

## FRESAS DE METAL DURO INTEGRAL ALTO RENDIMIENTO Y PRODUCCIÓN

USO  
GENERAL

MD



2Z



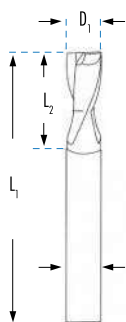
3Z



4Z

MUY RECOMENDABLE ALTO  
RENDIMIENTO EN MECANIZADO.Micro Grano  
MD

## SERIE CORTA

TOL D1  
+0 -0,05TOL D2  
h6

## HÉLICE VARIABLE



				FMT2	FMT63	FMT48
MATERIAL						
ACABADO				MD	MD	MD
CALIDAD				TiAlSiN	TiAlSiN	TiAlSiN
				Premium Quality	Premium Quality	Premium Quality
				2Z	3Z	4Z
D1 mm	L1 mm	L2 mm	D2 mm	€	€	€
1,00	38	3	3	45,85	45,85	45,85
1,50	38	4	3	44,77	44,77	44,77
2,00	38	6	3	35,63	35,63	35,63
2,50	38	8	3	34,82	34,82	34,82
3,00	38	8	3	29,99	29,99	29,99
3,50	50	11	4	36,81	36,81	36,81
4,00	50	11	4	34,20	34,20	34,20
4,50	50	13	5	43,74	43,74	43,74
5,00	50	13	5	43,21	43,21	43,21
6,00	50	16	6	48,71	48,71	48,71
7,00	60	16	8	67,94	67,94	67,94
8,00	60	19	8	57,66	57,66	57,66
9,00	72	19	10	82,67	82,67	82,67
10,00	72	22	10	91,92	91,92	91,92
11,00	75	26	12	122,27	122,27	122,27
12,00	75	26	12	113,69	113,69	113,69
14,00	84	30	14	169,00	169,00	169,00
16,00	92	32	16	218,92	218,92	218,92
18,00	100	38	18	304,21	304,21	304,21
20,00	100	38	20	346,83	346,83	346,83
25,00	100	38	25	569,30	569,30	569,30

				FMT81
MATERIAL				
ACABADO				MD
CALIDAD				TiAlSiN
				Premium Quality
				4Z
D1 mm	L1 mm	L2 mm	D2 mm	€
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	47,54
6,00	63	19	6	53,59
7,00	63	19	8	
8,00	63	19	8	63,42
9,00	70	22	10	
10,00	70	22	10	101,10
11,00	75	25	11	
12,00	75	25	12	125,05
14,00	88	30	14	185,89
16,00	88	32	16	240,81
18,00	100	36	18	334,62
20,00	100	36	20	381,51
25,00	100	38	25	

				FMT92
MATERIAL				
ACABADO				MD
CALIDAD				TiAlSiN
				Premium Quality
				2Z
D1 mm	L1 mm	L2 mm	D2 mm	€
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	39,59
4,00	50	8	4	43,92
5,00	50	10	5	54,29
6,00	50	12	6	62,11
8,00	60	15	8	76,36
10,00	75	20	10	110,69
12,00	75	20	12	136,13
14,00	90	25	14	197,84
16,00	100	25	16	247,01
18,00	100	30	18	364,56
20,00	100	30	20	384,81

\* FMT81: Fresa de 4 cortes, corte al centro, Hélice Variable con recubrimiento TiAlSiN.  
Su ángulo de Hélice Variable minimiza las vibraciones y junto con el recubrimiento TiAlSiN ofrece un espectacular rendimiento en el mecanizado.

## CONDICIONES DE CORTE ORIENTATIVAS

		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
	AVANCE (mm/min)	70	77	77	77	77	77	77	77	77	91	91	70
INOX	RPM	11200	7420	5600	4480	3640	2800	2240	1820	1540	1400	1120	840
	AVANCE (mm/min)	77	77	77	77	84	84	84	84	84	98	98	77
Ti	RPM	11200	7420	5600	4480	3640	2800	2240	1820	1540	1400	1120	840
	AVANCE (mm/min)	77	77	77	77	84	84	84	84	84	98	98	77
Ni	RPM	11200	7420	5600	4480	3640	2800	2240	1820	1540	1400	1120	840
	AVANCE (mm/min)	77	77	77	77	84	84	84	84	84	98	98	77

# FRESAS TÓRICAS DE METAL DURO

NEW

Ref. FMG10R  
Ref. FMG54R

USO  
GENERAL  
TÓRICA

MD



CILÍNDRICO

TiAlN

2 Z





4 Z

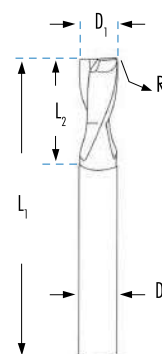


Micro Grano  
MD

Fresas

Rosa

					FMG10R		FMG54R	
MATERIAL ACABADO CALIDAD						MD		MD
						TiAlN		TiAlN
						★★		★★★
						2Z		4Z
D1 mm	D2 mm	R mm	L2 mm	L1 mm	€		€	
2	6	0,2	6	50	FMG100200R0,2	27,39	FMG540200R0,2	27,39
2	6	0,5	6	50	FMG100200R0,5	27,39	FMG540200R0,5	27,39
3	6	0,2	8	50	FMG100300R0,2	27,39	FMG540300R0,2	27,39
3	6	0,5	8	50	FMG100300R0,5	27,39	FMG540300R0,5	27,39
4	6	0,2	11	50	FMG100400R0,2	27,39	FMG540400R0,2	27,39
4	6	0,5	11	50	FMG100400R0,5	27,39	FMG540400R0,5	27,39
4	6	1,0	11	50	FMG100400R1	27,39	FMG540400R1	27,39
5	6	0,2	12	50	FMG100500R0,2	27,39	FMG540500R0,2	27,39
5	6	0,5	12	50	FMG100500R0,5	27,39	FMG540500R0,5	27,39
5	6	1,0	12	50	FMG100500R1	27,39	FMG540500R1	27,39
6	6	0,2	12	50	FMG100600R0,2	27,39	FMG540600R0,2	27,39
6	6	0,5	13	50	FMG100600R0,5	27,39	FMG540600R0,5	27,39
6	6	1,0	13	50	FMG100600R1	27,39	FMG540600R1	27,39
6	6	1,5	13	50	FMG100600R1,5	27,39	FMG540600R1,5	27,39
6	6	2,0	13	50	FMG100600R2	27,39	FMG540600R2	27,39
8	8	0,2	15	60	FMG100800R0,2	37,70	FMG540800R0,2	37,70
8	8	0,5	15	60	FMG100800R0,5	37,70	FMG540800R0,5	37,70
8	8	1,0	15	60	FMG100800R1	37,70	FMG540800R1	37,70
8	8	1,5	15	60	FMG100800R1,5	37,70	FMG540800R1,5	37,70
8	8	2,0	15	60	FMG100800R2	37,70	FMG540800R2	37,70
10	10	0,5	20	72	FMG101000R0,5	51,91	FMG541000R0,5	51,91
10	10	1,0	20	72	FMG101000R1	51,91	FMG541000R1	51,91
10	10	1,5	20	72	FMG101000R1,5	51,91	FMG541000R1,5	51,91
10	10	2,0	20	72	FMG101000R2	51,91	FMG541000R2	51,91
10	10	3,0	20	72	FMG101000R3	51,91	FMG541000R3	51,91
12	12	0,5	24	75	FMG101200R0,5	73,32	FMG541200R0,5	73,32
12	12	1,0	24	75	FMG101200R1	73,32	FMG541200R1	73,32
12	12	1,5	24	75	FMG101200R1,5	73,32	FMG541200R1,5	73,32
12	12	2,0	24	75	FMG101200R2	73,32	FMG541200R2	73,32
12	12	3,0	24	75	FMG101200R3	73,32	FMG541200R3	73,32
16	16	0,5	30	92	FMG101600R0,5	137,63	FMG541600R0,5	137,63
16	16	1,0	30	92	FMG101600R1	137,63	FMG541600R1	137,63
16	16	2,0	30	92	FMG101600R2	137,63	FMG541600R2	137,63
16	16	3,0	30	92	FMG101600R3	137,63	FMG541600R3	137,63
16	16	4,0	30	92	FMG101600R4	137,63	FMG541600R4	137,63



## FRESAS DE METAL DURO MICROMÉTRICAS, CON Y SIN CUELLO

Fresos

NEW

Ref. FMD22  
Ref. FMD35USO  
GENERAL  
MICRO

MD



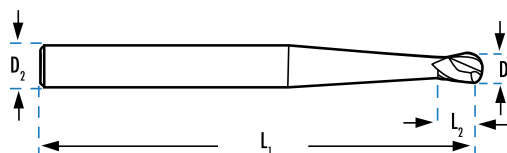
CILÍNDRICO

TiAlN

2 Z


Micro Grano  
MD

## SIN CUELLO


44  
HRc

## FRESA ESFÉRICA

FMD22

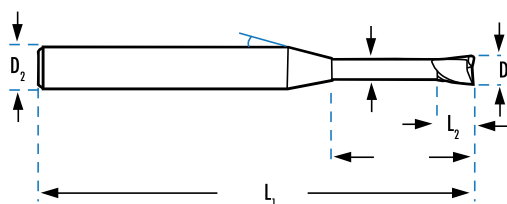
					FMD22
	TOL -0,015	TOL h6			€
	D1 mm	D2 mm	L2 mm	L1 mm	
FMD220020X04	0,2	4	0,4	50	38,57
FMD220030X06	0,3	4	0,6	50	36,78
FMD220040X08	0,4	4	0,8	50	34,41
FMD220050X10	0,5	4	1,0	50	32,50
FMD220060X12	0,6	4	1,2	50	32,50
FMD220070X14	0,7	4	1,4	50	32,50
FMD220080X16	0,8	4	1,6	50	32,50
FMD220090X18	0,9	4	1,8	50	32,50

FMD35



	TOL -0,015	TOL h6			FMD3500
	D1 mm	D2 mm	L2 mm	L1 mm	€
FMD350020X04	0,2	4	0,4	50	48,45
FMD350030X06	0,3	4	0,6	50	44,63
FMD350040X08	0,4	4	0,8	50	39,09
FMD350050X10	0,5	4	1,0	50	37,21
FMD350060X12	0,6	4	1,2	50	37,21
FMD350070X14	0,7	4	1,4	50	37,21
FMD350080X16	0,8	4	1,6	50	37,21
FMD350090X18	0,9	4	1,8	50	37,21

## CON CUELLO

44  
HRc

## FRESA ESFÉRICA

FMD22

	TOL -0,015	TOL h6					€
	D1 mm	D2 mm	D3 mm	L3 mm	L2 mm	L1 mm	
FMD220050X04	0,5	4	0,48	4	0,7	50	34,58
FMD220050X06	0,5	4	0,48	6	0,7	50	34,58
FMD220060X04	0,6	4	0,57	4	0,9	50	34,58
FMD220060X06	0,6	4	0,57	6	0,9	50	34,58
FMD220060X08	0,6	4	0,57	8	0,9	50	34,58
FMD220080X06	0,8	4	0,76	6	1,2	50	34,58
FMD220080X08	0,8	4	0,76	8	1,2	50	34,58
FMD220080X10	0,8	4	0,76	10	1,2	50	34,58
FMD220120X06	1,2	4	1,15	6	1,8	50	23,40
FMD220120X08	1,2	4	1,15	8	1,8	50	23,40
FMD220120X10	1,2	4	1,15	10	1,8	50	23,40

FMD35

	TOL -0,015	TOL h6					€
	D1 mm	D2 mm	D3 mm	L3 mm	L2 mm	L1 mm	
FMD350050X04	0,5	4	0,48	4	0,7	50	41,86
FMD350050X06	0,5	4	0,48	6	0,7	50	41,86
FMD350060X04	0,6	4	0,57	4	0,9	50	41,86
FMD350060X06	0,6	4	0,57	6	0,9	50	41,86
FMD350060X08	0,6	4	0,57	8	0,9	50	41,86
FMD350080X06	0,8	4	0,76	6	1,2	50	41,86
FMD350080X08	0,8	4	0,76	8	1,2	50	41,86
FMD350080X10	0,8	4	0,76	10	1,2	50	41,86
FMD350120X06	1,2	4	1,15	6	1,8	50	24,44
FMD350120X08	1,2	4	1,15	8	1,8	50	24,44
FMD350120X10	1,2	4	1,15	10	1,8	50	24,44

FRESAS DE METAL DURO CON CUELLO

**NEW**  
Ref. FMD22  
Ref. FMD44  
Ref. FMD35

**USO  
GENERAL  
MICRO**

MD



30°



CILÍNDRICO

TiAlN



Ø  
1-5 mm

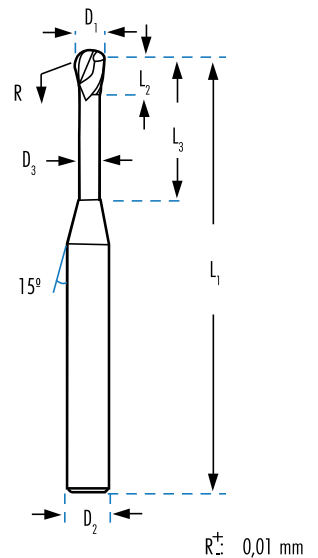
Micro Grano  
MD



44  
HRc

2Z

4Z



MATERIAL ACABADO CALIDAD							FMD22		FMD44		FMD35	
D1 mm	D2 mm	D3 mm	L3 mm	L2 mm	L1 mm		MD		MD		MD	
							TiAlN		TiAlN		TiAlN	
							★★		★★★		★★	
							2Z		4Z		2Z	
							€		€		€	
1,0	6	0,95	5	1,5	57	FMD220100X05	32,07	FMD440100X05		FMD350100X05	32,85	
1,0	6	0,95	8	1,5	57	FMD220100X08	32,07	FMD440100X08		FMD350100X08	33,80	
1,0	6	0,95	10	1,5	57	FMD220100X10	32,07	FMD440100X10		FMD350100X10	33,80	
1,0	6	0,95	12	1,5	65	FMD220100X12	33,80	FMD440100X12		FMD350100X12	35,36	
1,0	6	0,95	15	1,5	65	FMD220100X15	33,80	FMD440100X15		FMD350100X15	35,36	
1,0	6	0,95	20	1,5	65	FMD220100X20	33,80	FMD440100X20		FMD350100X20	35,36	
1,5	6	1,42	5	2,0	57	FMD220150X05	32,07	FMD440150X05		FMD350150X05	33,80	
1,5	6	1,42	8	2,0	57	FMD220150X08	32,07	FMD440150X08		FMD350150X08	33,80	
1,5	6	1,42	10	2,0	57	FMD220150X10	32,07	FMD440150X10		FMD350150X10	33,80	
1,5	6	1,42	12	2,0	65	FMD220150X12	33,80	FMD440150x12		FMD350150X12	35,36	
1,5	6	1,42	15	2,0	65	FMD220150X15	33,80	FMD440150X15		FMD350150X15	35,36	
1,5	6	1,42	20	2,0	65	FMD220150X20	33,80	FMD440150X20		FMD350150X20	35,36	
1,5	6	1,42	25	2,0	65	FMD220150X25	33,80	FMD440150X25		FMD350150X25	-	
2,0	6	1,92	6	3,0	57	FMD220200X06	32,07	FMD440200X06	32,07	FMD350200X06	33,80	
2,0	6	1,92	8	3,0	57	FMD220200X08	32,07	FMD440200X08	32,07	FMD350200X08	33,80	
2,0	6	1,92	10	3,0	57	FMD220200X10	32,07	FMD440200X10	32,07	FMD350200X10	33,80	
2,0	6	1,92	12	3,0	60	FMD220200X12	32,93	FMD440200X12	32,93	FMD350200X12	33,80	
2,0	6	1,92	14	3,0	65	FMD220200X14	33,80	FMD440200X14	33,80	FMD350200X14	33,80	
2,0	6	1,92	16	3,0	65	FMD220200X16	33,80	FMD440200X16	33,80	FMD350200X16	34,63	
2,0	6	1,92	20	3,0	65	FMD220200X20	33,80	FMD440200X20	33,80	FMD350200X20	34,63	
2,0	6	1,92	25	3,0	65	FMD220200X25	33,80	FMD440200X25	33,80	FMD350200X25	34,63	
2,0	6	1,92	30	3,0	80	FMD220200X30	41,08	FMD440200X30	41,08	FMD350200X30	42,55	
2,0	6	1,92	35	2,0	80	FMD220200X35	41,08	FMD440200X35	41,08	FMD350200X35	42,55	
2,0	6	1,92	40	3,0	80	FMD220200X40	41,08	FMD440200X40	41,08	FMD350200X40	42,90	
2,0	6	1,92	50	3,0	100	FMD220200X50	44,20	FMD440200X50	44,20	FMD350200X50	46,77	
2,5	6	2,40	10	4,0	57	FMD220250X10	32,07	FMD440250X10	32,07	FMD350250X10	-	
2,5	6	2,40	16	4,0	65	FMD220250X16	33,80	FMD440250X16	33,80	FMD350250X16	-	
2,5	6	2,40	20	4,0	65	FMD220250X20	33,80	FMD440250X20	33,80	FMD350250X20	34,63	
2,5	6	2,40	30	4,0	80	FMD220250X30	41,08	FMD440250X30	41,08	FMD350250X30	42,90	
2,5	6	2,40	40	4,0	80	FMD220250X40	41,08	FMD440250X40	41,08	FMD350250X40	42,90	
3,0	6	2,90	9	5,0	57	FMD220300X09	32,07	FMD440300X09	32,07	FMD350300X09	34,63	
3,0	6	2,90	12	5,0	60	FMD220300X12	32,93	FMD440300X12	32,93	FMD350300X12	34,63	
3,0	6	2,90	15	5,0	65	FMD220300X15	33,80	FMD440300X15	33,80	FMD350300X15	34,63	
3,0	6	2,90	20	5,0	65	FMD220300X20	33,80	FMD440300X20	33,80	FMD350300X20	34,63	
3,0	6	2,90	25	5,0	65	FMD220300X25	33,80	FMD440300X25	33,80	FMD350300X25	35,36	
3,0	6	2,90	30	5,0	80	FMD220300X30	41,08	FMD440300X30	41,08	FMD350300X30	42,90	
3,0	6	2,90	35	5,0	80	FMD220300X35	41,08	FMD440300X35	41,08	FMD350300X35	42,90	
3,0	6	2,90	40	5,0	80	FMD220300X40	41,08	FMD440300X40	41,08	FMD350300X40	42,90	
3,0	6	2,90	50	5,0	100	FMD220300X50	44,20	FMD440300X50	44,20	FMD350300X50	46,77	
4,0	6	3,90	10	6,0	57	FMD220400X10	32,07	FMD440400X10	32,07	FMD350400X10	33,80	
4,0	6	3,90	12	6,0	60	FMD220400X12	32,93	FMD440400X12	32,93	FMD350400X12	34,63	
4,0	6	3,90	16	6,0	65	FMD220400X16	33,80	FMD440400X16	33,80	FMD350400X16	34,63	
4,0	6	3,90	20	6,0	65	FMD220400X20	33,80	FMD440400X20	33,80	FMD350400X20	34,63	
4,0	6	3,90	25	6,0	65	FMD220400X25	33,80	FMD440400X25	33,80	FMD350400X25	35,36	
4,0	6	3,90	30	6,0	80	FMD220400X30	41,08	FMD440400X30	41,08	FMD350400X30	42,90	
4,0	6	3,90	35	6,0	80	FMD220400X35	41,08	FMD440400X35	41,08	FMD350400X35	42,90	
4,0	6	3,90	40	6,0	80	FMD220400X40	41,08	FMD440400X40	41,08	FMD350400X40	42,90	
4,0	6	3,90	50	6,0	100	FMD220400X50	44,20	FMD440400X50	44,20	FMD350400X50	46,77	
5,0	6	4,80	12	7,0	60	FMD220500X12	32,93	FMD440500X12	32,93	FMD350500X12	-	
5,0	6	4,80	20	7,0	65	FMD220500X20	33,80	FMD440500X20	33,80	FMD350500X20	34,63	
5,0	6	4,80	30	7,0	80	FMD220500X30	41,08	FMD440500X30	41,08	FMD350500X30	42,90	
5,0	6	4,80	40	7,0	80	FMD220500X40	41,08	FMD440500X40	41,08	FMD350500X40	42,90	
5,0	6	4,80	50	7,0	100	FMD220500X50	44,20	FMD440500X50	44,20	FMD350500X50	46,77	

## FRESA 2 LABIOS, SERIE CORTA, HÉLICE A 30°

Ref. FMG10

INOX

Ti



MD

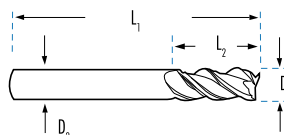


TiAlN

2 Z



Micro Grano  
MD



### SERIE CORTA

#### REVOLUCIONES Y AVANCES

R.P.M. rev./min	AVANCE mm/min	R.P.M. rev./min	AVANCE mm/min	R.P.M. rev./min	AVANCE mm/min
21.500	170	12.900	101	10.750	84
15.000	180	9.000	107	7.500	89
11.560	190	7.560	120	6.300	90
8.920	210	5.560	140	4.620	120
7.560	300	4.620	180	3.880	150
6.300	320	3.780	190	3.160	160
5.560	350	3.360	220	2.840	180
4.880	385	2.940	220	2.470	180
4.200	380	2.520	200	2.100	180
3.730	375	2.260	190	1.890	180
3.260	330	2.000	160	1.680	160
2.740	280	1.680	130	1.360	130
2.470	265	1.520	125	1.210	125
2.200	220	1.360	110	1.060	110
1.680	170	1.060	80	840	80
1.360	130	840	70	680	60

	TOL -0,03 D1 mm	TOL h6 D2 mm	L1 mm	L2 mm	€
FMG100100	1,0	6	40	2,5	25,99*
FMG100150	1,5	6	40	4,0	25,99*
FMG100200	2,0	6	50	6,0	38,62
FMG100300	3,0	6	50	8,0	38,62
FMG100400	4,0	6	50	11,0	38,62
FMG100500	5,0	6	50	12,0	38,62
FMG100600	6,0	6	50	12,0	38,62
FMG100700	7,0	8	60	16,0	35,78*
FMG100800	8,0	8	60	15,0	53,15
FMG100900	9,0	10	70	19,0	49,27*
FMG101000	10,0	10	72	20,0	73,20
FMG101200	12,0	12	75	24,0	103,39
FMG101400	14,0	14	85	26,0	119,86*
FMG101600	16,0	16	92	30,0	194,05
FMG102000	20,0	20	105	38,0	155,40*
FMG102500	25,0	25	120	45,0	202,30*



\*Hasta fin de existencias

## FRESA 3 LABIOS, SERIE CORTA, HÉLICE VARIABLE

Ref. FMD67

INOX

Ti



MD



TiAlSiN

3 Z



Micro Grano  
MD

### SERIE CORTA

#### FMD67

	TOL e8 D1 mm	TOL h6 D2 mm	L1 mm	L2 mm	€
FMD670300	3	6	50	8	32,66
FMD670400	4	6	50	11	32,66
FMD670500	5	6	50	13	32,66
FMD670600	6	6	50	16	32,66
FMD670800	8	8	60	19	41,18
FMD671000	10	10	73	22	60,84
FMD671200	12	12	75	26	82,99
FMD671400	14	14	85	30	148,11
FMD671600	16	16	92	32	161,62
FMD672000	20	20	100	38	238,37



Fresa de 3 cortes, corte al centro, Hélice Variable con recubrimiento TiAlSiN.

Su ángulo de Hélice Variable, minimiza las vibraciones y junto con el recubrimiento TiAlSiN ofrece un espectacular rendimiento en el mecanizado.



## FRESA 4 LABIOS, SERIE CORTA, HÉLICE VARIABLE

INOX

INOX  
AISI 316L

Ti

INC

55  
HRc

MD

35°  
38°

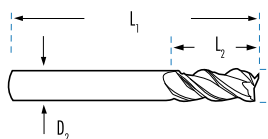
TiAlSiN

4 Z

Micro Grano  
MD

Ref. FMG12

## SERIE CORTA



## REVOLUCIONES Y AVANCES

R.P.M. rev./min	AVANCE mm/min	R.P.M. rev./min	AVANCE mm/min	R.P.M. rev./min	AVANCE mm/min
11.560	280	7.560	170	6.300	140
10.240	300	6.560	185	5.460	155
8.920	320	5.560	200	4.620	170
7.560	570	4.620	350	3.880	280
6.300	600	3.780	360	3.160	300
5.560	660	3.360	410	2.840	330
4.200	710	2.520	380	2.100	350
3.730	660	2.260	340	1.890	325
3.260	610	2.000	300	1.680	300
2.740	520	1.680	250	1.360	240
2.470	465	1.520	225	1.210	220
2.200	410	1.360	200	1.060	200
1.940	365	1.210	180	950	175
1.680	320	1.060	160	840	150

## FMG12

	TOL -0,03 D1 mm	TOL h6 D2 mm	L1 mm	L2 mm	€
FMG120200	2,0	6	40	*6	21,98*
FMG120250	2,5	6	40	*8	21,98*
FMG120300	3,0	6	50	8	32,66
FMG120400	4,0	6	50	11	32,66
FMG120500	5,0	6	50	13	32,66
FMG120600	6,0	6	50	16	32,66
FMG120800	8,0	8	60	19	41,18
FMG120900	9,0	10	70	*19	40,95*
FMG121000	10,0	10	73	22	60,84
FMG121200	12,0	12	75	26	82,99
FMG121400	14,0	14	85	30	113,36
FMG121600	16,0	16	92	32	161,62
FMG121800	18,0	18	92	38	238,37
FMG122000	20,0	20	100	38	238,37



\*Hasta fin de existencias

Fresa para materiales de alta dureza. Fresa de 4 cortes, corte al centro, Hélice Variable con recubrimiento TiAlSiN.  
Su ángulo de Hélice Variable, minimiza las vibraciones y junto con el recubrimiento TiAlSiN ofrece un espectacular rendimiento en el mecanizado.

## FRESAS 4 LABIOS DE HÉLICE VARIABLE

INOX

INOX  
AISI 316L

Ti

INC

MD

X-45°

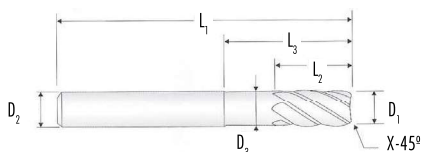
43°  
45°

TiAlSiN

4 Z

Micro Grano  
MD

Ref. FMG83



## REVOLUCIONES Y AVANCES

R.P.M. rev./min	AVANCE mm/min	R.P.M. rev./min	AVANCE mm/min
10.185	195	14.260	205
7.600	250	14.260	255
6.110	310	8.655	310
5.095	360	7.130	360
3.820	435	5.345	465
3.055	590	4.275	585
2.545	565	3.565	565
2.180	520	3.055	520
1.910	480	2.670	480
1.525	470	2.140	470

## FMG83

	TOL -0,03 D1 mm	TOL h6 D2 mm	L1 mm	L2 mm	L3 mm	X-45°	€
FMG830300	3,0	6	57	8	11	0,07	55,21
FMG830400	4,0	6	57	11	14	0,09	55,21
FMG830500	5,0	6	57	13	16	0,12	55,21
FMG830600	6,0	6	57	13	21	0,20	55,21
FMG830800	8,0	8	63	19	27	0,25	70,73
FMG831000	10,0	10	73	22	32	0,35	103,25
FMG831200	12,0	12	83	26	38	0,40	139,16
FMG831400	14,0	14	84	30	40	0,40	199,71
FMG831600	16,0	16	92	32	44	0,40	234,54
FMG832000	20,0	20	104	38	55	0,40	370,81



Fresa para materiales de alto contenido en níquel. Fresa de 4 cortes, corte al centro con chaflán a 45° en el corte, Hélice Variable con recubrimiento TiAlSiN.  
Su ángulo de Hélice Variable, minimiza las vibraciones y junto con el recubrimiento TiAlSiN ofrece un espectacular rendimiento en el mecanizado.

## FRESA 4 LABIOS MULTI MATERIAL

NEW

Ref. FMG80

**MULTI  
MATERIAL  
TOP**



56  
HRc

MD



CILÍNDRICO

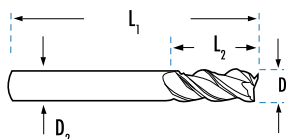
TiAlN

4 Z



Micro Grano  
MD

SERIE CORTA



FMG80

	TOL e8	TOL h6					
	D1 mm	D2 mm	D3 mm	L1 mm	L2 mm	L3 mm	€
FMG800300	3	6	8	20	0,05	57	36,66
FMG800400	4	6	11	20	0,05	57	36,66
FMG800500	5	6	13	21	0,07	57	36,66
FMG800600	6	6	13	21	0,10	57	36,66
FMG800800	8	8	19	27	0,15	63	44,81
FMG801000	10	10	22	32	0,15	73	65,00
FMG801200	12	12	26	38	0,25	83	92,25
FMG801400	14	14	30	40	0,30	84	117,26
FMG801600	16	16	32	44	0,35	92	164,49
FMG801800	20	20	38	55	0,35	104	242,32



Fresa de 4 cortes, corte al centro, Hélice Variable con recubrimiento TiAlN.

Su ángulo de Hélice Variable, minimiza las vibraciones y junto con el recubrimiento TiAlN ofrece un espectacular rendimiento en el mecanizado.

## FRESA ESFÉRICA 4 LABIOS ESPECIAL MOLDISTAS

NEW

Ref. FMG86

**MOLDISTAS**

INOX

Ti



65  
HRc

MD



CILÍNDRICO

TiAlSiN

4 Z



Micro Grano  
MD

SERIE CORTA

FMG86

	TOL e8	TOL h6				
	D1 mm	D2 mm	L1 mm	L2 mm	€	
FMG860600	6	6	8	50	33,28	
FMG860600X80	6	6	8	80	43,65	
FMG860600X100	6	6	8	100	48,07	
FMG860600X150	6	6	8	150	63,34	
FMG860800	8	8	10	60	42,61	
FMG860800X100	8	8	10	100	60,39	
FMG860800X150	8	8	10	150	81,52	
FMG861000	10	10	13	72	62,99	
FMG861000X100	10	10	13	100	86,79	
FMG861000X150	10	10	13	150	115,72	
FMG861000X200	10	10	13	200	162,52	
FMG861200	12	12	15	75	86,27	
FMG861200X100	12	12	15	100	121,56	
FMG861200X150	12	12	15	150	169,26	
FMG861200X200	12	12	15	200	198,41	



## FRESA 6 LABIOS, HÉLICE A 45°

Ref. FMG14

INOX

65  
HRC

Ti

MD



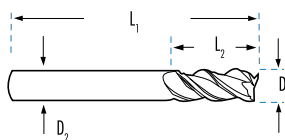
45°

TiAlN

6 Z

Materiales muy duros  
Aceros templados.Micro Grano  
MD

## SERIE CORTA



## FMG14

R.P.M. rev./min	AVANCE mm/min	R.P.M. rev./min	AVANCE mm/min	R.P.M. rev./min	AVANCE mm/min	R.P.M. rev./min	AVANCE mm/min
8.900	2.670	5.760	1.555	4.850	1.310	2.100	370
7.560	2.260	4.800	1.440	4.100	1.230	1.800	325
6.300	2.090	4.050	1.215	3.700	1.180	1.580	300
5.560	2.000	3.880	1.370	3.370	1.100	1.350	280
4.200	2.000	2.940	1.370	2.490	1.100	1.000	280
3.360	2.000	2.320	1.370	1.920	1.100	440	280
2.840	1.680	2.000	1.160	1.610	1.000	400	250
2.470	1.470	1.740	1.020	1.380	885	355	220
2.100	1.260	1.480	880	1.160	770	310	190
1.890	1.130	1.320	785	1.030	695	280	170
1.680	1.010	1.160	690	900	920	250	155
1.500	900	1.100	600	850	540	220	135

	TOL -0,03	TOL h6			
	D1 mm	D2 mm	L1 mm	L2 mm	€
FMG140300 4Z	3,0	3	38	8	24,53
FMG140400 4Z	4,0	4	50	11	27,14
FMG140500 4Z	5,0	5	50	13	34,32
FMG140600	6,0	6	50	16	35,21
FMG140800	8,0	8	60	19	49,25
FMG141000	10,0	10	75	22	68,69
FMG141200	12,0	12	75	26	100,58
FMG141400	14,0	14	90	32	129,82
FMG141600	16,0	16	100	32	177,13
FMG141800	18,0	18	100	38	205,60
FMG142000	20,0	20	100	38	256,50
FMG142500	25,0	25	100	38	437,21



## SERIE LARGA

R.P.M. rev./min	AVANCE mm/min	R.P.M. rev./min	AVANCE mm/min	R.P.M. rev./min	AVANCE mm/min	R.P.M. rev./min	AVANCE mm/min
8.900	2.670	5.760	1.555	4.850	1.310	2.100	370
7.560	2.260	4.800	1.440	4.100	1.230	1.800	325
6.300	2.090	4.050	1.215	3.700	1.180	1.580	300
5.560	2.000	3.880	1.370	3.370	1.100	1.350	280
4.200	2.000	2.940	1.370	2.490	1.100	1.000	280
3.360	2.000	2.320	1.370	1.920	1.100	440	280
2.840	1.680	2.000	1.160	1.610	1.000	400	250
2.840	1.680	2.000	1.160	1.610	1.000	400	250
2.470	1.470	1.740	1.020	1.380	885	355	220
2.100	1.260	1.480	880	1.160	770	310	190
2.100	1.260	1.480	880	1.160	770	310	190
1.680	1.010	1.160	690	900	920	250	155
1.680	1.010	1.160	690	900	920	250	155
1.680	1.010	1.160	690	900	920	250	155
1.500	900	1.100	600	850	540	220	135
1.500	900	1.100	600	850	540	220	135
1.500	900	1.100	600	850	540	220	135

## FMG25

	TOL -0,03	TOL h6			
	D1 mm	D2 mm	L1 mm	L2 mm	€
FMG250300 4Z	3,0	3	60	15	24,18
FMG250400 4Z	4,0	4	80	20	27,25
FMG250500 4Z	5,0	5	80	25	31,29
FMG250600	6,0	6	80	25	37,94
FMG250800	8,0	8	90	35	55,41
FMG251000	10,0	10	100	45	75,00
FMG251200	12,0	12	100	50	107,15
FMG251200X125	12,0	12	125	70	132,67
FMG251400	14,0	14	150	65	145,65
FMG251600	16,0	16	150	65	187,15
FMG251600X165	16,0	16	165	100	213,60
FMG252000	20,0	20	150	70	276,78
FMG252000X165	20,0	20	165	100	319,26
FMG252000X200	20,0	20	200	135	408,06
FMG252500	25,0	25	150	75	532,10
FMG252500X165	25,0	25	165	100	616,06
FMG252500X200	25,0	25	200	140	690,82
FMG253200	32,0	32	165	100	863,55
FMG253200X210	32,0	32	210	150	1.036,13





## FRESA 2 Y 3 LABIOS, SERIE CORTA, HÉLICE A 45°, PARA ALUMINIO

Al

Cu

PVC



CILÍNDRICO

2 Z



Ref. FMD59

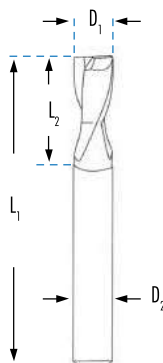
3 Z



Ref. FMD33

Micro Grano MD

## SERIE CORTA



## REVOLUCIONES Y AVANCES

Al

R.P.M. rev./min.	AVANCE 1 mm/min	AVANCE 2 mm/min
10.000	700	900
10.000	900	1.100
10.000	1.000	1.300
10.000	1.200	1.500
8.000	1.400	1.800
8.000	1.700	2.100
8.000	2.100	2.600
6.000	1.800	2.200
6.000	1.900	2.400
4.000	1.600	1.900

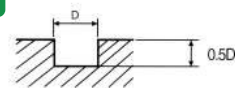
TOL -0,05	TOL h6					FMD59 2 Z	FMD33 3 Z
D1 mm	D2 mm	L1 mm	L2 mm			€	€
3,0	6,0	50	8	FMD590300		27,60	FMD330300 27,60
4,0	6,0	50	11	FMD590400		29,90	FMD330400 29,90
5,0	6,0	50	13	FMD590500		30,89	FMD330500 30,89
6,0	6,0	50	16	FMD590600		35,07	FMD330600 35,07
8,0	8,0	60	19	FMD590800		49,97	FMD330800 49,97
10,0	10,0	72	25	FMD591000		73,47	FMD331000 73,47
12,0	12,0	75	30	FMD591200		97,07	FMD331200 97,07
14,0	14,0	84	35	FMD591400		136,23	FMD331400 136,23
16,0	16,0	92	40	FMD591600		172,80	FMD331600 172,80
20,0	20,0	100	45	FMD592000		284,99	FMD332000 284,99

## TOLERANCIAS SEGÚN DIN 7160 y 7161

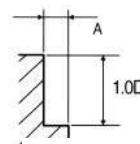
Gama de tolerancias $\mu\text{m}$ / Diámetro nominal en mm					
	de 1 a 3	de 3 a 6	de 6 a 10	de 10 a 18	de 18 a 30
TOL h10	0 - 40	0 - 48	0 - 58	0 - 70	0 - 84
TOL h6	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13

Al

AVANCE 1



AVANCE 2



A:  $\phi 3 \sim \phi 10 = 0.25 \times D$   
 $\phi 12 \sim \phi 20 = 0.5 \times D$



## FRESA 2 Y 3 LABIOS, SERIE LARGA, HÉLICE A 45°, PARA ALUMINIO

NEW

Al

Cu



2 Z



Ref. FMD69

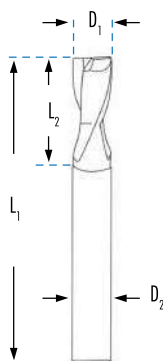
3 Z



Ref. FMD23

Micro Grano  
MD

SERIE LARGA



## REVOLUCIONES Y AVANCES

Al							FMD69		FMD23	
			TOL -0,05	TOL h6			2 Z		3 Z	
R.P.M. rev./min.	AVANCE 1 mm/min	AVANCE 2 mm/min	D1 mm	D2 mm	L1 mm	L2 mm	€		€	
10.000	1.200	1.500	6,0	6,0	80	25	FMD690600	40,33	FMD230600	40,33
8.000	1.400	1.800	8,0	8,0	90	35	FMD690800	57,47	FMD230800	57,47
8.000	1.700	2.100	10,0	10,0	100	45	FMD691000	84,49	FMD231000	84,49
8.000	2.100	2.600	12,0	12,0	100	50	FMD691200	111,63	FMD231200	111,63
6.000	1.800	2.200	14,0	14,0	165	65	FMD691400	156,66	FMD231400	156,66
6.000	1.900	2.400	16,0	16,0	150	65	FMD691600	198,72	FMD231600	198,72
4.000	1.600	1.900	20,0	20,0	150	70	FMD692000	327,74	FMD232000	327,74

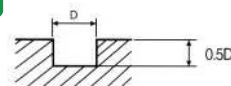
## TOLERANCIAS SEGÚN DIN 7160 y 7161

Gama de tolerancias  $\mu\text{m}$  / Diámetro nominal en mm

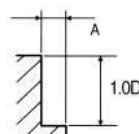
	de 1 a 3	de 3 a 6	de 6 a 10	de 10 a 18	de 18 a 30
TOL h10	0	0	0	0	0
	- 40	- 48	- 58	- 70	- 84
TOL h6	0	0	0	0	0
	- 6	- 8	- 9	- 11	- 13

Al

AVANCE 1



AVANCE 2



A:  $\phi 3 - \phi 10 = 0.25 \times D$   
 $\phi 12 - \phi 20 = 0.5 \times D$

## FRESA DE 2 LABIOS ESFÉRICA, SERIE CORTA Y LARGA, HÉLICE A 45°, PARA ALUMINIO

NEW

Al

Cu

PVC

40°  
N

CILÍNDRICO

2Z



Ref. FMD93

Ref. FMD94

Micro Grano  
MD

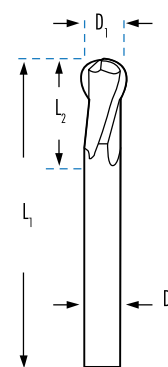
### SERIE CORTA

#### REVOLUCIONES Y AVANCES

Al

R.P.M. rev./min.	AVANCE 1 mm/min	AVANCE 2 mm/min
10.000	700	900
10.000	900	1.100
10.000	1.000	1.300
10.000	1.200	1.500
8.000	1.400	1.800
8.000	1.700	2.100
8.000	2.100	2.600
6.000	1.800	2.200
6.000	1.900	2.400
4.000	1.600	1.900

TOL -0,05	TOL h6					FMD93
D1 mm	D2 mm	L1 mm	L2 mm			2Z €
3,0	6,0	50	6	FMD930300		25,20
4,0	6,0	50	8	FMD930400		28,72
5,0	6,0	50	10	FMD930500		30,38
6,0	6,0	50	12	FMD930600		35,75
8,0	8,0	60	15	FMD930800		44,13
10,0	10,0	72	20	FMD931000		66,32
12,0	12,0	75	24	FMD931200		82,39
14,0	14,0	83	26	FMD931400		121,97
16,0	16,0	92	30	FMD931600		154,32
20,0	20,0	100	40	FMD932000		237,86



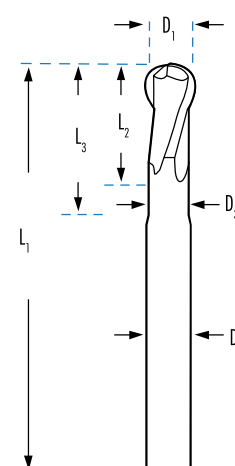
### SERIE LARGA

#### REVOLUCIONES Y AVANCES

Al

R.P.M. rev./min.	AVANCE 1 mm/min	AVANCE 2 mm/min
10.000	1.200	1.500
8.000	1.400	1.800
8.000	1.700	2.100
8.000	2.100	2.600
6.000	1.900	2.400
4.000	1.600	1.900

TOL -0,05	TOL h6							FMD94
D1 mm	D2 mm	D3 mm	L3 mm	L1 mm	L2 mm			2Z €
6,0	6,0	5,5	35	80	12	FMD940600		42,33
8,0	8,0	7,5	35	90	15	FMD940800		47,06
10,0	10,0	9,5	45	100	20	FMD941000		75,00
12,0	12,0	11,5	50	100	24	FMD941200		94,47
16,0	16,0	15,5	92	150	30	FMD941600		185,21
20,0	20,0	19,5	92	150	40	FMD942000		270,23



## FRESA 3 A 4 LABIOS, SERIE CORTA, HÉLICE A 50°

Ref. FMG13

INOX

45  
HRC

Ti

INC

MD



50°



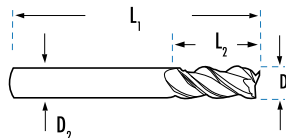
WELDON

TiAlN

3-4 Z

Micro Grano  
MD

## SERIE CORTA



## REVOLUCIONES Y AVANCES

R.P.M. rev./min	AVANCE mm/min	R.P.M. rev./min	AVANCE mm/min	R.P.M. rev./min	AVANCE mm/min	R.P.M. rev./min	AVANCE mm/min
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	L1 mm	L2 mm	Z	€
	D1 mm	D2 mm				
FMG130800	8,0	8	60	19	3	30,99*
FMG131000	10,0	10	70	22	3	45,78*
FMG131200	12,0	12	75	25	3	62,74*
FMG131600	16,0	16	90	32	3	103,96*
FMG131800	18,0	18	90	32	3	121,54*
FMG132000	20,0	20	100	28	4	137,83*
FMG132500	25,0	25	120	45	4	220,44*

\*Hasta fin de existencias



NOTA: En operaciones de fresado por una cara deberemos aumentar los avances señalados en un 30%, manteniendo las mismas revoluciones.

## TOLERANCIAS SEGÚN DIN 7160 y 7161

Gama de tolerancias  $\mu\text{m}$  / Diámetro nominal en mm

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

## FRESAS 3 A 5 LABIOS, DESBASTE FINO



Ref. FMG15  
Ref. FMG16



Ti

INC

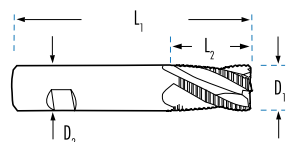
MD



TiAIN



Micro Grano  
MD



### SERIE CORTA

#### REVOLUCIONES Y AVANCES

R.P.M. rev./min	AVANCE mm/min	R.P.M. rev./min	AVANCE mm/min	R.P.M. rev./min	AVANCE mm/min	R.P.M. rev./min	AVANCE 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
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	23,07*
FMG150700	7,0	8	58	8	3	26,96*
FMG150800	8,0	8	58	9	3	26,96*
FMG150900	9,0	10	66	13	4	40,20*
FMG151000	10,0	10	66	14	4	40,20*
FMG151200	12,0	12	73	16	4	51,57*
FMG151400	14,0	14	75	18	4	62,55*
FMG151600	16,0	16	82	22	4	83,93*
FMG152000	20,0	20	92	26	4	121,49*
FMG152500	25,0	25	110	25	5	189,26*

\*Hasta fin de existencias



### SERIE LARGA

#### REVOLUCIONES Y AVANCES

R.P.M. rev./min	AVANCE mm/min	R.P.M. rev./min	AVANCE mm/min	R.P.M. rev./min	AVANCE mm/min	R.P.M. rev./min	AVANCE mm/min
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
9.200	2.320	7.600	840	5.100	570	1.300	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
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				
FMG160700	7,0	8	63	16	3	28,97*
FMG160800	8,0	8	63	16	3	28,97*
FMG161000	10,0	10	72	22	4	43,21*
FMG161400	14,0	14	83	26	4	67,24*
FMG161600	16,0	16	92	32	4	90,23*
FMG162000	20,0	20	104	38	4	130,63*
FMG162500	25,0	25	121	45	5	203,50*

\*Hasta fin de existencias



#### TOLERANCIAS SEGÚN DIN 7160 y 7161

Gama de tolerancias $\mu\text{m}$ / Diámetro nominal en mm					
	de 1 a 3	de 3 a 6	de 6 a 10	de 10 a 18	de 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 LABIOS, SERIE CORTA, HÉLICE A 45°, DESBASTE FINO



Ref. FMG17



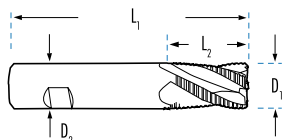
INC

MD



TiAlN

4-6 Z

Micro Grano  
MD

## SERIE CORTA

## REVOLUCIONES Y AVANCES

R.P.M. rev./min	AVANCE mm/min	R.P.M. rev./min	AVANCE mm/min	R.P.M. rev./min	AVANCE mm/min	R.P.M. rev./min	AVANCE mm/min
11.600	2.320	9.200	840	6.300	570	1.800	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

## FMG17

	TOL h10	TOL h6	L1 mm	L2 mm	Z	€
	D1 mm	D2 mm				
FMG170800	8,0	8	58	9	4	26,96*
FMG171200	12,0	12	73	16	4	51,57*
FMG171600	16,0	16	82	22	5	83,93*
FMG172000	20,0	20	92	26	6	107,99*

\*Hasta fin de existencias



## FRESA 3 A 6 LABIOS, SERIE LARGA, HÉLICE A 45°, DESBASTE FINO



Ref. FMG18



INC

MD



TiAlN

3-6 Z

Micro Grano  
MD

## SERIE LARGA

## REVOLUCIONES Y AVANCES

R.P.M. rev./min	AVANCE mm/min	R.P.M. rev./min	AVANCE mm/min	R.P.M. rev./min	AVANCE mm/min	R.P.M. rev./min	AVANCE mm/min
20.100	4.600	18.400	1.700	12.600	1.040	3.800	399
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
9.200	2.320	7.600	840	5.100	570	1.300	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
4.800	2.160	3.600	560	2.400	360	660	100
4.300	2.150	3.200	620	2.160	410	600	100

## FMG18

	TOL h10	TOL h6	L1 mm	L2 mm	Z	€
	D1 mm	D2 mm				
FMG180400	4,0	6	57	11	3	24,07*
FMG180600	6,0	6	57	16	4	24,07*
FMG180700	7,0	8	63	16	4	28,13*
FMG180800	8,0	8	63	16	4	28,13*
FMG181000	10,0	10	72	22	4	41,95*
FMG181400	14,0	14	83	26	5	65,28*
FMG181600	16,0	16	92	32	5	87,61*
FMG182000	20,0	20	104	38	6	140,91*
FMG182500	25,0	25	121	45	6	246,97*

\*Hasta fin de existencias



FRESA 4 A 6 LABIOS, SERIE LARGA, HÉLICE A 45°, DESBASTE FINO



Ref. FMG19



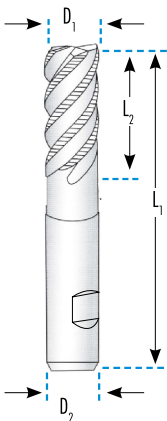
Micro Grano  
MD

SERIE LARGA

FMG19

	TOL h10	TOL h6						
	D1 mm	D2 mm	D3 mm	L1 mm	L2 mm	L3 mm	Z	€
FMG190600	6,0	6	5,5	57	16	20	4	29,72*
FMG190800	8,0	8	7,5	63	16	26	4	34,74*
FMG191000	10,0	10	9,5	72	22	31	4	51,82*
FMG191200	12,0	12	11,5	83	26	37	4	66,49*
FMG191600	16,0	16	15,5	100	32	51	5	86,66*
FMG192000	20,0	20	19,2	110	38	59	6	139,31*

\*Hasta fin de existencias



REVOLUCIONES Y AVANCES

	<30 HRC		30-45 HRC		INOX		INC
R.P.M. rev./min	AVANCE mm/min	R.P.M. rev./min	AVANCE mm/min	R.P.M. rev./min	AVANCE mm/min	R.P.M. rev./min	AVANCE 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

TOLERANCIAS SEGÚN DIN 7160 y 7161

Gama de tolerancias $\mu\text{m}$ / Diámetro nominal en mm					
	de 1 a 3	de 3 a 6	de 6 a 10	de 10 a 18	de 18 a 30
TOL h10	0 - 40	0 - 48	0 - 58	0 - 70	0 - 84
TOL h6	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13