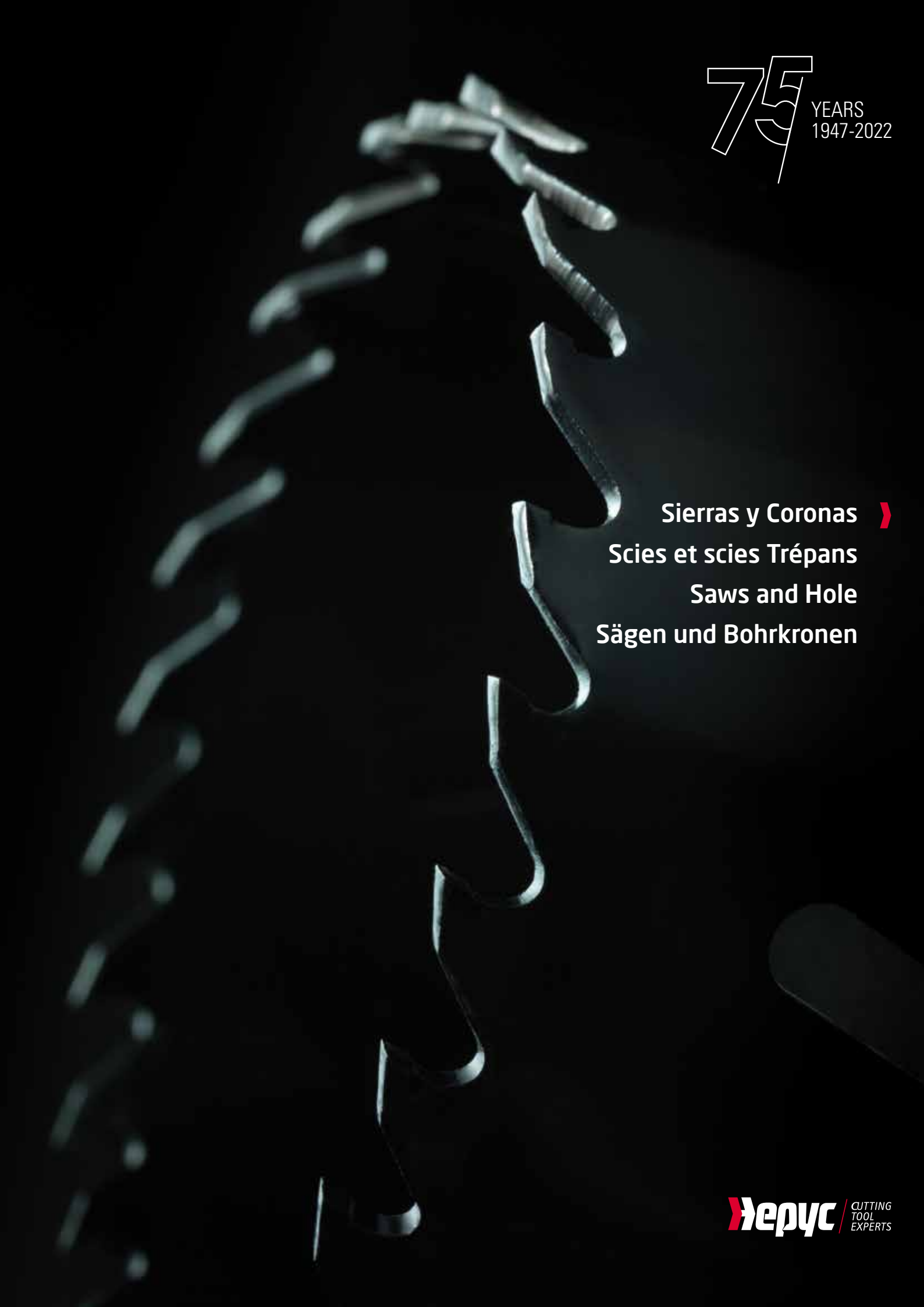

75
YEARS
1947-2022
Sierras y Coronas
Scies et scies Trépans
Saws and Hole
Sägen und Bohrkronen
CUTTING
TOOL
EXPERTS

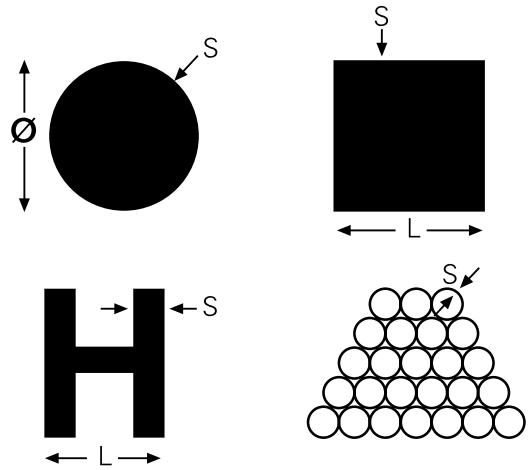
ÍNDICE
SOMMAIRE / INDEX

Pág.

P Aceros / Aciers / Steels / Stähle
M Aceros Inox / Aciers Inox / Stainless Steels / Edelstahl
K Fundicion / Fonte / Cast Iron / Gusseisen
N Metales no ferrosos / Métal non Ferraux / Non Ferrous metals / NE-Metalle
S Titanio y Superaleaciones / Titanium et Supealliages / Titanium and Superalloys / Titan und Superlegierungen
H Materiales Duros / Materiels Durs / Hard materials / Hartmaterialien

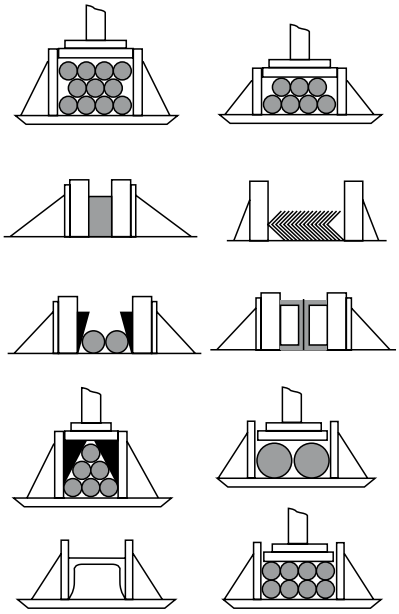
Dentado y amarre del material / Denture et fixation du matériel / Toothimg and securing of material / Verzahnung und Materialaufspannung

> Selección del correcto dentado para el corte de tubos y perfiles.
Choix de la dentura appropriée pour la coupe de tubes et de profilés.
Select correct toothing to cut tubes and beams.
Wahl der richtigen Verzahnung zur Rohr- und Profilbearbeitung.

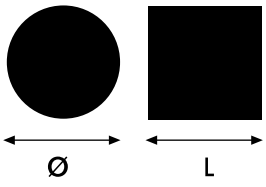


S mm	ØL mm										
	20	40	60	80	100	120	150	200	300	400	500
2	14	14	14	14	10/14	10/14	10/14	10/14	10/14	8/12	8/12
3				10/14					6/10		
4			10/14				6/10	6/10		6/10	6/10
5		10/14			6/10	6/10			4/6	4/6	4/6
6	10/14		8/12	6/10			5/8	4/6			
7		8/12				5/8					3/4
8			6/10		5/8		4/6		3/4	3/4	
10		6/10		5/8	4/6	4/6		3/4			
12			5/8	4/6	3/4	3/4	3/4				2/3
15							2/3	2/3	2/3	2/3	
20											
30											
50											

> Selección correcta de amarre de material.
Choix du type de fixation du matériel approprié.
Correct selection to secure material.
Richtige Wahl der Materialaufspannung.



> Para el corte de secciones macizas.
Pour la coupe de sections massives.
For cutting solid sections.
Für Vollprofilschnitte.



Ø L (mm)	tpi
< 20	10/14 ó 8/12
20 - 40	6/10 ó 6
40 - 70	6 ó 4/6
70 - 140	4 ó 3/4
140 - 200	3/4 ó 3
200 - 400	3 ó 2/3
> 400	1/2 ó 1,25

TABLA DE APLICACIONES
GUIDE D'APPLICATION / APPLICATION GUIDE / ANWENDUNGSÜBERSICHT

						Ref./ Réf. / Ref.	7202-7213				
						Diente/ Dent/ Teech	Constante/ Constant				
						Mat.	M42				
						Pag.	444	444	444	444	444
	Z	10-14	6-12	4-8	3-6	2-4	10-14	6-12	4-8	3-6	2-4
		10/14v	8/12-6/10	5/8-4/6	4/6-3/4	3/4-2/3					
	Ø/L	0-13mm	13-25mm	25-75mm	75-150mm	>150mm	0-13mm	13-25mm	25-75mm	75-150mm	>150mm
Mat.		Avance/Feed (cm2/min)					Vc (m/min)				
P.1	<600	55-75	60-80	70-90	77-100	77-100	o 100-120	o 95-115	o 90-110	o 80-100	o 70-90
P.2	<800	42-52	45-55	50-65	55-70	55-70	o 75-100	o 70-95	o 65-90	o 60-80	o 55-70
P.3	<1000	30-39	32-42	35-45	40-52	40-52	o 55-75	o 50-70	o 45-65	o 40-60	o 35-55
P.4	<1200	9-17	10-17	10-20	12-22	12-22	o 32-50	o 30-47	o 28-45	o 25-40	o 22-35
P.5	<1400	5-13	5-14	5-15	6-17	6-17					
M.1	<950	14-28	15-30	17-35	19-38	19-38	o 27-50	o 25-47	o 22-45	o 20-40	o 18-35
M.2		14-28	15-30	17-35	19-38	19-38	o 27-50	o 25-47	o 22-45	o 20-40	o 18-35
M.3	<1200	5-14	5-15	5-17	6-19	6-19					
M.4		5-14	5-15	5-17	6-19	6-19					
K.1	<500	26-33	28-36	30-40	35-45	35-45	o 60-85	o 57-82	o 55-80	o 50-70	o 45-60
K.2		26-33	28-36	30-40	35-45	35-45	o 60-85	o 57-82	o 55-80	o 50-70	o 45-60
K.3	<800	30-37	32-43	35-45	40-50	40-50	o 50-80	o 47-70	o 45-65	o 40-60	o 35-55
K.4.1		30-37	32-43	35-45	40-50	40-50	o 50-80	o 47-70	o 45-65	o 40-60	o 35-55
K.4.2	<1400	11-18	12-20	13-22	15-25	15-25					
N.1.1	Al	90-110	95-120	110-135	120-150	120-150	● 175-230	● 170-225	● 165-220	● 150-200	● 135-180
N.1.2		90-110	95-120	110-135	120-150	120-150	● 120-175	● 115-170	● 110-165	● 100-150	● 90-135
N.1.3		52-90	55-95	75-110	70-120	70-120	● 100-120	● 95-115	● 90-110	● 80-100	● 70-90
N.2.1	Cu	90-105	95-112	110-125	120-140	120-140	● 120-145	● 115-140	● 110-135	● 100-120	● 90-115
N.2.2		75-83	80-88	90-100	100-110	100-110	● 100-120	● 95-115	● 90-110	● 80-100	● 70-90
N.2.3		50-60	52-65	60-70	65-80	65-80	o 75-100	o 70-95	o 65-90	o 60-80	o 55-70
N.2.4		15-26	16-28	18-30	20-35	20-35	o 40-60	o 37-57	o 35-55	o 30-50	o 25-45
N.3.1	Mg/Zn	42-52	45-55	50-60	55-70	55-70	● 75-105	● 70-100	● 65-95	● 60-90	● 55-80
N.4.1	Plastic	90-110	95-120	110-135	120-150	120-150	● 120-175	● 115-170	● 110-165	● 100-150	● 90-135
N.4.2		52-90	55-95	75-110	70-120	70-120	● 100-120	● 95-115	● 90-110	● 80-100	● 70-90
N.4.3											
S.1.1	Ni	4-15	5-16	5-18	6-20	6-20					
S.1.2		4-7	5-8	5-9	6-10	6-10					
S.2.1	Ti	4-7	5-8	5-9	6-10	6-10					
S.2.2		4-7	5-8	5-9	6-10	6-10					
S.2.3		4-7	5-8	5-9	6-10	6-10					
H.1	50 HRC										
H.2	55 HRC										
H.3	60 HRC										

● Optima / Optimun ○ Alternativo / Alternative

P Aceros / Aciers / Steels / Stähle

M Aceros Inox / Aciers Inox / Stainless Steels / Edelstahl

K Fundicion / Fonte / Cast Iron / Gusseisen

N Metales no ferrosos / Métal non Ferraux / Non Ferrous metals / NE-Metalle

S Titanio y Superaleaciones / Titanium et Supealliages / Titanium and Superalloys / Titan und Superlegierungen

H Materiales Duros / Materiels Durs / Hard materials / Hartmaterialien

7301-7314					7321-7324				
Variable					Variable				
M42					M51				
445	445	445	445	445	446	446	446	446	446
10/14	8/12-6/10	5/8-4/6	4/6-3/4	3/4-2/3	10/14	8/12-6/10	5/8	3/4	3/4-2/3
0-13mm	13-25mm	25-75mm	75-150mm	150->mm	0-13mm	13-25mm	25-75mm	75-150mm	>150mm
Vc (m/min)									
● 100-120	● 95-115	● 90-110	● 80-100	● 70-90	o 100-120	o 95-115	o 90-110	o 80-100	o 70-90
● 75-100	● 70-95	● 65-90	● 60-80	● 55-70	o 75-100	o 70-95	o 65-90	o 60-80	o 55-70
● 55-75	● 50-70	● 45-65	● 40-60	● 35-55	● 55-75	● 50-70	● 45-65	● 40-60	● 35-55
o 32-50	o 30-47	o 28-45	o 25-40	o 22-35	● 32-50	● 30-47	● 28-45	● 25-40	● 22-35
					● 20-32	● 18-30	● 17-28	● 15-25	● 13-22
● 27-50	● 25-47	● 22-45	● 20-40	● 18-35	● 27-50	● 25-47	● 22-45	● 20-40	● 18-35
● 27-50	● 25-47	● 22-45	● 20-40	● 18-35	● 27-50	● 25-47	● 22-45	● 20-40	● 18-35
o 18-30	o 18-30	o 17-28	o 15-25	o 13-22	● 18-30	● 18-30	● 17-28	● 15-25	● 13-22
o 18-30	o 18-30	o 17-28	o 15-25	o 13-22	● 18-30	● 18-30	● 17-28	● 15-25	● 13-22
o 60-85	o 57-82	o 55-80	o 50-70	o 45-60	● 60-85	● 57-82	● 55-80	● 50-70	● 45-60
o 60-85	o 57-82	o 55-80	o 50-70	o 45-60	● 60-85	● 57-82	● 55-80	● 50-70	● 45-60
o 50-80	o 47-70	o 45-65	o 40-60	o 35-55	● 50-80	● 47-70	● 45-65	● 40-60	● 35-55
o 50-80	o 47-70	o 45-65	o 40-60	o 35-55	● 50-80	● 47-70	● 45-65	● 40-60	● 35-55
					● 32-50	● 30-47	● 28-45	● 25-40	● 22-35
o 175-230	o 170-225	o 165-220	o 150-200	o 135-180	o 175-230	o 170-225	o 165-220	o 150-200	o 135-180
o 120-175	o 115-170	o 110-165	o 100-150	o 90-135	o 120-175	o 115-170	o 110-165	o 100-150	o 90-135
o 100-120	o 95-115	o 90-110	o 80-100	o 70-90	o 100-120	o 95-115	o 90-110	o 80-100	o 70-90
o 120-145	o 115-140	o 110-135	o 100-120	o 90-115	o 120-145	o 115-140	o 110-135	o 100-120	o 90-115
o 100-120	o 95-115	o 90-110	o 80-100	o 70-90	o 100-120	o 95-115	o 90-110	o 80-100	o 70-90
● 75-100	● 70-95	● 65-90	● 60-80	● 55-70	o 75-100	o 70-95	o 65-90	o 60-80	o 55-70
● 40-60	● 37-57	● 35-55	● 30-50	● 25-45	● 40-60	● 37-57	● 35-55	● 30-50	● 25-45
o 75-105	o 70-100	o 65-95	o 60-90	o 55-80	o 75-105	o 70-100	o 65-95	o 60-90	o 55-80
o 120-175	o 115-170	o 110-165	o 100-150	o 90-135	o 120-175	o 115-170	o 110-165	o 100-150	o 90-135
o 100-120	o 95-115	o 90-110	o 80-100	o 70-90	o 100-120	o 95-115	o 90-110	o 80-100	o 70-90
					● 25-30	● 25-30	● 22-28	● 20-25	● 18-22
					● 18-25	● 18-25	● 17-22	● 15-20	● 13-18
					● 25-47	● 25-47	● 22-45	● 20-40	● 18-35
					● 25-30	● 25-30	● 22-28	● 20-25	● 18-22
					● 18-25	● 18-25	● 17-22	● 15-20	● 13-18

● Optima / Optimun ○ Alternativo / Alternative

P	Aceros Aciers Steels Stähle	M	Aceros Inox Aciers Inox Stainless Steels Edelstahl	K	Fundicion Fonte Cast Iron Gusseisen	N	Metales no ferrosos Métal non Ferraux Non Ferrous metals NE-Metalle	S	Titanio y Superaleaciones Titanium et Supealliages Titanium and Superalloys Titan und Superlegierungen	H	Materiales Duros Materiels Durs Hard materials Hartmaterialien

TABLA DE APLICACIONES
GUIDE D'APPLICATION / APPLICATION GUIDE / ANWENDUNGSÜBERSICHT

				
		Ref./ Réf. / Ref.	7801	7802
		Z	32-200	24-100
		Ejec./Exéc./Exec.	N	N
		Hel./Hel./Spiral		
		Mat.	HSS	HSS
		Rec./Rev./Coat.		
		DIN	1837-A	1838-B
		Gama/Gamme/Range	20-315	50-315
		Pag.	447	448
Mat.		fz mm	Vc (m/min)	
P.1	<600	0,03-0,06	● 25-50	● 25-50
P.2	<800	0,03-0,04	● 15-30	● 15-30
P.3	<1000	0,02-0,03	● 10-20	● 10-20
P.4	<1200	0,01-0,03	○ 5-10	○ 5-10
P.5	<1400			
M.1	<950	0,01-0,03	○ 10-20	○ 10-20
M.2		0,01-0,03	○ 10-20	○ 10-20
M.3	<1200	0,01-0,03	○ 5-10	○ 5-10
M.4		0,01-0,03	○ 5-10	○ 5-10
K.1	<500	0,04-0,05	● 15-30	● 15-30
K.2		0,04-0,05	● 15-30	● 15-30
K.3	<800	0,03-0,04	○ 10-20	○ 10-20
K.4.1		0,03-0,04	○ 10-20	○ 10-20
K.4.2	<1400			
N.1.1	Al	0,04-0,09	● 1000-2000	● 1000-2000
N.1.2		0,03-0,06	● 500-1000	● 500-1000
N.1.3		0,03-0,04	● 120-200	● 120-200
N.2.1	Cu	0,04-0,06	● 100-400	● 100-400
N.2.2		0,04-0,06	● 100-400	● 100-400
N.2.3		0,04-0,06	● 40-120	● 40-120
N.2.4		0,01-0,03	○ 10-20	○ 10-20
N.3.1	Mg/Zn	0,04-0,06	○ 40-120	○ 40-120
N.4.1	Plastic	0,04-0,09	○ 500-1000	○ 500-1000
N.4.2		0,04-0,09	○ 500-1000	○ 500-1000
N.4.3				
S.1.1	Ni	0,03-0,04	○ 20-30	○ 20-30
S.1.2				
S.2.1	Ti	0,01-0,03	○ 10-20	○ 10-20
S.2.2		0,03-0,04	○ 10-20	○ 10-20
S.2.3				
H.1	50 HRC			
H.2	55 HRC			
H.3	60 HRC			

● Optima / Optimun ○ Alternativo / Alternative

P Aceros Aciers Steels Stähle	M Aceros Inox Aciers Inox Stainless Steels Edelstahl	K Fundicion Fonte Cast Iron Gusseisen	N Metales no ferrosos Métal non Ferraux Non Ferrous metals NE-Metalle	S Titanio y Superaleaciones Titanium et Supealliages Titanium and Superalloys Titan und Superlegierungen	H Materiales Duros Materiels Durs Hard materials Hartmaterialien	

7202-7213 M42 Dentado constante

M42 Denture constant / M42 Constant tooth / M42 Konstante Verzahnung

68-69 HRC | M42 (8% CO) | CR 0° | CP 10°

P				M		K			N				S		H		
<800	<1.000	<1.200	<1.400	<950	<1.200	<500	<800	<1.400	Al	Cu	Mg/Zn	Plastic	Ni	Ti	50 HRC	55 HRC	60 HRC
○ 55-120	○ 35-75	○ 22-50		○ 18-50		○ 45-85	○ 35-80		● 70-230	● 25-45	● 55-105	● 70-175					

Vc (m/min). ● Optima / Optimun ○ Alternativo / Alternative

Ref.	A mm	e mm	t.p.i. 1,25	2	3	4	6	8	10	14	18	€ m	€ soldadura soudure welding
*7202	6,00	0,90					CP		CR	CR		*18,74*	*10,65*
*7204	10,00	0,90				CP	CP		CR	CR		*18,74*	*10,65*
7205	13,00	0,65				CP			CR	CR	CR	*17,21*	*10,65*
7206	13,00	0,90			CP	CP			CR	CR		*17,21*	*10,65*
7207	20,00	0,90			CP					CR		*19,68*	*10,65*
7208	27,00	0,90		CP	CP	CP-CR	CR			CR		*20,26*	*10,65*
7209	34,00	1,10	CP									*28,14*	*14,01*
7210	41,00	1,30	CP	CP	CP							*35,20*	*17,70*
7212	54,00	1,60	CP									*51,57*	*29,81*
7213	67,00	1,60	CP									*87,84*	*54,97*

*** Se vende sólo en rollos de 30 m.**
Vendu uniquement en rouleaux de 30 m.
Only sold in 30 m rolls.

Axe mm	L	€		Axe mm	L	€		Axe mm	L	€	
13x0,65	1.138	*30,24*	3		2.550	*60,85*	1		4.870	*109,28*	1
	1.140	*30,27*	3	27x0,90	2.000	*51,16*	1		5.000	*111,91*	1
	1.300	*33,02*	3		2.060	*52,36*	1	34x1,10	3.180	*103,54*	1
	1.325	*33,45*	3		2.070	*52,57*	1		3.420	*110,30*	1
	1.330	*33,55*	3		2.080	*52,77*	1		3.505	*112,69*	1
	1.440	*35,44*	3		2.150	*54,19*	1		3.660	*117,06*	1
	1.470	*35,96*	3		2.352	*58,28*	1		3.720	*118,74*	1
	1.638	*38,85*	3		2.360	*58,45*	1		3.800	*121,00*	1
	1.640	*38,88*	3		2.370	*58,64*	1		4.100	*129,45*	1
	1.735	*40,51*	3		2.420	*59,66*	1		4.115	*129,86*	1
	1.750	*40,77*	3		2.450	*60,27*	1		4.520	*141,27*	1
	2.000	*45,08*	3		2.460	*60,47*	1		4.570	*142,68*	1
13x0,90	1.140	*30,27*	3		2.480	*60,87*	1		4.640	*144,65*	1
	1.325	*33,45*	3		2.500	*61,28*	1		4.800	*149,14*	1
	1.330	*33,55*	3		2.550	*62,30*	1		4.860	*150,84*	1
	1.638	*38,85*	3		2.600	*63,30*	1		4.990	*154,50*	1
	1.640	*38,88*	3		2.650	*64,32*	1		5.270	*162,37*	1
	1.735	*40,51*	3		2.700	*65,34*	1		5.300	*163,22*	1
	1.750	*40,77*	3		2.750	*66,35*	1		5.550	*170,26*	1
	2.000	*45,08*	3		2.755	*66,45*	1		5.620	*172,23*	1
20x0,90	2.000	*50,03*	1		2.765	*66,64*	1		5.800	*177,31*	1
	2.060	*51,21*	1		2.825	*67,86*	1		6.000	*182,93*	1
	2.070	*51,41*	1		2.835	*68,06*	1	41x1,30	4.100	*162,01*	1
	2.080	*51,61*	1		2.845	*68,26*	1		4.520	*176,80*	1
	2.090	*51,80*	1		2.850	*68,37*	1		4.570	*178,56*	1
	2.100	*52,00*	1		2.895	*69,27*	1		5.300	*204,25*	1
	2.110	*52,21*	1		2.945	*70,29*	1		5.500	*211,29*	1
	2.115	*52,30*	1		2.950	*70,39*	1		5.550	*213,05*	1
	2.120	*52,39*	1		2.960	*70,60*	1		5.800	*221,86*	1
	2.140	*52,79*	1		3.010	*71,61*	1		6.000	*228,89*	1
	2.265	*55,25*	1		3.100	*73,43*	1		6.200	*235,93*	1
	2.360	*57,12*	1		3.180	*75,05*	1		6.300	*239,45*	1
	2.362	*57,17*	1		3.420	*79,91*	1		6.600	*250,01*	1
	2.370	*57,32*	1		3.505	*81,63*	1		6.700	*253,53*	1
	2.375	*57,42*	1		3.660	*84,77*	1		6.900	*260,58*	1
	2.400	*57,91*	1		3.800	*87,61*	1		7.000	*264,09*	1
	2.465	*59,19*	1		4.100	*93,68*	1	6x0,90	30 M	*562,35*	1
	2.520	*60,27*	1		4.250	*96,73*	1	10x0,90	30 M	*562,35*	1
	2.530	*60,47*	1		4.570	*103,20*	1				

P Aceros / Aciers / Steels / Stähle
M Aceros Inox / Aciers Inox / Stainless Steels / Edelstahl
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N Metales no ferrosos / Métal non Ferraux / Non Ferrous metals / NE-Metalle
S Titanio y Superaleaciones / Titanium et Supealliages / Titanium and Superalloys / Titan und Superlegierungen
H Materiales Duros / Materiels Durs / Hard materials / Hartmaterialien

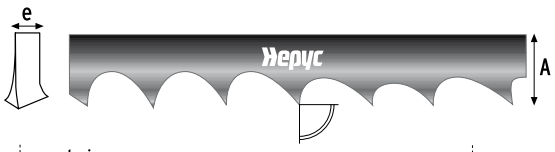
7301-7314

M42 Dentado variable
M42 Denture variable / M42 Variable tooth / M42 Variable Verzahnung

68-69 HRC | M42 (8% CO) | VR 0° | VP 10°

P				M		K			N				S		H		
<800	<1.000	<1.200	<1.400	<950	<1.200	<500	<800	<1.400	Al	Cu	Mg/Zn	Plastic	Ni	Ti	50 HRC	55 HRC	60 HRC
●	●	○		●	○	○	○		○	●	○	○					
55-120	35-75	22-50		18-50	13-30	45-85	35-80		70-230	25-45	55-105	70-175					

Vc (m/min). ● Optima / Optimun ○ Alternativo / Alternative



Ref.	A mm	e mm	t.p.i. 0,75/1,25	1,10/1,40	1,60/2	2/3	3/4	4/6	5/8	6/10	8/12	10/14	€ m	€ soldadura soudure welding
7302*	6,00	0,90										VR	*18,74*	*10,65*
7304*	10,00	0,90										VR	*18,74*	*10,65*
7305	13,00	0,65								VR	VR	VR	*17,21*	*10,65*
7306	13,00	0,90								VR	VR	VR	*17,21*	*10,65*
7307	20,00	0,90							VR	VR	VR	VR	*19,68*	*10,65*
7308	27,00	0,90				VP	VP-VR	VP-VR	VP-VR	VR	VR	VR	*20,26*	*10,65*
7309	34,00	1,10				VP	VP-VR	VP-VR	VP-VR	VR	VR		*28,17*	*14,01*
7310	41,00	1,30			VP	VP	VP-VR	VP-VR	VP-VR				*35,20*	*17,70*
7311	54,00	1,30			VP	VP	VP-VR						*51,57*	*29,81*
7312	54,00	1,60	VP	VP	VP	VP	VP						*51,57*	*29,81*
7313	67,00	1,60	VP	VP	VP	VP							*87,84*	*54,97*
7314	80,00	1,60	VP										*102,82*	*91,65*

*** Se vende sólo en rollos de 30m.** / Vendu uniquement en rouleaux de 30 m.
Only sold in 30 m rolls. / Nur in 30 m-Rollen erhältlich.

Axe mm	L	€		Axe mm	L	€		Axe mm	L	€	
13x0,65	1.138	*30,24*	3		2.550	*60,85*	1		4.870	*109,28*	1
	1.140	*30,27*	3	27x0,90	2.000	*51,16*	1		5.000	*111,91*	1
	1.300	*33,02*	3		2.060	*52,36*	1	34x1,10	3.180	*103,57*	1
	1.325	*33,45*	3		2.070	*52,57*	1		3.420	*110,34*	1
	1.330	*33,55*	3		2.080	*52,77*	1		3.505	*112,72*	1
	1.440	*35,44*	3		2.150	*54,19*	1		3.660	*117,10*	1
	1.470	*35,96*	3		2.352	*58,28*	1		3.720	*118,78*	1
	1.638	*38,85*	3		2.360	*58,45*	1		3.800	*121,04*	1
	1.640	*38,88*	3		2.370	*58,64*	1		4.100	*129,49*	1
	1.735	*40,51*	3		2.420	*59,66*	1		4.115	*129,91*	1
	1.750	*40,77*	3		2.450	*60,27*	1		4.520	*141,32*	1
	2.000	*45,08*	3		2.460	*60,47*	1		4.570	*142,72*	1
13x0,90	1.140	*30,27*	3		2.480	*60,87*	1		4.640	*144,69*	1
	1.325	*33,45*	3		2.500	*61,28*	1		4.800	*149,20*	1
	1.330	*33,55*	3		2.550	*62,30*	1		4.860	*150,89*	1
	1.638	*38,85*	3		2.600	*63,30*	1		4.990	*154,55*	1
	1.640	*38,88*	3		2.650	*64,32*	1		5.270	*162,45*	1
	1.735	*40,51*	3		2.700	*65,34*	1		5.300	*163,29*	1
	1.750	*40,77*	3		2.750	*66,35*	1		5.550	*170,32*	1
	2.000	*45,08*	3		2.755	*66,45*	1		5.620	*172,29*	1
20x0,90	2.000	*50,03*	1		2.765	*66,64*	1		5.800	*177,37*	1
	2.060	*51,21*	1		2.825	*67,86*	1		6.000	*183,00*	1
	2.070	*51,41*	1		2.835	*68,06*	1	41x1,30	4.100	*162,01*	1
	2.080	*51,61*	1		2.845	*68,26*	1		4.520	*176,80*	1
	2.090	*51,80*	1		2.850	*68,37*	1		4.570	*178,56*	1
	2.100	*52,00*	1		2.895	*69,27*	1		5.300	*204,25*	1
	2.110	*52,21*	1		2.945	*70,29*	1		5.500	*211,29*	1
	2.115	*52,30*	1		2.950	*70,39*	1		5.550	*213,05*	1
	2.120	*52,39*	1		2.960	*70,60*	1		5.800	*221,86*	1
	2.140	*52,79*	1		3.010	*71,61*	1		6.000	*228,89*	1
	2.265	*55,25*	1		3.100	*73,43*	1		6.200	*235,93*	1
	2.360	*57,12*	1		3.180	*75,05*	1		6.300	*239,45*	1
	2.362	*57,17*	1		3.420	*79,91*	1		6.600	*250,01*	1
	2.370	*57,32*	1		3.505	*81,63*	1		6.700	*253,53*	1
	2.375	*57,42*	1		3.660	*84,77*	1		6.900	*260,58*	1
	2.400	*57,91*	1		3.800	*87,61*	1		7.000	*264,09*	1
	2.465	*59,19*	1		4.100	*93,68*	1	6x0,90	30 M	*562,35*	1
	2.520	*60,27*	1		4.250	*96,73*	1	10x0,90	30 M	*562,35*	1
	2.530	*60,47*	1		4.570	*103,20*	1				

P Aceros / Aciers / Steels / Stähle
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H Materiales Duros / Materiels Durs / Hard materials / Hartmaterialien

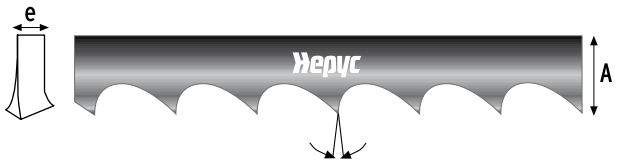
7321-7324 M51 Dentado variable

M51 Denture variable / M51 Variable tooth / M51 Variable Verzahnung

VP 10° | 68-69 HRC | M51 (10% CO)

P				M		K			N				S		H		
<800	<1.000	<1.200	<1.400	<950	<1.200	<500	<800	<1.400	Al	Cu	Mg/Zn	Plastic	Ni	Ti	50 HRC	55 HRC	60 HRC
● 55-120	● 35-75	● 22-50	● 13-32	● 18-50	● 13-30	● 45-85	● 35-80	● 22-50	○ 70-230	● 25-45	○ 55-105	○ 70-175	● 13-30	● 13-47			

Vc (m/min). ● Optima / Optimun ○ Alternativo / Alternative



Ref.	A mm	e mm	t.p.i. 0,75/1,25	1,5/2	2/3	3/4	€ m	€ soldadura soudure welding
7321	27,00	0,90			VP	VP	*38,34*	*91,65*
7322	34,00	1,10			VP	VP	*39,25*	*91,65*
7323	41,00	1,30		VP	VP	VP	*47,95*	*91,65*
7324	54,00	1,60	VP	VP	VP	VP	*85,10*	*91,65*

Axe mm	L	€	
27x0,90	2.000	*89,05*	1
	2.060	*91,35*	1
	2.070	*91,73*	1
	2.080	*92,12*	1
	2.150	*94,81*	1
	2.352	*102,56*	1
	2.370	*103,24*	1
	2.360	*102,85*	1
	2.420	*105,15*	1
	2.450	*106,31*	1
	2.460	*106,69*	1
	2.480	*107,46*	1
	2.500	*108,23*	1
	2.550	*110,14*	1
	2.600	*112,05*	1
	2.650	*113,97*	1
	2.700	*115,90*	1
	2.750	*117,81*	1
	2.755	*118,00*	1
	2.765	*118,38*	1
	2.825	*120,68*	1
	2.835	*121,07*	1
	2.845	*121,45*	1
	2.850	*121,64*	1
	2.895	*123,36*	1
	2.945	*125,29*	1
	2.950	*125,48*	1
	2.960	*125,85*	1
	3.010	*127,78*	1
	3.100	*131,24*	1
	3.180	*134,29*	1
	3.420	*143,50*	1
	3.505	*146,76*	1
	3.660	*152,70*	1
	3.800	*158,07*	1
	4.100	*169,58*	1
	4.250	*175,32*	1

Axe mm	L	€	
	4.570	*187,60*	1
	4.870	*199,09*	1
	5.000	*204,08*	1
34x1,10	3.180	*141,08*	1
	3.420	*150,50*	1
	3.505	*153,83*	1
	3.660	*159,91*	1
	3.720	*162,28*	1
	3.800	*165,41*	1
	4.100	*177,19*	1
	4.115	*177,78*	1
	4.520	*193,67*	1
	4.570	*195,64*	1
	4.640	*198,39*	1
	4.800	*204,66*	1
	4.860	*207,02*	1
	4.990	*212,13*	1
	5.270	*223,12*	1
	5.300	*224,30*	1
	5.550	*234,11*	1
	5.620	*236,86*	1
	5.800	*243,93*	1
	6.000	*251,77*	1
41x1,30	4.100	*217,20*	1
	4.520	*237,34*	1
	4.570	*239,74*	1
	5.300	*274,75*	1
	5.500	*284,35*	1
	5.550	*286,74*	1
	5.800	*298,73*	1
	6.000	*308,32*	1
	6.200	*317,92*	1
	6.300	*322,72*	1
	6.600	*337,10*	1
	6.700	*341,90*	1
	6.900	*351,49*	1
	7.000	*356,29*	1

P Aceros / Aciers / Steels / Stähle
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S Titanio y Superaleaciones / Titanium et Supealliages / Titanium and Superalloys / Titan und Superlegierungen
H Materiales Duros / Materiels Durs / Hard materials / Hartmaterialien

7801 HSS DIN 1837 N

ISO	Form.	Tol.	Tol.
2296	A	Ø (j15) d (H7)	l (j11) D1 (j18)

P				M		K			N				S		H		
<800	<1.000	<1.200	<1.400	<950	<1.200	<500	<800	<1.400	Al	Cu	Mg/Zn	Plastic	Ni	Ti	50 HRC	55 HRC	60 HRC
●	●	○		○	○	●	○		●	●	○	●	○	○			
15-50	10-20	5-10		10-20	5-10	15-30	10-20		120-2000	10-400	40-120	500-1000	20-30	10-20			

Vc (m/min). ● Optima / Optimun ○ Alternativo / Alternative

D mm	e mm	d mm	z	€
20	0,20	5	80	*17,77*
	0,25		64	*17,87*
	0,30		64	*16,82*
	0,40		64	*16,47*
	0,50		48	*16,47*
	0,60		48	*15,53*
	0,80		48	*16,00*
	1,00		40	*16,94*
	1,20		40	*17,41*
	1,60		40	*18,05*
	2,00		32	*19,29*
25	0,20	8	80	*18,35*
	0,25		80	*18,35*
	0,30		80	*17,41*
	0,40		64	*16,18*
	0,50		64	*16,47*
	0,60		64	*16,65*
	0,80		48	*16,65*
	1,00		48	*16,82*
	1,20		48	*17,41*
	1,60		40	*17,87*
	2,00		40	*18,35*
	2,50		40	*20,42*
32	0,20	8	100	*17,41*
	0,25		100	*15,71*
	0,30		80	*14,47*
	0,40		80	*14,00*
	0,50		80	*14,11*
	0,60		64	*14,29*
	0,80		64	*14,60*
	1,00		64	*15,71*
	1,20		48	*15,71*
	1,60		48	*16,82*
	2,00		48	*18,70*
	2,50		40	*21,53*
	3,00		40	*23,40*
40	0,20	10	128	*18,05*
	0,25		100	*17,12*
	0,30		100	*15,23*
	0,40		100	*14,76*
	0,50		80	*14,76*
	0,60		80	*14,94*
	0,80		80	*16,00*
	1,00		64	*17,41*
	1,20		64	*17,41*
	1,60		64	*19,29*
	2,00		48	*20,75*
	2,50		48	*24,05*
	3,00		48	*26,52*
50	0,25	13	128	*20,75*
	0,30		128	*16,94*
	0,40		100	*16,18*
	0,50		100	*16,82*
	0,60		100	*16,82*
	0,80		80	*23,30*
	1,00		80	*23,30*
	1,20		80	*23,30*
	1,60		64	*23,30*
	2,00		64	*23,30*
	2,50		64	*25,94*
	3,00		48	*28,76*
	4,00		48	*34,41*
	5,00		48	*39,11*
63	0,30	16	128	*22,76*
	0,40		128	*20,60*
	0,50		128	*20,75*
	0,60		100	*20,75*
	0,80		100	*23,35*
	1,00		100	*25,29*
	1,20		80	*25,46*
	1,60		80	*26,70*
	2,00		80	*28,41*
	2,50		64	*33,17*
	3,00		64	*36,58*
	4,00		64	*44,11*
	5,00		48	*53,12*
	6,00		48	*59,22*
80	0,50	22	128	*26,24*
	0,60		128	*27,00*
	0,80		128	*29,82*
	1,00		100	*29,35*
	1,20		100	*30,64*
	1,60		100	*33,46*
	2,00		80	*34,99*
	2,50		80	*40,99*
	3,00		80	*46,65*
	4,00		64	*57,00*
	5,00		64	*68,93*
	6,00		64	*78,99*
100	0,60	22	160	*34,41*
	0,80		128	*38,18*
	1,00		128	*36,94*
	1,20		128	*36,94*
	1,60		100	*42,88*
	2,00		100	*45,70*
	2,50		100	*55,12*
	3,00		80	*62,05*
	4,00		80	*74,28*
	5,00		80	*90,94*
	6,00		64	*104,45*
125	0,80	22	160	*56,05*
	1,00		160	*59,40*
	1,20		128	*59,40*
	1,60		128	*60,46*
	2,00		128	*63,93*
	2,50		100	*74,93*
	3,00		100	*85,29*
	4,00		100	*103,81*
	5,00		80	*124,58*
	6,00		80	*140,58*
160	1,20	32	200	*76,52*
	1,60		160	*87,51*
	2,00		128	*92,52*
	2,50		128	*109,46*
	3,00		128	*136,17*
	4,00		100	*175,75*
	5,00		100	*219,09*
	6,00		100	*255,56*
200	1,60	32	160	*130,87*
	2,00		160	*140,86*
	2,50		160	*165,11*
	3,00		128	*203,73*
	4,00		128	*274,38*
	5,00		128	*340,08*
	6,00		100	*394,43*
250	2,00	32	200	*183,26*
	2,50		160	*217,22*
	3,00		160	*269,38*
	4,00		160	*338,19*
	5,00		128	*423,96*
	6,00		128	*474,83*
315	2,50	40	200	*344,61*
	3,00		200	*401,02*
	4,00		160	*503,42*
	5,00		160	*624,21*
	6,00		160	*722,03*

P Aceros / Aciers / Steels / Stähle
M Aceros Inox / Aciers Inox / Stainless Steels / Edelstahl
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S Titanio y Superaleaciones / Titanium et Supealliages / Titanium and Superalloys / Titan und Superlegierungen
H Materiales Duros / Materiels Durs / Hard materials / Hartmaterialien

7802 HSS DIN 1838 N

ISO	Form.	Tol. Ø (j15) d (H7)	Tol. l (j11) D1 (j18)
2296	B		

P				M		K			N				S		H		
<800	<1.000	<1.200	<1.400	<950	<1.200	<500	<800	<1.400	Al	Cu	Mg/Zn	Plastic	Ni	Ti	50 HRC	55 HRC	60 HRC
●	●	○		○	○	●	○		●	●	○	●	○	○			
15-50	10-20	5-10		10-20	5-10	15-30	10-20		120-2000	10-400	40-120	500-1000	20-30	10-20			

Vc (m/min). ● Optima / Optimun ○ Alternativo / Alternative

D mm	e mm	d mm	z	€
50	0,50	13	48	*16,82*
	0,60		48	*16,82*
	0,80		40	*23,30*
	1,00		40	*23,30*
	1,20		40	*23,30*
	1,60		32	*23,30*
	2,00		32	*23,30*
	2,50		32	*25,94*
	3,00		24	*28,76*
	4,00		24	*34,41*
	5,00		24	*39,11*
63	0,50	16	64	*20,75*
	0,60		48	*20,75*
	0,80		48	*23,35*
	1,00		48	*25,29*
	1,20		40	*25,46*
	1,60		40	*26,70*
	2,00		40	*28,41*
	2,50		32	*33,17*
	3,00		32	*36,58*
	4,00		32	*44,11*
	5,00		24	*53,12*
	6,00		24	*59,22*
80	0,60	22	64	*27,00*
	0,80		64	*29,82*
	1,00		48	*29,35*
	1,20		48	*30,64*
	1,60		48	*33,46*
	2,00		40	*34,99*
	2,50		40	*40,99*
	3,00		40	*46,65*
	4,00		32	*57,00*
	5,00		32	*68,93*
	6,00		32	*78,99*
100	0,80	22	64	*38,18*
	1,00		64	*36,94*
	1,20		64	*36,94*
	1,60		48	*42,88*
	2,00		48	*45,70*
	2,50		48	*55,12*

D mm	e mm	d mm	z	€
	3,00		40	*62,05*
	4,00		40	*74,28*
	5,00		40	*90,94*
	6,00		32	*104,45*
125	0,80	22	80	*56,05*
	1,00		80	*59,40*
	1,20		64	*59,40*
	1,60		64	*60,46*
	2,00		64	*63,93*
	2,50		64	*74,93*
	3,00		48	*85,29*
	4,00		48	*103,81*
	5,00		40	*124,58*
	6,00		40	*140,58*
160	1,20	32	80	*76,52*
	1,60		80	*87,51*
	2,00		64	*92,52*
	2,50		64	*109,46*
	3,00		64	*136,17*
	4,00		48	*175,75*
	5,00		48	*219,09*
	6,00		48	*255,56*
200	1,60	32	80	*130,87*
	2,00		80	*140,86*
	2,50		80	*165,11*
	3,00		64	*203,73*
	4,00		64	*274,38*
	5,00		64	*340,08*
	6,00		48	*394,43*
250	2,00	32	100	*183,26*
	2,50		80	*217,22*
	3,00		80	*269,38*
	4,00		80	*338,19*
	5,00		80	*423,96*
	6,00		64	*474,83*
315	2,50	40	100	*344,61*
	3,00		100	*401,02*
	4,00		80	*503,42*
	5,00		80	*624,21*
	6,00		80	*722,03*

P Aceros / Aciers / Steels / Stähle
M Aceros Inox / Aciers Inox / Stainless Steels / Edelstahl
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S Titanio y Superaleaciones / Titanium et Supealliages / Titanium and Superalloys / Titan und Superlegierungen
H Materiales Duros / Materiels Durs / Hard materials / Hartmaterialien

7401 HSS DC

M2 | 0° | DC

L mm	A mm	e mm	Pulgadas Pouces Inches	Ø Taladro Perceuse Drill	tpi 4	6	8	10	14	€
300	25	1,50	12	8,5				■	■	*19,07*
350	25	1,25	14	8,5				■		*17,45*
350	25	1,50	14	8,5					■	*21,41*
350	30	1,50	14	8,5				■	■	*24,22*
350	30	2,00	14	8,5		■		■		*32,20*
400	25	1,50	16	8,5				■	■	*24,85*
400	30	1,50	16	8,5		■	■	■	■	*29,95*
400	30	2,00	16	8,5		■	■	■	■	*34,74*
450	30	2,00	18	10,5	■	■	■	■		*34,74*
450	35	2,00	18	10,5		■	■	■		*40,00*
450	40	2,00	18	10,5	■	■		■		*45,33*
500	40	2,00	20	10,5	■	■	■	■		*58,63*
600	50	2,50	24	13		■				*88,89*

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