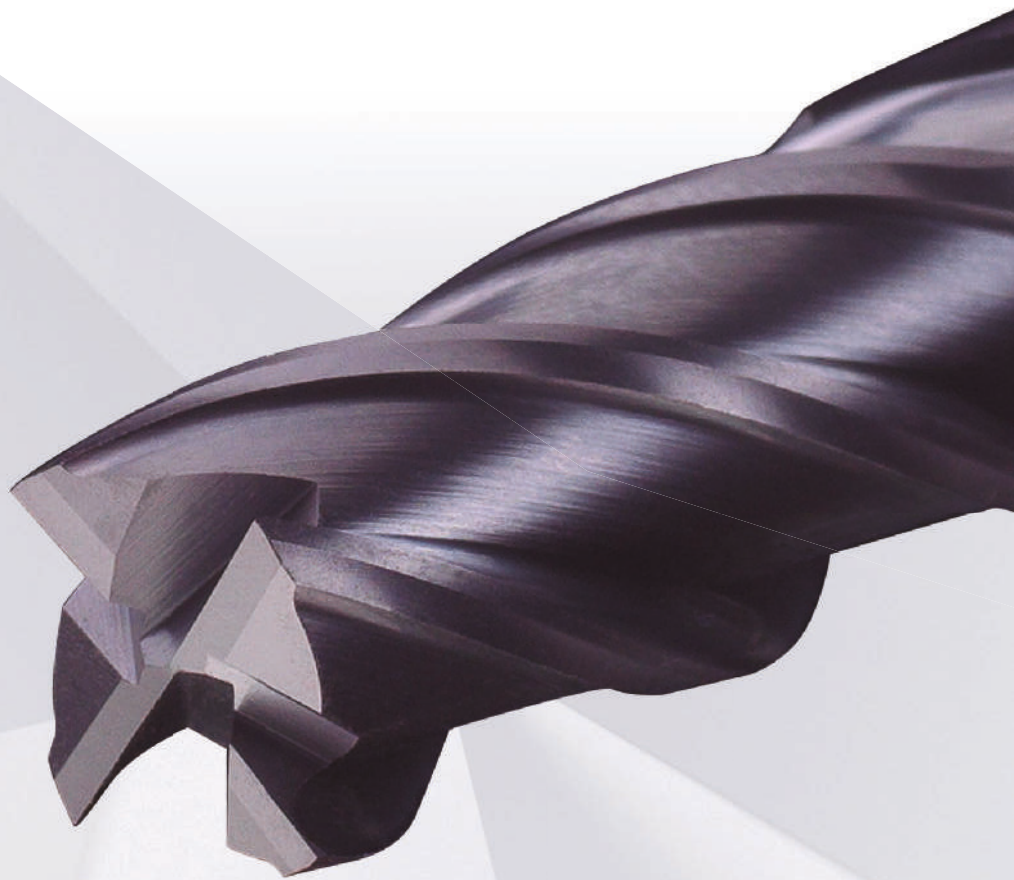
		DIAMETRO Ø (mm)														
		2	4	6	8	10	12	18	22	26	30	32	36	40		
<b>ACCIAIO DOLCE</b> 70 kg/mm <sup>2</sup>	<b>V/C 39 RPM</b>	<b>6207</b>	<b>3104</b>	<b>2069</b>	<b>1552</b>	<b>1241</b>	<b>1035</b>	<b>690</b>	<b>564</b>	<b>477</b>	<b>414</b>	<b>388</b>	<b>345</b>	<b>310</b>		
	<b>AVANZAMENTO</b> (mm/min)	N° tagli	<b>2</b>	50	56	74	84	82	81	80	81	76	68	68	62	60
			<b>3</b>	74	84	112	126	123	121	120	122	115	102	102	93	89
		<b>4</b>	99	112	149	168	164	161	160	163	153	136	137	124	119	
<b>ACCIAIO TRATTATO</b> 120 kg/mm <sup>2</sup>	<b>V/C 20 RPM</b>	<b>3183</b>	<b>1592</b>	<b>1061</b>	<b>796</b>	<b>637</b>	<b>531</b>	<b>354</b>	<b>289</b>	<b>245</b>	<b>212</b>	<b>199</b>	<b>177</b>	<b>159</b>		
	<b>AVANZAMENTO</b> (mm/min)	N° tagli	<b>2</b>	25	29	38	43	42	41	41	42	39	35	35	32	31
			<b>3</b>	38	43	57	64	63	62	62	63	59	52	53	48	46
		<b>4</b>	51	57	76	86	84	83	82	83	78	70	70	64	61	
<b>INOX</b>	<b>V/C 15 RPM</b>	<b>2387</b>	<b>1194</b>	<b>796</b>	<b>597</b>	<b>477</b>	<b>398</b>	<b>265</b>	<b>217</b>	<b>184</b>	<b>159</b>	<b>149</b>	<b>133</b>	<b>119</b>		
	<b>AVANZAMENTO</b> (mm/min)	N° tagli	<b>2</b>	19	21	29	32	32	31	31	31	29	26	26	24	23
			<b>3</b>	29	32	43	48	47	47	46	47	44	39	39	36	34
		<b>4</b>	38	43	57	64	63	62	62	63	59	52	53	48	46	
<b>ALLUMINIO</b>	<b>V/C 230 RPM</b>	<b>36606</b>	<b>18303</b>	<b>12202</b>	<b>9151</b>	<b>7321</b>	<b>6101</b>	<b>4067</b>	<b>3328</b>	<b>2816</b>	<b>2440</b>	<b>2288</b>	<b>2034</b>	<b>1830</b>		
	<b>AVANZAMENTO</b> (mm/min)	N° tagli	<b>2</b>	293	329	439	494	483	476	472	479	451	400	403	366	351
			<b>3</b>	439	494	659	741	725	714	708	719	676	600	604	549	527
		<b>4</b>	586	659	879	988	966	952	944	958	901	805	732	703		
<b>TITANIO</b>	<b>V/C 12 RPM</b>	<b>1910</b>	<b>955</b>	<b>637</b>	<b>477</b>	<b>382</b>	<b>318</b>	<b>212</b>	<b>174</b>	<b>147</b>	<b>127</b>	<b>119</b>	<b>106</b>	<b>95</b>		
	<b>AVANZAMENTO</b> (mm/min)	N° tagli	<b>2</b>	15	17	23	26	25	25	25	25	24	21	21	19	18
			<b>3</b>	23	26	34	39	38	37	37	38	35	31	32	29	28
		<b>4</b>	31	34	46	52	50	50	49	50	47	42	42	38	37	

\* Per frese rivestite moltiplicare i parametri in tabella per 1,3 e per frese ASP 60 moltiplicare per 1,8.

\* V/C: Velocità di taglio (m/min)

**PROFONDITÀ DEL PASSAGGIO IN FUNZIONE DELL'OPERAZIONE DA REALIZZARE**


# FRESE IN METALLO DURO



**BLUE-MASTER<sup>®</sup>**  
*by CELESA*

CUTTING TECHNOLOGIES

**FRESE IN METALLO DURO INTEGRALE PER APPLICAZIONI GENERALI SERIE CORTA, LUNGA E EXTRA LUNGA**

Frese

Rosa



2Z



3Z

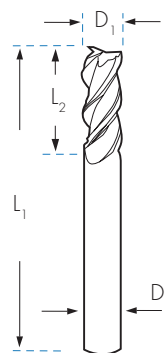


4Z



## SERIE CORTA

## SERIE LUNGA



				FMD2	FMD2TL	FMD63	FMD63TL	FMD48	FMD48TL
MATERIALE				MD	MD	MD	MD	MD	MD
FINITURA				BRILLANTE	TiAIN	BRILLANTE	TiAIN	BRILLANTE	TiAIN
QUALITÀ				★★	★★★	★★	★★★	★★	★★★
				2Z	2Z	3Z	3Z	4Z	4Z
D1	L1	L2	D2	€	€	€	€	€	€
1,00	38	3	3	20,60	26,57	20,60	26,57	20,60	26,57
1,50	38	4	3	22,32	28,30	22,32	28,30	22,32	28,30
2,00	38	6	3	18,71	24,68	18,71	24,68	18,71	24,68
2,50	38	8	3	18,34	24,31	18,34	24,31	18,34	24,31
3,00	38	8	3	17,60	23,59	17,60	23,59	17,60	23,59
3,50	50	11	4	20,56	26,55	20,56	26,55	20,56	26,55
4,00	50	11	4	17,50	23,47	17,50	23,47	17,50	23,47
4,50	50	13	5	22,53	28,50	22,53	28,50	22,53	28,50
5,00	50	13	5	19,86	25,83	19,86	25,83	19,86	25,83
6,00	50	16	6	21,73	27,70	21,73	27,70	21,73	27,70
7,00	60	16	8	35,54	42,72	35,54	42,72	35,54	42,72
8,00	60	19	8	32,29	39,46	32,29	39,46	32,29	39,46
9,00	72	19	10	51,16	59,53	51,16	59,53	51,16	59,53
10,00	72	22	10	48,50	56,87	48,50	56,87	48,50	56,87
11,00	75	26	12	81,01	90,58	81,01	90,58	81,01	90,58
12,00	75	26	12	61,85	71,41	61,85	71,41	61,85	71,41
14,00	84	30	14	95,04	107,00	95,04	107,00	95,04	107,00
16,00	92	32	16	122,79	135,93	122,79	135,93	122,79	135,93
18,00	100	38	18	179,91	197,83	179,91	197,83	179,91	197,83
20,00	100	38	20	204,64	227,35	204,64	227,35	204,64	227,35
25,00	100	45	25	355,08	389,76			355,08	389,76

				FMD54	FMD54TL	FMD58	FMD58TL
MATERIALE				MD	MD	MD	MD
FINITURA				BRILLANTE	TiAIN	BRILLANTE	TiAIN
QUALITÀ				★★	★★★	★★	★★★
				2Z	2Z	4Z	4Z
D1	L1	L2	D2	€	€	€	€
3,00	60	15	3	19,48	26,65	19,48	26,65
4,00	80	20	4	20,53	27,70	20,53	27,70
5,00	80	25	5	25,55	32,73	25,55	32,73
6,00	80	25	6	32,44	39,63	32,44	39,63
8,00	90	35	8	41,04	50,60	41,04	50,60
10,00	100	45	10	58,00	67,55	58,00	67,55
12,00	100	50	12	79,16	91,13	79,16	91,13
14,00	150	65	14	130,26	145,80	130,26	145,80
16,00	150	65	16	142,70	158,24	142,70	158,24
18,00	150	65	18			197,32	217,92
20,00	150	70	20	253,14	277,05	242,36	265,26

## SERIE EXTRA LUNGA

				FMD53	FMD53TL	FMD56	FMD56TL
MATERIALE				MD	MD	MD	MD
FINITURA				BRILLANTE	TiAIN	BRILLANTE	TiAIN
QUALITÀ				★★	★★★	★★	★★★
				2Z	2Z	4Z	4Z
Ø	L1	L2	D2	€	€	€	€
3,00	75	25	3	41,90	53,85	43,34	55,31
4,00	100	25	4	45,51	57,47	46,93	58,89
5,00	100	25	5	51,44	63,40	54,05	66,01
6,00	150	75	6	85,85	104,98	94,44	113,56
8,00	150	75	8	118,22	140,94	130,04	152,76
10,00	150	75	10	149,74	179,63	164,71	194,61
12,00	150	75	12	219,09	257,35	241,00	279,27
14,00	150	75	14	302,88	349,51	333,17	379,80
16,00	200	75	16	411,50	465,31	452,65	506,46
20,00	200	75	20	642,08	713,82	642,08	713,82

FRESE IN METALLO DURO INTEGRALE PER APPLICAZIONI GENERALI SERIE CORTA, LUNGA E EXTRA LUNGA

INOX  
Al  
Ti

2Z



30°  
N

44  
HRc

CILINDRICO

4Z

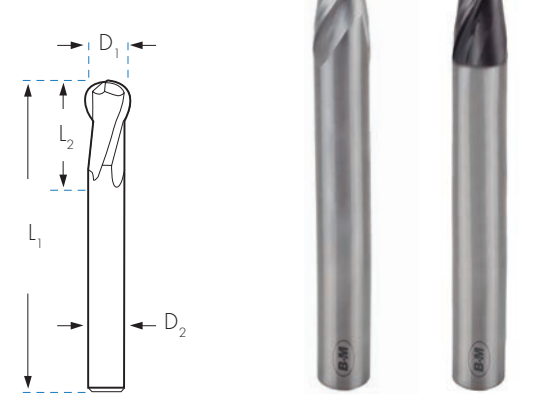


SERIE CORTA



MATERIALE				FMD92	FMD92TL	FMD51	FMD51TL
FINITURA				MD	MD	MD	MD
QUALITÀ				BRILLANTE	TiAlN	BRILLANTE	TiAlN
				★★	★★★	★★	★★★
				2Z	2Z	4Z	4Z
D <sub>1</sub> mm	L <sub>1</sub> mm	L <sub>2</sub> mm	D <sub>2</sub> mm	€	€	€	€
1,00	38	2	3	22,01	27,99		
1,50	38	3	3	22,01	27,99		
2,00	38	4	3	22,01	27,99		
2,50	38	5	3	22,01	27,99		
3,00	38	6	3	22,01	27,99	24,21	30,78
4,00	50	8	4	25,07	31,05	27,58	34,15
5,00	50	10	5	26,52	32,51	29,18	35,76
6,00	50	12	6	31,22	37,20	34,34	40,91
8,00	60	15	8	38,55	45,73	48,19	57,15
10,00	75	20	10	57,92	66,28	72,38	82,85
12,00	75	20	12	71,95	81,52	89,93	101,90
14,00	90	25	14	106,52	118,48	133,15	148,09
16,00	100	25	16	134,76	147,92	168,46	184,90
18,00	100	30	18	200,37	218,30	250,46	272,88
20,00	100	30	20	207,72	230,44	259,64	288,05

SERIE LUNGA






MATERIALE				FMD57	FMD57TL
FINITURA				MD	MD
QUALITÀ				BRILLANTE	TiAlN
				★★	★★★
				2Z	2Z
D <sub>1</sub> mm	L <sub>1</sub> mm	L <sub>2</sub> mm	D <sub>2</sub> mm	€	€
3,00	60	4	3	33,18	40,36
4,00	80	5	4	38,51	45,68
5,00	80	6	5	45,55	52,71
6,00	80	8	6	53,23	60,42
8,00	100	12	8	70,26	79,82
10,00	100	15	10	86,81	97,57
12,00	100	15	12	150,43	162,39
14,00	150	20	14	188,64	204,18
16,00	150	20	16	238,26	253,79
18,00	150	25	18	370,08	388,01
20,00	150	25	20	491,78	515,70

SERIE EXTRA LUNGA

MATERIALE				FMD55	FMD55TL
FINITURA				MD	MD
QUALITÀ				BRILLANTE	TiAlN
				★★	★★★
				2Z	2Z
D <sub>1</sub> mm	L <sub>1</sub> mm	L <sub>2</sub> mm	D <sub>2</sub> mm	€	€
3,00	75	6	3	38,07	49,52
4,00	100	6	4	43,91	55,36
5,00	100	6	5	53,07	64,52
6,00	100	15	6	66,69	78,14
8,00	150	25	8	89,59	106,76
10,00	150	25	10	126,22	143,39
12,00	150	25	12	200,75	232,80
14,00	200	50	14	246,54	283,18
16,00	200	50	16	331,26	371,33
18,00	200	75	18	486,54*	549,50*
20,00	200	75	20	629,64*	704,05*

CONDIZIONI DI TAGLIO INDICATIVE

		Ø2	Ø3	Ø4	Ø5	Ø6	Ø8	Ø10	Ø12	Ø14
	RPM	4000	2600	2000	1600	1300	1000	800	660	570
	AVANZ. (mm/min)	50	55	55	55	55	55	55	55	55
	RPM	8000	5300	4000	3200	2600	2000	1600	1300	1100
	AVANZ. (mm/min)	55	55	55	55	60	60	60	60	60
	RPM	16000	11000	8000	6400	5300	4000	3200	2600	2300
	AVANZ. (mm/min)	290	290	290	290	290	290	290	290	300

\* Per ricavare i parametri di taglio raccomandati per frese rivestite al TiAlN, moltiplicare i valori del riquadro per il fattore 1,3.

\*Fino ad esaurimento scorte



**FRESE FRONTALI IN MD INTEGRALE SGROSSATURA FINE, MEDIA E GROSSA**

Frese

Rosa



FMD1

D <sub>1</sub> mm	D <sub>2</sub> mm	L <sub>1</sub> mm	L <sub>2</sub> mm	Z	€
TOL D <sub>1</sub> +0 -0,05	TOL D <sub>2</sub> h6				
6	6	63	19	3	43,31*
8	8	63	19	3	46,49*
10	10	63	22	3	59,44*
12	12	75	25	4	75,07*
16	16	88	32	4	128,44*
20	20	100	38	4	150,34*

FMD3

D <sub>1</sub> mm	D <sub>2</sub> mm	L <sub>1</sub> mm	L <sub>2</sub> mm	Z	€
TOL D <sub>1</sub> +0 -0,05	TOL D <sub>2</sub> h6				
6	6	50	16	4	36,00
8	8	60	19	3	48,78
10	10	75	22	4	75,08
12	12	75	26	4	103,04
16	16	92	32	4	234,42
20	20	100	38	4	351,29

\*Fino ad esaurimento scorte.



FMD6

D <sub>1</sub> mm	D <sub>2</sub> mm	L <sub>1</sub> mm	L <sub>2</sub> mm	Z	€
TOL D <sub>1</sub> +0 -0,05	TOL D <sub>2</sub> h6				
6	6	63	19	3	43,31*
8	8	63	19	3	46,49*
10	10	63	22	3	59,44*
12	12	75	25	4	75,07*
16	16	88	32	4	128,44*
20	20	100	38	4	150,34*

\*Fino ad esaurimento scorte.

**FRESE IN METALLO DURO INTEGRALE SPECIALI PER INOX E LEGHE DI NICHEL**

**INOX**  
Ni  
Ti

**44**  
HRc

**CILINDRICO**

2Z

3Z

4Z

Altamente raccomandato  
per le lavorazioni di inox,  
titanio e leghe di nichel.

**Micro Grana**  
MD

**SERIE CORTA**

**TOL D1**  
+0 -0,05

**TOL D2**  
h6

				FMT2	FMT63	FMT48
				MD	MD	MD
				TiAlSiN	TiAlSiN	TiAlSiN
				Premium Quality	Premium Quality	Premium Quality
				2Z	3Z	4Z
D1	L1	L2	D2	€	€	€
1,00	38	3	3	46,05	46,05	46,05
1,50	38	4	3	44,96	44,96	44,96
2,00	38	6	3	35,79	35,79	35,79
2,50	38	8	3	34,96	34,96	34,96
3,00	38	8	3	30,12	30,12	30,12
3,50	50	11	4	36,97	36,97	36,97
4,00	50	11	4	34,33	34,33	34,33
4,50	50	13	5	43,92	43,92	43,92
5,00	50	13	5	43,38	43,38	43,38
6,00	50	16	6	48,92	48,92	48,92
7,00	60	16	8	68,23	68,23	68,23
8,00	60	19	8	57,90	57,90	57,90
9,00	72	19	10	83,02	83,02	83,02
10,00	72	22	10	92,31	92,31	92,31
11,00	75	26	12	122,80	122,80	122,80
12,00	75	26	12	114,17	114,17	114,17
14,00	84	30	14	169,72	169,72	169,72
16,00	92	32	16	219,86	219,86	219,86
18,00	100	38	18	305,50	305,50	305,50
20,00	100	38	20	348,32	348,32	348,32
25,00	100	38	25	571,72	571,72	571,72

				FMT81
				MD
				TiAlSiN
				Premium Quality
				4Z
D1	L1	L2	D2	€
1,00	38	3	3	
1,50	38	5	3	
2,00	38	6	3	
2,50	38	7	3	
3,00	38	12	3	
3,50	50	12	4	
4,00	50	14	4	
4,50	50	14	5	
5,00	50	16	5	57,27
6,00	63	19	6	64,57
7,00	63	19	8	
8,00	63	19	8	79,61
9,00	70	22	10	
10,00	70	22	10	116,76
11,00	75	25	11	
12,00	75	25	12	144,42
14,00	88	30	14	214,69
16,00	88	32	16	278,11
18,00	100	36	18	386,46
20,00	100	36	20	440,62
25,00	100	38	25	

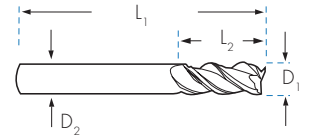
				FMT92
				MD
				TiAlSiN
				Premium Quality
				2Z
D1	L1	L2	D2	€
1,00	38	2	3	
1,50	38	3	3	
2,00	38	4	3	
2,50	38	5	3	
3,00	38	6	3	39,75
4,00	50	8	4	44,11
5,00	50	10	5	54,52
6,00	50	12	6	62,38
8,00	60	15	8	76,68
10,00	75	20	10	111,16
12,00	75	20	12	136,72
14,00	90	25	14	198,69
16,00	100	25	16	248,07
18,00	100	30	18	366,12
20,00	100	30	20	386,46

\* **FMT81:** Fresa a 4 taglienti, taglio al centro, elica variabile con rivestimento TiAlSiN. Il suo angolo ad elica variabile minimizza le vibrazioni e, insieme al rivestimento TiAlSiN, permette un rendimento estremamente elevato.

**CONDIZIONI DI TAGLIO INDICATIVE**

		Ø 2	Ø 3	Ø 4	Ø 5	Ø 6	Ø 8	Ø 10	Ø 12	Ø 14	Ø 16	Ø 20	Ø 25
	RPM	5600	3640	2800	2240	1820	1400	1120	924	798	700	560	420
	AVANZ. (mm/min)	70	77	77	77	77	77	77	77	77	91	91	70
<b>INOX</b> Ti	RPM	11200	7420	5600	4480	3640	2800	2240	1820	1540	1400	1120	840
	AVANZ. (mm/min)	77	77	77	77	84	84	84	84	84	98	98	77
<b>Ni</b>	RPM	11200	7420	5600	4480	3640	2800	2240	1820	1540	1400	1120	840
	AVANZ. (mm/min)	77	77	77	77	84	84	84	84	84	98	98	77

Frese  
Rosa



## FRESA 2 DENTI, SERIE CORTA, ELICA A 30°

INOX

Ref. FMG10

2 Z

MG  
MD

30°



CILINDRICO

TiAIN

INOX

45  
HRc

Ti

INC

Micro Grana  
MD

SERIE CORTA

## GIRI E AVANZAMENTO

R.P.M. rot./min	AVANZ. mm/min	R.P.M. rot./min	AVANZ. mm/min	R.P.M. rot./min	AVANZ. mm/min	FMG10	TOL	TOL	L <sub>1</sub> mm	L <sub>2</sub> mm	€
							-0,03 D <sub>1</sub> mm	h <sub>6</sub> D <sub>2</sub> mm			
21.500	170	12.900	101	10.750	84	FMG100100	1,0	6	40	2,5	38,78*
15.000	180	9.000	107	7.500	89	FMG100150	1,5	6	40	4,0	38,78*
11.560	190	7.560	120	6.300	90	FMG100200	2,0	6	50	6,0	38,78
8.920	210	5.560	140	4.620	120	FMG100300	3,0	6	50	8,0	38,78
7.560	300	4.620	180	3.880	150	FMG100400	4,0	6	50	11,0	38,78
6.300	320	3.780	190	3.160	160	FMG100500	5,0	6	50	12,0	38,78
5.560	350	3.360	220	2.840	180	FMG100600	6,0	6	50	12,0	38,78
4.880	385	2.940	220	2.470	180	FMG100700	7,0	8	60	16,0	53,38*
4.200	380	2.520	200	2.100	180	FMG100800	8,0	8	60	15,0	53,38
3.730	375	2.260	190	1.890	180	FMG100900	9,0	10	70	19,0	73,51*
3.260	330	2.000	160	1.680	160	FMG101000	10,0	10	72	20,0	73,51
2.740	280	1.680	130	1.360	130	FMG101200	12,0	12	75	24,0	103,83
2.470	265	1.520	125	1.210	125	FMG101400	14,0	14	85	26,0	120,37*
2.200	220	1.360	110	1.060	110	FMG101600	16,0	16	92	30,0	194,88
1.940	205	1.210	100	950	100	FMG101800	18,0	18	100	32,0	209,94*
1.680	170	1.060	80	840	80	FMG102000	20,0	20	105	38,0	231,86*
1.150	165	970	80	775	75	FMG102200	22,0	20	105	38,0	255,89*
1.360	130	840	70	680	60	FMG102500	25,0	25	120	45,0	301,85*

\*Fino ad esaurimento scorte.



## FRESA 3 DENTI, SERIE CORTA, ELICA VARIABILE

INOX

Ref. FMD67

3 Z



MD

35°  
38°

CILINDRICO

TiAlSiN

INOX

Ti

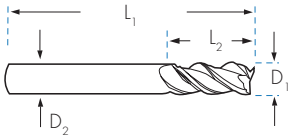
Ni

Micro Grana  
MD

SERIE CORTA

	TOL	TOL	L <sub>1</sub> mm	L <sub>2</sub> mm	FMD67 €
	e <sub>8</sub> D <sub>1</sub> mm	h <sub>6</sub> D <sub>2</sub> mm			
FMD670300	3	6	50	8	31,40
FMD670400	4	6	50	11	31,40
FMD670500	5	6	50	13	31,40
FMD670600	6	6	50	16	32,79
FMD670800	8	8	60	19	41,36
FMD671000	10	10	73	22	61,10
FMD671200	12	12	75	26	83,34
FMD671600	16	16	92	32	162,30
FMD672000	20	20	100	38	239,39





## FRESA 4 DENTI, SERIE CORTA, ELICA VARIABLE

**INOX** Ref. FMG12 **4 Z** **MG MD** **35°/38°** **WELDON** **TiAlSiN** **INOX** **45 HRc** **Ti** **INC** **Micro Grana MD**

### SERIE CORTA

GIRI E AVANZAMENTO						FMG12						
R.P.M. rot./min	AVANZ. mm/min	R.P.M. rot./min	AVANZ. mm/min	R.P.M. rot./min	AVANZ. mm/min	TOL -0,03	TOL h6	D1 mm	D2 mm	L1 mm	L2 mm	€
11.560	280	7.560	170	6.300	140	FMG120200		2,0	6	40	6	32,80*
10.240	300	6.560	185	5.460	155	FMG120250		2,5	6	40	8	32,80*
8.920	320	5.560	200	4.620	170	FMG120300		3,0	6	50	8	32,80
7.560	570	4.620	350	3.880	280	FMG120400		4,0	6	50	11	32,80
6.300	600	3.780	360	3.160	300	FMG120500		5,0	6	50	13	32,80
5.560	660	3.360	410	2.840	330	FMG120600		6,0	6	50	16	32,80
4.880	685	2.940	420	2.470	340	FMG120700		7,0	8	60	16	41,36*
4.200	710	2.520	380	2.100	350	FMG120800		8,0	8	60	19	41,36
3.730	660	2.260	340	1.890	325	FMG120900		9,0	10	70	19	61,10*
3.260	610	2.000	300	1.680	300	FMG121000		10,0	10	73	22	61,10
2.740	520	1.680	250	1.360	240	FMG121200		12,0	12	75	26	83,35
2.470	465	1.520	225	1.210	220	FMG121400		14,0	14	85	30	113,84
2.200	410	1.360	200	1.060	200	FMG121600		16,0	16	92	32	162,30
1.940	365	1.210	180	950	175	FMG121800		18,0	18	92	38	239,39
1.680	320	1.060	160	840	150	FMG122000		20,0	20	100	38	239,38
1.360	250	840	130	680	130	FMG122500		25,0	25	120	40	329,26*

\*Fino ad esaurimento scorte.



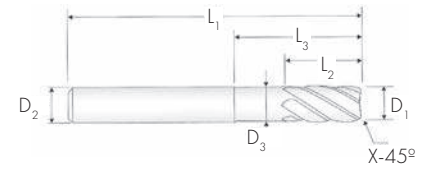
## FRESA 6 DENTI, SERIE CORTA, ELICA A 45°

**INOX** Ref. FMG14 **6 Z** **MG MD** **45°** **WELDON** **TiAlN** **INOX** **45 HRc** **Ti** **INC** **Micro Grana MD**

### SERIE CORTA

GIRI E AVANZAMENTO								FMG14						
R.P.M. rot./min	AVANZ. mm/min	R.P.M. rot./min	AVANZ. mm/min	R.P.M. rot./min	AVANZ. mm/min	R.P.M. rot./min	AVANZ. mm/min	TOL -0,03	TOL h6	D1 mm	D2 mm	L1 mm	L2 mm	€
8.900	2.670	5.760	1.555	4.850	1.310	2.100	370	FMG140300		3,0	3	38	8	23,59
7.560	2.260	4.800	1.440	4.100	1.230	1.800	325	FMG140400		4,0	4	50	11	26,10
6.300	2.090	4.050	1.215	3.700	1.180	1.580	300	FMG140500		5,0	5	50	13	33,00
5.560	2.000	3.880	1.370	3.370	1.100	1.350	280	FMG140600		6,0	6	50	16	35,36
4.200	2.000	2.940	1.370	2.490	1.100	1.000	280	FMG140800		8,0	8	60	19	49,47
3.360	2.000	2.320	1.370	1.920	1.100	440	280	FMG141000		10,0	10	75	22	68,98
2.840	1.680	2.000	1.160	1.610	1.000	400	250	FMG141200		12,0	12	75	26	101,00
2.470	1.470	1.740	1.020	1.380	885	355	220	FMG141400		14,0	14	90	32	130,38
2.100	1.260	1.480	880	1.160	770	310	190	FMG141600		16,0	16	100	32	177,89
1.890	1.130	1.320	785	1.030	695	280	170	FMG141800		18,0	18	100	38	206,48
1.680	1.010	1.160	690	900	920	250	155	FMG142000		20,0	20	100	38	257,59
1.500	900	1.100	600	850	540	220	135	FMG142500		25,0	25	100	38	439,07





## FRESE 4 DENTI AD ELICA VARIABILE

INOX

Ref. FMG83

4 Z

DIN  
6527MG  
MD

TiAIN

Micro Grana  
MD

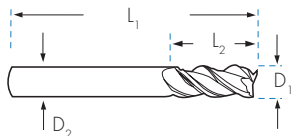
## GIRI E AVANZAMENTO

R.P.M. rot./min	INOX AISI 316L	R.P.M. rot./min	INOX AISI 304	D1 mm	TOL -0,03	TOL h6	L1 mm	L2 mm	L3 mm	X-45°	€
	AVANZ. mm/min		AVANZ. mm/min		D2 mm						
10.185	195	14.260	205	FMG830300	3,0	6	57	8	11	0,07	55,45
7.600	250	14.260	255	FMG830400	4,0	6	57	11	14	0,09	55,45
6.110	310	8.655	310	FMG830500	5,0	6	57	13	16	0,12	55,45
5.095	360	7.130	360	FMG830600	6,0	6	57	13	21	0,20	55,45
3.820	435	5.345	465	FMG830800	8,0	8	63	19	27	0,25	71,03
3.055	590	4.275	585	FMG831000	10,0	10	73	22	32	0,35	103,69
2.545	565	3.565	565	FMG831200	12,0	12	83	26	38	0,40	139,76
2.180	520	3.055	520	FMG831400	14,0	14	84	30	40	0,40	200,57
1.910	480	2.670	480	FMG831600	16,0	16	92	32	44	0,40	235,55
1.525	470	2.140	470	FMG832000	20,0	20	104	38	55	0,40	372,40

FMG83







**FRESA 3 A 4 DENTI, SERIE CORTA, ELICA A 50°**

**INOX** Ref. FMG13

3-4 Z

MG MD

50°

WELDON

TiAlN

INOX

45 HRc

Ti

INC

Micro Grana MD

SERIE CORTA

**GIRI E AVANZAMENTO**

<30 HRc		30-45 HRc		INOX		INC	
R.P.M. rot./min	AVANZ. mm/min	R.P.M. rot./min	AVANZ. mm/min	R.P.M. rot./min	AVANZ. mm/min	R.P.M. rot./min	AVANZ. mm/min
5.560	310	3.360	200	2.840	160	1.280	40
4.200	310	2.520	180	2.100	160	920	40
3.260	310	2.000	140	1.680	140	740	40
2.740	250	1.680	120	1.370	120	620	30
2.200	200	1.360	100	1.050	100	460	25
1.940	175	1.210	85	950	85	410	20
1.680	150	1.060	70	840	70	350	20
1.360	115	840	60	670	60	300	15

**FMG13**

	TOL -0,03	TOL h6	D1	D2	L1	L2	Z	€
	mm	mm	mm	mm	mm	mm		
FMG130600	6,0	6	50	13	3			42,17*
FMG130800	8,0	8	60	19	3			53,94*
FMG131000	10,0	10	70	22	3			79,69*
FMG131200	12,0	12	75	25	3			109,20*
FMG131600	16,0	16	90	32	3			180,98*
FMG131800	18,0	18	90	32	3			211,56*
FMG132000	20,0	20	100	28	4			239,92*
FMG132500	25,0	25	120	45	4			383,74*



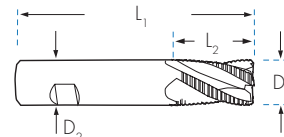
\*Fino ad esaurimento scorte.

NOTA: Nelle operazioni di fresatura ad una faccia conviene aumentare l'avanzamento del 30%, mantenendo le stesse RPM.

**TOLLERANZE SECONDO DIN 7160 E 7161**

Gamma di tolleranze  $\mu\text{m}$  / Diametro nominale in mm

	da 1 a 3	da 3 a 6	da 6 a 10	da 10 a 18	da 18 a 30
<b>TOL e8</b>	- 14 - 28	- 20 - 38	- 25 - 47	- 32 - 59	- 40 - 73
<b>TOL h6</b>	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13



## FRESE 3 A 5 DENTI, SGROSSATURA FINE

INOX

Ref. FMG15  
Ref. FMG16MG  
MD

NF



TiAIN

INOX




Ti

INC

Micro Grana  
MD

## SERIE CORTA

## GIRI E AVANZAMENTO

R.P.M. rot./min	AVANZ. mm/min			R.P.M. rot./min	AVANZ. mm/min	INOX		INC	
		R.P.M. rot./min	AVANZ. mm/min			R.P.M. rot./min	AVANZ. mm/min	R.P.M. rot./min	AVANZ. mm/min
15.600	2.320	12.400	840	8.400	570	2.400	190		
13.600	2.320	10.800	840	7.350	570	2.100	190		
11.600	2.320	9.200	840	6.300	570	1.800	190		
10.400	2.320	8.400	840	5.700	570	1.550	190		
9.200	2.320	7.600	840	5.100	570	1.300	190		
8.000	2.400	6.000	800	4.200	570	1.200	190		
6.800	2.400	5.200	840	3.600	570	900	130		
6.000	2.400	4.800	760	3.300	510	800	110		
5.200	2.320	4.400	720	2.700	420	700	100		
4.800	2.160	3.600	560	2.400	360	660	100		
4.300	2.150	3.200	620	2.160	410	600	100		

## FMG15

	TOL h10	TOL h6	L1 mm	L2 mm	Z	€
	D1 mm	D2 mm				
FMG150600	6,0	6	54	7	3	40,16*
FMG150700	7,0	8	58	8	3	46,92*
FMG150800	8,0	8	58	9	3	46,92*
FMG150900	9,0	10	66	13	4	69,98*
FMG151000	10,0	10	66	14	4	69,98*
FMG151200	12,0	12	73	16	4	89,77*
FMG151400	14,0	14	75	18	4	108,88*
FMG151600	16,0	16	82	22	4	146,10*
FMG151800	18,0	18	84	24	4	187,13*
FMG152000	20,0	20	92	26	4	211,48*
FMG152500	25,0	25	110	25	5	329,45*



\*Fino ad esaurimento scorte.

## SERIE LUNGA

## GIRI E AVANZAMENTO

R.P.M. rot./min	AVANZ. mm/min			R.P.M. rot./min	AVANZ. mm/min	INOX		INC	
		R.P.M. rot./min	AVANZ. mm/min			R.P.M. rot./min	AVANZ. mm/min	R.P.M. rot./min	AVANZ. mm/min
15.600	2.320	12.400	840	8.400	570	2.400	190		
13.600	2.320	10.800	840	7.350	570	2.100	190		
11.600	2.320	9.200	840	6.300	570	1.800	190		
10.400	2.320	8.400	840	5.700	570	1.550	190		
9.200	2.320	7.600	840	5.100	570	1.300	190		
8.000	2.400	6.000	800	4.200	570	1.200	190		
6.800	2.400	5.200	840	3.600	570	900	130		
6.000	2.400	4.800	760	3.300	510	800	110		
5.200	2.320	4.400	720	2.700	420	700	100		
4.800	2.160	3.600	560	2.400	360	660	100		
4.300	2.150	3.200	620	2.160	410	600	100		

## FMG16

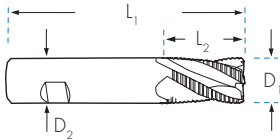
	TOL h10	TOL h6	L1 mm	L2 mm	Z	€
	D1 mm	D2 mm				
FMG160600	6,0	6	57	16	3	43,16*
FMG160700	7,0	8	63	16	3	50,44*
FMG160800	8,0	8	63	16	3	50,44*
FMG160900	9,0	9	72	19	4	75,22*
FMG161000	10,0	10	72	22	4	75,22*
FMG161200	12,0	12	83	26	4	96,52*
FMG161400	14,0	14	83	26	4	117,05*
FMG161600	16,0	16	92	32	4	157,07*
FMG161800	18,0	18	92	32	4	201,20*
FMG162000	20,0	20	104	38	4	227,38*
FMG162500	25,0	25	121	45	5	354,24*



\*Fino ad esaurimento scorte.

## TOLLERANZE SECONDO DIN 7160 E 7161

Gamma di tolleranze $\mu\text{m}$ / Diametro nominale in mm					
	da 1 a 3	da 3 a 6	da 6 a 10	da 10 a 18	da 18 a 30
TOL e8	0 -40	0 -48	0 -58	0 -70	0 -84
TOL h6	0 -6	0 -8	0 -9	0 -11	0 -13



**FRESA 4 A 6 DENTI, SERIE CORTA, ELICA A 45°**

**INOX** Ref. FMG17

4-6 Z

MG MD

45°

NF WELDON

TiAIN INOX

45 HRc

INC

Micro Grana MD

**SERIE CORTA**

GIRI E AVANZAMENTO								FMG17						
R.P.M. rot./min	AVANZ. mm/min	R.P.M. rot./min	AVANZ. mm/min	INOX		INC		TOL h10 D1 mm	TOL h6 D2 mm	L1 mm	L2 mm	Z	€	
				R.P.M. rot./min	AVANZ. mm/min	R.P.M. rot./min	AVANZ. mm/min							
15.600	2.320	12.400	840	8.400	570	2.400	190	FMG170600	6,0	6	54	7	4	40,16*
11.600	2.320	9.200	840	6.300	570	1.800	190	FMG170800	8,0	8	58	9	4	46,92*
9.200	2.320	7.600	840	5.100	570	1.300	190	FMG171000	10,0	10	66	14	4	69,98*
8.000	2.400	6.000	800	4.200	570	1.200	190	FMG171200	12,0	12	73	16	4	89,77*
6.000	2.400	4.800	760	3.300	510	800	110	FMG171600	16,0	16	82	22	5	146,10*
4.800	2.160	3.600	560	2.400	360	660	100	FMG172000	20,0	20	92	26	6	187,98*

\*Fino ad esaurimento scorte.



**FRESA 3 A 6 DENTI, SERIE LUNGA, ELICA A 45°**

**INOX** Ref. FMG18

3-6 Z

MG MD

45°

NF WELDON

TiAIN INOX

45 HRc

INC

Micro Grana MD

**SERIE LUNGA**

GIRI E AVANZAMENTO								FMG18						
R.P.M. rot./min	AVANZ. mm/min	R.P.M. rot./min	AVANZ. mm/min	INOX		INC		TOL h10 D1 mm	TOL h6 D2 mm	L1 mm	L2 mm	Z	€	
				R.P.M. rot./min	AVANZ. mm/min	R.P.M. rot./min	AVANZ. mm/min							
20.100	4.600	18.400	1.700	12.600	1.040	3.800	399	FMG180400	4,0	6	57	11	3	41,90*
18.000	4.600	15.000	1.650	10.200	1.040	2.200	390	FMG180500	5,0	6	57	13	4	41,90*
15.600	2.320	12.400	840	8.400	570	2.400	190	FMG180600	6,0	6	57	16	4	41,90*
13.600	2.320	10.800	840	7.350	570	2.100	190	FMG180700	7,0	8	63	16	4	48,96*
11.600	2.320	9.200	840	6.300	570	1.800	190	FMG180800	8,0	8	63	16	4	48,96*
10.400	2.320	8.400	840	5.700	570	1.550	190	FMG180900	9,0	10	72	19	4	73,03*
9.200	2.320	7.600	840	5.100	570	1.300	190	FMG181000	10,0	10	72	22	4	73,03*
8.000	2.400	6.000	800	4.200	570	1.200	190	FMG181200	12,0	12	83	26	4	93,70*
6.800	2.400	5.200	840	3.600	570	900	130	FMG181400	14,0	14	83	26	5	113,63*
6.000	2.400	4.800	760	3.300	510	800	110	FMG181600	16,0	16	92	32	5	152,50*
4.800	2.160	3.600	560	2.400	360	660	100	FMG182000	20,0	20	104	38	6	245,29*
4.300	2.150	3.200	620	2.160	410	600	100	FMG182500	25,0	25	121	45	6	429,90*

\*Fino ad esaurimento scorte.





## FRESA 4 A 6 DENTI, SERIE LUNGA, ELICA A 45°

INOX

Ref. FMG19

4-6 Z

MG  
MD

NF

WELDON

TiAlN

INOX

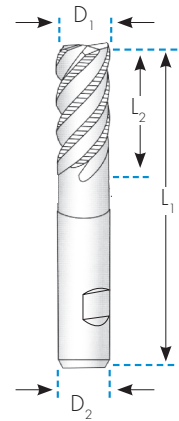
INC

45  
HRcMicro Grana  
MD

SERIE LUNGA

	FMG19							
	TOL h10 D1 mm	TOL h6 D2 mm	D3 mm	L1 mm	L2 mm	L3 mm	Z	€
FMG190600	6,0	6	5,5	57	16	20	4	51,73
FMG190800	8,0	8	7,5	63	16	26	4	60,48
FMG191000	10,0	10	9,5	72	22	31	4	90,21
FMG191200	12,0	12	11,5	83	26	37	4	115,75
FMG191600	16,0	16	15,5	100	32	51	5	150,86
FMG192000	20,0	20	19,2	110	38	59	6	242,50

\*Fino ad esaurimento scorte.



## GIRI E AVANZAMENTO

R.P.M. rot./min	<30 HRc		30-45 HRc		INOX		INC	
	AVANZ. mm/min	R.P.M. rot./min	AVANZ. mm/min	R.P.M. rot./min	AVANZ. mm/min	R.P.M. rot./min	AVANZ. mm/min	
15.600	2.320	12.400	840	8.400	570	2.400	190	
11.600	2.320	9.200	840	6.300	570	1.800	190	
9.200	2.320	7.600	840	5.100	570	1.300	190	
8.000	2.400	6.000	800	4.200	570	1.200	190	
6.000	2.400	4.800	760	3.300	510	800	110	
4.800	2.160	3.600	560	2.400	360	660	100	

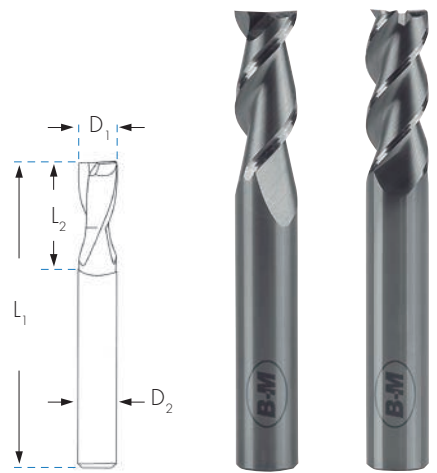
## TOLLERANZE SECONDO DIN 7160 E 7161

TOL	Gamma di tolleranze $\mu\text{m}$ / Diametro nominale in mm				
	da 1 a 3	da 3 a 6	da 6 a 10	da 10 a 18	da 18 a 30
h10	0 -40	0 -48	0 -58	0 -70	0 -84
h6	0 -6	0 -8	0 -9	0 -11	0 -13

**FRESA 2 E 3 DENTI, SERIE CORTA, ELICA A 45°, PER ALLUMINIO**

**Al**
**MG MD**
45°  
N
CILINDRICO
**2Z**
Ref. FMD59
**3Z**
Ref. FMD33
Micro Grana  
MD

**SERIE CORTA**

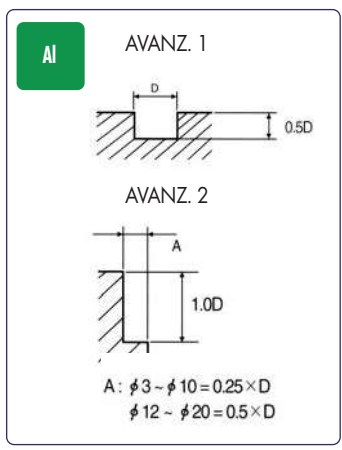


GIRI E AVANZAMENTO							<b>Al</b>		
R.P.M. rot./min	AVANZ. 1 mm/min	AVANZ. 2 mm/min	TOL -0,05 D1 mm	TOL h6 D2 mm	L1 mm	L2 mm	FMD59 2Z €	FMD33 3Z €	
10.000	700	900	3,0	6,0	50	8	26,94	28,03	
10.000	900	1.100	4,0	6,0	50	11	29,20	29,20	
10.000	1.000	1.300	5,0	6,0	50	13	32,71	32,71	
10.000	1.200	1.500	6,0	6,0	50	16	37,13	37,13	
8.000	1.400	1.800	8,0	8,0	60	19	48,80	48,80	
8.000	1.700	2.100	10,0	10,0	72	25	71,73	71,73	
8.000	2.100	2.600	12,0	12,0	75	30	94,79	94,79	
6.000	1.800	2.200	14,0	14,0	84	35	133,02	133,02	
6.000	1.900	2.400	16,0	16,0	92	40	168,71	168,71	
4.000	1.600	1.900	20,0	20,0	100	45	278,25	278,25	

**TOLLERANZE SECONDO DIN 7160 E 7161**

Gamma di tolleranze  $\mu\text{m}$  / Diametro nominale in mm

	da 1 a 3	da 3 a 6	da 6 a 10	da 10 a 18	da 18 a 30
<b>TOL</b>	0	0	0	0	0
<b>h10</b>	- 40	- 48	- 58	- 70	- 84
<b>TOL</b>	0	0	0	0	0
<b>h6</b>	- 6	- 8	- 9	- 11	- 13







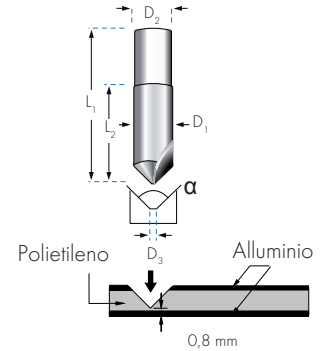
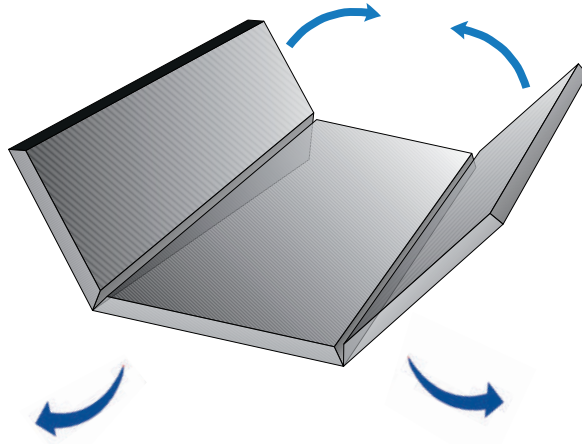
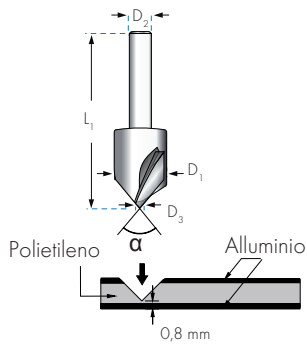
## FRESE SPECIALI PER ALUCOBOND

PMD

Ref. FFALUC

MDI

Ref. FFALUC...MDI



CON PLACCHETTA SALDATA

IN METALLO DURO INTEGRALE

	FFALUC					
	D <sub>1</sub> mm	D <sub>2</sub> mm	D <sub>3</sub> mm	L <sub>1</sub> mm	α	€
FFALUC1600	16,00	8	2,5	55	90°	236,54
FFALUC1800	18,00	8	2,5	55	90°	249,13
FFALUC2000	20,00	8	2,5	55	90°	265,62
FFALUC1600-135	16,00	8	2,3	55	135°	236,54
FFALUC1800-135	18,00	8	2,3	55	135°	249,13
FFALUC2000-135	20,00	8	2,3	55	135°	265,63

	FFALUC...MDI						
	D <sub>1</sub> mm	D <sub>2</sub> mm	D <sub>3</sub> mm	L <sub>1</sub> mm	L <sub>2</sub> mm	α	€
FFALUC1400MDI	14,00	14	2,5	50	14	90°	141,49
FFALUC1600MDI	16,00	16	2,5	50	16	90°	161,03
FFALUC1800MDI	18,00	18	2,5	50	18	90°	185,76
FFALUC1400MDI-135	14,00	14	0,5	50	14	135°	141,49
FFALUC1600MDI-135	16,00	16	0,5	50	16	135°	161,03
FFALUC1800MDI-135	18,00	18	0,5	50	18	135°	185,76

FRESE IN METALLO DURO FRONTALI CON COLLO



Ref. FMG74  
Ref. FMG75  
Ref. FMG76

2 Z



MG  
MD



30°



CILINDRICO

TiAIN

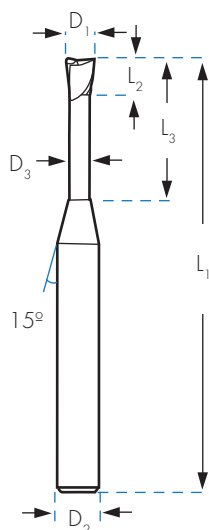


50  
HRc

Micro Grana  
MD

Frese

Rosa



FMG74

	TOL -0,015	TOL h6					€
	D1 mm	D2 mm	D3 mm	L1 mm	L2 mm	L3 mm	
FMG740050	0,5	4	0,45	45	0,7	8	105,55
FMG740100	1,0	4	0,95	55	1,5	20	108,30
FMG740150	1,5	4	1,45	55	2,3	20	97,76
FMG740200	2,0	4	1,95	55	3,0	20	93,81
FMG740300	3,0	6	2,85	60	4,5	20	121,32
FMG740400	4,0	6	3,85	60	6,0	20	121,32
FMG740500	5,0	6	4,85	60	7,5	20	121,32
FMG740600	6,0	6	5,85	80	9,0	20	121,32

FMG75

	TOL -0,015	TOL h6					€
	D1 mm	D2 mm	D3 mm	L1 mm	L2 mm	L3 mm	
FMG750200	2,0	4	1,95	70	3,0	30	110,88
FMG750300	3,0	6	2,85	70	4,5	30	126,02
FMG750400	4,0	6	3,85	70	6,0	30	126,02
FMG750500	5,0	6	4,85	80	7,5	30	126,02
FMG750600	6,0	6	5,85	90	9,0	30	126,02

FMG76

	TOL -0,015	TOL h6					€
	D1 mm	D2 mm	D3 mm	L1 mm	L2 mm	L3 mm	
FMG760400	4,0	6	3,85	90	6,0	40	138,58
FMG760500	5,0	6	4,85	80	7,5	40	138,58
FMG760600	6,0	6	5,85	100	9,0	40	138,58

## FRESE IN METALLO DURO SEMISFERICHE CON COLLO



Ref. FMG77  
Ref. FMG78  
Ref. FMG79

2 Z

MG  
MD

30°



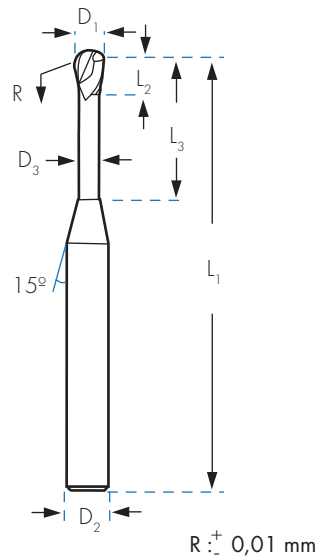
CILINDRICO

TiAlN

50  
HRcMicro Grana  
MD

Frese

Rosa



FMG77

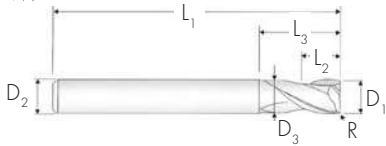
	TOL -0,02	TOL h6					
	D1 mm	D2 mm	D3 mm	L1 mm	L2 mm	L3 mm	€
FMG770050	0,5	4	0,45	45	0,7	8	105,55
FMG770100	1,0	4	0,95	55	1,5	20	108,30
FMG770150	1,5	4	1,45	55	2,3	20	97,76
FMG770200	2,0	4	1,95	55	3,0	20	93,81
FMG770300	3,0	6	2,85	60	4,5	20	121,32
FMG770400	4,0	6	3,85	65	6,0	20	121,32
FMG770500	5,0	6	4,85	60	7,5	20	121,32
FMG770600	6,0	6	5,85	80	9,0	20	121,32

FMG78

	TOL -0,02	TOL h6					
	D1 mm	D2 mm	D3 mm	L1 mm	L2 mm	L3 mm	€
FMG780200	2,0	4	1,95	70	3,0	30	110,88
FMG780300	3,0	6	2,85	70	4,5	30	126,02
FMG780400	4,0	6	3,85	70	6,0	30	126,02
FMG780500	5,0	6	4,85	80	7,5	30	126,02
FMG780600	6,0	6	5,85	90	9,0	30	126,02

FMG79

	TOL -0,02	TOL h6					
	D1 mm	D2 mm	D3 mm	L1 mm	L2 mm	L3 mm	€
FMG790400	4,0	6	3,85	90	6,0	40	132,68
FMG790600	6,0	6	5,85	100	9,0	40	132,68



## FRESA 2 DENTI PER ACCIAI DA TEMPRA ESTREMA 70HRc



Ref. FMG01

2 Z



MG  
MD



BLUE



Micro Grana  
MD

### GIRI E AVANZAMENTO

50-55 HRc		55-60 HRc		60-65 HRc		65-70 HRc	
R.P.M. rot./min	AVANZ. mm/min	R.P.M. rot./min	AVANZ. mm/min	R.P.M. rot./min	AVANZ. mm/min	R.P.M. rot./min	AVANZ. mm/min
25.500	360	20.500	215	16.000	135	12.500	88
21.500	390	17.500	240	13.500	150	11.000	102
11.500	420	9.500	260	7.500	160	6.400	115
10.150	430	8.350	270	6.550	165	5.575	118
8.800	440	7.200	270	5.600	170	4.750	118
8.550	470	6.800	280	5.350	175	4.600	125
8.300	500	6.400	285	5.100	180	4.450	132
6.900	480	5.300	280	4.200	180	3.700	130
5.200	445	4.000	255	3.200	165	2.800	120
4.100	415	3.200	240	2.550	155	2.200	112
3.500	415	2.650	240	2.100	155	1.860	112
2.600	365	2.000	210	1.600	135	1.400	98
2.050	335	1.600	295	1.300	125	1.100	88

FMG01

	TOL Speciale	TOL h6	D3 mm	L1 mm	L2 mm	L3 mm	R	€
	D1 mm	D2 mm						
FMG010100	1,0	3	-	40	1,5	-	0,1	30,53*
FMG010150	1,5	3	-	40	2,2	-	0,1	30,53*
FMG010300	3,0	6	2,9	45	4,0	7	0,1	40,45*
FMG010350	3,5	6	3,3	45	5,0	9	0,1	40,45*
FMG010400	4,0	6	3,8	45	5,0	9	0,1	40,45*
FMG010450	4,5	6	4,3	45	6,0	10	0,1	40,45*
FMG010500	5,0	6	4,8	50	6,0	11	0,2	40,45*
FMG010600	6,0	6	5,8	50	7,0	14	0,2	40,45*
FMG010800	8,0	8	7,8	60	9,0	18	0,2	51,15*
FMG011000	10,0	10	9,7	75	12,0	25	0,2	76,45*
FMG011200	12,0	12	11,7	75	15,0	30	0,3	105,42*
FMG011600	16,0	16	15,7	90	18,0	38	0,3	175,77*
FMG012000	20,0	20	19,7	100	24,0	45	0,3	232,50*



\*Fino ad esaurimento scorte.

## FRESA 4 DENTI PER ACCIAI DA TEMPRA ESTREMA 70HRc



Ref. FMG04

4 Z



MG  
MD



BLUE



Micro Grana  
MD

### GIRI E AVANZAMENTO

50-55 HRc		55-60 HRc		60-65 HRc		65-70 HRc	
R.P.M. rot./min	AVANZ. mm/min	R.P.M. rot./min	AVANZ. mm/min	R.P.M. rot./min	AVANZ. mm/min	R.P.M. rot./min	AVANZ. mm/min
25.500	710	20.500	430	16.000	270	12.500	175
21.500	775	17.500	475	13.500	295	11.000	200
17.500	840	14.500	520	11.000	320	9.500	230
14.500	840	12.000	520	9.250	320	7.950	230
11.500	840	9.500	520	7.500	320	6.400	230
10.150	860	8.350	530	6.550	328	5.575	240
8.800	880	7.200	540	5.600	335	4.750	240
8.550	940	6.800	560	5.350	353	4.600	255
8.300	1.000	6.400	580	5.100	370	4.450	270
6.900	950	5.300	560	4.200	350	3.700	260
5.200	900	4.000	520	3.200	330	2.800	240
4.100	840	3.200	480	2.550	310	2.200	220
3.500	840	2.650	480	2.100	300	1.860	220
2.600	730	2.000	420	1.600	270	1.400	200
2.050	650	1.600	380	1.300	250	1.100	180

FMG04

	TOL Speciale	TOL h6	D3 mm	L1 mm	L2 mm	L3 mm	R	€
	D1 mm	D2 mm						
FMG040100	1,0	3	-	40	1,5	-	0,1	30,53*
FMG040150	1,5	3	-	40	2,2	-	0,1	30,53*
FMG040200	2,0	3	1,9	40	3,0	6	0,1	27,70*
FMG040250	2,5	3	2,4	40	4,0	6	0,1	27,70*
FMG040300	3,0	6	2,9	45	4,0	7	0,1	40,45*
FMG040350	3,5	6	3,3	45	5,0	9	0,1	40,45*
FMG040400	4,0	6	3,8	45	5,0	9	0,1	40,45*
FMG040450	4,5	6	4,3	45	6,0	10	0,1	40,45*
FMG040500	5,0	6	4,8	50	6,0	11	0,2	40,45*
FMG040600	6,0	6	5,8	50	7,0	14	0,2	40,45*
FMG040800	8,0	8	7,8	60	9,0	18	0,2	51,15*
FMG041000	10,0	10	9,7	75	12,0	25	0,2	76,45*
FMG041200	12,0	12	11,7	75	15,0	30	0,3	105,42*
FMG041600	16,0	16	15,7	90	18,0	38	0,3	175,77*
FMG042000	20,0	20	19,7	100	24,0	45	0,3	232,50*



\*Fino ad esaurimento scorte.

## FRESA 2 DENTI SEMISFERICA PER ACCIAI DA TEMPRA ESTREMA 70HRC



Ref. FMG02

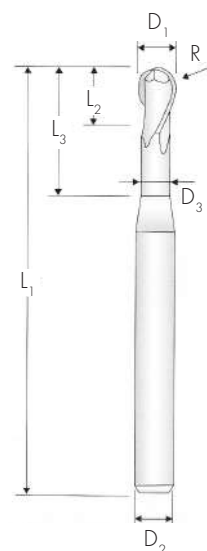
2 Z

MG  
MD

30°

CILINDRICO

BLUE

Micro Grana  
MD

## SERIE CORTA

## GIRI E AVANZAMENTO

R.P.M. rot./min	50-55 HRc		55-60 HRc		60-65 HRc		65-70 HRc	
	AVANZ. mm/min	R.P.M. rot./min	AVANZ. mm/min	R.P.M. rot./min	AVANZ. mm/min	R.P.M. rot./min	AVANZ. mm/min	R.P.M. rot./min
57.000	4.000	54.000	3.400	51.000	2.700	48.000	2.300	
52.750	4.000	50.000	3.300	46.000	2.700	43.000	2.300	
48.500	4.000	44.500	3.275	41.500	2.750	38.250	2.300	
40.000	4.000	35.000	3.150	32.000	2.800	28.500	2.300	
26.500	4.000	23.500	3.150	21.000	2.800	19.000	2.300	
20.000	4.000	17.500	3.150	16.000	2.800	14.500	2.300	
15.000	3.750	13.500	3.050	11.500	2.550	10.500	2.100	
11.000	3.100	10.000	2.500	8.800	2.150	8.000	1.750	
10.000	2.900	9.000	2.325	7.900	2.000	7.250	1.650	
9.000	2.700	8.000	2.150	7.000	1.850	6.500	1.550	
8.250	2.500	7.300	2.025	6.400	1.750	5.900	1.465	
7.500	2.400	6.600	1.900	5.800	1.650	5.300	1.380	
5.600	1.900	5.000	1.550	4.400	1.250	4.000	1.050	
5.000	1.800	4.500	1.450	3.950	1.125	3.600	950	
4.000	1.600	3.600	1.275	3.150	900	2.875	750	
3.600	1.500	3.200	1.200	2.800	800	2.550	660	
-	-	-	-	-	-	-	-	

## FMG02

	TOL Speciale		TOL h6		TOL R			€
	D1	D2	D3	L1	L2	L3	R	
FMG020100	1,0	4	0,95	50	1,0	2,2	0,5	50,34*
FMG020120	1,2	4	1,10	50	1,2	2,6	0,6	50,34*
FMG020150	1,5	4	1,40	50	1,5	3,0	0,8	50,34*
FMG020200	2,0	4	1,90	50	2,0	4,0	1,0	47,81*
FMG020300	3,0	6	2,90	60	3,0	6,0	1,5	47,81*
FMG020400	4,0	6	3,30	70	4,0	8,0	2,0	49,96*
FMG020500	5,0	6	4,90	80	5,0	10,0	2,5	51,44*
FMG020600	6,0	6	5,90	90	6,0	12,0	3,0	55,16*
FMG020700	7,0	8	6,90	90	7,0	14,0	3,5	86,96*
FMG020800	8,0	8	7,90	100	8,0	16,0	4,0	86,08*
FMG020900	9,0	10	8,90	100	9,0	18,0	4,5	141,96*
FMG021000	10,0	10	9,90	100	10,0	20,0	5,0	141,96*
FMG021200	12,0	12	11,90	110	12,0	24,0	6,0	182,23*
FMG021400	14,0	14	13,80	110	14,0	28,0	7,0	184,35*
FMG021800	18,0	18	17,80	140	18,0	36,0	9,0	262,78*
FMG022000	20,0	20	19,80	160	20,0	40,0	10,0	372,41*
FMG022500	25,0	25	24,80	180	25,0	50,0	12,5	603,68*

\*Fino ad esaurimento scorte.

## TOLLERANZE SECONDO DIN 7160 E 7161

Gamma di tolleranze  $\mu\text{m}$  / Diametro nominale in mm

	da 1 a 3	da 3 a 6	da 6 a 10	da 10 a 18	da 18 a 30
TOL Speciale	0 - 12	0 - 12	0 - 15	0 - 15	0 - 15
TOL h6	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13
TOL R	0 - 5	0 - 10	0 - 10	0 - 10	0 - 10



FRESE 6 DENTI PER ACCIAI DA TEMPRA ESTREMA 70HRc



Ref. FMG06

6 Z



MG MD

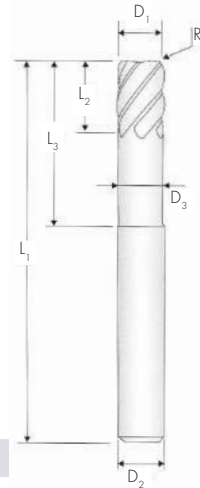


CILINDRICO

BLUE



Micro Grana MD



SERIE CORTA

FMG06

50-55 HRc		55-60 HRc		60-65 HRc		65-70 HRc	
R.P.M. rot./min	AVANZ. 1 mm/min	R.P.M. rot./min	AVANZ. 1 mm/min	R.P.M. rot./min	AVANZ. 1 mm/min	R.P.M. rot./min	AVANZ. 1 mm/min
16.000	4.900	13.500	3.300	10.500	2.100	8.000	1.450
12.000	4.600	10.000	3.100	8.000	2.000	6.000	1.400
9.500	4.100	8.000	2.900	6.400	1.800	4.800	1.300
8.000	3.800	6.600	2.500	5.300	1.600	4.000	1.150

	TOL Speciale		TOL h6		TOL R			€
	D1 mm	D2 mm	D3 mm	L1 mm	L2 mm	L3 mm	R	
FMG060600	6,0	6	5,70	50	6	14	0,5	57,86*
FMG060800	8,0	8	7,65	60	8	24	0,5	69,02*
FMG061000	10,0	10	9,65	70	10	30	1,0	107,68*
FMG061200	12,0	12	11,60	75	12	30	1,0	128,61*

\*Fino ad esaurimento scorte.

SERIE LUNGA

FMG07

50-55 HRc		55-60 HRc		60-65 HRc		65-70 HRc	
R.P.M. rot./min	AVANZ. 1 mm/min	R.P.M. rot./min	AVANZ. 1 mm/min	R.P.M. rot./min	AVANZ. 1 mm/min	R.P.M. rot./min	AVANZ. 1 mm/min
16.000	4.900	13.500	3.300	10.500	2.100	8.000	1.450
12.000	4.600	10.000	3.100	8.000	2.000	6.000	1.400
9.500	4.100	8.000	2.900	6.400	1.800	4.800	1.300
9.500	4.100	8.000	2.900	6.400	1.800	4.800	1.300
8.000	3.800	6.600	2.500	5.300	1.600	4.000	1.150
8.000	3.800	6.600	2.500	5.300	1.600	4.000	1.150
6.000	3.400	5.000	2.300	4.000	1.250	3.000	870
6.000	3.400	5.000	2.300	4.000	1.250	3.000	870
4.800	3.200	4.000	2.100	3.200	1.020	2.400	690
4.800	3.200	4.000	2.100	3.200	1.020	2.400	690
4.800	3.200	4.000	2.100	3.200	1.020	2.400	690

\*Fino ad esaurimento scorte.

TOLLERANZE SECONDO DIN 7160 E 7161

Gamma di tolleranze  $\mu\text{m}$  / Diametro nominale in mm

	da 1 a 3	da 3 a 6	da 6 a 10	da 10 a 18	da 18 a 30
TOL Speciale	0 - 12	0 - 12	0 - 15	0 - 15	0 - 15
TOL h6	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13

FRESE PER ACCIAI DA TEMPRA ESTREMA 70HRC,  
TECNOLOGIA DI MICROFRESATURA PEZZI DI PRECISIONE

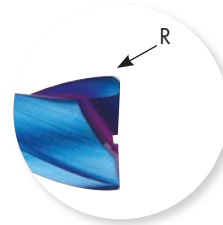
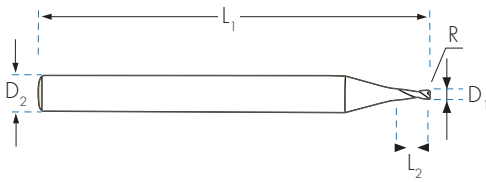
Ref. FMG09

2 Z

MG  
MD

CILINDRICO

BLUE

TOL D1  
-0,012TOL D2  
h6Micro Grana  
MD

FMG09

	D1 mm	D2 mm	L1 mm	L2 mm	R	€
FMG090030	0,30	6	50	0,45	-	117,78
FMG090040	0,40	6	50	0,60	-	110,54
FMG090050	0,50	6	50	0,70	0,05	96,15
FMG090060	0,60	6	50	0,90	0,05	92,50
FMG090080	0,80	6	50	1,20	0,05	85,24
FMG090100	1,00	6	50	1,50	0,10	81,69
FMG090120	1,20	6	50	1,80	0,10	81,69
FMG090150	1,50	6	50	2,20	0,15	81,69
FMG090200	2,00	6	50	2,20	0,15	74,04



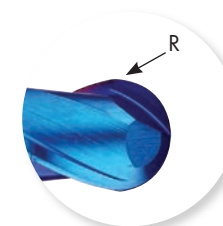
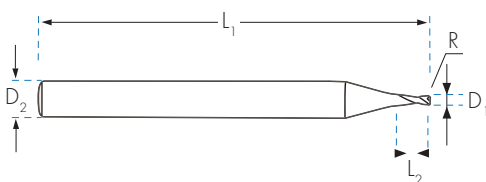
Ref. FMG08

2 Z

MG  
MD

CILINDRICO

BLUE

TOL D1  
-0,012TOL D2  
h6Micro Grana  
MD

FMG08

	D1 mm	D2 mm	L1 mm	L2 mm	R	€
FMG080040	0,40	6	50	0,40	0,20	119,55
FMG080050	0,50	6	50	0,50	0,25	110,35
FMG080060	0,60	6	50	0,60	0,30	101,19
FMG080080	0,80	6	50	0,80	0,40	82,53
FMG080100	1,00	6	50	1,00	0,50	77,70
FMG080120	1,20	6	50	1,20	0,60	77,70
FMG080150	1,50	6	50	1,50	0,75	77,70
FMG080200	2,00	6	50	2,00	1,00	70,40

# FRESE SCALANARE



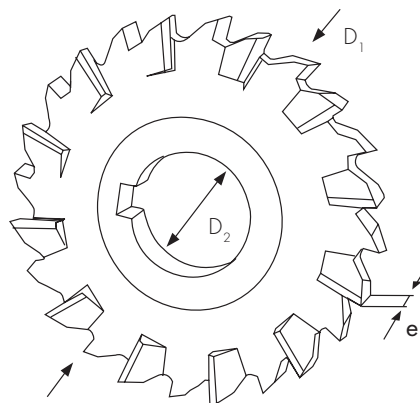
**BLUE-MASTER<sup>®</sup>**  
*by celesa*

CUTTING TECHNOLOGIES

**FRESA PER SCANALARE HSSCO A 3 TAGLIENTI CON DENTATURA ALTERNATA**


Ref. FF56

HSSCo

DIN  
885A

FF56				
D1 mm	e mm	D2 mm	Z	€
50	4,0	16	12	95,13
50	5,0	16	12	95,13
50	6,0	16	12	101,75
50	8,0	16	12	107,35
50	10,0	16	12	118,22
63	1,6	22	16	142,10
63	2,0	22	16	142,71
63	2,5	22	16	143,77
63	3,0	22	16	145,75
63	4,0	22	12	107,12
63	5,0	22	12	112,95
63	6,0	22	12	115,64
63	8,0	22	12	123,95
63	10,0	22	12	135,29
63	12,0	22	12	144,46
63	14,0	22	12	155,60
63	16,0	22	12	164,57
63	18,0	22	12	191,41
80	1,6	27	20	118,81
80	2,0	27	20	119,60
80	2,5	27	20	121,59
80	3,0	27	20	123,36
80	4,0	27	20	140,07
80	5,0	27	14	147,12
80	6,0	27	14	152,20
80	8,0	27	14	157,21
80	10,0	27	14	160,93
80	12,0	27	14	180,09
80	14,0	27	14	197,33
80	16,0	27	14	207,87
80	18,0	27	14	223,00
80	20,0	27	14	245,19

FF56				
D1 mm	e mm	D2 mm	Z	€
100	1,6	32	24	206,73
100	2,0	32	24	208,18
100	2,5	32	24	210,55
100	3,0	32	24	211,91
100	4,0	32	24	215,02
100	5,0	32	24	220,82
100	6,0	32	16	215,83
100	8,0	32	16	220,41
100	10,0	32	16	223,63
100	12,0	32	16	240,87
100	14,0	32	16	267,96
100	16,0	32	16	278,70
100	18,0	32	16	313,24
100	20,0	32	16	313,24
100	22,0	32	16	341,00
100	25,0	32	16	381,97
125	1,6	32	16	222,22
125	2,0	32	16	223,17
125	2,5	32	16	225,51
125	3,0	32	16	227,68
125	4,0	32	16	229,79
125	5,0	32	16	230,84
125	6,0	32	16	232,67
125	8,0	32	18	277,06
125	10,0	32	18	295,09
125	12,0	32	18	328,68
125	14,0	32	18	369,10
125	16,0	32	18	383,32
125	18,0	32	18	410,01
125	20,0	32	18	445,91
125	22,0	32	18	496,73
125	25,0	32	18	525,32
125	28,0	32	18	574,16

FF56				
D1 mm	e mm	D2 mm	Z	€
160	2,0	40	30	418,11
160	2,5	40	30	422,38
160	3,0	40	30	425,44
160	4,0	40	30	428,14
160	5,0	40	30	430,70
160	6,0	40	30	432,03
160	8,0	40	30	451,46
160	10,0	40	22	528,99
160	12,0	40	22	547,98
160	14,0	40	22	545,31
160	16,0	40	22	596,77
160	18,0	40	22	628,83
160	20,0	40	22	645,51
160	22,0	40	22	709,49
160	25,0	40	22	768,80
160	28,0	40	22	845,09
160	32,0	40	22	903,57
200	12,0	40	24	835,89
200	14,0	40	24	844,10
200	16,0	40	24	869,61
200	18,0	40	24	912,41
200	20,0	40	24	975,82
200	22,0	40	24	979,04
200	25,0	40	24	1.135,66
200	28,0	40	24	1.171,57
200	32,0	40	24	1.461,11

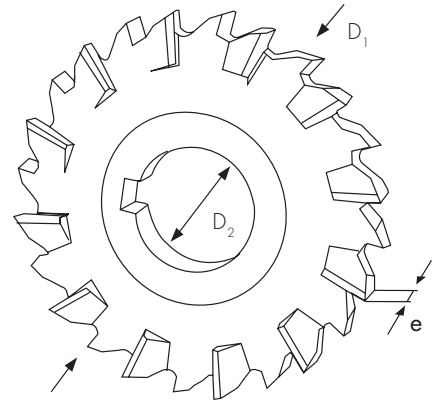
**FRESA PER SCANALARE HSSCO A 3 TAGLIENTI CON DENTATURA DRITTA**



Ref. FF59

**HSSCo**

**DIN  
885B**



FF59				
D1 mm	e mm	D2 mm	Z	€
50	4	16	16	105,63
50	5	16	16	105,63
50	6	16	16	122,42
50	8	16	16	119,22
50	10	16	16	131,27
63	4	22	18	123,06
63	5	22	18	123,06
63	6	22	18	124,69
63	8	22	18	135,55
63	10	22	18	145,87
63	12	22	18	156,24
63	14	22	18	168,27
63	16	22	18	177,97
63	18	22	18	212,55
80	5	27	20	165,53
80	6	27	20	169,88
80	8	27	20	179,27
80	10	27	20	191,38
80	12	27	20	204,92
80	14	27	20	219,14
80	16	27	20	224,84
80	18	27	20	241,17
80	20	27	20	265,17

FF59				
D1 mm	e mm	D2 mm	Z	€
100	6	32	22	231,12
100	8	32	22	237,68
100	10	32	22	246,36
100	12	32	22	265,33
100	14	32	22	292,12
100	16	32	22	309,49
100	18	32	22	338,77
100	20	32	22	338,77
100	22	32	22	378,68
100	25	32	22	414,24
125	8	32	24	368,02
125	10	32	24	377,64
125	12	32	24	391,94
125	14	32	24	425,65
125	16	32	24	447,50
125	18	32	24	478,20
125	20	32	24	508,78
125	22	32	24	579,35
125	25	32	24	584,96
125	28	32	24	639,33

FF59				
D1 mm	e mm	D2 mm	Z	€
160	10	40	28	610,19
160	12	40	28	610,19
160	14	40	28	607,22
160	16	40	28	664,53
160	18	40	28	700,22
160	20	40	28	718,77
160	22	40	28	790,05
160	25	40	28	856,07
160	28	40	28	941,03
160	32	40	28	1.006,14
200	12	40	30	930,80
200	14	40	30	939,92
200	16	40	30	968,33
200	18	40	30	1.016,00
200	20	40	30	1.086,60
200	22	40	30	1.090,19
200	25	40	30	1.264,59
200	28	40	30	1.304,56
200	32	40	30	1.626,99



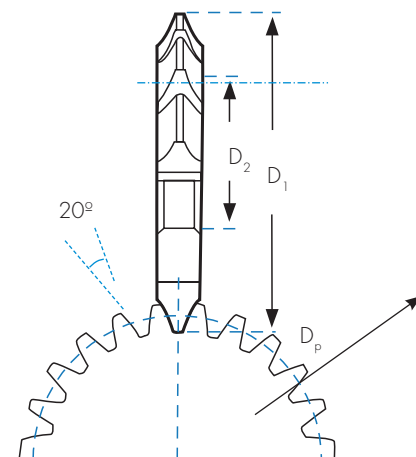
**FRESA A MODULO PER INGRANAGGI**

Frese

Rosa

HSS

Ref. 99RFM



			99RFM
MODULO FRESA	D <sub>1</sub> mm	D <sub>2</sub> mm	€
0,50	40	16	132,13
0,70	40	16	132,13
0,75	40	16	132,13
0,80	40	16	132,13
1,00	50	16	132,13
1,25	50	16	132,13
1,50	56	22	135,67
1,75	56	22	135,67
2,00	63	22	135,67
2,25	63	22	159,00
2,50	63	22	159,00
2,75	71	27	159,00
3,00	71	27	159,00
3,25	71	27	209,83
3,50	80	27	209,83
3,75	80	27	209,83
4,00	80	27	209,83
4,50	90	32	287,59
5,00	90	32	287,59
6,00	100	32	364,15
7,00	100	32	364,15

**NUMERO FRESA / DENTI**

N°1	N°2	N°3	N°4	N°5	N°6	N°7	N°8	Set
12-13	14-16	17-20	21-25	26-34	35-54	55-134	135-∞	12-∞

$$\text{Mod.} = \frac{\varnothing_{\text{Est}}}{(Z+2)}$$

NOTA: Il prezzo dipende dal modulo, indipendentemente dal n° di denti.

**FRESE CILINDRICHE FRONTALI CON CHIAVETTA TRASVERSALE HSSCo**

Ref. FF87

HSSCo

DIN  
1880

FINITURA

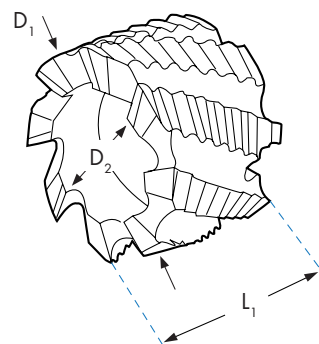
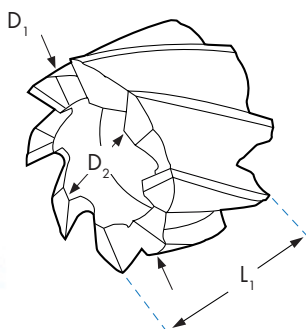
Ref. FF88

HSSCo

DIN  
1880

NR

SGROSSATURA



FF87				
D <sub>1</sub> mm	D <sub>2</sub> mm	L <sub>1</sub> mm	Z	€
40	16	32	8	139,35
50	22	36	8	191,72
63	27	40	8	261,96
80	27	45	10	370,78
100	32	50	12	596,92
125	40	56	14	958,62
160	50	63	16	1.713,26

FF88				
D <sub>1</sub> mm	D <sub>2</sub> mm	L <sub>1</sub> mm	Z	€
40	16	32	6	201,80
50	22	36	6	250,60
63	27	40	8	332,03
80	27	45	8	488,04
100	32	50	10	805,18
125	40	56	12	1.366,03
160	50	63	14	2.370,27

**FRESE CILINDRICHE FRONTALI CON CHIAVETTA TRASVERSALE HSSCo**



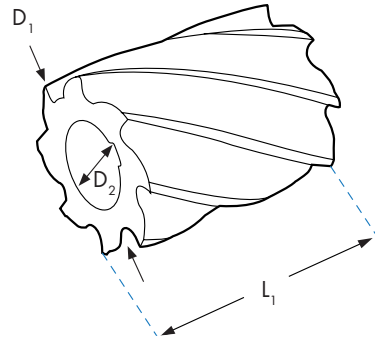
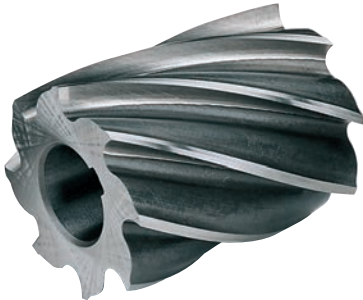
Ref. FF89

**HSSCo**

**DIN  
884**



CILINDRICA A SPIANARE



					FF89
D <sub>1</sub> mm	D <sub>2</sub> mm	L <sub>1</sub> mm	Z		€
50	22	63	8		174,57*
50	22	80	8		260,25*
63	27	50	8		229,10*
63	27	70	8		278,71*
80	32	63	8		386,12*
100	40	70	10		600,74*

\*Fino ad esaurimento scorte.

**FRESE CILINDRICHE FRONTALI A SPIANARE CON CODOLO**

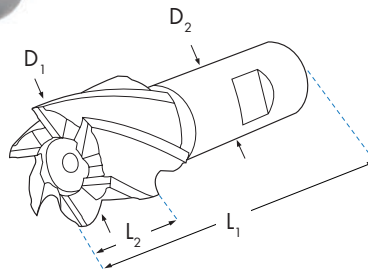


Ref. FMF87

**HSSCo  
8%**



FINITURA



					FMF87
D <sub>1</sub> mm	L <sub>2</sub> mm	L <sub>1</sub> mm	D <sub>2</sub> mm	Z	€
30	30	90	20	6	203,12
35	30	90	20	6	233,12
40	32	95	25	8	290,54

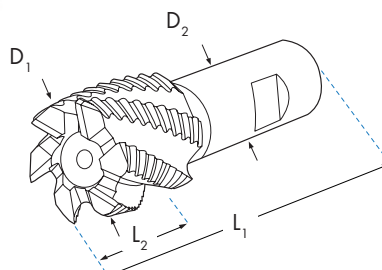


Ref. FMF88

**HSSCo  
8%**



SGROSSATURA



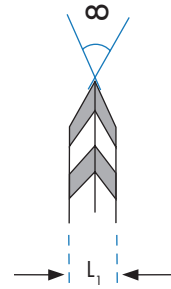
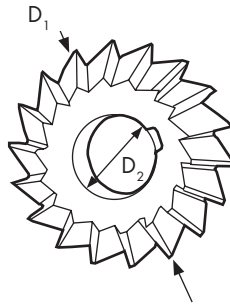
					FMF88
D <sub>1</sub> mm	L <sub>2</sub> mm	L <sub>1</sub> mm	D <sub>2</sub> mm	Z	€
30	30	90	20	6	234,82
35	30	90	20	6	300,83
40	32	95	25	8	368,53

**FRESE AD ANGOLO SINGOLO E DOPPIO HSSCo**

Frese

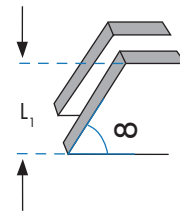
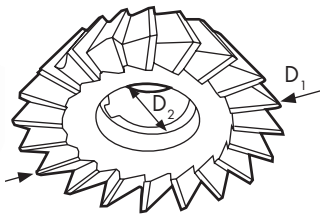
Rosa

Ref. FF77	HSSCo	DIN 847	45°	Ref. FF78	HSSCo	DIN 847	60°	Ref. FF79	HSSCo	DIN 847	90°
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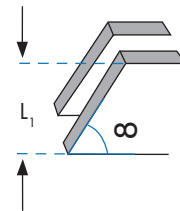
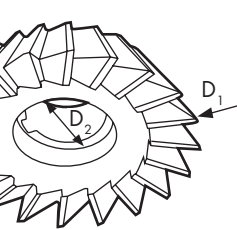


FF77						FF78						FF79					
D <sub>1</sub> mm	D <sub>2</sub> mm	L <sub>1</sub> mm	∞	Z	€	D <sub>1</sub> mm	D <sub>2</sub> mm	L <sub>1</sub> mm	∞	Z	€	D <sub>1</sub> mm	D <sub>2</sub> mm	L <sub>1</sub> mm	∞	Z	€
50	16	8	45°	20	129,31	50	16	10	60°	18	129,31	50	16	14	90°	16	129,31
63	22	10	45°	22	162,25	63	22	14	60°	20	162,25	63	22	20	90°	18	162,25
80	27	12	45°	24	241,24	80	27	18	60°	22	241,24	80	27	22	90°	20	241,24
100	32	18	45°	26	349,39	100	32	25	60°	24	349,39	100	32	32	90°	22	349,39

Ref. FF91	HSSCo	DIN 842	50°
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Ref. FF90	HSSCo	DIN 842	60°
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FF91					
D <sub>1</sub> mm	D <sub>2</sub> mm	L <sub>1</sub> mm	∞	Z	€
40	10	13	50°	14	140,07
50	13	16	50°	16	146,83
63	16	20	50°	18	198,70
80	22	25	50°	20	295,70
100	27	32	50°	22	456,26
125	32	40	50°	24	753,47
160	40	50	50°	30	1.317,99

FF90					
D <sub>1</sub> mm	D <sub>2</sub> mm	L <sub>1</sub> mm	∞	Z	€
40	10	13	60°	14	137,34
50	13	16	60°	16	143,98
63	16	20	60°	18	194,84
80	22	25	60°	20	289,97
100	27	32	60°	22	447,40
125	32	40	60°	24	738,86
160	40	50	60°	30	1.292,43



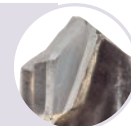


FRESE  
PER CHIAVI

**BLUE-MASTER<sup>®</sup>**  
*by celesa*

CUTTING TECHNOLOGIES

**UTENSILI PER I SERRATURIERI**  
**LA GAMMA PIÙ AMPIA DI UTENSILI PER LA SERRATURERIA**
**DIN 338**
**PMD**

**BRILLANTE**
**GHISA**


Ø mm	L <sub>1</sub> x L <sub>2</sub> mm	1U.	BC7		BC7B	
			€/U.	BLISTER	1	€/U.
6,00	93 x 57	BC70600	19,66	BC70600B	1	23,66

Punta DIN 338 con punta in metallo duro per **METALLI DURI**.  
 Punta di **ALTA DUREZZA** per forare **METALLI DURI** nella serratureria.  
 Lo trovi a pagina 51.

**DIN 338**
**HSSCo 5%**

**ORO**


Ø mm	L <sub>1</sub> x L <sub>2</sub> mm	1U.	BC5		BC5F		BC5B			
			€/U.	1	€	1	€			
6,00	93 x 57	BC50600	10	4,90	BC50600F	1	5,48	BC50600B	1	6,36

Punta elicoidale in HSSCo secondo DIN 338 per metalli di 120 Kg / mm<sup>2</sup> durezza .  
 Punta di **ALTA DUREZZA** per **USI GENERALI** nella serratureria.  
 Lo trovi a pagina 50.


**DIN 338**
**PMD**

**BRILLANTE**
**70 HRc**


Ø mm	L <sub>1</sub> x L <sub>2</sub> mm	1U.	BC98		BC98B	
			€/U.	1	€/U.	1
6,00	93 x 57	BC980600	16,25	BC980600B	1	20,25

Punta DIN 338 con punta in metallo duro per **METALLI MOLTI DURI** o **TEMPRATI**.  
 Punta di **ALTA DUREZZA** per forare **METALLI DURI** o **TEMPRATI** nella serratureria.  
 Lo trovi a pagina 51.

**MD**
**TOL D1 h7**
**TOL D2 h6**

**TiAIN**
**HARDOX 600**

**70 HRc**


Ø mm	L <sub>1</sub> x L <sub>2</sub> mm	1U.	BC85		BC85B	
			€/U.	1	€/U.	1
6,00	75 x 35	BC850600	76,14	BC850600B	1	81,14

Punta in metallo duro integrale per **METALLI TEMPRATI**, fino a durezza 70 HRc.  
 Punta di **DUREZZA MASSIMA** per forare **METALLI TEMPRATI** nella serratureria.  
 Lo trovi a pagina 70.

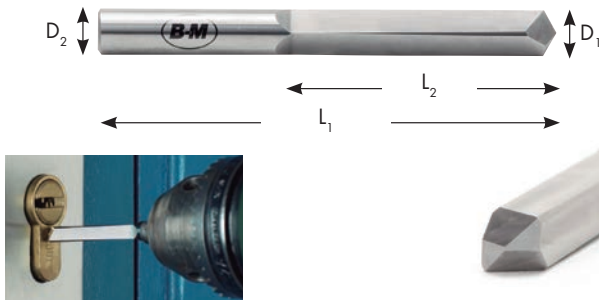


### PUNTA QUADRATA PER PERFORARE CILINDRI



Punta a sezione quadrata in metallo duro integrale per FORARE CILINDRI E PITONI ANTI-FORATURA. IL TRAPANO N. 1 PER LA FORATURA DI CILINDRI AD ALTA DUREZZA nella serratureria.

\* Per forare cilindri "Anti-drilling" lavorare a 300RPM

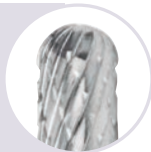


D1 mm	D2 mm	L2 mm	L1 mm	1U.	€	1U.	€
6	6	33	60	BCC06X60MD	73,89	BCC06X60MDB	78,89

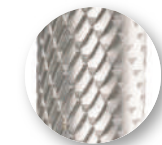
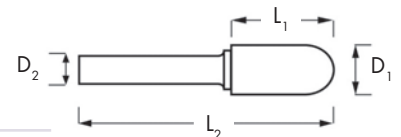
### FRESA PER I SERRATURIERI SPECIALE PER FRESARE CILINDRI

TIPO  
C

MD



Fresa per il SERRATURIERE, nota anche come VAMPIRO, realizzata in metallo duro integrale. Geometria emisferica in lunghezze totali da 60mm a 150mm. La fresa ideale per FRESATURA DI CILINDRI, selezionare dalla vasta gamma di dimensioni la più adatta alla sua applicazione.



	D1 mm	D2 mm	L1 mm	L2 mm		1U.		1U.	
3 mm. CODOLO	3.0	3	25.0	60	HSS	Y548TG2	19,95	Y548TG2B	22,95
	3.0	3	25.0	60	Monobloc	C30325-6	39,88	C30325-6B	43,88
6 mm. CODOLO	6.0	6	25.0	50	Monobloc	CBM60625-6	39,28	CBM60625-6B	43,28
	6.0	6	25.0	60	Monobloc	C60625-60-6	33,78	C60625-60-6B	37,78
	6.0	6	25.0	80	Monobloc	C60625-80-6	40,36	C60625-80-6B	44,36
	6.0	6	25.0	100	Monobloc	C60625-100-6	56,30	C60625-100-6B	60,30
	6.0	6	25.0	120	Monobloc	C60625-120-6	67,56	C60625-120-6B	71,56
	6.0	6	25.0	150	Monobloc	C60625-150-6	90,08	C60625-150-6B	94,08



### CILINDRICA CON TAGLIO FRONTALE

TIPO  
A/E

MD



Frese ROTATIVE in metallo duro forma A / E (frontale cilindrica) e forma C (semi sferica) La fresa ideale per FRESATURA DI CILINDRI, selezionare dal ampia gamma di dimensioni la più adatta alla sua applicazione. Lo trovi a pagine 335.



	D1 mm	L2 mm	D2 mm	L1 mm		1U.		1U.	
6 mm. CODOLO	6.0	25.0	6	50	Monobloc	ABM60625-6E	35,02	ABM60625-6EB	39,02



**FRESE PER MACCHINE DUPLICATRICI DI CHIAVI TIPO JMA**
**FRESE PRISMATICHE**


Ref. FLLFP4



Frese

Rosa

Ref. BM	Ref. JMA	TIPI DI MACCHINE	MATERIALE	mm		mm	$\beta^\circ$	Z	mm	FLL	€
FLLFP1 (FLL02)	FP1	OREGON	HSSV	25	10	10	100°	60	0,1		95,64
FLLFP2W	FP2W	VIRGINIA	MD	40	10	6	70°	70	0,1		376,16
FLLFP3 (FLL04)	FP3	KIS, SPRINT	HSSV	50	12	6	90°	80	0,15		116,39
FLLFP4 (FLL06)	FP4	KIS	HSSV	53	12,7	6,35	45/15°	72	0,6		120,06
FLLFP5	FP5	JMA	HSSV	57	12,7	5	90°	80	0,15		149,63
FLLFP6 (FLL09)	FP6	KIS, SPRINT	HSSV	60	12,7	5	84°	140	0,1		116,39
FLLFP11ECCO (FLL11)	FP11/ECCO-009	ECCO, ECCO-PLUS	HSSV	63	16	5	84°	80	1		111,35
FLLFP11W	FP11W	ECCO, ECCO-PLUS	MD	63	16	5	84°	80	1		340,54
FLLFP12	FP12	TUCSON	HSSV	63	16	5	80°	80	1,25		120,06
FLLFP12W	FP12W	TUCSON	MD	63	16	5	80°	80	1,25		367,70
FLLFP13	FP13	DALLAS	HSSV	63	16	5	84°	100	1		149,49
FLLCU14	CU14	ECCO, ECCO-PLUS	HSSV	63	16	5	80°	80	1,25		146,50
FLLFP16 (FLL13)	FP16	PROCEDURE	HSSV	70	16	5,25	76°	100	1		149,49
FLLFP16W	FP16W	PROCEDURE	MD	70	16	5,25	76°	100	1		367,70
SLLP01	FP24 DAKOTA = P01	DAKOTA, ERREBI SARATOGA, NEVADA, DENVER, TITAN, VIENNA	HSSV	80	16	5	84°	110	1		103,94
SLLP01/120	FP24 DAKOTA=P01/120		HSSV	80	16	5	84°	120	1		137,29
FLLFP24 (FLL16)	FP24 ERREBI		HSSV	80	16	5	84°	110	1,25		91,81
FLLFP24W	FP24W ERREBI		MD	80	16	5	84°	110	1,25		340,54
FLL99	FP24		HSSV	80	16	5	84°	110	0		101,57






Ref.FLL99: frese prismatiche 80x5x16 Z110 senza smusso laterale.

**FRESE PER MACCHINE DUPLICATRICI DI CHIAVI TIPO JMA**
**FRESE CIRCOLARI A TAGLIO LATERALE**


Ref. FLLFP19






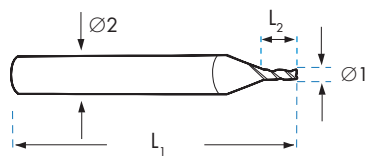
Ref. BM	Ref. JMA	TIPI DI MACCHINE	MATERIALE	mm			Z	FLL	€
									
FLLFP7	FP7	ECCO BIT, DETROIT	HSSV	63	16	1,25	80	116,39	
FLLFP7W	FP7W	ECCO BIT, DETROIT	MD	63	16	1,25	80	297,01	
FLLFP8 (FLL19)	FP8	ECCO BIT, DETROIT	HSSV	63	16	1,4	80	82,33	
FLLFP17	FP17	TITAN BIT, SARATOGA, YAKARTA	HSSV	80	16	1,25	100	85,07	
FLLFP17W	FP17W	TITAN BIT, SARATOGA, YAKARTA	MD	80	16	1,25	100	312,05	
FLLFP18	FP18	ATLANTA, TOPEKA	HSSV	80	22	1,25	100	116,39	
FLLFP18W	FP18W	ATLANTA, TOPEKA	MD	80	22	1,25	100	312,05	
FLLFP19 (FLL21)	FP19	SARATOGA, YAKARTA, TITAN BIT, DAKOTA	HSSV	80	16	1,4	100	88,18	
FLLFP19W	FP19W	SARATOGA, YAKARTA, TITAN BIT, DAKOTA	MD	80	16	1,4	100	292,28	
FLLFP20 (FLL22)	FP20	ATLANTA, TOPEKA	HSSV	80	22	1,4	100	88,18	
FLLFP21 (FLL24)	FP21 / SLLSG2	ATLANTA, TOPEKA, DUPLEX, KANSAS	HSSV	80	22	1,5	100	90,64	
FLLFP21W	FP21W	ATLANTA, TOPEKA, DUPLEX, KANSAS	MD	80	22	1,5	100	318,16	

**FRESE A SEGRETTO**

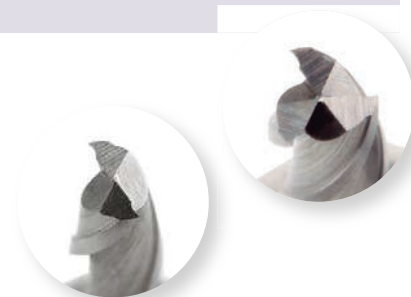

Ref. FLLFP22W



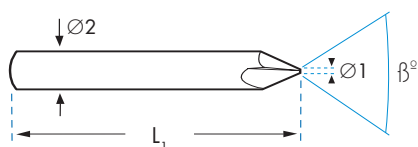
Ref. BM	Ref. JMA	TIPI DI MACCHINE	MATERIALE	mm			Z	FLL	€
									
FLLFP9	FP9	ECCO BIT	HSSV	63	16	1	80	78,80	
FLLFP10	FP10	ECCO FORD, ECCO ABBLOY, PASADENA, NEBRASCA	HSSV	63	16	2,4	80	78,80	
FLLFP22	FP22	TITAN BIT, DAKOTA, SARATOGA	HSSV	80	16	1	100	84,06	
FLLFP22W	FP22W	TITAN BIT, DAKOTA, SARATOGA	MD	80	16	1	100	287,66	
FLLFP23	FP23	DUPLEX, ATLANTA, TOPEKA	HSSV	80	22	1	100	87,10	
FLLFP23W	FP23W	DUPLEX, ATLANTA, TOPEKA	MD	80	22	1	100	287,66	
FF68801416100CO	-	TITAN, DAKOTA, SARATOGA, YAKARTA	HSSCo	80	16	1,4	100	84,65	
FLLFP26 (FLL23)	FP26	G, SENNA, DAKOTA, SARATOGA, YAKARTA	HSSV	80	16	1,5	100	88,29	
FLLFP26W	FP26W	G, SENNA, DAKOTA, SARATOGA,	MD	80	16	1,5	100	291,69	

**FRESE PER MACCHINE DUPLICATRICI DI CHIAVI TIPO JMA**
**FRESINI PER CHIAVI LASER**


Ref. FLLF3



Ref. BM	Ref. JMA	TIPI DI MACCHINE	MATERIALE	Ø <sub>1</sub> mm	L <sub>1</sub> mm	Ø <sub>2</sub> mm	L <sub>2</sub> mm	Z	FLL	€
FLLF3Z3 (FLL32)	≈ F3	ALBANY ARIZONA COLUMBIA DAKAR DAKAR EXPRESS DAY T-COL DAYTONA X CODE	HSSCo	1,5	45	6	3	3		41,51
FLLF3 (FLL44)	F3		HSSCo	1,5	45	6	3	2		38,84
FLLF3W (FLL45)	F3W		MD	1,5	45	6	3	2		126,27
FLLF33 (FLL53)	F33		HSSCo	2	45	6	4	3		37,50
FLL11Z3 (FLL33)	≈ F11		HSSCo	2,5	45	6	5	3		37,50
FLLF11 (FLL48)	F11		HSSCo	2,5	45	6	5	2		33,56
FLLF11W (FLL49)	F11W		MD	2,5	45	6	5	2		95,58
FLLF17 (FLL34)	F17		HSSCo	3	45	6	6	3		37,50
FLLF8Z3 (FLL35)	≈ F8		HSSCo	4	45	6	6	3		43,65
FLLF8 (FLL46)	F8		HSSCo	4	45	6	7	2		38,84
FLLF8W (FLL47)	F8W		MD	4	45	6	6	2		118,51
FLLF77 (FLL36)	-		HSSCo	5	45	6	7	3		43,65
FLLF78 (FLL37)	-		HSSCo	6	45	6	8	3		43,65
FLLF78W (FLL54)	-		MD	6	45	6	8	3		95,58
FLLF78WZ4 (FLL55)	-		MD	6	45	6	8	4		95,58

**FRESE DA CENTRO UNIVERSALE PER MACCHINE TIPO JMA E SILCA**


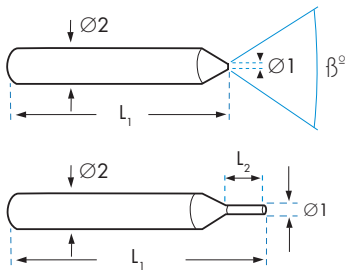
Ref. FLLF1



Ref. BM	Ref. JMA	TIPI DI MACCHINE	MATERIALE	β°	Ø <sub>1</sub> mm	L <sub>1</sub> mm	Ø <sub>2</sub> mm	Z	FLL	€
FLLF82	-	ALBANY ARIZONA CAPRI COLUMBIA DAKAR DAKAR EXPRESS DAY T-COL DAYTONA X CODE	HSSCo	82°	0,9	45	6	2		24,48
FLLF1 (FLL43)	F1		HSSCo	90°	0,8	45	6	2		25,56
FLLF1W (FLL42)	F1W		MD	90°	0,8	45	6	2		79,19
FLLF5 (FLL52)	F5		HSSCo	90°	0,9	45	6	2		25,56
FLLF5W (FLL42)	F5W		MD	90°	0,9	45	6	2		79,19
FLLF95	-		HSSCo	95°	0,9	45	6	2		24,48
FLLF13 (FLL50)	F13		HSSCo	100°	0,8	45	6	2		25,56
FLLF13W (FLL51)	F13W		MD	100°	0,8	45	6	2		74,09
FLLF105	-		HSSCo	105°	0,9	45	6	2		24,48

**FRESE PER MACCHINE DUPLICATRICI DI CHIAVI TIPO JMA**

**TASTATORI**



Ref. FLLP1



Ref. FLLP3



Ref. BM	Ref. JMA	TIPI DI MACCHINE	MATERIALE	β°	Ø1 mm	L1 mm	Ø2 mm	L2 mm	FLL
									€
FLLP1	(PLL38)	P1	HSSV	90°	0,8	45	6	-	20,81
FLLP3	(PLL32)	P3	HSSV	-	1,5	45	6	4	36,81
FLLP5		P5	HSSV	90°	0,9	45	6	-	20,81
FLLP8	(PLL35)	P8	HSSV	-	4	45	6	7	36,81
FLLP11	(PLL33)	P11	HSSV	-	2,5	45	6	4	36,81
FLLP13	(PLL50)	P13	HSSV	100°	0,8	45	6	-	20,81
FLLP17	(PLL34)	P17	HSSV	-	3	45	6	6	36,81
FLLP52	(PLL52)	-	HSSV	90°	0,9	45	6	-	20,81
FLLP77	(PLL36)	-	HSSV	-	5	45	6	7	36,81
FLLP78	(PLL37)	-	HSSV	-	6	45	6	8	36,81

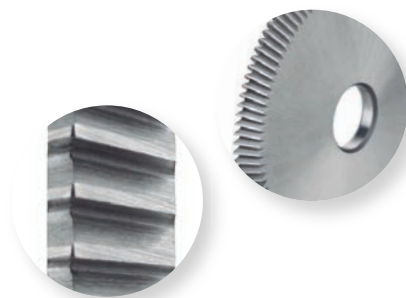
**FRESINI KEY LINE**



Ref. BM	Ref. JMA	TIPI DI MACCHINE	MATERIALE	β°	Ø1 mm	L1 mm	Ø2 mm	L2 mm	€
V001	-	KEY LINE	MD	90°	0,4	32	4	-	145,59
V003	-		MD	-	2,5	32	4	5	145,59
V004	-		MD	82°	0,5	32	4	-	145,59
V007	-		MD	100°	0,4	32	4	-	145,59
V012	-		MD	-	1,5	32	4	4	179,01



**FRESE PER MACCHINE DUPLICATRICI DI CHIAVI TIPO SILCA**
**FRESE PRISMATICHE**


Ref. SLLP01





Ref. BM	Ref. SILCA	TIPI DI MACCHINE	MATERIALE	mm		mm	$\beta^\circ$	Z	mm	SLL
										
SLL01F	O1F	FUTURA PRO	MD	60,4	9,52	3,05	40	110	0	160,81
SLLU01	U01	UNOCODE/ULTRACODE	HSSV	60,4	9,52	5,25	80	72	0,5	135,62
SLLU01W	U01W	UNOCODE/ULTRACODE	MD	60,4	9,52	5,25	80	72	0,5	433,31
SLLP21	P21	SILCA DELTA	HSSV	60,4	9,52	5,25	84	72	0,5	116,51
SLLP01	P01	BRAVO / POKER / REKORD / BRAVO SUPER / SUPER MASTER	HSSV	80	16	5	84	110	1	103,94
SLLP01/120	P01/120		HSSV	80	16	5	84	120	1	137,29
SLLP01W	P01W		MD	80	16	5	84	110	1	340,54

**FRESE CIRCOLARI A TAGLIO LATERALE**


Ref. SLLSG2



Ref. BM	Ref. SILCA	TIPI DI MACCHINE	MATERIALE	mm		mm	Z	SLL
								
SLLY2KW	Y2KW	DELTA	MD	63	16	1,35	80	312,05
SLLSG19	SG19	DELTA	HSSV	64,6	9,52	1,5	40	88,18
SLLSG19W	SG19W	DELTA	MD	64,6	9,52	1,5	40	297,01
SLLSG18	SG18	DELTA	HSSV	64,6	9,52	2,4	40	88,18
SLLSG18W	SG18W	DELTA	MD	64,6	9,52	2,4	40	297,01
SLLSG6	SG6	LANCER	HSSV	80	22	1,3	100	90,64
SLLSG6W	SG6W	LANCER	MD	80	22	1,3	100	312,05
SLLSG2	SG2	TARGA/TECH3/TECHNICA	HSSV	80	22	1,5	100	90,64
SLLSG2W	SG2W	TARGA/TECH3/TECHNICA	MD	80	22	1,5	100	312,05
SLLFSCL4-CAW	FSCL4-CAW	DELTA	MD	80	22	1,8	100	324,40

**FRESE PER MACCHINE DUPLICATRICI DI CHIAVI TIPO SILCA**
**FRESE A SEGNETTO**


Ref. SLLSG7W

Ref. BM	Ref. SILCA	TIPI DI MACCHINE	MATERIALE	mm			Z	SLL
								€
SLLSG14W	SG14W	DELTA	MD	60,4	9,52	1,14	80	249,54
SLLGB1	GB1	ULTRACODE / UNOCODE	HSSV	60,4	9,52	1,7	66	91,55
SLL05	05	UNOCODE/ULTRACODE	HSSV	60,4	9,52	1,8	68	91,55
SLL05W	05W	UNOCODE/ULTRACODE	MD	60,4	9,52	1,8	68	261,89
SLLCU-15C	CU-15C	OPERA /TARGA	MD	63	16	1,5	80	341,13
SLLSG17	SG17	DELTA	HSSV	64,6	9,52	1,8	70	91,55
SLLSG17W	SG17W	DELTA	MD	64,6	9,52	1,8	70	287,66
SLLSG13	SG13	UNOCODE / DELTA	HSSV	64,6	9,52	2	70	91,55
SLLSG13W	SG13W	UNOCODE / DELTA	MD	64,6	9,52	2	70	341,13
SLL06	06	UNOCODE/ULTRACODE	HSSV	64,6	9,52	2,4	70	91,55
SLL06W	06W	UNOCODE/ULTRACODE	MD	64,6	9,52	2,4	70	278,15
SLLSG3	SG3	OPERA /TARGA/TECH3	HSSV	80	22	1	100	87,10
SLLSG3W	SG3W	OPERA /TARGA/TECH3	MD	80	22	1	100	287,66
SLLSG4	SG4	OPERA /TARGA/TECH3	HSSV	80	22	1,25	100	87,10
SLLSG4W	SG4W	OPERA /TARGA/TECH3	MD	80	22	1,25	100	287,66
SLLSG5	SG5	LANCER	HSSV	80	22	1,3	100	87,10
SLLSG5W	SG5W	LANCER	MD	80	22	1,3	100	287,66
SLLSG7	SG7	OPERA / TARGA	HSSV	80	22	1,4	100	87,10
SLLSG7M35	SG7M35	OPERA / TARGA	HSSCo	80	22	1,4	100	111,50
SLLSG7W	SG7W	LANCER	MD	80	22	1,4	100	287,66
SLLSG1	SG1	OPERA /TARGA/TECH3	HSSV	80	22	1,5	100	87,10
SLLSG1W	SG1W	OPERA /TARGA/TECH3	MD	80	22	1,5	100	287,66
SLLSG8	SG8	TECH3 / TECHNICA	HSSV	80	22	1,75	100	87,10
SLLSG10	SG10	LANCER	HSSV	80	22	2	100	87,10
SLLSG10W	SG10W	LANCER/ OPERA /TARGA	MD	80	22	2	100	299,87
SLLSG11	SG11	SILCA GT40	HSSV	80	22	2,3	100	87,10
SLLSG12	SG12	TARGA/TECH3/TECNICA/OPERA	HSSV	80	22	2,5	100	87,10
SLLSG58400	SG58400	DELTA	MD	80	22	4	100	275,45
SLLPL1	PL1	PRIMA LASER	HSSV	100	22	1	100	150,27
SLLPL1W	PL1W	PRIMA LASER	MD	100	22	1	100	385,54
SLLPL1,25	PL1,25	PRIMA LASER	HSSV	100	22	1,25	100	150,27
SLLPL1,25W	PL1,25W	PRIMA LASER	MD	100	22	1,25	100	367,67
SLLPL1,5	PL1,5	PRIMA LASER	HSSV	100	22	1,5	100	150,27
SLLPL1,5W	PL1,5W	PRIMA LASER	MD	100	22	1,5	100	367,67
SLLPL1,7W	PL1,7W	PRIMA LASER	MD	100	22	1,7	100	378,93
SLLPL2	PL2.0	PRIMA LASER	HSSV	100	22	2	100	150,27
SLLPL2W	PL2.0W	PRIMA LASER	MD	100	22	2	100	378,93

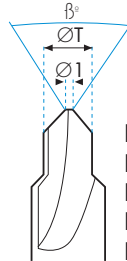
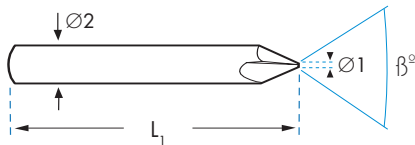
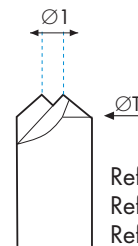
**FRESE PER MACCHINE DUPLICATRICI DI CHIAVI TIPO SILCA**


FRESINI PER CHIAVI PUNZONATE

MATRIX

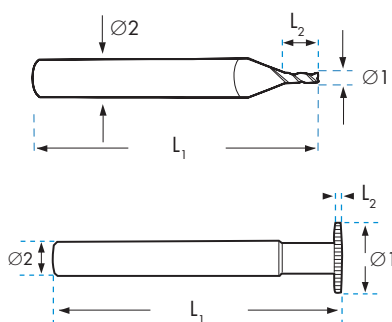


Ref. SLLFIW


 Ref. SLLF19-CAZ1  
 Ref. SLLF19  
 Ref. SLLF43  
 Ref. SLLF21  
 Ref. SLLF25

 Ref. SLLF12B  
 Ref. SLLF15  
 Ref. SLLF37


Ref. BM	Ref. SILCA	UNIV.	TIPI DI MACCHINE	MATERIALE		Ø1 mm	L1 mm	Ø2 mm	Z	SLL
										€
SLLF1Z1	F1	FLLF1	MATRIX	HSSV	90°	0,7	48	6	1	58,24
SLLF1	F1	FLLF1	MATRIX	HSSV	90°	0,7	48	6	2	58,24
SLLF1W	F1W	FLLF1W	MATRIX	MD	90°	0,7	48	6	1	104,13
SLLF4	F4	FLLF1	MATRIX	HSSV	90°	0,4	48	6	1	58,24
SLLF5	F5	FLLF5	MATRIX	HSSV	90°	0,9	48	6	1	58,24
SLLF6	F6	FLLF105	MATRIX	HSSV	106°	1	48	6	1	58,24
SLLF7	F7	FLLF82	MATRIX	HSSV	72°	0,8	48	6	2	58,26
SLLF12A	F12A	FLLF13	MATRIX	HSSV	100°	0,4	48	6	1	58,24
SLLF12B	F12B	FLLF1	MATRIX	HSSV	90°	8 x 1,8*	48	6	2	58,24
SLLF13	F13	FLLF1	MATRIX	HSSV	90°	0,77	48	6	1	58,24
SLLF14	F14	FLLF5	MATRIX	HSSV	90°	0,9	48	6	1	58,24
SLLF15	F15	FLLF1	MATRIX	HSSV	90°	8 x 0,8*	48	6	1	66,76
SLLF19	F19	FLLF1	MATRIX	HSSCo	90°	2,2 x 0,6*	48	6	1	58,26
SLLF19-CAZ1	F19-CA	FLLF1W	MATRIX	MD	90°	2,2 x 0,6*	48	6	1	104,13
SLLF20	F20	FLLF1	MATRIX	HSSV	90°	0,45	48	6	2	58,24
SLLF21	F21	FLLF82	MATRIX	HSSCo	85°	3,2 x 0,8*	48	6	1	66,76
SLLF23	F23	FLLF1	MATRIX	HSSV	90°	1,5	48	6	2	66,76
SLLF24	F24	FLLF13	MATRIX	HSSV	100°	1,3	48	6	1	58,24
SLLF25	F25	FLLF1	MATRIX	HSSV	90°	3,5 x 0,65*	48	6	1	58,24
SLLF26	F26	FLLF82	MATRIX	HSSV	82°	0,8	48	6	1	58,24
SLLF27-CA	F27-CA	-	MATRIX	MD	60°	2,4 x 1,9*	48	6	1	139,11
SLLF28	F28	-	MATRIX	HSSV	76°	0,76	48	6	1	58,24
SLLF29	F29	-	MATRIX	HSSV	76°	1,9 x 0,76*	48	6	1	58,24
SLLF34	F34	-	MATRIX	HSSV	50°	1,5	48	6	1	58,24
SLLF34-CAZ1	F34-CA	-	MATRIX	MD	50°	1,5	48	6	1	104,13
SLLF37	F37	FLLF1	MATRIX	HSSV	90°	6 x 2,1*	48	6	2	66,76
SLLF39	F39	FLLF1	MATRIX	HSSV	90°	0,6	48	6	2	70,74
SLLF42	F42	FLLF13	MATRIX	HSSV	100°	0,7	48	6	1	58,24
SLLF43	F43	FLLF1	MATRIX	HSSCo	90°	1	48	6	1	58,24
SLLF45	F45	-	MATRIX	HSSV	130°	0,56	48	6	1	58,26
SLLF46	F46	FLLF13	MATRIX	HSSV	100°	0,65	48	6	1	58,26
SLLF49	F49	FLLF95	MATRIX	HSSV	95°	0,8	48	6	1	66,76
SLLF50	F50	FLLF13	MATRIX	HSSV	100°	0,5	48	6	1	66,76
SLLF52-CA	F52-CA	-	MATRIX	MD	54°	0,86	48	6	2	58,24
SLLF59	F59	FLLF1	MATRIX	HSSV	90°	0,8	48	6	2	58,24
SLL01D	01D	-	FUTURA PRO	MD	90°	0,4	30	6	2	65,42
SLL02D	02D	-	FUTURA PRO	MD	100°	0,4	30	6	2	65,42

\* Ø1 x Ø1

**FRESE PER MACCHINE DUPLICATRICI DI CHIAVI TIPO SILCA**
**FRESINI PER CHIAVI LASER**
**MATRIX**


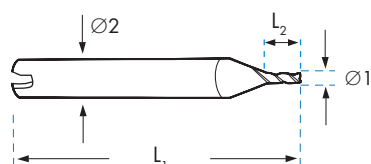
\* Ref.SLLF62W



Ref. SLLF3



Ref. BM	Ref. SILCA	TIPI DI MACCHINE	MATERIALE	Ø1 mm	L1 mm	Ø2 mm	L2 mm	Z	SLL
SLLF3	F3	MATRIX	HSSV	1,5	48	6	2	3	58,24
SLLF8	F8	MATRIX	HSSV	4	48	6	13	3	58,24
SLLF11	F11	MATRIX	HSSV	2,5	48	6	7	3	58,24
SLLF22	F22	MATRIX	HSSV	2,5	42	6	6	3	58,24
SLLF30	F30	MATRIX	HSSV	3	48	6	6	3	58,24
SLLF30Z2	F30	MATRIX	HSSV	3	48	6	6	2	68,46
SLLF44	F44	MATRIX	HSSV	2	40	6	6	3	58,24
SLLF62W*	F62W	MATRIX	MD	11,8	48	6	1	20	185,96
SLL01L	01L	FUTURA PRO	MD	2,5	30	6	3	3	65,42
SLL02L	02L	FUTURA PRO	MD	2	30	6	3	3	65,42

**FRESINI PER CHIAVI LASER**
**QUATTROCODE / TRIAX-E**


Ref. SLLW133



Ref. BM	Ref. SILCA	TIPI DI MACCHINE	MATERIALE	Ø1 mm	L1 mm	Ø2 mm	L2 mm	Z	SLL
SLLW101	W101	QUATTROCODE / TRIAX-E	MD	2,5	40	6	6	3	132,87
SLLW114	W114	QUATTROCODE / TRIAX-E	MD	2	40	6	6	3	132,90
SLLW117	W117	QUATTROCODE / TRIAX-E	MD	5	48	6	R1	4	107,85
SLLW129	W129	QUATTROCODE / TRIAX-E	MD	3	40	6	6	3	132,87
SLLW131	W131	QUATTROCODE / TRIAX-E	MD	6	40	6	5	3	98,09
SLLW133	W133	QUATTROCODE / TRIAX-E	MD	1,5	40	6	3	3	145,11
SLLW134	W134	QUATTROCODE / TRIAX-E	MD	4	40	6	7	3	132,90
SLLW219	W219	QUATTROCODE / TRIAX-E	MD	1,2	40	6	2	3	132,87
SLLW235	W235	QUATTROCODE / TRIAX-E	MD	1,1	40	6	2	3	132,84
SLLW268	W268	QUATTROCODE / TRIAX-E	MD	1,5	40	6	6	2	132,97

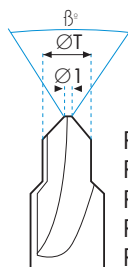
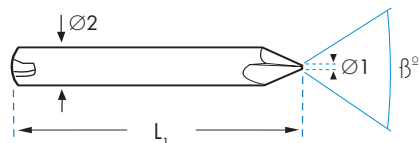
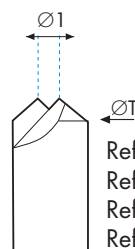
**FRESE PER MACCHINE DUPLICATRICI DI CHIAVI TIPO SILCA**

FRESINI PER CHIAVI PUNZONATE

QUATTROCODE /TRIAX-E



Ref. SLLW103


 Ref. SLLW115  
 Ref. SLLW128  
 Ref. SLLW135  
 Ref. SLLW145  
 Ref. SLLW210

 Ref. SLLW111  
 Ref. SLLW126  
 Ref. SLLW127  
 Ref. SLLW139


Ref. BM	Ref. SILCA	TIPI DI MACCHINE	MATERIALE	$\beta^\circ$	$\varnothing_1$ mm	$L_1$ mm	$\varnothing_2$ mm	Z	SLL
SLLW102	W102	QUATTROCODE /TRIAX-E	MD	106°	1	40	6	2	93,27
SLLW103	W103/W299	QUATTROCODE /TRIAX-E	MD	90°	0,8	40	6	2	93,27
SLLW104	W104	QUATTROCODE /TRIAX-E	MD	90°	1,2	40	6	2	93,27
SLLW105	W105	QUATTROCODE /TRIAX-E	MD	90°	0,7	40	6	2	93,27
SLLW106	W106	QUATTROCODE /TRIAX-E	MD	90°	0,6	40	6	2	93,27
SLLW107	W107	QUATTROCODE /TRIAX-E	MD	90°	0,9	40	6	2	93,27
SLLW108	W108	QUATTROCODE /TRIAX-E	MD	82°	0,9	40	6	2	93,27
SLLW109	W109	QUATTROCODE /TRIAX-E	MD	110°	0,4	40	6	2	93,27
SLLW110	W110	QUATTROCODE /TRIAX-E	MD	100°	0,6	40	6	2	93,27
SLLW111	W111	QUATTROCODE /TRIAX-E	MD	96°	8x2,75*	40	6	2	104,77
SLLW112	W112	QUATTROCODE /TRIAX-E	MD	60°/0°	1,5	40	6	2	93,86
SLLW113	W113	QUATTROCODE /TRIAX-E	MD	100°	0,76	40	6	2	93,27
SLLW115	W115	QUATTROCODE /TRIAX-E	MD	54°	4x0,86*	40	6	1	125,02
SLLW116	W116	QUATTROCODE /TRIAX-E	MD	90°	1	40	6	2	93,27
SLLW118	W118	QUATTROCODE /TRIAX-E	MD	120°	0,6	40	6	2	93,27
SLLW119	W119	QUATTROCODE /TRIAX-E	MD	85°	0,3	40	6	2	93,27
SLLW121	W121	QUATTROCODE /TRIAX-E	MD	86°	0,05	48	6	3	129,77
SLLW122	W122	QUATTROCODE /TRIAX-E	MD	90°	0,55	40	6	2	111,91
SLLW123	W123	QUATTROCODE /TRIAX-E	MD	76°	0,9	40	6	2	93,27
SLLW124	W124	QUATTROCODE /TRIAX-E	MD	90°	8x0,8*	48	6	3	178,77
SLLW126	W126	QUATTROCODE /TRIAX-E	MD	80°	3,3	48	6	2	111,91
SLLW127	W127	QUATTROCODE /TRIAX-E	MD	80°	2,1	48	6	2	111,91
SLLW128	W128	QUATTROCODE /TRIAX-E	MD	90°	4x0,55*	48	6	1	125,02
SLLW130	W130	QUATTROCODE /TRIAX-E	MD	90°	1,4	40	6	2	125,55
SLLW132	W132	QUATTROCODE /TRIAX-E	MD	60°	2	40	6	1	125,02
SLLW135	W135	QUATTROCODE /TRIAX-E	MD	90°	4x0,55*	40	6	2	124,94
SLLW136	W136	QUATTROCODE /TRIAX-E	MD	76°	2,23	40	6	1	125,02
SLLW138	W138	QUATTROCODE /TRIAX-E	MD	90°	4x0,7*	48	6	2	93,27
SLLW139	W139	QUATTROCODE /TRIAX-E	MD	60°/50°	0,9	40	6	2	139,11
SLLW142	W142	QUATTROCODE /TRIAX-E	MD	100°	1,2	40	6	2	93,27
SLLW145	W145	QUATTROCODE /TRIAX-E	MD	90°	3,2x0,8*	48	6	2	124,94
SLLW210	W210	QUATTROCODE /TRIAX-E	MD	90°	5x1,05*	40	6	3	187,13
SLLW213	W213	QUATTROCODE /TRIAX-E	MD	90°	0,95*	40	6	2	140,81
SLLW221	W221	QUATTROCODE /TRIAX-E	MD	90°	0,5	40	6	2	125,55
SLLW225	W225	QUATTROCODE /TRIAX-E	MD	90°	1	40	6	2	125,55
SLLW238	W238	QUATTROCODE /TRIAX-E	MD	90°	0,8	40	6	2	93,27
SLLW261	W261	QUATTROCODE /TRIAX-E	MD	1,1	3x1,5*	48	6	2	140,81
SLLW255	W255	QUATTROCODE /TRIAX-E	MD	90°	4x0,8*	48	6	2	125,55
SLLW293	W293	QUATTROCODE /TRIAX-E	MD	90°	0,85	40	6	2	125,55
SLLW299	W299	QUATTROCODE /TRIAX-E	MD	90°	3x0,80	40	6	2	93,92

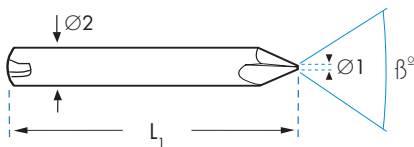
\*  $\varnothing_1 \times \varnothing_1$



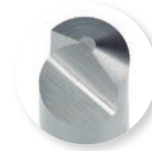
**FRESE PER MACCHINE DUPLICATRICI DI CHIAVI TIPO SILCA**

FRESINI PER CHIAVI PUNZONATE

QUATTROCODE / TRIAX-E



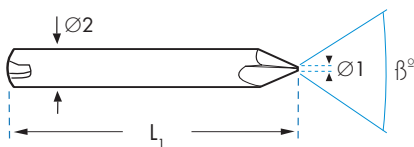
Ref. SLLW103Z1



Ref. BM	Ref. SILCA	TIPI DI MACCHINE	MATERIALE	$\beta^\circ$	$\varnothing_1$ mm	L1 mm	$\varnothing_2$ mm	Z	€
SLLW102Z1	W102 Z1	QUATTROCODE / TRIAX-E	MD	106°	1	40	6	2	93,86
SLLW103Z1	W103 Z1	QUATTROCODE / TRIAX-E	MD	90°	0,8	40	6	2	93,86
SLLW104Z1	W104 Z1	QUATTROCODE / TRIAX-E	MD	90°	1,2	40	6	2	93,86
SLLW105Z1	W105 Z1	QUATTROCODE / TRIAX-E	MD	90°	0,7	40	6	2	93,86
SLLW106Z1	W106 Z1	QUATTROCODE / TRIAX-E	MD	90°	0,6	40	6	2	93,86
SLLW107Z1	W107 Z1	QUATTROCODE / TRIAX-E	MD	90°	0,9	40	6	2	93,86
SLLW108Z1	W108 Z1	QUATTROCODE / TRIAX-E	MD	82°	0,9	40	6	2	93,86
SLLW109Z1	W109 Z1	QUATTROCODE / TRIAX-E	MD	110°	0,4	40	6	2	93,86
SLLW113Z1	W113 Z1	QUATTROCODE / TRIAX-E	MD	100°	0,76	40	6	2	93,86
SLLW116Z1	W116 Z1	QUATTROCODE / TRIAX-E	MD	90°	1	40	6	2	93,86
SLLW118Z1	W118 Z1	QUATTROCODE / TRIAX-E	MD	120°	0,6	40	6	2	93,86
SLLW119Z1	W119 Z1	QUATTROCODE / TRIAX-E	MD	85°	0,3	40	6	2	93,86
SLLW122Z1	W122 Z1	QUATTROCODE / TRIAX-E	MD	90°	0,55	40	6	2	93,86
SLLW123Z1	W123 Z1	QUATTROCODE / TRIAX-E	MD	76°	0,9	40	6	2	93,86
SLLW146Z1	W146 Z1	QUATTROCODE / TRIAX-E	MD	90°	0,25	40	6	1	93,86

SLL

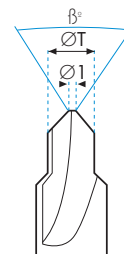
FRESINI PER CHIAVI PUNZONATE



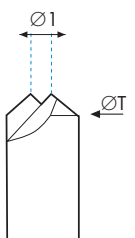
Ref. SLLH103



Ref. SLLH115



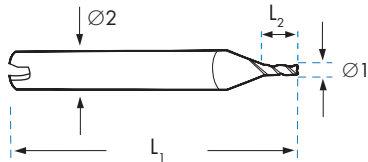
Ref. SLLH111  
Ref. SLLH126  
Ref. SLLH127



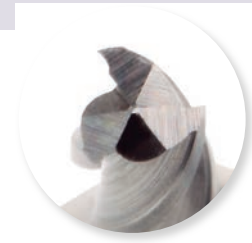
Ref. BM	Ref. SILCA	UNIV.	TIPI DI MACCHINE	MATERIALE	$\beta^\circ$	$\varnothing_1$ mm	L1 mm	$\varnothing_2$ mm	Z	€
SLLH103	H103	FLLF1	QUATTROCODE / TRIAX-E	HSSV	90°	0,8	40	6	2	68,81
SLLH104	H104	FLLF1	QUATTROCODE / TRIAX-E	HSSV	90°	1,2	40	6	2	61,47
SLLH105	H105	FLLF1	QUATTROCODE / TRIAX-E	HSSV	90°	0,7	40	6	2	61,47
SLLH106	H106	FLLF1	QUATTROCODE / TRIAX-E	HSSV	90°	0,6	40	6	2	58,24
SLLH107	H107	FLLF1	QUATTROCODE / TRIAX-E	HSSV	90°	0,9	40	6	2	58,24
SLLH108	H108	FLLF82	QUATTROCODE / TRIAX-E	HSSV	82°	0,9	40	6	2	58,24
SLLH110	H110	FLLF13	QUATTROCODE / TRIAX-E	HSSV	100°	0,6	40	6	2	58,24
SLLH111	H111	FLLF95	QUATTROCODE / TRIAX-E	HSSV	96°	6,4x2,75*	40	6	2	58,24
SLLH112	H112	-	QUATTROCODE / TRIAX-E	HSSV	60°	1,5	40	6	2	58,24
SLLH113	H113	FLLF13	QUATTROCODE / TRIAX-E	HSSV	100°	0,76	40	6	2	58,24
SLLH115	H115	-	QUATTROCODE / TRIAX-E	HSSV	54°	4x0,86*	40	6	1	58,24
SLLH116	H116	FLLF1	QUATTROCODE / TRIAX-E	HSSV	90°	1	40	6	2	76,88
SLLH118	H118	-	QUATTROCODE / TRIAX-E	HSSV	120°	0,6	40	6	1	58,24
SLLH119	H119	FLLF82	QUATTROCODE / TRIAX-E	HSSV	85°	0,3	40	6	2	58,24
SLLH122	H122	FLLF1	QUATTROCODE / TRIAX-E	HSSV	90°	0,55	40	6	2	58,24
SLLH126	H126	FLLF85	QUATTROCODE / TRIAX-E	HSSV	80°	3,3*	48	6	2	86,95
SLLH127	H127	FLLF85	QUATTROCODE / TRIAX-E	HSSV	80°	2,1*	48	6	2	86,95
SLLH128	H128	FLLF1	QUATTROCODE / TRIAX-E	HSSV	90°	0,75	48	6	2	58,24

SLL

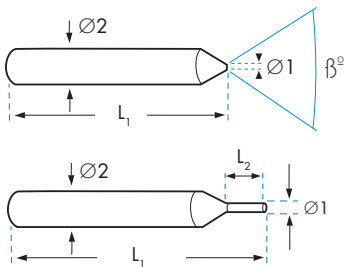
\*  $\varnothing_1 \times \varnothing_1$

**FRESE PER MACCHINE DUPLICATRICI DI CHIAVI TIPO SILCA**
**FRESINI PER CHIAVI LASER**


Ref. SLLH101



Ref. BM	Ref. SILCA	TIPI DI MACCHINE	MATERIALE	Ø <sub>1</sub> mm	L <sub>1</sub> mm	Ø <sub>2</sub> mm	L <sub>2</sub> mm	Z	€	SLL
SLLH101	H101	QUATTROCODE / TRIAX-E	HSSV	2,5	40	6	6	3	68,43	
SLLH114	H114	QUATTROCODE / TRIAX-E	HSSV	2	40	6	6	3	58,24	
SLLH117	H117	QUATTROCODE / TRIAX-E	HSSV	5	48	6	R1	4	70,68	
SLLH129	H129	QUATTROCODE / TRIAX-E	HSSV	3	40	6	6	3	58,24	
SLLH131	H131	QUATTROCODE / TRIAX-E	HSSV	6	40	6	5	3	76,88	

**TASTATORI**


Ref. SLLT1



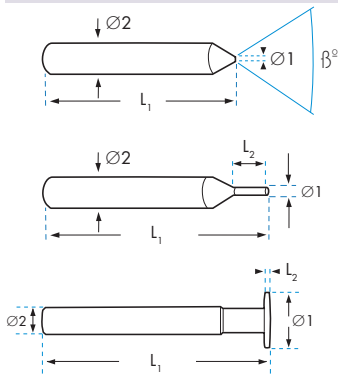
Ref. SLLT3



Ref. BM	Ref. SILCA	TIPI DI MACCHINE	Ref. FRESA	MATERIALE	$\beta^\circ$	Ø <sub>1</sub> mm	L <sub>1</sub> mm	Ø <sub>2</sub> mm	L <sub>2</sub> mm	Ø <sub>T</sub> mm	€	SLL
SLLT1	T1	MATRIX	F1	HSSV	90°	0,7	48	6	-	-	40,67	
SLLT2	T2	MATRIX	F2	HSSV	88°	1,6	48	6	-	-	45,81	
SLLT3	T3	MATRIX	F3	HSSV	-	1,5	48	6	3	-	45,81	
SLLT4	T4	MATRIX	F4	HSSV	90°	0,4	48	6	-	-	45,81	
SLLT5	T5	MATRIX	F5	HSSV	90°	0,9	48	6	-	-	45,81	
SLLT6	T6	MATRIX	F6	HSSV	106°	1	48	6	15	-	45,81	
SLLT7	T7	MATRIX	F7	HSSV	72°	0,8	48	6	2	-	45,81	
SLLT8	T8	MATRIX	F8	HSSV	-	4	48	6	12	-	45,81	
SLLT11	T11	MATRIX	F11	HSSV	-	2,5	48	6	6	-	45,81	
SLLT12A	T12A	MATRIX	F12A	HSSV	100°	0,4	48	6	-	-	45,81	
SLLT12B	T12B	MATRIX	F12B	HSSV	90°	2,8	48	6	-	-	45,81	
SLLT13	T13	MATRIX	F13	HSSV	90°	0,77	48	6	-	-	45,81	
SLLT14	T14	MATRIX	F14	HSSV	90°	0,9	48	6	-	-	45,81	
SLLT15	T15	MATRIX	F15	HSSV	90°	0,8	48	6	-	-	45,81	
SLLT19	T19	MATRIX	F19	HSSV	90°	2,2 x 0,6*	48	6	-	-	45,81	
SLLT20	T20	MATRIX	F20	HSSV	90°	0,45	48	6	-	-	45,81	
SLLT21	T21	MATRIX	F21	HSSV	85°	3,2 x 0,8*	48	6	-	-	45,81	
SLLT22	T22	MATRIX	F22	HSSV	-	2,5	42	6	6	-	45,81	
SLLT23	T23	MATRIX	F23	HSSV	90°	1,5	48	6	5	-	45,81	

FRESE PER MACCHINE DUPLICATRICI DI CHIAVI TIPO SILCA

TASTATORI



\*Ref. SLLT62W



Ref. SLLT1



Ref. SLLT3



Frese

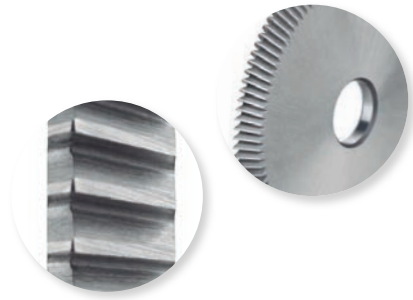
Rosa

Ref. BM	Ref. SILCA	TIPI DI MACCHINE	Ref. FRESA	MATERIALE	$\beta^\circ$	$\varnothing 1$ mm	L1 mm	$\varnothing 2$ mm	L2 mm	$\varnothing T$ mm	€
SLLT24	T24	MATRIX	F24	HSSV	100°	1,3	48	6	-	-	45,81
SLLT25	T25	MATRIX	F25	HSSV	90°	3,5 x 0,65*	48	6	-	-	45,81
SLLT26	T26	MATRIX	F26	HSSV	82°	0,8	48	6	-	-	45,81
SLLT27	T27	MATRIX	F27	HSSV	60°	1,28	48	6	-	-	51,70
SLLT28	T28	MATRIX	F28	HSSV	76°	0,76	48	6	-	-	45,81
SLLT29	T29	MATRIX	F29	HSSV	76°	1,9	48	6	-	-	45,81
SLLT30	T30	MATRIX	F30	HSSV	-	3	48	6	10	-	45,81
SLLT30-45	T30-45	MATRIX		HSSV	-	3	45	6	10	-	45,81
SLLT33	T33	MATRIX	F33	HSSV	48°	1,4	48	6	-	-	68,30
SLLT34	T34	MATRIX	F34	HSSV	50°	1,5	48	6	-	-	45,81
SLLT37	T37	MATRIX	F37	HSSV	90°	2,1	48	6	-	-	45,81
SLLT39	T39	MATRIX	F39	HSSV	90°	0,6	48	6	-	-	45,81
SLLT40	T40	MATRIX	F40	HSSV	108°	0,4	48	6	-	-	45,81
SLLT42	T42	MATRIX	F42	HSSV	100°	0,7	48	6	-	-	45,81
SLLT43	T43	MATRIX	F43	HSSV	90°	1	48	6	-	-	45,81
SLLT44	T44	MATRIX	F44	HSSV	-	2	48	6	8	-	45,81
SLLT44-45	T44-45	MATRIX		HSSV	-	2	45	6	8	-	45,81
SLLT46	T46	MATRIX	F46	HSSV	100°	0,65	48	6	-	-	45,81
SLLT49	T49	MATRIX	F49	HSSV	95°	0,8	48	6	-	-	45,81
SLLT50	T50	MATRIX	F50	HSSV	100°	0,5	48	6	-	-	45,81
SLLT52	T52	MATRIX	F52	HSSV	54°	0,86	48	6	6	2	45,81
SLLT54	T54	MATRIX	F54	HSSV	-	4	40	6	6,5	-	58,24
SLLT55	T55	MATRIX	F55	HSSV	100°	1	48	6	4	-	45,81
SLLT59	T59	MATRIX	F59	HSSV	90°	0,8	48	6	-	-	45,81
SLLT62W*	T62W	MATRIX	F62W	MD	-	11,8	48	6	1	-	91,46
SLLT63	T63	MATRIX	F63	HSSV	78°	0,5	48	6	4	3	45,81
SLLT65	T65	MATRIX	F65	HSSV	90°	1,05	48	6	5	3	45,81
SLLT101	T101	MATRIX		HSSV	-	2,5	40	6	6	-	45,81
SLLT129	T129	MATRIX		HSSV	-	3	40	6	10	-	45,81
SLLU101	U101	QUATTROCODE		MD	-	1,2	48	6	3	-	58,24
SLLU101/H	U101/H	QUATTROCODE /TRIAX-E		MD	-	1,2	48	6	3	-	39,57
SLLU102/65	U102/65	QUATTROCODE /TRIAX-E		MD	30°	0,2	48	6	9	2,6	62,21
SLLU102TT	U102TT	QUATTROCODE /TRIAX-E		MD	30°	0,2	26	4	6	2	62,21
SLLU103	U103	QUATTROCODE /TRIAX-E		MD	-	1	48	6	3	-	58,24
SLLU103/H	U103/H	QUATTROCODE /TRIAX-E		MD	-	1	48	6	3	-	39,57
SLLU103-TT	U103-TT	QUATTROCODE /TRIAX-E		MD	-	1	21	4	3	-	58,24
SLLU103-TT/H	U103-TT/H	QUATTROCODE /TRIAX-E		MD	-	1	21	4	3	-	39,57
SLLU111	U111	SILCA VIPER		MD	-	1	40	6	2,2	-	58,24
SLLU111/H	U111/H	SILCA VIPER		MD	-	1	40	6	2,2	-	39,57
SLLB3304	B3304	KEYLINE BIANCHI 994 LASER		MD	-	1	33	6	6	-	58,26
SLLB3310	B3310	KEYLINE BIANCHI 994 LASER		MD	-	1	30	6	2,6	-	58,26
SLLB3310M2	B3310	KEYLINE BIANCHI 994 LASER		HSSV	-	1	30	6	2,6	-	43,17

SLL

## FRESE PER MACCHINE DUPLICATRICI DI CHIAVI TIPO FLORA, NOVACLAU, WALKIN

## ALTRE FRESE PER USO GENERALE



## FRESE PRISMATICHE

Ref. BM	TIPI DI MACCHINE	MATERIALE	mm			Z	FLL
							€
FLL01	FLORA	HSSV	23	10	5	36	102,77
FLL03	YALE	HSSV	40	8	5	80	111,51
FLL05	NOVACLAU	HSSV	52	16	5	110	131,67
FLL07	KIS	HSSV	53	12,7	6	80	146,50
FLL08	KIS	HSSV	55	12	6	80	146,50
FLL10	NOVACLAU	HSSV	61	12,7	6,5	140	149,15
FLL11	NOVACLAU	HSSV	62	16	5	80	146,24
FLL12	NOVACLAU	HSSV	63	16	5	140	146,24
FLL14	WALKIN	HSSV	70	15	6,5	150	154,84
FLL15	LINCE	HSSV	70	13	7	88	150,64

FRESE CIRCOLARI A TAGLIO  
LATERALE

Ref. BM	TIPI DI MACCHINE	MATERIALE	mm			Z	FLL
							€
FLL17	JMA-NOVACLAU-WALKIN	HSSV	35	12	3,15	50	76,85
FLL18	JMA-NOVACLAU-WALKIN	HSSV	63	15	1,40	80	93,98
FLL20	JMA-NOVACLAU-WALKIN	HSSV	70	16	1,40	100	116,10