













Steel <800 N/mm<sup>2</sup>

		NIG Z=3			NIG Z=4					NIG Z=3			NIG Z=4				
																	
D	fz	F	n	fz	F	n			fz	F	n	fz	F	n			
mm	mm/z	mm/min	min	mm/z	mm/min	min			mm/z	mm/min	min	mm/z	mm/min	min			
6,0	0,010	107	3560	0,010	180	3560			0,030	320	3560	0,030	360	3560			
8,0	0,020	160	2670	0,020	200	2670			0,030	240	2670	0,030	370	2670			
10,0	0,030	192	2130	0,030	240	2130			0,040	256	2130	0,040	380	2130			
12,0	0,040	214	1780	0,040	270	1780			0,060	320	1780	0,060	400	1780			
16,0	0,050	200	1330	0,050	270	1330			0,080	319	1330	0,080	400	1330			
20,0	0,060	193	1070	0,060	270	1070			0,100	321	1070	0,100	410	1070			
25,0	0,080	204	850	0,080	260	850			0,120	306	850	0,120	400	850			



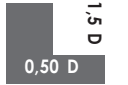

Steel <1000 N/mm<sup>2</sup>

		NIG Z=3			NIG Z=4					NIG Z=3			NIG Z=4				
																	
D	fz	F	n	fz	F	n			fz	F	n	fz	F	n			
mm	mm/z	mm/min	min	mm/z	mm/min	min			mm/z	mm/min	min	mm/z	mm/min	min			
6,0	0,010	97	3240	0,010	150	3240			0,020	194	3240	0,020	310	3240			
8,0	0,020	146	2430	0,020	170	2430			0,030	219	2430	0,030	320	2430			
10,0	0,030	175	1940	0,030	210	1940			0,040	233	1940	0,040	330	1940			
12,0	0,040	194	1620	0,040	230	1620			0,050	243	1620	0,050	350	1620			
16,0	0,050	182	1210	0,050	230	1210			0,070	254	1210	0,070	340	1210			
20,0	0,060	175	970	0,060	230	970			0,090	262	970	0,090	350	970			
25,0	0,070	164	780	0,070	230	780			0,110	257	780	0,110	350	780			
















Steel <1300 N/mm<sup>2</sup>

		NIG Z=3			NIG Z=4					NIG Z=3			NIG Z=4				
																	
D	fz	F	n	fz	F	n			fz	F	n	fz	F	n			
mm	mm/z	mm/min	min	mm/z	mm/min	min			mm/z	mm/min	min	mm/z	mm/min	min			
6,0	0,010	73	2440	0,010	73	2440			0,020	146	2440	0,020	210	2440			
8,0	0,020	110	1830	0,020	110	1830			0,030	165	1830	0,030	220	1830			
10,0	0,020	88	1460	0,020	88	1460			0,040	175	1460	0,040	220	1460			
12,0	0,030	110	1220	0,030	110	1220			0,050	183	1220	0,050	230	1220			
16,0	0,040	110	920	0,040	110	920			0,060	166	920	0,060	230	920			
20,0	0,050	110	730	0,050	110	730			0,080	175	730	0,080	240	730			
25,0	0,070	124	590	0,070	124	590			0,100	177	590	0,100	240	590			

## 12 % Cr

		NIG Z=3			NIG Z=4					NIG Z=3			NIG Z=4				
																	
D	fz	F	n	fz	F	n			fz	F	n	fz	F	n			
mm	mm/z	mm/min	min	mm/z	mm/min	min			mm/z	mm/min	min	mm/z	mm/min	min			
6,0	0,010	46	1540	0,010	60	1540			0,020	92	1540	0,020	120	1540			
8,0	0,010	35	1150	0,010	60	1150			0,030	104	1150	0,030	120	1150			
10,0	0,020	55	920	0,020	80	920			0,030	83	920	0,030	120	920			
12,0	0,030	69	770	0,030	90	770			0,040	92	770	0,040	130	770			
16,0	0,040	70	580	0,040	90	580			0,060	104	580	0,060	130	580			
20,0	0,050	69	460	0,050	90	460			0,070	97	460	0,070	130	460			
25,0	0,060	67	370	0,060	90	370			0,090	100	370	0,090	130	370			

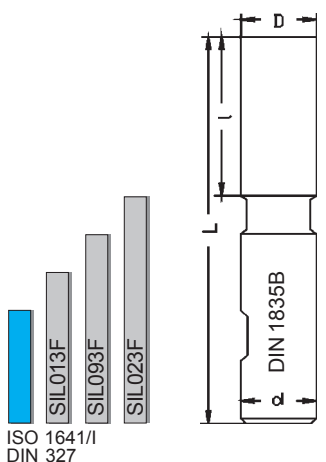
+20%	Serie CORTA	SHORT	KURZ	KRÓTKA
=	Serie NORMALE,	REGULAR	NORMAL	NORMALNA
-20%	Serie MEDIA,	MEDIUM	MITTLERE	WYDŁUŻONA
-40%	Serie LUNGA	LONG	LANG	DŁUGA

Alu & alloys < 6% Si												
NIG Z=3				SIL Z=3			NIG Z=3			SIL Z=3		
												
D	fz	F	n	fz	F	n	fz	F	n	fz	F	n
mm	mm/z	mm/min	min	mm/z	mm/min	min	mm/z	mm/min	min	mm/z	mm/min	min
6,0	0,019	530	9500	0,015	200	4510	0,038	1070	9500	0,030	410	4510
8,0	0,028	600	7130	0,023	230	3380	0,052	1120	7130	0,042	430	3380
10,0	0,043	740	5700	0,034	280	2710	0,067	1150	5700	0,054	440	2710
12,0	0,056	800	4750	0,044	300	2260	0,084	1200	4750	0,068	460	2260
16,0	0,075	800	3560	0,059	300	1690	0,112	1200	3560	0,091	460	1690
20,0	0,094	800	2850	0,074	300	1350	0,140	1200	2850	0,114	460	1350
25,0	0,117	800	2280	0,093	300	1080	0,175	1200	2280	0,142	460	1080
Alu & alloys > 6% Si												
NIG Z=3				SIL Z=3			NIG Z=3			SIL Z=3		
												
D	fz	F	n	fz	F	n	fz	F	n	fz	F	n
mm	mm/z	mm/min	min	mm/z	mm/min	min	mm/z	mm/min	min	mm/z	mm/min	min
6,0	0,015	300	6580	0,012	110	3130	0,030	590	6580	0,024	230	3130
8,0	0,022	330	4940	0,018	130	2350	0,042	620	4940	0,034	240	2350
10,0	0,035	410	3950	0,028	160	1880	0,054	640	3950	0,043	240	1880
12,0	0,045	440	3290	0,036	170	1570	0,068	670	3290	0,053	250	1570
16,0	0,059	440	2470	0,048	170	1170	0,090	670	2470	0,071	250	1170
20,0	0,074	440	1970	0,060	170	940	0,113	670	1970	0,089	250	940
25,0	0,093	440	1580	0,077	170	740	0,141	670	1580	0,113	250	740
Copper & alloys												
NIG Z=3				SIL Z=3			NIG Z=3			SIL Z=3		
												
D	fz	F	n	fz	F	n	fz	F	n	fz	F	n
mm	mm/z	mm/min	min	mm/z	mm/min	min	mm/z	mm/min	min	mm/z	mm/min	min
6,0	0,012	240	6900	0,012	130	3710	0,018	200	3710	0,018	200	3710
8,0	0,019	290	5170	0,019	150	2780	0,030	250	2780	0,030	250	2780
10,0	0,026	320	4140	0,026	170	2220	0,045	290	2220	0,045	290	2220
12,0	0,040	410	3450	0,040	220	1850	0,065	360	1850	0,065	360	1850
16,0	0,055	420	2580	0,055	220	1390	0,085	350	1390	0,085	350	1390
20,0	0,075	460	2070	0,075	240	1110	0,115	380	1110	0,115	380	1110
25,0	0,090	440	1650	0,090	240	890	0,155	410	890	0,155	410	890
Thermo Plastics												
NIG Z=3				SIL Z=3			NIG Z=3			SIL Z=3		
												
D	fz	F	n	fz	F	n	fz	F	n	fz	F	n
mm	mm/z	mm/min	min	mm/z	mm/min	min	mm/z	mm/min	min	mm/z	mm/min	min
6,0	0,020	500	8490	0,020	250	4240	0,050	1270	8490	0,050	630	4240
8,0	0,030	570	6360	0,030	280	3180	0,070	1330	6360	0,070	660	3180
10,0	0,040	610	5090	0,040	300	2540	0,080	1220	5090	0,080	600	2540
12,0	0,050	630	4240	0,050	310	2120	0,090	1140	4240	0,090	570	2120
16,0	0,065	620	3180	0,065	310	1590	0,120	1140	3180	0,120	570	1590
20,0	0,075	570	2540	0,075	280	1270	0,150	1140	2540	0,150	570	1270
25,0	0,090	540	2030	0,090	270	1010	0,170	1030	2030	0,170	510	1010
+20%	Serie CORTA			SHORT			KURZ			KRÓTKA		
=	Serie NORMALE,			REGULAR			NORMAL			NORMALNA		
-20%	Serie MEDIA,			MEDIUM			MITTLERE			WYDŁUŻONA		
-40%	Serie LUNGA			LONG			LANG			DŁUGA		

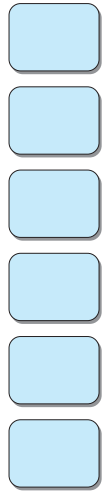


# 038F

Frese a sgrossare serie corta



- HSS**  
M42Co8
- NRF**  
F Form
- $\lambda$  30°  
 $\gamma$  12°
- 45°



Uncoated Alcrona

D	d	L	l	038F	SIL	NIG	Z
k12	h6				€	€	
5	6	52	8	038F05	26,90	31,40	4
6	6	52	8	038F06	26,90	31,40	4
7	10	60	10	038F07	31,50	40,30	4
8	10	61	11	038F08	29,20	37,90	4
9	10	61	11	038F09	31,50	40,30	4
10	10	63	13	038F10	30,40	39,10	4
11	12	70	13	038F11	40,40	50,10	4
12	12	73	16	038F12	35,10	44,40	4
13	12	73	16	038F13	39,90	52,60	4
14	12	73	16	038F14	40,90	46,80	4
15	12	73	16	038F15	48,20	57,50	4
16	16	79	19	038F16	45,90	58,00	4
17	16	79	19	038F17	60,40	75,60	4
18	16	79	19	038F18	56,80	71,40	4
19	16	79	19	038F19	67,50	81,90	4
20	20	88	22	038F20	59,60	78,10	4
22	20	88	22	038F22	77,50	98,50	4
25	25	102	26	038F25	88,60	114,30	4
30	25	102	26	038F30	121,20	148,40	6
32	32	112	32	038F32	137,40	168,70	6

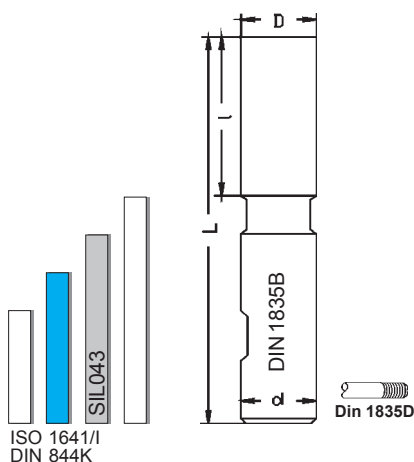
		PARAMETRI DI TAGLIO (Cutting data) Pag. 140	Steel <800 N/mm <sup>2</sup>	Steel <1000 N/mm <sup>2</sup>	Steel <1300 N/mm <sup>2</sup>	12% Cr	Alu & alloys < 6% Si
NIG038F	● ●		Vc 80	Vc 73	Vc 55	Vc 35	--



### 041 Frese a sgrossare semifinire serie normale

### 013R Frese a sgrossare serie normale

Con fori di lubrificazione  
Internal Coolant supply  
Mit innerer Kühlmittelzufuhr  
Z otworami do dostarczenia chłodziwa



- HSS M42Co8
- HN40
- $\lambda 40^\circ$   
 $\gamma 14^\circ$
- 45°



- HSS M42Co8
- NRF F Form
- $\lambda 30^\circ$   
 $\gamma 12^\circ$
- 45°



RAIN MILL

SGR

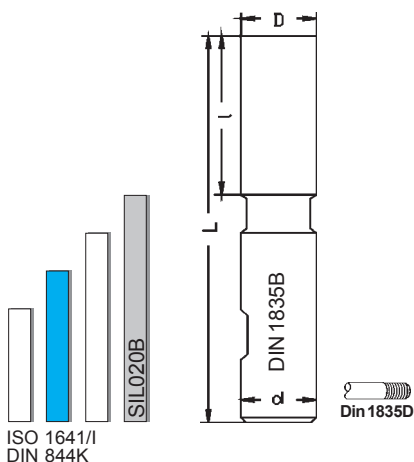
D	d	L	l	Uncoated		Alcrona		z	013R	Alcrona		z
				041	SIL	NIG	RMG					
	h6			Toll.D=k10	€	€			Toll.D=k12	€		
6	6	57	13	041006	25,60	30,20		3				
8	10	69	19	041008	30,40	39,10		3				
10	10	72	22	041010	31,00	39,70		3				
12	12	83	26	041012	35,80	45,00		3				
14	12	83	26	041014	39,90	50,90		3				
16	16	92	32	041016	47,00	61,60		3	013F16	89,80	4	
18	16	92	32						013F18	101,30	4	
20	20	104	38	041020	71,40	90,00		4	013F20	114,20	4	
22	20	104	38						013F22	138,50	4	
25	25	121	45	041025	106,30	133,00		4	013F25	157,20	4	
28	25	121	45	041028	120,90	153,30		4	013F28	185,80	6	
30	25	121	45	041030	127,30	159,90		4	013F30	208,20	6	
32	32	133	53	041032	178,60	211,00		4	013F32	217,20	6	
36	32	133	53						013F36	293,20	6	
40	40	155	63						013F40	397,20	6	
50	50	177	75						013F50	539,70	6	

	MAX MQL AIR	PARAMETRI DI TAGLIO (Cutting data) Pag. 140	Steel <800 N/mm <sup>2</sup>	Steel <1000 N/mm <sup>2</sup>	Steel <1300 N/mm <sup>2</sup>	12% Cr	Alu & alloys < 6% Si
NIG041	●	●	Vc 67	Vc 61	Vc 46	Vc 29	--
RMG013F	●	●	Vc 67	Vc 61	Vc 46	Vc 29	--



### 011F Frese a sgrossare serie normale

### 010B Frese a sgrossare serie normale



- HSS M42Co8
- NRF F Form
- $\lambda 30^\circ$   
 $\gamma 12^\circ$
- 45°



- HSS M42Co8
- NRB B Form
- $\lambda 30^\circ$   
 $\gamma 12^\circ$
- 45°



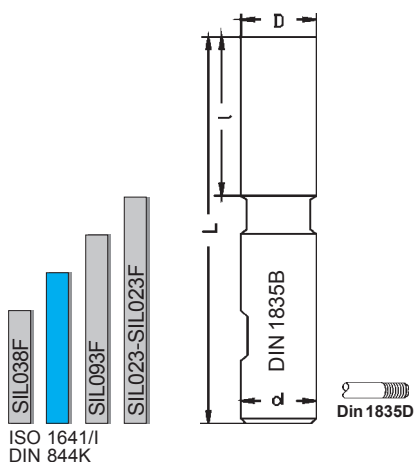
				Uncoated		Alcrona							
D	d	L	l	011F	SIL	NIG		Z	010B	SIL	NIG		Z
k12	h6				€	€				€	€		
6	6	57	13	011F06	28,00	33,20		3					
8	10	69	19	011F08	32,80	41,40		3					
9	10	69	19	011F09	36,30	46,20		3					
10	10	72	22	011F10	33,30	42,10		3					
11	12	79	22	011F11	41,70	50,30		3					
12	12	83	26	011F12	37,50	46,80		3	010B12	37,50	46,80		4
13	12	83	26	011F13	45,90	56,90		3	010B13	45,90	56,90		4
14	12	83	26	011F14	42,30	52,70		3	010B14	42,30	52,70		4
15	12	83	26						010B15	53,60	65,80		4
16	16	92	32	011F16	48,20	62,80		3	010B16	48,20	62,80		4
17	16	92	32						010B17	62,50	81,10		4
18	16	92	32	011F18	57,10	75,80		3	010B18	57,10	75,80		4
19	16	92	32						010B19	74,00	92,70		4
20	20	104	38	011F20	66,00	84,70		3	010B20	66,00	84,70		4
22	20	104	38	011F22	82,70	106,60		3	010B22	82,70	106,60		4
24	25	121	45						010B24	105,30	132,00		5
25	25	121	45	011F25	97,60	124,30		3	010B25	97,60	124,30		5
26	25	121	45						010B26	123,10	153,90		5
28	25	121	45						010B28	119,00	150,30		5
30	25	121	45	011F30	129,60	161,00		3	010B30	129,60	161,00		5
32	32	133	53	011F32	163,60	190,20		3	010B32	159,50	190,20		5
36	32	133	53						010B36	168,90	209,50		5
40	40	155	63	011F40	227,00	309,40		3	010B40	227,00	309,40		5
50	50	177	75						010B50	367,50	495,30		6

MAX MQL AIR	PARAMETRI DI TAGLIO (Cutting data)	Steel <800 N/mm²	Steel <1000 N/mm²	Steel <1300 N/mm²	12% Cr	Alu & alloys < 6% Si
●	●	Vc 67	Vc 61	Vc 46	Vc 29	--
●	●	Vc 67	Vc 61	Vc 46	Vc 29	--



### 013 Frese a sgrossare serie normale

### 013F Frese a sgrossare serie normale



- HSS M42Co8
- NF2 Sil F2
- $\lambda 30^\circ$   
 $\gamma 10^\circ$
- 45°



- HSS M42Co8
- NRF F Form
- $\lambda 30^\circ$   
 $\gamma 12^\circ$
- 45°



SGR

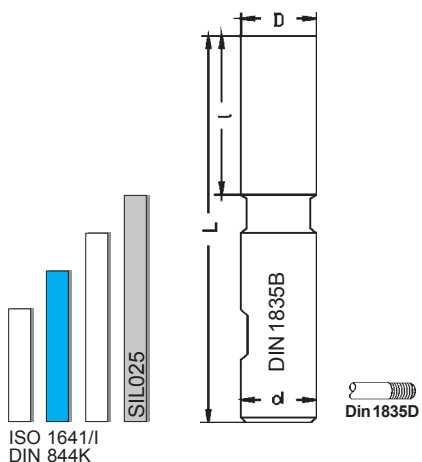
D	d	L	l	013		z	013F		z	
				SIL	NIG		SIL	NIG		
k12	h6									
					€	€		€	€	
5	6	57	13				013F05	29,20	34,40	4
6	6	57	13	013006	29,20	34,40	013F06	29,20	34,40	4
7	10	66	16				013F07	37,50	46,20	4
8	10	69	19	013008	34,00	42,70	013F08	34,00	42,70	4
9	10	69	19				013F09	37,50	46,20	4
10	10	72	22	013010	35,10	43,90	013F10	35,10	43,90	4
11	12	79	22				013F11	41,70	50,90	4
12	12	83	26	013012	39,90	49,20	013F12	39,90	49,20	4
13	12	83	26				013F13	48,20	59,20	4
14	12	83	26	013014	44,70	55,10	013F14	44,70	55,10	4
15	12	83	26				013F15	54,80	68,80	4
16	16	92	32	013016	52,30	66,40	013F16	52,30	66,40	4
17	16	92	32				013F17	67,80	87,00	4
18	16	92	32	013018	61,90	80,50	013F18	61,90	80,50	4
19	16	92	32				013F19	81,70	99,10	4
20	20	104	38	013020	75,00	93,50	013F20	75,00	93,50	4
22	20	104	38	013022	83,30	107,20	013F22	83,30	107,20	4
24	25	121	45				013F24	109,50	136,10	4
25	25	121	45	013025	105,30	132,00	013F25	105,30	132,00	4
26	25	121	45				013F26	132,70	163,30	4
28	25	121	45				013F28	129,60	161,00	6
30	25	121	45	013030	138,50	169,90	013F30	138,50	169,90	6
32	32	133	53	013032	163,60	194,20	013F32	163,60	194,20	6
36	32	133	53				013F36	199,30	240,30	6
40	40	155	63	013040	238,40	320,80	013F40	238,40	320,80	6
45	40	155	63				013F45	350,90	478,20	6
50	50	177	75				013F50	387,20	514,30	6

MAX MQL AIR	PARAMETRI DI TAGLIO (Cutting data) Pag. 140	Steel <800 N/mm <sup>2</sup>	Steel <1000 N/mm <sup>2</sup>	Steel <1300 N/mm <sup>2</sup>	12% Cr	Alu & alloys < 6% Si
NIG013	● ●	Vc 67	Vc 61	Vc 46	Vc 29	--
NIG013F	● ●	Vc 67	Vc 61	Vc 46	Vc 29	--



### 015 Frese a sgrossare serie normale

### 011B Frese a sgrossare serie normale



- HSS M42Co8
- WF Alu Form
- $\lambda 35^\circ$   
 $\gamma 17^\circ$
- 45°



- HSS M42Co8
- WF B Form
- $\lambda 30^\circ$   
 $\gamma 14^\circ$
- 45°



D	d	L	l	015		z	011B		z
				SIL	NIG		SIL	NIG	
k12	h6								
					€	€		€	€
6	6	57	13	015006	28,60	33,80			
8	10	69	19	015008	32,80	41,40			
10	10	72	22	015010	35,10	43,90	3	011B10	33,30 42,10
12	12	83	26	015012	38,70	48,00	3	011B12	37,50 46,80
14	12	83	26					011B14	42,30 52,70
16	16	92	32	015016	51,20	65,10	3	011B16	48,20 62,80
18	16	92	32					011B18	57,10 75,80
20	20	104	38	015020	68,50	87,00	3	011B20	66,00 84,70
25	25	121	45	015025	100,50	127,30	3	011B25	97,60 124,30
30	25	121	45	015030	132,70	163,30	3		
32	32	133	53	015032	151,10	181,70	3		

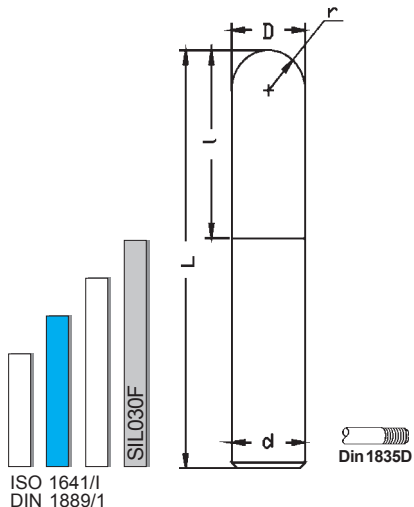
MAX MQL AIR	PARAMETRI DI TAGLIO (Cutting data) Pag. 140	Steel <800 N/mm <sup>2</sup>	Steel <1000 N/mm <sup>2</sup>	Steel <1300 N/mm <sup>2</sup>	12% Cr	Alu & alloys < 6% Si
NIG015	● ●	--	--	--	--	Vc 179
NIG011B	● ●	--	--	--	--	Vc 179



### 031F Frese a sgrossare serie normale

### 031R Frese a sgrossare serie normale

Con fori di lubrificazione  
Internal Coolant supply  
Mit innerer Kühlmittelzufuhr  
Z otworami do dostarczania chłodziwa



- HSS M42Co8
- NRF F Form
- $\lambda 30^\circ$   
 $\gamma 12^\circ$
- U-cooled



- HSS M42Co8
- NRF F Form
- $\lambda 30^\circ$   
 $\gamma 12^\circ$
- U-cooled



RAIN MILL

SGR

D	d	L	l	r	031F		Z	031R		Z
					SIL	NIG		RMG		
k12	h6					€	€		€	
6	6	57	13	3,0	031F06	37,50	42,70	3		
8	10	69	19	4,0	031F08	48,20	56,90	3		
10	10	72	22	5,0	031F10	49,40	58,00	3		
12	12	83	26	6,0	031F12	54,80	64,00	3		
14	12	83	26	7,0	031F14	61,30	71,70	4		
16	16	92	32	8,0	031F16	72,60	87,00	4	031F16	97,10
18	16	92	32	9,0	031F18	85,00	103,60	4		
20	20	104	38	10,0	031F20	91,00	109,50	4	031F20	126,90
22	20	104	38	11,0	031F22	107,10	130,20	4		
25	25	121	45	12,5	031F25	130,90	157,50	6	031F25	196,90
30	25	121	45	15,0	031F30	174,10	204,60	6		
32	32	133	53	16,0	031F32	178,00	208,60	6	031F32	262,60

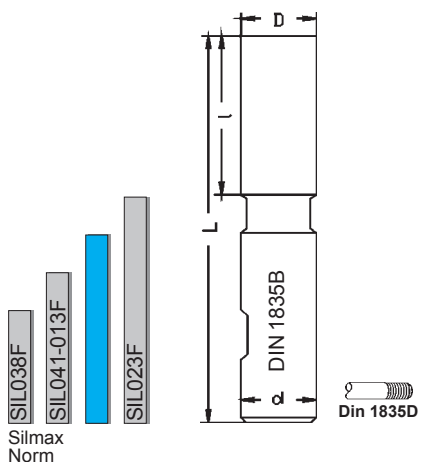
	MAX MQL AIR	PARAMETRI DI TAGLIO (Cutting data) Pag. 140	Steel <800 N/mm <sup>2</sup>	Steel <1000 N/mm <sup>2</sup>	Steel <1300 N/mm <sup>2</sup>	12% Cr	Alu & alloys < 6% Si
NIG031F	●	●	Vc 67	Vc 61	Vc 46	Vc 29	--
RMG031F	●	●	Vc 67	Vc 61	Vc 46	Vc 29	--





### 043 Frese a sgrossare serie media

### 093F Frese a sgrossare serie media



- HSS M42Co8
- HN40
- $\lambda$  40°  
 $\gamma$  14°
- 45°



- HSS M42Co8
- NRF F Form
- $\lambda$  30°  
 $\gamma$  12°
- 45°



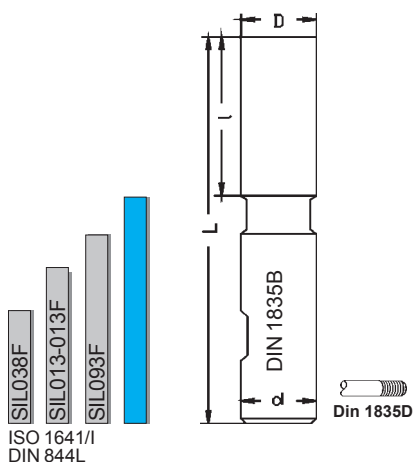
D	d	L	l	043		Z	093F		Z		
				SIL	NIG		SIL	NIG			
k12	h6										
				Toll.D=k10	€	€		€	€		
6	6	62	18	043006	28,00	33,20	3	093F06	31,50	36,80	4
8	10	75	25	043008	35,10	43,90	3	093F08	36,90	45,70	4
10	10	83	33	043010	36,30	48,60	3	093F10	37,50	50,30	4
12	12	96	39	043012	42,90	55,70	3	093F12	44,70	57,50	4
14	12	96	39	043014	47,00	61,60	3	093F14	51,20	65,10	4
16	16	105	45	043016	55,90	72,20	3	093F16	60,70	76,40	4
18	16	105	45					093F18	70,80	89,40	4
20	20	121	55	043020	80,90	105,40	4	093F20	82,70	107,20	4
22	20	121	55					093F22	93,40	136,80	4
25	25	141	65	043025	114,00	173,10	4	093F25	120,00	178,60	4
28	25	141	65					093F28	148,10	222,50	6
30	25	141	65					093F30	158,20	232,70	6
32	32	158	78					093F32	185,60	270,50	6

	MAX MQL AIR	PARAMETRI DI TAGLIO (Cutting data) Pag. 140	Steel <800 N/mm <sup>2</sup>	Steel <1000 N/mm <sup>2</sup>	Steel <1300 N/mm <sup>2</sup>	12% Cr	Alu & alloys < 6% Si
NIG043	●	●	Vc 54	Vc 49	Vc 37	Vc 23	--
NIG093F	●	●	Vc 54	Vc 49	Vc 37	Vc 23	--



### 023 Frese a sgrossare serie lunga

### 023F Frese a sgrossare serie lunga



- HSS M42Co8
- NF2 Sil F2
- λ 30° γ 10°
- 45°



- HSS M42Co8
- NRF F Form
- λ 30° γ 12°
- 45°



ISO 1641/  
DIN 844L

Uncoated Alcrona

Uncoated Alcrona

D	d	L	l	023		z	023F		z		
				SIL	NIG		SIL	NIG			
k12	h6			€	€		€	€			
6	6	68	24	023006	37,50	44,40	4	023F06	37,50	44,40	4
8	10	88	38	023008	44,70	56,90	4	023F08	44,70	56,90	4
10	10	95	45	023010	47,00	59,80	4	023F10	47,00	59,80	4
12	12	110	53	023012	54,10	66,90	4	023F12	54,10	66,90	4
14	12	110	53	023014	60,10	74,00	4	023F14	60,10	74,00	4
16	16	123	63	023016	70,20	86,50	4	023F16	70,20	86,50	4
18	16	123	63	023018	81,50	106,00	4	023F18	81,50	106,00	4
20	20	141	75	023020	93,40	117,90	4	023F20	93,40	117,90	4
22	20	141	75	023022	113,10	156,20	4	023F22	113,10	156,20	4
25	25	166	90	023025	135,60	194,20	4	023F25	135,60	194,20	4
30	25	166	90					023F30	189,70	263,40	6
32	32	186	106					023F32	217,10	301,30	6
36	32	186	106					023F36	243,20	331,40	6
40	40	217	125					023F40	317,50	410,80	6

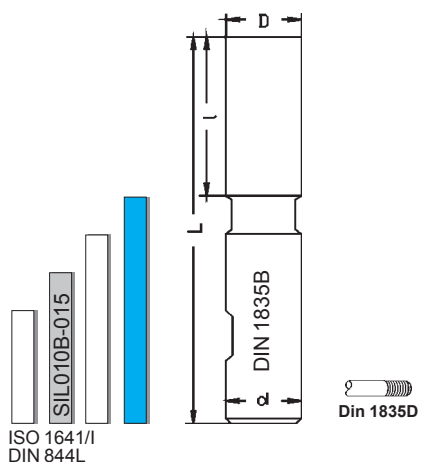
SGR

	MAX MQL AIR	PARAMETRI DI TAGLIO (Cutting data) Pag. 140	Steel <800 N/mm <sup>2</sup>	Steel <1000 N/mm <sup>2</sup>	Steel <1300 N/mm <sup>2</sup>	12% Cr	Alu & alloys < 6% Si
NIG023	●	●	Vc 40	Vc 37	Vc 28	Vc 17	--
NIG023F	●	●	Vc 40	Vc 37	Vc 28	Vc 17	--



### 020B Frese a sgrossare serie lunga

### 025 Frese a sgrossare serie lunga



- HSS M42Co8
- NRB B Form
- $\lambda 30^\circ$   
 $\gamma 12^\circ$
- 45°



- HSS M42Co8
- WF Alu Form
- $\lambda 35^\circ$   
 $\gamma 17^\circ$
- 45°



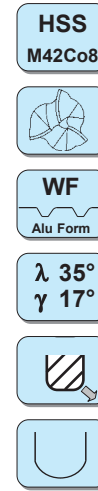
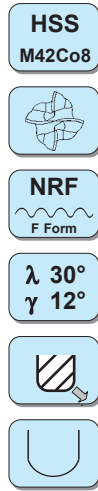
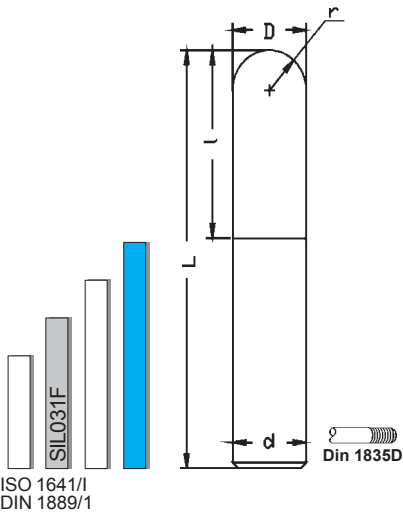
D	d	L	l	020B		Z	025		Z	
				SIL	NIG		SIL	NIG		
k12	h6			€	€		€	€		
6	6	68	24				025006	35,10	41,30	3
8	10	88	38				025008	41,20	54,00	3
10	10	95	45				025010	44,70	56,90	3
12	12	110	53	020B12	45,90	59,20	025012	51,20	64,00	3
14	12	110	53	020B14	57,30	71,20				4
16	16	123	63	020B16	62,50	78,70	025016	66,70	82,90	3
18	16	123	63	020B18	75,70	99,60				4
20	20	141	75	020B20	85,00	109,50	025020	88,60	113,10	3
22	20	141	75	020B22	102,30	145,70				4
25	25	166	90	020B25	127,70	186,40	025025	125,00	184,00	3
28	25	166	90	020B28	146,30	219,60				5
30	25	166	90	020B30	161,20	235,00	025030	172,50	246,80	3
32	32	186	106	020B32	182,00	266,40	025032	199,80	284,70	3
36	32	186	106	020B36	227,80	316,10				5
40	32	217	125	020B40	306,30	399,50	025040	302,70	396,50	3
50	50	252	150	020B50	494,70	622,00				6

MAX MQL AIR	PARAMETRI DI TAGLIO (Cutting data) Pag. 140	Steel <800 N/mm <sup>2</sup>	Steel <1000 N/mm <sup>2</sup>	Steel <1300 N/mm <sup>2</sup>	12% Cr	Alu & alloys < 6% Si
NIG020B	● ●	Vc 40	Vc 37	Vc 28	Vc 17	--
NIG025	● ●	--	--	--	--	Vc 107



### 030F Frese semisferiche a sgrossare serie lunga

### 035 Frese semisferiche a sgrossare serie lunga



ALU

SGR

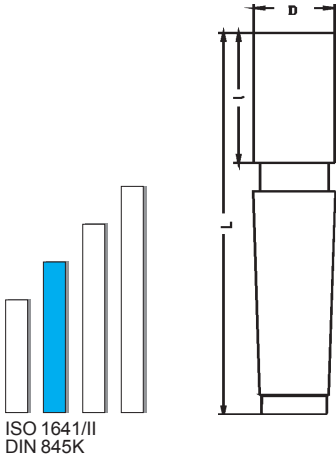
D	d	L	l	r	030F	Uncoated		Z	035	Uncoated		Z
						SIL	Alcrona NIG			SIL	Alcrona NIG	
k12	h6					€	€			€	€	
6	6	68	24	3,0	030F06	42,90	49,20	3				
8	10	88	38	4,0	030F08	52,30	64,60	3	035008	52,30	64,60	3
10	10	95	45	5,0	030F10	58,30	71,00	3	035010	58,30	71,00	3
12	12	110	53	6,0	030F12	65,50	78,70	3	035012	65,50	82,30	3
16	16	123	63	8,0	030F16	92,80	109,00	4	035016	87,50	103,60	3
20	20	141	75	10,0	030F20	108,30	132,70	4	035020	103,80	128,20	3
25	25	166	90	12,5	030F25	168,90	227,30	6	035025	154,00	213,10	3
32	32	186	106	16,0	030F32	231,30	316,10	6	035032	214,10	298,80	3
40	32	217	125	20,0					035040	344,90	437,90	3

	MAX MQL AIR	PARAMETRI DI TAGLIO (Cutting data) Pag. 140	Steel <800 N/mm <sup>2</sup>	Steel <1000 N/mm <sup>2</sup>	Steel <1300 N/mm <sup>2</sup>	12% Cr	Alu & alloys < 6% Si
NIG030F	●	●	Vc 40	Vc 37	Vc 28	Vc 17	--
NIG035	●	●	--	--	--	--	Vc 107



# 052F

Frese a sgrossare serie normale



**HSS**  
M42Co8



**NRF**  
F Form

$\lambda$  30°  
 $\gamma$  12°



45°



Uncoated Alcrona

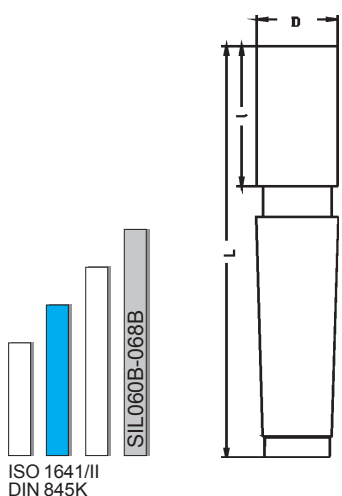
				052F	SIL	NIG	Z		
D	L	I	Mk		€	€			
k12									
16	117	32	2	052F16	66,70	97,10	4		
18	117	32	2	052F18	75,60	106,00	4		
20	123	38	2	052F20	86,80	126,10	4		
22	140	38	3	052F22	114,20	211,80	4		
25	147	45	3	052F25	139,20	237,30	4		
28	147	45	3	052F28	156,50	259,80	6		
30	147	45	3	052F30	176,70	285,80	6		
32	155	53	3	052F32	193,30	324,90	6		
36	178	53	4	052F36	258,10	400,10	6		
40	188	63	4	052F40	309,90	459,20	6		

			PARAMETRI DI TAGLIO (Cutting data) Pag. 140	Steel <800 N/mm <sup>2</sup>	Steel <1000 N/mm <sup>2</sup>	Steel <1300 N/mm <sup>2</sup>	12% Cr	Alu & alloys <6% Si
NIG052F	●	●		Vc 67	Vc 61	Vc 46	Vc 29	--



### 058B Frese a sgrossare serie normale

### 050B Frese a sgrossare serie normale



- HSS M42Co8
- WF B Form
- $\lambda 30^\circ$   
 $\gamma 14^\circ$
- 45°



- HSS M42Co8
- NRB B Form
- $\lambda 30^\circ$   
 $\gamma 12^\circ$
- 45°



Uncoated Alcrona

Uncoated Alcrona

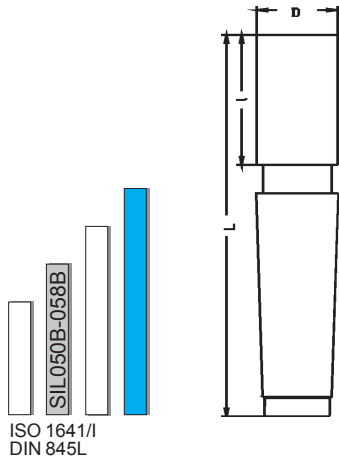
				058B			050B		
D	L	I	Mk	SIL	NIG	Z	SIL	NIG	Z
<b>k12</b>				€	€		€	€	
16	117	32	2	058B16	68,70	97,10	050B16	66,70	97,10
18	117	32	2	058B18	75,60	106,00	050B18	75,60	106,00
20	123	38	2	058B20	86,80	126,10	050B20	86,80	126,10
22	140	38	3	058B22	114,20	211,80	050B22	114,20	211,80
25	147	45	3	058B25	139,20	237,30	050B25	139,20	237,30
28	147	45	3	058B28	156,50	259,80	050B28	156,50	259,80
30	147	45	3	058B30	176,70	285,80	050B30	176,70	285,80
32	155	53	3	058B32	193,30	324,90	050B32	193,30	324,90
36	178	53	4	058B36	258,10	400,10	050B36	258,10	400,10
40	188	63	4				050B40	309,90	459,20
50	233	75	5				050B50	460,90	698,90
63	248	90	5				050B63	651,10	917,20
<b>Mk - DIN2207</b>							<b>Mk - DIN2207</b>		
32	201	53	4				051B32	282,30	366,90
36	201	53	4				051B36	280,10	422,00
40	211	63	4				051B40	343,20	492,60
50	261	75	5				051B50	575,10	738,60

MAX MQL AIR	PARAMETRI DI TAGLIO (Cutting data) Pag. 140	Steel <800 N/mm <sup>2</sup>	Steel <1000 N/mm <sup>2</sup>	Steel <1300 N/mm <sup>2</sup>	12% Cr	Alu & alloys < 6% Si
NIG058B	● ●	--	--	--	--	Vc 179
NIG050B	● ●	Vc 67	Vc 61	Vc 46	Vc 29	--



**068B** Frese a sgrossare serie lunga

**060B** Frese a sgrossare serie lunga



**HSS**  
M42Co8

**WF**  
B Form

$\lambda$  30°  
 $\gamma$  14°

45°



**HSS**  
M42Co8

**NRB**  
B Form

$\lambda$  30°  
 $\gamma$  12°

45°



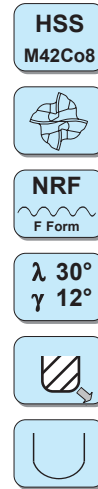
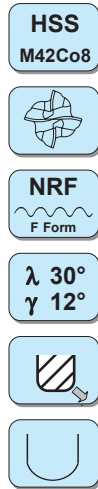
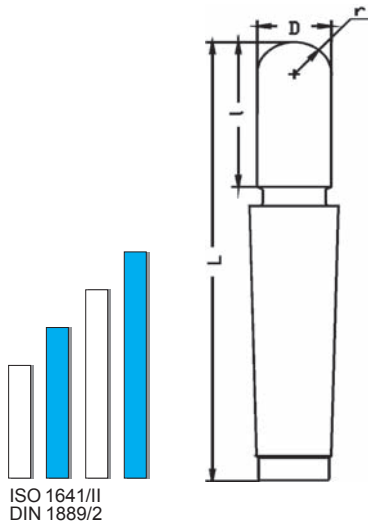
D	L	I	Mk	068B		z	060B		z		
				SIL	NIG		SIL	NIG			
				Uncoated		Alcrona					
				€	€		€	€			
k12											
16	148	63	2	068B16	82,10	117,90	3	060B16	82,10	117,90	4
18	148	63	2	068B18	91,60	127,30	3	060B18	91,60	127,30	4
20	177	75	3	068B20	124,70	219,60	3	060B20	117,70	219,60	4
22	177	75	3	068B22	136,20	237,90	3	060B22	136,20	237,90	4
25	192	90	3	068B25	163,60	265,10	3	060B25	163,60	265,10	5
28	192	90	3	068B28	190,90	295,90	3	060B28	190,90	295,90	5
30	192	90	3	068B30	225,40	343,20	3	060B30	225,40	343,20	5
32	231	106	4	068B32	244,40	384,10	3	060B32	244,40	384,10	5
36	231	106	4	068B36	323,50	468,70	3	060B36	323,50	468,70	5
40	250	125	4					060B40	373,50	524,30	6
50	308	150	5					060B50	590,50	828,50	6

	MAX MQL AIR	PARAMETRI DI TAGLIO (Cutting data) Pag. 140	Steel <800 N/mm <sup>2</sup>	Steel <1000 N/mm <sup>2</sup>	Steel <1300 N/mm <sup>2</sup>	12% Cr	Alu & alloys < 6% Si
NIG068B	●	●	--	--	--	--	Vc 107
NIG060B	●	●	Vc 40	Vc 37	Vc 28	Vc 17	--



### 075F Frese semisferiche a sgrossare serie normale

### 070F Frese semisferiche a sgrossare serie lunga



Uncoated Alcrona

					075F					
D	L	I	Mk	r	SIL	NIG			Z	
k12					€	€				
16	117	32	2	8,0	075F16	100,60	131,00		4	
20	123	38	2	10,0	075F20	137,30	178,30		4	
25	147	45	3	12,5	075F25	173,50	271,60		6	
28	147	45	3	14,0	075F28	189,90	293,30		6	
30	147	45	3	15,0	075F30	203,60	312,20		6	
32	155	53	3	16,0	075F32	228,40	359,80		6	
36	178	53	4	18,0	075F36	294,40	436,10		6	
40	188	63	4	20,0	075F40	351,50	500,10		6	
50	233	75	5	25,0	075F50	563,70	801,90		6	
					070F					
D	L	I	Mk	r	SIL	NIG			Z	
k12					€	€				
16	148	63	2	8,0	070F16	124,50	160,10		4	
20	177	75	3	10,0	070F20	155,90	258,10		4	
25	192	90	3	12,5	070F25	198,50	300,00		6	
32	231	106	4	16,0	070F32	299,40	439,30		6	
40	250	125	4	20,0	070F40	435,30	585,80		6	
50	308	150	5	25,0	070F50	692,20	929,70		8	
63	338	180	5	31,5	070F63	1057,30	1322,00		8	

Uncoated Alcrona

MAX MQL AIR Pag. 251	PARAMETRI DI TAGLIO (Cutting data) Pag. 140	Steel <800 N/mm <sup>2</sup>	Steel <1000 N/mm <sup>2</sup>	Steel <1300 N/mm <sup>2</sup>	12% Cr	Alu & alloys <6% Si
NIG075F	● ●	Vc 67	Vc 61	Vc 46	Vc 29	--
NIG070F	● ●	Vc 40	Vc 37	Vc 28	Vc 17	--



Gruppo	Nr	DIN	Gruppo	Nr	DIN
<b>Steel &lt; 800 N/mm<sup>2</sup></b>	Non legati < 800 N/mm <sup>2</sup>	1.1231 Ck67 1.1248 Ck75 1.1274 Ck101 1.0402 C22 1.0406 C25 1.0501 C35 1.0503 C45 1.1133 20Mn5	Legati < 800 N/mm <sup>2</sup>	1.5026 55Si7 1.7176 55Cr3 1.8159 50CrV4 1.3505 100Cr6 1.6546 40NiCrMo2 2 1.7218 25CrMo4 1.7220 34CrMo4 1.7223 41CrMo4	
	Legati < 800 N/mm <sup>2</sup>	1.7015 15Cr3 1.5752 14NiCr14 1.5919 15CrNi6 1.6523 21NiCrMo2 1.6587 17CrNiMo6 1.7131 16MnCr5			
<b>Steel &lt; 1000 N/mm<sup>2</sup></b>	Non legati < 1000 N/mm <sup>2</sup>	1.0535 C55 1.0601 C60 1.1203 Ck55 1.1206 Ck50 1.1221 Ck60 1.1157 40Mn4 1.1165 30Mn5 1.1167 36Mn5 1.1170 28Mn6	Legati < 1000 N/mm <sup>2</sup>	1.7225 42CrMo4 1.8159 50CrV4 1.7045 42Cr4 1.8507 34CrAlMo5 1.8509 41CrAlMo7 1.8515 31CrMo12	
	Legati < 1000 N/mm <sup>2</sup>	1.5710 36NiCr6 1.5755 31NiCr14 1.6511 36CrNiMo4 1.7033 34Cr4 1.7034 37Cr4 1.7035 41Cr4 1.7218 25CrMo4 1.7220 34CrMo4 1.7223 41CrMo4	Acciai legati per utensili	1.2067 100Cr6 1.2330 35CrMo4 1.2332 47CrMo4 1.2510 100MnCrW4 1.2516 120WV4 1.2542 45WCrV7 1.2833 100V1 1.2842 90MnCrV8	
<b>Steel &lt; 1300 N/mm<sup>2</sup></b>			Ghisa	0.6015 GG-15 0.6010 GG-10 0.6020 GG-20	
	Legati < 1300 N/mm <sup>2</sup>	1.5710 36NiCr6 1.6511 36CrNiMo4 1.6580 30CrNiMo8 1.6582 34CrNiMo6 1.7220 34CrMo4 1.7223 41CrMo4 1.7225 42CrMo4 1.7361 32CrMo12 1.8159 50CrV4	Acciai legati per utensili	1.2311 40CrMnMo7 1.2344 X40CrMoV5 1 1.2365 X32CrMoV3 3 1.2581 X30WCrV9 3 1.2343 X38 CrMoV5 1 1.2344 X40CrMoV5 1 1.2714 56NiCrMoV7	
<b>12% Cr</b>			Ghisa	0.6030 GG-30 0.6040 GG-40	
	Acciai legati per utensili	1.2080 X210Cr12 1.2436 X210CrW12 1.2601 X165CrMoV12 1.2706 X3NiCrMo18 8 5 1.2709 X2NiCoMoTi18 9 5 1.2201 X165CrV12 1.2376 X96CrMoV12 1.2379 X155CrMo12 1 1.2609 X165CrVMo12 1 1.2631 X50CrMoW9 1 1 1.2880 X165CrCoMo12	Acciai resistenti al calore	1.4914 - 1.4920 X15CrMo12 1 1.4924 - 1.4718 X45CrSi9 3 1.4845 X12CrNi25 21 1.4878 X12CrNiTi18 9 1.4742 X10CrAl18 1.4923 X22CrMoV12 1	