



**FRACTIONAL**  
INCHES · PULGADAS · POUÇES

izartool.com • 2024



**Amorebieta 01.07.2024**

Dear customers, business partners, and friends,

We are a European manufacturing company operating in a market where the metric system predominates. However, we have always maintained a global vision, and products in inches have been part of our offer since our origin over 100 years ago.

As a result of this commitment and extensive internal effort, we present this new catalogue with the widest range of fractional references in our history.

In this edition, we include over 3,000 items, among which we can highlight several new products, primarily oriented towards the world of precision machining:

A significant increase in our 5XD offer of solid carbide drill bits, both with internal cooling (1781) and high-performance for CNC (1780); new carbide-tipped drill bits, whether in standard spiral (ref. 0910) or straight flute (0911), as well as cobalt drill bits with a reduced shank (1727).

An expanded range of threading tools in inches, with new ISO taps in UNC (3103) and UNF (3123) formats, as well as DIN-type BSP (3506) and BSPT (3519) dies.

Carbide end mills for high-performance finishing work (7403), with the inclusion of the innovative IRIS coating for end mills, mainly focused on machining non-ferrous materials such as aluminium (7437, 7426 & 7427).

We have made a significant effort to develop new capabilities and expand our technical offering to provide you with the great evolution of our cutting solutions, tailored to the most specific applications of the most demanding end users.

The entire IZAR team is proud of the work done and confident in continuing to meet the needs of our customers in a sustainable manner and committed to the environment, and to excellence in quality and service.

Sincerely,

Estimados clientes, colaboradores y amigos,

Somos una empresa de fabricación europea y trabajamos en un mercado donde el sistema métrico es predominante. Aun así, siempre hemos tenido una visión global y el producto en pulgadas ha formado parte de nuestra oferta desde nuestro origen, hace ya más de 100 años.

Fruto de esta vocación y de un arduo trabajo interno, presentamos este nuevo catálogo con la más amplia gama de referencias fraccionales de nuestra historia.

En esta edición incluimos más de 3.000 artículos, entre los cuales podemos destacar varios nuevos productos, orientados sobre todo al mundo del mecanizado de precisión:

Gran incremento de nuestra oferta 5XD en brocas fabricadas en metal duro integral, tanto con refrigeración interior (1781) como de gran rendimiento en CNC (1780); nuevas brocas con punta de metal duro, ya sea en espiral estándar (ref. 0910) o de canal recto (0911), así como brocas fabricadas en cobalto con mango reducido (1727).

Ampliación de la gama de roscado en pulgadas, con nuevos machos ISO en formato UNC (3103) y UNF (3123), además de cojinetes DIN tipo BSP (3506) y BSPT (3519).

Fresas fabricadas en metal duro para trabajos de acabado de alto rendimiento (7403) con la inclusión del novedoso recubrimiento IRIS para las fresas enfocadas al mecanizado de materiales no ferrosos como el aluminio (7437, 7426 y 7427).

Hemos realizado un gran esfuerzo en desarrollar nuevas capacidades y ampliar nuestra propuesta técnica para poner a su disposición la gran evolución de nuestras soluciones de corte, dirigidas a las aplicaciones más específicas de los usuarios finales más exigentes, también en el área de mecanizado en pulgadas.

Todo el equipo humano de IZAR nos sentimos orgullosos del trabajo realizado y confiamos en seguir dando respuesta a las necesidades de nuestros clientes, repartidos por todo el mundo, de una manera sostenible y comprometida con el medio ambiente y con la excelencia en la calidad y en el servicio.

Atentamente,

Chers clients, collaborateurs et amis,

Nous sommes une entreprise de fabrication européenne opérant sur un marché où le système métrique prédomine. Cependant, nous avons toujours eu une vision globale, et les produits en pouces ont fait partie de notre offre depuis nos débuts, il y a plus de 100 ans.

Fruit de cette vocation et d'un travail interne acharné, nous vous présentons ce nouveau catalogue avec la gamme de références fractionnelles la plus large de notre histoire.

Dans cette édition, nous incluons plus de 3 000 articles, parmi lesquels nous pouvons souligner plusieurs nouveaux produits, principalement orientés vers le monde de l'usinage de précision :

Un grand accroissement de notre offre 5XD en forets fabriqués en carbure monobloc, tant avec refroidissement interne (1781) qu'à haut rendement en CNC (1780) ; de nouveaux forets à pointe en carbure, qu'ils soient en spirale standard (réf. 0910) ou à goujures droites (0911), ainsi que des forets fabriqués en cobalt avec queue réduite (1727).

Une extension de la gamme de taraudage en pouces, avec de nouveaux tarauds ISO au format UNC (3103) et UNF (3123), ainsi que des filières DIN de type BSP (3506) et BSPT (3519).

Des fraises en carbure pour les travaux de finition à haut rendement (7403) avec l'inclusion du nouveau revêtement IRIS pour les fraises destinées à l'usinage des matériaux non ferreux tels que l'aluminium (7437, 7426 et 7427).

Nous avons déployé d'importants efforts pour développer de nouvelles capacités et élargir notre offre technique afin de mettre à votre disposition l'évolution majeure de nos solutions de coupe, adaptées aux applications les plus spécifiques des utilisateurs finaux les plus exigeants.

Toute l'équipe d'IZAR est fière du travail accompli, et nous sommes convaincus de continuer à répondre aux besoins de nos clients de manière durable et engagée envers l'environnement, tout en maintenant l'excellence en termes de qualité et de service.

Cordialement,

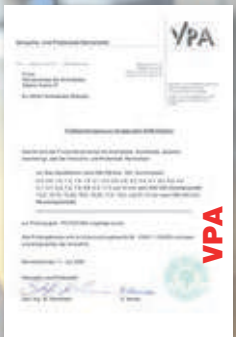


**Elena Serrano**

General Manager

IZAR Cutting Tools SAL

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Total quality makes the difference  
 La calidad total nos distingue  
 La qualité totale nous différencie  
**ISO 90101:2015 • ISO 14001:2015 • VPA**



International presence in more than 90 countries  
Presencia internacional en más de 90 países  
Présence internationale dans plus de 90 pays



Material table - Tabla materiales - Tableau de matériaux

Group Grupo Groupe	Subgroup Subgrupo S. Groupe	Materials Materiales Matériaux	Hardness Dureza Dureté (HRC)	Hardness Dureza Dureté (HB)	Tensile Tracción Traction (N/mm <sup>2</sup> )
<b>P</b>	<b>P.1</b>	Structural Steels - Case Hardening Steels Aceros Construcción - Aceros Cementación Aciers de construction - Aciers supérieurs	<24,5	<250	<850
		Unalloyed Carbon Steels - Heat-Treatable Steels Aceros al Carbono No Aleados - Aceros Bonificados Aciers au carbone sans alliage - Aciers supérieurs			
	<b>P.2</b>	Alloyed Steels Aceros Aleados Aciers alliés	<31,6	<300	<1000
	<b>P.3</b>	Heat-Treatable Alloyed Steels Aceros Aleados Tratados - Aceros Bonificados Aciers alliés supérieurs	31,6-42,8	300-400	1000-1300
	<b>P.4</b>	Wear-Resistant Materials Materiales resistentes al desgaste Matériaux résistant a l'usure	42,8-50,8	400-500	1300-1800
	<b>P.5</b>	Ferritic-Martensitic Stainless INOX Ferríticos-Martensíticos INOX ferritiques-martensitiques	<34	<320	<1100
<b>M</b>		Austenitic Stainless INOX Austeníticos INOX austénitiques	<24,5	<250	<850
<b>K</b>	<b>K.1</b>	Grey Cast Iron Fundición Gris Fonte grise		<200	<700
	<b>K.2</b>	Nodular Cast Iron Fundición Nodular Fonte nodulaire	<31,6	>200<300	>700<1000
<b>S</b>		Heat-Resistant Alloys (Titanium, Inconel...) Aleaciones Termorresistentes (Titanio, Inconel...) Alliages theromorésistants (Titane, Inconel...)			
<b>N</b>	<b>N.1</b>	Copper - Bronze - Brass (Short Chip) Cobre - Bronce - Latón Viruta Corta Cuivre - Bronze - Laiton (Copeaux courts)		<200	<700
	<b>N.2</b>	Copper - Bronze - Brass (Long Chip) Cobre - Bronce - Latón Viruta Larga Cuivre - Bronze - Laiton (Copeaux longs)		<200	<700
	<b>N.3</b>	Unalloyed Al - Mg Al - Mg No Aleado Al - Mg Sans alliage		<100	<350
	<b>N.4</b>	Al Alloys Si < 10% Aleaciones Al Si < 10% Alliages Al Si < 10%		<180	<600
	<b>N.5</b>	Al Alloys Si > 10% Aleaciones Al Si > 10% Alliages Al Si > 10%		<180	<600
	<b>N.6</b>	Thermoplastics Termoplásticos Thermoplastiques			
	<b>N.7</b>	Hard Plastics Duroplásticos Plastiques durs			
<b>F</b>		Fiber Composites (CFRP, GFRP, Honeycomb...) Composites de Fibras (Fibra de Carbono, Fibra de Vidrio...) Composites en fibre (CFRP, GFRP, Structure en nid d'abeilles...)			
<b>H</b>		Heat-Treated Alloys Aceros Templados, Aceros Endurecidos Aciers trempés, Aciers alliés supérieurs	45<70		



	Spain España - Espagne	Germany Alemania - Allemagne	France Francia	UK Reino Unido Royaume-Uni	Sweden Suecia Suède	Italy Italia - Italie	USA - EE.UU. États-Unis	
	UNE	W.-nr.	DIN	AFNOR	B.S.	SS	UNI	AISI
<b>GROUP GRUPO GROUPE P STEELS - ACEROS - ACIERS</b>								
P.1	<b>STRUCTURAL STEELS / ACEROS DE CONSTRUCCIÓN / ACIERS DE CONSTRUCTION (&lt;850 N/mm<sup>2</sup> / &lt;250 HB)</b>							
	AE235B,FE360 B	1,0036	FE360 (ST 37-2)	E -42-2	FE 360 B	1311	FE 360 B FU	A 570 GR.33,36
	AE235B,FE360B	1,0037	FE 360 B(RST 37-2)	E 24-2	FE 360 B		FE 360 B,C,D	A 283 CR.C
	AE275B,FE430BFN	1,0044	FE 430 B (ST 44-2)	E 28-2	FE 430 B FN		FE 430 B	A 570 GR.40
	A490-2,FE490-2FN	1,0050	FE 490-2 (ST 50-2)	A 50-2	FE 490-2 FN		FE 490	A 570 GR.50
	A590-2,FE590-2FN	1,0060	FE 590-2 (ST 60-2)	A 60-2	FE 590-2 FN		FE 60-2	A 572 GR.65
	A690-2,FE690-2FN	1,0070	FE 690-2 (ST 70-2)	A 70-2	FE 690-2 FN		FE 70-2,FE 690	
	AE 235 D,FE360D1FF	1,0116	FE 360D1 (ST 37-3)	A 24-3	FE 360 D1 FF	1312	FE 360 C,D	A 284 GR.D
	<b>CASE HARDENING STEELS / ACEROS DE CEMENTACIÓN / ACIERS DE CIMENTÉRIE</b>							
	F.111	1,0401	C 15	AF 37 C 12	O80 A 15	1350	C 15	M 1015
F.1510-C10K	1,1121	CK 10	XC 10	O40 A 10	1265	C 10	1010	
F.1110-C15K	1,1141	C15	C18RR	O80M15	1390	C15	GR.1016	
	1,7015	15 CR 3	12C8	523M15			5015	
F.1516-16MNCR5	1,7131	16MNCR5	16MC5	527M17		16MNCR5	NO.5115	
F.150 D	1,7147	20MNCR5	20MC5			20MNCR5	5120	
<b>FREE-CUTTING STEELS / ACEROS DE FÁCIL MECANIZACIÓN / ACIERS D'USINAGE MECANIQUE FACILE</b>								
F.2111-11SMN28	1,0712	9SMN28	S 250	230M07		CF 9 SMN 28	1213	
F.2112-11SMN PB28	1,0718	9 SMN PB 28	S 250 PB		1914	CF 9SMN PB28	12 L 13	
F.2121-10S20	1,0721	10S20	10F1	210M15		CF10S20	GR.1108	
F.210-G	1,0726	35S20	35 MF 6	212M36	1957	CF 35 SMN 10	1140	
	1,0727	45 S 20	45 MF 4		1973		1146	
F.2113-12SMN35	1,0736	9 SMN 36	S 300			CF 9 SMN 36	1215	
F.210-F	1,0723	15 S 20		210 A 15	1922			
<b>CAST STEELS / ACEROS DE CONSTRUCCIÓN FUNDIDOS / ACIERS DE CONSTRUCTION FONTE</b>								
	1,0416	GS-83,3	A 42C-M	AM 1		FEG38VR	GR. N1	
	1,0551	GS-52	E26-52-M	161GR400A		GC20	GR.N 2	
	1,0553	GS-60	30M6M	A 3			GR.80-40	
	1,0554	GS-62	E26-52-M	AW3			GR.105-85	
<b>UNALLOYED CARBON STEELS / ACEROS AL CARBONO NO ALEADOS / ACIERS AU CARBONE SANS ALLIAGE</b>								
<b>HEAT-TREATABLE STEELS / ACEROS BONIFICADOS / ACIERS SUPÉRIEURS</b>								
F. 112	1,0402	C 22	1 C 22	070 M 20	1450	C 25	M 1023	
F. 113	1,5010	C 35	C 35	40 HS		C 35	GR.1035	
F.114	1,0503	C 45	C 45	50 HS	1650	C 45	GR.1043	
F.115	1,0535	C 55	C 54	50	1655	C 55	GR.1055	
	1,0601	CK 60	C 60	60 HS,CS		C 60	1060	
F.1120-C25K	1,1151	CK 22	2 C 22	055 M 15		C 20, C 25	1020	
	1,1157	40 MN 4	35 M 5	150 M 36			1035	
F.1130-C35K	1,1181	CK 35	2 C 35	080 A 35	1572	C 35	1038	
F.1140-C45K	1,1191	CK 45	2 C 45	080 M 46	1660	C45	1045	
F.1150-C55K	1,1203	CK 55	2 C 55	060 A 57		C 55	1055	
	1,1221	CK 60	2 C 60	060 A 62	1770	C 60	1060	
<b>ALLOYED STEELS - ACEROS ALEADOS - ACIERS ALLIÉS (&lt;1000 N/mm<sup>2</sup> / &lt;300 HB)</b>								
<b>ALLOYED TOOL STEELS / ACEROS ALEADOS PARA HERRAMIENTAS / ACIERS ALLIÉS POUR OUTILS</b>								
F.5230-100 CR6	1,2067	100 CR 6	Y 100 C 6	BL 3			L 1, L 3	
F.5212-X210CR12	1,2080	X210 CR 12	Z 200 C 12	B D 3	2710	X 205CR12 KU	D 3	
F.5227-X100CRMO V5	1,2363	X 100 CRMO V5	Z 100	CDV 5	2260	X100CRMOV51KU	A 2	
	1,2379	X 155CRVMO 12	Z 160CDV12	BD2	2310	X155CRVMO121KU	D 2	
F.5220-95MNCRW5	1,2510	100 MNCRW 4	90 MWCV 5	BO 1	2140	95MNCRW5KU	O 1	
	1,2550	60 WCRV 7	55 W C20	BS 1		55 WCR V8 KU	S 1	
	1,2842	90MN CRV8	90 MNV8	B 02		90MNVCR8KU	O 2	
<b>HIGH SPEED STEELS / ACEROS RÁPIDOS / ACIERS RAPIDES</b>								
F.5563.12-1-5-5	1,3202	HS 12-1-4-5	HS 12-1-5-5	BT 15		HS12-1-5-5	T 15	
F.5553.10-4-3-10	1,3207	HS 10-4-3-10	Z130WKCDV	BT 42		HS 10-4-3-10	T 42	
F.5613-6-5-2-5	1,3243	HS 6-5-2-5	Z85WDCV06	BM 35	2723	HS 6-5-2-5	M 35	
F.5617.-2-10-1-8	1,3247	S 2 10 1 8	Z110DKCWV	BM 42		HS 5-5-2	M 42	
F.5603.-6-5-2	1,3343	HS 6-5-2	Z85WDCV06	BM 2	2715	HS 6-5-2	M 2	
<b>ALLOYED CAST IRON / FUNDICIÓN ALEADA / FONTE ALLIÉE</b>								
F.8372-AM26CRMO4	1,7218	GS-25 CRMO 4	25 CD 4	70 8A 25	2225	25 CRMO4	4130	
F.8331-AM34CRMO 4	1,7220	34 CRM 04	25 CD 4	708 A25	2234	30 CRMO4	4130	
<b>ALLOYED HEAT-TREATABLE STEELS / ACEROS BONIFICADOS / ACIERS SUPÉRIEURS</b>								
F. 114	1,0503	C 45	C 45	50 HS	1650	C 45	GR.1043	
F.8331-AM34CRMO 4	1,7220	34 CRMO 4	25 CD4	708 A25		30 CRMO 4	4130	
F.8332-AM42CRMO 4	1,7225	41 CRMO 4	42 CD4	708M 40	2244	38CRMO 4KB	GR.4140	
	1,7228	50 CRMO 4	50 CR MO 4	708 A 47			4150	
<b>NITRIDING STEELS / ACEROS NITRURACIÓN / ACIERS AVEC NITRATE</b>								
	1,7779	20 CRMOV 1 3 5						
	1,8504	34 CR AL 6						
F,1741-34CRAIMO 5	1,8507	34 CRAIMO 5	30 CAD 6,12			34 CR AI MO 7	A 355 CI.D	
F.1740-41 CRAIMO 7	1,8509	41 CRAIMO 7	40 CAD 6,12	905 M 39		41 CR AI MO 7	A 355 CI.A	
F.1712-31 CRMO 12	1,8515	31 CRMO 12	30 CD 12	722 M 24	2240	30 CR MO 12		



Material table - Tabla materiales - Tableau de matériaux

	Spain España - Espagne	Germany Alemania - Allemagne		France Francia	UK Reino Unido Royaume-Uni	Sweden Suecia Suède	Italy Italia - Italie	USA - EE.UU. États-Unis
	UNE	W.-nr.	DIN	AFNOR	B.S.	SS	UNI	AISI
<b>HEAT-TREATABLE ALLOYED STEEL - ACEROS ALEADOS BONIFICADOS - ACIERS ALLIÉS SUPÉRIEURS (1000-1300 N/mm<sup>2</sup> / 300-400 HB)</b>								
<b>P.3</b>	<b>ALLOYED TOOL STEELS / ACEROS ALEADOS HERRAMIENTAS / ACIERS ALLIÉS OUTILS</b>							
		1,2311	40 CRMNMO 7					
		1,2312	40 CRNMOS 8 6					
	F.5213-X210CRW 12	1,2436	X 210 CRW 12	Z 200 CW 12		2312	X 215 CRW 12 1 KU	
		1,2713	55 NICRMOV 6	55 NCDV	BH 224/5			L 6
		1,2714	56 NICRMOV 7	55 NCDV 7	BH 224/5		56 NICRMOV7KU	L 6
	<b>TOOL STEELS WARM WORKING / ACEROS ALEADOS HTAS. TRABAJO CALIENTE / ACIERS ALLIÉS OUTILS TRAVAIL EN CHAUD</b>							
	F.5317-X37CRMOV 5	1,2343	X38CRMOV5.1	Z 38CDV 5	BH 11		X37CRMOV51KU	H 11
	F.5318-X40CRMOV 5	1,2344	X 40CRMOV 51	X 40CRMOV 5	BH 13	2242	X 40CRMOV511KU	H 13
	F.5318-X40CRMOV 5							
	F.5313-30CRMOV 12	1,2365	X 32CRMOV 3 3	32CDV12-28	BH 10		30CRMOV1227KU	H 10
	F.5323-X30WCRV 9 3	1,2581	X30WCRV 9,3	Z30WCV 9	BH 21		X 30WCRV 93KU	H 21
		1,2550	60 WCRV 7	55 WC 20	BS 1		55 WCRV 8 KU	S 1
		1,2567	X 30 WCRV 5 3	Z 32 WCV 5			X 30 WCRV 53 KU	
	<b>HEAT-TREATABLE STEELS / ACEROS BONIFICADOS / ACIERS SUPÉRIEURS</b>							
	1,5864	35 NICR 18						
	1,6580	30 NICRMO 8						
F-124 A	1,7361	32 CRMO 12	30 CD 12	722 M 24		32 CRMO 12		
	1,7707	30 CRMOV 9				31 CRMOV 10		
<b>NITRIDING STEELS / ACEROS NITRURACION / ACIERS AVEC NITRATE</b>								
F.1712-31 CRMO 12	1,8515	31 CRMO 12	30 CD 12	722 M 24	2240	30 CRMO 12		
	1,8523	39 CRMOV 13 9		897 M 39				
<b>P.4</b>	<b>Wear-Resistant Materials - Materiales resistentes al desgaste - Matériaux résistant a l'usure</b>							
	For instance / Por ejemplo / Par exemple <b>HARDOX® 450 wear plate - XAR 450 - RAEX® - FORA - CREUSABRO</b>							
<b>P.5</b>	<b>MARTENSITIC STAINLESS STEEL / ACEROS INOX MARTENSÍTICOS / ACIERS INOX MARTENSITIQUES (&lt;1100 N/mm<sup>2</sup> / &lt;320 HB)</b>							
	F.3402-X20CR13	1,4021	X 20 CR 13	X 20 CR 13	420 S 37	2314	X 20 CR 13	420
	F.3427-X19CRNI 17-2	1,4057	X 20 CRNI 17 2	Z 15 CN16,02	431 S29	2321	X 16 CRNI16	431
	F.3220-X45CRSI09-03	1,4718	X 45 CRSI 9,3	Z 45 CS9	401 S45		X 45CR SI 8	HNV 3
	<b>FERRITIC STAINLESS STEELS / ACEROS INOX FERRÍTICOS / ACIERS INOX FERRITIQUES (&lt;1100 N/mm<sup>2</sup> / &lt;320 HB)</b>							
	F.3111-X6CRAI 13	1,4002	X 6 CRAI 13	Z 8CA 12	405 S17		X 6 CRAI 13	405
	F.3401-X 10 CR 13	1,4006	X 10 CR13	Z 12 C 13	410 S2	2302	X 12 CR 13	410
	F.3113-X6 CR17	1,4016	X 6 CR 17	Z 8 C 17	430 S18	2320	X 8 CR 17	430
	F.3115-X5CRTI 17	1,4510	X 6 CRTI 17	Z 8C T 17			X 6 CRTI 17	430 TI
		1,4512	X 6 CRTI 12	Z 6CT 12	409 S19		X 6 CRTI 12	409

GROUP GRUPO GROUPE **M** STAINLESS STEELS - ACEROS INOXIDABLES - ACIERS INOX

<b>AUSTENITIC STAINLESS STEELS / ACEROS INOX AUSTENÍTICOS / ACIERS INOX AUSTÉNITIQUES (&lt; 850 N/mm<sup>2</sup> / &lt;250 HB)</b>								
F.3507-X 10CRNI 18-8	1,4300	X 12 CRNI 18 8						302
F.3504-X5CRNI 18-10	1,4301	X5 CRNI 18-10	X5 CRNI 18-10	304 S31	2333	X5 CRNI 18-10		304
F.3541-X2CRNIN 18-10	1,4311	X 2 CRNIN 18-10	Z 3CN 18.07AZ	304 S 61	2371	X 2 CRNIN 18 11		304 LN
F.3542-X2CRNIMON17-12-2	1,4406	X 2 CRNIMON 17-12-2	Z 3 CND17.11.02	316 S 61	2375	X 2 CRNIMON 17 12		316 LN
F.3533-X2CRNIMO17-13-2	1,4435	X2CRNIMO 18-14-3	Z3CND 17-12-03	316 S14	2353	X2CRNIMO 1713		316 L
F.3523-X6CRNITI 18-10	1,4541	X 6CRNITI 18-10	Z 6CNT 18-10	321 S31	2337	X 6CRNITI 18 11		321
F.3535-X6CRNITI 17-12-2	1,4571	X 6 CRNIMOTI 17 12 2	Z 6CNDT 17,12	320 S18	2350	X 6 CRNIMOTI 17 12		316 TI
F.3535-X6CRNIMOTI17-12	1,4573	X 10 CRNIMOTI 18 12		320 S33		X 6 CRNIMOTI 17 13		316 TI
F.3312-X15CRNISI20-12	1,4828	X 15CRNISI 20 12	Z 17CNS 20 12	309 S24		X 16CRNI 23 14		309

GROUP GRUPO GROUPE **K** CAST IRON - FUNDICIÓN - FONTE

<b>GREY CAST IRON / FUNDICIÓN GRIS / FONTE GRISE (&lt;700N/mm<sup>2</sup>/<b>&lt;200 HB</b>)</b>								
<b>K.1</b>		0.7033	GGG 35-3	FGS 370-71	GR.350/22	0717-15	GS 370-17	
		0.7040	GGG 40	FGS 400-12	GR.420-12	0717-02	GS 400-12	GR.60-40-18
		0.7050	GGG 50	FGS 500-7	500/7	0727	GS 500-7	65-45-12
		0.7060	GGG 60	FGS 600-3	GR.600/3	0732-03	GS 600-3	GR.80-55-06
		0.8135	GTS 35-10	MN 35-10	B 35-12	0815	B 35-10	GR.32510
		0.8145	GTS 45-06	MN 450-6	P 45-06	0852-00	P 45-06	GR.45006
	0.8155	GTS 55-04	MN 550-4	P 55-04	0854-00	P 55-04	6004	
<b>K.2</b>	<b>NODULAR CAST IRON / FUNDICIÓN NODULAR / FONTE NODULAIRE (700-1000N/mm<sup>2</sup> / 200-300 HB)</b>							
		0.7070	GGG 70	FGS 700-2	GR.700/2	0737-01	GS 700-2	100-70-03
		0.8080	GGG 80	FGS 800-2	GR.800/2		GS 800-2	GR.120-90-02

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<b>UNE</b>	<b>W.-nr.</b>	<b>DIN</b>	<b>AFNOR</b>	<b>B.S.</b>	<b>SS</b>	<b>UNI</b>	<b>AISI</b>

GROUP GRUPO GROUPE <b>S</b>							
HEAT-RESISTANT ALLOYS - ALEACIONES TERMORRESISTENTES - ALLIAGES THERMORÉSISTANTS							
<b>UNALLOYED TITANIUM / TITANIO PURO / TITANE PUR (&lt;700 N/mm<sup>2</sup> / &lt;200 HB)</b>							
	3,7024	TI 99,5 GRADO 1	T 35				
	3,7034	TI 99,7 GRADO 2	T 40				
	3,7055	TI 99,4 GRADO 3	T 50				
	3,7065	TI 4	T 60				
<b>ALLOYED TITANIUM / TITANIO ALEADO / ALLIAGES TITANE (&lt; 900 N/mm<sup>2</sup> / &lt;270 HB)</b>							
	3,7114	TIAL 5 SN 2					
	3,7124	TICU 2,5	TU 2				
	3,7164	TIAL 6 V 4	T-AGV	2 TA 10			
<b>NICKEL ALLOYS / ALEACIONES NICKEL / ALLIAGES NICKEL: Inconel, Nimonic, Hastelloy... (&lt;1300 N/mm<sup>2</sup> / &lt;380 HB)</b>							

GROUP GRUPO GROUPE <b>N</b>							
COPPER - BRASS - BRONZE - COBRE - LATÓN - BRONCE - CUIVRE - LAITON - BRONZE (< 700 N/mm <sup>2</sup> / <200-300 HB)							
<b>BRONZE / BRONCES / BRONZES</b>							
	2,1020	CU SN 6					
C 7150	2,1030	CU SN 8					
<b>SHORT CHIPPING COPPER / ALEACIONES COBRE VIRUTA CORTA / ALLIAGE CUIVRE COPEAUX COURTS</b>							
	2,0360	CU ZN 40	CU ZN 40	CZ 109		P-CU ZN 40	C 28000
	2,0402	CU ZN 40 PB2	CU ZN 39 PB2	CZ 122			C 38000
<b>BRASS / LATONES / LAITONS (&lt; 700 N/mm<sup>2</sup> / &lt; 200-300 HB)</b>							
	2,0250	CU ZN 20	CU ZN 20	CZ 103			C 24000
	2,0265	CU ZN 30	CU ZN 30	CZ 106		P-CU ZN 30	C 26000
	2,0321	CU ZN 37	CU ZN 37	CZ 108			C 27400
<b>LONG CHIPS ALLOYED Cu / ALEACIÓN Cu VIRUTA LARGA / ALLIAGE Cu COPEAUX LONGS (&lt; 700 N/mm<sup>2</sup> / &lt;200-300 HB)</b>							
	2,1245	CUBE 1,7	CU BE 1,7	CB101			C 17000
	2,1247	CUBE 2	CU BE 1,9				C 17200

GROUP GRUPO GROUPE <b>N</b>							
ALUMINIUM - MAGNESIUM - ALUMINIO - MAGNESIO							
<b>UNALLOYED ALUMINIUM - MAGNESIUM / Al - Mg SIN ALEAR / ALUMINIUM - MAGNESIUM SANS ALLIAGE (&lt;350 N/mm<sup>2</sup> / &lt;100 HB)</b>							
	3,0250	AI 99,5 H					
	3,0280	AI 99,8 H					
<b>ALUMINIUM ALLOYS / ALEACIONES ALUMINIO / ALLIAGES ALUMINIUM Si&lt;10% (&lt; 600 N/mm<sup>2</sup> / &lt;180 HB)</b>							
L-3811	3,0515	AIMN 1	3103	3103		P-ALMN 1,2 CU	A 93003
L-3120-38-312	3,1325	AICUMG 1	2017 A			P-AICU4MGMNSI	A 92017
L-3140-38-314	3,1355	AICUMG 2	2024	2024		P-AICU4-4MGMN	2024
L-3710-38.371	3,4365	AIZNMGCU-1,5	7075	7075		P-AIZNMGCU-1,5	A 9775
<b>CAST ALUMINIUM / FUNDICIÓN ALUMINIO / FONTE ALUMINIUM</b>							
	3,3292	GD-AIMG 9	A-G10SY 4	LM 10			A 05200
<b>ALUMINIUM ALLOYS / ALEACIONES ALUMINIO / ALLIAGES ALUMINIUM Si&gt;10% (&lt;600 N/mm<sup>2</sup> / &lt;180 HB)</b>							
L-2560-61	3,2381	G-AISI 10 MG	A-S10G			G-AISI9MG	A-0359.0
L-2530	3,2583	G-AISI 11	A-S12U	LM 20		G-AISI13CUMN	A-04130

GROUP GRUPO GROUPE <b>N</b>							
SYNTHETIC MATERIALS - MATERIALES SINTÉTICOS - MATERIELS SYNTHETIQUES							
<b>THERMOPLASTICS / TERMOPLÁSTICOS / THERMOPLASTIQUES</b>							
	POLIPROPILENO			PP			
	POLISTIROL		PS				
	POLIVILNICLORITO			PVC			
	POLICARBONATO		MACRALON	PC			
ULTRAMID	POLIAMIDA		PA				
	POLIMETILMETACRILATO		PLEXIGLAS	PMMA			
<b>HARD PLASTICS / DUROPLÁSTICOS / PLASTIQUES DURS</b>							
	BAQUELITA						
	PERTINAX						
	MOLTOPREN						
	RESOPAL	GRAFITO					

GROUP GRUPO GROUPE <b>F</b>							
FIBER COMPOSITES (CFRP, GFRP, HONEYCOMB...)							
COMPOSITES DE FIBRAS (FIBRA DE CARBONO, FIBRA DE VIDRIO, ESTRUCTURAS TIPO PANAL DE ABEJA...)							
COMPOSITES EN FIBRE (CFRP, GFRP, STRUCTURE EN NID D'ABEILLES...)							

GROUP GRUPO GROUPE <b>H</b>							
HEAT-TREATED ALLOYS - ACEROS TEMPLADOS, ACEROS ENDURECIDOS							
ACIERS TREMPÉS, ACIERS ALLIÉS SUPÉRIEURS							





# Drill Bits Brocas Forets

- Recommended use / Uso recomendado / Utilisation conseillée
- Alternative use / Uso alternativo / Option d'emploi




<850 N/mm <sup>2</sup>	< 1000 N/mm <sup>2</sup>	1000-1300 N/mm <sup>2</sup> Wear-resistant Anti-desgaste - Anti-usure Martensítico - Martensítico Martensitique	Austenitic stainless steel - Inox austenítico Aciers inox austénitiques	< 700 N/mm <sup>2</sup>	700-1000 N/mm <sup>2</sup> Heat-resistant alloys - Aleaciones termorresistentes Alliages thermorésistants	Short chip - Viruta corta Copeaux courts Long chip - Viruta larga Copeaux longs Unalloyed - No aleado Sans alliage	< 10% SI	> 10% SI	Thermoplastics - Termoplásticos Thermoplastiques Hard plastics - Duroplásticos Plastiques durs	Fiber composites Composites de fibres	45-70 HRC
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Ref.	Image	Pag.	DIN	Type Tipo	Material	Coating Recubr. Revêt.	P					M	K	S	N							F	H		
							P.1	P.2	P.3	P.4	P.5	K.1	K.2	N.1	N.2	N.3	N.4	N.5	N.6	N.7					
1781		18	IZAR Std.	3XD-5XD	Carbide	ALTIN	●	●	●	○	○	○	●	●	○	●	●	○	○	○					○
1780		20	IZAR Std.	3XD-5XD	Carbide	ALTIN	●	●	●	○	○	○	●	●	○	●	●	○	○	○					○
1785		24	IZAR Std.	8XD-20XD	Carbide	X-AlCr	●	●	●	○	○	○	●	●	○	●	●	○	○	○					○
9370		25	IZAR Std.		Carbide		●	●	●	○	○	○	●	●	○	●	●	○	○	○	●				
0910 <span style="color: blue; border: 1px solid blue; border-radius: 50%; padding: 2px;">New!</span>		26	ANSI Std.		TCT			●	●	○	○	○	●	●	○	●	●	○	○	○					○
0911 <span style="color: blue; border: 1px solid blue; border-radius: 50%; padding: 2px;">New!</span>		28	ANSI Std.		TCT			○	●	●	○	○	○	○	○	○	○	○	○	○					○
1729		33	NAS	907 J	Cobalt 5%	BORDEAUX	○	○	●	○	○	○	○	○	○	○	○	○	○	○					○
1700		34	NAS	907 J	Cobalt 5%			○	●	○	○	○			○	○	○	○	○	○					○
1721		35	ANSI Std.		Cobalt 5%		●						●	●		○	○	○	○	○					○
1720		37	ANSI Std.		Cobalt 5%								●	●		○	○	○	○	○					○
1070		38	ANSI Std.	N	HSS	TIN	●						●	●		○	○	○	○	○					○
1715		41	ANSI Std.	N	HSS	Zirkonio	●						●	●		○	○	○	○	○					○
1727 <span style="color: blue; border: 1px solid blue; border-radius: 50%; padding: 2px;">New!</span>		43	ANSI Std.	N	Cobalt 5%		●	○	●	○	○	○	●	●		○	○	○	○	○					○
1702		42	ANSI Std.	N	HSS		●						●	●		○	○	○	○	○					○
1717		44	ANSI Std.	N	HSS		●						●	●		○	○	○	○	○					○
1752		45	ANSI Std.	N	Cobalt 5%			●		●	○	○			○	○	○	○	○	○					○
1710		46	ANSI Std.	N	HSS		●	○					●	●		○	○	○	○	○					○
1370		48	ASME Std.	N	Cobalt 5%		●	●					○	○		○	○	○	○	○	●				○
1380		49	ASME Std.	N	HSS		●	●					○	○		○	○	○	○	○	●				○
7070		50	IZAR Std.		HSS-XT		●	●	○				●	●		○	○	○	○	○					○
7071		51	IZAR Std.		HSS-XT		●	●	○				●	●		○	○	○	○	○					○



# Taps Machos Tarauds

- Recommended use / Uso recomendado / Utilisation conseillée
- Alternative use / Uso alternativo / Option d'emploi






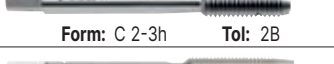

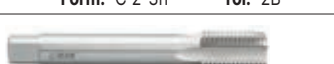
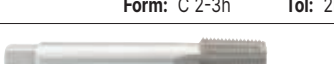
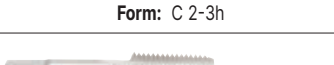
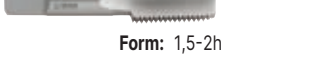



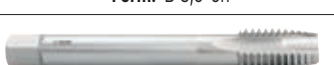
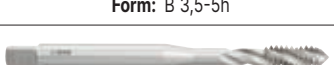
<850 N/mm <sup>2</sup>	<1000 N/mm <sup>2</sup>	1000-1300 N/mm <sup>2</sup> Wear-resistant Antidesgaste - Anti-usure Martensítico - Martensitic Martensitique			Austenitic stainless steel - Inox austenítico Aciers inox austénitiques	< 700 N/mm <sup>2</sup>	700-1000 N/mm <sup>2</sup>	Heat-resistant alloys - Aleaciones termorresistentes Alliages thermorésistants	Short chip - Viruta corta Ciseaux courts Long chip - Viruta larga Copeaux longs Unalloyed - No aleado Sans alliage	< 10% Si	> 10% Si	Thermoplastics - Termoplásticos Thermoplastiques Hard plastics - Duroplásticos Plastiques durs	Fiber composites Composites en fibre	45-70 HRC
														

Ref.	Pag.	Thread Rosca Filet	Use Uso Usage	DIN	Material	Coating Recubr. Revêt.	P					M		K	S	N							F	H		
							P.1	P.2	P.3	P.4	P.5	K.1	K.2	N.1	N.2	N.3	N.4	N.5	N.6	N.7						
3144	58	UNC	Machine Máquina	371	PMX	HARD	●				●	●	○	○		●	●	●	●	○						
3104	59	UNC	Machine Máquina	371	PMX	HARD	●				●	●	○	○		●	●	●	●	○						
3114	60	UNC	Machine Máquina	371	Cobalt 5%		●						●			●	●	●	●	○						
3214	61	UNC	Machine Máquina	376	Cobalt 5%		●						●			●	●	●	●	○						
3134	62	UNC	Machine Máquina	371	Cobalt 5%		●						●			●	●	●	●	○						
3234	63	UNC	Machine Máquina	376	Cobalt 5%		●						●			●	●	●	●	○						
3103 <span style="border: 1px solid blue; border-radius: 50%; padding: 2px;">New!</span>	64	M	Machine Máquina	ISO 529	HSS		●						●			○		●	●							
3154	65	UNC	Machine Máquina	371	Cobalt 5%		●						●			●	●	●	●	○						
3254	66	UNC	Machine Máquina	376	Cobalt 5%		●						●			●	●	●	●	○						
3034	67	UNC	Hand Mano Main	352	HSS		●						●	●		●	●	●	●	○						
3127	68	UNF	Machine Máquina	371	PMX	HARD		●		●	●		○	○		●	●	●	●	○						
3124	69	UNF	Machine Máquina	371	PMX	HARD		●		●	●		○	○		●	●	●	●	○						
3204	70	UNF	Machine Máquina	374	Cobalt 5%		●						●	●		●	●	●	○							



# Taps - Machos - Tarauds


























● Recommended use / Uso recomendado / Utilisation conseillée  
 ○ Alternative use / Uso alternativo / Option d'emploi

Ref.	Image	Pag.	Thread Rosca Filet	Use Uso Usage	DIN	Material	Coating Recubr. Revêt.	P					M		K		S		N							F	H
								P.1	P.2	P.3	P.4	P.5	K.1	K.2	S	N.1	N.2	N.3	N.4	N.5	N.6	N.7					
3224	 Form: C 2-3h Tol: 2B	71	UNF	Máquina Machine	374	Cobalt 5%		●							●	●			●	●	●	●	○				
3123 <span style="border: 1px solid blue; border-radius: 5px; padding: 2px;">New!</span>	 Form: B 3,5-5h / C 2-3h - Tol: 6H	72	UNF	Máquina Machine	ISO 529	HSS		●												●	●	●					
3244	 Form: C 2-3h Tol: 2B	73	UNF	Máquina Machine	374	Cobalt 5%		●							●	●			●	●	●	●	○				
3141	 FORMING TAP Form: C 2-3h Tol: 2BX	75	UNC-UNF	Máquina Machine	371-376	Cobalt 5%	TIALN + TIN																				
3024	 Form: C 2-3h Tol: 2B	76	UNF	Hand Mano	2181	HSS		●							●	●			●	●	●	●	○				
3025	 Form: C 2-3h Tol: 2B	77	UNEF	Hand Mano	2181	HSS		●							●	●			●	●	●	●	○				
3209	 Form: C 2-3h Tol: 2B	79	UN	Máquina Machine	374	Cobalt 5%		●							●	●			●	●	●	●	○				
3107	 Form: C 2-3h	80	NPT	Máquina Machine	374	Cobalt 5%		●							●	●			●	●	●	●	○				
3017	 Form: 1,5-2h	81	NPT	Hand Mano	2181	HSS		●							●	●			●	●	●	●	○				
3112	 Form: C 2-3h	82	BSW (Whitworth)	Máquina Machine	371	Cobalt 5%		●							●	●			●	●	●	●	○				
3212	 Form: C 2-3h	83	BSW (Whitworth)	Máquina Machine	376	Cobalt 5%		●							●	●			●	●	●	●	○				
3102	 Form: B 3,5-5h	84	BSW (Whitworth)	Máquina Machine	371	Cobalt 5%		●							●	●			●	●	●	●	○				
3202	 Form: B 3,5-5h	85	BSW (Whitworth)	Máquina Machine	376	Cobalt 5%		●							●	●			●	●	●	●	○				
3152	 Form: C 2-3h	86	BSW (Whitworth)	Máquina Machine	371	Cobalt 5%		●							●	●			●	●	●	●	○				
3252	 Form: C 2-3h	87	BSW (Whitworth)	Máquina Machine	376	Cobalt 5%		●							●	●			●	●	●	●	○				
3032	 Form: C 2-3h	88	BSW (Whitworth)	Hand Mano	352	HSS		●							●	●			●	●	●	●	○				



# Taps Machos Tarauds

● Recommended use / Uso recomendado / Utilisation conseillée  
○ Alternative use / Uso alternativo / Option d'emploi

Ref.	Image	Pag.	Thread Rosca Filet	Use Use Usage	DIN	Material	Coating Recubr. Revêt.	P					M	K	S	N							F	H			
								P.1	P.2	P.3	P.4	P.5		K.1	K.2		N.1	N.2	N.3	N.4	N.5	N.6	N.7				
3012	 Form: C 2-3h	89	BSW (Whitworth)	Hand Mano-Main 	352	HSS		●						●	●		●	●	●	●	○						
3126	 Form: B 3,5-5h	91	BSPP (GAS)	Machine Máquina 	5156	Cobalt 5%	TIN					●	●														
3136	 Form: C 2-3h	92	BSPP (GAS)	Machine Máquina 	5156	Cobalt 5%	TIN					●	●														
3106	 Form: B 3,5-5h	93	BSPP (GAS)	Machine Máquina 	5156	Cobalt 5%		●						●	●		●	●	●	●	○						
3116	 Form: C 2-3h	94	BSPP (GAS)	Machine Máquina 	5156	Cobalt 5%		●						●	●		●	●	●	●	○						
3156	 Form: C 2-3h	95	BSPP (GAS)	Machine Máquina 	5156	Cobalt 5%		●						●	●		●	●	●	●	○						
3026	 Form: C 2-3h	96	BSPP (GAS)	Hand Mano-Main 	5157	HSS		●						●	●		●	●	●	●	○						
3016	 Form: C 2-3h	97	BSPP (GAS)	Hand Mano-Main 	5157	HSS		●						●	●		●	●	●	●	○						
3019	 Form: C 2-3h	98	BSPT (RC)	Hand Mano-Main 	5157	HSS		●						●	●		●	●	●	●	○						
3534	 Form: 1,75h Tol: 2A	99	UNC	Hand Mano-Main	223	HSS		●	○					○			●	●	●			●					
3504	 Form: 1,75h Tol: 2A	99	UNF	Hand Mano-Main	223	HSS		●	○					○			●	●	●			●					
3505	 Form: 1,75h Tol: 2A	100	UNEF	Hand Mano-Main	22568	HSS		●	○					○			●	●	●			●					
3507	 Form: 1,75h	100	NPT	Hand Mano-Main	22568	HSS		●	○					○			●	●	●			●					
3502	 Form: 1,75h	101	BSW (Whitworth)	Hand Mano-Main	223	HSS		●	○					○			●	●	●			●					
3506 <b>New!</b>	 Form: 1,75h	102	BSPP (Gas)	Hand Mano-Main		HSS		●	○					○			●	●	●			●					
3519 <b>New!</b>	 Form: 1,75h	102	BSPT (RC)	Hand Mano-Main		HSS		●	○					○			●	●	●			●					













# 01.

FRACTIONAL - INCHES · PULGADAS · POUÇES

## Carbide Drilling Taladrado Metal Duro Perçage carbure

Solid Carbide Drill Bits  
Brocas Metal Duro Integral  
Forets carbure

18

Center Drills  
Brocas Centrar  
Forets à centrer

25



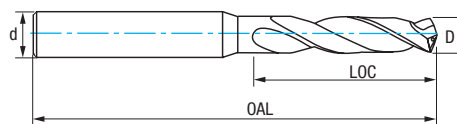
# Ref. 1781

FRACTIONAL-24

## Internal Cooling Solid Carbide Drill Bit Broca Integral Metal Duro Refrigeración Interior Foret carbure trous d'huile



3XD



5XD

Carbide/MD  
Carbure  
Micrograno

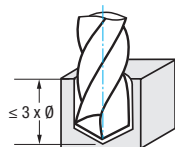
ALTIN

IZAR  
std.



HRC  
45-55

Tol.  
m7



Material		Vc (ft/min) *	Feed**-Avances**-Pas** f/rev. (inch/rev)					
Group	Sub.	ALTIN	Ø 1/8	Ø 1/4	Ø 5/16	Ø 1/2	Ø 9/16	Ø 5/8
P	P.1	100-120	0,007	0,008	0,011	0,014	0,016	0,018
	P.2	90-110	0,006	0,007	0,008	0,011	0,012	0,014
	P.3	75-95	0,003	0,004	0,004	0,006	0,007	0,009
	P.4	35-40	0,002	0,003	0,004	0,004	0,006	0,006
	P.5	50-65	0,003	0,005	0,006	0,008	0,009	0,010
M		30-40	0,002	0,002	0,002	0,004	0,005	0,006
K	K.1	125-150	0,007	0,009	0,012	0,016	0,018	0,022
	K.2	90-110	0,007	0,008	0,010	0,012	0,014	0,018
S		35-50	0,002	0,004	0,004	0,006	0,006	0,007

$$\text{r.p.m.} = \frac{Vc \times 1.000}{\pi \times \phi}$$

$$Vf = \text{r.p.m.} \times f \times K \quad Vf \text{ (Feed/Avance/Pas inch/min)}$$

K = Correction coefficient depending on drilling depth  
Coeficiente corrección según profundidad taladrado  
Coéficent correction suivant la profondeur du perçage

\*K for/para/pour Vc:      \*\*K for/para/pour Vf:

< 3 x Ø → K = 1

< 3 x Ø → K = 1

< 4 x Ø → K = 0,9

> 3 x Ø → K = 0,9

< 5 x Ø → K = 0,8





3XD	D	D (Decimal Inch)	D (mm)	LOC	LOC (mm)	OAL	OAL (mm)	d	d (mm)	N° Art. ALTIN	€/€
	1/8	0,1248	3,18	25/32	20	2 7/16	62	5/32	4	76740	
	9/64	0,1406	3,57	25/32	20	2 9/16	65	5/32	4	76741	
	5/32	0,1563	3,97	25/32	20	2 9/16	65	5/32	4	76742	
	11/64	0,1720	4,37	15/16	24	2 9/16	65	15/64	6	76743	
	3/16	0,1874	4,76	1 7/64	28	2 9/16	65	15/64	6	76744	
	13/64	0,2031	5,16	1 7/64	28	2 9/16	65	15/64	6	76745	
	7/32	0,2189	5,56	1 7/64	28	2 9/16	65	15/64	6	76746	
	15/64	0,2343	5,95	1 7/64	28	2 9/16	65	15/64	6	76747	
	1/4	0,2500	6,35	1 11/32	34	3 7/64	79	5/16	8	76748	
	17/64	0,2657	6,75	1 11/32	34	3 7/64	79	5/16	8	76749	
	9/32	0,2811	7,14	1 39/64	41	3 7/64	79	5/16	8	76750	
	19/64	0,2969	7,54	1 39/64	41	3 7/64	79	5/16	8	76751	
	5/16	0,3126	7,94	1 39/64	41	3 7/64	79	5/16	8	76752	
	21/64	0,3280	8,33	1 27/32	47	3 1/2	89	25/64	10	76753	
	11/32	0,3437	8,73	1 27/32	47	3 1/2	89	25/64	10	76754	
	23/64	0,3594	9,13	1 27/32	47	3 1/2	89	25/64	10	76755	
	3/8	0,3748	9,52	1 27/32	47	3 1/2	89	25/64	10	76756	
	25/64	0,3906	9,92	1 27/32	47	3 1/2	89	25/64	10	76757	
	13/32	0,4063	10,32	2 11/64	55	4 1/64	102	15/32	12	76758	
	27/64	0,4220	10,72	2 11/64	55	4 1/64	102	15/32	12	76759	
	7/16	0,4374	11,11	2 11/64	55	4 1/64	102	15/32	12	76760	
	29/64	0,4531	11,51	2 11/64	55	4 1/64	102	15/32	12	76761	
	15/32	0,4689	11,91	2 11/64	55	4 1/64	102	15/32	12	76762	
	31/64	0,4843	12,30	2 23/64	60	4 7/32	107	35/64	14	76763	
	1/2	0,5000	12,70	2 23/64	60	4 7/32	107	35/64	14	76764	
	33/64	0,5118	13,00	2 23/64	60	4 7/32	107	35/64	14	76765	
	17/32	0,5311	13,49	2 23/64	60	4 7/32	107	35/64	14	76766	
	9/16	0,5626	14,29	2 9/16	65	4 21/64	110	5/8	16	76767	
	37/64	0,5780	14,68	2 9/16	65	4 21/64	110	5/8	16	76768	

5XD	D	D (Decimal Inch)	D (mm)	LOC	LOC (mm)	OAL	OAL (mm)	d	d (mm)	N° Art. ALTIN	€/€
	1/8	0,1248	3,18	1 1/8	28	2 9/16	65	5/32	4	83028	
New!	9/64	0,1406	3,57	1 1/8	28	2 9/16	65	15/64	4	86691	
New!	5/32	0,1563	3,97	1 1/8	36	2 7/8	74	15/64	4	86687	
New!	11/64	0,1720	4,37	1 1/8	36	2 7/8	74	15/64	6	86665	
	3/16	0,1874	4,76	1 3/4	44	3 1/4	82	15/64	6	83030	
New!	13/64	0,2031	5,15	1 3/4	44	3 1/4	82	15/64	6	86667	
	7/32	0,2189	5,56	1 3/4	44	3 1/4	82	15/64	6	83031	
New!	15/64	0,2343	5,95	1 3/4	44	3 1/4	82	15/64	6	86669	
	1/4	0,2500	6,35	2 1/16	52	3 9/16	90	5/16	8	83032	
New!	17/64	0,2657	6,75	2 1/16	52	3 9/16	90	5/16	8	86674	
New!	9/32	0,2811	7,14	2 1/16	52	3 9/16	90	5/16	8	86690	
New!	19/64	0,2969	7,54	2 1/16	52	3 9/16	90	5/16	8	86675	
	5/16	0,3126	7,94	2 1/16	52	3 9/16	90	5/16	8	83033	
New!	21/64	0,3280	8,33	2 3/8	60	4 1/16	103	25/64	10	86676	
New!	11/32	0,3437	8,73	2 3/8	60	4 1/16	103	25/64	10	86664	
New!	23/64	0,3594	9,13	2 3/8	60	4 1/16	103	25/64	10	86677	
	3/8	0,3748	9,53	2 3/8	60	4 1/16	103	25/64	10	83034	
New!	25/64	0,3906	9,92	2 3/8	60	4 1/16	103	25/64	10	86678	
New!	13/32	0,4063	10,31	2 3/8	60	4 5/8	117	15/32	12	86666	
New!	27/64	0,4220	10,72	2 3/8	60	4 5/8	117	15/32	12	86679	
	7/16	0,4374	11,11	2 13/16	71	4 5/8	117	15/32	12	83035	
New!	29/64	0,4531	11,50	2 13/16	71	4 5/8	117	15/32	12	86680	
New!	15/32	0,4689	11,90	2 13/16	71	4 5/8	117	15/32	12	86668	
	31/64	0,4843	12,30	3	76	4 7/8	124	35/64	14	83036	
	1/2	0,5000	12,70	3	76	4 7/8	124	35/64	14	83037	
	33/64	0,5118	13,10	3	76	4 7/8	124	35/64	14	83038	
New!	17/32	0,5311	13,50	3	76	4 7/8	124	35/64	14	86673	
New!	9/16	0,5626	14,29	3 1/4	83	5 15/64	133	5/8	16	86689	
New!	37/64	0,5780	14,68	3 1/4	83	5 15/64	133	5/8	16	86681	



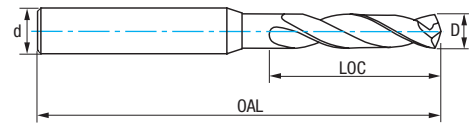
# Ref. 1780

FRACTIONAL-24

CNC High Performance Solid Carbide Drill Bit  
 Broca Integral Metal Duro Gran Rendimiento CNC  
 Foret carbure haut rendement CNC



3XD



5XD

Carbide/MD  
 Carbure  
 Micrograno

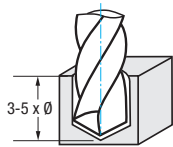
ALTIN

IZAR  
 std.



HRC  
 45-55

Tol.  
 m7



Material		Vc (ft./min.)	Feed-Avances-Pas <b>f/rev.</b> (inch/rev)					
Group	Sub.	ALTIN	Ø 1/8	Ø 7/32	Ø 5/16	Ø 1/2	Ø 9/16	Ø 5/8
P	P.1	290-360	0,003	0,006	0,008	0,011	0,012	0,013
	P.2	130-260	0,002	0,004	0,005	0,006	0,008	0,009
	P.3	100-130	0,001	0,002	0,003	0,004	0,006	0,006
	P.4	50-100	0,001	0,002	0,002	0,003	0,003	0,003
	P.5	130-230	0,002	0,002	0,003	0,005	0,006	0,007
M		115-150	0,001	0,002	0,002	0,003	0,003	0,003
K	K.1	130-330	0,003	0,006	0,008	0,011	0,012	0,012
	K.2	130-195	0,003	0,005	0,006	0,009	0,010	0,011
S		100-130	0,001	0,002	0,003	0,005	0,006	0,007
N	N.1	160-490	0,003	0,006	0,008	0,011	0,012	0,013
	N.2	160-490	0,003	0,006	0,008	0,011	0,012	0,013
	N.3	260-980	0,003	0,006	0,008	0,011	0,012	0,013
	N.4	260-980	0,003	0,006	0,008	0,011	0,012	0,013
	N.5	195-490	0,003	0,006	0,008	0,011	0,012	0,013

$$\text{r.p.m.} = \frac{Vc \times 1.000}{\pi \times \phi}$$

$$Vf \text{ (inch/min)} = \text{r.p.m.} \times f$$





FRACTIONAL-24

3XD	D	D (Decimal Inch)	D (mm)	LOC	LOC (mm)	OAL	OAL (mm)	d	d (mm)	N° Art. ALTIN	€/ \$
	1/8	0,1248	3,18	25/32	20	2 7/16	62	5/32	4	76706	
	9/64	0,1406	3,57	25/32	20	2 9/16	65	5/32	4	76707	
	5/32	0,1563	3,97	25/32	20	2 9/16	65	5/32	4	76708	
	11/64	0,1720	4,37	15/16	24	2 9/16	65	15/64	6	76709	
	3/16	0,1874	4,76	1 7/64	28	2 9/16	65	15/64	6	76710	
	13/64	0,2031	5,16	1 7/64	28	2 9/16	65	15/64	6	76711	
	7/32	0,2189	5,56	1 7/64	28	2 9/16	65	15/64	6	76712	
	15/64	0,2343	5,95	1 7/64	28	2 9/16	65	15/64	6	76713	
	1/4	0,2500	6,35	1 11/32	34	3 7/64	79	5/16	8	76714	
	17/64	0,2657	6,75	1 11/32	34	3 7/64	79	5/16	8	76715	
	9/32	0,2811	7,14	1 39/64	41	3 7/64	79	5/16	8	76716	
	19/64	0,2969	7,54	1 39/64	41	3 7/64	79	5/16	8	76717	
	5/16	0,3126	7,94	1 39/64	41	3 7/64	79	5/16	8	76718	
	21/64	0,3280	8,33	1 27/32	47	3 1/2	89	25/64	10	76719	
	11/32	0,3437	8,73	1 27/32	47	3 1/2	89	25/64	10	76720	
	23/64	0,3594	9,13	1 27/32	47	3 1/2	89	25/64	10	76721	
	3/8	0,3748	9,52	1 27/32	47	3 1/2	89	25/64	10	76722	
	25/64	0,3906	9,92	1 27/32	47	3 1/2	89	25/64	10	76723	
	13/32	0,4063	10,32	2 11/64	55	4 1/64	102	15/32	12	76726	
	27/64	0,4220	10,72	2 11/64	55	4 1/64	102	15/32	12	76727	
	7/16	0,4374	11,11	2 11/64	55	4 1/64	102	15/32	12	76729	
	29/64	0,4531	11,51	2 11/64	55	4 1/64	102	15/32	12	76730	
	15/32	0,4689	11,91	2 11/64	55	4 1/64	102	15/32	12	76731	
	31/64	0,4843	12,30	2 23/64	60	4 7/32	107	35/64	14	76732	
	1/2	0,5000	12,70	2 23/64	60	4 7/32	107	35/64	14	76734	
	33/64	0,5118	13,00	2 23/64	60	4 7/32	107	35/64	14	76735	
	17/32	0,5311	13,49	2 23/64	60	4 7/32	107	35/64	14	76736	
	9/16	0,5626	14,29	2 9/16	65	4 21/64	110	5/8	16	76737	
	37/64	0,5780	14,68	2 9/16	65	4 21/64	110	5/8	16	76738	

5XD	D	D (Decimal Inch)	D (mm)	LOC	LOC (mm)	OAL	OAL (mm)	d	d (mm)	N° Art. ALTIN	€/ \$
	1/8	0,1248	3,18	1 1/8	28	2 9/16	65	5/32	4	83039	
New!	9/64	0,1406	3,57	1 1/8	28	2 9/16	65	15/64	4	86712	
New!	5/32	0,1563	3,97	1 1/8	36	2 7/8	74	15/64	4	86708	
New!	11/64	0,1720	4,37	1 1/8	36	2 7/8	74	15/64	6	86693	
	3/16	0,1874	4,76	1 3/4	44	3 1/4	82	15/64	6	83040	
New!	13/64	0,2031	5,15	1 3/4	44	3 1/4	82	15/64	6	83041	
	7/32	0,2189	5,56	1 3/4	44	3 1/4	82	15/64	6	86697	
New!	15/64	0,2343	5,95	1 3/4	44	3 1/4	82	15/64	6	83042	
	1/4	0,2500	6,35	2 1/16	52	3 9/16	90	5/16	8	86699	
New!	17/64	0,2657	6,75	2 1/16	52	3 9/16	90	5/16	8	86711	
New!	9/32	0,2811	7,14	2 1/16	52	3 9/16	90	5/16	8	86695	
New!	19/64	0,2969	7,54	2 1/16	52	3 9/16	90	5/16	8	86701	
	5/16	0,3126	7,94	2 1/16	52	3 9/16	90	5/16	8	83043	
New!	21/64	0,3280	8,33	2 3/8	60	4 1/16	103	25/64	10	86702	
New!	11/32	0,3437	8,73	2 3/8	60	4 1/16	103	25/64	10	86692	
New!	23/64	0,3594	9,13	2 3/8	60	4 1/16	103	25/64	10	86703	
	3/8	0,3748	9,53	2 3/8	60	4 1/16	103	25/64	10	83044	
New!	25/64	0,3906	9,92	2 3/8	60	4 1/16	103	25/64	10	86704	
New!	13/32	0,4063	10,31	2 3/8	60	4 5/8	117	15/32	12	86694	
New!	27/64	0,4220	10,72	2 3/8	60	4 5/8	117	15/32	12	86705	
	7/16	0,4374	11,11	2 13/16	71	4 5/8	117	15/32	12	83045	
New!	29/64	0,4531	11,50	2 13/16	71	4 5/8	117	15/32	12	86706	
New!	15/32	0,4689	11,90	2 13/16	71	4 5/8	117	15/32	12	86696	
	31/64	0,4843	12,30	3	76	4 7/8	124	35/64	14	83046	
	1/2	0,5000	12,70	3	76	4 7/8	124	35/64	14	83047	
	33/64	0,5118	13,10	3	76	4 7/8	124	35/64	14	83048	
New!	17/32	0,5311	13,50	3	76	4 7/8	124	35/64	14	86698	
New!	9/16	0,5626	14,29	3 1/4	83	5 15/64	133	5/8	16	86710	
New!	37/64	0,5780	14,68	3 1/4	83	5 15/64	133	5/8	16	86707	



Ref. **1785**

Internal Coolant  
Extra-Long  
Carbide Drill Bits

Brocas Extra-Largas  
Metal Duro  
Refrigeración Interior

Forets extra-long  
carbure  
lubrification interne

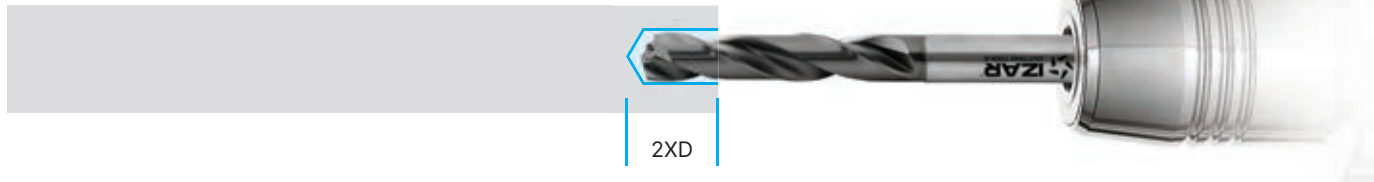
8XD

10XD

15XD

Up to  
Hasta  
jusqu'à **20XD**

Deep hole drilling instructions for 10XD drill bits and above  
 Instrucciones de taladrado para agujeros profundos a partir de brocas 10XD  
 Instructions de perçage pour des trous profonds à partir de forets 10XD



1) Pilot drilling

Pilot drilling with a short drill bit (3XD) with coolant (internal or external). The point angle should be the same as in the long drill bit on the step 2.

1) Taladrado con broca guía

Utilizamos una broca corta, por ejemplo de longitud 3XD, con refrigeración (refrigeración interior o exterior, dependiendo del tipo de broca guía que usemos). Esta broca debe tener el mismo ángulo de punta que la broca larga que usaremos después.

1) Perçage avec foret de guidage

Nous utilisons un foret court, par exemple de longueur 3XD, avec refroidissement (refroidissement interne ou externe, selon le type de foret de guidage que nous utilisons). Ce foret doit avoir le même angle de pointe que le foret long que nous utiliserons après.

1-2 mm (3/64 - 5/64)



2) Insert the long drill into the pilot drill hole

Insert the long drill carefully and without any coolant at 300 rpm and vf: 40inch/min. Just before reaching the bottom of the hole (1-2 mm or 3/64-5/64"), stop the feed and start adding the coolant.

2) Introducir la broca larga en el agujero guía

Introducir cuidadosamente la broca sin refrigeración a 300 rpm y con vf: 40inch/min.

Justo antes de llegar al fondo del agujero guía (1-2mm ó 3/64-5/64"), parar el avance y activar la refrigeración.

2) Insérer le foret long dans le trou de guidage

Insérer avec précaution le foret non refroidi à 300 rpm avec vf: 40inch/min.

Juste avant d'atteindre le fond du trou de guidage (1-2 mm ou 3/64-5/64"), arrêter l'avance et activer le refroidissement.



3) Spot drilling

Reduce Vc and Vf to 50% of the final value. Hole depth: 3XD approx.

3) Punteado

Ajustar las Vc y Vf a 50% hasta llegar a una profundidad aproximada de 3XD.

3) Pointillage

Ajuster la Vc et la Vf à 50 % jusqu'à atteindre une profondeur d'environ 3XD.



4) Deep hole drilling

Adjust Vc and Vf at 100%. Don't reduce the speed in the whole process.

4) Taladrado profundo

Ajustar las Vc y Vf a los valores finales (100%) y sin ralentizar en ningún momento.

4) Perçage profond

Ajuster les Vc et Vf aux valeurs finales (100%) et sans ralentir à aucun moment.



5) Removing the long drill

After reaching the hole depth, reduce the Vc to 300 rpm and vf: 20 inch/min. Don't use any coolant during this process.

5) Extracción de la broca

Antes de extraer la broca, volvemos a reducir a Vc: 300 rpm y a vf: 20 inch/min. Sin refrigeración.

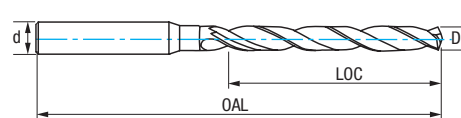
5) Retrait du foret

Avant de retirer le foret, nous le réduisons à Vc: 300 rpm et vf: 20 inch/min. Pas de refroidissement.



Ref. **1785**  
FRACTIONAL-24

**8-20XD Internal Coolant Carbide Drill Bit**  
Broca Metal Duro con Refrigeración Interior 8-20XD  
Foret carbure lubrification interne 8-20XD



Carbide/MD Carbure Grano UF	X-AICr	IZAR Std.					HRC 45-55	Tol. m7	<b>8-20XD</b>
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**Custom-made lengths up to 20XD OAL:**

- As a result of our Lean Manufacturing production process, we can guarantee a 2-3 weeks delivery time for on-demand lengths.

**No MOQ:**

- There is no minimum order quantity required for these long drill bits.

**Thoroughly tested:**

- Ref. 1785 has been thoroughly tested against the most famous brands on the market, beating them on the most common materials.

**Other options available:**

- Our standard production of ref. 1785 is a universal multipurpose geometry suitable for a wide range of materials like steel, stainless steel or cast iron. However, other special-geometry shapes and coatings are available depending on the needs of the user, including mirror-polished surface for aluminium or other specific angles for inconel, titanium, etc.

**Medidas especiales bajo demanda hasta largos totales de 20XD:**

- La implementación del sistema "Lean Manufacturing" en nuestro entorno productivo se centra en la fabricación pieza a pieza, garantizando un plazo de 2-3 semanas para medidas especiales.

**Sin cantidades mínimas:**

- Excelente flexibilidad tanto para testeos iniciales de usuario final como para lotes de repetición.

**Testado minuciosamente:**

- La ref. 1785 ha sido testado minuciosamente contra los competidores de más alto nivel del mercado, batiéndoles en vida útil de herramienta en los principales materiales de mecanizado.

**Otras geometrías disponibles:**

- La producción estándar de la ref. 1785 se basa en nuestra geometría universal multi-material. Otras geometrías, acabados y recubrimientos están disponibles según la necesidad del consumidor. Ejemplos típicos son las brocas pulidas con acabado espejo para aluminio, geometrías características para Inconel o titanio, etc.

**Mesures spéciales sur demande jusqu'à une longueur totale de 20XD :**

- La mise en œuvre du système « Lean Manufacturing » dans notre environnement de production est axée sur la fabrication pièce par pièce, garantissant un délai de 2-3 semaines pour les mesures spéciales.

**Sans quantités minimales :**

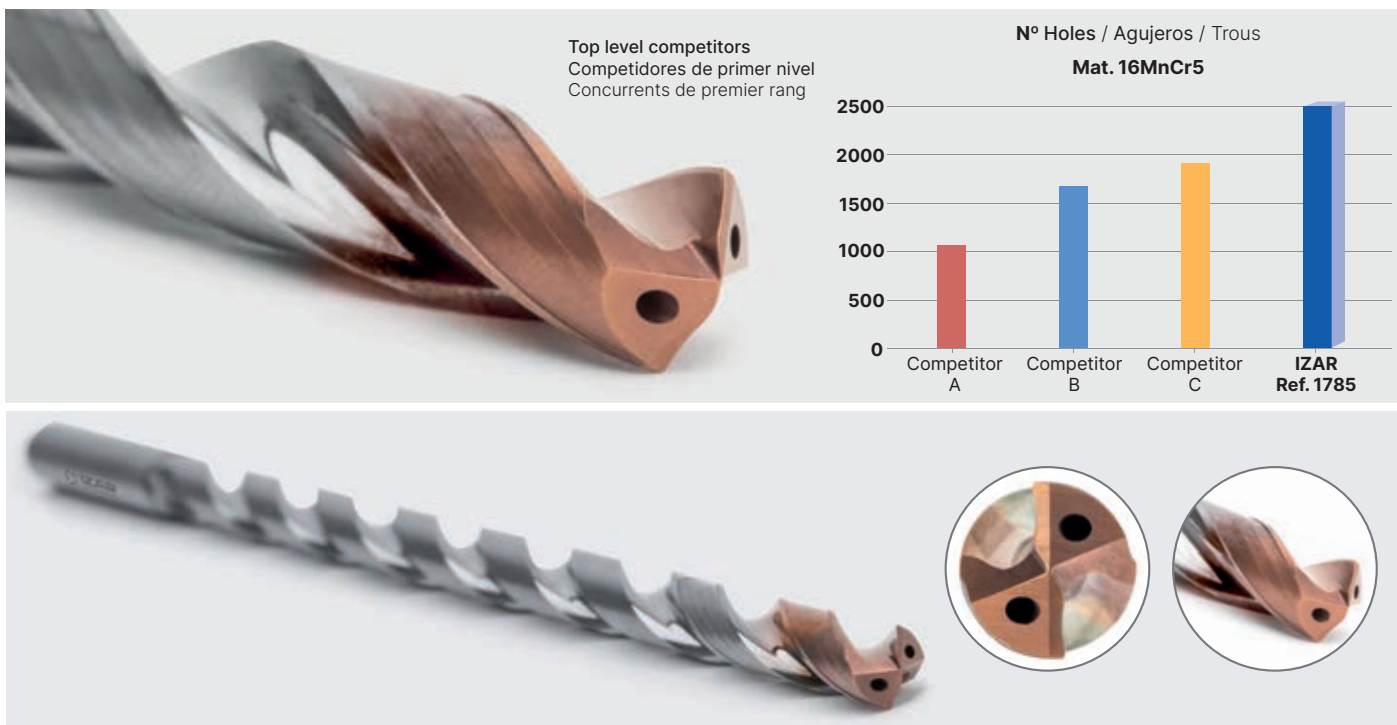
- Excellente flexibilité tant pour les tests initiaux de l'utilisateur final que pour les lots de répétition.

**Testé minutieusement :**

- La réf. 1785 a été testée minutieusement face aux concurrents de plus haut niveau du marché, afin de les battre en termes de durée de vie de l'outil sur les principaux matériaux d'usage.

**Autres géométries disponibles :**

- La production standard de la réf. 1785 est basée sur notre géométrie universelle multi-matériaux. D'autres géométries, finitions et revêtements sont disponibles selon les besoins du client. Des exemples typiques sont les forets polis avec finition miroir pour l'aluminium, des géométries caractéristiques pour Inconel ou le titane, etc.

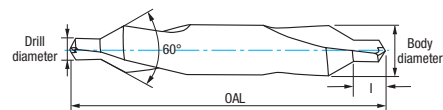




# Ref. 9370

FRACTIONAL-24

## Solid Carbide Double Center Drill Broca Centrar Doble Metal Duro Foret a centrar double carbure



Carbide/MD  
Carbure  
Micrograno

IZAR  
Std.



Material		Vc (ft/min)	f - HM Drill Feed - Avances Brocas MD - Pas Foret Carbure (inch/rev.)				
Group	Sub.	Carb./MD	Ø 5/64	Ø 1/8	Ø 7/32	Ø 7/16	Ø 5/8
P	P.1	200-250	0,0027	0,0035	0,0059	0,0078	0,0098
	P.2	160-200	0,0027	0,0035	0,0059	0,0078	0,0098
	P.3	80-130	0,0023	0,0031	0,0055	0,0066	0,0078
	P.5	65-100	0,0023	0,0031	0,0055	0,0078	0,0086
M		65-100	0,0023	0,0031	0,0055	0,0078	0,0086
K	K.1	160-200	0,0039	0,0047	0,0066	0,0086	0,0098
	K.2	110-170	0,0039	0,0047	0,0066	0,0086	0,0098
S		60-100	0,0019	0,0023	0,0031	0,0047	0,0059
N	N.1	230-330	0,0039	0,0047	0,0059	0,0086	0,0098
	N.2	230-330	0,0039	0,0047	0,0059	0,0086	0,0098
	N.3	330-500	0,0047	0,0055	0,0062	0,0086	0,0098
	N.4	330-500	0,0047	0,0055	0,0062	0,0086	0,0098
	N.5	230-300	0,0047	0,0055	0,0062	0,0086	0,0098
	N.6	490-650	0,0059	0,0062	0,0086	0,0110	0,0118

$$\text{r.p.m.} = \frac{\text{Vc} \times 1.000}{\pi \times \phi}$$

$$\text{Vf (inch/min)} = \text{r.p.m.} \times \text{f}$$

D	Diam. Broca Drill / Foret	Diam. Cuerpo Body / Corps	Longitud total OAL	I		Nº Art. Carb./MD	€/ \$
0	1/32	3/32	1 7/8	1,5	1	75934	
1	3/64	1/8	1 7/8	1,8	1	75937	
2	5/64	3/16	1 7/8	2,8	1	75938	
3	7/64	1/4	2	3,5	1	75939	
4	1/8	5/16	2 1/8	4,1	1	75941	
5	3/16	7/16	2 3/4	6	1	75942	
6	7/32	1/2	3	6,5	1	75947	
7	1/4	5/8	3 3/4	8,2	1	75945	
8	5/16	3/4	3 1/2	10,5	1	75946	



CROMAX upon request / bajo demanda / sur demande

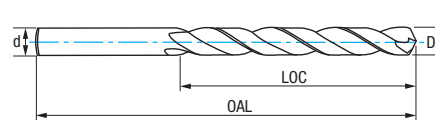


# Ref. 0910

FRACTIONAL-24

Carbide Tipped Drill Bit  
Broca Punta Metal Duro  
Foret pointe carbure

**New!**



TCT

ANSI Std.

118°

135°

**Rectificado**  
Ground  
Taillé meulé

Material		Vc (ft./min.) Carb./MD	Feed-Avances-Pas <b>f/rev. (inch/rev)</b>							
Group	Sub.		5/64	1/8	5/32	13/64	1/4	21/64	25/64	15/32
<b>P</b>	<b>P.3</b>	32-60	0,0012	0,0019	0,0023	0,0023	0,0031	0,0039	0,0047	0,0047
	<b>P.5</b>	39-55	0,0012	0,0019	0,0023	0,0023	0,0031	0,0039	0,0047	0,0047
<b>M</b>		32-60	0,0012	0,0019	0,0023	0,0023	0,0031	0,0039	0,0047	0,0047
<b>K</b>	<b>K.1</b>	114-130	0,0031	0,0039	0,0062	0,0062	0,0078	0,0098	0,0118	0,0118
	<b>K.2</b>	82-98	0,0019	0,0027	0,0031	0,0039	0,0047	0,0055	0,0066	0,0078

$$\text{r.p.m.} = \frac{\text{Vc} \times 1.000}{\pi \times \phi}$$

$$\text{Vf (inch/min)} = \text{r.p.m.} \times \text{f}$$




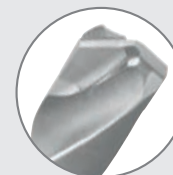
D	D (Decimal inch)	LOC Corte	OAL Longitud total	d		N° Art. Carb./MD	€/€
1/8	0,1250	0,36	1 7/8	1/8	1	84506	
9/64	0,1406	0,42	2 1/8	9/64	1	84507	
5/32	0,1563	0,45	2 1/8	5/32	1	84508	
11/64	0,1719	0,51	2 1/4	11/64	1	84509	
3/16	0,1875	0,54	2 1/4	3/16	1	84510	
13/64	0,2031	0,60	2 3/8	13/64	1	84511	
7/32	0,2188	0,63	2 3/8	7/32	1	84512	
1/4	0,2500	0,75	2 1/2	1/4	1	84513	
17/64	0,2656	0,78	2 3/4	17/64	1	84514	
5/16	0,3125	0,93	2 7/8	5/16	1	84516	
11/32	0,3438	1,02	3	11/32	1	84517	
3/8	0,3750	1,11	3 1/8	3/8	1	84518	
25/64	0,3750	1,17	3 3/8	25/64	1	84519	
13/32	0,4063	1,20	3 3/8	13/32	1	84520	
27/64	0,4219	1,26	3 1/2	27/64	1	84521	
7/16	0,4375	1,29	3 1/2	7/16	1	84522	
1/2	0,5000	1,50	3 3/4	1/2	1	84523	
17/32	0,5313	1,59	3 7/8	17/32	1	84524	
9/16	0,5625	1,68	4	9/16	1	84525	
5/8	0,6250	1,86	4 1/4	5/8	1	84526	
11/16	0,6875	2,04	4 5/8	11/16	1	84527	
3/4	0,7500	2,25	5	3/4	1	84528	



Cont.



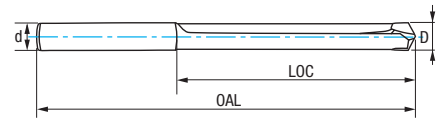
D	D (Decimal inch)	LOC Corte	OAL Longitud total	d		N° Art. Carb./MD	€/€
1/8	0,1250	0,36	1 7/8	1/8	1	84529	
9/64	0,1406	0,42	2 1/8	9/64	1	84530	
5/32	0,1563	0,45	2 1/8	5/32	1	84531	
3/16	0,1875	0,54	2 1/4	3/16	1	84533	
13/64	0,2031	0,60	2 3/8	13/64	1	84534	
7/32	0,2188	0,63	2 3/8	7/32	1	84535	
1/4	0,2500	0,75	2 1/2	1/4	1	84536	
17/64	0,2656	0,78	2 3/4	17/64	1	84537	
9/32	0,2813	0,84	2 3/4	9/32	1	84538	
5/16	0,3125	0,93	2 7/8	5/16	1	84539	
11/32	0,3438	1,02	3	11/32	1	84540	
3/8	0,3750	1,11	3 1/8	3/8	1	84541	
25/64	0,3906	1,17	3 3/8	25/64	1	84542	
13/32	0,4063	1,20	3 3/8	13/32	1	84543	
27/64	0,4219	1,26	3 1/2	27/64	1	84544	
7/16	0,4375	1,29	3 1/2	7/16	1	84545	
1/2	0,5000	1,50	3 3/4	1/2	1	84546	
17/32	0,5313	1,59	3 7/8	17/32	1	84547	
9/16	0,5625	1,68	4	9/16	1	84548	
5/8	0,6250	1,86	4 1/4	5/8	1	84549	
11/16	0,6875	2,04	4 5/8	11/16	1	84550	
3/4	0,7500	2,25	5	3/4	1	84551	



Ref. **0911**  
FRACTIONAL-24

Carbide Tipped Drill Bit. **Straight Flute**  
Broca Punta Metal Duro. **Canal Recto**  
Foret pointe carbure. **Goujure droite**

**New!**



TCT

ANSI Std.


118°

Rectificado Ground  
Taillé meulé

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$

$$Vf \text{ (inch/min)} = r.p.m. \times f$$

Material		Vc (ft./min.) Carb./MD	Feed-Avances-Pas <b>f/rev. (inch/rev)</b>							
Group	Sub.		5/64	1/8	5/32	13/64	1/4	21/64	25/64	15/32
P	P.3	32-60	0,0012	0,0019	0,0023	0,0023	0,0031	0,0039	0,0047	0,0047
	P.5	39-55	0,0012	0,0019	0,0023	0,0023	0,0031	0,0039	0,0047	0,0047
M		32-60	0,0012	0,0019	0,0023	0,0023	0,0031	0,0039	0,0047	0,0047
K	K.1	114-130	0,0031	0,0039	0,0062	0,0062	0,0078	0,0098	0,0118	0,0118
	K.2	82-98	0,0019	0,0027	0,0031	0,0039	0,0047	0,0055	0,0066	0,0078

D	D (Decimal inch)	LOC Corte	OAL Longitud total	d		N° Art. Carb./MD	€/€
3/16	0,1875	2 5/16	3 1/2	3/16	1	85498	
13/64	0,2031	2 7/16	3 3/4	13/64	1	85499	
7/32	0,2188	2 1/2	3 3/4	7/32	1	85500	
15/64	0,2344	2 5/8	4	15/64	1	85501	
1/4	0,2500	2 3/4	4	1/4	1	85502	
17/64	0,2656	2 7/8	4 1/4	17/64	1	85503	
9/32	0,2812	2 15/16	4 1/4	9/32	1	85504	
19/64	0,2969	3 1/16	4 1/2	19/64	1	85505	
5/16	0,3125	3 3/16	4 1/2	5/16	1	85506	
21/64	0,3281	3 5/16	4 3/4	21/64	1	85507	
11/32	0,3438	3 7/16	4 3/4	11/32	1	85508	
3/8	0,3750	3 5/8	5	3/8	1	85509	
25/64	0,3906	3 3/4	5 1/4	25/64	1	85510	
13/32	0,4062	3 7/8	5 1/4	13/32	1	85511	
27/64	0,4219	3 15/16	5 1/2	27/64	1	85512	
7/16	0,4375	4 1/16	5 1/2	7/16	1	85513	
15/32	0,4688	4 5/16	5 3/4	15/32	1	85514	
1/2	0,5000	4 1/2	6	1/2	1	85515	
17/32	0,5312	4 13/16	6	17/32	1	85516	
9/16	0,5625	4 13/16	6	9/16	1	85517	
5/8	0,6250	5 3/16	7	5/8	1	85518	
3/4	0,7500	6 7/64	8	3/4	1	85519	
23/64	0,3594	3 1/2	5	23/64	1	85520	

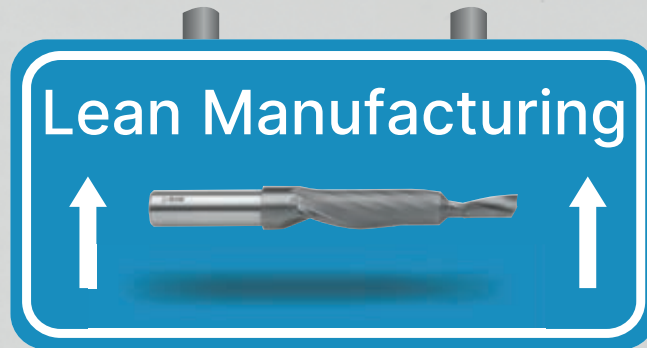


Continued improvement of quality control

[izartool.com](http://izartool.com)



Specialists in custom made tools  
Especialistas en herramientas bajo demanda  
Spécialistes en outils sur demande



**WE DESIGN SPECIAL TOOLS BASED ON YOUR REQUIREMENTS**

Next generation manufacturing processes provide an improved service and quality control.

Lean Manufacturing implementation in our production environment focuses on the one-piece-flow, resulting in outstanding flexibility and reducing the batch size and lead time dramatically. Therefore we guarantee a lead time of 2-3 weeks in custom made products.

**DISEÑAMOS Y FABRICAMOS A MEDIDA CUALQUIERA QUE SEAN SUS NECESIDADES**

Los procesos de fabricación "Next Generation" proporcionan un mejor servicio y control de calidad

La implementación del sistema "Lean Manufacturing" en nuestro entorno productivo se centra en la fabricación pieza a pieza ("one-piece-flow"), lo que da como resultado una flexibilidad excepcional y reduce drásticamente el tamaño del lote y el plazo de entrega, garantizando un plazo de 2-3 semanas para la herramienta especial.

**NOUS CONCEVONS ET FABRIQUONS N'IMPORTE QUELS SONT VOS BESOINS**

Les processus de fabrication de « Next Generation » offrent un meilleur service et contrôle de la qualité.

La mise en œuvre du système « Lean Manufacturing » dans notre environnement de production se concentre sur la fabrication pièce par pièce (flux en une seule pièce), ce qui se traduit par une flexibilité exceptionnelle et réduit considérablement la taille des lots et les délais. C'est pourquoi nous garantissons un délai de 2 à 3 semaines pour les produits sur demande.



# 02.

FRACTIONAL - PULGADAS · INCHES · POUÇES

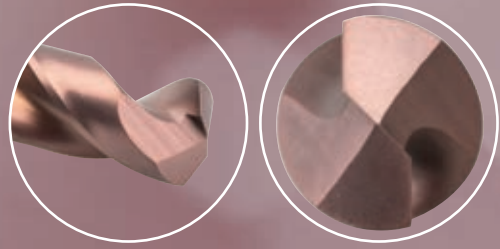
## Drilling. HSS and Cobalt Taladrado. HSS y Cobalto Perçage. HSS et Cobalt



<b>Straight Shank Drill Bits</b> Brocas Mango Cilíndrico Forets queue cylindrique	32
<b>Morse Taper Shank Drill Bits</b> Brocas Mango Cónico Forets queue cône morse	46
<b>Center Drills</b> Brocas Centrar Forets à centrer	48
<b>Annular Cutter Core Drills for Magnetic Drilling Machines</b> Fresas Huecas Máquinas Electromagnéticas Fraises à carotter pour unités de perçage électromagnétiques	50
<b>Drill Bit Sets</b> Juegos Brocas Jeux forets	54



Ref. 1729



- State-of-the-art technology coating for a higher performance
- Multi-material geometry, obtaining long durability in all types of Steel, Inox, Cast Iron...
- Recubrimiento de alto rendimiento con la última tecnología
- Geometría multi-material con una alta durabilidad en todo tipo de Aceros, Inox, Fundición...
- Revêtement de dernière technologie pour une performance supérieure
- Géométrie multi-matériaux, obtenant une longue durée de vie dans tous les types d'Acier, Inox, Fonte...

## The best HSS Co drill bit on the market\*

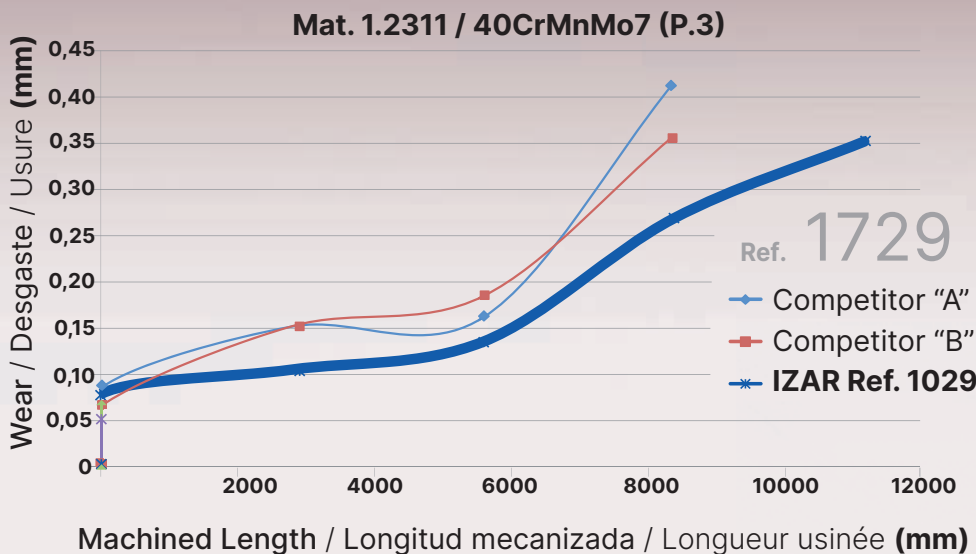
Cobalt drill bit suitable for Hard materials, Stainless Steel and Cast Iron

## La mejor broca de HSS Co del mercado\*

Broca de Cobalto especial para Materiales Duros, Inoxidables y Fundición

## Le meilleur foret HSS Co du marché\*

Foret cobalt spécial pour matériaux durs, inox et fonté



See our IND-24 catalogue for products in Metric Units

Referencias equivalentes en medidas métricas en IND-24

Références équivalentes en mesures métriques en IND-24



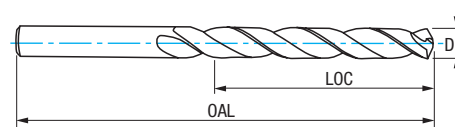
\* Comparative test against well-known brands in the market  
 \* Testado contra las marcas más conocidas del mercado  
 \* Testé contre les marques les plus connues du marché



# Ref. 1729

FRACTIONAL-24

**Multi-Steel** Straight Shank Drill Bit  
 Broca Mango Cilíndrico **Multi Acero**  
 Foret **multi-acier** queue cylindrique



Cobalt  
5%

**BORDEAUX**

NAS  
907 J



Ground  
Rectificado  
Taillé meulé

I.H.P.\* Intensive High Performance  
 A.R.I.\* Alto Rendimiento Intensivo  
 H.P.I.\* Haute Performance Intensif

Material		Vc (ft/min.)	Feed-Avances-Pas <b>f/rev. (inch/rev)</b>							
Group	Sub.	<b>BORDEAUX</b>	5/64	1/8	5/32	13/64	1/4	21/64	25/64	15/32
P	P.3	32-60	0,0012	0,0019	0,0023	0,0023	0,0031	0,0039	0,0047	0,0047
	P.5	39-55	0,0012	0,0019	0,0023	0,0023	0,0031	0,0039	0,0047	0,0047
M		32-60	0,0012	0,0019	0,0023	0,0023	0,0031	0,0039	0,0047	0,0047
K	K.1	114-130	0,0031	0,0039	0,0062	0,0062	0,0078	0,0098	0,0118	0,0118
	K.2	82-98	0,0019	0,0027	0,0031	0,0039	0,0047	0,0055	0,0066	0,0078

$$\text{r.p.m.} = \frac{\text{Vc} \times 1.000}{\pi \times \phi}$$

$$\text{Vf (inch/min)} = \text{r.p.m.} \times \text{f}$$

D	LOC Corte	OAL Longitud total		N° Art. <b>BORDEAUX</b>	€/€
3/64	3/4	1 3/4	10	11533	
1/16	7/8	1 7/8	10	10476	
5/64	1	2	10	10456	
3/32	1 1/4	2 1/4	10	11531	
7/64	1 1/2	2 5/8	10	11570	
1/8	1 5/8	2 3/4	10	11571	
9/64	1 3/4	2 7/8	10	11613	
5/32	2	3 1/8	10	11622	
11/64	2 1/8	3 1/4	10	11623	
3/16	2 5/16	3 1/2	10	11626	
13/64	2 7/16	3 5/8	10	11656	
7/32	2 1/2	3 3/4	10	11668	
15/64	2 5/8	3 7/8	10	11671	
1/4	2 3/4	4	10	11674	
17/64	2 7/8	4 1/8	10	11676	

D	LOC Corte	OAL Longitud total		N° Art. <b>BORDEAUX</b>	€/€
9/32	2 15/16	4 1/4	10	11679	
19/64	3 1/16	4 3/8	10	11692	
5/16	3 3/16	4 1/2	10	11694	
21/64	3 5/16	4 5/8	10	11695	
11/32	3 7/16	4 3/4	10	11698	
23/64	3 1/2	4 7/8	10	11755	
3/8	3 5/8	5	10	11761	
25/64	3 3/4	5 1/8	10	11763	
13/32	3 7/8	5 1/4	5	11764	
27/64	3 15/16	5 3/8	5	11766	
7/16	4 1/16	5 1/2	5	11779	
29/64	4 3/16	5 5/8	5	11782	
15/32	4 5/16	5 3/4	5	11785	
31/64	4 3/8	5 7/8	5	11790	
1/2	4 1/2	6	5	11791	

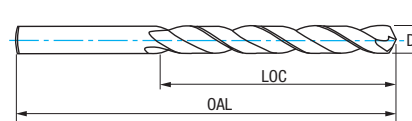
Sets **1493** pags. 54-55  
**1495**  
**1496**



# Ref. 1700

FRACTIONAL-24

Hard Materials Straight Shank Drill Bit. Jobber Series  
 Broca Mango Cilíndrico Materiales Duros. Serie Corta  
 Foret queue cylindrique matériaux durs. Série courte



<b>Cobalt 5%</b>	NAS 907 J	135°		<b>Gold Finish</b> Ambar Finition Or	<b>Ground</b> Rectificado Taillé meulé	<b>I.H.P.*</b> Intensive High Performance <b>A.R.I.*</b> Alto Rendimiento Intensivo <b>H.P.I.*</b> Haute Performance Intensif
------------------	-----------	------	--	--------------------------------------------	----------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------

Material		Vc (ft/min.)	Feed-Avances-Pas <b>f/rev.</b> (inch/rev)												
Group	Sub.	5% Co	Ø 5/64	Ø 1/8	Ø 5/32	Ø 13/64	Ø 1/4	Ø 21/64	Ø 25/64	Ø 15/32	Ø 5/8	Ø 51/64	Ø 1	Ø 1 3/16	Ø 1 37/64
<b>P</b>	<b>P.3</b>	26 - 49	0,0008	0,0014	0,0018	0,0020	0,0024	0,0028	0,0035	0,0039	0,0047	0,0063	0,0071	0,0075	0,0098
	<b>P.5</b>	26 - 39	0,0012	0,0016	0,0020	0,0024	0,0028	0,0035	0,0039	0,0047	0,0059	0,0067	0,0083	0,0098	0,0118
<b>S</b>		33-49	0,0008	0,0012	0,0016	0,0020	0,0024	0,0028	0,0031	0,0039	0,0047	0,0055	0,0063	0,0079	0,0094

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi} \quad Vf \text{ (inch/min)} = r.p.m. \times f$$

D	LOC Corte	OAL Longitud total		N° Art. Cobalt	€/€
3/64	3/4	1 3/4	10	10785	
1/16	7/8	1 7/8	10	29771	
5/64	1	2	10	29780	
3/32	1 1/4	2 1/4	10	29790	
7/64	1 1/2	2 5/8	10	29800	
1/8	1 5/8	2 3/4	10	29808	
9/64	1 3/4	2 7/8	10	29815	
5/32	2	3 1/8	10	29821	
11/64	2 1/8	3 1/4	10	29830	
3/16	2 5/16	3 1/2	10	27637	
13/64	2 7/16	3 5/8	10	29843	
7/32	2 1/2	3 3/4	10	29850	
15/64	2 5/8	3 7/8	10	29855	
1/4	2 3/4	4	10	27638	
17/64	2 7/8	4 1/8	10	29864	
9/32	2 15/16	4 1/4	10	29871	
19/64	3 1/16	4 3/8	10	29876	
5/16	3 3/16	4 1/2	10	29878	
21/64	3 5/16	4 5/8	10	29882	
11/32	3 7/16	4 3/4	10	29888	
23/64	3 1/2	4 7/8	10	29893	
3/8	3 5/8	5	10	29896	

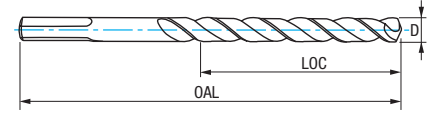
D	LOC Corte	OAL Longitud total		N° Art. Cobalt	€/€
25/64	3 3/4	5 1/8	10	29900	
13/32	3 7/8	5 1/4	5	29904	
27/64	3 15/16	5 3/8	5	29907	
7/16	4 1/16	5 1/2	5	29909	
29/64	4 3/16	5 5/8	5	29912	
15/32	4 5/16	5 3/4	5	29913	
31/64	4 3/8	5 7/8	5	29916	
1/2	4 1/2	6	5	29918	
33/64	4 13/16	6 5/8	1	29920	
17/32	4 13/16	6 5/8	1	29921	
35/64	4 13/16	6 5/8	1	29922	
9/16	4 13/16	6 5/8	1	29923	
37/64	4 13/16	6 5/8	1	29924	
19/32	5 3/16	7 1/8	1	29925	
39/64	5 3/16	7 1/8	1	29926	
5/8	5 3/16	7 1/8	1	29927	
41/64	5 3/16	7 1/8	1	29928	
21/32	5 3/16	7 1/8	1	29929	
43/64	5 5/8	7 5/8	1	29931	
11/16	5 5/8	7 5/8	1	29932	
3/4	6 7/64	9 31/32	1	18844	

**Sets** 1493  
1495  
1496 pag. 54-55



Ref. **1721**  
FRACTIONAL-24

**Multi-STAINLESS** Steel Straight Shank Drill Bit. Jobber Series  
Broca Mango Cilíndrico **Multi Inox**. Serie Corta  
Foret queue cylindrique **multi inox**. Serie courte



Cobalt 5%	ANSI Std.	135°	40°			Blue+ Gold Finish	Ground Rectificado Taillé meulé		
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Material		Vc (ft./min.)	Feed-Avances-Pas <b>f/rev. (inch/rev)</b>												
Group	Sub.	5% Co	Ø 5/64	Ø 1/8	Ø 5/32	Ø 13/64	Ø 1/4	Ø 21/64	Ø 25/64	Ø 15/32	Ø 5/8	Ø 51/64	Ø 1	Ø 1 3/16	Ø 1 37/64
P	P.1	82 - 98	0,0018	0,0022	0,0028	0,0031	0,0039	0,0047	0,0059	0,0063	0,0071	0,0098	0,0118	0,0122	0,0157
	P.5	26 - 39	0,0012	0,0016	0,0020	0,0024	0,0028	0,0035	0,0039	0,0047	0,0059	0,0067	0,0083	0,0098	0,0118
M		17 - 39	0,0012	0,0016	0,0020	0,0024	0,0028	0,0035	0,0039	0,0047	0,0059	0,0067	0,0083	0,0098	0,0118
N	N.1	164-197	0,0016	0,0020	0,0024	0,0031	0,0035	0,0043	0,0051	0,0059	0,0075	0,0087	0,0102	0,0126	0,0150
	N.2	82-98	0,0024	0,0035	0,0039	0,0047	0,0059	0,0071	0,0083	0,0098	0,0118	0,0142	0,0169	0,0201	0,0244
	N.3	197-262	0,0031	0,0043	0,0051	0,0059	0,0075	0,0087	0,0102	0,0126	0,0150	0,0177	0,0213	0,0252	0,0303
	N.4	197-262	0,0031	0,0043	0,0051	0,0059	0,0075	0,0087	0,0102	0,0126	0,0150	0,0177	0,0213	0,0252	0,0303
	N.5	131-164	0,0024	0,0035	0,0039	0,0047	0,0059	0,0071	0,0083	0,0098	0,0118	0,0142	0,0169	0,0201	0,0244

$$\text{r.p.m.} = \frac{Vc \times 1.000}{\pi \times \phi}$$

$$Vf \text{ (inch/min)} = \text{r.p.m.} \times f$$

D	LOC Corte	OAL Longitud total		N° Art. Cobalt	€/€
1/16	7/8	1 7/8	10	35066	
5/64	1	2	10	35067	
3/32	1 1/4	2 1/4	10	35068	
7/64	1 1/2	2 5/8	10	35069	
1/8	1 5/8	2 3/4	10	35070	
9/64	1 3/4	2 7/8	10	35071	
5/32	2	3 1/8	10	35072	
11/64	2 1/8	3 1/4	10	35073	
3/16	2 5/16	3 1/2	10	35074	
13/64	2 7/16	3 5/8	10	35075	
7/32	2 1/2	3 3/4	10	35076	
15/64	2 5/8	3 7/8	10	35077	
1/4	2 3/4	4	10	35078	
17/64	2 7/8	4 1/8	10	35079	
9/32	2 15/16	4 1/4	10	35080	

D	LOC Corte	OAL Longitud total		N° Art. Cobalt	€/€
19/64	3 1/16	4 3/8	10	35081	
5/16	3 3/16	4 1/2	10	35082	
21/64	3 5/16	4 5/8	10	35083	
11/32	3 7/16	4 3/4	10	35084	
23/64	3 1/2	4 7/8	10	35085	
3/8	3 5/8	5	10	35086	
25/64	3 3/4	5 1/8	10	35087	
13/32	3 7/8	5 1/4	5	35088	
27/64	3 15/16	5 3/8	5	35089	
7/16	4 1/16	5 1/2	5	35090	
29/64	4 3/16	5 5/8	5	35091	
15/32	4 5/16	5 3/4	5	35092	
31/64	4 3/8	5 7/8	5	35093	
1/2	4 1/2	6	5	35094	





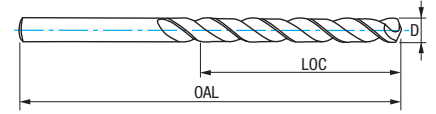
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# Ref. 1720

FRACTIONAL-24

**Stainless Steel** Straight Shank Drill Bit. Jobber Series  
 Broca Mango Cilíndrico **Inox**. Serie Corta  
 Foret queue cylindrique **inoxydable**. Série courte



Cobalt 5%	ANSI Std.	135°	40°		Bright Finish Blanca Finition Blanc		Ground Rectificado Taillé meulé
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Material		Vc (ft./min.)	Feed-Avances-Pas <b>f/rev. (inch/rev)</b>												
Group	Sub.	5% Co	Ø 5/64	Ø 1/8	Ø 5/32	Ø 13/64	Ø 1/4	Ø 21/64	Ø 25/64	Ø 15/32	Ø 5/8	Ø 51/64	Ø 1	Ø 1 3/16	Ø 1 37/64
<b>M</b>		17 - 39	0,0012	0,0016	0,0020	0,0024	0,0028	0,0035	0,0039	0,0047	0,0059	0,0067	0,0083	0,0098	0,0118
<b>N</b>	<b>N.3</b>	197-262	0,0031	0,0043	0,0051	0,0059	0,0075	0,0087	0,0102	0,0126	0,0150	0,0177	0,0213	0,0252	0,0303
	<b>N.4</b>	197-262	0,0031	0,0043	0,0051	0,0059	0,0075	0,0087	0,0102	0,0126	0,0150	0,0177	0,0213	0,0252	0,0303
	<b>N.5</b>	131-164	0,0024	0,0035	0,0039	0,0047	0,0059	0,0071	0,0083	0,0098	0,0118	0,0142	0,0169	0,0201	0,0244

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$

$$Vf \text{ (inch/min)} = r.p.m. \times f$$

D	LOC Corte	OAL Longitud total		Nº Art. Cobalt	€/€
3/64	3/4	1 3/4	10	32051	
1/16	7/8	1 7/8	10	37549	
5/64	1	2	10	37550	
3/32	1 1/4	2 1/4	10	37551	
7/64	1 1/2	2 5/8	10	37552	
1/8	1 5/8	2 3/4	10	37553	
9/64	1 3/4	2 7/8	10	37554	
5/32	2	3 1/8	10	37555	
11/64	2 1/8	3 1/4	10	37556	
3/16	2 5/16	3 1/2	10	37557	
13/64	2 7/16	3 5/8	10	37558	
7/32	2 1/2	3 3/4	10	37559	
15/64	2 5/8	3 7/8	10	37560	
1/4	2 3/4	4	10	37561	
17/64	2 7/8	4 1/8	10	37562	

D	LOC Corte	OAL Longitud total		Nº Art. Cobalt	€/€
9/32	2 15/16	4 1/4	10	37563	
19/64	3 1/16	4 3/8	10	37564	
5/16	3 3/16	4 1/2	10	37565	
21/64	3 5/16	4 5/8	10	37566	
11/32	3 7/16	4 3/4	10	37567	
23/64	3 1/2	4 7/8	10	37568	
3/8	3 5/8	5	10	37569	
25/64	3 3/4	5 1/8	10	37570	
13/32	3 7/8	5 1/4	5	37571	
27/64	3 15/16	5 3/8	5	37572	
7/16	4 1/16	5 1/2	5	37573	
29/64	4 3/16	5 5/8	5	37574	
15/32	4 5/16	5 3/4	5	37575	
31/64	4 3/8	5 7/8	5	37576	
1/2	4 1/2	6	5	37577	

**Sets** 1493  
 1495  
 1496

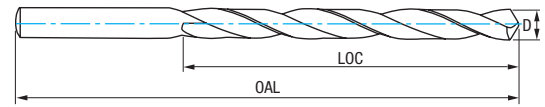
pag.  
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# Ref. 1070

FRACTIONAL-24

General Purpose Straight Shank Drill Bit. Jobber Series  
 Broca Mango Cilíndrico Uso General. Serie Corta  
 Foret queue cylindrique utilisation générale. Série courte



HSS	TIN	ANSI Std. N	118°			Blanca Bright Finish Finition Blanc	Ground Rectificado Taillé meulé
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Material		Vc (ft/min.)		Feed-Avances-Pas <b>f/rev. (inch/rev)</b>												
Group	Sub.	HSS	TIN	Ø 5/64	Ø 1/8	Ø 5/32	Ø 13/64	Ø 1/4	Ø 21/64	Ø 25/64	Ø 15/32	Ø 5/8	Ø 51/64	Ø 1	Ø 1 3/16	Ø 1 37/64
P	P.1	82 - 98	98-115	0,0018	0,0022	0,0028	0,0031	0,0039	0,0047	0,0059	0,0063	0,0071	0,0098	0,0118	0,0122	0,0157
K	K.1	98-115	118-138	0,0024	0,0035	0,0039	0,0047	0,0059	0,0071	0,0083	0,0098	0,0118	0,0142	0,0169	0,0201	0,0244
	K.2	82-98	98-118	0,0020	0,0028	0,0031	0,0039	0,0047	0,0055	0,0067	0,0079	0,0094	0,0110	0,0134	0,0161	0,0193
N	N.3	196-262	236-315	0,0031	0,0043	0,0051	0,0059	0,0075	0,0087	0,0102	0,0126	0,0150	0,0177	0,0213	0,0252	0,0303
	N.4	196-262	236-315	0,0031	0,0043	0,0051	0,0059	0,0075	0,0087	0,0102	0,0126	0,0150	0,0177	0,0213	0,0252	0,0303
	N.5	131-164	157-197	0,0024	0,0035	0,0039	0,0047	0,0059	0,0071	0,0083	0,0098	0,0118	0,0142	0,0169	0,0201	0,0244

$$\text{r.p.m.} = \frac{Vc \times 1.000}{\pi \times \phi}$$


$$Vf \text{ (inch/min)} = \text{r.p.m.} \times f$$




Ref. **1070**

FRACTIONAL-24

General Purpose Straight Shank Drill Bit. Jobber Series  
 Broca Mango Cilíndrico Uso General. Serie Corta  
 Foret queue cylindrique utilisation générale. Série courte

D	Corte LOC	OAL Longitud total		Nº Art. HSS	€/€	Nº Art. TIN	€/€
1/64	3/16	3/4	10	19871		13913	
1/32	1/2	1 3/8	10	17700		13914	
3/64	3/4	1 3/4	10	17721		13919	
1/16	7/8	1 7/8	10	17733		13922	
5/64	1	2	10	17751		13925	
3/32	1 1/4	2 1/4	10	17772		13931	
7/64	1 1/2	2 5/8	10	17793		13934	
1/8	1 5/8	2 3/4	10	17811		13940	
9/64	1 3/4	2 7/8	10	17820		13942	
5/32	2	3 1/8	10	17841		13948	
11/64	2 1/8	3 1/4	10	17862		13952	
3/16	2 5/16	3 1/2	10	17880		13957	
13/64	2 7/16	3 5/8	10	17904		13960	
7/32	2 1/2	3 3/4	10	17919		13964	
15/64	2 5/8	3 7/8	10	17931		13967	
1/4	2 3/4	4	10	17943		13970	
17/64	2 7/8	4 1/8	10	17955		13973	
9/32	2 15/16	4 1/4	10	18593		13977	
19/64	3 1/16	4 3/8	10	20597		13978	
5/16	3 3/16	4 1/2	10	20603		13980	
21/64	3 5/16	4 5/8	10	21500		13982	
11/32	3 7/16	4 3/4	10	21539		13985	
23/64	3 1/2	4 7/8	10	22679		13988	
3/8	3 5/8	5	10	24017		13990	
25/64	3 3/4	5 1/8	10	24026		13992	
13/32	3 7/8	5 1/4	5	24038		13995	
27/64	3 15/16	5 3/8	5	24044		13996	
7/16	4 1/16	5 1/2	5	24050		13997	
29/64	4 3/16	5 5/8	5	24053		13998	
15/32	4 5/16	5 3/4	5	25701		13999	
31/64	4 3/8	5 7/8	5	25704		14000	
1/2	4 1/2	6	5	25707		14001	

D	Corte LOC	OAL Longitud total		Nº Art. HSS	€/€
33/64	4 13/16	6 5/8	1	17928	
17/32	4 13/16	6 5/8	1	25713	
35/64	4 13/16	6 5/8	1	25722	
9/16	4 13/16	6 5/8	1	25725	
37/64	4 13/16	6 5/8	1	25731	
19/32	5 3/16	7 1/8	1	25734	
39/64	5 3/16	7 1/8	1	17930	
5/8	5 3/16	7 1/8	1	25740	
41/64	5 3/16	7 1/8	1	25743	
21/32	5 3/16	7 1/8	1	25746	
43/64	5 5/8	7 5/8	1	24143	
11/16	5 5/8	7 5/8	1	25752	
45/64	5 5/8	9 1/2	1	13683	
23/32	5 5/8	9 1/2	1	13686	
47/64	5 5/8	9 3/4	1	24149	
3/4	5 7/8	9 3/4	1	25767	
25/32	6	9 7/8	1	25776	
13/16	6 1/8	10	1	25779	
27/32	6 1/8	10	1	25782	
7/8	6 1/8	10	1	25785	
29/32	6 1/8	10	1	29845	
59/64	6 1/8	10 3/4	1	29841	
15/16	6 1/8	10 3/4	1	29842	
31/32	6 3/8	11	1	29844	
1	6 3/8	11	1	25800	

 Sets **1493** **1495** **1496** pag. 54-55



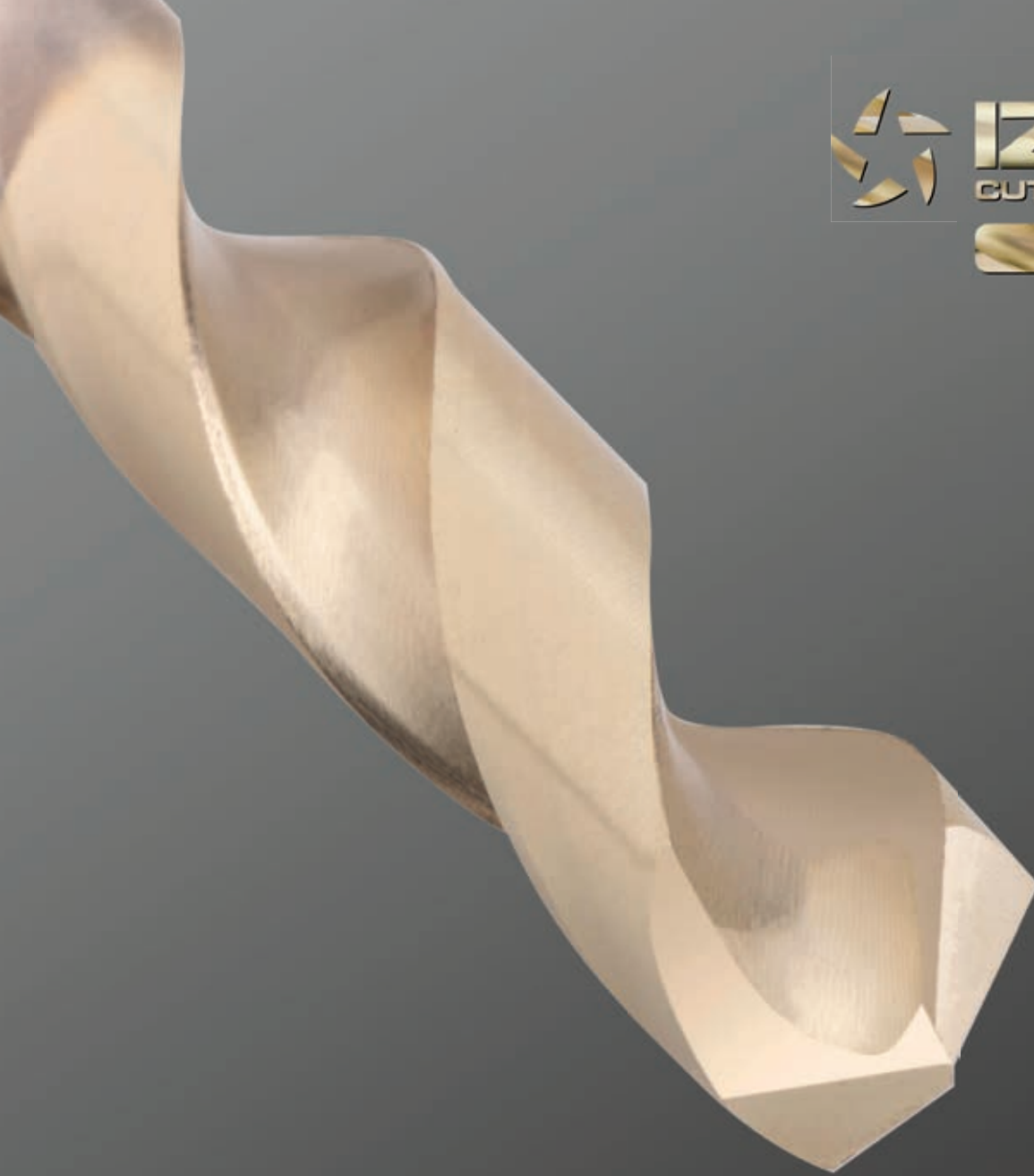


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**118° Point Angle**

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**Angulo punta 118°**

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**Angle Pointe 118°**

- Autocentreur
- Perceuse à main
- Géométrie pour réduire l'effort de coupe

**Latest generation Zirkonio coating by PVD**

- Based on ZRN
- Low Friction Coefficient
- High Corrosion Resistant
- Appropriate for Non-Ferrous Materials
- Built-Up Edge avoided

**Nuevo recubrimiento Zirkonio de última generación por PVD**

- Basado en ZRN
- Bajo coeficiente de fricción
- Muy resistente a la corrosión
- Adecuado para materiales no férricos
- Evita la adherencia de material en el filo de corte

**Nouveau revêtement Zirkonio dernière génération par PVD**

- Base ZRN
- Faible coefficient friction
- Résistant à l'usure
- Recommandé pour aciers non ferreux
- Évite l'adhérence sur les filets de coupe





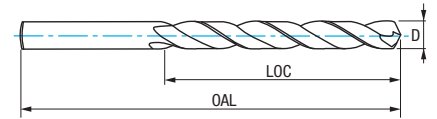
Ref. **1715**

FRACTIONAL-24

Zirkonio Straight Shank Drill Bit  
Broca Mango Cilíndrico Zirkonio  
Foret queue cylindrique zirkonio

Special  
Espécial  
Spécial

**Multi  
METAL**



HSS	Zirkonio	ANSI Std. N					Ground Rectificado Taillé meulé
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Material		Vc (ft./min.)	Feed-Avances-Pas <b>f/rev. (inch/rev)</b>												
Group	Sub.	Zirkonio	Ø 5/64	Ø 1/8	Ø 5/32	Ø 13/64	Ø 1/4	Ø 21/64	Ø 25/64	Ø 15/32	Ø 5/8	Ø 51/64	Ø 1	Ø 1 3/16	Ø 1 37/64
<b>P</b>	<b>P.1</b>	82 - 98	0,0018	0,0022	0,0028	0,0031	0,0039	0,0047	0,0059	0,0063	0,0071	0,0098	0,0118	0,0122	0,0157
<b>K</b>	<b>K.1</b>	98-115	0,0024	0,0035	0,0039	0,0047	0,0059	0,0071	0,0083	0,0098	0,0118	0,0142	0,0169	0,0201	0,0244
	<b>K.2</b>	82-98	0,0020	0,0028	0,0031	0,0039	0,0047	0,0055	0,0067	0,0079	0,0094	0,0110	0,0134	0,0161	0,0193
<b>N</b>	<b>N.3</b>	196-262	0,0031	0,0043	0,0051	0,0059	0,0075	0,0087	0,0102	0,0126	0,0150	0,0177	0,0213	0,0252	0,0303
	<b>N.4</b>	196-262	0,0031	0,0043	0,0051	0,0059	0,0075	0,0087	0,0102	0,0126	0,0150	0,0177	0,0213	0,0252	0,0303
	<b>N.5</b>	131-164	0,0024	0,0035	0,0039	0,0047	0,0059	0,0071	0,0083	0,0098	0,0118	0,0142	0,0169	0,0201	0,0244

$$\text{r.p.m.} = \frac{\text{Vc} \times 1.000}{\pi \times \phi}$$

$$\text{Vf (inch/min)} = \text{r.p.m.} \times \text{f}$$

D	LOC Corte	OAL Longitud total		N° Art. Zirkonio	€/ \$
3/64	3/4	1 3/4	10	77388	
1/16	7/8	1 7/8	10	77389	
5/64	1	2	10	77390	
3/32	1 1/4	2 1/4	10	77391	
7/64	1 1/2	2 5/8	10	77393	
1/8	1 5/8	2 3/4	10	77394	
9/64	1 3/4	2 7/8	10	77395	
5/32	2	3 1/8	10	77396	
11/64	2 1/8	3 1/4	10	77400	
3/16	2 5/16	3 1/2	10	77401	
13/64	2 7/16	3 5/8	10	77408	
7/32	2 1/2	3 3/4	10	77409	
15/64	2 5/8	3 7/8	10	77410	
1/4	2 3/4	4	10	77411	
17/64	2 7/8	4 1/8	10	77412	

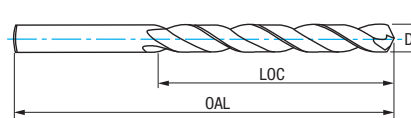
D	LOC Corte	OAL Longitud total		N° Art. Zirkonio	€/ \$
9/32	2 15/16	4 1/4	10	77415	
19/64	3 1/16	4 3/8	10	77416	
5/16	3 3/16	4 1/2	10	77417	
21/64	3 5/16	4 5/8	10	77418	
11/32	3 7/16	4 3/4	10	77419	
23/64	3 1/2	4 7/8	10	77420	
3/8	3 5/8	5	10	77421	
25/64	3 3/4	5 1/8	10	77423	
13/32	3 7/8	5 1/4	5	77424	
27/64	3 15/16	5 3/8	5	77425	
7/16	4 1/16	5 1/2	5	77426	
29/64	4 3/16	5 5/8	5	77427	
15/32	4 5/16	5 3/4	5	77428	
31/64	4 3/8	5 7/8	5	77429	
1/2	4 1/2	6	5	77430	



# Ref. 1702

FRACTIONAL-24

Split Point Straight Shank Drill Bit. Jobber Series  
 Broca Mango Cilíndrico Aguzada. Serie Corta  
 Foret queue cylindrique affutage en croix. Série courte



HSS	ANSI Std. N	118°			Ground Rectificado Taillé meulé
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Material		Vc (ft./min.)	Feed-Avances-Pas <b>f/rev. (inch/rev)</b>												
Group	Sub.		HSS	Ø 5/64	Ø 1/8	Ø 5/32	Ø 13/64	Ø 1/4	Ø 21/64	Ø 25/64	Ø 15/32	Ø 5/8	Ø 51/64	Ø 1	Ø 1 3/16
P	P.1	82 - 98	0,0018	0,0022	0,0028	0,0031	0,0039	0,0047	0,0059	0,0063	0,0071	0,0098	0,0118	0,0122	0,0157
K	K.1	98-115	0,0024	0,0035	0,0039	0,0047	0,0059	0,0071	0,0083	0,0098	0,0118	0,0142	0,0169	0,0201	0,0244
	K.2	82-98	0,0020	0,0028	0,0031	0,0039	0,0047	0,0055	0,0067	0,0079	0,0094	0,0110	0,0134	0,0161	0,0193
N	N.3	196-262	0,0031	0,0043	0,0051	0,0059	0,0075	0,0087	0,0102	0,0126	0,0150	0,0177	0,0213	0,0252	0,0303
	N.4	196-262	0,0031	0,0043	0,0051	0,0059	0,0075	0,0087	0,0102	0,0126	0,0150	0,0177	0,0213	0,0252	0,0303
	N.5	131-164	0,0024	0,0035	0,0039	0,0047	0,0059	0,0071	0,0083	0,0098	0,0118	0,0142	0,0169	0,0201	0,0244

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi} \quad Vf \text{ (inch/min)} = r.p.m. \times f$$

D	LOC Corte	OAL Longitud total		Nº Art. HSS	€/€
3/64	3/4	1 3/4	10	23232	
1/16	7/8	1 7/8	10	23233	
5/64	1	2	10	23234	
3/32	1 1/4	2 1/4	10	22822	
7/64	1 1/2	2 5/8	10	23235	
1/8	1 5/8	2 3/4	10	22824	
9/64	1 3/4	2 7/8	10	23236	
5/32	2	3 1/8	10	23237	
11/64	2 1/8	3 1/4	10	23238	
3/16	2 5/16	3 1/2	10	23239	
13/64	2 7/16	3 5/8	10	23240	
7/32	2 1/2	3 3/4	10	23241	
15/64	2 5/8	3 7/8	10	23242	
1/4	2 3/4	4	10	22825	
17/64	2 7/8	4 1/8	10	23243	
9/32	2 15/16	4 1/4	10	23244	
19/64	3 1/16	4 3/8	10	23245	
5/16	3 3/16	4 1/2	10	22826	
21/64	3 5/16	4 5/8	10	23246	
11/32	3 7/16	4 3/4	10	23247	
23/64	3 1/2	4 7/8	10	23248	
3/8	3 5/8	5	10	22827	

D	LOC Corte	OAL Longitud total		Nº Art. HSS	€/€
25/64	3 3/4	5 1/8	10	23249	
13/32	3 7/8	5 1/4	5	23250	
27/64	3 15/16	5 3/8	5	23251	
7/16	4 1/16	5 1/2	5	23252	
29/64	4 3/16	5 5/8	5	23253	
15/32	4 5/16	5 3/4	5	23254	
31/64	4 3/8	5 7/8	5	23255	
1/2	4 1/2	6	5	23256	
33/64	4 13/16	6 5/8	1	23257	
17/32	4 13/16	6 5/8	1	23258	
35/64	4 13/16	6 5/8	1	23259	
9/16	4 13/16	6 5/8	1	23260	
37/64	4 13/16	6 5/8	1	23261	
19/32	5 3/16	7 1/8	1	23262	
39/64	5 3/16	7 1/8	1	23263	
5/8	5 3/16	7 1/8	1	23264	
41/64	5 3/16	7 1/8	1	23265	
21/32	5 3/16	7 1/8	1	23266	
43/64	5 5/8	7 5/8	1	23267	
11/16	5 5/8	7 5/8	1	23268	
3/4	6 7/64	9 31/32	1	23269	

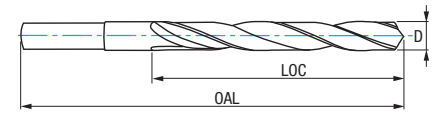


Ref. **1727**

FRACTIONAL-24

Hard Materials Reduced Shank Drill Bit. Jobber Series  
 Broca Mango Rebajado Materiales Duros. Serie Corta  
 Foret queue reduite matériaux durs. Série courte

**New!**

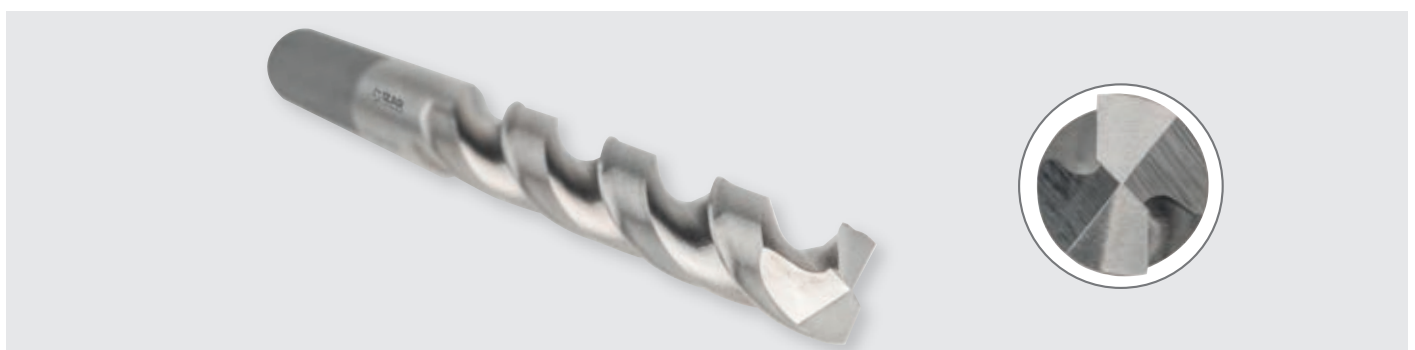


HSSE 5%Co	DIN 338 N	135°				D=1/2	L= 1 3/16		Ground Rectificado Taillé meulé	Tol. D h8
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Material		Vc (ft/min.)	Feed-Avances-Pas <b>f/rev. (inch/rev)</b>												
Group	Sub.	5% Co	Ø 5/64	Ø 1/8	Ø 5/32	Ø 13/64	Ø 1/4	Ø 21/64	Ø 25/64	Ø 15/32	Ø 5/8	Ø 51/64	Ø 1	Ø 1 3/16	Ø 1 37/64
P	P.3	26 - 49	0,0008	0,0014	0,0018	0,0020	0,0024	0,0028	0,0035	0,0039	0,0047	0,0063	0,0071	0,0075	0,0098
	P.5	26 - 39	0,0012	0,0016	0,0020	0,0024	0,0028	0,0035	0,0039	0,0047	0,0059	0,0067	0,0083	0,0098	0,0118
S		33-49	0,0008	0,0012	0,0016	0,0020	0,0024	0,0028	0,0031	0,0039	0,0047	0,0055	0,0063	0,0079	0,0094

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi} \quad Vf (inch/min) = r.p.m. \times f$$

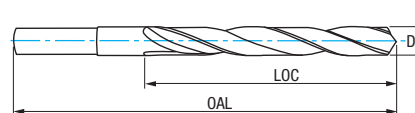
D	LOC Corte	OAL Longitud total		Nº Art. Cobalt	€/ \$
5/8	3	6	1	20140	
11/16	3	6	1	20153	
3/4	3	6	1	20156	
13/16	3	6	1	20162	
7/8	3	6	1	20163	
15/16	3	6	1	20165	
1	3	6	1	20167	



# Ref. 1717

FRACTIONAL-24

Reduced Shank Drill Bit. Jobber Series  
Broca Mango Rebajado. Serie Corta  
Foret queue reduit. Série courte



HSS	ANSI Std. N	118°			D=1/2	L= 1 3/16		Blue Finish	Ground Rectificado Taillé meulé
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Material		Vc (ft./min.)	Feed-Avances-Pas <b>f/rev.</b> (inch/rev)												
Group	Sub.		HSS	Ø 5/64	Ø 1/8	Ø 5/32	Ø 13/64	Ø 1/4	Ø 21/64	Ø 25/64	Ø 15/32	Ø 5/8	Ø 51/64	Ø 1	Ø 1 3/16
P	P.1	82 - 98	0,0018	0,0022	0,0028	0,0031	0,0039	0,0047	0,0059	0,0063	0,0071	0,0098	0,0118	0,0122	0,0157
	K	K.1	98-115	0,0024	0,0035	0,0039	0,0047	0,0059	0,0071	0,0083	0,0098	0,0118	0,0142	0,0169	0,0201
		K.2	82-98	0,0020	0,0028	0,0031	0,0039	0,0047	0,0055	0,0067	0,0079	0,0094	0,0110	0,0134	0,0161
N	N.3	196-262	0,0031	0,0043	0,0051	0,0059	0,0075	0,0087	0,0102	0,0126	0,0150	0,0177	0,0213	0,0252	0,0303
	N.4	196-262	0,0031	0,0043	0,0051	0,0059	0,0075	0,0087	0,0102	0,0126	0,0150	0,0177	0,0213	0,0252	0,0303
	N.5	131-164	0,0024	0,0035	0,0039	0,0047	0,0059	0,0071	0,0083	0,0098	0,0118	0,0142	0,0169	0,0201	0,0244

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$

$$Vf \text{ (inch/min)} = r.p.m. \times f$$

D	LOC Corte	OAL Longitud total		N° Art. HSS	€/€
17/32	3	6	1	22864	
9/16	3	6	1	22866	
19/32	3	6	1	22869	
5/8	3	6	1	22872	
21/32	3	6	1	22874	
11/16	3	6	1	22875	
23/32	3	6	1	22876	
3/4	3	6	1	22877	
25/32	3	6	1	22878	
13/16	3	6	1	22879	
27/32	3	6	1	24616	
7/8	3	6	1	22881	
29/32	3	6	1	24617	

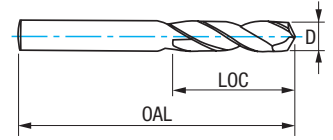
D	LOC Corte	OAL Longitud total		N° Art. HSS	€/€
15/16	3	6	1	22883	
31/32	3	6	1	24618	
1	3	6	1	22884	
1 1/16	3	6	1	22885	
1 1/8	3	6	1	22886	
1 5/32	3	6	1	24619	
1 3/16	3	6	1	22887	
1 1/4	3	6	1	22888	
1 5/16	3	6	1	22890	
1 3/8	3	6	1	22892	
1 7/16	3	6	1	24620	
1 1/2	3	6	1	22893	



Ref. **1752**

FRACTIONAL-24

Hard Materials Straight Shank Drill Bit. Stub Series  
 Broca Mango Cilíndrico Materiales Duros. Serie Extra Corta  
 Foret queue cylindrique matériaux durs. Série extra-courte



Cobalt 5%	ANSI Std. N				Gold Finish Ambar Finition Or	Ground Rectificado Taillé meulé
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Material		Vc (ft/min.)	Feed-Avances-Pas <b>f/rev. (inch/rev)</b>												
Group	Sub.	5% Co	Ø 5/64	Ø 1/8	Ø 5/32	Ø 13/64	Ø 1/4	Ø 21/64	Ø 25/64	Ø 15/32	Ø 5/8	Ø 51/64	Ø 1	Ø 1 3/16	Ø 1 37/64
P	P.3	26 - 49	0,0008	0,0014	0,0018	0,0020	0,0024	0,0028	0,0035	0,0039	0,0047	0,0063	0,0071	0,0075	0,0098
	P.5	26 - 39	0,0012	0,0016	0,0020	0,0024	0,0028	0,0035	0,0039	0,0047	0,0059	0,0067	0,0083	0,0098	0,0118
S		33-49	0,0008	0,0012	0,0016	0,0020	0,0024	0,0028	0,0031	0,0039	0,0047	0,0055	0,0063	0,0079	0,0094

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$

$$Vf \text{ (inch/min)} = r.p.m. \times f$$



D	LOC Corte	OAL Longitud total		Nº Art. Cobalt	€/€
3/64	1/2	1 3/8	10	13333	
1/16	5/8	1 5/8	10	29649	
5/64	11/16	1 11/16	10	29655	
3/32	3/4	1 3/4	10	29662	
7/64	13/16	1 13/16	10	29670	
1/8	7/8	1 7/8	10	29676	
9/64	15/16	1 15/16	10	29679	
5/32	1	2 1/16	10	29685	
11/64	1 1/16	2 1/8	10	29691	
3/16	1 1/8	2 3/16	10	29697	
13/64	1 3/16	2 1/4	10	29704	
7/32	1 1/4	2 3/8	10	29709	
15/64	1 5/16	2 7/16	10	29713	
1/4	1 3/8	2 1/2	10	29717	
17/64	1 7/16	2 5/8	10	29720	
9/32	1 1/2	2 11/16	10	29724	
19/64	1 9/12	2 3/4	10	29727	
5/16	1 5/8	2 13/16	10	29729	
21/64	1 11/16	2 15/16	10	29732	
11/32	1 11/16	3	10	29735	
23/64	1 3/4	3 1/16	10	29738	
3/8	1 13/16	3 1/8	10	29740	
25/64	1 7/8	3 1/4	10	29743	

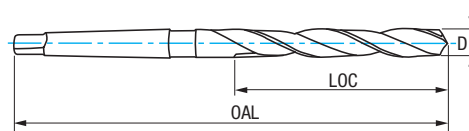
D	LOC Corte	OAL Longitud total		Nº Art. Cobalt	€/€
13/32	1 15/16	3 5/16	5	29746	
27/64	2	3 3/8	5	29748	
7/16	2 1/16	3 7/16	5	29749	
29/64	2 1/8	3 9/16	5	29750	
15/32	2 1/8	3 5/8	5	29751	
31/64	2 3/16	3 11/16	5	29752	
1/2	2 1/4	3 3/4	5	29753	
33/64	2 3/8	3 7/8	1	13334	
17/32	2 3/8	3 7/8	1	29754	
35/64	2 1/2	4	1	13335	
9/16	2 43/64	4 11/64	1	29756	
19/32	2 5/8	4 1/8	1	13336	
39/64	2 3/4	4 1/4	1	13337	
5/8	2 15/16	4 7/16	1	29759	
41/64	2 7/8	4 1/2	1	13338	
21/32	2 7/8	4 1/2	1	13339	
11/16	3 5/64	4 53/64	1	29760	
3/4	3 11/32	5 7/32	1	29761	
25/32	3 1/4	5 1/8	1	68674	
13/16	3 3/8	5 1/4	1	68617	
27/32	3 1/2	5 3/8	1	68675	
7/8	3 1/2	5 1/2	1	68618	
1	4	6	1	68619	



# Ref. 1710

FRACTIONAL-24

Morse Taper Shank Drill Bit. Jobber Series  
 Broca Mango Cónico. Serie Corta  
 Foret queue cône morse. Série courte



HSS	ANSI Std. N	118°			Blue Finish	Ground Rectificado Taillé meulé
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Material		Vc (ft/min.)	Feed-Avances-Pas <b>f/rev. (inch/rev)</b>												
Group	Sub.		HSS	Ø 5/64	Ø 1/8	Ø 5/32	Ø 13/64	Ø 1/4	Ø 21/64	Ø 25/64	Ø 15/32	Ø 5/8	Ø 51/64	Ø 1	Ø 1 3/16
P	P.1	82 - 98	0,0018	0,0022	0,0028	0,0031	0,0039	0,0047	0,0059	0,0063	0,0071	0,0098	0,0118	0,0122	0,0157
	P.2	49 - 66	0,0014	0,0018	0,0020	0,0024	0,0031	0,0039	0,0047	0,0051	0,0063	0,0079	0,0098	0,0102	0,0118
K	K.1	98-115	0,0024	0,0035	0,0039	0,0047	0,0059	0,0071	0,0083	0,0098	0,0118	0,0142	0,0169	0,0201	0,0244
	K.2	82-98	0,0020	0,0028	0,0031	0,0039	0,0047	0,0055	0,0067	0,0079	0,0094	0,0110	0,0134	0,0161	0,0193
N	N.1	180-215	0,0016	0,0020	0,0024	0,0031	0,0035	0,0043	0,0051	0,0059	0,0075	0,0087	0,0102	0,0126	0,0150
	N.2	82-98	0,0024	0,0035	0,0039	0,0047	0,0059	0,0071	0,0083	0,0098	0,0118	0,0142	0,0169	0,0201	0,0244

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$


$$Vf \text{ (inch/min)} = r.p.m. \times f$$




Ref. **1710**

FRACTIONAL-24

Morse Taper Shank Drill Bit. Jobber Series  
Broca Mango Cónico. Serie Corta  
Foret queue cône morse. Série courte

D	LOC Corte	OAL Longitud total	CM Taper		Nº Art. HSS	€/€
<b>1/2</b>	3 63/64	7 11/64	1	1	22894	
<b>33/64</b>	3 63/64	7 11/64	1	1	22896	
<b>17/32</b>	4 1/4	7 7/16	1	1	22899	
<b>35/64</b>	4 1/4	7 7/16	1	1	22901	
<b>9/16</b>	4 31/64	8 11/32	2	1	22902	
<b>37/64</b>	4 31/64	8 11/32	2	1	22903	
<b>19/32</b>	4 23/32	8 37/64	2	1	22905	
<b>39/64</b>	4 23/32	8 37/64	2	1	22906	
<b>5/8</b>	4 23/32	8 37/64	2	1	22908	
<b>41/64</b>	4 59/64	8 25/32	2	1	22911	
<b>21/32</b>	4 59/64	8 25/32	2	1	22913	
<b>43/64</b>	5 1/8	8 31/32	2	1	22914	
<b>11/16</b>	5 1/8	8 31/32	2	1	22915	
<b>45/64</b>	5 1/8	8 31/32	2	1	22916	
<b>23/32</b>	5 5/16	9 11/64	2	1	22917	
<b>47/64</b>	5 5/16	9 11/64	2	1	22918	
<b>3/4</b>	5 33/64	9 3/8	2	1	22919	
<b>49/64</b>	5 33/64	9 3/8	2	1	22920	
<b>25/32</b>	5 33/64	9 3/8	2	1	22921	
<b>51/64</b>	5 45/64	9 9/16	2	1	22922	
<b>13/16</b>	5 45/64	9 9/16	2	1	22923	
<b>53/64</b>	5 45/64	9 9/16	2	1	22924	
<b>27/32</b>	5 29/32	9 49/64	2	1	22926	
<b>55/64</b>	5 29/32	9 49/64	2	1	22927	
<b>7/8</b>	5 29/32	9 61/64	2	1	22928	
<b>57/64</b>	6 7/64	9 61/64	2	1	22929	
<b>29/32</b>	6 7/64	9 61/64	2	1	22930	
<b>59/64</b>	6 7/64	10 55/64	3	1	22931	

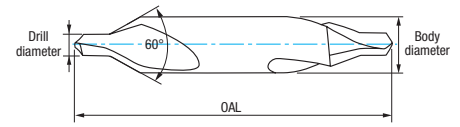
D	LOC Corte	OAL Longitud total	CM Taper		Nº Art. HSS	€/€
<b>15/16</b>	6 19/64	11 1/16	3	1	22932	
<b>61/64</b>	6 19/64	11 1/16	3	1	22933	
<b>31/32</b>	6 19/64	11 1/16	3	1	22934	
<b>63/64</b>	6 1/2	11 17/64	3	1	22935	
<b>1</b>	6 1/2	11 17/64	3	1	22936	
<b>1 1/32</b>	6 1/2	11 17/64	3	1	22937	
<b>1 1/16</b>	6 11/16	11 29/64	3	1	22938	
<b>1 3/32</b>	6 11/16	11 29/64	3	1	22939	
<b>1 1/8</b>	6 57/64	11 21/32	3	1	22940	
<b>1 5/32</b>	6 57/64	11 21/32	3	1	22941	
<b>1 3/16</b>	7 3/32	11 27/32	3	1	22942	
<b>1 7/32</b>	7 3/32	11 27/32	3	1	22943	
<b>1 1/4</b>	7 9/32	12 3/64	3	1	22944	
<b>1 9/32</b>	7 9/32	13 5/32	4	1	22946	
<b>1 5/16</b>	7 9/32	13 5/32	4	1	22947	
<b>1 11/32</b>	7 31/64	13 11/32	4	1	22948	
<b>1 3/8</b>	7 31/64	13 11/32	4	1	22949	
<b>1 13/32</b>	7 43/64	13 35/64	4	1	22950	
<b>1 7/16</b>	7 43/64	13 35/64	4	1	22951	
<b>1 1/2</b>	7 7/8	13 47/64	4	1	22952	
<b>1 9/16</b>	7 7/8	13 47/64	4	1	22953	
<b>1 5/8</b>	8 5/64	13 15/16	4	1	22954	
<b>1 11/16</b>	8 17/64	14 9/64	4	1	22955	
<b>1 3/4</b>	8 17/64	14 9/64	4	1	22956	
<b>1 13/16</b>	8 15/32	14 21/64	4	1	22957	
<b>1 7/8</b>	8 21/32	14 17/32	4	1	22958	
<b>1 15/16</b>	8 21/32	14 17/32	4	1	22959	
<b>2</b>	8 55/64	14 23/32	4	1	22960	



# Ref. 1370

FRACTIONAL-24

## Cobalt Double Center Drill Broca Centrar Doble Cobalto Foret à centrer double cobalt



Cobalt 5%	ASME Std.	60°	118°	Ground Rectificado Taillé meulé
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Material		Vc (ft/min.)	Feed-Avances-Pas <b>f/rev. (inch/rev)</b>												
Group	Sub.	5% Co	Ø 5/64	Ø 1/8	Ø 5/32	Ø 13/64	Ø 1/4	Ø 21/64	Ø 25/64	Ø 15/32	Ø 5/8	Ø 51/64	Ø 1	Ø 1 3/16	Ø 1 37/64
P	P.1	71-90	0,0018	0,0022	0,0028	0,0031	0,0039	0,0047	0,0059	0,0063	0,0071	0,0098	0,0118	0,0122	0,0157
	P.2	29-43	0,0014	0,0018	0,0020	0,0024	0,0031	0,0039	0,0047	0,0051	0,0063	0,0079	0,0098	0,0102	0,0118
K	K.1	72-87	0,0024	0,0035	0,0039	0,0047	0,0059	0,0071	0,0083	0,0098	0,0118	0,0142	0,0169	0,0201	0,0244
	K.2	54-72	0,0020	0,0028	0,0031	0,0039	0,0047	0,0055	0,0067	0,0079	0,0094	0,0110	0,0134	0,0161	0,0193
N	N.1	90-108	0,0016	0,0020	0,0024	0,0031	0,0035	0,0043	0,0051	0,0059	0,0075	0,0087	0,0102	0,0126	0,0150
	N.5	54-90	0,0024	0,0035	0,0039	0,0047	0,0059	0,0071	0,0083	0,0098	0,0118	0,0142	0,0169	0,0201	0,0244

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$

$$Vf \text{ (inch/min)} = r.p.m. \times f$$

D	Diam. Drill/Broca/Foret	Diam. Body/Cuerpo/Corps	OAL Longitud total		Nº Art. Cobalt	€/€
0	1/32	3/32	1 1/8	1	42859	
1	3/64	1/8	1 1/4	1	42860	
2	5/64	3/16	1 7/8	1	42861	
3	7/64	1/4	2	1	42862	
4	1/8	5/16	2 1/8	1	42864	
5	3/16	7/16	2 3/4	1	42867	
6	7/32	1/2	3	1	42870	
7	1/4	5/8	3 1/4	1	42871	
8	5/16	3/4	3 1/2	1	42873	

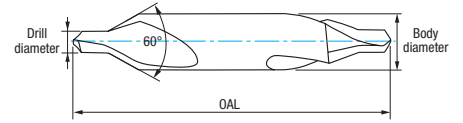




# Ref. 1380

FRACTIONAL-24

## HSS Double Center Drill Broca Centrar Doble HSS Foret à centrer double HSS



HSS	ASME Std.	60°	118°	Ground Rectificado Taillé meulé
-----	-----------	-----	------	---------------------------------------

Material		Vc (ft./min.)	Feed-Avances-Pas <b>f/rev. (inch/rev)</b>												
Group	Sub.		HSS	Ø 5/64	Ø 1/8	Ø 5/32	Ø 13/64	Ø 1/4	Ø 21/64	Ø 25/64	Ø 15/32	Ø 5/8	Ø 51/64	Ø 1	Ø 1 3/16
P	P.1	65-82	0,0018	0,0022	0,0028	0,0031	0,0039	0,0047	0,0059	0,0063	0,0071	0,0098	0,0118	0,0122	0,0157
	P.2	26-39	0,0014	0,0018	0,0020	0,0024	0,0031	0,0039	0,0047	0,0051	0,0063	0,0079	0,0098	0,0102	0,0118
	P.5	20-26	0,0012	0,0016	0,0020	0,0024	0,0028	0,0035	0,0039	0,0047	0,0059	0,0067	0,0083	0,0098	0,0118
K	K.1	65-79	0,0024	0,0035	0,0039	0,0047	0,0059	0,0071	0,0083	0,0098	0,0118	0,0142	0,0169	0,0201	0,0244
	K.2	49-65	0,0020	0,0028	0,0031	0,0039	0,0047	0,0055	0,0067	0,0079	0,0094	0,0110	0,0134	0,0161	0,0193
N	N.1	82-98	0,0016	0,0020	0,0024	0,0031	0,0035	0,0043	0,0051	0,0059	0,0075	0,0087	0,0102	0,0126	0,0150
	N.2	82-98	0,0024	0,0035	0,0039	0,0047	0,0059	0,0071	0,0083	0,0098	0,0118	0,0142	0,0169	0,0201	0,0244
	N.5	49-82	0,0024	0,0035	0,0039	0,0047	0,0059	0,0071	0,0083	0,0098	0,0118	0,0142	0,0169	0,0201	0,0244

$$\text{r.p.m.} = \frac{\text{Vc} \times 1.000}{\pi \times \phi}$$

$$\text{Vf (inch/min)} = \text{r.p.m.} \times \text{f}$$

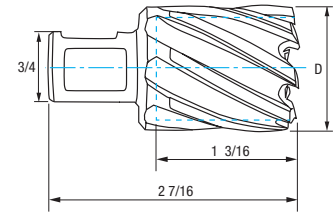
D	Diam. Drill/Broca/Foret	Diam. Body/Cuerpo/Corps	OAL Longitud total		Nº Art. HSS	€/€
0	1/32	3/32	1 1/8	1	43940	
1	3/64	1/8	1 1/4	1	40054	
2	5/64	3/16	1 7/8	1	40056	
3	7/64	1/4	2	1	40059	
4	1/8	5/16	2 1/8	1	40060	
5	3/16	7/16	2 3/4	1	40250	
6	7/32	1/2	3	1	40253	
7	1/4	5/8	3 1/4	1	40062	
8	5/16	3/4	3 1/2	1	40064	



# Ref. 7070

FRACTIONAL-24

Short HSS Annular Cutter Core Drill  
 Fresa Hueca Máquinas Electromagnéticas HSS Corta  
 Fraise à carotter pour unité de perçage électromagnétique HSS courte



HSS-XT

Short Length  
Serie Corta  
Série courte

Ground  
Rectificado  
Taillé meulé

Structural Steels  
Aceros Construcción  
Aciers de construction

Suitable with Minimal Cooling  
Apto con poca Lubricación  
Apte avec lubrification minimale

**DOBLE  
WELDON**

Material		RPM						
Group	Sub.	1/2	5/8	13/16	1	1 1/4	1 5/8	2
P	P.1	344	258	206	165	137	105	83
	P.2	265	198	159	127	106	80	65
K	K.1	477	358	286	229	190	145	115
N	N.3	981	736	588	471	392	295	235

D	LOC Corte	d	Nº Art. HSS	€/€
1/2	1 3/16	3/4	65762	
9/16	1 3/16	3/4	65763	
5/8	1 3/16	3/4	43598	
11/16	1 3/16	3/4	43599	
3/4	1 3/16	3/4	43600	
13/16	1 3/16	3/4	43601	
7/8	1 3/16	3/4	65764	
15/16	1 3/16	3/4	43602	
1	1 3/16	3/4	65765	
1 1/16	1 3/16	3/4	43603	
1 1/8	1 3/16	3/4	43604	
1 3/16	1 3/16	3/4	65766	
1 1/4	1 3/16	3/4	43605	

D	LOC Corte	d	Nº Art. HSS	€/€
1 5/16	1 3/16	3/4	65767	
1 3/8	1 3/16	3/4	65769	
1 7/16	1 3/16	3/4	65770	
1 1/2	1 3/16	3/4	43606	
1 9/16	1 3/16	3/4	65772	
1 5/8	1 3/16	3/4	65773	
1 11/16	1 3/16	3/4	65774	
1 3/4	1 3/16	3/4	65775	
1 13/16	1 3/16	3/4	65776	
1 7/8	1 3/16	3/4	65777	
1 15/16	1 3/16	3/4	65778	
2	1 3/16	3/4	65779	
2 1/16	1 3/16	3/4	65780	



# Ref. 4075

FRACTIONAL-24

Pilot Pin  
Expulsor  
Ejecteur



HSS



D	LOC Corte	OAL Longitud total	Nº Art. HSS	€/€
1/4	1 3/16	3 1/16	61502	

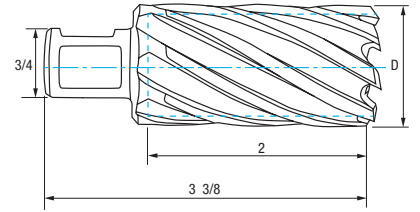


Ref. **7071**

FRACTIONAL-24

FRESA HUECA MÁQUINAS ELECTROMAGNÉTICAS HSS LARGA  
Long HSS Annular Cutter Core Drill

Fraise à carotter pour unité de perçage électromagnétique HSS longue



HSS-XT

Long Length  
Serie Larga  
Série longue

Ground  
Rectificado  
Taillé meulé

Structural Steels  
Aceros Construcción  
Aciers de construction

Suitable with Minimal Cooling  
Apto con Poca Lubricación  
Apte avec lubrification minimale

**DOBLE  
WELDON**

Material		RPM				
Group	Sub.	11/16	13/16	1 1/8	3/4	7/8
P	P.1	225	206	140	210	180
	P.2	170	159	113	145	145
K	K.1	315	286	210	290	255
N	N.3	650	588	400	595	520

D	LOC Corte	d	Nº Art. HSS	€/€
1/2	2	3/4	14405	
9/16	2	3/4	68280	
5/8	2	3/4	68276	
11/16	2	3/4	43608	
3/4	2	3/4	65374	
13/16	2	3/4	43609	
7/8	2	3/4	68278	
15/16	2	3/4	43611	
1	2	3/4	14401	
1 1/16	2	3/4	43612	

D	LOC Corte	d	Nº Art. HSS	€/€
1 1/8	2	3/4	43613	
1 1/4	2	3/4	43614	
1 3/8	2	3/4	14394	
1 1/2	2	3/4	43615	
1 9/16	2	3/4	14402	
1 13/16	2	3/4	14404	
1 7/8	2	3/4	14406	

Other sizes upon request  
Otras medidas bajo demanda  
Autres tailles sur demande



Ref. **4075**

FRACTIONAL-24

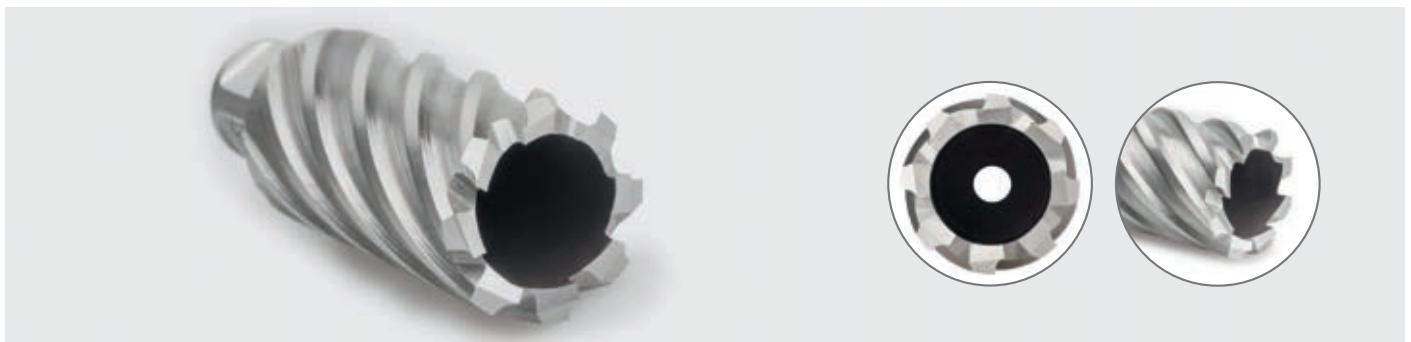
Pilot Pin  
Expulsor  
Ejecteur



HSS



D	LOC Corte	OAL Longitud total	Nº Art. HSS	€/€
1/4	2	4	61500	





Next Generation Manufacturing

[izartool.com](http://izartool.com)

# OLATU

Exclusive Packaging

## Making the difference

- Exclusive design
- 13% lighter
- 64% less environmental impact
- Ergonomic
- Possible to hang
- Stackable

## Marcamos la diferencia

- Diseño exclusivo
- 13% más ligero
- 64% menos de impacto ambiental
- Ergonómico
- Apto para colgar
- Apilable

## Marquant la différence

- Design esclusif
- 13% plus léger
- 64% moins d'impact environnementale
- Ergonomique
- Brochable
- Empilable



▶ Video



# Ref. 1493

FRACTIONAL-24

Drill Bit Set. **13 pcs.** (1/16 - 1/4 × 1/64)  
 Juego Brocas. **13 Pcs.** (1/16 - 1/4 X 1/64)  
 Jeu de forets. **13 pcs.** (1/16 - 1/4 × 1/64)



Set  
1070

N° Art. HSS	€/€
13065	



Set  
1070 TIN

N° Art. TIN	€/€
14279	

\* Upon request  
Art. bajo demanda  
sur demande



Set  
1700

N° Art. Cobalt	€/€
14280	



Set  
1720

**New!**

N° Art. Cobalt	€/€
75841	



Set  
1729

**New!**

N° Art. BORDEAUX	€/€
12081	

# Ref. 1495

FRACTIONAL-24

Drill Bit Set. **15 pcs.** (1/16 - 1/2 × 1/32)  
 Juego Brocas. **15 Pcs.** (1/16 - 1/2 X 1/32)  
 Jeu de forets. **15 pcs.** (1/16 - 1/2 × 1/32)



Set  
1070

N° Art. HSS	€/€
13067	



Set  
1070 TIN

N° Art. TIN	€/€
19230	

\* Upon request  
Art. bajo demanda  
sur demande



Set  
1700

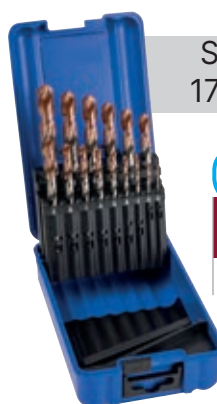
N° Art. Cobalt	€/€
14272	



Set  
1720

**New!**

N° Art. Cobalt	€/€
75842	



Set  
1729

**New!**

N° Art. BORDEAUX	€/€
12091	



Ref. **1496**  
 FRACTIONAL-24

Drill Bit Set. **29 pcs.** (1/16 - 1/2 × 1/64)  
 Juego Brocas. **29 Pcs.** (1/16 - 1/2 X 1/64)  
 Jeu de forets. **29 pcs.** (1/16 - 1/2 × 1/64)



Set  
1070

N° Art. HSS	€/€
20423	



Set  
1070 TIN

N° Art. TIN	€/€
19231	

\* Upon request  
 Art. bajo demanda  
 sur demande



Set  
1700

N° Art. Cobalt	€/€
14271	



Set  
1720

**New!**

N° Art. Cobalt	€/€
75844	



Set  
1729

**New!**

N° Art. BORDEAUX	€/€
12095	





Precision manufacturing

[izartool.com](http://izartool.com)



# 03.

FRACTIONAL - INCHES · PULGADAS · POUÇES

## Threading

### Roscado

### Taraudage



#### UNC Taps

Machos UNC

Tarauds UNC

58

#### UNF Taps

Machos UNF

Tarauds UNF

68

#### UNEF - UN - NPT Taps

Machos UNEF - UN - NPT

Tarauds UNEF - UN - NPT

77

#### BSW (Whitworth)

BSP (Gas) - BSPT Taps

Machos BSW (Whitworth) -

BSP (GAS) - BSPT

Tarauds BSW (Whitworth) -

BSP (Gaz) - BSPT

82

#### Dies

Cojinetes

Filières

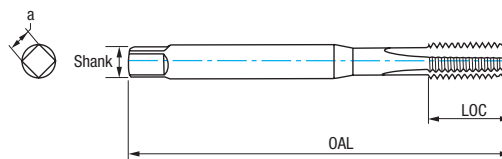
99



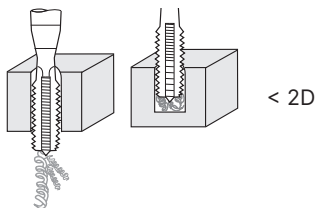
# Ref. 3144

FRACTIONAL-24

UNC Machine Straight Tap  
Macho Recto Máquina UNC  
Taraud droit machine UNC



PMX	HARD	DIN 371	C 2-3h	Tol. 2B	$\alpha$ 10 -14°	60°
-----	------	---------	-----------	------------	---------------------	-----



Material		Vc (ft/min.)
Group	Sub.	5%Co
P	P.1	6-10
K	K.1	7-10
	K.2	4-7
N	N.1	5-8
	N.2	8-12
	N.3	15-35
	N.4	14-20
	N.5	12-15

Feed / Avance  $f = \text{TPI}$

TPI = threads per inch  
hilos por pulgada  
filets par pouce

$$\text{r.p.m.} = \frac{\text{Vc (ft/min)} \times 3,82}{\phi \text{ (inch)}}$$

$$\text{Vf (inch/min)} = \frac{\text{r.p.m.}}{\text{TPI}}$$

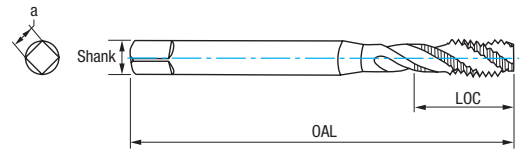
UNC	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue	$\phi$	$\alpha$	Z	N° Art. HARD	€/€
UNC N°10	24	2 3/4	33/64	15/64	3/16	3	3	71378	
UNC 1/4	20	3 5/32	19/32	9/32	13/64	3	3	71372	
UNC 5/16	18	3 35/64	45/64	5/16	1/4	3	3	71376	
UNC 3/8	16	3 35/64	25/32	23/64	9/32	3	3	71374	



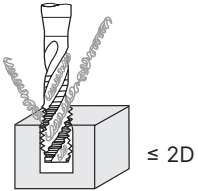
# Ref. 3104

FRACTIONAL-24

UNC Machine Spiral Tap  
 Macho Helicoidal Máquina UNC  
 Taraud hélicoïdal machine UNC



PMX	HARD	DIN 371	C 2-3h	Tol. 2B	35°	α 10 -14°	60°
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Material		Vc (ft/min.)
Group	Sub.	5%Co
P	P.1	6-10
K	K.1	7-10
	K.2	4-7
N	N.1	5-8
	N.2	8-12
	N.3	15-35
	N.4	14-20
	N.5	12-15

Feed / Avance  $f = \text{TPI}$

TPI = threads per inch  
 hilos por pulgada  
 filets par pouce

$$\text{r.p.m.} = \frac{\text{Vc (ft/min)} \times 3,82}{\phi \text{ (inch)}}$$

$$\text{Vf (inch/min)} = \frac{\text{r.p.m.}}{\text{TPI}}$$

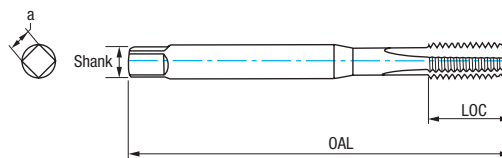
UNC	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue	a	Z	N° Art. HARD	€/€
UNC N°10	24	2 3/4	5/16	15/64	3/16	3	69500	
UNC 1/4	20	3 5/32	25/64	9/32	7/32	3	69502	
UNC 5/16	18	3 35/64	33/64	5/16	1/4	3	69503	
UNC 3/8	16	3 35/64	19/32	23/64	9/32	3	69505	



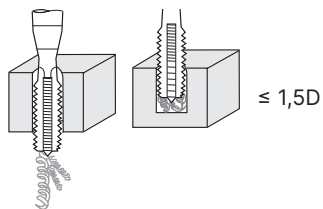
# Ref. 3114

FRACTIONAL-24

Reinforced Shank UNC Machine Straight Tap  
 Macho Recto Máquina UNC Mango Reforzado  
 Taraud droit machine UNC queue renforcée



Cobalt 5%	DIN 371	C 2-3h	Tol. 2B	$\alpha$ $10^\circ \pm 2$	$60^\circ$
--------------	------------	-----------	------------	------------------------------	------------



Material		Vc (ft/min.)
Group	Sub.	5%Co
P	P.1	20-32
K	K.1	22-32
	K.2	13-22
N	N.1	16-26
	N.2	26-39
	N.3	49-115
	N.4	45-66
	N.5	39-49

Feed / Avance  $f = \text{TPI}$

TPI = threads per inch  
 hilos por pulgada  
 filets par pouce

$$\text{r.p.m.} = \frac{\text{Vc (ft/min)} \times 3,82}{\phi \text{ (inch)}}$$

$$\text{Vf (inch/min)} = \frac{\text{r.p.m.}}{\text{TPI}}$$

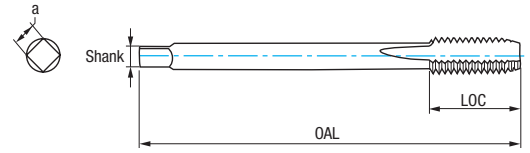
UNC	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue	$\phi$ a	Z	N° Art. Cobalt	€/€
UNC N°5	40	2 13/64	7/16	9/64	7/64	3	75615	
UNC N°6	32	2 13/64	33/64	5/32	1/8	3	75616	
UNC N°8	32	2 31/64	33/64	11/64	9/64	3	75617	
UNC N°10	24	2 3/4	5/8	15/64	3/16	3	75618	
UNC N°12	24	3 5/32	43/64	15/64	3/16	3	75619	
UNC 1/4	20	3 5/32	3/4	9/32	7/32	3	75507	
UNC 5/16	18	3 35/64	55/64	5/16	1/4	3	16693	
UNC 3/8	16	3 35/64	55/64	23/64	9/32	3	75509	



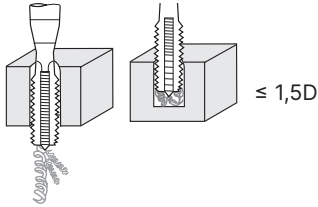
# Ref. 3214

FRACTIONAL-24

UNC Machine Straight Tap  
 Macho Recto Máquina UNC  
 Taraud droit machine UNC



Cobalt 5%	DIN 376	C 2-3h	Tol. 2B	$\alpha$ $10^\circ \pm 2$
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Material		Vc (ft/min.)
Group	Sub.	5%Co
P	P.1	20-32
K	K.1	22-32
	K.2	13-22
N	N.1	16-26
	N.2	26-39
	N.3	49-115
	N.4	45-66
	N.5	39-49

Feed / Avance  $f =$  TPI

TPI = threads per inch  
 hilos por pulgada  
 filets par pouce

$$r.p.m. = \frac{Vc \text{ (ft/min)} \times 3,82}{\phi \text{ (inch)}}$$

$$Vf \text{ (inch/min)} = \frac{r.p.m.}{TPI}$$

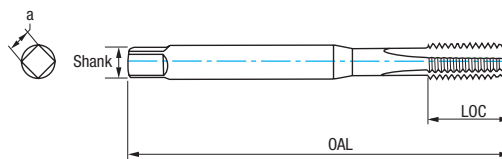
UNC	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue	$\phi$ a	Z	N° Art. Cobalt	€/€
UNC 7/16	14	3 15/16	55/64	5/16	1/4	4	70485	
UNC 1/2	13	4 21/64	15/16	23/64	9/32	4	70486	
UNC 9/16	12	4 21/64	1 1/32	7/16	23/64	4	70488	
UNC 5/8	11	4 21/64	1 1/16	15/32	23/64	4	70489	
UNC 3/4	10	4 59/64	1 3/16	35/64	7/16	4	70491	
UNC 7/8	9	5 33/64	1 7/32	45/64	37/64	4	70492	
UNC 1	8	6 19/64	1 3/8	45/64	37/64	4	70494	
UNC 1 1/8	7	7 3/32	1 17/32	55/64	45/64	4	75339	



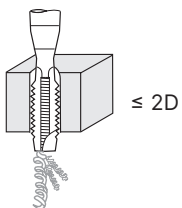
# Ref. 3134

FRACTIONAL-24

Reinforced Shank UNC Machine Straight Tap  
 Macho Recto Máquina UNC Mango Reforzado  
 Taraud droit machine UNC queue renforcée



Cobalt 5%	DIN 371	B 3,5-5h	Tol. 2B	GUN	$\alpha$ 10 -14°	60°
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Material		Vc (ft/min.)
Group	Sub.	5%Co
P	P.1	20-32
K	K.1	22-32
	K.2	13-22
N	N.1	16-26
	N.2	26-39
	N.3	49-115
	N.4	45-66
	N.5	39-49

Feed / Avance  $f = \frac{TPI}{Z}$

TPI = threads per inch  
 hilos por pulgada  
 filets par pouce

$$r.p.m. = \frac{Vc \text{ (ft/min)} \times 3,82}{\phi \text{ (inch)}}$$

$$Vf \text{ (inch/min)} = \frac{r.p.m.}{TPI}$$

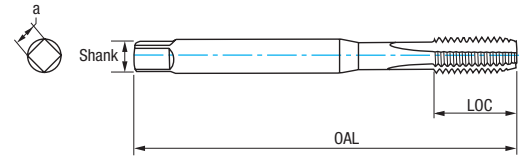
UNC	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue	$\phi$	Z	N° Art. Cobalt	€/€
UNC N°5	40	2 13/64	23/64	9/64	7/64	3	75627	
UNC N°6	32	2 13/64	7/16	5/32	1/8	3	75628	
UNC N°8	32	2 31/64	15/32	11/64	9/64	3	75629	
UNC N°10	24	2 3/4	33/64	15/64	3/16	3	75630	
UNC N°12	24	3 5/32	19/32	15/64	3/16	3	75631	
UNC 1/4	20	3 5/32	19/32	9/32	7/32	3	75527	
UNC 5/16	18	3 35/64	45/64	5/16	1/4	3	75531	
UNC 3/8	16	3 35/64	25/32	23/64	9/32	3	75529	



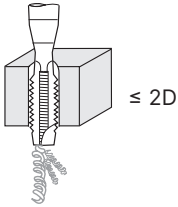
# Ref. 3234

FRACTIONAL-24

## UNC Machine Straight Tap Macho Recto Máquina UNC Taraud droit machine UNC



Cobalt 5%	DIN 376	B 3,5-5h	Tol. 2B	GUN	$\alpha$ 10 -14°	60°
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Material		Vc (ft/min.)
Group	Sub.	5%Co
P	P.1	20-32
K	K.1	22-32
	K.2	13-22
N	N.1	16-26
	N.2	26-39
	N.3	49-115
	N.4	45-66
	N.5	39-49

Feed / Avance  $f = \text{TPI}$

TPI = threads per inch  
hilos por pulgada  
filets par pouce

$$\text{r.p.m.} = \frac{\text{Vc (ft/min)} \times 3,82}{\phi \text{ (inch)}}$$

$$\text{Vf (inch/min)} = \frac{\text{r.p.m.}}{\text{TPI}}$$

UNC	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue	$\phi$ a	Z	N° Art. Cobalt	€/€
UNC 7/16	14	3 15/16	25/32	5/16	1/4	3	70521	
UNC 1/2	13	4 21/64	29/32	23/64	9/32	3	70512	
UNC 9/16	12	4 21/64	63/64	7/16	23/64	3	70522	
UNC 5/8	11	4 21/64	63/64	15/32	23/64	3	70516	
UNC 3/4	10	4 59/64	1 3/16	35/64	7/16	3	70513	
UNC 7/8	9	5 33/64	1 3/16	45/64	37/64	3	70519	
UNC 1	8	6 19/64	1 27/64	45/64	37/64	3	70524	

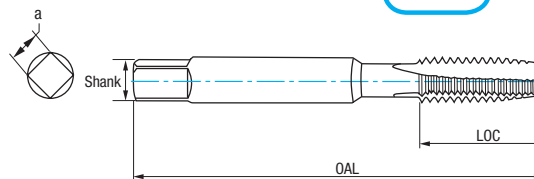


# Ref. 3103

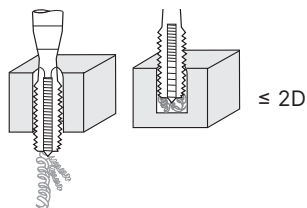
FRACTIONAL-24

ISO 529 Norm Standard UNC Machine Straight Tap  
 Macho Recto Máquina UNC Norma ISO 529  
 Taraud droit machine UNC norme ISO 529

**New!**



HSS	ISO 529	B 3,5-5h	C 2-3h	Tol. 6H	GUN	$\alpha$ 10-12°	60°
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Material		Vc (ft./min.)
Group	Sub.	HSS
P	P.1	20-32
N	N.1	16-26
	N.3	49-115
	N.4	45-66

Feed / Avance  $f = \text{TPI}$

TPI = threads per inch  
 hilos por pulgada  
 filets par pouce

$$\text{r.p.m.} = \frac{\text{Vc (ft/min)} \times 3,82}{\phi \text{ (inch)}}$$

$$\text{Vf (inch/min)} = \frac{\text{r.p.m.}}{\text{TPI}}$$



UNC	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue	$\phi$	$\alpha$	Z	N° Art. HSS	€/€	N° Art. HSS	€/€
UNC N°1	64	1 5/8	5/16	3/32	5/64	3		62989		62990	
UNC N°2	56	1 3/4	3/8	7/64	3/32	3		62991		62992	
UNC N°3	48	1 3/4	3/8	7/64	3/32	3		62994		62995	
UNC N°4	40	1 7/8	7/16	1/8	3/32	3		62996		62997	
UNC N°5	40	1 7/8	7/16	1/8	3/32	3		62998		62999	
UNC N°6	32	1 15/16	1/2	9/64	7/64	3		63000		63001	
UNC N°8	32	2 1/16	1/2	11/64	9/64	3		63003		63004	
UNC N°10	24	2 5/16	5/8	13/64	5/32	3		63006		63007	
UNC N°12	24	2 7/16	11/16	7/32	11/64	3		63009		63012	
UNC 1/4	20	2 5/8	3/4	1/4	13/64	3		63016		63018	
UNC 5/16	18	2 13/16	7/8	5/16	1/4	3		63019		63021	
UNC 3/8	16	3 1/8	15/16	25/64	5/16	3		63022		63027	
UNC 7/16	14	3 3/8	63/64	5/16	1/4	3		63028		63030	
UNC 1/2	13	3 1/2	1 1/8	23/64	9/32	3		63031		63033	
UNC 9/16	12	3 3/4	1 3/16	7/16	23/64	3		63034		63036	
UNC 5/8	11	4 1/64	1 1/4	31/64	25/64	3		63038		63039	
UNC 3/4	10	4 7/16	1 7/16	35/64	7/16	3		63040		63042	
UNC 7/8	9	4 5/8	1 1/2	5/8	31/64	3		63043		63045	
UNC 1	8	5 1/8	1 3/4	45/64	35/64	3		63046		63047	
UNC 1 1/8	7	5 7/16	1 7/8	25/32	5/8	4		63048		63049	
UNC 1 1/4	7	5 15/16	2 1/64	7/8	45/64	4		63051		63052	
UNC 1 3/8	6	6 3/8	2 1/4	63/64	25/32	4		63054		63057	
UNC 1 1/2	6	6 1/16	2 3/8	1 7/64	7/8	4		63058		63060	
UNC 1 3/4	5	7 3/8	2 5/8	1 15/16	36/64	4		63061		63063	
UNC 2	4	7 7/8	2 3/4	1 25/64	1 7/64	4		63064		63066	

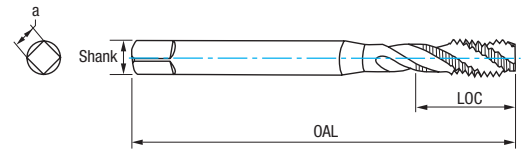




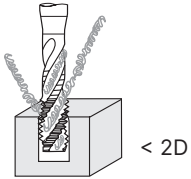
# Ref. 3154

FRACTIONAL-24

Reinforced Shank UNC Machine Spiral Tap  
 Macho Helicoidal Máquina UNC Mango Reforzado  
 Taraud hélicoïdal machine UNC queue renforcée



Cobalt 5%	DIN 371	C 2-3h	Tol. 2B	35°	$\alpha$ $10^\circ \pm 2$	60°
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Material		Vc (ft/min.)
Group	Sub.	5%Co
P	P.1	20-32
K	K.1	22-32
	K.2	13-22
N	N.1	16-26
	N.2	26-39
	N.3	49-115
	N.4	45-66
	N.5	39-49

Feed / Avance  $f = \text{TPI}$

**TPI** = threads per inch  
 hilos por pulgada  
 filets par pouce

$$\text{r.p.m.} = \frac{\text{Vc (ft/min)} \times 3,82}{\phi \text{ (inch)}}$$

$$\text{Vf (inch/min)} = \frac{\text{r.p.m.}}{\text{TPI}}$$

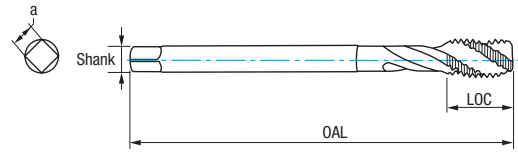
UNC	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue	$\phi$	$\alpha$	Z	N° Art. Cobalt	€/€
UNC N°5	40	2 13/64	13/64	9/64	7/64	3	10621		
UNC N°6	32	2 13/64	9/32	5/32	1/8	3	75634		
UNC N°8	32	2 31/64	9/32	11/64	9/64	3	59071		
UNC N°10	24	2 3/4	5/16	15/64	3/16	3	75636		
UNC N°12	24	3 5/32	25/64	15/64	3/16	3	10624		
UNC 1/4	20	3 5/32	25/64	9/32	13/64	3	75537		
UNC 5/16	18	3 35/64	33/64	5/16	1/4	3	75541		
UNC 3/8	16	3 35/64	19/32	23/64	9/32	3	75539		



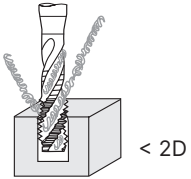
# Ref. 3254

FRACTIONAL-24

UNC Machine Spiral Tap  
 Macho Helicoidal Máquina UNC  
 Taraud helicoidal machine UNC



Cobalt 5%	DIN 376	C 2-3h	Tol. 2B		$\alpha$ $10^\circ \pm 2$	
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Material		Vc (ft/min.)
Group	Sub.	5%Co
P	P.1	20-32
K	K.1	22-32
	K.2	13-22
N	N.1	16-26
	N.2	26-39
	N.3	49-115
	N.4	45-66
	N.5	39-49

Feed / Avance  $f = \frac{1}{TPI}$

TPI = threads per inch  
 hilos por pulgada  
 filets par pouce

$$r.p.m. = \frac{Vc \text{ (ft/min)} \times 3,82}{\phi \text{ (inch)}}$$

$$Vf \text{ (inch/min)} = \frac{r.p.m.}{TPI}$$

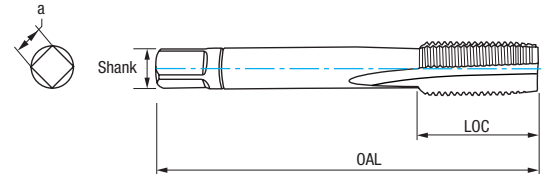
UNC	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue	a	Z	N° Art. Cobalt	€/€
UNC 7/16	14	3 15/16	45/64	5/16	1/4	3	70507	
UNC 1/2	13	4 21/64	25/32	23/64	9/32	3	70495	
UNC 9/16	12	4 21/64	25/32	7/16	23/64	3	70509	
UNC 5/8	11	4 21/64	25/32	15/32	23/64	3	70500	
UNC 3/4	10	4 59/64	63/64	35/64	7/16	4	70497	
UNC 7/8	9	5 33/64	63/64	45/64	37/64	4	70506	
UNC 1	8	6 19/64	1 3/16	45/64	37/64	4	70510	
UNC 1 1/8	7	7 3/32	1 3/8	7/8	11/16	4	10627	



# Ref. 3034

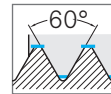
FRACTIONAL-24

## UNC Hand Tap Set Juego Machos Mano UNC Jeu de tarauds à main UNC

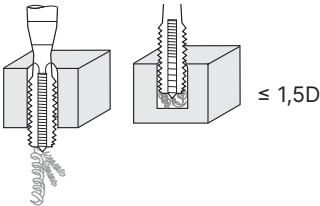


HSS	DIN 352	C 2-3h	DIN 352		Tol. 2B	$\alpha$ $10^\circ \pm 2$	<b>N°1 Roughing</b> Desbaste Ébauche	<b>N°2 Semiroughing</b> Semidesbaste Semi-ébauche	<b>N°3 Finishing</b> Acabado - Finition <b>* (Ref. 3004)</b>
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Group-Grupo Groupe	Subgrup. P.1	Group-Grupo Groupe	Group-Grupo Groupe	Subgrup. N.1 - N.3 N.4 - N.5
<b>P</b>		<b>K</b>	<b>N</b>	



\* Single Tap Ref. 3004 upon request  
Macho único Ref. 3004 bajo demanda  
Taraud Ref. 3004 sur demande



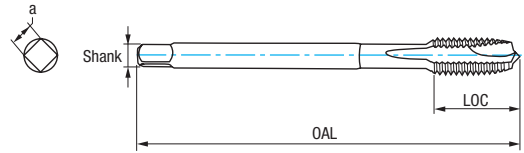
UNC	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue	a	Z	N° Art. HSS	€/€
UNC N°4	40	1 37/64	15/32	9/64	15/16	3	75595	
UNC N°5	40	1 37/64	15/32	9/64	15/16	3	75594	
UNC N°6	32	1 49/64	35/64	5/32	1/8	3	75596	
UNC N°8	32	1 49/64	35/64	11/64	9/64	3	75597	
UNC N°10	24	1 31/32	5/8	15/64	3/16	3	75598	
UNC N°12	24	1 31/32	45/64	15/64	3/16	3	75599	
UNC 1/4	20	2 13/64	3/4	15/64	3/16	3	62732	
UNC 5/16	18	2 13/64	55/64	15/64	3/16	3	62744	
UNC 3/8	16	2 31/64	15/16	9/32	7/32	3	62738	
UNC 7/16	14	2 3/4	15/16	5/16	1/4	3	62750	
UNC 1/2	13	2 61/64	1 9/64	23/64	9/32	4	75115	
UNC 9/16	12	3 5/32	1 3/16	7/16	23/64	4	62753	
UNC 5/8	11	3 5/32	1 17/64	15/32	23/64	4	62741	
UNC 3/4	10	3 47/64	1 37/64	35/64	7/16	4	62735	
UNC 7/8	9	3 15/16	1 37/64	45/64	37/64	4	62747	
UNC 1	8	4 21/64	1 31/32	45/64	37/64	4	62756	



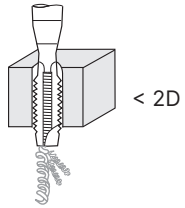
# Ref. 3127

FRACTIONAL-24

UNF Machine Straight Tap  
 Macho Recto Máquina UNF  
 Taraud droit machine UNF



PMX	HARD	DIN 371	B 3,5-5h	Tol. 2B	GUN	$\alpha$ $10^\circ \pm 2$	60°
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Material		Vc (ft/min.)
Group	Sub.	5%Co
P	P.1	6-10
K	K.1	7-10
	K.2	4-7
N	N.1	5-8
	N.2	8-12
	N.3	15-35
	N.4	14-20
	N.5	12-15

Feed / Avance  $f = \text{TPI}$

TPI = threads per inch  
 hilos por pulgada  
 filets par pouce

$$\text{r.p.m.} = \frac{\text{Vc (ft/min)} \times 3,82}{\phi \text{ (inch)}}$$

$$\text{Vf (inch/min)} = \frac{\text{r.p.m.}}{\text{TPI}}$$

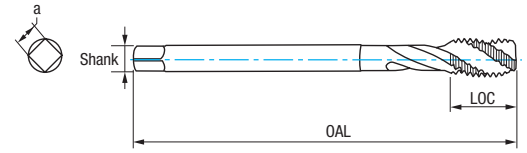
UNF	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue	$\phi$ a	Z	N° Art. HARD	€/\$
UNF N°10	32	2 3/4	33/64	9/64	7/64	3	71386	
UNF 1/4	28	3 5/32	19/32	11/64	9/64	3	71380	
UNF 5/16	24	3 35/64	45/64	15/64	3/16	3	71384	
UNF 3/8	24	3 35/64	25/32	9/32	7/32	3	71382	



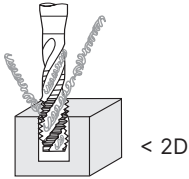
# Ref. 3124

FRACTIONAL-24

## UNF Machine Spiral Tap Macho Helicoidal Máquina UNF Taraud hélicoïdal machine UNF



PMX	HARD	DIN 371	C 2-3h	Tol. 2B	35°	$\alpha$ $10^\circ \pm 2$	60°
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Material		Vc (ft/min.)
Group	Sub.	5%Co
P	P.1	6-10
K	K.1	7-10
	K.2	4-7
N	N.1	5-8
	N.2	8-12
	N.3	15-35
	N.4	14-20
	N.5	12-15

Feed / Avance  $f = \text{TPI}$

TPI = threads per inch  
hilos por pulgada  
filets par pouce

$$\text{r.p.m.} = \frac{\text{Vc (ft/min)} \times 3,82}{\phi \text{ (inch)}}$$

$$\text{Vf (inch/min)} = \frac{\text{r.p.m.}}{\text{TPI}}$$

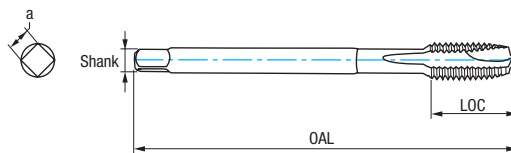
UNF	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue	$\phi$	$\alpha$	Z	N° Art. HARD	€/€
UNF N°10	32	2 3/4	5/16	9/64	7/64	3	3	69506	
UNF 1/4	28	3 5/32	25/64	11/64	9/64	3	3	69508	
UNF 5/16	24	3 35/64	33/64	15/64	3/16	3	3	69509	
UNF 3/8	24	3 35/64	19/32	9/32	7/32	3	3	69511	



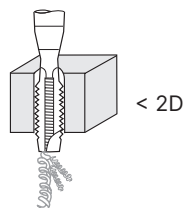
# Ref. 3204

FRACTIONAL-24

UNF Machine Straight Tap  
Macho Recto Máquina UNF  
Taraud droit machine UNF



Cobalt 5%	DIN 374	B 3,5-5h	Tol. 2B	GUN	$\alpha$ 10 -14°	60°
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Material		Vc (ft/min.)
Group	Sub.	5%Co
P	P.1	20-32
K	K.1	22-32
	K.2	13-22
N	N.1	16-26
	N.2	26-39
	N.3	49-115
	N.4	45-66
	N.5	39-49

Feed / Avance  $f = \text{TPI}$

TPI = threads per inch  
hilos por pulgada  
filets par pouce

$$\text{r.p.m.} = \frac{\text{Vc (ft/min)} \times 3,82}{\phi \text{ (inch)}}$$

$$\text{Vf (inch/min)} = \frac{\text{r.p.m.}}{\text{TPI}}$$

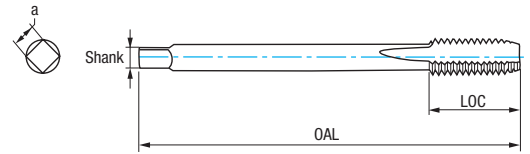
UNF	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue	$\phi$ a	Z	N° Art. Cobalt	€/€
UNF N°5	44	2 13/64	23/64	3/32	5/64	3	59868	
UNF N°6	40	1 37/64	7/16	3/32	5/64	3	59869	
UNF N°8	36	2 31/64	15/32	7/64	5/64	3	59870	
UNF N°10	32	2 3/4	33/64	9/64	7/64	3	59073	
UNF N°12	28	3 5/32	19/32	5/32	1/8	3	59871	
UNF 1/4	28	3 5/32	19/32	11/64	9/64	3	75744	
UNF 5/16	24	3 35/64	45/64	15/64	3/16	3	75751	
UNF 3/8	24	3 35/64	25/32	9/32	7/32	3	62933	
UNF 7/16	20	3 15/16	25/32	5/16	1/4	3	70461	
UNF 1/2	20	3 15/16	55/64	23/64	9/32	3	70465	
UNF 9/16	18	3 15/16	55/64	7/16	23/64	3	70467	
UNF 5/8	18	3 15/16	55/64	15/32	23/64	3	70468	
UNF 3/4	16	3 15/16	63/64	35/64	7/16	3	70470	
UNF 7/8	14	4 59/64	15/16	45/64	37/64	3	59872	
UNF 1	12	5 33/64	1 1/32	45/64	37/64	3	59873	
UNF 1 1/8	12	5 29/32	1 7/64	55/64	45/64	4	59874	



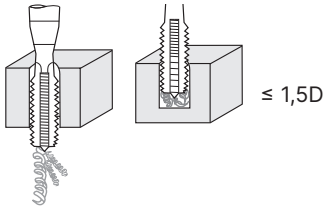
# Ref. 3224

FRACTIONAL-24

## UNF Machine Straight Tap Macho Recto Máquina UNF Taraud droit machine UNF



Cobalt 5%	DIN 374	C 2-3h	Tol. 2B	$\alpha$ $10^\circ \pm 2$	60°
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Material		Vc (ft/min.)
Group	Sub.	5%Co
P	P.1	20-32
K	K.1	22-32
	K.2	13-22
N	N.1	16-26
	N.2	26-39
	N.3	49-115
	N.4	45-66
	N.5	39-49

Feed / Avance  $f = \text{TPI}$

TPI = threads per inch  
hilos por pulgada  
filets par pouce

$$\text{r.p.m.} = \frac{\text{Vc (ft/min)} \times 3,82}{\phi \text{ (inch)}}$$

$$\text{Vf (inch/min)} = \frac{\text{r.p.m.}}{\text{TPI}}$$

UNF	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue	$\phi$	$\alpha$	Z	N° Art. Cobalt	€/€
UNF 5/16	24	3 35/64	55/64	15/64	3/16	3	3	22576	
UNF 3/8	24	3 35/64	25/32	9/32	7/32	3	3	20655	
UNF 7/16	20	3 15/16	25/32	5/16	1/4	3	3	22578	
UNF 1/2	20	3 15/16	55/64	23/64	9/32	3	3	22579	
UNF 9/16	18	3 15/16	55/64	7/16	23/64	3	3	70543	
UNF 5/8	18	3 15/16	55/64	15/32	23/64	3	3	70537	
UNF 3/4	16	4 21/64	63/64	35/64	7/16	3	3	70534	
UNF 7/8	14	4 59/64	63/64	45/64	37/64	3	3	70540	

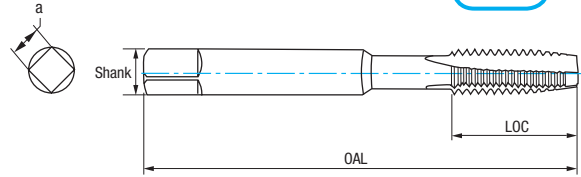


# Ref. 3123

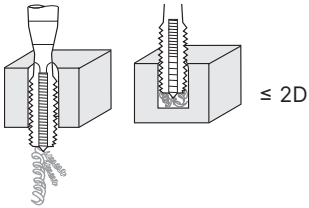
FRACTIONAL-24

ISO 529 Norm Standard UNF Machine Straight Tap  
 Macho Recto Máquina UNF norma ISO 529  
 Taraud droit machine UNF norme ISO 529

**New!**



HSS	ISO 529	B 3,5-5h	C 2-3h	Tol. 6H	GUN	$\alpha$ 10-12°	60°
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Material		Vc (ft/min.)
Group	Sub.	HSS
P	P.1	20-32
N	N.1	16-26
	N.3	49-115
	N.4	45-66

Feed / Avance  $f = TPI$

TPI = threads per inch  
 hilos por pulgada  
 filets par pouce

$$r.p.m. = \frac{Vc (ft/min) \times 3.82}{\phi (inch)}$$

$$Vf (inch/min) = \frac{r.p.m.}{TPI}$$



UNC	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue	$\alpha$	Z	N° Art. HSS	€/€	N° Art. HSS	€/€
UNF N°0	80	1 5/8	5/16	3/32	5/64	3	63067		66203	
UNF N°1	72	1 5/8	5/16	3/32	5/64	3	63069		66205	
UNF N°2	64	1 3/4	3/8	7/64	3/32	3	63070		66398	
UNF N°3	56	1 3/4	3/8	7/64	3/32	3	84231		84232	
UNF N°4	48	1 7/8	7/16	1/8	3/32	3	63072		66410	
UNF N°5	44	1 7/8	7/16	1/8	3/32	3	63075		66413	
UNF N°6	40	1 15/16	1/2	9/64	7/64	3	63076		66509	
UNF N°8	36	2 1/16	1/2	11/64	9/64	3	63079		66512	
UNF N°10	32	2 5/16	5/8	13/64	5/32	3	63112		66566	
UNF N°12	28	2 7/16	11/16	7/32	11/64	3	63171		66596	
UNF 1/4	28	2 5/8	3/4	1/4	13/64	3	63172		66722	
UNF 5/16	24	2 13/16	7/8	5/16	1/4	3	63173		66728	
UNF 3/8	24	3 1/8	15/16	25/64	5/16	3	63174		67163	
UNF 7/16	20	3 3/8	63/64	5/16	1/4	3	63175		67169	
UNF 1/2	20	3 1/2	1 1/8	23/64	9/32	3	63177		67349	
UNF 9/16	18	3 3/4	1 3/16	7/16	23/64	3	63180		67358	
UNF 5/8	18	4 1/64	1 1/4	31/64	25/64	3	63181		67359	
UNF 3/4	16	4 7/16	1 7/16	35/64	7/16	3	63184		67361	
UNF 7/8	14	4 5/8	1 1/2	5/8	31/64	3	63213		67364	
UNF 1	12	5 1/8	1 3/4	45/64	35/64	3	63326		67370	
UNF 1 1/8	12	5 7/16	1 7/8	25/32	5/8	4	63389		67373	
UNF 1 1/4	12	5 15/16	2 1/64	7/8	45/64	4	63392		67376	
UNF 1 3/8	12	6 3/8	2 1/4	63/64	25/32	4	63446		67394	
UNF 1 1/2	12	6 1/16	2 3/8	1 7/64	7/8	4	64121		67403	

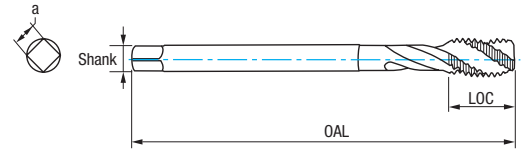




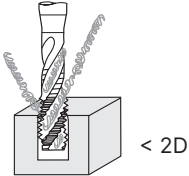
# Ref. 3244

FRACTIONAL-24

## UNF Machine Spiral Tap Macho Helicoidal Máquina UNF Taraud hélicoïdal machine UNF



Cobalt 5%	DIN 374	C 2-3h	Tol. 2B		$\alpha$ $10^\circ \pm 2$	
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Feed / Avance  $f = \text{TPI}$

TPI = threads per inch  
hilos por pulgada  
filets par pouce

$$\text{r.p.m.} = \frac{\text{Vc (ft/min)} \times 3,82}{\phi \text{ (inch)}}$$

$$\text{Vf (inch/min)} = \frac{\text{r.p.m.}}{\text{TPI}}$$

Material		Vc (ft/min.)
Group	Sub.	5%Co
P	P.1	20-32
K	K.1	22-32
	K.2	13-22
N	N.1	16-26
	N.2	26-39
	N.3	49-115
	N.4	45-66
	N.5	39-49

UNF	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue	a	Z	N° Art. Cobalt	€/€
UNF N°5	44	2 13/64	13/64	3/32	5/64	3	10633	
UNF N°6	40	2 13/64	9/32	3/32	5/64	3	10641	
UNF N°8	36	2 13/64	9/32	7/64	5/64	3	10642	
UNF N°10	32	2 3/4	5/16	9/64	7/64	3	10645	
UNF N°12	28	3 5/32	25/64	5/32	1/8	3	10648	
UNF 1/4	28	3 5/32	25/64	5/32	1/8	3	24118	
UNF 5/16	24	3 35/64	15/32	15/64	3/16	3	70459	
UNF 3/8	24	3 35/64	33/64	9/32	7/32	3	70471	
UNF 7/16	20	3 15/16	19/32	5/16	1/4	3	70479	
UNF 1/2	20	3 15/16	5/8	23/64	9/32	3	70474	
UNF 9/16	18	3 15/16	43/64	7/16	23/64	3	70480	
UNF 5/8	18	3 15/16	3/4	15/32	23/64	3	70477	
UNF 3/4	16	4 21/64	53/64	35/64	7/16	4	70476	
UNF 7/8	14	4 59/64	29/32	45/64	37/64	4	70473	
UNF 1	12	5 33/64	55/64	45/64	37/64	4	10651	
UNF 1 1/8	12	5 29/32	1 1/32	55/64	45/64	4	10654	



# Forming Taps

## Machos de Laminación

### Tarauds à réfooler

We bring our expertise in metric forming taps to this fractional catalogue

Nuestro amplio conocimiento en roscado de laminación ahora también en pulgadas

Désormais, notre vaste connaissance en matière de filetage par réfoolage est également disponible en pouces

See our IND-24 catalogue for metric sizes

Consulte nuestro catálogo IND-24 para medidas métricas

Consultez notre catalogue IND-24 pour les mesures métriques



- No chips.
- Longer life than normal cutting taps.
- Formed threads are stronger because the material is compressed at the surface of it.
- No generan viruta.
- Vida útil muy superior a machos estándar de corte.
- La rosca formada es más resistente dado que el material se comprime en la superficie.
- Sans production de copeaux.
- Durée de vie plus longue que les tarauds de coupe standard.
- Le filetage formé est plus solide car le matériel est comprimé en surface.

Ref. 3141

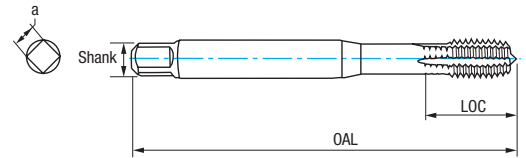
12-14% Lengthening Coefficient Materials  
Materiales con un Coeficiente de Alargamiento de 12-14%  
Matériaux avec coefficient de rallonge 12-14%



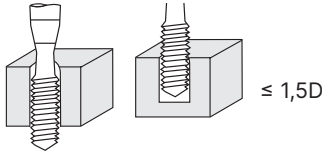
# Ref. 3141

FRACTIONAL-24

UNC/UNF High Performance **Cold Forming** Machine Tap  
 Macho **Laminación** Alto Rendimiento UNC/UNF  
 Taraud machine **réfouleur** haut rendement UNC/UNF



Cobalt 5%	TIALN + TIN	DIN 371 < 7/16	DIN 376 ≥ 7/16	C 2-3h		Tol. 2BX		
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Material		Vc (ft/min.)
Group	Sub.	TIALN-TIN
P	P.1	33-99
	P.2	33-99
	P.3	26-50
	P.5	33-82
M		33-82
N	N.1	65-130
	N.2	65-130
	N.3	65-130
	N.4	65-130
	N.5	65-130

UNC	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue	a	N° Art. Cobalt	€/€
UNC N°5	40	2 13/64	9/32	9/64	7/64	10812	
UNC N°6	32	2 13/64	15/64	5/32	1/8	10818	
UNC N°8	32	2 31/64	9/32	11/64	9/64	10821	
UNC N°10	24	2 3/4	5/16	15/64	3/16	10824	
UNC N°12	24	3 5/32	25/64	15/64	3/16	10828	
UNC 1/4	20	3 5/32	33/64	9/32	7/32	10829	
UNC 5/16	18	3 35/64	33/64	5/16	1/4	10830	
UNC 3/8	16	3 15/16	19/32	25/64	5/16	10848	
UNC 7/16	14	3 15/16	19/32	5/16	1/4	10850	
UNC 1/2	13	4 21/64	45/64	23/64	9/32	10851	
UNC 5/8	11	4 21/64	25/32	15/32	23/64	10860	

UNF	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue	a	N° Art. Cobalt	€/€
UNF N°5	44	2 13/64	9/32	9/64	7/64	10861	
UNF N°6	40	2 13/64	15/64	5/32	1/8	10863	
UNF N°8	36	2 31/64	9/32	11/64	9/64	10864	
UNF N°10	32	2 3/4	5/16	15/64	3/16	10866	
UNF N°12	28	3 5/32	25/64	15/64	3/16	10873	
UNF 1/4	28	3 5/32	25/64	15/64	3/16	10887	
UNF 5/16	24	3 35/64	33/64	5/16	1/4	10888	
UNF 3/8	24	3 15/16	19/32	25/64	5/16	10891	
UNF 7/16	20	3 15/16	19/32	5/16	1/4	10892	
UNF 1/2	20	4 21/64	19/32	23/64	9/32	10893	
UNF 5/8	18	4 21/64	19/32	15/32	23/64	10896	
UNF 3/4	16	4 23/32	43/64	35/64	7/16	10905	

Feed / Avance f = TPI

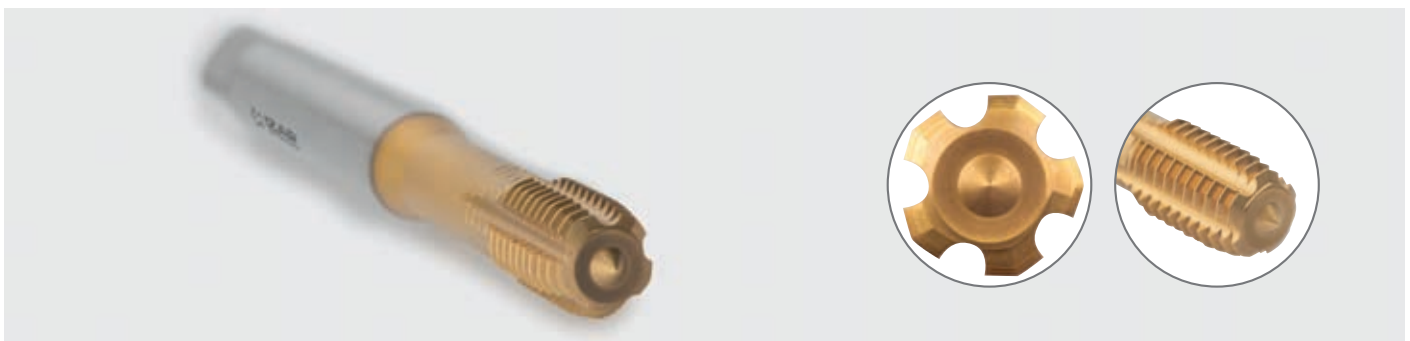
TPI = threads per inch  
 hilos por pulgada  
 filets par pouce

$$r.p.m. = \frac{Vc (ft/min) \times 3,82}{\phi (inch)}$$

$$Vf (inch/min) = \frac{r.p.m.}{TPI}$$



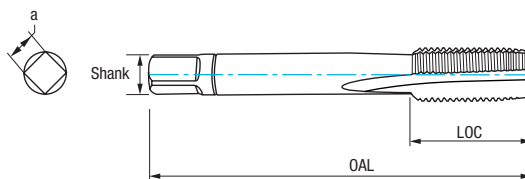
Ref. 3141 upon request / bajo demanda / sur demande



# Ref. 3024

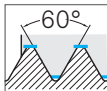
FRACTIONAL-24

## UNF Hand Tap Set Juego Machos Mano UNF Jeu de tarauds à main UNF

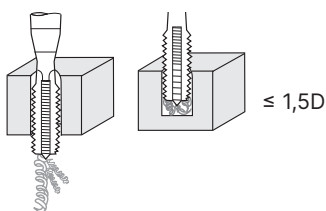


HSS	DIN 2181	C 2-3h	Tol. 2B		$\alpha$ $10^\circ \pm 2$	N°1 Roughing Desbaste Ébauche	N°3 Finishing Acabado - Finition <b>(Ref. 3014)</b>
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Group-Grupo Groupe	Subgrup. P.1	Group-Grupo Groupe	Group-Grupo Groupe	Subgrup. N.1 - N.3 N.4 - N.5
<b>P</b>		<b>K</b>	<b>N</b>	



\* Single Tap Ref. 3014 upon request  
Macho único Ref. 3014 bajo demanda  
Taraud Ref. 3014 sur demande



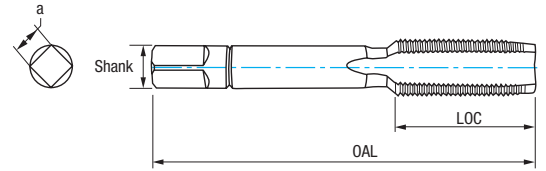
UNF	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue			N° Art. HSS	€/€
UNF N°5	44	1 27/64	7/16	9/64	7/64	3	75601	
UNF N°6	40	1 37/64	15/32	5/32	1/8	3	75602	
UNF N°8	36	1 37/64	15/32	11/64	9/64	3	75603	
UNF N°10	32	1 49/64	35/64	15/64	3/16	3	75604	
UNF N°12	28	1 31/32	35/64	15/64	3/16	3	75605	
UNF 1/4	28	1 31/32	45/64	15/64	3/16	3	62462	
UNF 5/16	24	2 13/64	55/64	15/64	3/16	3	62477	
UNF 3/8	24	2 31/64	55/64	9/32	7/32	3	62471	
UNF 7/16	20	2 31/64	55/64	5/16	1/4	3	62483	
UNF 1/2	20	2 61/64	15/16	23/64	9/32	3	62459	
UNF 9/16	18	3 5/32	1 7/64	7/16	23/64	4	62486	
UNF 5/8	18	3 5/32	1 7/64	15/32	23/64	4	62474	
UNF 3/4	16	3 47/64	1 17/64	35/64	7/16	4	62465	
UNF 7/8	14	3 15/16	1 17/64	45/64	37/64	4	62480	
UNF 1	12	4 21/64	1 37/64	45/64	37/64	4	62489	
UNF 1 1/4	12	5 13/64	2 13/64	55/64	45/64	4	76158	



# Ref. 3025

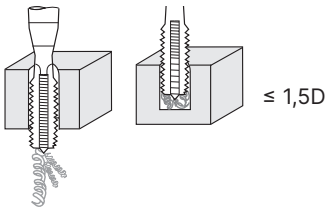
FRACTIONAL-24

## UNEF Hand Tap Set Juego Machos Mano UNEF Jeu de tarauds à main UNEF



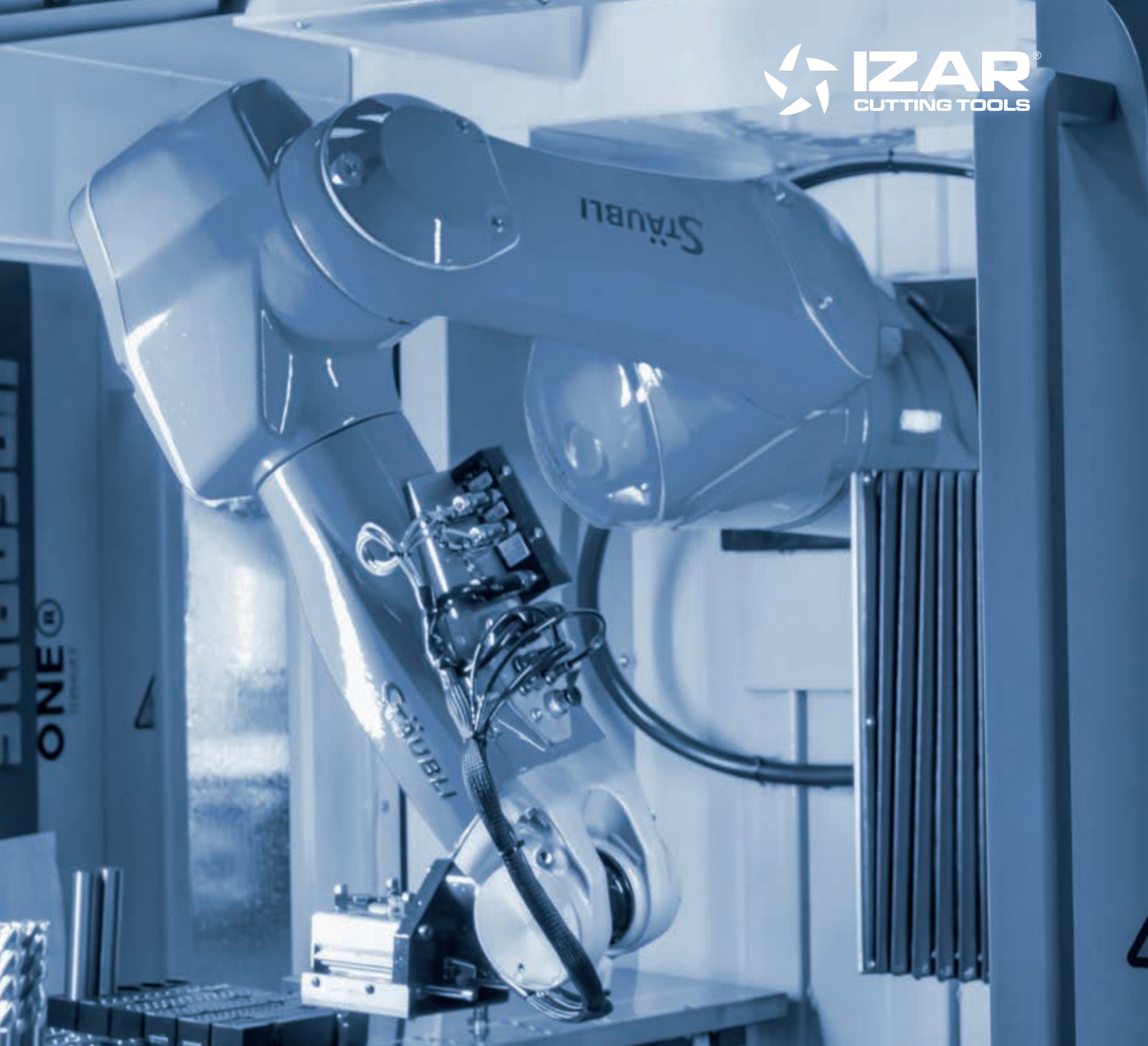
HSS	DIN 2181	C 2-3h	Tol. 2B		$\alpha$ $10^\circ \pm 2$	<b>N°1 Roughing</b> Desbaste Ébauche	<b>N°3 Finishing</b> Acabado Finition
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Group-Grupo Groupe <b>P</b>	Subgrup. P.1	Group-Grupo Groupe <b>K</b>	Group-Grupo Groupe <b>N</b>	Subgrup. <b>N.1 - N.3</b> <b>N.4 - N.5</b>	
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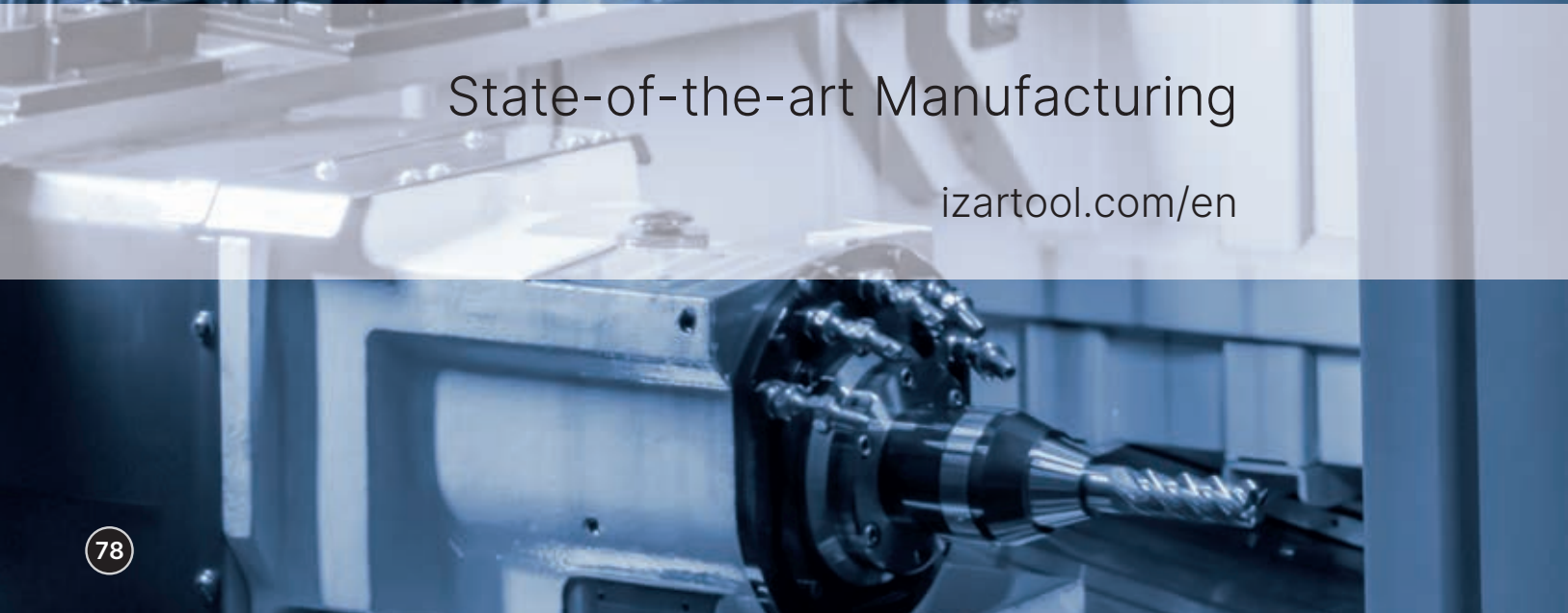
UNEF	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue	a	Z	N° Art. HSS	€/S
UNEF 1/4	32	1 31/32	45/64	15/64	3/16	3	38269	
UNEF 5/16	32	2 13/64	55/64	15/64	3/16	3	75857	
UNEF 3/8	32	2 31/64	55/64	9/32	7/32	3	75863	
UNEF 7/16	28	2 31/64	55/64	5/16	1/4	4	38270	
UNEF 1/2	28	2 61/64	15/16	23/64	9/32	4	75876	
UNEF 9/16	24	3 5/32	1 7/64	7/16	23/64	4	16853	
UNEF 5/8	24	3 5/32	1 7/64	15/32	23/64	4	38271	
UNEF 3/4	20	3 47/64	1 17/64	35/64	7/16	4	38272	
UNEF 1	20	4 21/64	1 37/64	45/64	37/64	4	38273	





State-of-the-art Manufacturing

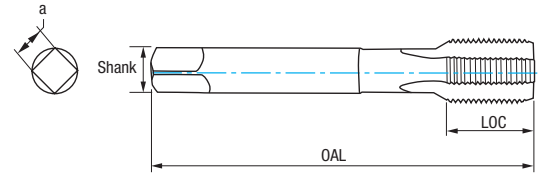
[izartool.com/en](http://izartool.com/en)



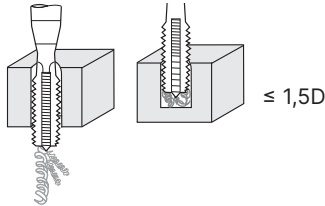
# Ref. 3209

FRACTIONAL-24

UN Machine Straight Tap  
Macho Recto Máquina UN  
Taraud droit machine UN



Cobalt 5%	DIN 374	C 2-3h	Tol. 2B	$\alpha$ $10^\circ \pm 2$	$60^\circ$
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Material		Vc (ft/min.)
Group	Sub.	5%Co
P	P.1	20-32
K	K.1	22-32
	K.2	13-22
N	N.1	16-26
	N.2	26-39
	N.3	49-115
	N.4	45-66
	N.5	39-49

Feed / Avance  $f = \text{TPI}$

TPI = threads per inch  
hilos por pulgada  
filets par pouce

$$\text{r.p.m.} = \frac{\text{Vc (ft/min)} \times 3,82}{\phi \text{ (inch)}}$$

$$\text{Vf (inch/min)} = \frac{\text{r.p.m.}}{\text{TPI}}$$

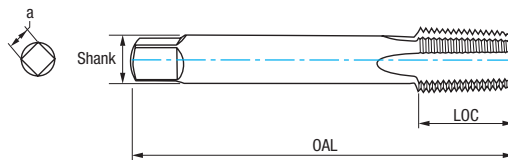
UN	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue	$\phi$	$a$	Z	N° Art. Cobalt	€/€
UN 1 1/8	8	7 3/32	1 49/64	55/64	45/64	4	4	38311	
UN 1 1/4	8	7 3/32	1 49/64	55/64	45/64	4	4	38312	
UN 1 3/8	8	7 7/8	2 13/64	1 7/64	55/64	4	4	38313	
UN 1 1/2	8	7 7/8	2 13/64	1 7/64	55/64	5	5	38314	
UN 1 5/8	8	7 7/8	2 13/64	1 7/64	55/64	5	5	38315	
UN 1 3/4	8	7 7/8	2 13/64	1 7/64	55/64	5	5	38316	
UN 2	8	8 55/64	1 31/32	1 37/64	1 17/64	5	5	38317	



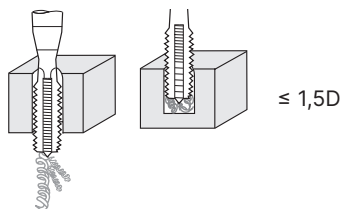
# Ref. 3107

FRACTIONAL-24

NPT Machine Straight Tap  
Macho Recto Máquina NPT  
Taraud droit machine NPT



Cobalt 5%	DIN 374	C 2-3h	$\alpha$ $10^\circ \pm 2$	<p>American tapered thread for pipes Rosca cónica americana para tubo Filetage conique américain pour tuyau</p>
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Material		Vc (ft/min.)
Group	Sub.	5%Co
P	P.1	20-32
K	K.1	22-32
	K.2	13-22
N	N.1	16-26
	N.2	26-39
	N.3	49-115
	N.4	45-66
	N.5	39-49

Feed / Avance  $f = \text{TPI}$

TPI = threads per inch  
hilos por pulgada  
filets par pouce

$$\text{r.p.m.} = \frac{\text{Vc (ft/min)} \times 3,82}{\phi \text{ (inch)}}$$

$$\text{Vf (inch/min)} = \frac{\text{r.p.m.}}{\text{TPI}}$$

NPT	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue	$\phi$	a	Z	N° Art. Cobalt	€/ \$
NPT 1/8	27	3 35/64	45/64	5/16	1/4	3	77890		
NPT 1/4	18	3 15/16	1 1/16	7/16	23/64	3	15165		
NPT 3/8	18	3 15/16	1 1/16	15/32	23/64	4	75872		
NPT 1/2	14	4 59/64	1 3/8	5/8	15/32	4	15830		
NPT 3/4	14	5 33/64	1 3/8	25/32	5/8	4	77892		
NPT 1	11	6 19/64	1 3/4	63/64	25/32	4	17937		
NPT 1 1/2	11,5	7 31/64	1 3/4	1 27/64	1 9/64	6	17941		
NPT 2	11,5	8 55/64	1 3/4	1 49/64	1 3/8	6	17946		

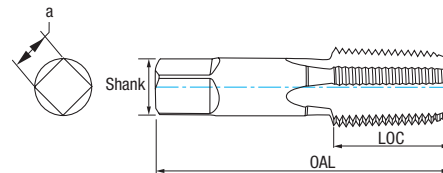




Ref. **3017**

FRACTIONAL-24

NPT Hand Single Tap  
Macho Único Mano NPT  
Taraud à main NPT



HSS

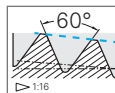
DIN 2181



1,5-2h

$\alpha$   
 $10^\circ \pm 2$

N°3 Finishing  
Acabado  
Finition



American tapered thread for pipes  
Rosca cónica americana para tubo  
Filetage conique américain pour tuyau

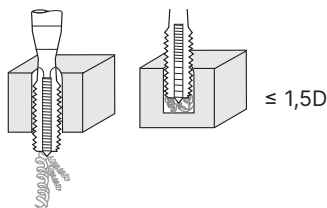
Group-Grupo  
Groupe  
**P**

Subgrup.  
P.1

Group-Grupo  
Groupe  
**K**

Group-Grupo  
Groupe  
**N**

Subgrup.  
N.1 - N.3  
N.4 - N.5



NPT	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue	$a$	$Z$	N° Art. HSS	€/€
NPT 1/8	27	2 9/16	3/4	5/16	1/4	3	62315	
NPT 1/4	18	2 3/4	63/64	7/16	23/64	3	62309	
NPT 3/8	18	2 61/64	63/64	15/32	23/64	4	62327	
NPT1/2	14	3 5/32	1 7/32	5/8	15/32	4	62303	
NPT 3/4	14	3 15/16	1 19/64	25/32	5/8	4	62321	
NPT 1	11,5	4 21/64	1 1/2	63/64	25/32	4	62330	
NPT 1 1/4	11,5	4 59/64	1 39/64	1 17/64	15/16	6	17945	
NPT 1 1/2	11,5	5 33/64	1 21/32	1 27/64	1 9/64	6	17944	
NPT 2	11,5	6 19/64	1 47/64	1 49/64	1 3/8	6	76063	



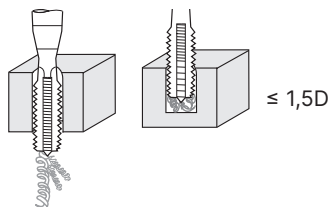
# Ref. 3112

FRACTIONAL-24

## Reinforced Shank BSW (Whitworth) Machine Straight Tap Macho Recto Máquina BSW (Whitworth) Mango Reforzado Taraud droit machine BSW (Whitworth) queue renforcée



Cobalt 5%	DIN 371	C 2-3h	$\alpha$ $10^\circ \pm 2$	55°
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Material		Vc (ft/min.)
Group	Sub.	5%Co
P	P.1	20-32
K	K.1	22-32
	K.2	13-22
N	N.1	16-26
	N.2	26-39
	N.3	49-115
	N.4	45-66
	N.5	39-49

Feed / Avance  $f = \frac{TPI}{\text{inch}}$

TPI = threads per inch  
hilos por pulgada  
filets par pouce

$$r.p.m. = \frac{Vc \text{ (ft/min)} \times 3,82}{\phi \text{ (inch)}}$$

$$Vf \text{ (inch/min)} = \frac{r.p.m.}{TPI}$$

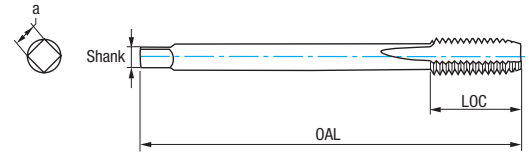
W	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue	$\phi$	$a$	Z	N° Art. Cobalt	€/ \$
W 3/32	48	1 31/32	23/64	7/64	5/64	3	75415		
W 1/8	40	2 13/64	7/16	9/64	7/64	3	75413		
W 5/32	32	2 31/64	33/64	11/64	9/64	3	75129		
W 3/16	24	2 3/4	19/32	15/64	3/16	3	75414		
W 7/32	24	3 5/32	5/8	15/64	3/16	3	75418		
W 1/4	20	3 5/32	43/64	9/32	7/32	3	75412		
W 5/16	18	3 35/64	25/32	5/16	1/4	3	75458		
W 3/8	16	3 15/16	55/64	23/64	9/32	3	75456		



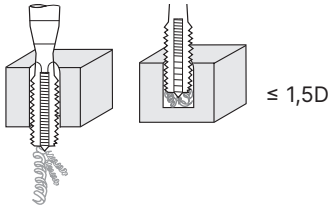
# Ref. 3212

FRACTIONAL-24

BSW (Whitworth) Machine Straight Tap  
 Macho Recto Máquina BSW (Whitworth)  
 Taraud droit machine BSW (Whitworth)



Cobalt 5%	DIN 376	C 2-3h	$\alpha$ $10^\circ \pm 2$	55°
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Material		Vc (ft/min.)
Group	Sub.	5%Co
P	P.1	20-32
K	K.1	22-32
	K.2	13-22
N	N.1	16-26
	N.2	26-39
	N.3	49-115
	N.4	45-66
	N.5	39-49

Feed / Avance  $f = \text{TPI}$

TPI = threads per inch  
 hilos por pulgada  
 filets par pouce

$$\text{r.p.m.} = \frac{\text{Vc (ft/min)} \times 3,82}{\phi \text{ (inch)}}$$

$$\text{Vf (inch/min)} = \frac{\text{r.p.m.}}{\text{TPI}}$$

W	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue	$\phi$ a	Z	N° Art. Cobalt	€/€
W 3/8	16	3 15/16	55/64	9/32	7/32	3	70395	
W 7/16	14	3 15/16	55/64	5/16	1/4	3	70396	
W 1/2	12	4 21/64	15/16	23/64	9/32	3	70398	
W 9/16	12	4 21/64	1 1/32	7/16	23/64	3	70399	
W 5/8	11	4 21/64	1 1/16	15/32	23/64	3	70401	
W 3/4	10	4 59/64	1 3/16	35/64	7/16	4	70402	
W 7/8	9	5 33/64	1 17/64	45/64	37/64	4	70416	
W 1	8	6 19/64	1 27/64	45/64	37/64	4	70404	
W 1 1/8	7	7 3/32	1 37/64	55/64	45/64	4	70450	
W 1 1/4	7	7 3/32	1 37/64	55/64	45/64	4	70452	
W 1 3/8	6	7 7/8	1 31/32	1 7/64	55/64	4	70453	
W 1 1/2	6	7 7/8	1 31/32	1 17/64	15/16	4	70455	
W 1 5/8	5	8 21/32	2 9/32	1 27/64	1 9/64	4	70456	
W 1 7/8	4,5	8 21/32	2 9/32	1 27/64	1 9/64	4	70458	



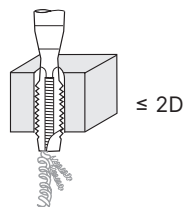
# Ref. 3102

FRACTIONAL-24

Reinforced Shank BSW (Whitworth) Machine Straight Tap  
 Macho Recto Máquina BSW (Whitworth) Mango Reforzado  
 Taraud droit machine BSW (Whitworth) queue renforcée



Cobalt 5%	DIN 371	B 3,5-5h	GUN	$\alpha$ 10 - 12°	55°
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Material		Vc (ft/min.)
Group	Sub.	5%Co
P	P.1	20-32
K	K.1	22-32
	K.2	13-22
N	N.1	16-26
	N.2	26-39
	N.3	49-115
	N.4	45-66
	N.5	39-49

Feed / Avance  $f = \frac{TPI}{Z}$

TPI = threads per inch  
 hilos por pulgada  
 filets par pouce

$$r.p.m. = \frac{Vc \text{ (ft/min)} \times 3,82}{\phi \text{ (inch)}}$$

$$Vf \text{ (inch/min)} = \frac{r.p.m.}{TPI}$$

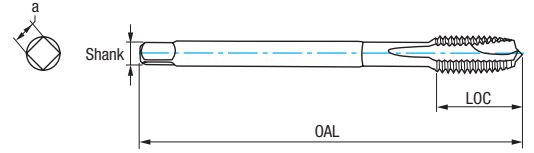
W	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue	$\phi$ a	Z	N° Art. Cobalt	€/ \$
W 1/8	40	2 13/64	7/16	9/64	7/64	3	62897	
W 5/32	32	2 31/64	33/64	11/64	9/64	3	62915	
W 3/16	24	2 3/4	19/32	15/64	3/16	3	62903	
W 1/4	20	3 5/32	43/64	9/32	7/32	3	62894	
W 5/16	18	3 35/64	25/32	5/16	1/4	3	62912	
W 3/8	16	3 15/16	55/64	23/64	9/32	3	73766	



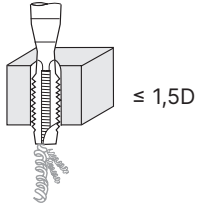
# Ref. 3202

FRACTIONAL-24

BSW (Whitworth) Machine Straight Tap  
 Macho Recto Máquina BSW (Whitworth)  
 Taraud droit machine BSW (Whitworth)



Cobalt 5%	DIN 376	B 3,5-5h	GUN	$\alpha$ 10 -12°	55°
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Material		Vc (ft/min.)
Group	Sub.	5%Co
P	P.1	20-32
K	K.1	22-32
	K.2	13-22
N	N.1	16-26
	N.2	26-39
	N.3	49-115
	N.4	45-66
	N.5	39-49

Feed / Avance  $f = \text{TPI}$

TPI = threads per inch  
 hilos por pulgada  
 filets par pouce

$$\text{r.p.m.} = \frac{\text{Vc (ft/min)} \times 3,82}{\phi \text{ (inch)}}$$

$$\text{Vf (inch/min)} = \frac{\text{r.p.m.}}{\text{TPI}}$$

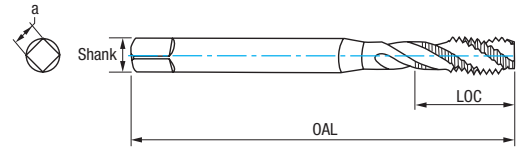
W	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue	$\phi$ a	Z	N° Art. Cobalt	€/€
W 1/4	20	3 5/32	43/64	11/64	9/64	3	59861	
W 5/16	18	3 35/64	25/32	15/64	3/16	3	14979	
W 3/8	16	3 15/16	55/64	9/32	7/32	3	70420	
W 7/16	14	3 15/16	55/64	5/16	1/4	3	70446	
W 1/2	12	4 21/64	15/16	23/64	9/32	3	70417	
W 9/16	12	4 21/64	1 1/32	7/16	23/64	3	70447	
W 5/8	11	4 21/64	1 1/16	15/32	23/64	3	70443	
W 3/4	10	4 59/64	1 3/16	35/64	7/16	4	70419	
W 7/8	9	5 33/64	1 17/64	45/64	37/64	4	70444	
W 1	8	6 19/64	1 27/64	45/64	37/64	4	70449	



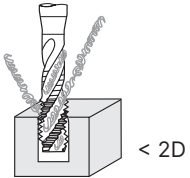
# Ref. 3152

FRACTIONAL-24

Reinforced Shank BSW (Whitworth) Spiral Machine Tap  
 Macho Helicoidal Máquina BSW (Whitworth) Mango Reforzado  
 Taraud helicoidal machine BSW (Whitworth) queue renforcée



Cobalt 5%	DIN 371	C 2-3h	35°	$\alpha$ 10° ± 2	55°
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Material		Vc (ft/min.)
Group	Sub.	5%Co
P	P.1	20-32
K	K.1	22-32
	K.2	13-22
N	N.1	16-26
	N.2	26-39
	N.3	49-115
	N.4	45-66
	N.5	39-49

Feed / Avance  $f = \text{TPI}$

TPI = threads per inch  
 hilos por pulgada  
 filets par pouce

$$\text{r.p.m.} = \frac{\text{Vc (ft/min)} \times 3,82}{\phi \text{ (inch)}}$$

$$\text{Vf (inch/min)} = \frac{\text{r.p.m.}}{\text{TPI}}$$

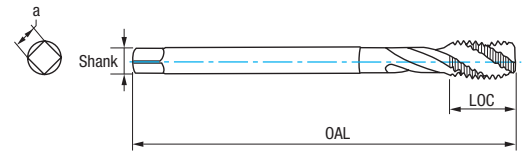
W	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue	$\phi$	$\alpha$	Z	N° Art. Cobalt	€/€
W 1/8	40	2 13/64	13/64	9/64	7/64	3	3	63152	
W 5/32	32	2 31/64	9/32	11/64	9/64	3	3	63170	
W 3/16	24	2 3/4	5/16	15/64	3/16	3	3	63161	
W 1/4	20	3 5/32	25/64	9/32	7/32	3	3	63149	
W 5/16	18	3 35/64	15/32	5/16	1/4	3	3	63167	
W 3/8	16	3 15/16	35/64	23/64	9/32	3	3	63158	



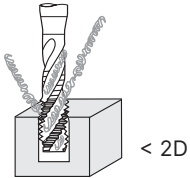
# Ref. 3252

FRACTIONAL-24

## BSW (Whitworth) Machine Spiral Tap Macho Helicoidal Máquina BSW (Whitworth) Taraud helicoidal machine BSW (Whitworth)



Cobalt 5%	DIN 376	C 2-3h	35°	α 10° ± 2	55°
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Material		Vc (ft/min.)
Group	Sub.	5%Co
P	P.1	20-32
K	K.1	22-32
	K.2	13-22
N	N.1	16-26
	N.2	26-39
	N.3	49-115
	N.4	45-66
	N.5	39-49

Feed / Avance  $f = \text{TPI}$

$\text{TPI} =$  threads per inch  
hilos por pulgada  
filets par pouce

$$\text{r.p.m.} = \frac{\text{Vc (ft/min)} \times 3,82}{\phi \text{ (inch)}}$$

$$\text{Vf (inch/min)} = \frac{\text{r.p.m.}}{\text{TPI}}$$

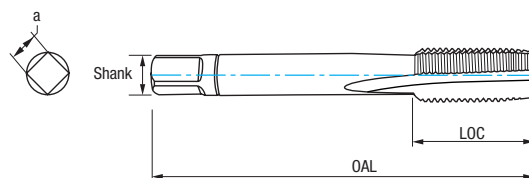
W	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue	a	Z	N° Art. Cobalt	€/€
W 3/16	24	2 3/4	5/16	9/64	7/64	3	59857	
W 1/4	20	3 5/32	33/64	11/64	9/64	3	59858	
W 5/16	18	3 35/64	35/64	15/64	3/16	3	59859	
W 3/8	16	3 15/16	5/8	9/32	7/32	3	70408	
W 7/16	14	3 15/16	5/8	5/16	1/4	3	70411	
W 1/2	12	4 21/64	45/64	23/64	9/32	3	70405	
W 9/16	12	4 21/64	25/32	7/16	23/64	3	70413	
W 5/8	11	4 21/64	25/32	15/32	23/64	3	70410	
W 3/4	10	4 59/64	63/64	35/64	7/16	4	70407	
W 7/8	9	5 33/64	1 1/16	45/64	37/64	4	10909	
W 1	8	6 19/64	1 3/16	45/64	37/64	4	70414	



# Ref. 3032

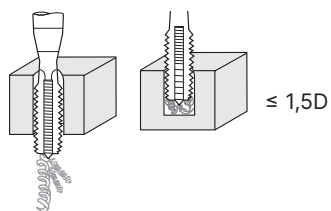
FRACTIONAL-24

## BSW (Whitworth) Hand Tap Set Juego Machos Mano BSW (Whitworth) Jeu de tarauds à main BSW (Whitworth)



HSS	DIN 352	C 2-3h		$\alpha$ $10^\circ \pm 2$	<b>N°1 Roughing</b> Desbaste Ébauche	<b>N°2 Semiroughing</b> Semidesbaste Semi-ébauche	<b>N°3 Finishing</b> Acabado - Finition <b>(Ref. 3012)</b>	
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Group-Grupo Groupe	Subgrup. P.1	Group-Grupo Groupe	Group-Grupo Groupe	Subgrup. N.1 - N.3 N.4 - N.5
<b>P</b>		<b>K</b>	<b>N</b>	



W	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue	a	Z	N° Art. HSS	€/€
W 3/32	48	1 27/64	25/64	7/64	5/64	3	62663	
W 1/8	40	1 37/64	15/32	9/64	7/64	3	62642	
W 5/32	32	1 49/64	35/64	11/64	9/64	3	62675	
W 3/16	24	1 31/32	45/64	15/64	3/16	3	62660	
W 7/32	24	1 31/32	45/64	15/64	3/16	3	62684	
W 1/4	20	1 31/32	3/4	15/64	3/16	3	62633	
W 5/16	18	2 13/64	55/64	15/64	3/16	4	62669	
W 3/8	16	2 3/4	15/16	9/32	7/32	4	62654	
W 7/16	14	2 3/4	15/16	5/16	1/4	4	62681	
W 1/2	12	2 61/64	1 9/64	23/64	9/32	4	62630	
W 9/16	12	3 5/32	1 3/16	7/16	23/64	4	62687	
W 5/8	11	3 5/32	1 17/64	15/32	23/64	4	62666	
W 3/4	10	3 47/64	1 37/64	35/64	7/16	4	62645	
W 7/8	9	3 15/16	1 37/64	45/64	37/64	4	62678	
W 1	8	4 21/64	1 31/32	45/64	37/64	4	62693	
W 1 1/8	7	5 13/64	2 13/64	55/64	45/64	4	62702	
W 1 1/4	7	5 13/64	2 13/64	55/64	45/64	4	62699	
W 1 3/8	6	5 29/32	2 31/64	1 7/64	55/64	4	42713	
W 1 1/2	6	5 29/32	2 31/64	1 17/64	15/16	4	62696	
W 1 5/8	5	6 19/64	2 3/4	1 17/64	15/16	4	59880	
W 1 3/4	5	6 19/64	2 3/4	1 27/64	1 9/64	6	59881	
W 1 7/8	4,5	7 31/64	3 5/32	1 27/64	1 9/64	6	59882	
W 2	4,5	7 31/64	3 5/32	1 37/64	1 17/64	6	59883	

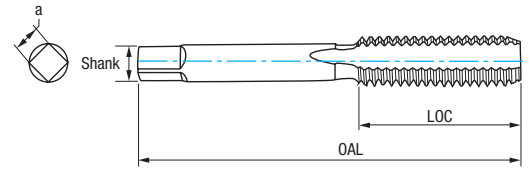




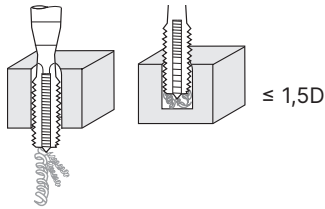
Ref. **3012**

FRACTIONAL-24

BSW (Whitworth) Hand Tap  
Macho Único Mano BSW (Whitworth)  
Taraud à main BSW (Whitworth)



HSS	DIN 352	C 2-3h		$\alpha$ $10^\circ \pm 2$	N°3 Finishing Acabado Finition	
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Group-Grupo Groupe	Subgrup. P.1	Group-Grupo Groupe	Group-Grupo Groupe	Subgrup. N.1 - N.3 N.4 - N.5
<b>P</b>		<b>K</b>	<b>N</b>	

W	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue			N° Art. HSS	€/€
W 3/32	48	1 27/64	25/64	7/64	5/64	3	75404	
W 1/8	40	1 37/64	15/32	9/64	7/64	3	75401	
W 5/32	32	1 49/64	35/64	11/64	9/64	3	75069	
W 3/16	24	1 31/32	45/64	15/64	3/16	3	74825	
W 7/32	24	1 31/32	45/64	15/64	3/16	3	75409	
W 1/4	20	1 31/32	3/4	15/64	3/16	3	75400	
W 5/16	18	2 13/64	55/64	15/64	3/16	4	75406	
W 3/8	16	2 3/4	15/16	9/32	7/32	4	75403	
W 7/16	14	2 3/4	15/16	5/16	1/4	4	75408	
W 1/2	12	2 61/64	1 9/64	23/64	9/32	4	75399	
W 9/16	12	3 5/32	1 3/16	7/16	23/64	4	75448	
W 5/8	11	3 5/32	1 17/64	15/32	23/64	4	75405	
W 3/4	10	3 47/64	1 37/64	35/64	7/16	4	75402	
W 7/8	9	3 15/16	1 37/64	45/64	37/64	4	75407	
W 1	8	4 21/64	1 31/32	45/64	37/64	4	75410	
W 1 1/8	7	5 13/64	2 13/64	55/64	45/64	4	76255	
W 1 1/4	7	5 13/64	2 13/64	55/64	45/64	4	76259	
W 1 3/8	6	5 29/32	2 31/64	1 7/64	55/64	4	76264	
W 1 1/2	6	5 29/32	2 31/64	1 17/64	15/16	4	76269	
W 1 5/8	5	6 19/64	2 3/4	1 17/64	15/16	4	76274	
W 1 3/4	5	6 19/64	2 3/4	1 27/64	1 9/64	4	76280	
W 1 7/8	4,5	7 31/64	3 5/32	1 27/64	1 9/64	4	76286	
W 2	4,5	7 31/64	3 5/32	1 37/64	1 17/64	4	76291	





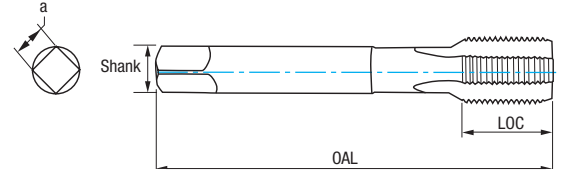
## Modern Production Facilities

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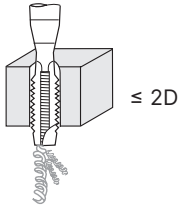
# Ref. 3126

FRACTIONAL-24

## Reinforced Shank Stainless BSP (Gas) Metric Machine Straight Tap Macho Recto Máquina BSP (Gas) Inox Mango Reforzado Taraud droit machine BSP (Gaz) inox queue renforcée



Cobalt 5%	TIN	DIN 5156	B 3,5-5h	GUN	Tol. 2B		<b>British Standard Parallel Pipe (BSPP-GAS)</b> Rosca británica para tubo paralelo (BSPP-GAS) Filetage britannique pour tuyau parallèle (BSPP-GAS)
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Material		Vc (ft/min.)
Group	Sub.	<b>TIN</b>
<b>P</b>	<b>P.5</b>	15-25
<b>M</b>		52-40

Feed / Avance  $f = \text{TPI}$

TPI = threads per inch  
hilos por pulgada  
filets par pouce

$$\text{r.p.m.} = \frac{\text{Vc (ft/min)} \times 3,82}{\phi \text{ (inch)}}$$

$$\text{Vf (inch/min)} = \frac{\text{r.p.m.}}{\text{TPI}}$$

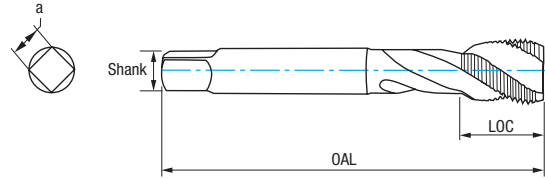
G	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue	$\phi$ a	Z	N° Art. TIN	€/€
<b>G 1/8</b>	<b>28</b>	3 35/64	15/32	9/32	7/32	3	28636	
<b>G 1/4</b>	<b>19</b>	3 15/16	5/8	7/16	23/64	3	28635	
<b>G 3/8</b>	<b>19</b>	3 15/16	5/8	15/32	23/64	3	28638	
<b>G 1/2</b>	<b>14</b>	4 59/64	25/32	5/8	15/32	3	28634	
<b>G 5/8</b>	<b>14</b>	4 59/64	25/32	45/64	37/64	4	28639	
<b>G 3/4</b>	<b>14</b>	5 33/64	7/8	25/32	5/8	4	28637	
<b>G 1</b>	<b>11</b>	6 19/64	1 3/16	63/64	25/32	4	28641	
<b>G 1 1/2</b>	<b>11</b>	7 1/2	1 1/4	1 7/16	1 1/8	6	28642	



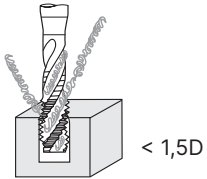
# Ref. 3136

FRACTIONAL-24

Stainless BSP (Gas) Metric Machine Spiral Tap  
 Macho Helicoidal Máquina BSP (Gas) Inox  
 Taraud hélicoïdal machine BSP (Gaz) Inox



Cobalt 5%	TIN	DIN 5156	C 2-3h	35°	55°	British Standard <b>Parallel Pipe (BSPP-GAS)</b> Rosca británica para tubo <b>paralelo (BSPP-GAS)</b> Filetage britannique pour tuyau <b>parallèle (BSPP-GAS)</b>
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Material		Vc (ft/min.)
Group	Sub.	<b>TIN</b>
<b>P</b>	<b>P.5</b>	15-25
<b>M</b>		52-40

Feed / Avance  $f = \text{TPI}$

**TPI** = threads per inch  
 hilos por pulgada  
 filets par pouce

$$\text{r.p.m.} = \frac{\text{Vc (ft/min)} \times 3,82}{\phi \text{ (inch)}}$$

$$\text{Vf (inch/min)} = \frac{\text{r.p.m.}}{\text{TPI}}$$

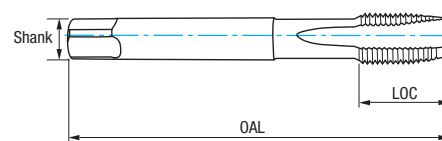
G	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue	a	Z	N° Art. TIN	€/€
<b>G 1/8</b>	<b>28</b>	3 35/64	15/32	9/32	7/32	3	28647	
<b>G 1/4</b>	<b>19</b>	3 15/16	5/8	7/16	23/64	3	28646	
<b>G 3/8</b>	<b>19</b>	3 15/16	5/8	15/32	23/64	3	28649	
<b>G 1/2</b>	<b>14</b>	4 59/64	25/32	5/8	15/32	4	28645	
<b>G 3/4</b>	<b>14</b>	5 33/64	7/8	25/32	5/8	4	28648	
<b>G 1</b>	<b>11</b>	6 19/64	1 3/16	63/64	25/32	4	28652	



# Ref. 3106

FRACTIONAL-24

BSP (Gas) Machine Straight Tap  
 Macho Recto Máquina BSP (Gas)  
 Taraud droit machine BSP (Gaz)



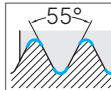
Cobalt  
5%

DIN  
5156

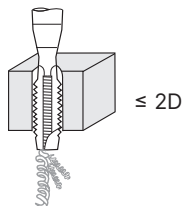
B  
3,5-5h



$\alpha$   
 $10^\circ \pm 2$



British Standard Parallel Pipe (BSPP-GAS)  
 Rosca británica para tubo paralelo (BSPP-GAS)  
 Filetage britannique pour tuyau parallèle (BSPP-GAS)



Feed / Avance  $f = \text{TPI}$

TPI = threads per inch  
 hilos por pulgada  
 filets par pouce

$$\text{r.p.m.} = \frac{\text{Vc (ft/min)} \times 3,82}{\phi \text{ (inch)}}$$

$$\text{Vf (inch/min)} = \frac{\text{r.p.m.}}{\text{TPI}}$$

Material		Vc (ft/min.)
Group	Sub.	5%Co
P	P.1	20-32
K	K.1	22-32
	K.2	13-23
N	N.1	15-26
	N.2	26-39
	N.3	49-115
	N.4	45-65
	N.5	39-49

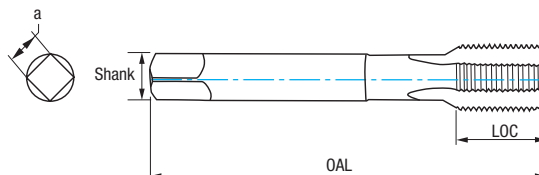
G	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue	$\phi$ a	Z	N° Art. 5% Co	€/€
G 1/8	28	3 35/64	25/32	9/32	7/32	3	75479	
G 1/4	19	3 15/16	55/64	7/16	23/64	3	62936	
G 3/8	19	3 15/16	55/64	15/32	23/64	3	75481	
G 1/2	14	4 59/64	63/64	5/8	15/32	3	75478	
G 5/8	14	4 59/64	25/32	45/64	37/64	4	75482	
G 3/4	14	5 33/64	1 1/8	25/32	5/8	4	75480	
G 1	11	6 19/64	1 3/16	63/64	25/32	4	75483	
G 1 1/2	11	7 1/2	1 1/4	1 7/16	1 1/8	6	76221	



# Ref. 3116

FRACTIONAL-24

BSP (Gas) Machine Straight Tap  
 Macho Recto Máquina BSP (Gas)  
 Taraud droit machine BSP (Gaz)

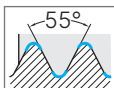


Cobalt  
5%

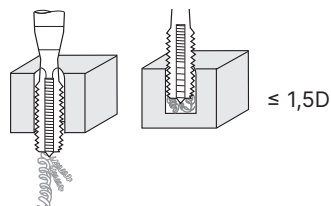
DIN  
5156



$\alpha$   
 $10^\circ \pm 2$



British Standard Parallel Pipe (BSPP-GAS)  
 Rosca británica para tubo paralelo (BSPP-GAS)  
 Filetage britannique pour tuyau parallèle (BSPP-GAS)



Material		Vc (ft/min.)
Group	Sub.	5%Co
P	P.1	20-32
K	K.1	22-32
	K.2	13-23
N	N.1	15-26
	N.2	26-39
	N.3	49-115
	N.4	45-65
	N.5	39-49

Feed / Avance  $f = \text{TPI}$

TPI = threads per inch  
 hilos por pulgada  
 filets par pouce

$$\text{r.p.m.} = \frac{\text{Vc (ft/min)} \times 3,82}{\phi \text{ (inch)}}$$

$$\text{Vf (inch/min)} = \frac{\text{r.p.m.}}{\text{TPI}}$$

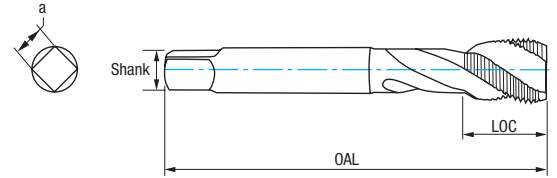
G	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue	$\phi$	Z	N° Art. 5% Co	€/€
G 1/8	28	3 35/64	25/32	9/32	7/32	3	75467	
G 1/4	19	3 15/16	55/64	7/16	23/64	3	75466	
G 3/8	19	3 15/16	55/64	15/32	23/64	3	75143	
G 1/2	14	4 59/64	63/64	5/8	15/32	3	75465	
G 5/8	14	4 59/64	63/64	45/64	37/64	4	75469	
G 3/4	14	5 33/64	7/64	25/32	5/8	4	75468	
G 7/8	14	5 29/32	7/64	55/64	45/64	4	77647	
G 1	11	6 19/64	1 3/16	63/64	25/32	4	75470	
G 1 1/8	11	6 11/16	1 3/16	1 7/64	55/64	4	76197	
G 1 1/4	11	6 11/16	1 3/16	1 17/64	15/16	4	76205	
G 1 1/2	11	7 1/2	1 17/64	1 7/16	1 1/8	6	76219	
G 1 3/4	11	7 1/2	1 17/64	1 37/64	1 17/64	6	76227	
G 2	11	8 21/32	1 37/64	1 49/64	1 3/8	6	76233	


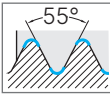


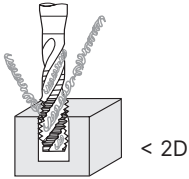
# Ref. 3156

FRACTIONAL-24

BSP (Gas) Machine Spiral Tap  
 Macho Helicoidal Máquina BSP (Gas)  
 Taraud hélicoïdal machine BSP (Gaz)



Cobalt 5%	DIN 5156	C 2-3h		$\alpha$ $10^\circ \pm 2$		British Standard <b>Parallel Pipe (BSPP-GAS)</b> Rosca británica para tubo <b>paralelo (BSPP-GAS)</b> Filetage britannique pour tuyau <b>parallèle (BSPP-GAS)</b>
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Material		Vc (ft/min.)
<b>Group</b>	<b>Sub.</b>	<b>5%Co</b>
<b>P</b>	<b>P.1</b>	20-32
<b>K</b>	<b>K.1</b>	22-32
	<b>K.2</b>	13-23
<b>N</b>	<b>N.1</b>	15-26
	<b>N.2</b>	26-39
	<b>N.3</b>	49-115
	<b>N.4</b>	45-65
	<b>N.5</b>	39-49

Feed / Avance  $f = \text{TPI}$

**TPI** = threads per inch  
 hilos por pulgada  
 filets par pouce

$$\text{r.p.m.} = \frac{\text{Vc (ft/min)} \times 3.82}{\phi \text{ (inch)}}$$

$$\text{Vf (inch/min)} = \frac{\text{r.p.m.}}{\text{TPI}}$$

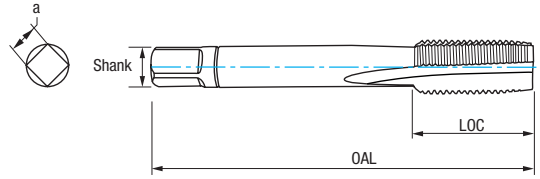
G	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue	 a	 Z	N° Art. 5% Co	€/€
<b>G 1/8</b>	<b>28</b>	3 35/64	25/32	9/32	7/32	3	63188	
<b>G 1/4</b>	<b>19</b>	3 15/16	55/64	7/16	23/64	3	63185	
<b>G 3/8</b>	<b>19</b>	3 15/16	55/64	15/32	23/64	3	75142	
<b>G 1/2</b>	<b>14</b>	4 59/64	63/64	5/8	15/32	4	75484	
<b>G 3/4</b>	<b>14</b>	5 33/64	7/64	25/32	5/8	4	75485	
<b>G 1</b>	<b>11</b>	6 19/64	1 3/16	63/64	25/32	4	75487	
<b>G 1 1/4</b>	<b>11</b>	6 11/16	1 3/16	1 17/64	15/16	5	76208	
<b>G 1 1/2</b>	<b>11</b>	7 1/2	1 17/64	1 7/16	1 1/8	5	76222	



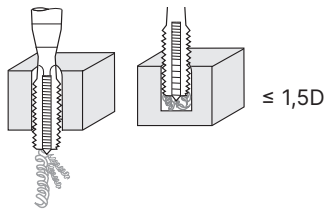
# Ref. 3026

FRACTIONAL-24

BSP (Gas) Hand Tap Set  
 Juego Machos Mano BSP (Gas)  
 Jeu tarauds à main BSP (Gaz)



HSS	DIN 5157	ISO 2284	B 3,5-5h	C 2-3h		$\alpha$ $10^\circ \pm 2$		Whitworth <b>Parallel</b> Thread (BSPP) Rosca Whitworth <b>Paralela</b> (BSPP) Filetage Whitworth <b>Parallèle</b> (BSPP)
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Group-Grupo Groupe	Subgrup. P.1	Group-Grupo Groupe	Group-Grupo Groupe	Subgrup. N.1 - N.3 N.4 - N.5
<b>P</b>		<b>K</b>	<b>N</b>	



DIN 5157	<b>N°1</b> Roughing Desbaste Ébauche	<b>N°3</b> Finishing Acabado Finition
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**N°1** **B**  
3,5-5h

**N°3** **C**  
2-3h

G	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue			N° Art. HSS	€
G 1/8	28	2 31/64	25/32	9/32	7/32	4	62510	
G 1/4	19	2 3/4	55/64	7/16	23/64	4	62504	
G 3/8	19	2 3/4	55/64	15/32	23/64	4	62516	
G 1/2	14	3 5/32	55/64	5/8	15/32	4	62498	
G 5/8	14	3 5/32	55/64	45/64	37/64	4	62522	
G 3/4	14	3 35/64	55/64	25/32	5/8	4	62513	
G 7/8	14	3 35/64	55/64	55/64	45/64	4	62525	
G 1	11	3 15/16	1 3/16	63/64	25/32	4	62528	
G 1 1/8	11	4 59/64	1 37/64	1 7/64	55/64	4	76195	
G 1 1/4	11	4 59/64	1 37/64	1 17/64	15/16	4	76203	
G 1 3/8	11	4 59/64	1 37/64	1 27/64	1 9/64	4	76211	
G 1 1/2	11	5 33/64	1 37/64	1 27/64	1 1/8	6	74823	
G 1 3/4	11	5 33/64	1 37/64	1 37/64	1 17/64	6	76225	
G 2	11	6 19/64	1 37/64	1 49/64	1 3/8	8	76231	

**New!**

ISO 2284	<b>N°3</b> Finishing Acabado Finition
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**N°3** **B**  
3,5-5h

**N°3** **C**  
2-3h

G	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue			N° Art. HSS	€/€
G 1/8	28	2 5/16	9/16	5/16	1/4	4	26780	
G 1/4	19	2 5/8	3/4	25/64	5/16	4	26789	
G 3/8	19	2 15/16	13/16	31/64	25/64	4	26814	
G 1/2	14	3 7/16	1 1/32	5/8	31/64	4	26830	
G 5/8	14	3 9/16	1 1/32	45/64	35/64	4	26845	
G 3/4	14	3 3/4	1 1/8	25/32	5/8	4	26852	
G 7/8	14	4 1/64	1 1/8	7/8	45/64	6	26857	
G 1	11	4 5/16	1 5/16	63/64	25/32	6	26860	
G 1 1/8	11	4 9/16	1 11/32	1 7/64	7/8	6	26891	
G 1 1/4	11	4 11/16	1 7/16	1 15/64	63/64	6	26950	
G 1 3/8	11	4 3/4	1 7/16	1 15/64	63/64	6	26954	
G 1 1/2	11	4 15/16	1 29/64	1 25/64	1 7/64	6	26973	
G 1 3/4	11	5 3/16	1 9/16	1 25/64	1 7/64	6	26988	
G 2	11	5 1/2	1 5/8	1 37/64	1 15/64	6	27002	

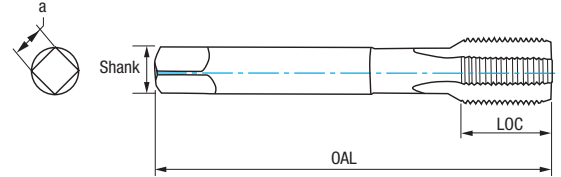




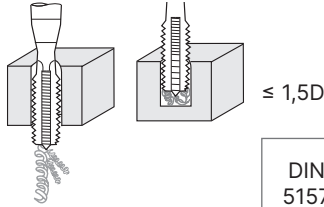
# Ref. 3016

FRACTIONAL-24

BSP (Gas) Hand Tap  
Macho Único Mano Bsp (Gas)  
Taraud à main BSP (Gaz)



HSS	DIN 5157	ISO 2284		$\alpha$ 10° ± 2		Whitworth <b>Paralele</b> Thread (BSPP) Rosca Whitworth <b>Paralela</b> (BSPP) Filetage Whitworth <b>Parallèle</b> (BSPP)	N°3 Finishing Acabado Finition
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Group-Grupo Groupe	Subgrup.	Group-Grupo Groupe	Group-Grupo Groupe	Subgrup.
<b>P</b>	<b>P.1</b>	<b>K</b>	<b>N</b>	<b>N.1 - N.3</b> <b>N.4 - N.5</b>



DIN 5157



G	Chamfer Entrada Entrée	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue			N° Art. HSS	€/€\$
G 1/8	C	28	2 31/64	25/32	9/32	7/32	3	75461	
G 1/4		19	2 3/4	55/64	7/16	23/64	3	75460	
G 3/8		19	2 3/4	55/64	15/32	23/64	3	75462	
G 1/2		14	3 5/32	55/64	5/8	15/32	3	75459	
G 5/8		14	3 5/32	55/64	45/64	37/64	4	75463	
G 3/4		14	3 35/64	55/64	25/32	5/8	4	75106	
G 7/8		14	3 35/64	55/64	55/64	45/64	4	76246	
G 1		11	3 15/16	1 3/16	63/64	25/32	4	75464	
G 1 1/8		11	4 59/64	1 37/64	1 7/64	55/64	4	76196	
G 1 1/4		11	4 59/64	1 37/64	1 17/64	15/16	4	76204	
G 1 3/8		11	5 33/64	1 37/64	1 27/64	1 9/64	4	76212	
G 1 1/2		11	5 33/64	1 37/64	1 27/64	1 1/8	6	76218	
G 1 3/4		11	5 33/64	1 37/64	1 37/64	1 17/64	6	76226	
G 2		11	6 19/64	1 37/64	1 49/64	1 3/8	8	76232	

N°3



**New!**

ISO 2284



G	Chamfer Entrada Entrée	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue			N° Art. HSS	€/€\$
G 1/8	B	28	2 5/16	9/16	5/16	1/4	4	26759	
	C							26779	
G 1/4	B	19	2 5/8	3/4	25/64	5/16	4	26781	
	C							26783	
G 3/8	B	19	2 15/16	13/16	31/64	25/64	4	26790	
	C							26791	
G 1/2	B	14	3 7/16	1 1/32	5/8	31/64	4	26823	
	C							26827	
G 5/8	B	14	3 9/16	1 1/32	45/64	35/64	4	26832	
	C							26843	
G 3/4	B	14	3 3/4	1 1/8	25/32	5/8	4	26849	
	C							26850	
G 7/8	B	11	4 1/64	1 1/8	7/8	45/64	6	26853	
	C							26855	
G 1	B	11	4 5/16	1 5/16	63/64	25/32	6	26858	
	C							26859	
G 1 1/8	B	11	4 9/16	1 11/32	1 7/64	7/8	6	26862	
	C							26873	
G 1 1/4	B	11	4 11/16	1 7/16	1 15/64	63/64	6	26941	
	C							26948	
G 1 3/8	B	11	4 3/4	1 7/16	1 15/64	63/64	6	26951	
	C							26953	
G 1 1/2	B	11	4 15/16	1 29/64	1 25/64	1 7/64	6	26956	
	C							26971	
G 1 3/4	B	11	5 3/16	1 9/16	1 25/64	1 7/64	6	26974	
	C							26976	
G 2	B	11	5 1/2	1 5/8	1 37/64	1 15/64	8	26991	
	C							26997	

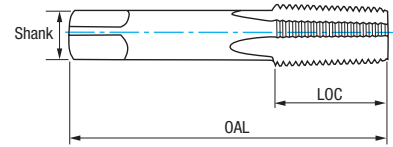
N°3



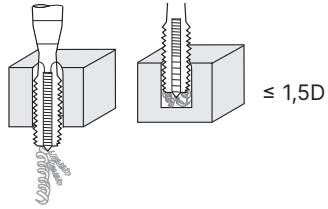
Ref. **3019**

FRACTIONAL-24

**BSPT (RC) Hand Single Tap**  
**Macho Único Mano BSPT (RC)**  
**Taraud à main BSPT (RC)**



HSS	DIN 5157	C 2-3h		$\alpha$ $10^\circ \pm 2$	 55° ▷ 1:16	British Standard Pipe Taper Rosca británica para tubo cónica Raccord BSPT
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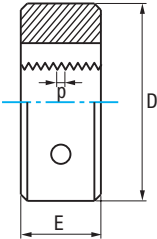
Group-Grupo Groupe	Subgrup. P.1	Group-Grupo Groupe	Group-Grupo Groupe	Subgrup. N.1 - N.3 N.4 - N.5
<b>P</b>		<b>K</b>	<b>N</b>	

BSPT	TPI	OAL Longitud total	LOC Corte	Shank Mango Queue	a	Z	N° Art. HSS	€/€
B 1/8	28	2 9/16	3/4	9/32	7/32	3	38254	
B 1/4	19	2 3/4	63/64	7/16	23/64	4	38255	
B 3/8	19	2 61/64	63/64	15/32	23/64	5	38256	
B 1/2	14	3 5/32	1 7/32	5/8	15/32	5	38257	
B 5/8	14	3 5/32	1 27/64	45/64	35/64	5	38258	
B 3/4	14	3 11/32	1 19/64	25/32	43/64	5	76138	
B 7/8	14	3 15/16	1 27/64	55/64	43/64	6	38259	
B 1	11	4 21/64	1 1/2	63/64	27/32	6	38260	



Ref. **3534**  
FRACTIONAL-24

UNC Hand Die  
Cojinete mano UNC  
Filière à main UNC



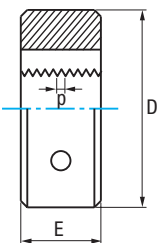
HSS	UNC	DIN 223		Tol. 2A	$\alpha$ 10 - 17°	Chamfer 1,75 threads Chafilán Entrada 1,75h Chanfrein 1,75 filets
-----	-----	---------	--	---------	-------------------	-------------------------------------------------------------------------

UNC	P	D	E	N° Art. HSS	€/ \$
UNC 1/4	20	25/32	9/32	75557	
UNC 5/16	18	63/64	23/64	75561	
UNC 3/8	16	1 3/16	7/16	75559	
UNC 7/16	14	1 3/16	7/16	75563	
UNC 1/2	13	1 1/2	35/64	75556	
UNC 9/16	12	1 1/2	35/64	75564	
UNC 5/8	11	1 49/64	45/64	75560	
UNC 3/4	10	1 49/64	45/64	75558	
UNC 7/8	9	2 11/64	55/64	75562	
UNC 1	8	2 11/64	55/64	75565	



Ref. **3504**  
FRACTIONAL-24

UNF Hand Die  
Cojinete Mano UNF  
Filière à main UNF



HSS	DIN 223		UNF	Tol. 2A	$\alpha$ 10 - 17°	Chamfer 1,75 threads Chafilán Entrada 1,75h Chanfrein 1,75 filets
-----	---------	--	-----	---------	-------------------	-------------------------------------------------------------------------

UNF	P	D	E	N° Art. HSS	€/ \$
UNF N°4	48	5/8	13/64	75688	
UNF N°5	44	25/32	13/64	75689	
UNF N°6	40	25/32	9/32	75690	
UNF N°8	36	25/32	9/32	75691	
UNF N°10	32	25/32	9/32	75692	
UNF N°12	28	25/32	9/32	75693	
UNF 1/4	28	25/32	9/32	63422	
UNF 5/16	24	63/64	23/64	63434	
UNF 3/8	24	1 3/16	7/16	63428	
UNF 7/16	20	1 3/16	7/16	63440	
UNF 1/2	20	1 1/2	25/64	63419	
UNF 9/16	18	1 1/2	25/64	75747	
UNF 5/8	18	1 49/64	35/64	63431	
UNF 3/4	16	1 49/64	35/64	63425	
UNF 7/8	14	2 11/64	5/8	63437	



Ref. 3534

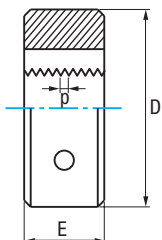


Ref. 3504

# Ref. 3505

FRACTIONAL-24

UNEF Hand Die  
Cojinete Mano UNEF  
Filière à main UNEF



HSS	UNEF	DIN 22568		Tol. 2A	$\alpha$ 10 - 17°	Chamfer 1,75 threads Chafilán Entrada 1,75h Chanfrein 1,75 filets
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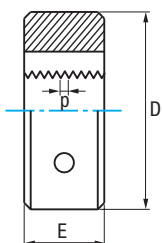
UNEF	P	D	E	N° Art. HSS	€/€
UNEF 1/4	32	25/32	9/32	38275	
UNEF 5/16	32	63/64	23/64	38279	
UNEF 3/8	32	1 3/16	7/16	38277	
UNEF 7/16	28	1 3/16	7/16	38280	
UNEF 1/2	28	1 1/2	25/64	38274	
UNEF 9/16	24	1 1/2	25/64	15217	
UNEF 5/8	24	1 49/64	35/64	38278	
UNEF 3/4	20	1 49/64	35/64	38276	
UNEF 1	20	2 11/64	5/8	38281	



# Ref. 3507

FRACTIONAL-24

NPT Hand Die  
Cojinete Mano NPT  
Filière à main NPT



HSS	NPT	DIN 22568		$\alpha$ 10 - 17°	Chamfer 1,75 threads Chafilán Entrada 1,75h Chanfrein 1,75 filets
-----	-----	-----------	--	-------------------	-------------------------------------------------------------------------

NPT	P	D	E	N° Art. HSS	€/€
NPT 1/8	27,00	1 3/16	7/16	76043	
NPT 1/4	18,00	1 1/2	35/64	77707	
NPT 3/8	18,00	1 49/64	45/64	22395	
NPT 1/2	14,00	1 49/64	45/64	45894	
NPT 3/4	14,00	2 11/64	55/64	76052	
NPT 1	11,50	2 9/16	63/64	63476	
NPT 1 1/4	11,50	2 61/64	1 1/32	22456	
NPT 1 1/2	11,50	3 35/64	1 1/16	22460	
NPT 2	11,50	4 9/64	1 7/64	22475	



Ref. 3505

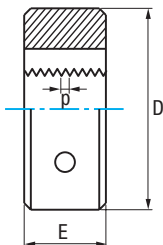



Ref. 3507



Ref. **3502**

BSW (Whitworth) Hand Die  
 Cojinete Mano BSW (Whitworth)  
 Filiere a main BSW (Whitworth)



HSS	W	DIN 223		$\alpha$ 10 - 17°	Chamfer 1,75 threads Chaflán Entrada 1,75h Chanfrein 1,75 filets
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W	P	D	E	Nº Art. HSS	€/ \$
W 3/32	48	5/8	13/64	63344	
W 1/8	40	25/32	13/64	63329	
W 5/32	32	25/32	9/32	63356	
W 3/16	24	25/32	9/32	63341	
W 7/32	24	25/32	9/32	63365	
W 1/4	20	25/32	9/32	63323	
W 5/16	18	63/64	23/64	63350	
W 3/8	16	1 3/16	7/16	63335	
W 7/16	14	1 3/16	7/16	63362	
W 1/2	12	1 1/2	35/64	63320	
W 9/16	12	1 1/2	35/64	63368	
W 5/8	11	1 49/64	45/64	63347	
W 3/4	10	1 49/64	45/64	63332	
W 7/8	9	2 11/64	55/64	63359	
W 1	8	2 11/64	55/64	63374	
W 1 1/8	7	2 9/16	63/64	63383	

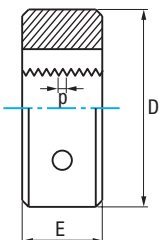


Ref. **3506**

FRACTIONAL-24

BSP (Gas) Hand Die  
Cojinete Mano BSP (GAS)  
Filière à main BSP (Gaz)

**New!**



HSS	DIN 24231		Tol. A	$\alpha$ 10 - 17°	Chamfer 1,75 threads Chañlón Entrada 1,75h Chanfrein 1,75 filets
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British Standard **Parallel** Pipe (BSPP-GAS)  
Rosca británica para tubo **paralelo** (BSPP-GAS)  
Filetage britannique pour tuyau **parallèle** (BSPP-GAS)

G	Threads Hilos-Filets	D	E	Nº Art. HSS	€/ \$
G 1/8	28	1 3/16	7/16	63461	
G 1/4	19	1 1/2	25/64	63455	
G 3/8	19	1 3/4	35/64	63467	
G 1/2	14	1 3/4	35/64	63452	
G 5/8	14	2 3/16	5/8	75496	
G 3/4	14	2 3/16	5/8	63464	
G 7/8	14	2 9/16	45/64	76252	
G 1	11	2 9/16	45/64	63470	
G 1 1/8	11	2 15/16	25/32	76202	
G 1 1/4	11	2 15/16	25/32	76210	
G 1 1/2	11	3 9/16	55/64	76224	
<b>New!</b> G 1 3/4	11	4 1/8	55/64	76230	
<b>New!</b> G 2	11	4 1/8	55/64	76236	

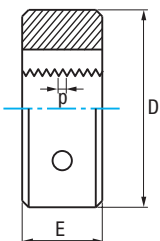


Ref. **3519**

FRACTIONAL-24

BSPT (RC) Hand Die  
Cojinete Mano BSPT (RC)  
Filière à main BSPT (RC)

**New!**



HSS	DIN 24231		Tol. A	$\alpha$ 10 - 17°	Chamfer 1,75 threads Chañlón Entrada 1,75h Chanfrein 1,75 filets
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British Standard Pipe **Taper**  
Rosca británica para tubo **cónica**  
Raccord BSPT

BSPT	Threads Hilos-Filets	D	E	Nº Art. HSS	€/ \$
BSPT 1/8	28	1 3/16	7/16	38263	
BSPT 1/4	19	1 1/2	35/64	38262	
BSPT 3/8	19	1 3/4	45/64	38265	
BSPT 1/2	14	2 3/16	55/64	38261	
BSPT 5/8	14	2 3/16	55/64	38266	
BSPT 3/4	14	2 3/16	55/64	38264	
BSPT 7/8	14	2 9/16	55/64	38267	
BSPT 1	11	2 9/16	63/64	38268	



Ref. 3506

Ref. 3519



# 04.

FRACTIONAL - INCHES · PULGADAS · POUÇES

## Carbide Milling Fresado Metal Duro Fraisage carbure

### Roughing End Mills

Fresas Desbaste	114
Fraises ébauche	

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### Finishing End Mills

Fresas Acabado	104
Fraises finition	

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### Fiber Composites End Mills

Fresas Fibras / Composites	123
Fraises Fibres / Composites	

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Ref. **7406**



## The most versatile End Mill La Fresa más versátil La fraise la plus polyvalente

Suitable for all kind of materials, including the most demanding ones.  
Convenient and user-friendly: multiple options both for LENGTHS (short, long, extra-long...) and POINT SHAPES (square, chamfer and radius), all in just one reference.

Válida para todo tipo de materiales, incluyendo los más exigentes.  
Intuitiva y sencilla: Una sola referencia para diferentes LARGOS (cortas, largas, extra-largas) y PUNTAS (plana, con chaflán y con radio)

Convient à tous les types de matériaux, y compris les plus exigeants.  
Intuitif et simple : Une seule référence pour les différentes LONGUEURS (courtes, longues, extra-longues) et POINTES (plates, chanfreinées et à rayon)

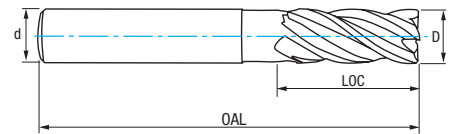




# Ref. 7406

FRACTIONAL-24

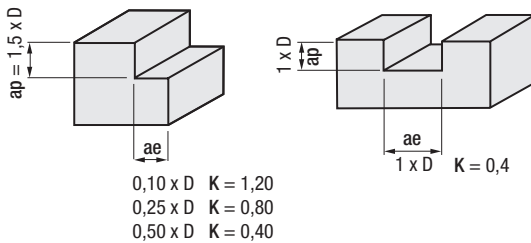
High Performance **Unequal Helix** Carbide End Mill  
 Fresa Metal Duro **Hélice Alternada** Alto Rendimiento  
 Fraise carbure **hélice alternée** haut rendement



Carbide/MD Carbure Grano UF	TIALCN	IZAR Std.		4 Z				Tol. D(+0,000"/-0,002") d(h6)
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**Opciones / Options / Options**

Plana Square Plate	Chaflán Chamfer Chanfrein	Radio Radius Rayon
--------------------------	---------------------------------	--------------------------



Material		Vc (ft./min.)	Feed-Avances-Pas fz/rev. (inch/z)				
Group	Sub.	TIALCN	1/8	1/4	5/16	3/8	1/2
P	P.2	365-490	0,0009	0,0015	0,0022	0,0025	0,0033
	P.3	190-420	0,0007	0,0014	0,0019	0,0021	0,0026
	P.5	320-425	0,0006	0,0010	0,0013	0,0012	0,0022
M		165-260	0,0007	0,0014	0,0019	0,0018	0,0026
K	K.1	260-390	0,0009	0,0016	0,0022	0,0028	0,0035
	K.2	260-330	0,0009	0,0016	0,0022	0,0028	0,0035
S	Ti6Al44V	220-295	0,0005	0,0007	0,0009	0,0010	0,0015
	Inconel 718	330-425	0,0005	0,0007	0,0009	0,0010	0,0015
N	N.1	455-1150	0,0010	0,0020	0,0027	0,0031	0,0041
	N.2	455-1150	0,0010	0,0020	0,0027	0,0031	0,0041

$$\text{r.p.m.} = \frac{Vc \times 1.000}{\pi \times \phi}$$

**K = Correction coefficient**  
 Coeficiente corrección  
 Coéfficient correction

$$Vf \text{ (inch/min.)} = \text{r.p.m.} \times Z \times fz \times K$$

1. No vibrations.
2. Good surface quality.
3. Higher feed (up to 40-50%).
4. Longer tool life  
→ Higher Productivity
5. Better chipping.

1. Eliminación de vibraciones.
2. Gran calidad superficial.
3. Mayores avances (hasta 40-50%).
4. Mayor vida de la herramienta  
→ Mayor productividad
5. Mejor evacuación de viruta.

1. Sans vibrations.
2. Haute qualité de surface.
3. Meilleurs avances (jusqu'au 40-50%).
4. Vie utile de l'outil plus longue  
→ Haute Productivité
5. Meilleure évacuation copeaux.



Ref. **7406**

FRACTIONAL-24

High Performance Unequal Helix Carbide End Mill  
 Fresa Metal Duro Hélice Alterna Alto Rendimiento  
 Fraise carbure hélice alternée haut rendement

D mm	d mm	LOC Corte	OAL Longitud total	Square Plana Plate	Chamfer Chafilán Chanfrein	Radius Radio Rayou	N° Art. TIALCN	€/€
1/8	1/8	1/4	1 1/2	●	-	-	78912	
1/8	1/8	1/4	1 1/2	-	0,10	-	78911	
1/8	1/8	1/4	2 1/2	-	-	0,15	78913	
1/8	1/8	1/2	2	●	-	-	78923	
1/8	1/8	1/2	2	-	0,10	-	78924	
1/8	1/8	1/2	2	-	-	0,15	78916	
1/8	1/8	1/2	2 1/2	●	-	-	78934	
3/16	3/16	5/16	1 1/2	●	-	-	78936	
3/16	3/16	5/16	1 1/2	-	0,10	-	78935	
3/16	3/16	5/16	2 1/2	-	-	0,15	78937	
3/16	3/16	5/16	2 1/2	●	-	-	78938	
3/16	3/16	5/8	2 1/4	●	-	-	78948	
3/16	3/16	5/8	2 1/4	-	0,10	-	78947	
3/16	3/16	5/8	2 1/4	-	-	0,15	78939	
3/16	3/16	5/8	2 1/4	-	-	0,30	78940	
3/16	3/16	5/8	2 1/2	●	-	-	78951	
3/16	3/16	5/8	2 1/2	-	-	0,15	78949	
3/16	3/16	5/8	2 1/2	-	-	0,30	78950	
1/4	1/4	3/8	2	●	-	-	78953	
1/4	1/4	3/8	2	-	0,15	-	78954	
1/4	1/4	3/8	2	-	-	0,30	78952	
1/4	1/4	3/4	2 1/2	●	-	-	78970	
1/4	1/4	3/4	2 1/2	-	0,15	-	78969	
1/4	1/4	3/4	2 1/2	-	-	0,30	78966	
1/4	1/4	3/4	2 1/2	-	-	0,60	78968	
1/4	1/4	1	3	●	-	-	78972	
1/4	1/4	1	3	-	-	0,15	78971	
1/4	1/4	1 1/4	3 1/4	●	-	-	78975	
1/4	1/4	1 1/4	3 1/4	-	-	0,15	78973	
1/4	1/4	1 1/4	3 1/4	-	-	0,30	78974	
5/16	5/16	1/2	2	●	-	-	78978	
5/16	5/16	1/2	2	-	0,15	-	78977	
5/16	5/16	1/2	2	-	-	0,30	78976	
5/16	5/16	3/4	2 1/2	●	-	-	78984	
5/16	5/16	3/4	2 1/2	-	0,15	-	78983	
5/16	5/16	3/4	2 1/2	-	-	0,15	78979	
5/16	5/16	3/4	2 1/2	-	-	0,30	78981	
5/16	5/16	3/4	2 1/2	-	-	0,60	78982	
5/16	5/16	1 1/4	3 1/4	●	-	-	78990	
5/16	5/16	1 1/4	3 1/4	-	-	0,30	78988	
3/8	3/8	1/2	2	●	-	-	78993	
3/8	3/8	1/2	2	-	0,20	-	78992	
3/8	3/8	1/2	2	-	-	0,30	78991	
3/8	3/8	7/8	2 1/2	●	-	-	79001	
3/8	3/8	7/8	2 1/2	-	0,20	-	79000	
3/8	3/8	7/8	2 1/2	-	-	0,15	78994	
3/8	3/8	7/8	2 1/2	-	-	0,30	78996	
3/8	3/8	7/8	2 1/2	-	-	0,60	78997	
3/8	3/8	7/8	2 1/2	-	-	0,90	78998	
3/8	3/8	1	3	●	-	-	79013	
3/8	3/8	1	3	-	-	0,15	79003	
3/8	3/8	1	3	-	-	0,30	79004	
3/8	3/8	1	3	-	-	0,60	79007	
3/8	3/8	1 1/2	4	-	-	0,30	79016	
3/8	3/8	1 1/2	4	-	-	0,60	79017	
3/8	3/8	2 1/2	4	-	-	0,30	79019	




Ref. **7406**

FRACTIONAL-24

High Performance Unequal Helix Carbide End Mill  
 Fresa Metal Duro Hélice Alterna Alto Rendimiento  
 Fraise carbure hélice alternée haut rendement

D mm	d mm	LOC Corte	OAL Longitud total	Square Plana Plate	Chamfer Chafilán Chanfrein	Radius Radio Rayou	N° Art. TIALCN	€/€
3/8	3/8	2 1/2	4	-	-	0,60	79020	
7/16	7/16	5/8	2 1/2	●	-	-	79022	
7/16	7/16	5/8	2 1/2	-	0,20	-	79021	
7/16	7/16	7/8	2 1/2	●	-	-	79025	
7/16	7/16	7/8	2 1/2	-	0,20	-	79024	
7/16	7/16	2	4	●	-	-	79027	
1/2	1/2	5/8	2 1/2	●	-	-	79031	
1/2	1/2	5/8	2 1/2	-	0,20	-	79030	
1/2	1/2	5/8	2 1/2	-	-	0,30	79028	
1/2	1/2	5/8	2 1/2	-	-	0,60	79029	
1/2	1/2	1	3	●	-	-	79032	
1/2	1/2	1	3	-	0,20	-	79033	
1/2	1/2	1 1/4	3	●	-	-	79044	
1/2	1/2	1 1/4	3	-	0,20	-	79039	
1/2	1/2	1 1/4	3	-	-	0,15	79034	
1/2	1/2	1 1/4	3	-	-	0,30	79035	
1/2	1/2	1 1/4	3	-	-	0,60	79036	
1/2	1/2	1 1/4	3	-	-	0,90	79037	
1/2	1/2	1 1/4	3	-	-	1,20	79038	
1/2	1/2	1 1/2	4	●	-	-	79053	
1/2	1/2	1 1/2	4	-	0,20	-	79051	
1/2	1/2	1 1/2	4	-	-	0,30	79046	
1/2	1/2	1 1/2	4	-	-	0,60	79049	
1/2	1/2	2	4	●	-	-	79071	
1/2	1/2	2	4	-	-	0,30	79067	
1/2	1/2	2	4	-	-	0,60	79070	
1/2	1/2	2 1/4	4 1/2	●	-	-	79074	
1/2	1/2	2 1/4	4 1/2	-	-	0,30	79072	
1/2	1/2	2 1/4	4 1/2	-	-	0,60	79073	
5/8	5/8	3/4	3	●	-	-	79078	
5/8	5/8	3/4	3	-	0,20	-	79077	
5/8	5/8	3/4	3	-	-	0,60	79075	
5/8	5/8	1 1/4	3 1/2	-	-	1,20	79076	
5/8	5/8	1 1/4	3 1/2	●	-	-	79101	
5/8	5/8	1 1/4	3 1/2	-	0,20	-	79102	
5/8	5/8	1 1/4	3 1/2	-	-	0,30	79084	
5/8	5/8	1 1/4	3 1/2	-	-	0,60	79085	
5/8	5/8	1 1/4	3 1/2	-	-	0,90	79088	
5/8	5/8	1 1/4	3 1/2	-	-	1,20	79089	
5/8	5/8	1 5/8	4 1/8	-	0,20	-	79106	
5/8	5/8	1 5/8	4 1/8	-	-	0,60	79105	
3/4	3/4	1 1/2	4	●	-	-	79112	
3/4	3/4	1 1/2	4	-	0,20	-	79111	
3/4	3/4	1 1/2	4	-	-	0,30	79108	
3/4	3/4	1 1/2	4	-	-	0,60	79109	
3/4	3/4	1 1/2	4	-	-	0,90	79110	
1	1	2	5	●	-	-	79114	
1	1	2	5	-	0,20	-	79113	
1	1	2 1/4	5	●	-	-	79119	
1	1	2 1/4	5	-	0,20	-	79120	
1	1	2 1/4	5	-	-	0,30	79115	
1	1	2 1/4	5	-	-	0,60	79116	

 Weldon Shank / Mango / Queue  
 upon request / bajo demanda / sur demande

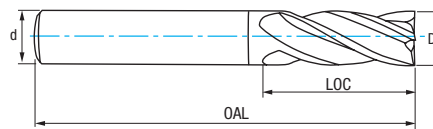


# Ref. 7403

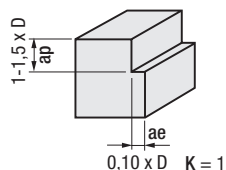
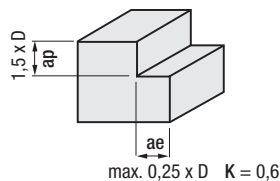
FRACTIONAL-24

**High Performance Solid Carbide Finishing End Mill**  
**Fresa Acabado Metal Duro Alto Rendimiento**  
**Fraise finition carbure haut rendement**

**New!**



Carbide/MD Carbure Ultrafino	CROMAX	CNC qualified	IZAR Std.	4 Z				Tol. D(+0,000"/-0,002") d(h6)
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Material		Vc (ft/min.)	Feed-Avances-Pas fz/rev. (inch/z)						
Group	Sub.	CROMAX	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4
P	P.1	410-525	0,0008	0,0012	0,0016	0,0022	0,0026	0,0031	0,0059
	P.2	367-493	0,0008	0,0012	0,0016	0,0022	0,0026	0,0031	0,0039
	P.3	196-427	0,0008	0,0010	0,0014	0,0016	0,0020	0,0024	0,0030
	P.5	328-427	0,0004	0,0010	0,0010	0,0010	0,0016	0,0031	0,0039
M		164-263	0,0004	0,0010	0,0014	0,0014	0,0020	0,0028	0,0031
K	K.1	223-312	0,0008	0,0012	0,0016	0,0022	0,0026	0,0031	0,0039
	K.2	131-197	0,0008	0,0012	0,0016	0,0022	0,0026	0,0031	0,0039
S		164-223	0,0004	0,0006	0,0008	0,0010	0,0012	0,0016	0,0020
N	N.1	459-1148	0,0008	0,0020	0,0020	0,0024	0,0030	0,0031	0,0049
	N.2	459-1148	0,0008	0,0020	0,0020	0,0024	0,0030	0,0031	0,0049
	N.3	459-1380	0,0004	0,0020	0,0031	0,0031	0,0039	0,0059	0,0079
	N.4	459-1380	0,0004	0,0020	0,0031	0,0031	0,0039	0,0059	0,0079
	N.5	328-985	0,0004	0,0020	0,0031	0,0031	0,0039	0,0059	0,0079
	N.6	459-919	0,0008	0,0012	0,0012	0,0016	0,0020	0,0039	0,0059
	N.7	229-575	0,0006	0,0010	0,0012	0,0012	0,0016	0,0031	0,0059

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$

K = Correction coefficient  
 Coeficiente corrección  
 Coéfficient correction

$$Vf \text{ (inch/min.)} = r.p.m. \times Z \times fz \times K$$



D	d	LOC - Corte	OAL - L. total	N° Art. Carb./MD	€/€	N° Art. CROMAX	€/€
1/16	1/8	3/16	1 1/2	80801		81134	
5/64	1/8	1/4	1 1/2	80847		81135	
3/32	1/8	9/32	1 1/2	80850		81136	
7/64	1/8	3/8	1 1/2	80855		81137	
1/8	1/8	1/2	1 1/2	80929		81139	
9/64	3/16	1/2	2	80938		81140	
5/32	3/16	1/2	2	80940		81141	
11/64	3/16	5/8	2	80958		81142	
3/16	3/16	5/8	2	80973		81143	
13/64	1/4	5/8	2 1/2	80975		81144	
7/32	1/4	5/8	2 1/2	80998		81145	
15/64	1/4	3/4	2 1/2	81073		81147	

D	d	LOC - Corte	OAL - L. total	N° Art. Carb./MD	€/€	N° Art. CROMAX	€/€
1/4	1/4	3/4	2 1/2	81085		81151	
9/32	5/16	1 1/4	3	81087		81152	
5/16	5/16	3/4	2 1/2	81112		81153	
3/8	3/8	7/8	2 1/2	81115		83811	
7/16	7/16	1	2 3/4	81117		83812	
1/2	1/2	1	3	81119		83813	
5/8	5/8	1 1/4	3 1/2	81121		83814	
3/4	3/4	1 1/2	4	81132		83815	
1	1	1 3/4	4	81133		83816	

**Weldon Shank / Mango / Queue**  
 upon request / bajo demanda / sur demande





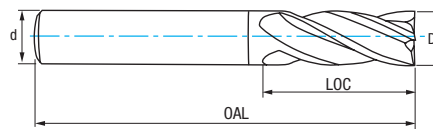
Expertise in Non-Standard tools

[izartool.com](http://izartool.com)

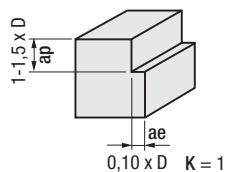
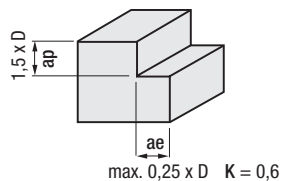
# Ref. 7401

FRACTIONAL-24

Solid Carbide Finishing End Mill  
Fresa Acabado Metal Duro  
Fraise finition carbure



Carbide/MD Carbure Micrograno	CROMAX	CNC qualified	IZAR Std.	4 Z				Tol. D(+0,000"/-0,002") d(h6)
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Material		Vc (ft/min.)	Feed-Avances-Pas fz/rev. (inch/z)						
Group	Sub.	CROMAX	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4
P	P.1	410-525	0,0008	0,0012	0,0016	0,0022	0,0026	0,0031	0,0059
	P.2	367-493	0,0008	0,0012	0,0016	0,0022	0,0026	0,0031	0,0039
	P.3	196-427	0,0008	0,0010	0,0014	0,0016	0,0020	0,0024	0,0030
	P.5	328-427	0,0004	0,0010	0,0010	0,0010	0,0016	0,0031	0,0039
M		164-263	0,0004	0,0010	0,0014	0,0014	0,0020	0,0028	0,0031
K	K.1	223-312	0,0008	0,0012	0,0016	0,0022	0,0026	0,0031	0,0039
	K.2	131-197	0,0008	0,0012	0,0016	0,0022	0,0026	0,0031	0,0039
S		164-223	0,0004	0,0006	0,0008	0,0010	0,0012	0,0016	0,0020
N	N.1	459-1148	0,0008	0,0020	0,0020	0,0024	0,0030	0,0031	0,0049
	N.2	459-1148	0,0008	0,0020	0,0020	0,0024	0,0030	0,0031	0,0049
	N.3	459-1380	0,0004	0,0020	0,0031	0,0031	0,0039	0,0059	0,0079
	N.4	459-1380	0,0004	0,0020	0,0031	0,0031	0,0039	0,0059	0,0079
	N.5	328-985	0,0004	0,0020	0,0031	0,0031	0,0039	0,0059	0,0079
	N.6	459-919	0,0008	0,0012	0,0012	0,0016	0,0020	0,0039	0,0059
	N.7	229-575	0,0006	0,0010	0,0012	0,0012	0,0016	0,0031	0,0059

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$

K = Correction coefficient  
Coeficiente corrección  
Coéfficient correction

$$Vf \text{ (inch/min.)} = r.p.m. \times Z \times fz \times K$$




# Ref. 7401

FRACTIONAL-24

Solid Carbide Finishing End Mill  
Fresa Acabado Metal Duro  
Fraise finition carbure

D	d	LOC - Corte	OAL - L. total	N° Art. Carb./MD	€/€	N° Art. CROMAX	€/€
1/32	1/8	1/16	1 1/2	83534		75434	
1/32	1/8	3/32	1 1/2	83535		75435	
3/64	1/8	3/32	1 1/2	83536		75436	
3/64	1/8	9/64	1 1/2	83537		75437	
1/16	1/8	1/8	1 1/2	79621		75438	
1/16	1/8	3/16	1 1/2	83538		75439	
5/64	1/8	1/4	1 1/2	83539		75440	
3/32	1/8	3/16	1 1/2	83540		75441	
3/32	1/8	9/32	1 1/2	79622		75442	
7/64	1/8	3/16	1 1/2	83541		75444	
7/64	1/8	3/8	1 1/2	83542		75445	
1/8	1/8	1/4	1 1/2	83543		75446	
1/8	1/8	1/2	1 1/2	79623		75447	
1/8	1/8	3/4	2 1/4	79662		75450	
1/8	1/8	3/4	3	83544		75451	
1/8	1/8	1	3	83545		75452	
9/64	3/16	3/8	2	83546		75453	
9/64	3/16	1/2	2	83547		75454	
5/32	3/16	3/8	2	83548		75455	
5/32	3/16	1/2	2	79625		75457	
5/32	3/16	3/4	2 1/2	83549		75471	
11/64	3/16	3/8	2	83553		75473	
11/64	3/16	5/8	2	83648		75486	
3/16	3/16	3/8	2	83649		75489	
3/16	3/16	5/8	2	79626		75490	
3/16	3/16	3/4	2 1/2	83650		75492	
3/16	3/16	1	2 1/2	83651		75495	
3/16	3/16	1 1/8	3	83652		75500	
3/16	3/16	1	4	79663		75499	
13/64	1/4	3/8	2	83654		75503	
13/64	1/4	5/8	2 1/2	83655		75504	
7/32	1/4	3/8	2	83656		75506	
7/32	1/4	5/8	2 1/2	79627		75505	
7/32	1/4	1	3	83657		75510	
15/64	1/4	3/8	2	83658		75511	
15/64	1/4	3/4	2 1/2	83659		75512	
1/4	1/4	3/8	2 1/2	83660		75513	
1/4	1/4	3/4	2 1/2	79628		75514	
1/4	1/4	1 1/8	3	79652		75516	
1/4	1/4	1 1/4	3	83661		75517	
1/4	1/4	1	4	83662		75515	
1/4	1/4	1 1/4	4	83663		75518	
1/4	1/4	1 1/2	6	83664		75519	
17/64	5/16	1/2	2	83665		75520	
17/64	5/16	3/4	2 1/2	83666		75521	
9/32	5/16	1/2	2	83667		75522	
9/32	5/16	1 1/4	3	83668		75524	
19/64	5/16	1/2	2	83669		75525	
19/64	5/16	3/4	2 1/2	83670		75528	
5/16	5/16	1/2	2	83671		75530	
5/16	5/16	3/4	2 1/2	79629		75532	
5/16	5/16	1 1/8	3	79654		75534	
5/16	5/16	1 3/8	3	83672		75535	
5/16	5/16	1	4	83673		75533	
5/16	5/16	1 5/8	4	83674		75538	
5/16	5/16	1 1/2	6	83675		75536	
21/64	3/8	5/8	2	83676		75542	
21/64	3/8	7/8	2 1/2	83677		75543	
11/32	3/8	5/8	2	83678		75544	
11/32	3/8	7/8	2 1/2	83679		75545	

D	d	LOC - Corte	OAL - L. total	N° Art. Carb./MD	€/€	N° Art. CROMAX	€/€
23/64	3/8	5/8	2	83680		75546	
23/64	3/8	7/8	2 1/2	83681		75547	
3/8	3/8	5/8	2	83682		75548	
3/8	3/8	7/8	2 1/2	79630		75550	
3/8	3/8	1 1/8	3	82664		75552	
3/8	3/8	1 3/8	3	83683		75553	
3/8	3/8	1	4	83684		75551	
3/8	3/8	1 3/4	4	83685		75555	
3/8	3/8	1 1/2	6	79655		75554	
3/8	3/8	3	6	83686		75566	
25/64	7/16	5/8	2	83687		75568	
25/64	7/16	1	2 3/4	83688		75569	
13/32	7/16	5/8	2	83689		75590	
13/32	7/16	1	2 3/4	83690		75591	
27/64	7/16	5/8	2	83691		75592	
27/64	7/16	1	2 3/4	83692		75593	
7/16	7/16	5/8	2	83693		75606	
7/16	7/16	1	2 3/4	79631		75607	
7/16	7/16	1	4	83694		75608	
7/16	7/16	1 3/8	4	83695		75609	
7/16	7/16	2	4	83696		75612	
7/16	7/16	1 1/2	6	83697		75611	
7/16	7/16	3	6	83698		75613	
29/64	1/2	5/8	2 1/2	83699		75614	
29/64	1/2	1	3	83700		75620	
15/32	1/2	5/8	2 1/2	83701		75622	
15/32	1/2	1	3	83702		75624	
31/64	1/2	5/8	2 1/2	83703		75640	
31/64	1/2	1	3	83704		75643	
1/2	1/2	5/8	2 1/2	83705		75650	
1/2	1/2	1	3	79633		75651	
1/2	1/2	1 1/2	3 1/2	83706		75653	
1/2	1/2	1	4	83707		75652	
1/2	1/2	2	4	83708		75656	
1/2	1/2	1 1/2	6	79657		75655	
1/2	1/2	3	6	83709		75657	
9/16	9/16	7/8	3	83710		75658	
9/16	9/16	1 1/4	3 1/2	79634		75659	
9/16	9/16	2	6	83711		75660	
9/16	9/16	3	6	83712		75661	
5/8	5/8	7/8	3	82663		75662	
5/8	5/8	1 1/4	3 1/2	79635		75663	
5/8	5/8	2 1/8	4 5/8	83713		75665	
5/8	5/8	2	6	83714		75664	
5/8	5/8	3	6	83715		75666	
11/16	3/4	1	3	83716		75669	
11/16	3/4	1 1/2	4	83717		75670	
3/4	3/4	1	3	83718		75671	
3/4	3/4	1 1/2	4	79636		75675	
3/4	3/4	2 1/4	5	83719		75679	
3/4	3/4	2	6	83720		75677	
3/4	3/4	3	6	83721		75682	
7/8	7/8	1 3/4	4	79637		75684	
1	1	1 3/4	4	79638		75694	
1	1	2 1/4	5	83722		75697	
1	1	2	6	83723		75695	
1	1	3	6	83724		75698	

 Weldon Shank / Mango / Queue  
upon request / bajo demanda / sur demande



SUA

## SUA, a superior coating

New coating for demanding works in hardened materials 55-70 HRC

## SUA, un recubrimiento superior

Nuevo recubrimiento para trabajos exigentes en materiales endurecidos 55-70 HRC

## SUA, un revêtement supérieur

Nouveau revêtement pour les travaux exigeants dans les matériaux durcis 55-70 HRC

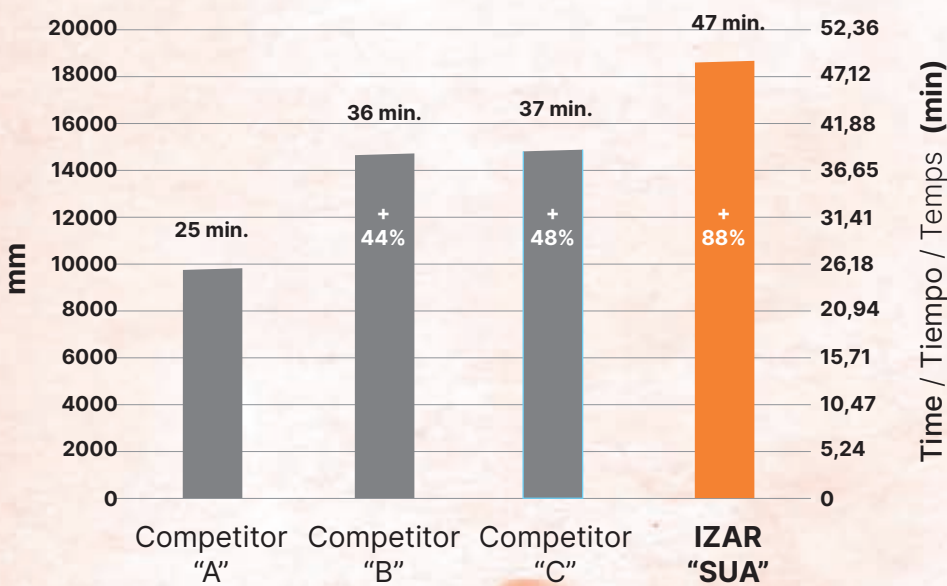


SUA Recubrimiento / Coating / Revêtement	
Hardness / Dureza / Dureté HV(0,05)	3500+-300
Oxidation / Oxidación / Oxidation	1000-1100°C
Rubbing Coefficient Coeficiente Fricción / Coéfcient Friction	0,45
Colour / Color / Couleur: Copper / Cobre / Cuivre	

Ref. 7425

Ref. 7422

Average tool life / Vida media de herramienta / Durée de vie moyenne de l'outil



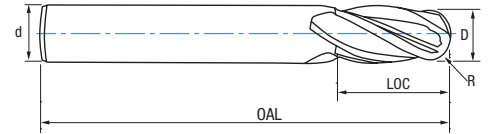
\* Comparative test against well-known coatings in the market.  
 \* Testado contra los recubrimientos más conocidos del mercado.  
 \* Testé contre les marques les plus connues du marché.



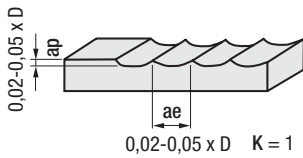
# Ref. 7422

FRACTIONAL-24

Ball Nose 4Z Carbide End Mill  
Fresa Metal Duro 4Z Cabeza Esférica  
Fraise carbure 4Z hémisphérique



Carbide/MD Carbure Micrograno	SUA	IZAR Std.		4 Z				Tol. D (h10) d (h6)
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Material		Vc (ft/min.)	Feed-Avances-Pas fz/rev. (inch/z)						
Group	Sub.	SUA	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4
P	P.1	410-525	0,0008	0,0012	0,0016	0,0022	0,0026	0,0031	0,0059
	P.2	367-493	0,0008	0,0012	0,0016	0,0022	0,0026	0,0031	0,0039
	P.3	196-427	0,0008	0,0010	0,0014	0,0016	0,0020	0,0024	0,0030
	P.5	328-427	0,0004	0,0010	0,0010	0,0010	0,0016	0,0031	0,0039
M		164-263	0,0004	0,0010	0,0014	0,0014	0,0020	0,0028	0,0031
K	K.1	223-312	0,0008	0,0012	0,0016	0,0022	0,0026	0,0031	0,0039
	K.2	131-197	0,0008	0,0012	0,0016	0,0022	0,0026	0,0031	0,0039
S		164-223	0,0004	0,0006	0,0008	0,0010	0,0012	0,0016	0,0020
N	N.1	459-1148	0,0008	0,0020	0,0020	0,0024	0,0030	0,0031	0,0049
	N.2	459-1148	0,0008	0,0020	0,0020	0,0024	0,0030	0,0031	0,0049
	N.3	459-1380	0,0004	0,0020	0,0031	0,0031	0,0039	0,0059	0,0079
	N.4	459-1380	0,0004	0,0020	0,0031	0,0031	0,0039	0,0059	0,0079
	N.5	328-985	0,0004	0,0020	0,0031	0,0031	0,0039	0,0059	0,0079
	N.6	459-919	0,0008	0,0012	0,0012	0,0016	0,0020	0,0039	0,0059
	N.7	229-575	0,0006	0,0010	0,0012	0,0012	0,0016	0,0031	0,0059

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$

K = Correction coefficient  
Coeficiente corrección  
Coéfficient correction

$$Vf \text{ (inch/min.)} = r.p.m. \times Z \times fz \times K$$

D	R	d	LOC Corte	OAL Longitud total	Z	Nº Art. SUA	€/€
1/8	1/16	1/8	1/2	2	4	82740	
3/16	3/32	3/16	5/8	2 1/4	4	82741	
1/4	1/8	1/4	3/4	2 1/2	4	82742	
5/16	5/32	5/16	3/4	2 1/2	4	82743	
3/8	3/16	3/8	7/8	2 1/2	4	82744	
7/16	7/32	7/16	7/8	2 1/2	4	82745	
1/2	1/4	1/2	1	3	4	82746	
5/8	5/16	5/8	1 1/4	3 1/2	4	82747	



**Welded Shank / Mango / Queue**  
upon request / bajo demanda / sur demande

**UNEQUAL HELIX:**

- It suppresses chattering vibrations
- Quiet and smooth machining

**HÉLICE ALTERNA:**

- Eliminación de vibraciones
- Mecanizado más silencioso

**HÉLICE ALTERNÉE :**

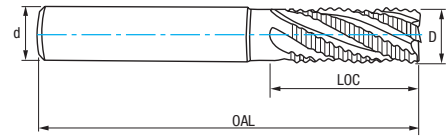
- Élimination des vibrations
- Usinage plus silencieux



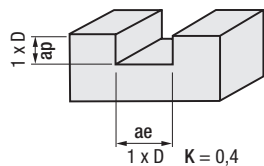
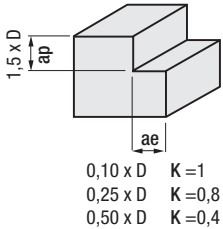
# Ref. 7744

## General Purpose Roughing End Mill Fresa Desbaste Uso General Fraise ébauche utilisation générale

FRACTIONAL-24



Carbide/MD Carbure Micrograno	<b>CROMAX</b>	IZAR Std. NR		3-5 Z				Tol. D(+/-0,002") d(h6)	
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Material		Vc (ft/min.)	Feed-Avances-Pas fz/rev. (inch/z)						
Group	Sub.	CROMAX	Ø 3/16	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4
P	P.1	230-300	0,0007	0,0011	0,0015	0,0019	0,0023	0,0031	0,0059
	P.2	180-230	0,0007	0,0011	0,0011	0,0015	0,0019	0,0031	0,0039
	P.3	140-260	0,0003	0,0007	0,0011	0,0011	0,0015	0,0023	0,0029
	P.4	95-130	0,0003	0,0007	0,0007	0,0007	0,0011	0,0019	0,0023
M		160-260	0,0007	0,0011	0,0011	0,0015	0,0019	0,0027	0,0031
K	K.1	190-280	0,0007	0,0011	0,0015	0,0019	0,0023	0,0031	0,0039
	K.2	190-300	0,0007	0,0011	0,0015	0,0019	0,0023	0,0031	0,0039
N	N.1	260-520	0,0011	0,0019	0,0019	0,0023	0,0029	0,0031	0,0049

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \varnothing}$$

K = Correction coefficient  
Coeficiente corrección  
Coéfcient correction

$$Vf \text{ (inch/min.)} = r.p.m. \times Z \times fz \times K$$



D	d	LOC Corte	OAL Longitud total	Z	N° Art. CROMAX	€/€
3/16	3/16	3/8	2	3	76853	
3/16	3/16	5/8	2	3	76854	
1/4	1/4	3/8	2	4	76855	
1/4	1/4	3/4	2 1/2	4	76856	
5/16	5/16	1/2	2 1/2	4	76857	
5/16	5/16	3/4	2 1/2	4	76858	
3/8	3/8	5/8	2	4	76859	
3/8	3/8	7/8	2 1/2	4	76860	
7/16	7/16	1	2 3/4	4	76861	
1/2	1/2	5/8	2 1/2	4	76862	
1/2	1/2	1 1/4	3	4	76863	

D	d	LOC Corte	OAL Longitud total	Z	N° Art. CROMAX	€/€
1/2	1/2	1 1/2	3 1/2	4	76864	
9/16	9/16	1 1/4	3 1/2	4	76865	
5/8	5/8	7/8	3	4	76866	
5/8	5/8	1 1/4	3 1/2	4	76868	
5/8	5/8	2	4	4	76870	
3/4	3/4	1	3	4	76871	
3/4	3/4	1 5/8	4	4	76872	
3/4	3/4	2 1/4	5	4	76873	
1	1	1 3/4	4	5	76874	
1	1	2 5/8	5	5	76875	

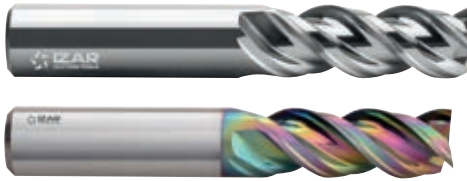
**Welded Shank / Mango / Queue**  
upon request / bajo demanda / sur demande



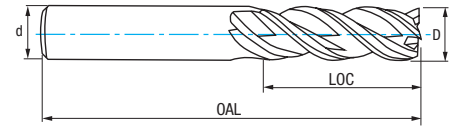
Ref. **7437**

FRACTIONAL-24

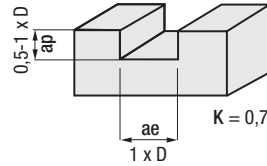
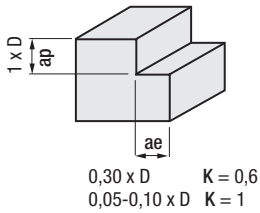
Mirror Polished 45° Aluminium 3Z Carbide End Mill  
 Fresa Metal Duro 3Z Aluminio Pulido Espejo 45°  
 Fraise carbure 3Z aluminium 45° polyglass



New Coating



Carbide/MD Carbure Micrograno+	IRIS	IZAR Std.	$\alpha \neq \beta \neq \gamma$	3 Z	45°		Tol. D(+0,000"/-0,0012") d(h6)
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Material	Vc (ft/min.)	Feed-Avances-Pas fz/rev. (inch/z)						
		1/8	1/4	5/16	3/8	1/2	5/8	
Group N	N.1	590-820	0,0007	0,0015	0,0016	0,0022	0,0023	0,0031
	N.2	590-820	0,0007	0,0015	0,0016	0,0022	0,0023	0,0031
	N.3	1140-1640	0,0012	0,0022	0,0023	0,0027	0,0028	0,0035
	N.4	1140-1475	0,0012	0,0022	0,0023	0,0027	0,0028	0,0035
	N.5	620-950	0,0012	0,0019	0,0020	0,0027	0,0028	0,0035

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$

K = Correction coefficient  
 Coeficiente corrección  
 Coefficient correction

$$Vf \text{ (inch/min.)} = r.p.m. \times Z \times fz \times K$$

D	d	LOC Corte	OAL Longitud total	Z	N° Art. Carb./MD	€/€	N° Art. IRIS	€/€
1/8	1/8	1/2	2	3	82731		86630	
1/4	1/4	3/8	2	3	82732		86631	
5/16	5/16	1/2	2	3	82733		86632	
3/8	3/8	5/8	3	3	82734		86633	
3/8	3/8	1	3	3	82735		86634	
1/2	1/2	1	3	3	82736		86635	
5/8	5/8	1 5/8	3 1/2	3	82737		86636	

New!



Weldon Shank / Mango / Queue  
 upon request / bajo demanda / sur demande

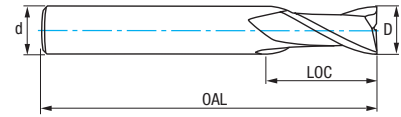
- Special wide-space flute design for an excellent chip extraction.
- Diseño especial del canal para una óptima evacuación de la viruta.
- Conception spéciale des goujures avec grand espace pour une excellente extraction des copeaux.
- Suitable for high feeds. Better finishing surface at high speed machining.
- Permite avances elevados y mejores acabados en altas velocidades.
- Il permet des avancées élevées et meilleures finitions à grande vitesse.



# Ref. 7421

FRACTIONAL-24

General Purpose 2Z Carbide End Mill  
 Fresa Metal Duro 2Z Uso General  
 Fraise carbure 2Z utilisation générale



Carbide/MD  
 Carbure  
 Micrograno

CROMAX

IZAR  
 Std.

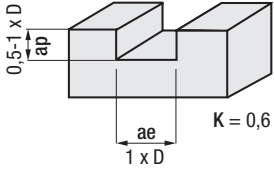


2 Z



Tol.  
 D (e8)  
 d (h6)

Keyway  
 Tol.



Material		Vc (ft/min.)	Feed-Avances-Pas fz/rev. (inch/z)						
Group	Sub.	CROMAX	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4
P	P.1	410-525	0,0008	0,0012	0,0016	0,0022	0,0026	0,0031	0,0059
	P.2	367-493	0,0008	0,0012	0,0016	0,0022	0,0026	0,0031	0,0039
	P.3	196-427	0,0008	0,0010	0,0014	0,0016	0,0020	0,0024	0,0030
	P.5	328-427	0,0004	0,0010	0,0010	0,0010	0,0016	0,0031	0,0039
M		164-263	0,0004	0,0010	0,0014	0,0014	0,0020	0,0028	0,0031
K	K.1	223-312	0,0008	0,0012	0,0016	0,0022	0,0026	0,0031	0,0039
	K.2	131-197	0,0008	0,0012	0,0016	0,0022	0,0026	0,0031	0,0039
S		164-223	0,0004	0,0006	0,0008	0,0010	0,0012	0,0016	0,0020
N	N.1	459-1148	0,0008	0,0020	0,0020	0,0024	0,0030	0,0031	0,0049
	N.2	459-1148	0,0008	0,0020	0,0020	0,0024	0,0030	0,0031	0,0049
	N.3	459-1380	0,0004	0,0020	0,0031	0,0031	0,0039	0,0059	0,0079
	N.4	459-1380	0,0004	0,0020	0,0031	0,0031	0,0039	0,0059	0,0079
	N.5	328-985	0,0004	0,0020	0,0031	0,0031	0,0039	0,0059	0,0079
	N.6	459-919	0,0008	0,0012	0,0012	0,0016	0,0020	0,0039	0,0059
	N.7	229-575	0,0006	0,0010	0,0012	0,0012	0,0016	0,0031	0,0059

$$\text{r.p.m.} = \frac{Vc \times 1.000}{\pi \times \varnothing}$$

K = Correction coefficient  
 Coeficiente corrección  
 Coefficient correction

$$Vf \text{ (inch/min.)} = \text{r.p.m.} \times Z \times fz \times K$$

D	d	LOC Corte	OAL Longitud total	Z	N° Art. CROMAX	€/ \$
1/8	1/8	1/2	2	2	82889	
3/16	3/16	5/8	2 1/2	2	82890	
1/4	1/4	3/4	2 1/2	2	82891	
3/8	3/8	7/8	2 3/4	2	82892	
7/16	7/16	7/8	2 1/2	2	82893	
1/2	1/2	1	3	2	82894	
5/8	5/8	1 1/4	3 1/2	2	82895	



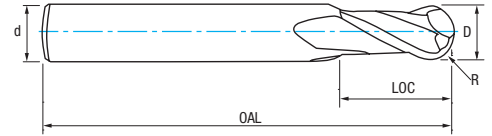
Weldon Shank / Mango / Queue  
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# Ref. 7425

FRACTIONAL-24

< 55 HRC Ball Nose 2Z Carbide End Mill  
 Fresa Metal Duro 2Z Cabeza Esférica < 55 Hrc  
 Fraise carbure 2Z hémisphérique < 55 HRC



Carbide/MD  
 Carbure  
 Micrograno

SUA

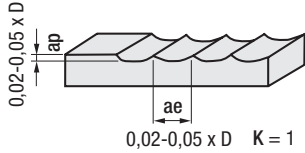
IZAR  
 Std.



2 Z



Tol.  
 D (e8)  
 d (h6)



Material		Vc (ft/min.)	Feed-Avances-Pas fz/rev. (inch/z)						
Group	Sub.	SUA	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4
P	P.1	410-525	0,0008	0,0012	0,0016	0,0022	0,0026	0,0031	0,0059
	P.2	367-493	0,0008	0,0012	0,0016	0,0022	0,0026	0,0031	0,0039
	P.3	196-427	0,0008	0,0010	0,0014	0,0016	0,0020	0,0024	0,0030
	P.5	328-427	0,0004	0,0010	0,0010	0,0010	0,0016	0,0031	0,0039
M		164-263	0,0004	0,0010	0,0014	0,0014	0,0020	0,0028	0,0031
K	K.1	223-312	0,0008	0,0012	0,0016	0,0022	0,0026	0,0031	0,0039
	K.2	131-197	0,0008	0,0012	0,0016	0,0022	0,0026	0,0031	0,0039
S		164-223	0,0004	0,0006	0,0008	0,0010	0,0012	0,0016	0,0020
N	N.1	459-1148	0,0008	0,0020	0,0020	0,0024	0,0030	0,0031	0,0049
	N.2	459-1148	0,0008	0,0020	0,0020	0,0024	0,0030	0,0031	0,0049
	N.3	459-1380	0,0004	0,0020	0,0031	0,0031	0,0039	0,0059	0,0079
	N.4	459-1380	0,0004	0,0020	0,0031	0,0031	0,0039	0,0059	0,0079
	N.5	328-985	0,0004	0,0020	0,0031	0,0031	0,0039	0,0059	0,0079
	N.6	459-919	0,0008	0,0012	0,0012	0,0016	0,0020	0,0039	0,0059
	N.7	229-575	0,0006	0,0010	0,0012	0,0012	0,0016	0,0031	0,0059

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$

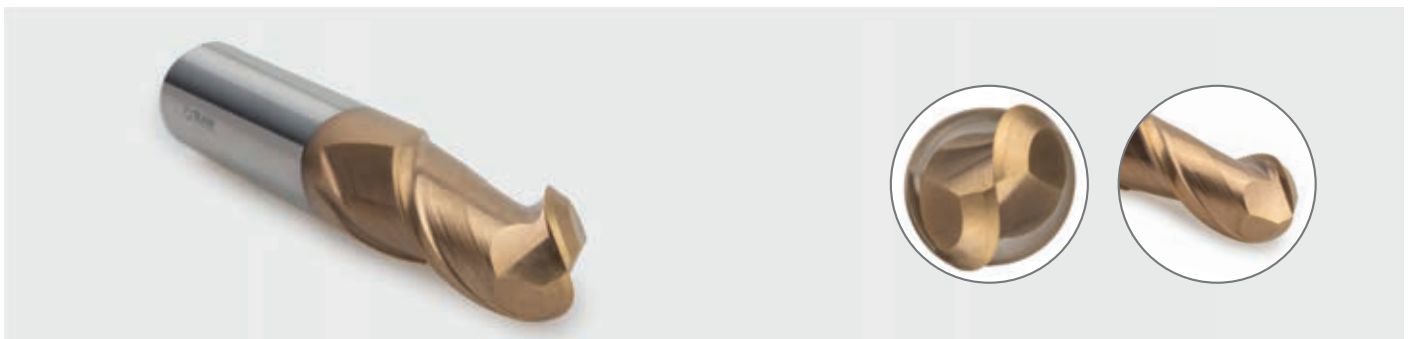
K = Correction coefficient  
 Coeficiente corrección  
 Coéfficient correction

$$Vf \text{ (inch/min.)} = r.p.m. \times Z \times fz \times K$$

D	R	d	LOC Corte	OAL Longitud total	Z	Nº Art. SUA	€/€
1/8	1/16	1/8	1/2	2	2	82881	
3/16	3/32	3/16	5/8	2 1/4	2	82882	
1/4	1/8	1/4	3/4	2 1/2	2	82883	
5/16	5/32	5/16	3/4	2 1/2	2	82884	
3/8	3/16	3/8	7/8	2 1/2	2	82885	
7/16	7/32	7/16	7/8	2 3/4	2	82886	
1/2	1/4	1/2	1	3	2	82887	
5/8	5/16	5/8	1 1/4	3 1/2	2	82888	



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# Aluminium Milling 1Z

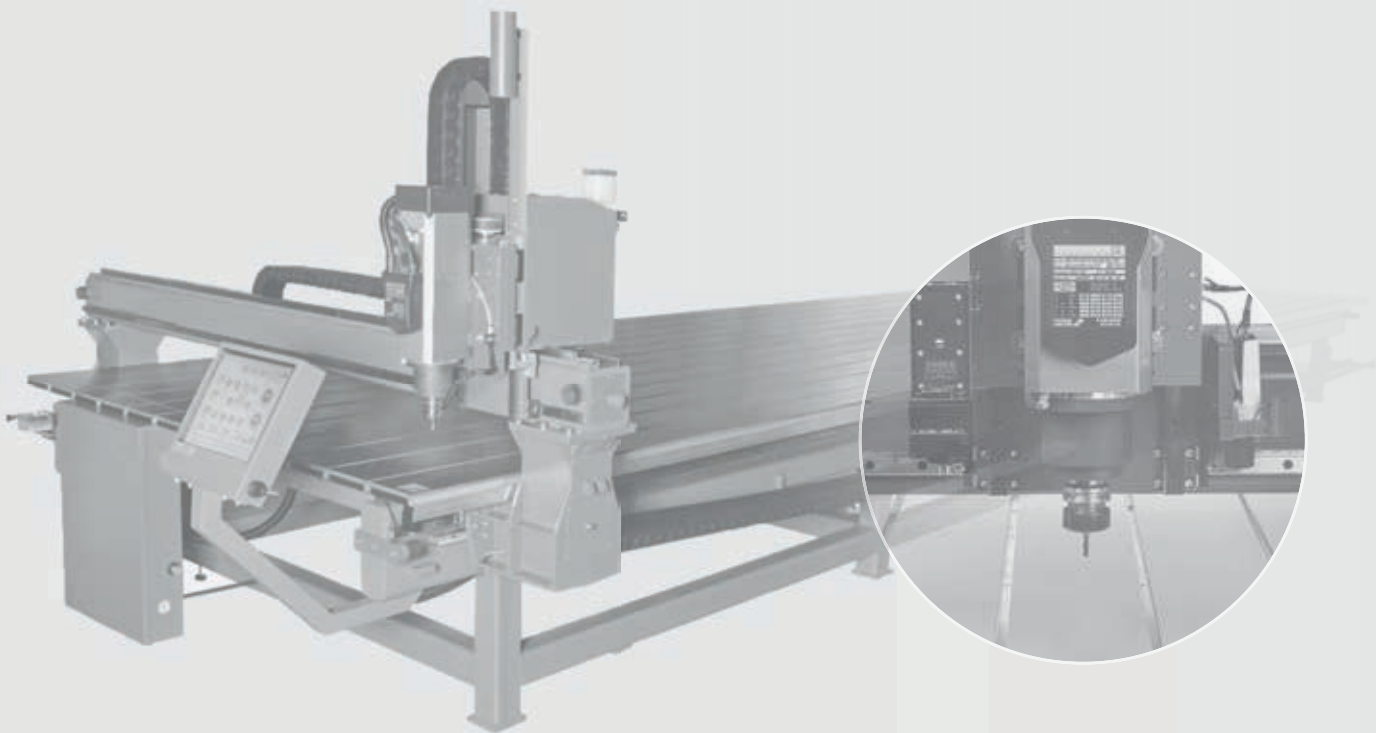
## Fresado 1Z Aluminio

## Fraisage 1Z aluminium

**New Range of 1Z End Mills for High Speed Machining of Aluminium, PVC and others**

Nueva gama de fresas 1Z para mecanizado de alta velocidad de planchas o perfiles de aluminio y PVC

Gamme nouvelle de fraises 1Z pour l'usinage à grande vitesse de tôles ou profils aluminium et PVC



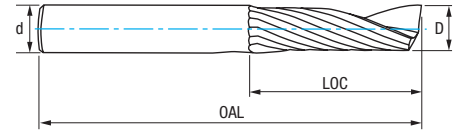
# Ref. 7426

FRACTIONAL-24

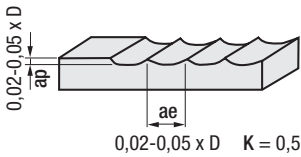
Aluminium 1Z Mirror Polished Carbide End Mill  
 Fresa Metal Duro 1Z Pulido Espejo Aluminio  
 Fraise carbure 1Z polyglass aluminium



New Coating



Carbide/MD Carbure Micrograno+	IRIS	IZAR Std.		1 Z				Mirror Polished Pulido Espejo Polyglass
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Material		Vc (ft./min.)	Feed-Avances-Pas fz/rev. (inch/z)			
Group	Sub.	Carb./MD	1/8	1/4	5/16	3/8
N	N.3	320-1150	0,0009	0,0019	0,0019	0,0030
	N.4	320-1150	0,0009	0,0019	0,0019	0,0030
	N.5	320-1150	0,0009	0,0019	0,0019	0,0030
	N.6	320-650	0,0006	0,0011	0,0011	0,0015
	N.7	160-410	0,0005	0,0009	0,0009	0,0011

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$

K = 1

Correction coefficient  
 Coeficiente corrección  
 Coéfficient correction

$$Vf \text{ (inch/min.)} = r.p.m. \times Z \times fz \times K$$

New!

D	d	LOC Corte	OAL Longitud total	Z	N° Art. Carb./MD	€/€	N° Art. IRIS	€/€
1/16	1/16	1/4	1 1/2	1	82899		86637	
1/8	1/8	1/2	1 1/2	1	82901		86638	
3/16	3/16	2/3	2	1	82900		86639	
1/4	1/4	7/8	2	1	82902		86640	
5/16	5/16	1	2 3/8	1	82903		86641	
3/8	3/8	1 1/4	3	1	82904		86642	



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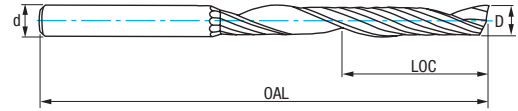
Ref. **7427**

FRACTIONAL-24

Aluminium 1Z Mirror Long Series Polished Carbide End Mill  
 Fresa Metal Duro 1Z Pulido Espejo Serie Larga Aluminio  
 Fraise carbure série longue 1Z polyglass aluminium



New Coating



Carbide/MD Carbure Micrograno+	IRIS	IZAR Std.		1 Z				Mirror Polished Pulido Espejo Polyglass
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Material		Vc (ft/min.)	Feed-Avances-Pas fz/rev. (inch/z)			
Group	Sub.	Carb./MD	1/8	1/4	5/16	3/8
N	N.3	320-1150	0,0009	0,0019	0,0019	0,0030
	N.4	320-1150	0,0009	0,0019	0,0019	0,0030
	N.5	320-1150	0,0009	0,0019	0,0019	0,0030
	N.6	320-650	0,0006	0,0011	0,0011	0,0015
	N.7	160-410	0,0005	0,0009	0,0009	0,0011

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$

K = 1

$$Vf \text{ (inch/min.)} = r.p.m. \times Z \times fz \times K$$

Correction coefficient  
 Coeficiente corrección  
 Coéfficient correction

New!

D	d	LOC Corte	OAL Longitud total	Z	N° Art. Carb./MD	€/€	N° Art. IRIS	€/€
1/8	1/8	2	3	1	82905		86643	
3/16	3/16	1 21/32	3 3/16	1	82906		86644	
5/16	5/16	2	3 9/16	1	82907		86645	
3/8	3/8	2	4	1	82908		86646	



Weldon Shank / Mango / Queue  
 upon request / bajo demanda / sur demande



90° POINT AVAILABLE ON DEMAND,  
 typically used in drain holes and slots of  
 window profiles

PUNTA DE 90° BAJO DEMANDA,  
 habitualmente para agujeros de desagüe en  
 perfilaría metálica.

POINTE DE 90° SUR DEMANDE, généralement  
 pour les trous de drainage dans les profilés  
 métalliques.

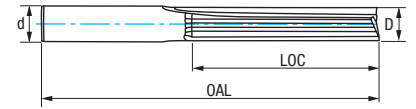




# Ref. 7689

FRACTIONAL-24

Thermoplastics 2Z Carbide End Mill  
 Fresa Metal Duro 2Z Termoplásticos  
 Fraise carbure 2Z thermoplastiques



Carbide/MD  
 Carbure  
 Micrograno

IZAR  
 Std.



2 Z



EVA  
 Foam-Espumas  
 Caoutchouc

Wood  
 Madera  
 Bois

Plastics  
 Plásticos  
 Plastiques

Material		Vc (ft/min.)	Feed-Avances-Pas fz/rev. (inch/z)			
Group	Sub.	Carb./MD	1/8	1/4	3/8	1/2
N	N.3	325-1150	0,0009	0,0015	0,0022	0,0027
	N.6	325-650	0,0006	0,0011	0,0015	0,0019
F		160-410	0,0005	0,0009	0,0010	0,0012

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$

K = 1

Correction coefficient  
 Coeficiente corrección  
 Coéficent correction

$$Vf \text{ (inch/min.)} = r.p.m. \times Z \times fz \times K$$

D	d	LOC Corte	OAL Longitud total	Z	N° Art. Carb./MD	€/€
1/8	1/8	2/3	1 1/2	2	83411	
3/16	3/16	7/8	2	2	83412	
5/16	5/16	1	2 3/8	2	83413	
3/8	3/8	1 1/4	3	2	83414	



Weldon Shank / Mango / Queue  
 upon request / bajo demanda / sur demande



- Special Multi Material geometry suitable for a wide range of products such as foams, acrylic, PVC, ABS, hardwood, plywood, resins, nylon, etc.
- Machining of tool trays.
- Geometría Multi Material válida para una amplia gama de productos como espumas, acrílicos, PVC, ABS, tableros, madera contrachapada, resinas, nylon, etc.
- Mecanizado de las bandejas de herramientas.
- Géométrie Multi Matériaux pour une gamme large de produits comme mousses, acryliques, PVC, ABC, tableaux, bois contreplaqués, résines, nylon, etc.
- Usinage de plateaux d'outils.





## FIBER REINFORCED POLYMERS

Carbon Fiber (CFRP) - Fiberglass (GFRP)  
Honeycomb materials

## POLIMEROS REFORZADOS CON FIBRAS

Fibra de Carbono (CFRP) - Fibra de Vidrio (GFRP)  
Estructuras de panal

## POLYMÈRES DE FIBRES RENFORCÉS

Fibre de carbone (CFRP) - Fibre de verre (GFRP)  
Matériaux en structure nid d'abeilles



Ref. 7290  
135°

Ref. 7290  
Square-Plana-Plate

Ref. 7283

Composite materials are formed by at least two elements that when combined provide unique mechanical properties for a number of different applications in several industries like automotive, aerospace, power generation or sports equipment. One of the elements acts as the binding agent that form the structure and the other material acts as the reinforcement. This combination produces very abrasive materials which require end mills with special geometries and coatings that we include in this new range. The surface finishing quality is a key factor in these fiber-reinforced composites due to common problems such as delamination, burring or uncut fibers.

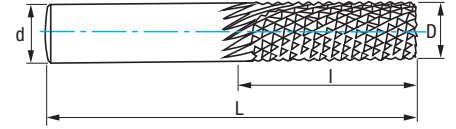
Los materiales compuestos se forman de al menos dos materiales que combinándolos se obtienen propiedades mecánicas deseadas para multitud de aplicaciones en automoción, en la industria aeroespacial, generación de energía o en material deportivo por ejemplo. Uno de los componentes hará de cohesión y el otro será el material de refuerzo, como pueden ser fibras sintéticas de vidrio o carbono. Esta combinación produce materiales abrasivos que requieren ser mecanizados con fresas de geometrías y recubrimientos especiales que presentamos en esta gama. El acabado final de estas superficies mecanizadas es un factor clave en el diseño de estas fresas, debido a fenómenos típicos de estos materiales, como la delaminación.

Les matériaux composites sont formés d'au moins deux éléments qui, lorsqu'ils sont combinés, offrent des propriétés mécaniques uniques pour un certain nombre d'applications différentes dans plusieurs secteurs comme l'automobile, l'aérospatiale, la production d'énergie ou les équipements sportifs. Un des éléments agit comme un liant qui forme la structure tandis que l'autre matériau agit comme renfort. Cette combinaison produit des matériaux très abrasifs qui nécessitent des fraises à géométrie spéciale et des revêtements spécifiques, que nous incluons dans cette nouvelle gamme. La qualité de la finition de la surface est un facteur clé dans ces composites renforcés de fibres, en raison de problèmes courants tels que la délamination, l'ébarbage ou les fibres non coupées.

# Ref. 7290

FRACTIONAL-24

Composites Carbide End Mill  
Fresa Metal Duro Composites  
Fraise lime carbure composites



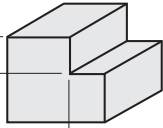
Carbide/MD  
Carbure  
Micrograno

IZAR  
Std.

2 Z

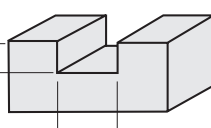


1 x D K=1  
2 x D K=0,8



<1 x D

1 x D K=1  
2 x D K=0,8



1 x D K=0,4

Material		Vc (ft/min.)	Feed-Avances-Pas fz/rev. (inch/z)			
Group	Sub.	Carb./MD	1/8	1/4	3/8	1/2
F		260-490	0,0004	0,0006	0,0009	0,0011

$$\text{r.p.m.} = \frac{Vc \times 1.000}{\pi \times \phi}$$

K = Correction coefficient  
Coeficiente corrección  
Coéfficient correction

$$Vf \text{ (inch/min.)} = \text{r.p.m.} \times Z \times fz \times K$$

Edging  
Canteado  
Bordure



135°  
Taladrado  
Drilling  
Perçage



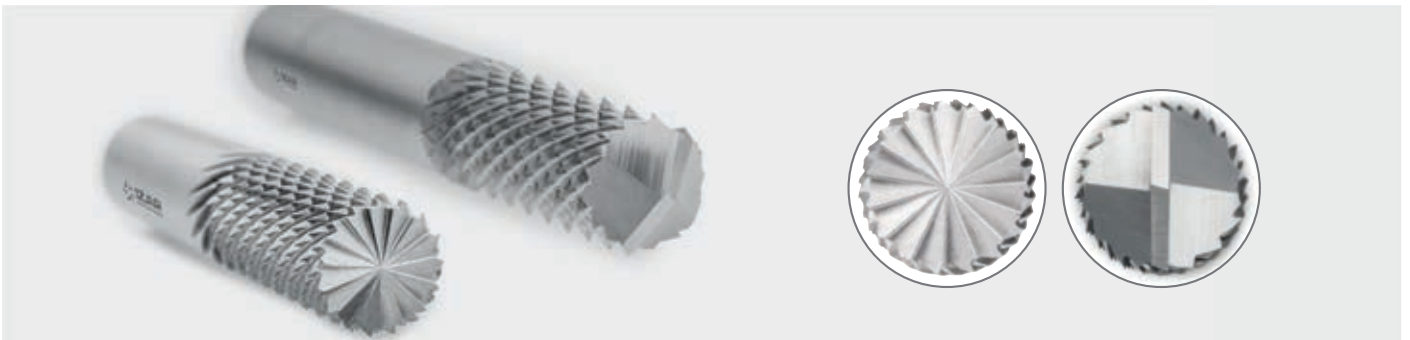
D	d	LOC Corte	OAL Longitud total	Z	N° Art. Carb./MD	€/€
1/16	1/8	3/16	1 1/2	2	83465	
1/8	1/8	1/2	1 1/2	2	83466	
3/16	3/16	5/8	2	2	83467	
1/4	1/4	3/4	2	2	83468	
3/8	3/8	1	3	2	83469	
1/2	1/2	1	3	2	83470	

D	d	LOC Corte	OAL Longitud total	Z	N° Art. Carb./MD	€/€
1/16	1/8	3/16	1 1/2	2	83471	
1/8	1/8	1/2	1 1/2	2	83472	
3/16	3/16	5/8	2	2	83473	
1/4	1/4	3/4	2	2	83474	
3/8	3/8	1	3	2	83475	
1/2	1/2	1	3	2	83476	

**Welded Shank / Mango / Queue**  
upon request / bajo demanda / sur demande



- Both for hand-machines and CNCs.
- Designed for a wide range of composites, including fiberglass and phenolic panels.
- Válido para recantados manuales y CNCs.
- Diseñado para un amplio abanico de materiales compuestos incluyendo fibras de vidrio o paneles fenólicos.
- À la fois pour les machines à main et pour les CNC.
- Conçu pour une large gamme de composites, y compris la fibre de verre et les panneaux phénoliques.

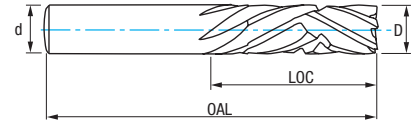


# Ref. 7283

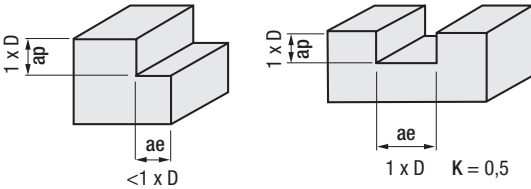
FRACTIONAL-24

## Compression Carbide End Mill for Carbon Fiber Fresa Metal Duro de Compresión Fibra de Carbono Fraise à compression carbure pour fibre carbone

**New!**



Carbide/MD Carbure Micrograno+	DIAMAX	IZAR Std.		6 Z	
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Material		Vc (ft./min.)	Feed-Avances-Pas fz/rev. (inch/z)		
Group	Sub.	DIAMAX	1/4	3/8	1/2
F	CFRP*	520-720	0,0005	0,0009	0,0011

\* CFRP: Carbon Fiber Reinforced Polymer  
Polímero Reforzado de Fibra de Carbono  
Polymère renforcé de fibres de carbone

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$

K = Correction coefficient  
Coeficiente corrección  
Cœfficient correction

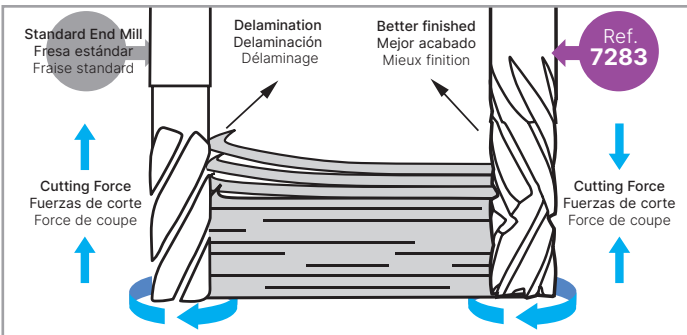
$$Vf \text{ (inch/min.)} = r.p.m. \times Z \times fz \times K$$

Feed reduction in accordance with the material thickness:  
Reducción de los valores de avance en función del grosor de la pieza:

Réduction du pas en fonction de l'épaisseur du matériau:

Thickness  
Espesor  
Épaisseur:

≤0,5xD	→ K = 1,50
0,5xD - 1xD	→ K = 1,20
1xD - 2xD	→ K = 0,80
3xD - 4xD	→ K = 0,50



D	d	LOC Corte	OAL Longitud total	Z	N° Art. DIAMAX	€/S
1/4	1/4	1	3	6	83015	
3/8	3/8	1	3	6	83017	
1/2	1/2	1 1/2	4	6	83019	

**Welded Shank / Mango / Queue**  
upon request / bajo demanda / sur demande

- Special design for reducing delamination.
- This new geometry requires less cutting force.
- Special DIAMAX thick-layer diamond coating for extremely long tool life.
- Alternative use for machining honeycomb-panel-composites increasing cutting conditions approx. x2.
- Diseño especial para reducir la delaminación.
- Esta nueva geometría requiere de menores fuerzas de corte.
- Recubrimiento DIAMAX gran espesor especial diamante para una vida de la herramienta extremadamente larga.
- Uso alternativo para mecanizar composites tipo panel de abeja aumentando las condiciones de corte x2 aprox.
- Conception spéciale pour réduire la délamination.
- Cette nouvelle géométrie nécessite moins de force de coupe.
- Revêtement diamanté spécial DIAMAX en couche épaisse pour une très longue durée de vie des outils.
- Utilisation alternative pour l'usinage de panneaux composites à structure en nid d'abeilles en augmentant par 2 la dimension de la coupe.



05.

**Milling. PMX and Cobalt**  
**Fresado. PMX y Cobalto**  
**Fraisage. PMX et Cobalt**

FRACTIONAL · INCHES · PULGADAS · POUÇES

**Fine Pitch Roughing End Mills - Fresas Desbaste Fino - Fraises ébauche pas fin**

126

**PMX**

7644 - 3-8Z  
 7696 - 3-8Z

126

**COBALTO 8% Cobalt**

7304 - 3-5Z  
 7330 - 6-8Z  
 7306 - 3-5Z  
 7332 - 6Z

7307 - 5-6Z  
 7391 - 4-6Z  
 7521 - 3Z  
 7320 - 3Z

128

**Coarse Roughing End Mills - Fresas Desbaste Grueso - Fraises ébauche**

138

**PMX**

7640 - 3-8Z  
 7690 - 3-8Z

138

**COBALTO 8% Cobalt**

7300 - 3-5Z  
 7340 - 6-8Z  
 7302 - 3-8Z  
 7342 - 6-8Z  
 7390 - 3-8Z

7324 - 3Z  
 7370 - 3Z  
 7372 - 3Z  
 7377 - 3Z

140

**Finishing End Mills - Fresas de Acabado - Fraises finition**

151

**PMX**

7666 - 4-6Z  
 7600 - 4Z  
 7630 - 3Z  
 7620 - 2Z

151

**COBALTO 8% Cobalt**

7411 - 4-6Z  
 7413 - 4-8Z  
 7415 - 4-6Z  
 7417 - 5-6Z  
 7420 - 4-6Z  
 7530 - 3Z

7532 - 3Z  
 7537 - 3Z  
 7205 - 2Z  
 7203 - 2Z  
 7220 - 2Z

156

**HSS**

7410 - 4-6Z  
 7400 - 4-8Z  
 7412 - 4Z  
 7402 - 6-8Z  
 7414 - 4-6Z  
 7200 - 2Z

168

**Special End Mills - Fresas Especiales - Fraises spéciales**

174

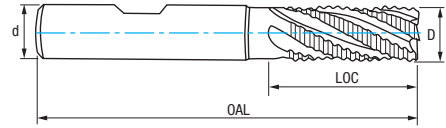
9001  
 7009  
 7002  
 7003  
 7001



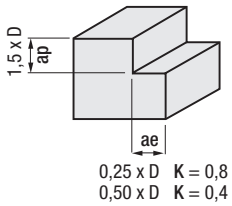
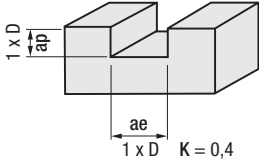
# Ref. 7644

FRACTIONAL-24

## PMX Fine Pitch Roughing End Mill Fresa Desbaste Fino PMX Fraise ébauche pas fin PMX



PMX	PMX + TIALN-TOP	CNC qualified	ASME Std. NR-F		3-8 Z			Tol. +0,00394" -0,00197"	
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Material		Vc (ft/min.)		Feed-Avances-Pas fz/rev. (inch/z)											
Group	Sub.	PMX	TIALN-TOP	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4	Ø 1	Ø 1 1/4	Ø 1 1/2	Ø 2	Ø 2 1/2
P	P.2	98-138	147-246	0,0006	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045
	P.3	39-59	65-115	0,0005	0,0010	0,0012	0,0020	0,0020	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030
	P.5	59-79	98-147	0,0005	0,0010	0,0012	0,0020	0,0020	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030
S		59-79	98-147	0,0010	0,0017	0,0024	0,0030	0,0036	0,0050	0,0059	0,0059	0,0059	0,0059	0,0059	0,0059

$$r.p.m. = \frac{Vc \times 1000}{\pi \times \phi}$$

K = Correction coefficient  
Coeficiente corrección  
Coéfcient correction

$$Vf \text{ (inch/min.)} = r.p.m. \times Z \times fz \times K$$

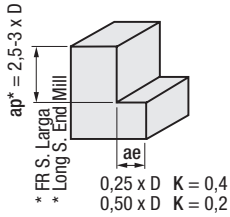
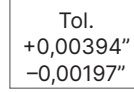
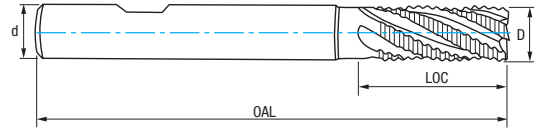
D	d	LOC Corte	OAL Longitud total	Z	Nº Art. PMX	€/€	Nº Art. TIALN-TOP	€/€
1/4	3/8	5/8	2 7/16	3	24065		14449	
5/16	3/8	3/4	2 1/2	3	24066		14451	
3/8	3/8	3/4	2 1/2	4	24067		22336	
7/16	3/8	1	2 11/16	4	24068		24078	
1/2	1/2	1 1/4	3 1/4	4	17663		22321	
5/8	5/8	1 5/8	3 3/4	4	24069		22322	
3/4	5/8	1 5/8	3 3/4	4	24070		24079	
3/4	3/4	1 5/8	3 3/4	4	24071		22323	
7/8	3/4	1 7/8	4 1/8	5	24073		24080	
1	3/4	2	4 1/4	5	24074		24081	
1	1	2	4 1/2	5	17429		22324	
1 1/4	1 1/4	2	4 1/2	6	24075		24082	
1 1/2	1 1/4	2	4 1/2	6	24076		24083	
2	1 1/4	2	4 1/2	8	24077		24084	



# Ref. 7696

FRACTIONAL-24

Long PMX Fine Pitch Roughing End Mill  
 Fresa Desbaste Fino Pmx Larga  
 Fraise ébauche pas fin PMX longue



Material		Vc (ft/min.)		Feed-Avances-Pas fz/rev. (inch/z)											
Group	Sub.	PMX	TIALN-TOP	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4	Ø 1	Ø 1 1/4	Ø 1 1/2	Ø 2	Ø 2 1/2
P	P.2	98-138	147-246	0,0006	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045
	P.3	39-59	65-115	0,0005	0,0010	0,0012	0,0020	0,0020	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030
	P.5	59-79	98-147	0,0005	0,0010	0,0012	0,0020	0,0020	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030
S		59-79	98-147	0,0010	0,0017	0,0024	0,0030	0,0036	0,0050	0,0059	0,0059	0,0059	0,0059	0,0059	0,0059

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$

K = Correction coefficient  
 Coeficiente corrección  
 Coéfficient correction

$$Vf \text{ (inch/min.)} = r.p.m. \times Z \times fz \times K$$

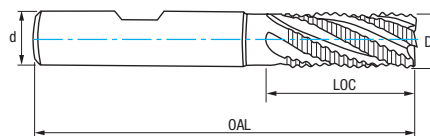
D	d	LOC Corte	OAL Longitud total	Z	N° Art. PMX	€/€	N° Art. TIALN-TOP	€/€
1/4	3/8	1 1/4	3 1/16	3	25491		25492	
5/16	3/8	1 3/8	3 1/8	3	25455		25456	
3/8	3/8	1 1/2	3 1/4	4	25457		25458	
1/2	1/2	5/8	2 5/8	4	68642		68654	
1/2	1/2	2	4	4	24093		24085	
1/2	1/2	3	5	4	25459		25461	
5/8	5/8	3/4	2 7/8	4	68643		68656	
5/8	5/8	2 1/2	4 5/8	4	24094		24086	
5/8	5/8	3 1/8	5 1/4	4	25460		25465	
3/4	3/4	3/4	3	4	68644		68657	
3/4	3/4	2	3 3/4	4	24095		21940	
3/4	3/4	3	5 1/4	4	24096		24087	
3/4	3/4	4 1/8	6 3/8	4	25462		25466	
7/8	3/4	3 1/2	5 3/4	5	25463		25468	
7/8	7/8	3 1/2	5 3/4	5	25464		25470	
1	1	1 1/8	3 5/8	5	68645		68659	
1	3/4	3	5 1/4	5	25467		25485	
1	1	3	5 1/2	5	24097		24088	
1	3/4	4	6 1/4	5	25469		25471	
1	1	4	6 1/2	5	24098		24089	
1	1	6	8 1/2	5	24099		24090	
1 1/4	1 1/4	3	5 1/2	6	24100		24091	
1 1/4	1 1/4	4	6 1/2	6	24101		24092	
1 1/4	1 1/4	6	8 1/2	6	25472		25473	
1 1/2	1 1/4	3	5 1/2	6	25474		25475	
1 1/2	1 1/4	4	6 1/2	6	25476		25478	
1 1/2	1 1/4	6	8 1/2	6	25477		25480	
2	2	3	6 3/4	8	25479		25483	
2	2	4	7 3/4	8	25482		25484	
2	2	6	9 3/4	8	25486		25488	



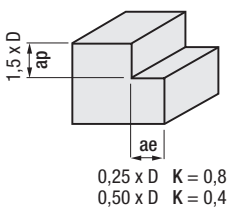
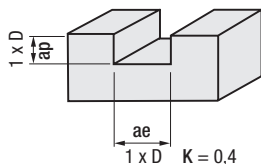
# Ref. 7304

FRACTIONAL-24

NZ Cobalt 8% Fine Pitch Roughing End Mill  
 Fresa Desbaste Fino Cobalto 8% NZ  
 Fraise ébauche pas fin cobalt 8% NZ



Cobalt 8%
TIALSIN
CNC qualified
ASME Std. NR-F
3-5 Z



Material		Vc (ft./min.)		Feed-Avances-Pas fz/rev. (inch/z)											
Group	Sub.	8% Co	TIALSIN	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4	Ø 1	Ø 1 1/4	Ø 1 1/2	Ø 2	Ø 2 1/2
P	P.2	80-115	115-151	0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
K	K.1	65-98	82-131	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	K.2	49-65	65-82	0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
S		49-65	65-82	0,0010	0,0017	0,0024	0,0026	0,0031	0,0043	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
N	N.1	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	N.2	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$

K = Correction coefficient  
 Coeficiente corrección  
 Coefficient correction

$$Vf \text{ (inch/min.)} = r.p.m. \times Z \times fz \times K$$

D	d	LOC Corte	OAL Longitud total	Z	N° Art. Cobalt	€/€	N° Art. TIALSIN	€/€
1/4	3/8	5/8	2 7/16	3	42409		23640	
5/16	3/8	3/4	2 1/2	3	42410		23641	
3/8	3/8	3/4	2 1/2	4	42411		23643	
7/16	3/8	1	2 11/16	4	42412		23644	
1/2	1/2	1 1/4	3 1/4	4	42413		23645	
5/8	5/8	1 5/8	3 3/4	4	42414		23646	
3/4	5/8	1 5/8	3 3/4	4	42415		23647	
3/4	3/4	1 5/8	3 3/4	4	42416		23649	
7/8	3/4	1 7/8	4 1/8	5	42417		23650	
1	3/4	2	4 1/4	5	42325		23651	
1	1	2	4 1/2	5	42327		23652	
1 1/4	1 1/4	2	4 1/2	6	42333		23658	
1 1/2	1 1/4	2	4 1/2	6	42418		23662	
2	1 1/4	2	4 1/2	8	66762		23665	

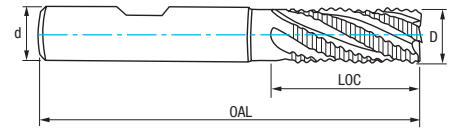




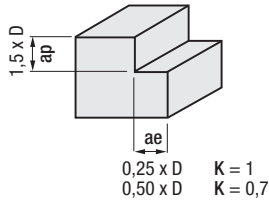
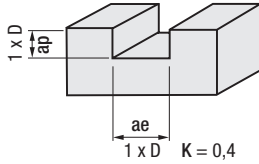
# Ref. 7330

FRACTIONAL-24

NZ Cobalt 8% Fine Pitch Roughing End Mill  
 Fresa Desbaste Fino Cobalto 8% NZ  
 Fraise ébauche pas fin cobalt 8% NZ



Cobalt 8%	TIALSIN	CNC qualified	ASME Std. NR-F		6-8 Z			Tol. +0,00394" -0,00197"	
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Material		Vc (ft/min.)		Feed-Avances-Pas fz/rev. (inch/z)											
Group	Sub.	8 % Co	TIALSIN	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4	Ø 1	Ø 1 1/4	Ø 1 1/2	Ø 2	Ø 2 1/2
P	P.2	98-131	131-183	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
K	K.1	65-98	82-131	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	K.2	49-65	65-82	0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
N	N.1	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	N.2	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$

$$Vf \text{ (inch/min.)} = r.p.m. \times Z \times fz \times K$$

K = Correction coefficient  
 Coeficiente corrección  
 Coéficent correction

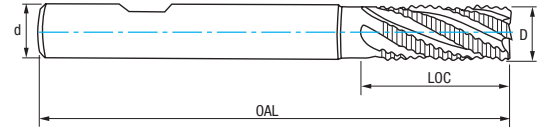
D	d	LOC Corte	OAL Longitud total	Z	N° Art. Cobalt	€/€	N° Art. TIALSIN	€/€
1 1/8	1	2	4 1/2	5	54011		23604	
1 1/4	3/4	2	4 1/4	6	54017		23605	
1 1/4	1 1/4	2	4 1/2	6	54020		23607	
1 1/2	1 1/4	2	4 1/2	6	54029		23610	
2	1 1/4	2	4 1/2	8	54041		23613	



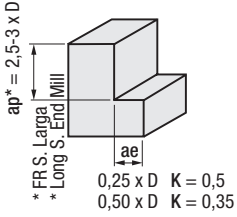
# Ref. 7306

FRACTIONAL-24

Long Cobalt 8% Fine Pitch Roughing End Mill  
 Fresa Desbaste Fino Cobalto 8% Larga  
 Fraise ébauche pas fin cobalt 8% longue



Cobalt 8%	TIALSIN	CNC qualified	ASME Std. NR-F		3-5 Z			Tol. +0,00394" -0,00197"	
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Material		Vc (ft./min.)		Feed-Avances-Pas fz/rev. (inch/z)											
Group	Sub.	8% Co	TIALSIN	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4	Ø 1	Ø 1 1/4	Ø 1 1/2	Ø 2	Ø 2 1/2
P	P.2	80-115	115-151	0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
K	K.1	65-98	82-131	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	K.2	49-65	65-82	0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
S		49-65	65-82	0,0010	0,0017	0,0024	0,0026	0,0031	0,0043	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
N	N.1	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	N.2	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$

**K = Correction coefficient**  
 Coeficiente corrección  
 Coéficent correction

$$Vf \text{ (inch/min.)} = r.p.m. \times Z \times fz \times K$$



Ref. **7306**

FRACTIONAL-24

Long Cobalt 8% Fine Pitch Roughing End Mill  
 Fresa Desbaste Fino Cobalto 8% Larga  
 Fraise ébauche pas fin cobalt 8% longue

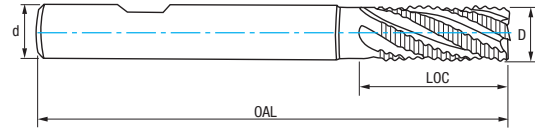
D	d	LOC Corte	OAL Longitud total	Z	N° Art. Cobalt	€/€	N° Art. TIALSIN	€/€
1/4	3/8	7/8	2 11/16	3	42423		23667	
1/4	3/8	1 1/8	2 15/16	3	42424		23668	
1/4	3/8	1 1/4	3 1/16	3	42558		23670	
5/16	3/8	7/16	2 3/16	3	42425		23671	
5/16	3/8	1 1/8	2 15/16	3	42426		23673	
5/16	3/8	1 3/8	3 1/8	4	42693		23674	
3/8	3/8	3/4	2 9/16	4	42427		23675	
3/8	3/8	1 1/8	2 15/16	4	42429		23676	
3/8	3/8	1 1/2	3 1/4	4	66742		66743	
1/2	1/2	5/8	2 5/8	4	42432		23677	
1/2	1/2	1	3	4	42433		23679	
1/2	1/2	1 5/8	3 5/8	4	42435		23680	
1/2	1/2	2	4	4	42339		23682	
1/2	1/2	3	5	4	42342		23684	
5/8	5/8	3/4	2 7/8	4	42344		23685	
5/8	5/8	1 1/4	3 3/8	4	42345		23686	
5/8	5/8	2 1/2	4 5/8	4	42347		23688	
5/8	5/8	3 1/8	5 1/4	4	66744		66745	
3/4	3/4	3/4	3	4	42349		23689	
3/4	3/4	1 1/4	3 1/2	4	42351		23698	
3/4	3/4	2 1/2	4 5/8	4	42353		23691	
3/4	3/4	2 1/2	4 3/4	4	42354		23697	
3/4	3/4	3	5 1/4	4	42436		23692	
3/4	3/4	4 1/8	6 3/8	4	66746		66747	
7/8	3/4	3 1/2	5 5/8	5	42437		24258	
7/8	3/4	3 1/2	5 3/4	5	66748		66749	
7/8	7/8	3 1/2	5 3/4	5	66750		66751	
1	1	1 1/8	3 5/8	5	42440		23700	
1	1	1 5/8	4 1/8	5	42441		23701	
1	3/4	3	5 1/4	5	42361		24263	
1	1	3	5 1/2	5	42442		23694	
1	3/4	4	6 1/4	5	42444		24266	
1	1	4	6 1/2	5	42448		23695	
1	1	6	8 1/2	5	66752		66753	
1 1/4	1 1/4	3	5 1/2	6	42456		23696	
1 1/4	1 1/4	4	6 1/2	6	42462		24308	
1 1/4	1 1/4	6	8 1/2	6	42463		24309	
1 1/2	1 1/4	3	5 1/2	6	66754		66755	
1 1/2	1 1/4	4	6 1/2	6	42373		24312	
1 1/2	1 1/4	6	8 1/2	6	66716		66763	
2	2	3	6 3/4	8	66756		66757	
2	2	6	9 3/4	8	66758		66759	
2	2	4	7 3/4	8	66760		66761	



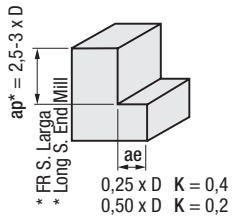
Ref. **7332**

FRACTIONAL-24

Long Cobalt 8% Fine Pitch Roughing End Mill  
 Fresa Desbaste Fino Cobalto 8% Larga  
 Fraise ébauche pas fin cobalt 8% longue



Cobalt 8%	TIALSIN	CNC qualified	ASME Std. NR-F		6 Z			Tol. +0,00394" -0,00197"	
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Material		Vc (ft/min.)		Feed-Avances-Pas fz/rev. (inch/z)											
Group	Sub.	8% Co	TIALSIN	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4	Ø 1	Ø 1 1/4	Ø 1 1/2	Ø 2	Ø 2 1/2
P	P.2	80-115	115-151	0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
K	K.1	65-98	82-131	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	K.2	49-65	65-82	0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
S		49-65	65-82	0,0010	0,0017	0,0024	0,0026	0,0031	0,0043	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
N	N.1	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	N.2	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$

K = Correction coefficient  
 Coeficiente corrección  
 Coefficient correction

$$Vf (inch/min.) = r.p.m. \times Z \times fz \times K$$

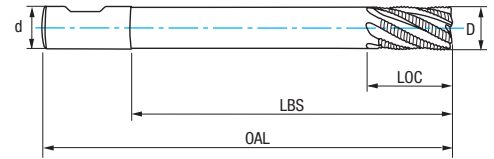
D	d	LOC Corte	OAL Longitud total	Z	N° Art. Cobalt	€/€	N° Art. TIALSIN	€/€
1 1/4	1 1/4	3	5 1/2	6	54083		23631	
1 1/4	1 1/4	4	6 1/2	6	54089		23632	
1 1/2	1 1/4	3	5 1/2	6	42350		23634	
1 1/2	1 1/4	4	6 1/2	6	54101		23636	



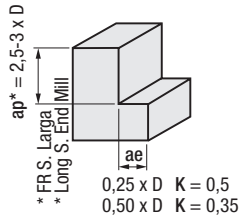
# Ref. 7307

FRACTIONAL-24

Extended Neck Cobalt 8% Fine Pitch Roughing End Mill  
 Fresa Desbaste Fino Cobalto 8% Cuello Largo  
 Fraise ébauche pas fin cobalt 8 % long cou



Cobalt 8%	CNC qualified	IZAR Std. NR-F		5-6 Z			Tol. +0,00394" -0,00197"	
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Material		Vc (ft/min.)	Feed-Avances-Pas fz/rev. (inch/z)		
Group	Sub.	8 % Co	Ø 3/4	Ø 1	Ø 1 1/4
P	P.2	80-115	0,0039	0,0039	0,0039
K	K.1	65-98	0,0039	0,0039	0,0039
	K.2	49-65	0,0039	0,0039	0,0039
S		49-65	0,0051	0,0051	0,0051
N	N.1	164-295	0,0039	0,0039	0,0039
	N.2	164-295	0,0039	0,0039	0,0039

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$

**Vf (inch/min.) = r.p.m. x Z x fz x K**

**K =** Correction coefficient  
 Coeficiente corrección  
 Coéfficient correction

D	d	LOC Corte	LBS	OAL Longitud total	Z	N° Art. Cobalt	€/€
3/4	3/4	1 1/2	3	5 1/4	5	83077	
3/4	3/4	1 1/2	4	6 1/4	5	83078	
<b>New!</b> 3/4	3/4	2 1/2	6	8	5	23092	
1	1	2	4	6 1/2	6	83079	
1	1	2	6	8 1/2	6	83080	
1	1	2	8	10 1/2	6	83081	
1	1	3	8	10 1/2	5	81897	
1	1	3	10	12 1/2	5	81898	
1 1/4	1 1/4	2	4	6 1/2	6	83082	
1 1/4	1 1/4	2	5	7 1/2	6	83083	
1 1/4	1 1/4	2	6	8 1/2	6	83084	
1 1/4	1 1/4	3	8	10 1/2	6	81899	
1 1/4	1 1/4	3	10	12 1/2	6	81900	



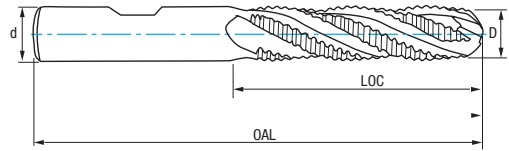
Corner radius option, other lengths and coatings upon demand  
 Radios, otras longitudes y recubrimientos bajo demanda  
 Rayons, autres longueurs et revêtements sur demande



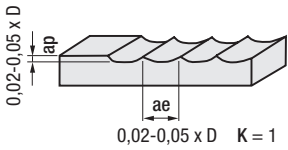
Ref. **7391**

FRACTIONAL-24

**Radial Cobalt 8% Fine Pitch Roughing End Mill**  
**Fresa Desbaste Fino Cobalto 8% Radial**  
**Fraise ébauche pas fin cobalt 8% hemisphérique**



Cobalt 8%	TIALSIN	CNC qualified	ASME Std. NR-F		4-6 Z				Tol. +0,00394" -0,00197"	
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Material		Vc (ft./min.)		Feed-Avances-Pas fz/rev. (inch/z)											
Group	Sub.	8 % Co	TIALSIN	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4	Ø 1	Ø 1 1/4	Ø 1 1/2	Ø 2	Ø 2 1/2
P	P.2	80-115	115-151	0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
K	K.1	65-98	82-131	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	K.2	49-65	65-82	0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
S		49-65	65-82	0,0010	0,0017	0,0024	0,0026	0,0031	0,0043	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
N	N.1	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	N.2	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039

$$\text{r.p.m.} = \frac{Vc \times 1.000}{\pi \times \phi}$$

**K = Correction coefficient**  
 Coeficiente corrección  
 Coéfcient correction

$$Vf (\text{inch./min.}) = \text{r.p.m.} \times Z \times fz \times K$$

D	d	LOC Corte	OAL Longitud total	Z	N° Art. Cobalt	€/€	N° Art. TIALSIN	€/€
3/8	3/8	3/4	2 1/2	4	26057		26189	
1/2	1/2	1 1/4	3 1/4	4	26058		26190	
1/2	1/2	2	4	4	26344		26379	
5/8	5/8	1 5/8	3 3/4	4	26059		26191	
5/8	5/8	2	4 1/8	4	26345		26380	
5/8	5/8	2 1/2	4 5/8	4	26347		26381	
3/4	3/4	1 5/8	3 7/8	4	26060		26192	
3/4	3/4	1 3/4	4	4	26348		26382	
3/4	3/4	2 1/4	4 1/2	4	26349		26383	
3/4	3/4	3	5 1/4	4	26350		26385	
7/8	7/8	1 7/8	4 1/8	5	26061		26193	
7/8	7/8	3 1/2	5 3/4	5	26352		26386	
1	1	2	4 1/2	5	26063		26194	
1	1	3	5 1/2	5	26353		26387	
1	1	4	6 1/2	5	26354		26388	
1 1/4	1 1/4	2	4 1/2	6	26066		26195	
1 1/4	1 1/4	3	5 1/2	6	26355		26390	
1 1/4	1 1/4	4	6 1/2	6	26356		26391	
1 1/2	1 1/4	2	4 1/2	6	26067		26196	
2	2	2	5 3/4	6	26069		26197	
2	2	4	6 3/4	6	26357		26392	
2	2	6	9 3/4	6	26358		26394	



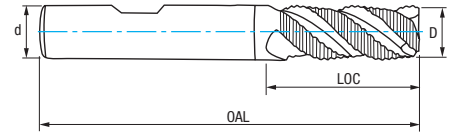
# Ref. 7521

FRACTIONAL-24

## Stainless Steel 3Z Cobalt 8% Fine Pitch Roughing End Mill

Fresa Desbaste Fino Cobalto 8% 3Z **Inox**

Fraise ébauche pas fin cobalt 8% 3Z **inoxydable**



Cobalt 8%

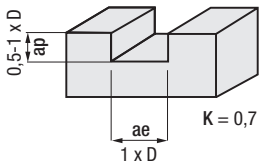
TIALSIN

CNC qualified

ASME Std. WR-F

45°

Tol. +0,00394" -0,00197"



Material		Vc (ft/min.)		Feed-Avances-Pas <b>fz/rev. (inch/z)</b>											
Group	Sub.	8 % Co	TIALSIN	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4	Ø 1	Ø 1 1/4	Ø 1 1/2	Ø 2	Ø 2 1/2
P	P.1	98-131	131-183	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	P.5	49-65	65-92	0,0005	0,0010	0,0012	0,0018	0,0018	0,0026	0,0026	0,0026	0,0026	0,0026	0,0026	0,0026
M		49-65	65-92	0,0005	0,0010	0,0012	0,0018	0,0018	0,0026	0,0026	0,0026	0,0026	0,0026	0,0026	0,0026
N	N.3	525-656	722-918	0,0010	0,0017	0,0024	0,0026	0,0031	0,0039	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
	N.4	525-656	722-918	0,0010	0,0017	0,0024	0,0026	0,0031	0,0039	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
	N.5	164-262	229-361	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$

**K =** Correction coefficient  
Coeficiente corrección  
Coéfficient correction

$$Vf \text{ (inch/min.)} = r.p.m. \times Z \times fz \times K$$

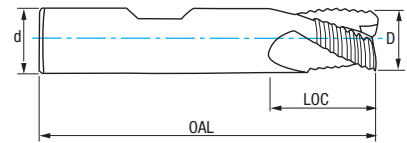
D	d	LOC Corte	OAL Longitud total	Z	N° Art. Cobalt	€/€	N° Art. TIALSIN	€/€
1/4	3/8	5/8	2 7/16	3	57740		65682	
5/16	3/8	3/4	2 1/2	3	57743		25497	
3/8	3/8	3/4	2 1/2	3	57746		24488	
1/2	1/2	1 1/4	3 1/4	3	57749		24489	
5/8	5/8	1 5/8	3 3/4	3	57752		24490	
3/4	3/4	1 5/8	3 3/4	3	57755		24491	
7/8	3/4	1 7/8	4 1/8	3	57758		24492	
1	3/4	2	4 1/2	3	57761		24493	
1	1	2	4 1/2	3	57764		24495	
1 1/8	3/4	2	4 1/2	3	57767		24498	
1 1/4	1 1/4	2	4 1/2	3	57770		24499	
1 1/2	1 1/4	2	4 1/2	3	57773		24500	
1 3/4	1 1/4	2	4 1/2	3	57776		24501	
2	1 1/4	2	4 1/2	3	57779		24502	



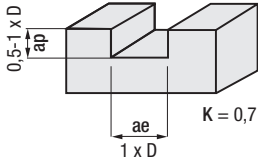
Ref. **7320**

FRACTIONAL-24

**Short Chip Aluminium Stub 3Z Fine Pitch Roughing End Mill**  
**Fresa Desbaste Fino 3Z Extra Corta Aluminio Viruta Corta**  
**Fraise ébauche pas fin 3Z extra-courte aluminium coupeau court**



Cobalt 8%	TIALSIN	CNC qualified	ASME Std. NR-F				Tol. +0,00394" -0,00197"	
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Material		Vc (ft/min.)		Feed-Avances-Pas fz/rev. (inch/z)											
Group	Sub.	8 % Co	TIALSIN	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4	Ø 1	Ø 1 1/4	Ø 1 1/2	Ø 2	Ø 2 1/2
P	P.1	98-131	131-183	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
K	K.1	65-98	82-131	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	K.2	49-65	65-82	0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
S		49-65	65-82	0,0010	0,0017	0,0024	0,0026	0,0031	0,0043	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
N	N.1	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	N.2	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	N.3	525-656	722-918	0,0010	0,0017	0,0024	0,0026	0,0031	0,0039	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
	N.4	525-656	722-918	0,0010	0,0017	0,0024	0,0026	0,0031	0,0039	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
	N.5	164-262	229-361	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$

K = Correction coefficient  
 Coeficiente corrección  
 Coéfficient correction

$$Vf \text{ (inch/min.)} = r.p.m. \times Z \times fz \times K$$

D	d	LOC Corte	OAL Longitud total	Z	N° Art. Cobalt	€/€	N° Art. TIALSIN	€/€
1/4	3/8	1/4	2 1/16	3	21284		23710	
3/8	3/8	3/8	2 5/32	3	21285		23711	
1/2	1/2	1/2	2 1/2	3	21286		23712	
5/8	5/8	5/8	2 3/4	3	21288		23713	
7/8	3/4	7/8	3 1/8	3	21290		23715	
1	1	1	3 1/2	3	21291		23716	







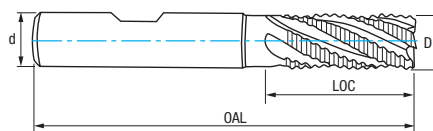
Technical Expertise in Heat Treatment

[izartool.com/en](http://izartool.com/en)

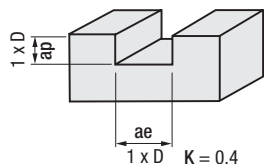
Ref. **7640**

FRACTIONAL-24

**NZ PMX Coarse Roughing End Mill**  
**Fresa Desbaste Grueso PMX NZ**  
**Fraise ébauche PMX NZ**



PMX	TIALN-TOP	CNC qualified	ASME Std. NR		3-8 Z			Tol. +0,00394" -0,00197"	
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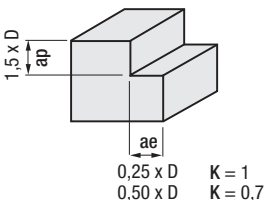


Material		Vc (ft./min.)		Feed-Avances-Pas fz/rev. (inch/z)											
Group	Sub.	PMX	TIALN-TOP	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4	Ø 1	Ø 1 1/4	Ø 1 1/2	Ø 2	Ø 2 1/2
P	P.1	115-147	180-262	0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045
	N.1	197-328	295-623	0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045
N	N.2	197-328	295-623	0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045
	N.3	623-787	951-1378	0,0010	0,0017	0,0024	0,0030	0,0036	0,0050	0,0059	0,0059	0,0059	0,0059	0,0059	0,0059
	N.4	623-787	951-1378	0,0010	0,0017	0,0024	0,0030	0,0036	0,0050	0,0059	0,0059	0,0059	0,0059	0,0059	0,0059
	N.5	197-315	295-557	0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$

$$Vf \text{ (inch/min.)} = r.p.m. \times Z \times fz \times K$$

**K = Correction coefficient**  
 Coeficiente corrección  
 Coéfficient correction



D	d	LOC Corte	OAL Longitud total	Z	N° Art. PMX	€/€	N° Art. TIALN-TOP	€/€
1/4	3/8	5/8	2 7/16	3	24058		24048	
5/16	3/8	3/4	2 1/2	3	24059		24049	
3/8	3/8	3/4	2 1/2	4	24060		24051	
7/16	3/8	1	2 11/16	4	25400		25414	
1/2	1/2	1 1/4	3 1/4	4	24061		24052	
5/8	5/8	1 5/8	3 3/4	4	24062		24054	
3/4	5/8	1 5/8	3 3/4	4	25401		25415	
3/4	3/4	1 5/8	3 3/4	4	24063		24055	
7/8	3/4	1 7/8	4 1/8	5	25402		25416	
1	3/4	2	4 1/4	5	25403		25417	
1	1	2	4 1/2	5	24064		24057	
1 1/4	1 1/4	2	4 1/2	6	25404		25418	
1 1/2	1 1/4	2	4 1/2	6	25405		25420	
2	1 1/4	2	4 1/2	8	25406		25421	



Ref. 7640

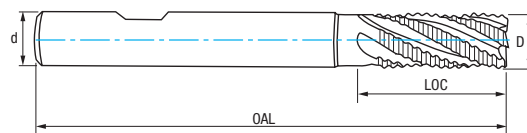
Ref. 7690



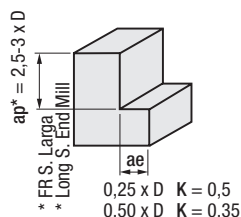
# Ref. 7690

FRACTIONAL-24

Long PMX Coarse Roughing End Mill  
Fresa Desbaste Grueso PMX Larga  
Fraise ébauche PMX longue



PMX	TIALN-TOP	CNC qualified	ASME Std. NR		3-8 Z			Tol. +0,00394" -0,00197"	
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Material		Vc (ft./min.)		Feed-Avances-Pas fz/rev. (inch/z)											
Group	Sub.	PMX	TIALN-TOP	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4	Ø 1	Ø 1 1/4	Ø 1 1/2	Ø 2	Ø 2 1/2
P	P.1	115-147	180-262	0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045
	N.1	197-328	295-623	0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045
N	N.2	197-328	295-623	0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045
	N.3	623-787	951-1378	0,0010	0,0017	0,0024	0,0030	0,0036	0,0050	0,0059	0,0059	0,0059	0,0059	0,0059	0,0059
	N.4	623-787	951-1378	0,0010	0,0017	0,0024	0,0030	0,0036	0,0050	0,0059	0,0059	0,0059	0,0059	0,0059	0,0059

$$\text{r.p.m.} = \frac{Vc \times 1.000}{\pi \times \phi}$$

K = Correction coefficient  
Coeficiente corrección  
Coéfficient correction

$$Vf \text{ (inch/min.)} = \text{r.p.m.} \times Z \times fz \times K$$

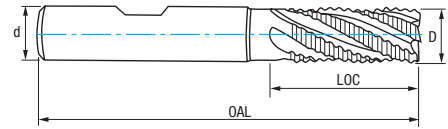
D	d	LOC Corte	OAL Longitud total	Z	N° Art. PMX	€/€	N° Art. TIALN-TOP	€/€
1/4	3/8	1 1/4	3 1/16	3	24109		24102	
5/16	3/8	1 3/8	3 1/8	3	24110		24103	
3/8	3/8	1 1/2	3 1/4	4	24111		24104	
1/2	1/2	5/8	2 5/8	4	68646		68660	
1/2	1/2	2	4	4	24112		24105	
1/2	1/2	3	5	4	25425		25432	
5/8	5/8	3/4	2 7/8	4	68647		68661	
5/8	5/8	2 1/2	4 5/8	4	24113		24106	
5/8	5/8	3 1/8	5 1/4	4	25428		25433	
3/4	3/4	3/4	3	4	68648		68662	
3/4	3/4	2 1/2	4 3/4	4	25439		25441	
3/4	3/4	3	5 1/4	4	24114		24107	
3/4	3/4	4 1/8	6 3/8	4	25434		25438	
7/8	3/4	3 1/2	5 3/4	5	25437		25440	
7/8	7/8	3 1/2	5 3/4	5	25407		25423	
1	1	1 1/8	3 5/8	5	68650		68663	
1	3/4	3	5 1/4	5	25408		25424	
1	1	3	5 1/2	5	25409		25426	
1	3/4	4	6 1/4	5	25449		25422	
1	1	4	6 1/2	5	24115		24108	
1	1	6	8 1/2	5	25419		25435	
1 1/4	1 1/4	3	5 1/2	6	25410		25427	
1 1/4	1 1/4	4	6 1/2	6	25442		28618	
1 1/4	1 1/4	6	8 1/2	6	25443		25436	
1 1/2	1 1/4	3	5 1/2	6	25411		25429	
1 1/2	1 1/4	4	6 1/2	6	25444		25450	
1 1/2	1 1/4	6	8 1/2	6	25445		25451	
2	2	3	6 3/4	8	25412		25430	
2	2	6	9 3/4	8	25413		25431	
2	2	4	7 3/4	8	25446		25452	
2	2	8	11 3/4	8	25447		25453	
2	2	12	15 3/4	8	25448		25454	



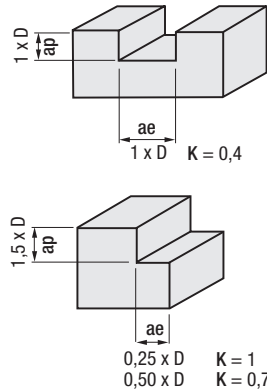
# Ref. 7300

FRACTIONAL-24

NZ Cobalt 8% Coarse Roughing End Mill  
 Fresa Desbaste Grueso Cobalto 8% Nz  
 Fraise ébauche cobalt 8% NZ



Cobalt 8%	TIALSIN	CNC qualified	ASME Std. NR		3-5 Z			Tol. +0,00394" -0,00197"	
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Material		Vc (ft./min.)		Feed-Avances-Pas fz/rev. (inch/z)											
Group	Sub.	8% Co	TIALSIN	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4	Ø 1	Ø 1 1/4	Ø 1 1/2	Ø 2	Ø 2 1/2
P	P.1	98-131	131-183	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
K	K.1	65-98	82-131	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	K.2	49-65	65-82	0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
N	N.1	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	N.2	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$

K = Correction coefficient  
 Coeficiente corrección  
 Coéfficient correction

$$Vf \text{ (inch./min.)} = r.p.m. \times Z \times fz \times K$$

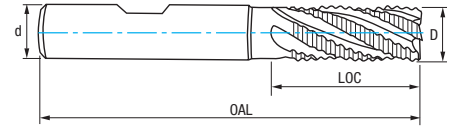
D	d	LOC Corte	OAL Longitud total	Z	N° Art. Cobalt	€/€	N° Art. TIALSIN	€/€
3/16	3/8	1/2	2 3/8	3	42300		23484	
1/4	3/8	5/8	2 7/16	3	42303		23485	
9/32	3/8	3/4	2 1/2	3	53387		23486	
5/16	3/8	3/4	2 1/2	3	53390		23487	
11/32	3/8	3/4	2 1/2	3	42306		23488	
3/8	3/8	3/4	2 1/2	4	53396		23489	
13/32	3/8	1	2 11/16	4	17441		23490	
7/16	3/8	1	2 11/16	4	53399		23491	
15/32	1/2	1 1/4	3 1/4	4	53402		23492	
1/2	1/2	1 1/4	3 1/4	4	53405		23494	
9/16	1/2	1 3/8	3 3/8	4	53408		23495	
5/8	5/8	1 5/8	3 3/4	4	53411		23496	
11/16	5/8	1 5/8	3 3/4	4	53414		23497	
3/4	5/8	1 5/8	3 3/4	4	42309		23498	
3/4	3/4	1 5/8	3 3/4	4	53420		23499	
13/16	3/4	1 7/8	4 1/8	4	23916		23917	
7/8	3/4	1 7/8	4 1/8	5	42313		23500	
7/8	7/8	1 7/8	4 1/8	5	53429		23501	
1	3/4	2	4 1/4	5	23518		23519	
1	1	2	4 1/2	5	53435		23502	
1 1/4	1 1/4	2	4 1/2	6	53447		23508	
1 1/2	1 1/4	2	4 1/2	6	42324		23512	
2	1 1/4	2	4 1/2	8	16384		23514	



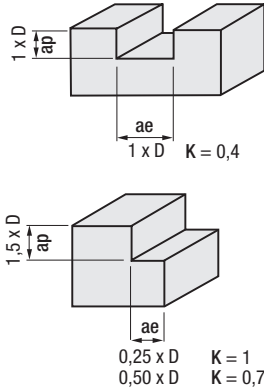
# Ref. 7340

FRACTIONAL-24

NZ Cobalt 8% Coarse Roughing End Mill  
 Fresa Desbaste Grueso Cobalto 8% Nz  
 Fraise ébauche cobalt 8% NZ



Cobalt 8%	TIALSIN	CNC qualified	ASME Std. NR		6-8 Z			Tol. +0,00394" -0,00197"	
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Material		Vc (ft/min.)		Feed-Avances-Pas fz/rev. (inch/z)											
Group	Sub.	8 % Co	TIALSIN	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4	Ø 1	Ø 1 1/4	Ø 1 1/2	Ø 2	Ø 2 1/2
P	P.1	98-131	131-183	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
K	K.1	65-98	82-131	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	K.2	49-65	65-82	0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
N	N.1	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	N.2	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039

$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$   
 $Vf \text{ (inch/min.)} = r.p.m. \times Z \times fz \times K$

**K = Correction coefficient**  
 Coeficiente corrección  
 Coéfficient correction

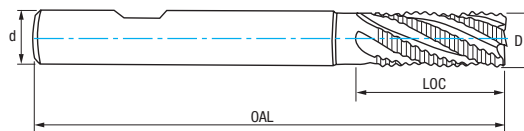
D	d	LOC Corte	OAL Longitud total	Z	N° Art. Cobalt	€/€	N° Art. TIALSIN	€/€
1 1/8	3/4	2	4 1/4	6	54320		23880	
1 1/8	3/4	2	4 1/2	6	24331		24332	
1 1/8	1	2	4 1/2	6	54323		23881	
1 1/4	3/4	2	4 1/2	6	23419		23481	
1 1/4	1	2	4 1/2	6	54329		23883	
1 1/4	1 1/4	2	4 1/2	6	54332		23884	
1 3/8	3/4	2	4 1/4	6	54335		23885	
1 1/2	3/4	1 1/8	3 3/8	6	23420		24333	
1 1/2	3/4	1 1/2	3 3/4	6	23421		24334	
1 1/2	3/4	2	4 1/4	6	54341		23886	
1 1/2	3/4	2	4 1/2	6	23422		24335	
1 1/2	1 1/4	2	4 1/2	6	54344		23887	
1 3/4	3/4	2	4 1/2	6	24337		24338	
1 3/4	1 1/4	2	4 1/2	6	54353		23890	
2	3/4	2	4 1/4	6	24339		24342	
2	3/4	2	4 1/2	6	24340		24343	
2	1 1/4	2	4 1/2	8	54359		23892	
2	1 1/4	3 1/8	5 5/8	8	24341		24344	



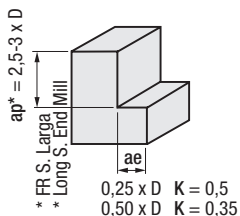
# Ref. 7302

FRACTIONAL-24

Long Cobalt 8% Coarse Roughing End Mill  
 Fresa Desbaste Grueso Cobalto 8% Larga  
 Fraise ébauche cobalt 8% longue



Cobalt 8%	TIALSIN	CNC qualified	ASME Std. NR		3-8 Z			Tol. +0,00394" -0,00197"	
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Material		Vc (ft./min.)		Feed-Avances-Pas fz/rev. (inch/z)												
Group	Sub.	8 % Co	TIALSIN	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4	Ø 1	Ø 1 1/4	Ø 1 1/2	Ø 2	Ø 2 1/2	
P	P.1	98-131	131-183	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	
K	K.1	65-98	82-131	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	
	K.2	49-65	65-82	0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	
N	N.1	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	
	N.2	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$

K = Correction coefficient  
 Coeficiente corrección  
 Coéficent correction

$$Vf \text{ (inch/min.)} = r.p.m. \times Z \times fz \times K$$



Ref. **7302**

FRACTIONAL-24

Long Cobalt 8% Coarse Roughing End Mill  
 Fresa Desbaste Grueso Cobalto 8% Larga  
 Fraise ébauche cobalt 8% longue

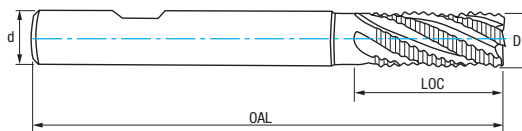
D	d	LOC Corte	OAL Longitud total	Z	N° Art. Cobalt	€/€	N° Art. TIALSIN	€/€
1/4	3/8	5/16	2 1/8	3	42283		23520	
1/4	3/8	7/8	2 11/16	3	53474		23521	
1/4	3/8	1 1/4	3 1/16	3	66731		66732	
1/4	3/8	1 1/8	2 15/16	3	42286		23523	
1/4	3/8	1 3/8	3 1/8	3	53480		23524	
5/16	3/8	7/16	2 3/16	3	42289		23525	
5/16	3/8	1 1/8	2 15/16	3	42516		23526	
5/16	3/8	1 3/8	3 1/8	3	53489		23527	
3/8	3/8	7/16	2 3/16	4	53492		23529	
3/8	3/8	1 1/8	2 15/16	4	42517		23530	
3/8	3/8	1 1/2	3 1/4	4	66733		66734	
3/8	3/8	1 5/8	3 3/16	4	53498		23531	
1/2	1/2	5/8	2 5/8	4	53501		23532	
1/2	1/2	1	3	4	42519		23533	
1/2	1/2	1 5/8	3 5/8	4	53507		23534	
1/2	1/2	2	4	4	53510		23535	
1/2	1/2	2 1/2	4 1/2	4	53513		23536	
1/2	1/2	3	5	4	53516		23538	
5/8	5/8	3/4	2 7/8	4	53519		23539	
5/8	5/8	1 1/4	3 3/8	4	53522		23540	
5/8	5/8	2 1/8	4 1/4	4	42298		23541	
5/8	5/8	2 1/2	4 5/8	4	53528		23542	
5/8	5/8	3 1/8	5 1/4	4	42301		23543	
3/4	3/4	3/4	3	4	53534		23544	
3/4	3/4	1 1/4	3 1/2	4	53537		23545	
3/4	3/4	2 1/2	4 5/8	4	53540		23546	
3/4	3/4	2 1/2	4 3/4	4	66735		66736	
3/4	3/4	3	5 1/4	4	53543		23547	
3/4	3/4	4 1/8	6 3/8	4	53546		23548	
7/8	3/4	1 1/8	3 3/8	5	53549		23549	
7/8	7/8	1 1/8	3 3/8	5	80586		23583	
7/8	3/4	3 1/2	5 5/8	5	42304		23550	
7/8	7/8	3 1/2	5 3/4	5	53555		23551	
1	3/4	1 1/8	3 3/8	6	42307		23552	
1	1	1 1/8	3 5/8	5	53561		23553	
1	3/4	1 1/2	3 3/4	5	42310		23554	
1	1	1 5/8	4 1/8	5	53567		23555	
1	3/4	3	5 1/4	5	42520		23556	
1	1	3	5 1/2	5	53573		23557	
1	3/4	4	6 1/4	5	42522		23558	
1	1	4	6 1/2	5	53579		23559	
1	1	6	8 1/2	5	42525		23560	
1 1/4	1 1/4	3	5 1/2	6	53597		23565	
1 1/4	1 1/4	4	6 1/2	6	53600		23566	
1 1/4	1 1/4	6	8 1/2	6	53603		23568	
1 1/2	1 1/4	3	5 1/2	6	53615		23574	
1 1/2	1 1/4	4	6 1/2	6	53618		23575	
1 1/2	1 1/4	6	8 1/2	6	53621		23576	
2	2	3	6 3/4	8	66738		66739	
2	2	6	9 3/4	8	66740		66741	
2	2	4	7 3/4	8	16027		23584	
<b>New!</b> 2	2	7	10 3/4	8	66417		83768	
2	2	8	11 3/4	8	16033		23582	
2	2	10	13 3/4	8	23586		23587	



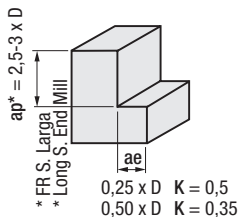
# Ref. 7342

FRACTIONAL-24

Long Cobalt 8% Coarse Roughing End Mill  
 Fresa Desbaste Grueso Cobalto 8% Larga  
 Fraise ébauche cobalt 8% longue



Cobalt 8%
TIALSIN
CNC qualified
ASME Std. NR
6-8 Z
Tol. +0,00394" -0,00197"



Material		Vc (ft./min.)		Avances fz/rev. (inch/z) - Feed - Pas												
Group	Sub.	8 % Co	TIALSIN	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4	Ø 1	Ø 1 1/4	Ø 1 1/2	Ø 2	Ø 2 1/2	
P	P.1	98-131	131-183	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	
K	K.1	65-98	82-131	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	
	K.2	49-65	65-82	0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	
N	N.1	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	
	N.2	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$

K = Correction coefficient  
 Coeficiente corrección  
 Coefficient correction

$$Vf \text{ (inch/min.)} = r.p.m. \times Z \times fz \times K$$

D	d	LOC Corte	OAL Longitud total	Z	N° Art. Cobalt	€/€	N° Art. TIALSIN	€/€
1 1/8	1	3 1/2	6	6	54464		23369	
1 1/4	1 1/4	3	5 1/2	6	54467		23370	
1 1/4	3/4	4	6 1/4	6	11092		11094	
1 1/4	1 1/4	4	6 1/2	6	54473		23371	
1 1/4	1 1/4	6	8 1/2	6	54476		23372	
1 1/2	1 1/4	3	5 1/2	6	54479		23373	
1 1/2	1 1/4	4	6 1/2	6	54485		23375	
1 1/2	1 1/4	6	8 1/2	6	54491		23377	
1 1/2	1 1/4	6 1/8	8 5/8	6	23423		24336	
1 3/4	1 1/4	4	6 1/2	6	54494		23378	
2	1 1/4	4	6 1/2	8	54500		23379	
2	2	4	7 3/4	8	23350		23380	
2	1 1/4	6 1/8	8 5/8	8	23349		23381	

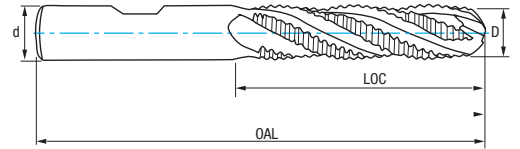




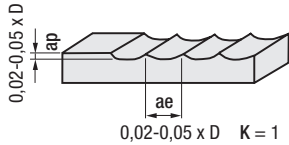
# Ref. 7390

FRACTIONAL-24

Radial Cobalt 8% Coarse Roughing End Mill  
 Fresa Desbaste Grueso Cobalto 8% Radial  
 Fraise ébauche cobalt 8% hémisphérique



Cobalt 8%	TIALSIN	CNC qualified	ASME Std. NR		3-8 Z				Tol. +0,00394" -0,00197"	
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Material		Vc (ft/min.)		Avances fz/rev. (inch/z) - Feed - Pas											
Group	Sub.	8 % Co	TIALSIN	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4	Ø 1	Ø 1 1/4	Ø 1 1/2	Ø 2	Ø 2 1/2
P	P.1	98-131	131-183	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
K	K.1	65-98	82-131	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	K.2	49-65	65-82	0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
N	N.1	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	N.2	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039

$$\text{r.p.m.} = \frac{Vc \times 1.000}{\pi \times \phi}$$

K = Correction coefficient  
 Coeficiente corrección  
 Coéfcient correction

$$Vf \text{ (inch/min.)} = \text{r.p.m.} \times Z \times fz \times K$$

D	d	LOC Corte	OAL Longitud total	Z	N° Art. Cobalt	€/S	N° Art. TIALSIN	€/S
1/4	3/8	5/8	2 7/16	3	26036		26174	
5/16	3/8	3/4	2 1/2	3	26037		26175	
3/8	3/8	3/4	2 1/2	4	26039		26176	
1/2	1/2	1 1/4	3 1/4	4	26040		26177	
1/2	1/2	2	4	4	26262		26359	
1/2	1/2	2 1/2	4 1/2	4	26263		26362	
5/8	5/8	1 5/8	3 3/4	4	26042		26178	
5/8	5/8	2 1/2	4 5/8	4	26265		26364	
3/4	3/4	1 5/8	3 7/8	4	26043		26179	
3/4	3/4	1 3/4	4	4	26266		26365	
3/4	3/4	2 1/4	4 1/2	4	26268		26366	
3/4	3/4	3	5 1/4	4	26269		26367	
7/8	7/8	1 7/8	4 1/8	5	26044		26180	
7/8	7/8	3 1/2	5 3/4	5	26271		26368	
1	3/4	2	4 1/2	5	26045		26182	
1	1	2	4 1/2	5	26046		26181	
1	1	3	5 1/2	5	26329		26369	
1	1	4	6 1/2	5	26334		26370	
1 1/4	3/4	2	4 1/2	6	26048		26183	
1 1/4	1 1/4	2	4 1/2	6	26047		26184	
1 1/4	1 1/4	3	5 1/2	6	26335		26371	
1 1/4	1 1/4	4	6 1/2	6	26336		26372	
1 1/2	1 1/4	2	4 1/2	6	25979		26186	
1 1/2	1 1/2	2	4 1/2	6	26051		26185	
1 1/2	3/4	2	4 1/2	6	26049		26187	
1 1/2	1 1/2	4	6 1/2	6	26337		26373	
2	2	2	5 3/4	6	26052		26188	
2	2	4	7 3/4	6	26338		26374	
2	2	4	7 3/4	8	26340		26376	
2	2	6	9 3/4	6	26341		26377	
2	2	6	9 3/4	8	26343		26378	



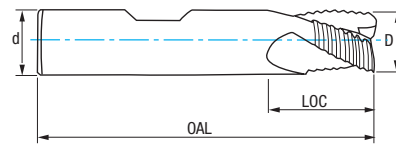
# Ref. 7324

FRACTIONAL-24

## Aluminium Stub 3Z Coarse Roughing End Mill

Fresa Desbaste Grueso 3Z Extra Corta **Aluminio**

Fraise ébauche 3Z extra-courte **aluminium**



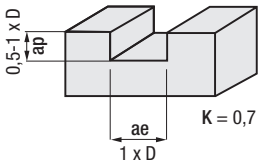
Cobalt  
8%

TIALSIN

CNC  
qualified

ASME  
Std.  
NR

Tol.  
+0,00394"  
-0,00197"



Material		Vc (ft/min.)		Feed-Avances-Pas <b>fz/rev. (inch/z)</b>											
Group	Sub.	8 % Co	TIALSIN	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4	Ø 1	Ø 1 1/4	Ø 1 1/2	Ø 2	Ø 2 1/2
P	P.1	98-131	131-183	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	K.1	65-98	82-131	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
K	K.2	49-65	65-82	0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	S	49-65	65-82	0,0010	0,0017	0,0024	0,0026	0,0031	0,0043	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
N	N.1	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	N.2	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	N.3	525-656	722-918	0,0010	0,0017	0,0024	0,0026	0,0031	0,0039	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
	N.4	525-656	722-918	0,0010	0,0017	0,0024	0,0026	0,0031	0,0039	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
	N.5	164-262	229-361	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$

K = Correction coefficient  
Coeficiente corrección  
Coéfcient correction

$$Vf (inch/min.) = r.p.m. \times Z \times fz \times K$$

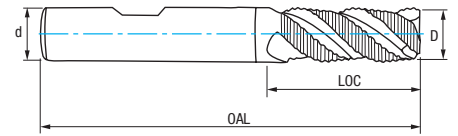
D	d	LOC Corte	OAL Longitud total	Z	N° Art. Cobalt	€/€	N° Art. TIALSIN	€/€
1/4	3/8	1/4	2 1/16	3	21292		23703	
3/8	3/8	3/8	2 5/32	3	21294		23704	
1/2	1/2	1/2	2 1/2	3	21296		23706	
5/8	5/8	5/8	2 3/4	3	21297		23707	
3/4	3/4	3/4	2 7/8	3	21299		23708	
7/8	3/4	7/8	3 1/8	3	25495		25496	
1	1	1	3 1/2	3	21301		23709	



# Ref. 7370

FRACTIONAL-24

## Long Chip Aluminium 3Z Coarse Roughing End Mill Fresa Desbaste Grueso 3Z Aluminio Viruta Larga Fraise ébauche 3Z aluminium coupeau long



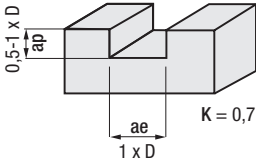
Cobalt  
8%

TIALSIN

CNC  
qualified

ASME  
Std.  
WR

Tol.  
+0,00394"  
-0,00197"



Material		Vc (ft/min.)		Feed-Avances-Pas fz/rev. (inch/z)											
Group	Sub.	8% Co	TIALSIN	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4	Ø 1	Ø 1 1/4	Ø 1 1/2	Ø 2	Ø 2 1/2
P	P.1	98-131	131-183	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
K	K.1	65-98	82-131	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	K.2	49-65	65-82	0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
S		49-65	65-82	0,0010	0,0017	0,0024	0,0026	0,0031	0,0043	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
N	N.1	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	N.2	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	N.3	525-656	722-918	0,0010	0,0017	0,0024	0,0026	0,0031	0,0039	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051

$$\text{r.p.m.} = \frac{Vc \times 1.000}{\pi \times \phi}$$

K = Correction coefficient  
Coeficiente corrección  
Coéfcient correction

$$Vf (\text{inch/min.}) = \text{r.p.m.} \times Z \times fz \times K$$

D	d	LOC Corte	OAL Longitud total	Z	N° Art. Cobalt	€/€	N° Art. TIALSIN	€/€
3/16	3/8	1/2	2 3/8	3	23824		23828	
1/4	3/8	5/8	2 7/16	3	23825		23829	
9/32	3/8	3/4	2 1/2	3	24454		24455	
5/16	3/8	3/4	2 1/2	3	23826		23830	
11/32	3/8	3/4	2 1/2	3	24456		24457	
3/8	3/8	3/4	2 1/2	3	55406		23718	
7/16	3/8	1	2 11/16	3	23827		23831	
15/32	1/2	1 1/4	3 1/4	3	24458		24459	
1/2	1/2	1 1/4	3 1/4	3	55415		23719	
5/8	5/8	1 5/8	3 3/4	3	55418		23721	
11/16	5/8	1 5/8	3 3/4	3	24460		24461	
3/4	5/8	1 5/8	3 3/4	3	24462		24463	
3/4	3/4	1 5/8	3 7/8	3	55427		23722	
7/8	3/4	1 7/8	4 1/8	3	55430		23724	
1	1	2	4 1/2	3	55439		23726	
1 1/4	3/4	2	4 1/4	3	55442		23727	
1 1/4	1 1/4	2	4 1/2	3	55445		23728	
1 3/8	3/4	2	4 1/4	3	24464		24465	
2	3/4	2	4 1/2	3	24466		24467	



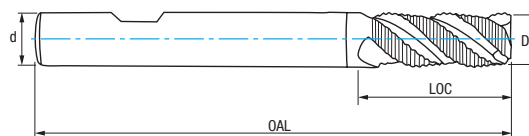
Ref. **7372**

FRACTIONAL-24

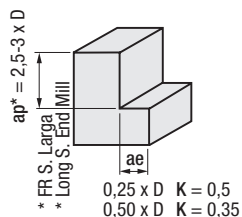
**Long Chip Aluminium 3Z Coarse Roughing End Mill**

Fresa Desbaste Grueso 3Z **Aluminio Viruta Larga**

Fraise ébauche 3Z **aluminium copeau long**



Cobalt 8%	TIALSIN	CNC qualified	ASME Std. WR			Tol. +0,00394" -0,00197"	
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Material		Vc (ft./min.)		Feed-Avances-Pas fz/rev. (inch/z)											
Group	Sub.	8 % Co	TIALSIN	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4	Ø 1	Ø 1 1/4	Ø 1 1/2	Ø 2	Ø 2 1/2
P	P.1	98-131	131-183	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
K	K.1	65-98	82-131	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	K.2	49-65	65-82	0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
S		49-65	65-82	0,0010	0,0017	0,0024	0,0026	0,0031	0,0043	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
N	N.1	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	N.2	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	N.3	525-656	722-918	0,0010	0,0017	0,0024	0,0026	0,0031	0,0039	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051

$$\text{r.p.m.} = \frac{Vc \times 1.000}{\pi \times \phi}$$

K = Correction coefficient  
 Coeficiente corrección  
 Coéfcient correction

$$Vf (\text{inch./min.}) = \text{r.p.m.} \times Z \times fz \times K$$

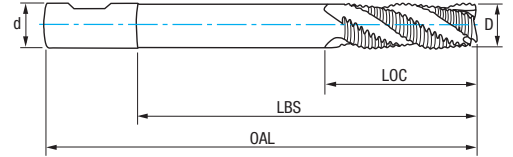
D	d	LOC Corte	OAL Longitud total	Z	N° Art. Cobalt	€/€	N° Art. TIALSIN	€/€
1/4	3/8	1 3/8	3 1/8	3	23841		23844	
5/16	3/8	1 3/8	3 1/8	3	23842		23845	
3/8	3/8	1 5/8	3 3/16	3	23843		23847	
1/2	1/2	2	4	3	55478		23733	
1/2	1/2	3	5	3	24468		24469	
5/8	5/8	2 1/2	4 5/8	3	55484		23734	
5/8	5/8	3 1/8	5 1/4	3	24470		24471	
3/4	3/4	2	4 1/4	3	52326		23736	
3/4	3/4	3	5 1/4	3	55490		23737	
1	1	3	5 1/2	3	55499		23739	
1	1	4	6 1/2	3	55502		23742	
1 1/4	1 1/4	3	5 1/2	3	55505		23743	
1 1/4	1 1/4	4	6 1/2	3	55508		23745	
1 1/2	1 1/4	4	6 1/2	3	24472		24473	
2	1 1/4	4	6 1/2	3	55520		23748	



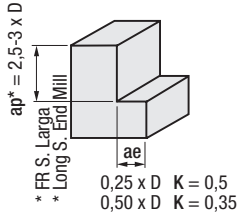
# Ref. 7377

FRACTIONAL-24

Extended Neck 3Z Cobalt 8% Coarse Roughing End Mill  
 Fresa Desbaste Grueso Cobalto 8% 3Z Cuello Largo  
 Fraise ébauche cobalt 8 % 3Z long cou



Cobalt 8%	CNC qualified	IZAR Std. WR				Tol. +0,00394" -0,00197"	
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Material		Vc (ft/min.)	Feed-Avances-Pas fz/rev. (inch/z)		
Group	Sub.	8 % Co	Ø 3/4	Ø 1	Ø 1 1/4
P	P.1	98-131	0,0039	0,0039	0,0039
K	K.1	65-98	0,0039	0,0039	0,0039
	K.2	49-65	0,0039	0,0039	0,0039
S		49-65	0,0051	0,0051	0,0051
N	N.1	164-295	0,0039	0,0039	0,0039
	N.2	164-295	0,0039	0,0039	0,0039
	N.3	525-656	0,0051	0,0051	0,0051

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$

Vf (inch/min.) = r.p.m. x Z x fz x K

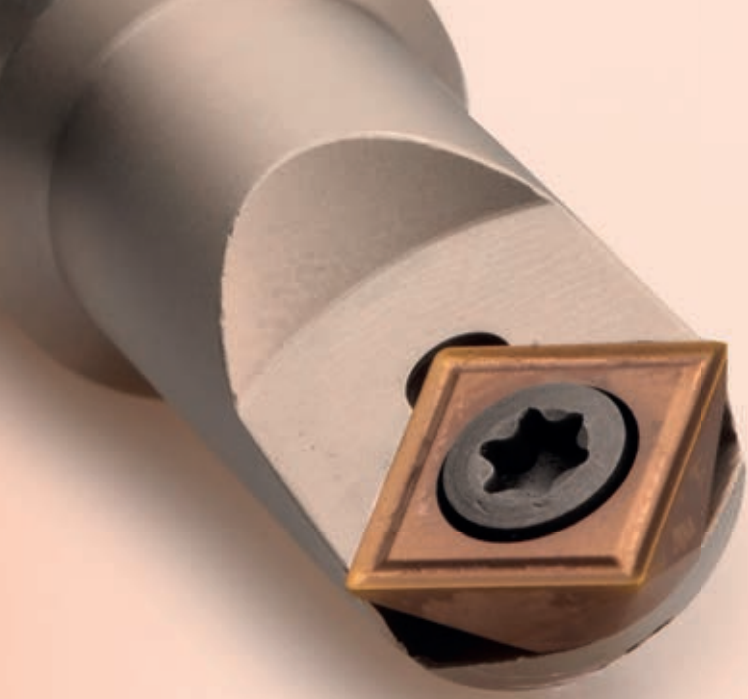
K = Correction coefficient  
 Coeficiente corrección  
 Coéfficient correction

D	d	LOC Corte	LBS	OAL Longitud total	Z	N° Art. Cobalt	€/€
3/4	3/4	1 1/2	3	5 1/4	3	83062	
3/4	3/4	1 1/2	4	6 1/4	3	83063	
<b>New!</b> 3/4	3/4	2 1/2	6	8	3	23083	
1	1	1 1/2	3	5 1/2	3	83064	
1	1	2	4	6 1/2	3	83065	
1	1	2	6	8 1/2	3	83066	
1	1	2 3/4	7	9 1/2	3	81889	
1	1	3	8	10 1/2	3	81904	
1 1/4	1 1/4	2	4	6 1/2	3	83067	
1 1/4	1 1/4	2	6	8 1/2	3	83068	
1 1/4	1 1/4	2 3/4	7	9 1/2	3	81890	
1 1/4	1 1/4	3	8	10 1/2	3	81891	
1 1/4	1 1/4	3 1/2	10	12 1/2	3	81892	



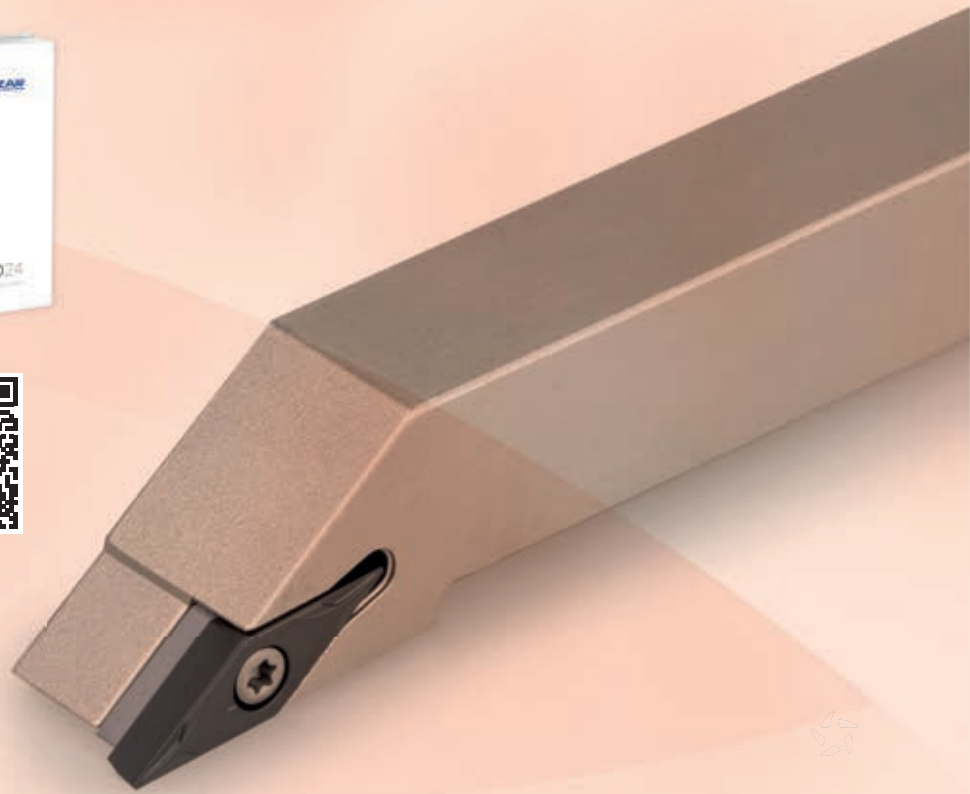
Corner radius option, other lengths and coatings upon demand  
 Radios, otras longitudes y recubrimientos bajo demanda  
 Rayons, autres longueurs et revêtements sur demande





## Indexable Inserts Programa Plaquitas Intercambiables Programme de plaquettes

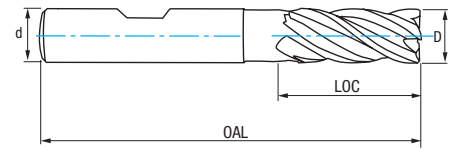
See our IND-24 catalogue  
Consulte nuestro catálogo IND-24  
Consultez notre catalogue IND-24



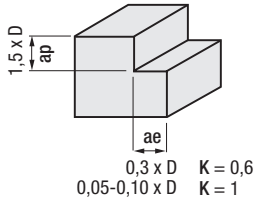
# Ref. 7666

FRACTIONAL-24

Unequal Spiral Angle PMX Finishing End Mill  
 Fresa Acabado PMX Hélice Variable  
 Fraise finition PMX hélice variable



PMX	TIALN-TOP	CNC qualified	ASME Std. N		4-6 Z		Tol. +0,00150" -0,00000"	
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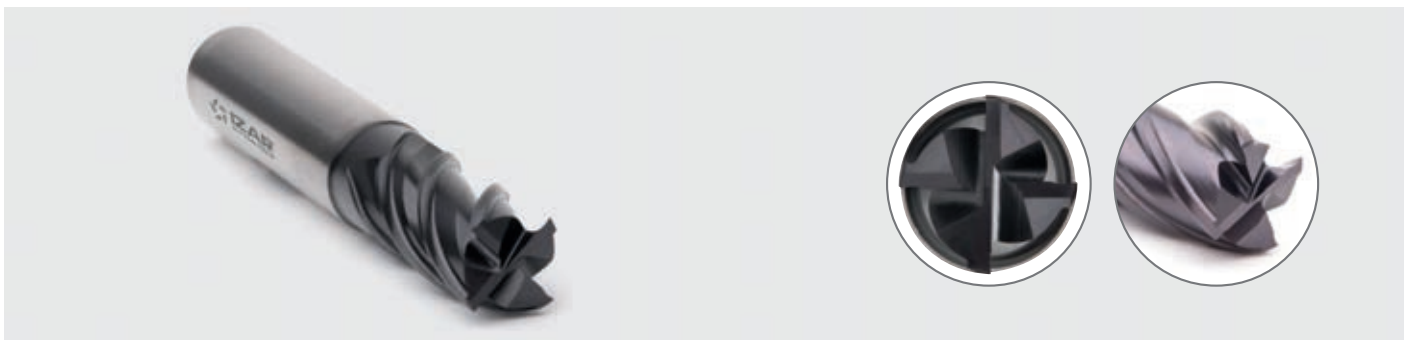
Material		Vc (ft./min.)		Feed-Avances-Pas fz/rev. (inch/z)											
Group	Sub.	PMX	TIALN-TOP	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4	Ø 1	Ø 1 1/4	Ø 1 1/2	Ø 2	Ø 2 1/2
P	P.2	98-138	147-246	0,0006	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045
	P.3	39-59	65-115	0,0005	0,0010	0,0012	0,0020	0,0020	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030
	P.5	59-79	98-147	0,0005	0,0010	0,0012	0,0020	0,0020	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030
M		17-39	26-56	0,0005	0,0010	0,0012	0,0020	0,0020	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030
K	K.1	79-118	115-213	0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045
	K.2	79-118	115-213	0,0006	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045
S		59-79	98-147	0,0010	0,0017	0,0024	0,0030	0,0036	0,0050	0,0059	0,0059	0,0059	0,0059	0,0059	0,0059
N	N.1	197-328	295-623	0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045
	N.2	623-787	951-1378	0,0010	0,0017	0,0024	0,0030	0,0036	0,0050	0,0059	0,0059	0,0059	0,0059	0,0059	0,0059
	N.3	197-315	295-557	0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$

**Vf (inch/min.) = r.p.m. x Z x fz x K**

K = Correction coefficient  
 Coeficiente corrección  
 Coéfficient correction

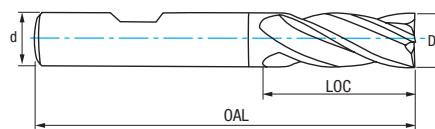
D	d	LOC Corte	OAL Longitud total	Z	N° Art. PMX	€/€	N° Art. TIALN-TOP	€/€
1/4	3/8	5/8	2 7/16	4	39893		39901	
5/16	3/8	3/4	2 1/2	4	39894		39902	
3/8	3/8	3/4	2 1/2	4	39895		39903	
7/16	3/8	1	2 11/16	4	39896		39904	
1/2	1/2	1 1/4	3 1/4	4	39897		39905	
5/8	5/8	1 5/8	3 3/4	5	39898		39906	
3/4	3/4	1 5/8	3 7/8	5	39899		39907	
1	1	2	4 1/2	6	39900		39908	



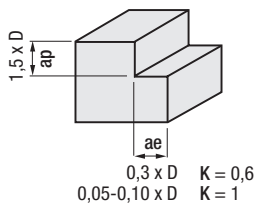
# Ref. 7600

FRACTIONAL-24

NZ PMX Finishing End Mill  
Fresa Acabado PMX NZ  
Fraise finition PMX NZ



PMX	TIALN-TOP	CNC qualified	ASME Std. N		4 Z			Tol. +0,00150" -0,00000"
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Material		Vc (ft./min.)		Feed-Avances-Pas fz/rev. (inch/z)											
Group	Sub.	PMX	TIALN-TOP	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4	Ø 1	Ø 1 1/4	Ø 1 1/2	Ø 2	Ø 2 1/2
P	P.2	98-138	147-246	0,0006	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045
	P.3	39-59	65-115	0,0005	0,0010	0,0012	0,0020	0,0020	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030
	P.5	59-79	98-147	0,0005	0,0010	0,0012	0,0020	0,0020	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030
M		17-39	26-56	0,0005	0,0010	0,0012	0,0020	0,0020	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030
K	K.1	79-118	115-213	0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045
	K.2	79-118	115-213	0,0006	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045
S		59-79	98-147	0,0010	0,0017	0,0024	0,0030	0,0036	0,0050	0,0059	0,0059	0,0059	0,0059	0,0059	0,0059
N	N.1	197-328	295-623	0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045
	N.4	623-787	951-1378	0,0010	0,0017	0,0024	0,0030	0,0036	0,0050	0,0059	0,0059	0,0059	0,0059	0,0059	0,0059
	N.5	197-315	295-557	0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$

**K = Correction coefficient**  
 Coeficiente corrección  
 Coefficient correction

$$Vf \text{ (inch/min.)} = r.p.m. \times Z \times fz \times K$$

D	d	LOC Corte	OAL Longitud total	Z	N° Art. PMX	€/€	N° Art. TIALN-TOP	€/€
1/8	3/8	3/8	2 5/16	4	24294		14452	
5/32	3/8	3/8	2 3/8	4	24295		14454	
3/16	3/8	1/2	2 3/8	4	24296		14446	
7/32	3/8	5/8	2 7/16	4	24297		24291	
1/4	3/8	5/8	2 7/16	4	24298		22325	
9/32	3/8	3/4	2 1/2	4	24299		24292	
5/16	3/8	3/4	2 1/2	4	24300		22326	
3/8	3/8	3/4	2 1/2	4	24301		22327	
7/16	3/8	1	2 11/16	4	24302		24293	
1/2	1/2	1 1/4	3 1/4	4	24303		22329	
5/8	5/8	1 5/8	3 3/4	4	24304		22330	
3/4	3/4	1 5/8	3 7/8	4	24305		22331	
1	1	2	4 1/2	4	24306		14448	

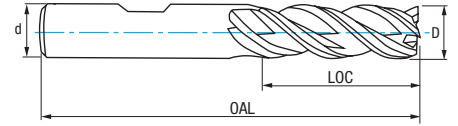




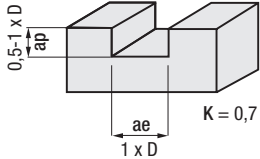
# Ref. 7630

FRACTIONAL-24

Aluminium 3Z PMX Finishing End Mill  
 Fresa Acabado PMX 3Z Aluminio  
 Fraise finition PMX 3Z aluminium



PMX	TIALN-TOP	CNC qualified	ASME Std. W			3 Z			Tol. +0,00150" -0,00000"
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Material		Vc (ft/min.)		Feed-Avances-Pas fz/rev. (inch/z)								
Group	Sub.	PMX	TIALN-TOP	Ø 5/32	Ø 15/64	Ø 5/16	Ø 25/64	Ø 15/32	Ø 5/8	Ø 25/32	Ø 1	Ø 1 7/64
M		52-72	66-115	0,0005	0,0010	0,0012	0,0020	0,0020	0,0030	0,0030	0,0030	0,0030
S		59-98	98-148	0,0010	0,0017	0,0024	0,0030	0,0036	0,0050	0,0059	0,0059	0,0059
N	N.1	230-361	361-689	0,0010	0,0017	0,0024	0,0030	0,0036	0,0050	0,0050	0,0059	0,0059
	N.2	230-361	361-689	0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045
	N.3	623-787	951-1378	0,0010	0,0017	0,0024	0,0030	0,0036	0,0050	0,0059	0,0059	0,0059
	N.4	623-787	951-1378	0,0010	0,0017	0,0024	0,0030	0,0036	0,0050	0,0059	0,0059	0,0059
	N.5	197-315	295-558	0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$

K = Correction coefficient  
 Coeficiente corrección  
 Coéfcient correction

$$Vf \text{ (inch/min.)} = r.p.m. \times Z \times fz \times K$$

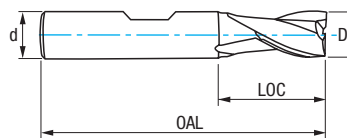
D	d	LOC Corte	OAL Longitud total	Z	N° Art. PMX	€/€	N° Art. TIALN-TOP	€/€
1/8	3/8	3/8	2 5/16	3	75874		75891	
5/32	3/8	1/2	2 3/8	3	75875		75892	
3/16	3/8	1/2	2 3/8	3	75877		75893	
7/32	3/8	5/8	2 7/16	3	75878		75894	
1/4	3/8	5/8	2 7/16	3	75879		75896	
9/32	3/8	3/4	2 1/2	3	75880		75902	
5/16	3/8	3/4	2 1/2	3	75882		75918	
3/8	3/8	3/4	2 1/2	3	75884		75923	
7/16	3/8	1	2 11/16	3	75886		75926	
1/2	1/2	1 1/4	3 1/4	3	75887		75927	
5/8	5/8	1 5/8	3 3/4	3	75888		75930	
3/4	3/4	1 5/8	3 7/8	3	75889		75931	
1	1	2	4 1/2	3	75890		75933	



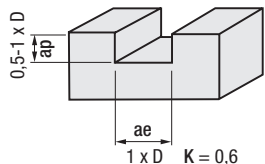
# Ref. 7620

FRACTIONAL-24

2Z PMX Finishing End Mill  
Fresa Acabado PMX 2Z  
Fraise finition PMX 2Z



PMX	TIALN-TOP	CNC qualified	ASME Std. N		2 Z			Tol. +0,00000" -0,00150"	Keyway Tol.	
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Material		Vc (ft./min.)		Feed-Avances-Pas fz/rev. (inch/z)								
Group	Sub.	PMX	TIALN-TOP	Ø 5/32	Ø 15/64	Ø 5/16	Ø 25/64	Ø 15/32	Ø 5/8	Ø 25/32	Ø 1	Ø 1 7/64
P	P.1	115-180	180-262	0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045
	P.2	98-148	148-246	0,0006	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045
	P.3	39-66	66-115	0,0005	0,0010	0,0012	0,0020	0,0020	0,0030	0,0030	0,0030	0,0030
K	K.1	79-115	115-213	0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045
	K.2	79-115	115-213	0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045
S		59-98	98-148	0,0010	0,0017	0,0024	0,0030	0,0036	0,0050	0,0059	0,0059	0,0059
N	N.1	230-361	361-689	0,0010	0,0017	0,0024	0,0030	0,0036	0,0050	0,0059	0,0059	0,0059
	N.2	230-361	361-689	0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045
	N.3	623-951	951-1378	0,0010	0,0017	0,0024	0,0030	0,0036	0,0050	0,0059	0,0059	0,0059
	N.4	623-951	951-1378	0,0010	0,0017	0,0024	0,0030	0,0036	0,0050	0,0059	0,0059	0,0059
	N.5	197-295	295-558	0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$

**K =** Correction coefficient  
Coeficiente corrección  
Coéfficient correction

$$Vf \text{ (inch./min.)} = r.p.m. \times Z \times fz \times K$$

D	d	LOC Corte	OAL Longitud total	Z	N° Art. PMX	€/€	N° Art. TIALN-TOP	€/€
1/8	3/8	3/8	2 5/16	2	75845		75859	
5/32	3/8	7/16	2 5/16	2	75846		75860	
3/16	3/8	7/16	2 5/16	2	75847		75861	
7/32	3/8	1/2	2 5/16	2	75848		75862	
1/4	3/8	1/2	2 5/16	2	75849		75864	
9/32	3/8	9/16	2 5/16	2	75850		75865	
5/16	3/8	9/16	2 5/16	2	75851		75866	
3/8	3/8	9/16	2 5/16	2	75852		75867	
7/16	3/8	13/16	2 1/2	2	75853		75868	
1/2	1/2	1	3	2	75854		75869	
5/8	5/8	1 5/16	3 7/16	2	75855		75870	
3/4	3/4	1 5/16	3 9/16	2	75856		75871	
1	1	1 5/8	4 1/8	2	75858		75873	





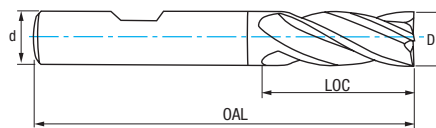
Premium Quality Raw Materials

[izartool.com](http://izartool.com)

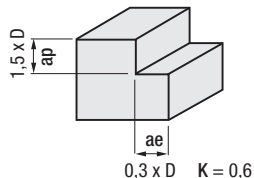
# Ref. 7411

FRACTIONAL-24

## NZ Cobalt 8% Finishing End Mill Fresa Acabado Cobalto 8% Nz Fraise finition cobalt 8% NZ



Cobalt 8%	TIALSIN	CNC qualified	ASME Std. N		4-6 Z			Tol. +0,00150" -0,00000"
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Material	Vc (ft/min.)	Feed-Avances-Pas fz/rev. (inch/z)															
		Group	Sub.	8 % Co	TIALSIN	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4	Ø 1	Ø 1 1/4	Ø 1 1/2	Ø 2	Ø 2 1/2
P	P.1	98-131	131-183	0,0008	0,0012	0,0014	0,0020	0,0024	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
		K	K.1	65-98	82-131	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
K	K.2	49-65	65-82	0,0006	0,0012	0,0014	0,0020	0,0024	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
		N	N.1	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
N	N.2	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039

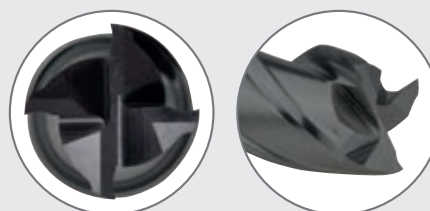
$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$

K = Correction coefficient  
Coeficiente corrección  
Coéfcient correction

$$Vf \text{ (inch/min.)} = r.p.m. \times Z \times fz \times K$$



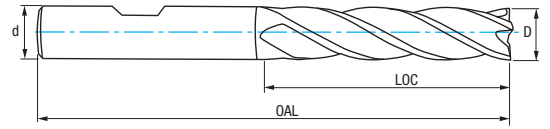
D	d	LOC Corte	OAL Longitud total	Z	N° Art. Cobalt	€/€	N° Ar TIALSIN	€/€	D	d	LOC Corte	OAL Longitud total	Z	N° Art. Cobalt	€/€	N° Ar TIALSIN	€/€
1/8	3/8	3/8	2 5/16	4	56426		28149		1	1/2	1 7/8	4 1/8	4	10914		10915	
5/32	3/8	1/2	2 3/8	4	21879		28150		1	5/8	1 7/8	4	4	53565		28168	
3/16	3/8	1/2	2 3/8	4	56429		28089		1	3/4	1 7/8	4 1/8	4	56489		25616	
7/32	3/8	5/8	2 7/16	4	56432		28151		1	1	2	4 1/2	4	56492		28169	
1/4	3/8	5/8	2 7/16	4	56435		26671		1 1/16	3/4	1 1/2	3 7/8	6	10918		10920	
9/32	3/8	3/4	2 1/2	4	56438		28152		1 1/8	3/4	1 1/2	3 7/8	6	56495		28170	
5/16	3/8	3/4	2 1/2	4	56441		25614		1 1/8	1	2	4 1/2	6	56498		28171	
11/32	3/8	3/4	2 1/2	4	56444		28153		1 3/16	3/4	2	4 1/4	6	21930		28172	
3/8	3/8	3/4	2 1/2	4	56447		28154		1 1/4	3/4	1 1/2	3 7/8	6	56501		28173	
13/32	3/8	1	2 11/16	4	56450		28155		1 1/4	1	2	4 1/2	6	77529		28174	
7/16	3/8	1	2 11/16	4	56453		28156		1 1/4	1 1/4	2	4 1/2	6	56504		28175	
1/2	3/8	1	2 11/16	4	56456		25615		1 5/16	3/4	2	4 3/8	6	10921		10923	
1/2	1/2	1 1/4	3 1/4	4	56459		28088		1 3/8	3/4	2	4 3/8	6	10924		10927	
9/16	1/2	1 3/8	3 3/8	4	56462		26672		1 3/8	1	2	4 1/2	6	70769		28176	
5/8	1/2	1 3/8	3 3/8	4	56465		28158		1 1/2	3/4	2	4 3/8	6	21933		28177	
5/8	5/8	1 5/8	3 3/4	4	56468		28159		1 1/2	1	2	4 1/2	6	10928		10929	
11/16	5/8	1 5/8	3 3/4	4	56471		28161		1 1/2	1 1/4	2	4 1/2	6	17117		28178	
3/4	1/2	1 5/8	3 5/8	4	56474		28162		1 5/8	1 1/4	2	4 1/2	6	70775		28179	
3/4	5/8	1 5/8	3 3/4	4	10912		10913		1 3/4	3/4	2	4 3/8	6	10930		10931	
3/4	3/4	1 5/8	3 7/8	4	56477		28163		1 3/4	1 1/4	2	4 1/2	6	70781		28180	
13/16	3/4	1 7/8	4 1/8	4	56480		28164		1 7/8	3/4	2	4 1/2	6	10932		28181	
7/8	3/4	1 7/8	4 1/8	4	56483		28165		1 7/8	1 1/4	2	4 3/8	6	10933		28182	
7/8	7/8	1 7/8	4 1/8	4	56486		28166		2	3/4	2	4 1/26	6	53571		28183	
15/16	3/4	1 7/8	4 1/8	4	53562		28167		2	1 1/4	2	4 1/2	6	70784		28184	



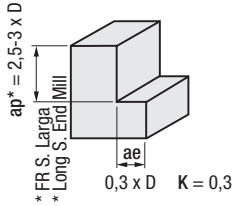
# Ref. 7413

FRACTIONAL-24

Long Cobalt 8% Finishing End Mill  
 Fresa Acabado Cobalto 8% Larga  
 Fraise finition cobalt 8% longue



Cobalt 8%	TIALSIN	CNC qualified	ASME Std. N		4-8 Z			Tol. +0,00150" -0,00000"
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Material		Vc (ft./min.)		Feed-Avances-Pas fz/rev. (inch/z)											
Group	Sub.	8 % Co	TIALSIN	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4	Ø 1	Ø 1 1/4	Ø 1 1/2	Ø 2	Ø 2 1/2
P	P.1	98-131	131-183	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
K	K.1	65-98	82-131	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	K.2	49-65	65-82	0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
N	N.1	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	N.2	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$

K = Correction coefficient  
 Coeficiente corrección  
 Coéfficient correction

$$Vf \text{ (inch/min.)} = r.p.m. \times Z \times fz \times K$$

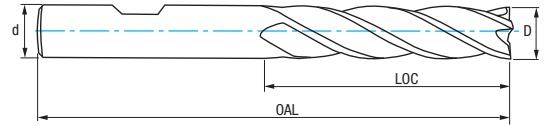
D	d	LOC Corte	OAL Longitud total	Z	N° Art. Cobalt	€/€	N° Art. TIALSIN	€/€
1/4	3/8	1 1/4	3 1/16	4	56618		28187	
5/16	3/8	1 3/8	3 1/8	4	56621		28188	
3/8	3/8	1 1/2	3 1/4	4	56624		28189	
7/16	1/2	1 3/4	3 3/4	4	77531		28190	
1/2	1/2	2	4	4	56627		28191	
5/8	5/8	2 1/2	4 5/8	4	56630		28192	
3/4	3/4	3	5 1/4	4	56633		28193	
7/8	7/8	3 1/2	5 3/4	4	56636		28194	
1	1	4	6 1/2	4	56639		28195	
1 1/16	3/4	2	4 1/4	6	10936		28196	
1 1/8	1	4	6 1/2	6	10937		28197	
1 1/4	1 1/4	4	6 1/2	6	56642		28199	
1 1/2	1 1/4	4	6 1/2	6	77595		28200	
1 3/4	1 1/4	4	6 1/2	6	77596		28201	
2	1 1/4	4	6 1/2	8	56645		28203	



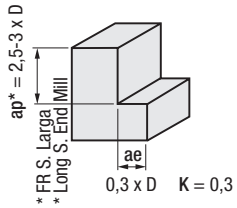
# Ref. 7415

FRACTIONAL-24

Long Cobalt 8% Finishing End Mill  
 Fresa Acabado Cobalto 8% Larga  
 Fraise finition cobalt 8% longue



Cobalt 8%	TIALSIN	CNC qualified	ASME Std. N		4-6 Z			Tol. +0,00150" -0,00000"
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Material		Vc (ft/min.)		Feed-Avances-Pas fz/rev. (inch/z)											
Group	Sub.	8% Co	TIALSIN	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4	Ø 1	Ø 1 1/4	Ø 1 1/2	Ø 2	Ø 2 1/2
P	P.1	98-131	131-183	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
K	K.1	65-98	82-131	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	K.2	49-65	65-82	0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
N	N.1	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	N.2	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039

r.p.m. =  $\frac{Vc \times 1.000}{\pi \times \phi}$       K = Correction coefficient  
 Coeficiente corrección  
 Coéfficient correction

Vf (inch/min.) = r.p.m. x Z x fz x K

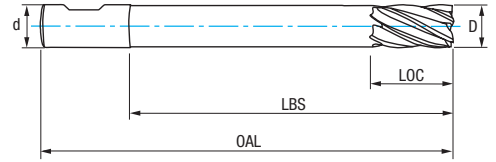
D	d	LOC Corte	OAL Longitud total	Z	N° Art. Cobalt	€/€	N° Art. TIALSIN	€/€
1/4	3/8	1 3/4	3 9/16	4	56720		28206	
3/8	3/8	2 1/2	4 1/4	4	56726		28208	
1/2	1/2	3	5	4	56729		28209	
5/8	5/8	4	6 1/8	4	56732		28210	
3/4	3/4	4	6 1/4	4	56735		28211	
7/8	7/8	5	7 1/4	4	56738		28212	
1	1	6	8 1/2	4	56741		28213	
1 1/4	1 1/4	6	8 1/2	6	56744		28214	
1 1/2	1 1/4	8	10 1/2	6	77597		28215	



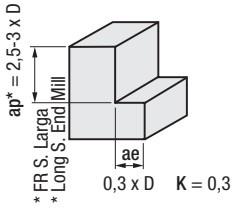
# Ref. 7417

FRACTIONAL-24

Extended Neck Cobalt 8% Finishing End Mill  
 Fresa Acabado Cobalto 8% Cuello Largo  
 Fraise finition cobalt 8 % long cou



Cobalt 8%	CNC qualified	IZAR Std. N		5-6 Z			Tol. +0,00150" -0,00000"
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Material		Vc (ft./min.)	Feed-Avances-Pas fz/rev. (inch/z)		
Group	Sub.	8 % Co	Ø 3/4	Ø 1	Ø 1 1/4
P	P.1	98-131	0,0039	0,0039	0,0039
K	K.1	65-98	0,0039	0,0039	0,0039
	K.2	49-65	0,0039	0,0039	0,0039
N	N.1	164-295	0,0039	0,0039	0,0039
	N.2	164-295	0,0039	0,0039	0,0039

$$\text{r.p.m.} = \frac{Vc \times 1.000}{\pi \times \phi}$$

**Vf (inch/min.) = r.p.m. x Z x fz x K**

K = Correction coefficient  
 Coeficiente corrección  
 Coéfficient correction

D	d	LOC Corte	LBS	OAL Longitud total	Z	Nº Art. Cobalt	€/€
3/4	3/4	1 1/2	3	5 1/4	5	83069	
3/4	3/4	1 1/2	4	6 1/4	5	83070	
<b>New!</b> 3/4	3/4	2 1/2	6	8	5	23084	
1	1	2	4	6 1/2	6	83071	
1	1	2	6	8 1/2	6	83072	
1	1	2	8	10 1/2	6	83073	
1	1	3	8	10 1/2	5	81893	
1	1	3 1/2	10	12 1/2	5	81894	
1 1/4	1 1/4	2	4	6 1/2	6	83074	
1 1/4	1 1/4	2	5	7 1/2	6	83075	
1 1/4	1 1/4	2	6	8 1/2	6	83076	
1 1/4	1 1/4	3	8	10 1/2	6	81895	
1 1/4	1 1/4	3 1/2	10	12 1/2	6	81896	



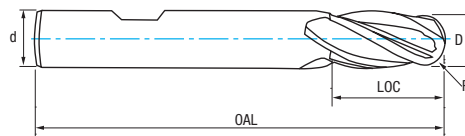
Corner radius option, other lengths and coatings upon demand  
 Radios, otras longitudes y recubrimientos bajo demanda  
 Rayons, autres longueurs et revêtements sur demande



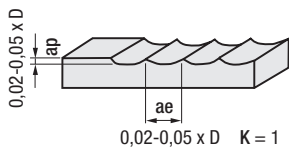
# Ref. 7420

FRACTIONAL-24

Radial Cobalt 8% Finishing End Mill  
 Fresa Acabado Cobalto 8% Radial  
 Fraise finition cobalt 8% hemisphérique



Cobalt 8%	TIALSIN	CNC qualified	ASME Std. N		4-6 Z				Tol. +0,00150" -0,00000"
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Material		Vc (ft/min.)		Feed-Avances-Pas fz/rev. (inch/z)											
Group	Sub.	8% Co	TIALSIN	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4	Ø 1	Ø 1 1/4	Ø 1 1/2	Ø 2	Ø 2 1/2
P	P.1	98-131	131-183	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
K	K.1	65-98	82-131	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	K.2	49-65	65-82	0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
N	N.1	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	N.2	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039

$$\text{r.p.m.} = \frac{Vc \times 1.000}{\pi \times \phi}$$

K = Correction coefficient  
 Coeficiente corrección  
 Coéfficient correction

$$Vf \text{ (inch/min.)} = \text{r.p.m.} \times Z \times fz \times K$$

D	d	LOC Corte	OAL Longitud total	Z	N° Art. Cobalt	€/€	N° Ar TIALSIN	€/€
1/8	3/8	3/8	2 5/16	4	26109		26161	
3/16	3/8	1/2	2 3/8	4	26111		26162	
1/4	3/8	5/8	2 7/16	4	26112		26163	
1/4	3/8	3/4	2 9/16	4	26241		26395	
1/4	3/8	1	2 13/16	4	26242		26396	
1/4	3/8	1 1/4	3 1/16	4	26243		26397	
1/4	3/8	1 3/4	3 9/16	4	26244		26491	
5/16	3/8	3/4	2 1/2	4	26114		26164	
5/16	3/8	1	2 3/4	4	26245		26400	
3/8	3/8	3/4	2 1/2	4	26115		26165	
3/8	3/8	1	2 3/4	4	26246		26401	
3/8	3/8	1 1/2	3 1/4	4	26247		26403	
3/8	3/8	2 1/2	4 1/4	4	26248		26404	
7/16	1/2	1 1/4	3 1/4	4	26117		26166	
1/2	1/2	1 1/4	3 1/4	4	26118		26167	
1/2	1/2	2	4	4	26249		26406	
1/2	1/2	3	5	4	26250		26407	
5/8	5/8	1 5/8	3 3/4	4	26120		26168	
5/8	5/8	2 1/2	4 5/8	4	26251		26410	
5/8	5/8	4	6 1/8	4	26252		26412	
3/4	3/4	1 5/8	3 7/8	4	26121		26169	
3/4	3/4	3	5 1/4	4	26253		26413	
3/4	3/4	4	6 1/4	4	26254		26416	
7/8	7/8	1 7/8	4 1/8	4	26123		26170	
1	1	2	4 1/2	4	26124		26171	
1	1	2	5 1/2	4	26255		26418	
1	1	4	6	4	26256		26419	
1 1/4	1 1/4	2	4 1/2	6	26126		26172	
1 1/4	1 1/4	2	4 1/2	4	26257		26422	
1 1/2	1 1/4	2	4 1/2	6	26127		26173	
1 1/2	1 1/4	2	4 1/2	4	26259		26424	

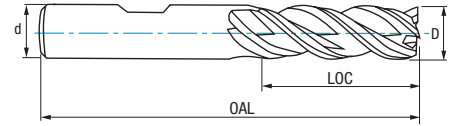




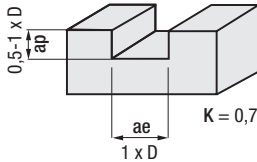
# Ref. 7530

FRACTIONAL-24

**Stainless-Aluminium 3Z Finishing End Mill**  
**Fresa Acabado 3Z Inox-Aluminio**  
**Fraise finition 3Z Inoxydable-Aluminium**



Cobalt 8%	CNC qualified	ASME Std. W		3 Z			Tol. +0,00150" -0,00000"
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Material		Vc (ft/min.)	Feed-Avances-Pas fz/rev. (inch/z)											
Group	Sub.	8 % Co	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4	Ø 1	Ø 1 1/4	Ø 1 1/2	Ø 2	Ø 2 1/2
P	P.1	98-131	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	P.5	49-65	0,0005	0,0010	0,0012	0,0018	0,0018	0,0026	0,0026	0,0026	0,0026	0,0026	0,0026	0,0026
M		49-65	0,0005	0,0010	0,0012	0,0018	0,0018	0,0026	0,0026	0,0026	0,0026	0,0026	0,0026	0,0026
N	N.3	525-656	0,0010	0,0017	0,0024	0,0026	0,0031	0,0039	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
	N.4	525-656	0,0010	0,0017	0,0024	0,0026	0,0031	0,0039	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
	N.5	164-262	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$

K = Correction coefficient  
 Coeficiente corrección  
 Coefficient correction

$$Vf \text{ (inch/min.)} = r.p.m. \times Z \times fz \times K$$

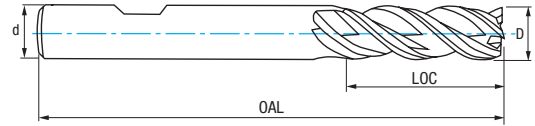
D	d	LOC Corte	OAL Longitud total	Z	N° Art. Cobalt	€/€
1/4	3/8	5/8	2 7/16	3	19339	
5/16	3/8	3/4	2 1/2	3	19340	
3/8	3/8	3/4	2 1/2	3	19342	
1/2	1/2	1 1/4	3 1/4	3	19343	
5/8	5/8	1 5/8	3 3/4	3	19344	
3/4	3/4	1 5/8	3 7/8	3	10874	
7/8	3/4	1 7/8	4 1/8	3	24511	
1	1	2	4 1/2	3	24512	
1 1/4	3/4	2	4 1/4	3	24513	
1 1/4	1 1/4	3	5 1/2	3	19354	



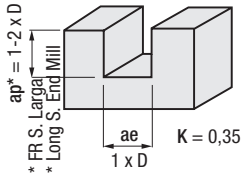
Ref. **7532**

FRACTIONAL-24

Long **Stainless-Aluminium** 3Z Finishing End Mill  
 Fresa Acabado 3Z **Inox-Aluminio** Larga  
 Fraise finition 3Z **Inoxydable-Aluminium** longue



Cobalt 8%	CNC qualified	ASME Std. W		3 Z			Tol. +0,00150" -0,00000"
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Material		Vc (ft./min.)	Feed-Avances-Pas <b>fz/rev. (inch/z)</b>											
Group	Sub.	8 % Co	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4	Ø 1	Ø 1 1/4	Ø 1 1/2	Ø 2	Ø 2 1/2
P	P.1	98-131	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	P.5	49-65	0,0005	0,0010	0,0012	0,0018	0,0018	0,0026	0,0026	0,0026	0,0026	0,0026	0,0026	0,0026
M		49-65	0,0005	0,0010	0,0012	0,0018	0,0018	0,0026	0,0026	0,0026	0,0026	0,0026	0,0026	0,0026
N	N.3	525-656	0,0010	0,0017	0,0024	0,0026	0,0031	0,0039	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
	N.4	525-656	0,0010	0,0017	0,0024	0,0026	0,0031	0,0039	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
	N.5	164-262	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$

**K** = Correction coefficient  
 Coeficiente corrección  
 Coéfcient correction

$$Vf \text{ (inch/min.)} = r.p.m. \times Z \times fz \times K$$

D	d	LOC Corte	OAL Longitud total	Z	N° Art. Cobalt	€/€
1/2	1/2	2	4	3	24514	
5/8	5/8	2 1/2	4 5/8	3	24515	
3/4	3/4	3	5 1/4	3	24516	
1	1	4	6 1/2	3	24517	
1 1/4	1 1/4	4	6 1/2	3	24518	





# Extended Neck End Mills

Fresas de Cuello Largo

Fraises à long cou



Ref. **7537**

pag.  
164

Finishing  
Acabado  
Finition

Cobalt 8%  
M42

3 Z



Ref. **7377**

pag.  
149

Coarse Roughing  
Desbaste Grueso  
Ébauche

Cobalt 8%  
M42

3 Z



Ref. **7417**

pag.  
159

Finishing  
Acabado  
Finition

Cobalt 8%  
M42

5-6 Z



Ref. **7307**

pag.  
133

Fine Pitch Roughing  
Desbaste Fino  
Ébauche pas fin

Cobalt 8%  
M42

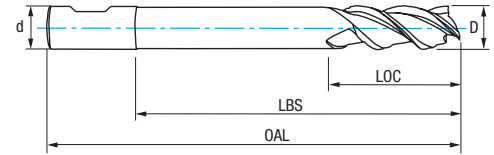
5-6 Z



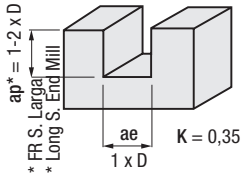
Ref. **7537**

FRACTIONAL-24

Extended Neck 3Z Cobalt 8% Finishing End Mill  
 Fresa Acabado Cobalto 8% 3Z Cuello Largo  
 Fraise finition cobalt 8 % 3Z long cou



Cobalt 8%	CNC qualified	IZAR Std. W		3 Z			Tol. +0,00150" -0,00000"
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Material		Vc (ft/min.)	Feed-Avances-Pas fz/rev. (inch/z)		
Group	Sub.	8 % Co	Ø 3/4	Ø 1	Ø 1 1/4
P	P.1	98-131	0,0039	0,0039	0,0039
	P.5	49-65	0,0026	0,0026	0,0026
M		49-65	0,0026	0,0026	0,0026
N	N.3	525-656	0,0051	0,0051	0,0051
	N.4	525-656	0,0051	0,0051	0,0051
	N.5	164-262	0,0039	0,0039	0,0039

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \varnothing}$$

**K = Correction coefficient**  
 Coeficiente corrección  
 Coefficient correction

$$Vf \text{ (inch/min.)} = r.p.m. \times Z \times fz \times K$$

New!

D	d	LOC Corte	LBS	OAL Longitud total	Z	N° Art. Cobalt	€/€
3/4	3/4	1 1/2	3	5 1/4	3	83054	
3/4	3/4	1 1/2	4	6 1/4	3	83055	
3/4	3/4	2 1/2	6	8	3	23081	
1	1	1 1/2	3	5 1/2	3	83057	
1	1	2	4	6 1/2	3	83058	
1	1	2	6	8 1/2	3	83059	
1	1	2 3/4	7	9 1/2	3	81885	
1	1	3	8	10 1/2	3	81903	
1 1/4	1 1/4	2	4	6 1/2	3	83060	
1 1/4	1 1/4	2	6	8 1/2	3	83061	
1 1/4	1 1/4	2 3/4	7	9 1/2	3	81886	
1 1/4	1 1/4	3	8	10 1/2	3	81887	
1 1/4	1 1/4	3 1/2	10	12 1/2	3	81888	



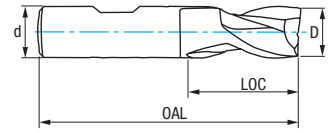
Corner radius option, other lengths and coatings upon demand  
 Radios, otras longitudes y recubrimientos bajo demanda  
 Rayons, autres longueurs et revêtements sur demande



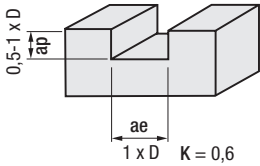
# Ref. 7205

FRACTIONAL-24

2Z Cobalt 8% Finishing End Mill  
Fresa Acabado Cobalto 8% 2Z  
Fraise finition cobalt 8% 2Z



Cobalt 8%	TIALSIN	CNC qualified	ASME Std. N		2 Z			Tol. +0,00000" -0,00150"	Keyway Tol.	
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Material		Vc (ft./min.)		Feed-Avances-Pas fz/rev. (inch/z)											
Group	Sub.	8 % Co	TIALSIN	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4	Ø 1	Ø 1 1/4	Ø 1 1/2	Ø 2	Ø 2 1/2
P	P.1	98-131	131-183	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
K	K.1	65-98	82-131	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	K.2	49-65	65-82	0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
N	N.1	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	N.2	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	N.3	525-656	722-918	0,0010	0,0017	0,0024	0,0026	0,0031	0,0039	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
	N.4	525-656	722-918	0,0010	0,0017	0,0024	0,0026	0,0031	0,0039	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
	N.5	164-262	229-361	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039

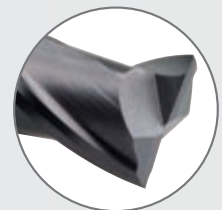
$$\text{r.p.m.} = \frac{Vc \times 1.000}{\pi \times \phi}$$

K = Correction coefficient  
Coeficiente corrección  
Coéfficient correction

$$\text{Vf (inch/min.)} = \text{r.p.m.} \times Z \times fz \times K$$



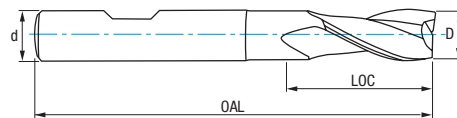
D	d	LOC Corte	OAL Longitud total	Z	N° Art. Cobalt	€/€	N° Art. TIALSIN	€/€	D	d	LOC Corte	OAL Longitud total	Z	N° Art. Cobalt	€/€	N° Art. TIALSIN	€/€
1/8	3/8	3/8	2 5/16	2	16648		28217		1	3/4	1 1/2	3 3/4	2	11127		28251	
5/32	3/8	7/16	2 5/16	2	16649		28218		1	1	1 5/8	4 1/8	2	16673		28253	
3/16	3/8	7/16	2 5/16	2	16650		28219		1 1/16	3/4	1 5/8	3 7/8	2	16681		28254	
7/32	3/8	1/2	2 5/16	2	16651		28220		1 1/8	3/4	1 5/8	3 7/8	2	13872		28255	
1/4	3/8	1/2	2 5/16	2	16652		28221		1 1/8	7/8	1 5/8	3 7/8	2	13873		28242	
9/32	3/8	9/16	2 5/16	2	16654		28222		1 1/8	1	1 5/8	4 1/8	2	16674		28256	
5/16	3/8	9/16	2 5/16	2	16655		28223		1 3/16	3/4	1 5/8	3 7/8	2	16682		28257	
11/32	3/8	9/16	2 5/16	2	16657		28224		1 1/4	3/4	1 5/8	3 7/8	2	13874		28258	
3/8	3/8	9/16	2 5/16	2	16658		28225		1 1/4	1	1 5/8	4 1/8	2	13875		28259	
13/32	3/8	13/16	2 1/2	2	16659		28226		1 1/4	1 1/4	1 5/8	4 1/8	2	16675		28261	
7/16	3/8	13/16	2 1/2	2	16660		28227		1 5/16	3/4	1 5/8	3 7/8	2	16685		28262	
1/2	1/2	1	3	2	16664		28230		1 3/8	3/4	1 5/8	3 7/8	2	13876		28263	
9/16	1/2	1 1/8	3 1/8	2	16665		28232		1 3/8	1	1 5/8	4 1/8	2	16686		28264	
5/8	1/2	1 1/8	3 1/8	2	11569		28233		1 3/8	1 1/4	1 5/8	4 1/8	2	13877		28265	
5/8	5/8	1 5/16	3 7/16	2	16666		28235		1 7/16	3/4	1 5/8	4 1/8	2	13878		28266	
11/16	1/2	1 5/16	3 5/16	2	11775		28236		1 1/2	3/4	1 5/8	3 7/8	2	13879		28268	
11/16	5/8	1 5/16	3 7/16	2	16667		28237		1 1/2	1	1 5/8	4 1/8	2	13880		28269	
3/4	1/2	1 5/16	3 5/16	2	11799		28239		1 1/2	1 1/4	1 5/8	4 1/8	2	16676		28270	
3/4	5/8	1 5/16	3 7/16	2	11802		28240		1 5/8	3/4	1 5/8	4 1/8	2	13881		28271	
3/4	3/4	1 5/16	3 9/16	2	16669		28241		1 5/8	1 1/4	1 5/8	4 1/8	2	16687		28272	
13/16	3/4	1 1/2	3 3/4	2	16670		28244		1 3/4	3/4	1 5/8	4 1/8	2	13882		28273	
7/8	5/8	1 1/2	3 5/8	2	13870		28246		1 3/4	1 1/4	1 5/8	4 1/8	2	16678		28274	
7/8	3/4	1 1/2	3 3/4	2	16672		28247		1 7/8	3/4	1 5/8	4 1/8	2	13883		28275	
7/8	7/8	1 1/2	3 3/4	2	11125		28248		1 7/8	1 1/4	1 5/8	4 1/8	2	16688		28276	
15/16	3/4	1 1/2	3 3/4	2	16680		28249		2	3/4	1 5/8	4 1/8	2	13884		28277	
1	5/8	1 1/2	3 5/8	2	13871		28250		2	1 1/4	1 5/8	4 1/8	2	16679		28278	



# Ref. 7203

FRACTIONAL-24

Long 2Z Cobalt 8% Finishing End Mill  
 Fresa Acabado Cobalto 8% 2Z Larga  
 Fraise finition cobalt 8% 2Z longue



Cobalt 8%

TIALSIN

CNC qualified

ASME Std. N

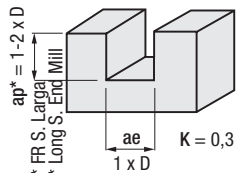


2 Z



Tol. +0,00000" -0,00150"

Keyway Tol.



Material		Vc (ft./min.)		Feed-Avances-Pas fz/rev. (inch/z)											
Group	Sub.	8% Co	TIALSIN	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4	Ø 1	Ø 1 1/4	Ø 1 1/2	Ø 2	Ø 2 1/2
P	P.1	98-131	131-183	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
K	K.1	65-98	82-131	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	K.2	49-65	65-82	0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
N	N.1	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	N.2	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	N.3	525-656	722-918	0,0010	0,0017	0,0024	0,0026	0,0031	0,0039	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
	N.4	525-656	722-918	0,0010	0,0017	0,0024	0,0026	0,0031	0,0039	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
	N.5	164-262	229-361	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039

$$\text{r.p.m.} = \frac{Vc \times 1.000}{\pi \times \phi}$$

K = Correction coefficient  
 Coeficiente corrección  
 Coéfcient correction

$$Vf (\text{inch./min.}) = \text{r.p.m.} \times Z \times fz \times K$$

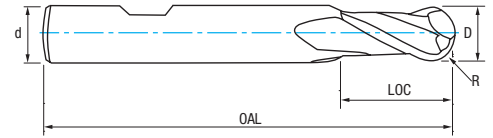
D	d	LOC Corte	OAL Longitud total	Z	N° Art. Cobalt	€/€	N° Art. TIALSIN	€/€
1/4	3/8	1	3 1/16	2	77618		28279	
5/16	3/8	1 1/2	3 1/4	2	17113		28281	
3/8	3/8	1	2 3/4	2	53439		28282	
3/8	3/8	1 1/2	3 1/4	2	77525		28283	
1/2	3/8	1	3	2	13885		28284	
1/2	1/2	1 1/8	3 1/8	2	17114		28285	
1/2	1/2	1 1/2	3 1/2	2	77640		28286	
1/2	1/2	2	4	2	77550		28287	
1/2	1/2	3	5	2	77551		28288	
5/8	5/8	1 5/8	3 3/4	2	17116		28289	
5/8	5/8	2	4 1/8	2	52667		28290	
5/8	5/8	2 1/2	4 5/8	2	80848		28291	
5/8	5/8	3	5 1/8	2	53442		28292	
3/4	3/4	2 1/4	4 1/2	2	53445		28293	
3/4	3/4	3	5 1/4	2	77526		28294	
3/4	3/4	3 1/2	5 3/4	2	17133		28295	
7/8	7/8	2 1/2	4 3/4	2	53448		28296	
1	1	2 1/2	5	2	53451		28297	
1	1	3	5 1/2	2	53454		28298	
1	1	4	6 1/2	2	78604		28299	
1 1/4	1 1/4	3	5 1/2	2	77527		28300	
1 3/8	1	3	5 1/2	2	13886		28301	
1 1/2	1 1/4	3	5 1/2	2	77641		28302	
1 5/8	1 1/4	3	5 1/2	2	13887		28303	
1 3/4	1 1/4	3	5 1/2	2	79870		28304	
1 7/8	1 1/4	3	5 1/2	2	13888		28305	
2	1 1/4	3	5 1/2	2	80851		28306	



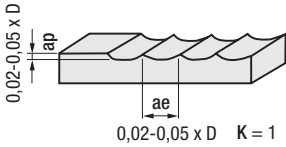
# Ref. 7220

FRACTIONAL-24

Radial 2Z Cobalt 8% Finishing End Mill  
Fresa Acabado Cobalto 8% 2Z Radial  
Fraise finition Cobalt 8% 2Z hemisphérique



Cobalt 8%	TIALSIN	CNC qualified	ASME Std. N		2 Z			Tol. +0,00000" -0,00150"
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Material		Vc (ft./min.)		Feed-Avances-Pas fz/rev. (inch/z)											
Group	Sub.	8% Co	TIALSIN	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4	Ø 1	Ø 1 1/4	Ø 1 1/2	Ø 2	Ø 2 1/2
P	P.1	98-131	131-183	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
K	K.1	65-98	82-131	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	K.2	49-65	65-82	0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
N	N.1	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	N.2	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	N.3	525-656	722-918	0,0010	0,0017	0,0024	0,0026	0,0031	0,0039	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
	N.4	525-656	722-918	0,0010	0,0017	0,0024	0,0026	0,0031	0,0039	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
	N.5	164-262	229-361	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$

$$Vf \text{ (inch./min.)} = r.p.m. \times Z \times fz \times K$$

K = Correction coefficient  
Coeficiente corrección  
Coéfcient correction



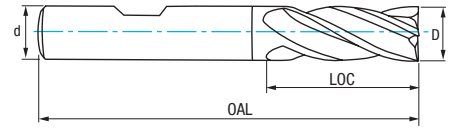
D	d	LOC Corte	OAL Longitud total	Z	N° Art. Cobalt	€/€	N° Art. TIAL-SIN	€/€	D	d	LOC Corte	OAL Longitud total	Z	N° Art. Cobalt	€/€	N° Art. TIAL-SIN	€/€
1/8	3/8	3/8	2 5/16	2	26070		26129		3/4	1/2	1 5/8	3 5/8	2	26090		26148	
5/32	3/8	7/16	2 5/16	2	26072		26130		3/4	3/4	1 5/8	3 7/8	2	26091		26149	
3/16	3/8	1/2	2 3/8	2	26073		26132		13/16	3/4	2	4 1/4	2	26093		26150	
7/32	3/8	1/2	2 3/8	2	26074		26135		7/8	3/4	2	4 1/4	2	26094		26151	
1/4	3/8	5/8	2 7/16	2	26075		26137		7/8	7/8	2	4 1/2	2	26095		26152	
9/32	3/8	5/8	2 1/2	2	26076		26138		15/16	3/4	2 1/4	4 1/4	2	26096		26153	
5/16	3/8	3/4	2 1/2	2	26078		26139		1	3/4	2 1/4	4 9/16	2	26097		26154	
11/32	3/8	3/4	2 1/2	2	26079		26141		1	1	2 1/4	4 3/4	2	26099		26155	
3/8	3/8	3/4	2 1/2	2	26081		26142		1 1/8	1	2 1/4	4 3/4	2	26101		26156	
7/16	1/2	1	3	2	26082		26143		1 1/4	1 1/4	2 1/2	5	2	26102		26157	
1/2	1/2	1	3	2	26083		26144		1 3/8	1 1/4	2 1/2	5	2	26103		26158	
9/16	1/2	1	3	2	26085		26145		1 1/2	1 1/4	2 1/2	5	2	26105		26159	
5/8	1/2	1 1/8	3 1/8	2	26087		26146		2	1 1/4	2 1/2	5	2	26106		26160	
5/8	5/8	1 3/8	3 3/8	2	26088		26147										



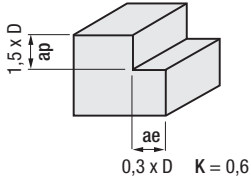
# Ref. 7410

FRACTIONAL-24

NZ HSS Finishing End Mill  
Fresa Acabado HSS NZ  
Fraise finition HSS NZ



HSS	CNC qualified	ASME Std. N		4-6 Z			Tol. +0,00150" -0,00000"
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Material		Vc (ft/min.)	Feed-Avances-Pas <b>fz/rev. (inch/z)</b>											
Group	Sub.	HSS	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4	Ø 1	Ø 1 1/4	Ø 1 1/2	Ø 2	Ø 2 1/2
<b>P</b>	<b>P.1</b>	65-80	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0049	0,0049	0,0049	0,0049	0,0049

$$\text{r.p.m.} = \frac{Vc \times 1.000}{\pi \times \phi}$$

**K** = Correction coefficient  
Coeficiente corrección  
Coéfcient correction

$$Vf \text{ (inch/min.)} = \text{r.p.m.} \times Z \times fz \times K$$



D	d	LOC Corte	OAL Longitud total	Z	Nº Art. HSS	€/S
1/8	3/8	3/8	2 5/16	4	55991	
5/32	3/8	1/2	2 3/8	4	42680	
3/16	3/8	1/2	2 3/8	4	56003	
7/32	3/8	5/8	2 7/16	4	42681	
1/4	3/8	5/8	2 7/16	4	56015	
9/32	3/8	3/4	2 1/2	4	42208	
5/16	3/8	3/4	2 1/2	4	56027	
11/32	3/8	3/4	2 1/2	4	42694	
3/8	3/8	3/4	2 1/2	4	56039	
13/32	3/8	1	2 11/16	4	42695	
7/16	3/8	1	2 11/16	4	42210	
1/2	3/8	1	2 11/16	4	56063	
1/2	1/2	1 1/4	3 1/4	4	56066	
9/16	1/2	1 3/8	3 3/8	4	56069	
5/8	1/2	1 3/8	3 3/8	4	56072	
5/8	5/8	1 5/8	3 3/4	4	56075	
11/16	5/8	1 5/8	3 3/4	4	56081	
3/4	1/2	1 5/8	3 5/8	4	56084	
3/4	5/8	1 5/8	3 3/4	4	56087	
3/4	3/4	1 5/8	3 7/8	4	56090	
13/16	3/4	1 7/8	4 1/8	4	56096	
7/8	3/4	1 7/8	4 1/8	4	56105	
7/8	7/8	1 7/8	4 1/8	4	56108	
15/16	3/4	1 7/8	4 1/8	4	56111	
1	5/8	1 7/8	4	4	42216	

D	d	LOC Corte	OAL Longitud total	Z	Nº Art. HSS	€/S
1	1/2	1 7/8	4 1/8	4	42682	
1	3/4	1 7/8	4 1/8	4	56120	
1	1	2	4 1/2	4	56126	
1 1/16	3/4	1 1/2	3 7/8	6	42683	
1 1/8	3/4	1 1/2	3 7/8	6	56132	
1 1/8	1	2	4 1/2	6	42219	
1 3/16	3/4	2	4 1/4	6	42222	
1 1/4	3/4	1 1/2	3 7/8	6	56141	
1 1/4	1	2	4 1/2	6	56144	
1 1/4	1 1/4	2	4 1/2	6	56147	
1 5/16	3/4	2	4 3/8	6	42228	
1 3/8	3/4	2	4 3/8	6	56153	
1 3/8	1	2	4 1/2	6	42230	
1 1/2	3/4	2	4 3/8	6	56162	
1 1/2	1	2	4 1/2	6	42685	
1 1/2	1 1/4	2	4 1/2	6	56168	
1 5/8	3/4	2	4 3/8	6	56171	
1 5/8	1 1/4	2	4 1/2	6	56174	
1 3/4	3/4	2	4 3/8	6	56177	
1 3/4	1 1/4	2	4 1/2	6	56180	
1 7/8	3/4	2	4 1/2	6	42697	
1 7/8	1 1/4	2	4 3/8	6	42698	
2	3/4	2	4 1/26	6	56189	
2	1 1/4	2	4 1/2	6	56192	

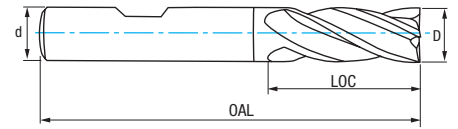




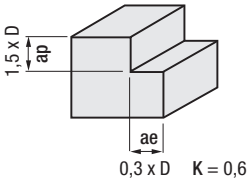
# Ref. 7400

FRACTIONAL-24

NZ HSS Finishing End Mill  
Fresa Acabado HSS NZ  
Fraise finition HSS NZ



HSS	CNC qualified	ASME Std. N		4-8 Z			Tol. +0,00150" -0,00000"
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Material		Vc (ft./min.)	Feed-Avances-Pas fz/rev. (inch/z)											
Group	Sub.	HSS	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4	Ø 1	Ø 1 1/4	Ø 1 1/2	Ø 2	Ø 2 1/2
P	P.1	65-80	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0049	0,0049	0,0049	0,0049

$$\text{r.p.m.} = \frac{Vc \times 1.000}{\pi \times \phi}$$

K = Correction coefficient  
Coeficiente corrección  
Coéfcient correction

$$Vf \text{ (inch/min.)} = \text{r.p.m.} \times Z \times fz \times K$$



D	d	LOC Corte	OAL Longitud total	Z	Nº Art. HSS	€/€
1/8	3/8	3/8	2 5/16	4	55625	
3/16	3/8	1/2	2 3/8	4	55631	
7/32	3/8	5/8	2 7/16	4	90003	
1/4	3/8	5/8	2 1/2	4	55634	
9/32	3/8	3/4	2 1/2	4	90004	
5/16	3/8	3/4	2 1/2	4	55637	
11/32	3/8	3/4	2 1/2	4	90005	
3/8	3/8	3/4	2 1/2	4	55643	
13/32	3/8	1	2 11/16	4	90006	
7/16	3/8	1	2 11/16	4	15053	
1/2	1/2	1 1/4	3 1/4	4	55652	
9/16	1/2	1 3/8	3 3/8	4	15060	
19/32	1/2	1 3/8	3 3/8	4	15059	
5/8	1/2	1 3/8	3 3/8	4	55658	
5/8	5/8	1 5/8	3 3/4	4	55661	
11/16	1/2	1 5/8	3 5/8	4	15246	
11/16	5/8	1 5/8	3 3/4	4	15061	
3/4	1/2	1 5/8	3 5/8	4	15240	
3/4	5/8	1 5/8	3 3/4	4	22788	
3/4	3/4	1 5/8	3 3/4	4	55676	
13/16	5/8	1 7/8	4	6	22789	
13/16	3/4	1 7/8	4 1/8	4	15062	
7/8	5/8	1 7/8	4 1/8	6	22791	
7/8	3/4	1 7/8	4 1/8	4	55694	
7/8	7/8	1 7/8	3 7/8	4	55697	

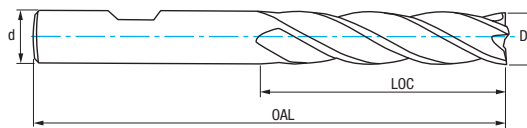
D	d	LOC Corte	OAL Longitud total	Z	Nº Art. HSS	€/€
15/16	3/4	1 7/8	4	4	55703	
1	1/2	1 7/8	4 1/8	4	22611	
1	5/8	1 7/8	4 1/2	4	55712	
1	3/4	1 7/8	4 1/4	4	55715	
1	1	2	4 1/8	4	55721	
1 1/16	3/4	2	4 1/2	6	22792	
1 1/8	3/4	2	4 1/4	6	55727	
1 1/8	1	2	4 1/2	6	55730	
1 1/4	3/4	2	4 1/4	6	55736	
1 1/4	1	2	4 1/2	6	55742	
1 1/4	1 1/4	2	4 1/2	4	55745	
1 5/16	3/4	2	4 1/2	6	22794	
1 3/8	3/4	2	4 1/4	6	55751	
1 3/8	1	2	4 1/2	6	55754	
1 1/2	3/4	2	4 1/4	6	55757	
1 1/2	1	2	4 1/2	6	16690	
1 1/2	1 1/4	2	4 1/2	6	55763	
1 5/8	3/4	2	4 1/2	6	55766	
1 5/8	1 1/4	2	4 1/2	6	22795	
1 3/4	3/4	2	4 1/2	4	55772	
1 3/4	1 1/4	2	4 1/2	6	55775	
1 7/8	1 1/4	2	4 1/2	6	23117	
1 7/8	1 1/4	2	4 1/2	8	55778	
2	3/4	2	4 1/2	6	55781	
2	1 1/4	2	4 1/2	6	22796	



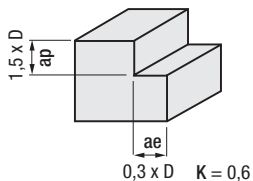
Ref. **7412**

FRACTIONAL-24

Long HSS Finishing End Mill  
Fresa Acabado HSS Larga  
Fraise finition HSS longue



HSS	CNC qualified	ASME Std. N		4-8 Z			Tol. +0,00150" -0,00000"
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Material	Vc (ft/min.)	Feed-Avances-Pas fz/rev. (inch/z)												
Group	Sub.	HSS	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4	Ø 1	Ø 1 1/4	Ø 1 1/2	Ø 2	Ø 2 1/2
<b>P</b>	<b>P.1</b>	65-80	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0049	0,0049	0,0049	0,0049

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \varnothing}$$

**K** = Correction coefficient  
Coeficiente corrección  
Coéfficient correction

$$Vf \text{ (inch/min.)} = r.p.m. \times Z \times fz \times K$$

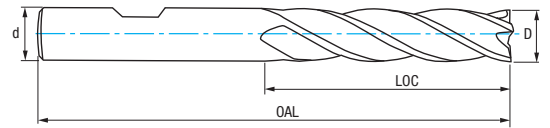
D	d	LOC Corte	OAL Longitud total	Z	Nº Art. HSS	€/€
1/4	3/8	1 1/4	3 1/16	4	42699	
5/16	3/8	1 3/8	3 1/8	4	42700	
3/8	3/8	1 1/2	3 1/4	4	56513	
7/16	1/2	1 3/4	3 3/4	4	42701	
1/2	1/2	2	4	4	56519	
5/8	5/8	2 1/2	4 5/8	4	56522	
3/4	3/4	3	5 1/4	4	42710	
7/8	7/8	3 1/2	5 3/4	4	56531	
1	1	4	6 1/2	4	56540	



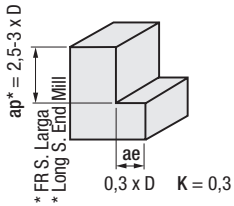
# Ref. 7402

FRACTIONAL-24

Long HSS Finishing End Mill  
 Fresa Acabado HSS Larga  
 Fraise finition HSS longue



HSS	CNC qualified	ASME Std. N		4-8 Z			Tol. +0,00150" -0,00000"
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Material		Vc (ft./min.)	Feed-Avances-Pas fz/rev. (inch/z)											
Group	Sub.	HSS	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4	Ø 1	Ø 1 1/4	Ø 1 1/2	Ø 2	Ø 2 1/2
P	P.1	65-80	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0049	0,0049	0,0049	0,0049

$$\text{r.p.m.} = \frac{Vc \times 1.000}{\pi \times \phi}$$

K = Correction coefficient  
 Coeficiente corrección  
 Coéfcient correction

$$Vf \text{ (inch/min.)} = \text{r.p.m.} \times Z \times fz \times K$$

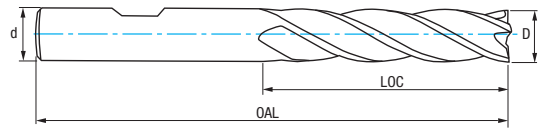
D	d	LOC Corte	OAL Longitud total	Z	N° Art. HSS	€/€
1 1/8	1	4	6 1/2	6	55850	
1 1/4	1 1/4	4	6 1/2	6	55853	
1 1/4	1	4	6 1/2	6	53556	
1 3/8	1	4	6 1/2	6	55856	
1 1/2	1 1/4	4	6 1/2	6	55859	
1 3/4	1 1/4	4	6 1/2	6	55862	
2	1 1/4	4	6 1/2	8	55865	



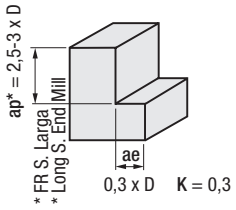
Ref. **7414**

FRACTIONAL-24

Extra Long HSS Finishing End Mill  
Fresa Acabado HSS Extra Larga  
Fraise finition HSS extra-longue



HSS	CNC qualified	ASME Std. N		4-6 Z			Tol. +0,00150" -0,00000"
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Material	Vc (ft/min.)	Feed-Avances-Pas fz/rev. (inch/z)												
Group	Sub.	HSS	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4	Ø 1	Ø 1 1/4	Ø 1 1/2	Ø 2	Ø 2 1/2
P	P.1	65-80	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0049	0,0049	0,0049	0,0049

$$\text{r.p.m.} = \frac{Vc \times 1.000}{\pi \times \theta}$$

K = Correction coefficient  
Coeficiente corrección  
Coéfficient correction

$$Vf \text{ (inch/min.)} = \text{r.p.m.} \times Z \times fz \times K$$

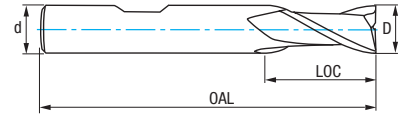
D	d	LOC Corte	OAL Longitud total	Z	N° Art. HSS	€/€
1/4	3/8	1 3/4	3 9/16	4	22332	
3/8	3/8	2 1/2	4 1/4	4	22371	
1/2	1/2	3	5	4	56663	
5/8	5/8	4	6 1/8	4	56666	
3/4	3/4	4	6 1/4	4	56669	
7/8	7/8	5	7 1/4	4	56672	
1	1	6	8 1/2	4	56675	
1 1/4	1 1/4	6	8 1/2	6	56678	
1 1/2	1 1/4	8	10 1/2	6	70811	



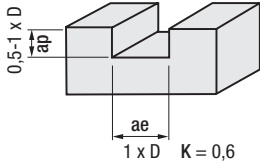
# Ref. 7200

FRACTIONAL-24

2Z HSS Finishing End Mill  
Fresa Acabado HSS 2Z  
Fraise finition HSS 2Z



HSS	CNC qualified	ASME Std. N		2 Z			Tol. +0,00000" -0,00150"	Keyway Tol.	
-----	---------------	-------------	--	-----	--	--	--------------------------	-------------	--



Material		Vc (ft./min.)	Feed-Avances-Pas fz/rev. (inch/z)											
Group	Sub.	HSS	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4	Ø 1	Ø 1 1/4	Ø 1 1/2	Ø 2	Ø 2 1/2
P	P.1	65-80	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0049	0,0049	0,0049	0,0049

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \phi}$$

**Vf (inch/min.) = r.p.m. x Z x fz x K**

K = Correction coefficient  
Coeficiente corrección  
Coéfficient correction



D	d	LOC Corte	OAL Longitud total	Z	Nº Art. HSS	€/€
1/8	3/8	3/8	2 5/16	2	51923	
5/32	3/8	7/16	2 5/16	2	14532	
3/16	3/8	7/16	2 5/16	2	51935	
7/32	3/8	1/2	2 5/16	2	90001	
1/4	3/8	1/2	2 5/16	2	51944	
9/32	3/8	9/16	2 5/16	2	90002	
5/16	3/8	9/16	2 5/16	2	51950	
11/32	3/8	9/16	2 1/2	2	41971	
3/8	3/8	9/16	2 1/2	2	51956	
13/32	3/8	13/16	3	2	41976	
7/16	3/8	13/16	3 1/8	2	41979	
1/2	1/2	1	3 1/8	2	51971	
9/16	1/2	1 1/8	3 7/16	2	41986	
5/8	1/2	1 1/8	3 5/16	2	41988	
5/8	5/8	1 5/16	3 7/16	2	51983	
11/16	1/2	1 5/16	3 5/16	2	41991	
11/16	5/8	1 5/16	3 7/16	2	41992	
3/4	1/2	1 5/16	3 5/16	2	41996	
3/4	5/8	1 5/16	3 7/16	2	51995	
3/4	3/4	1 5/16	3 9/16	2	51998	
13/16	3/4	1 1/2	3 3/4	2	52007	
7/8	5/8	1 1/2	3 5/8	2	42001	
7/8	3/4	1 1/2	3 3/4	2	52016	
7/8	7/8	1 1/2	3 3/4	2	52019	
15/16	3/4	1 1/2	3 3/4	2	42005	
1	5/8	1 1/2	3 5/8	2	52037	

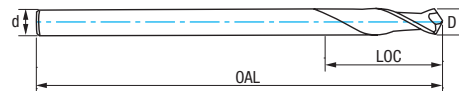
D	d	LOC Corte	OAL Longitud total	Z	Nº Art. HSS	€/€
1	3/4	1 1/2	3 3/4	2	52040	
1	1	1 5/8	4 1/8	2	52046	
1 1/16	3/4	1 5/8	3 7/8	2	52049	
1 1/8	3/4	1 5/8	3 7/8	2	52052	
1 1/8	1	1 5/8	4 1/8	2	42013	
1 3/16	3/4	1 5/8	3 7/8	2	52061	
1 1/4	3/4	1 5/8	3 7/8	2	52064	
1 1/4	1	1 5/8	4 1/8	2	52070	
1 1/4	1 1/4	1 5/8	4 1/8	2	52073	
1 5/16	3/4	1 5/8	3 7/8	2	42015	
1 3/8	3/4	1 5/8	3 7/8	2	52079	
1 3/8	1	1 5/8	4 1/8	2	52082	
1 3/8	1 1/4	1 5/8	4 1/8	2	42016	
1 7/16	3/4	1 5/8	4 1/8	2	42017	
1 1/2	3/4	1 5/8	3 7/8	2	52088	
1 1/2	1	1 5/8	4 1/8	2	52091	
1 1/2	1 1/4	1 5/8	4 1/8	2	42018	
1 5/8	3/4	1 5/8	4 1/8	2	52097	
1 5/8	1 1/4	1 5/8	4 1/8	2	52100	
1 3/4	3/4	1 5/8	4 1/8	2	52103	
1 3/4	1 1/4	1 5/8	4 1/8	2	52106	
1 7/8	3/4	1 5/8	4 1/8	2	52109	
1 7/8	1 1/4	1 5/8	4 1/8	2	52112	
2	3/4	1 5/8	4 1/8	2	42019	
2	1 1/4	1 5/8	4 1/8	2	42020	



Ref. **9001**

FRACTIONAL-24

Metal Rotozip® / Rotocut® Cutout Bit  
Broca-Fresa Rotozip® / Rotocut® Metal  
Foret-Fraise Rotozip® / Rotocut® métal



Carbide  
MD  
Carbure



Thin metal sheets

Chapas finas de metal

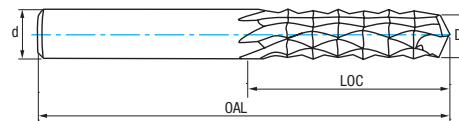
Tôles fines

D	OAL Longitud total	LOC Corte	Z	Box	N° Art. Carb./MD	€/€
5/32	2	7/16	2	2	67805	

Ref. **7009**

FRACTIONAL-24

Ceramic Rotozip® / Rotocut® Cutout Bit  
Broca-Fresa Rotozip® / Rotocut® Cerámicas  
Foret-Fraise Rotozip® / Rotocut® ceramique



Carbide  
MD  
Carbure



Concrete Panels, Ceramic Tiles, Marble, Mortar, Plaster, Stucco

Argamasa, Azulejos Cerámica, Estuco, Mármol, Placas Cemento, Yeso

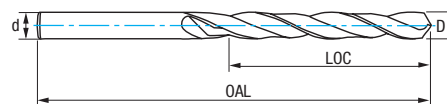
Mortier, Carreaux faïence céramique, Stuc, Marbre, Plaques de ciment, Plâtre

D	OAL Longitud total	LOC Corte	Box	N° Art. Carb./MD	€/€
1/8	1 49/64	53/64	1	18933	
1/4	2	13/16	1	18939	

Ref. **7002**

FRACTIONAL-24

Drywall Rotozip® / Rotocut® Cutout Bit  
Broca-Fresa Rotozip® / Rotocut® Escayola  
Foret-Fraise Rotozip® / Rotocut® plâtre



HSS

Pladur

Drywall  
Escayola  
Plâtre

Drywall, Prefabricated Walls

Escayola, Muros Prefabricados

Plâtre, Murs préfabriqués

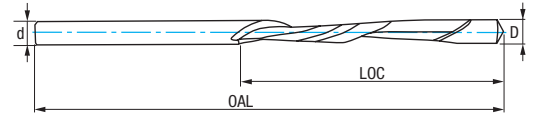
D	OAL Longitud total	LOC Corte	Z	Box	N° Art. HSS	€/€
1/8	2 9/32	1 3/8	3	2	18927	



Ref. **7003**

FRACTIONAL-24

Autocenter Rotozip® / Rotocut® Cutout Bit  
 Broca-Fresa Rotozip® / Rotocut® Auto-Guía  
 Foret-Fraise Rotozip® / Rotocut® autocentré



HSS      Auto-center

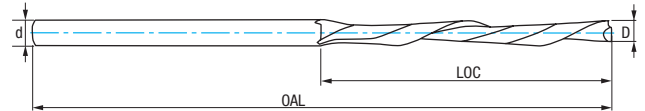
Drywall, Foam, Prefabricated Walls  
 Escayola, Espuma, Muros Prefabricados  
 Plâtre, Mousse, Murs préfabriqués

D	OAL Longitud total	LOC Corte	Z		N° Art. HSS	€/ \$
1/8	2 3/8	1 23/64	1	2	19002	
5/32	2 15/16	1 9/16	1	2	67795	
1/4	3 1/4	1 3/4	1	1	18930	

Ref. **7001**

FRACTIONAL-24

Wood Rotozip® / Rotocut® Cutout Bit  
 Broca-Fresa Rotozip® / Rotocut® Madera  
 Foret-Fraise Rotozip® / Rotocut® bois



HSS     

Aluminium, Chipboard, FibreGlass, Foam, Laminated, Plastics, Plexiglas, Vinyl  
 Aglomerado, Aluminio, Espuma, Fibra Vidrio, Laminados, Plástico, Plexiglás, Vinilo  
 Agglomérat, Aluminium, Mousse, Fibre de verre, Laminés, Plastiques, Plexiglas, Vinyle

D	OAL Longitud total	LOC Corte	Z		N° Art. HSS	€/ \$
1/8	2 3/4	1 29/64	1	2	18999	



# Special Drill Bits

## Brocas Especiales

### Forets spéciaux

#### IZAR CUTTING TOOLS S.A.L.

Parque Empresarial Boroa 2B2  
48340 AMOREBIETA (Bizkaia) - Spain  
Tel. +34 94 630 02 43  
Fax +34 94 630 05 42  
E-mail [ibeobide@izartool.com](mailto:ibeobide@izartool.com)  
**izartool.com**

**Customer**  
Cliente  
Client

**Address**  
Dirección  
Adresse

**Contact**  
Contacto  
Contact

**E-mail**  
E-mail  
E-mail

**Date**  
Fecha  
Date

**Town**  
Ciudad  
Ville

**Phone**  
Teléfono  
Téléphone

**Fax**  
Fax  
Fax

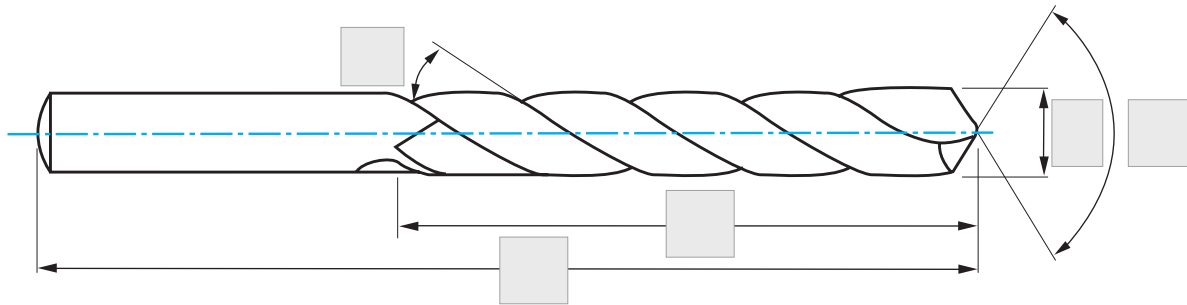
#### TOOL DENOMINATION

DENOMINACIÓN HERRAMIENTA

DÉNOMINATION DE L'OUTIL

**Requested Quantity**  
Cantidad Requerida  
Quantité demandée

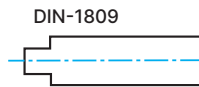
**Similar to IZAR Ref.**  
Similar a Ref. IZAR  
Similaire à ref. IZAR



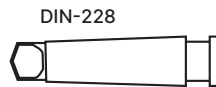
#### SHANK TYPE FORMA DEL MANGO TYPE DE QUEUE



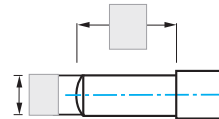
Flat  
Liso  
Plat



Tang  
Lengueta  
Clavette



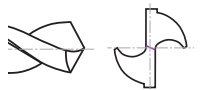
Morse Taper  
Cono Morse  
Cône morse



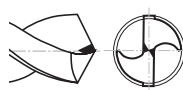
Reduced  
Rebajado  
Baissé

Another one  
Otro  
Autres

#### SPLIT POINT AGUZADO AFFUTAGE



Without Split Point  
Sin Aguzar  
Sans affuter



"A" Type  
Tipo "A"  
Type "A"



"C" Type  
Tipo "C"  
Type "C"



"U" Type  
Tipo "U"  
Type "U"

Another one  
Otro  
Autres

#### APPLICATION APLICACIÓN APPLICATION

##### Material to Work

Material a Trabajar  
Matériel à travailler

##### Hardness / Tensile Strength

Dureza / Resistencia a la Tracción  
Dureté / Resistance à la traction

**TOOL MATERIAL**  
MATERIAL PIEZA  
MATÉRIEL DE L'OUTIL

HM  
MD Integral  
Carbure

Carbide Tipped  
MD Plaquita  
Pointe carbure

HSSE 5% Co

HSS

Another one  
Otro  
Autres

**FINISH**  
ACABADO  
FINITION

Bright Finish  
Blanca  
Blanche

Blue Finish  
Negra  
Noir

Gold Finish  
Ambar  
Ambre

Another one  
Otro  
Autres

**COATING**  
RECUBRIMIENTO  
REVÊTEMENT

TIALSIN

CROMAX

TIN

Another one  
Otro  
Autres





# Special End Mills

## Fresas Especiales

### Fraises spéciales

#### IZAR CUTTING TOOLS S.A.L.

Parque Empresarial Boroa 2B2  
48340 AMOREBIETA (Bizkaia) - Spain  
Tel. +34 94 630 02 43  
Fax +34 94 630 05 42  
E-mail [ibeobide@izartool.com](mailto:ibeobide@izartool.com)  
**izartool.com**

#### Customer

Cliente  
Client \_\_\_\_\_

Address  
Dirección  
Adresse \_\_\_\_\_

Contact  
Contacto  
Contact \_\_\_\_\_

E-mail  
E-mail  
E-mail \_\_\_\_\_

#### Date

Fecha  
Date \_\_\_\_\_

Town  
Ciudad  
Ville \_\_\_\_\_

Phone  
Teléfono  
Téléphone \_\_\_\_\_

Fax  
Fax  
Fax \_\_\_\_\_

#### TOOL DENOMINATION

DENOMINACIÓN HERRAMIENTA

DÉNOMINATION DE L'OUTIL \_\_\_\_\_

Requested Quantity

Cantidad Requerida

Quantité demandée

Similar to IZAR Ref.

Similar a Ref. IZAR

Similaire à ref. IZAR

Tooth N°

N° Dientes

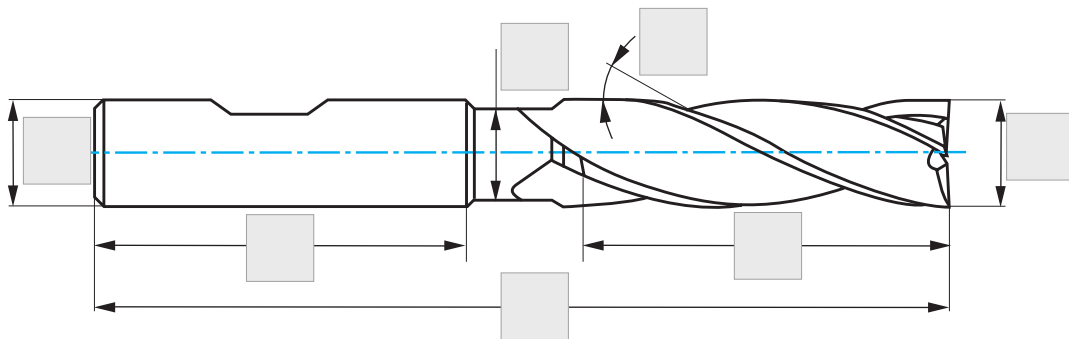
N° de dents




Center-Cutting  
Corte al Centro  
Coupe au centre



Non Center-Cutting  
Sin Corte al Centro  
Sans coupe au centre



SHANK TYPE

FORMA DEL MANGO

TYPE DE QUEUE



DIN 1835 E (PMX-HSSE-HSS)

DIN 1835 B (PMX-HSSE-HSS)

DIN 1835 A (PMX-HSSE-HSS)

Another one

DIN 6535 HE (MD-HM-Carbure)

DIN 6535 HB ((HM-MD-Carbure)

DIN 6535 HA (HM-MD-Carbure)

Otro

Autres

PROFILE GEOMETRY

GEOMETRÍA DEL PERFIL

GÉOMÉTRIE DU PROFIL



Finishing N  
Acabado N  
Finition N



Coarse Roughing NR  
Desbaste Grueso NR  
Ébauche NR



Fine Pitch Roughing NR-F  
Desbaste Fino NR-F  
Ébauche Pas Fin NR-F



Roughing & Finishing NF  
Desbaste Medio NF  
Semi-Ébauche NF

Another one  
Otro  
Autres

FRONT GEOMETRY

GEOMETRÍA FRONTAL

GÉOMÉTRIE FRONTALE



Straight  
Recta  
Droite



Chamfer  
Chafilán  
Chamfrein



Radius  
Radio  
Rayou



Radial  
Radial  
Fémisphérique

Another one  
Otro  
Autres

APPLICATION

APLICACIÓN

APPLICATION

Material to Work

Material a Trabajar

Matériel à travailler \_\_\_\_\_

Hardness / Tensile Strength

Dureza / Resistencia a la Tracción

Dureté / Resistance à la traction \_\_\_\_\_

TOOL MATERIAL

MATERIAL PIEZA

MATÉRIEL DE L'OUTIL

HM  
MD  
Carbure

PMX

HSSE 8% Co

HSS

Another one  
Otro  
Autres

COATING

RECUBRIMIENTO

REVÊTEMENT

Bright  
Blanca  
Blanche

TIALSIN

TIALN-TOP

CROMAX

Another one  
Otro  
Autres



Ref. 1700



Material		Vc (ft./min.)	Feed-Avances-Pas <b>f/rev. (inch/rev)</b>												
Group	Sub.	5% Co	Ø 5/64	Ø 1/8	Ø 5/32	Ø 13/64	Ø 1/4	Ø 21/64	Ø 25/64	Ø 15/32	Ø 5/8	Ø 51/64	Ø 1	Ø 13/16	Ø 1 37/64
P	P.3	26 - 49	0,0008	0,0014	0,0018	0,0020	0,0024	0,0028	0,0035	0,0039	0,0047	0,0063	0,0071	0,0075	0,0098
	P.5	26 - 39	0,0012	0,0016	0,0020	0,0024	0,0028	0,0035	0,0039	0,0047	0,0059	0,0067	0,0083	0,0098	0,0118
S		33-49	0,0008	0,0012	0,0016	0,0020	0,0024	0,0028	0,0031	0,0039	0,0047	0,0055	0,0063	0,0079	0,0094

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \varnothing}$$

$$Vf \text{ (inch/min)} = r.p.m. \times f$$

Initial Recommendation Example

- Vc: Cutting Speed (feet/min)
- D ø: Diameter of the drills
- f/rev.: Feed per revolution
- r.p.m.: Revolution per minute
- Vf: Feed (mm/min)
- π: 3,1416

Ejemplo Recomendaciones Iniciales

- Vc: Velocidad de corte (pie/min)
- D ø: Diámetro de broca
- f/rev.: Avance por revolución
- r.p.m.: Revoluciones por minuto
- Vf: Avance (mm/min)
- π: 3,1416

Conditions initiales conseillées

- Vc: Vitesse de coupe (pieds/min)
- D ø: Diametre foret
- f/rev.: Avance par tour
- r.p.m.: Tours par minute
- Vf: Avance (mm/min)
- π: 3,1416

1° Choose working material.  
For example, Stainless Steel of the group P.5 (see page 5)

1° Determinar el material a trabajar.  
Por ejemplo, Acero Inoxidable del tipo P.5. (ver pág. 5)

1° Déterminer le matériel à usiner.  
Par exemple acier INOX du groupe P.5 (voir page 5)

2° Please choose a value in the middle for Vc.  
For example, 26-39 (30)

2° Determinar un valor intermedio de Vc.  
Por ejemplo, 26-39 (30)

2° Déterminer une valeur en moyenne de Vc.  
Par exemple, 26-39 (30)

3° Choose f according to diameter.  
For Ø 1/4 (6,35 mm) → f=0,0028

3° Determinar f según diámetro.  
Para Ø 1/4 (6,35 mm) → f=0,0028

3° Déterminer f selon diamètre.  
Pour Ø 1/4 (6,35 mm) → f=0,0028

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \varnothing}$$

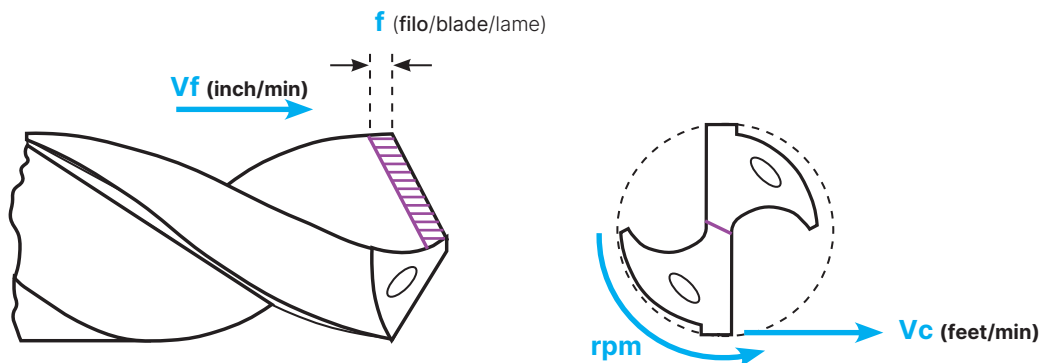
$$r.p.m. = \frac{30 \times 1.000}{3,14 \times 6,35} = 1504$$

$$Vf = r.p.m. \times f = 1504 \times 0,0028 = 4,21 \text{ inch/min.}$$

Note: In the tables there are two common values for all operations: π (3,14) & 1000.

Nota: En las tablas hay dos valores comunes para todas las operaciones: π (3,14) y 1000.

Note: Dans les tableaux il y a deux valeurs communes pour toutes les opérations: π (3,14) y 1000



# Ref. 7644



Material		Vc (ft./min.)		Feed-Avances-Pas fz/rev. (inch/z)											
Group	Sub.	PMX	TIALN-TOP	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 5/8	Ø 3/4	Ø 1	Ø 1 1/4	Ø 1 1/2	Ø 2	Ø 2 1/2
P	P.2	98-138	147-246	0,0006	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045
	P.3	39-59	65-115	0,0005	0,0010	0,0012	0,0020	0,0020	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030
	P.5	59-79	98-147	0,0005	0,0010	0,0012	0,0020	0,0020	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030
S		59-79	98-147	0,0010	0,0017	0,0024	0,0030	0,0036	0,0050	0,0059	0,0059	0,0059	0,0059	0,0059	0,0059

$r.p.m. = \frac{Vc \times 1.000}{\pi \times \varnothing}$        $K =$  Correction coefficient  
 Coeficiente corrección  
 $Vf$  (inch/min.) = r.p.m. x Z x fz x K      Coéfficient correction

### Initial Recommendation Example

- Vc: Cutting Speed (feet/min)
- D ø: Diameter of the End Mill
- Z: Number of teeth
- f/rev.: Feed per tooth and Rev
- K: Correction Coefficient
- ae: Axis cut depth
- ap: Radial Cutting Depth
- r.p.m.: Revolution per minute
- Vf: Feed per minute (inch/min)
- π: 3,1416

### Ejemplo Recomendaciones Iniciales

- Vc: Velocidad de corte (pie/min)
- D ø: Diámetro de fresa
- Z: Número de dientes
- f/rev.: Avance por diente y revolución
- K: Factor de corrección
- ae: Profundidad de corte axial
- ap: Profundidad de corte radial
- r.p.m.: Revoluciones por minuto
- Vf: Avance (inch/min)
- π: 3,1416

### Conditions initiales conseillées

- Vc: Vitesse de coupe (pieds/min)
- D ø: Diamètre fraise
- z: Number of teeth
- f/rev.: Avance par dent et tour
- K: Coefficient de Correction
- ae: Profondeur coupe axiale
- ap: Profondeur coupe radiale
- r.p.m.: Tours par minute
- Vf: Avance par minute (inch/min)
- π: 3,1416

- |                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1° Choose working material.<br/>For example, Stainless Steel of the group P.5 (see page 5)</p> <p>2° Please choose a value in the middle for Vc.<br/>For example, 59-79 (70)</p> <p>3° Choose fz according to diameter.<br/>For Ø 3/8 (9,52 mm) → f=0,0020</p> <p>4° Choose K value depending on the ae.<br/>For example, for ae: 0,5xD<br/>→ K=0,40</p> | <p>1° Determinar el material a trabajar.<br/>Por ejemplo, Acero Inoxidable del tipo P.5. (ver pág. 5)</p> <p>2° Determinar un valor intermedio de Vc.<br/>Por ejemplo, 59-79 (70)</p> <p>3° Determinar fz según diámetro.<br/>Para Ø 3/8 (9,52 mm) → f=0,0020</p> <p>4° Determinar factor K en función de ae.<br/>Por ejemplo, para ae: 0,5xD<br/>→ K=0,40</p> | <p>1° Déterminer le matériel à usiner.<br/>Par exemple acier INOX du groupe P.5 (voir page 5)</p> <p>2° Déterminer une valeur en moyenne de Vc.<br/>Par exemple, 59-79 (70)</p> <p>3° Déterminer fz selon diamètre.<br/>Pour Ø 3/8 (9,52 mm) → f=0,0020</p> <p>4° Déterminer le facteur K en fonction de ae.<br/>Par exemple, pour ae: 0,5xD<br/>→ K = 0,40</p> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

$r.p.m. = \frac{Vc \times 1.000}{\pi \times \varnothing}$        $r.p.m. = \frac{70 \times 1.000}{3,14 \times 9,52} = 2341,7$        $Vf = r.p.m. \times Z \times fz \times K = 2341,7 \times 4 \times 0,0020 \times 0,40 = 7,49$  inch/min.

Note: In the tables there are two common values for all operations: π (3,14) & 1000

Nota: En las tablas hay 2 valores comunes para todas las operaciones: π (3,14) y 1000.

Note: Dans les tableaux il y a deux valeurs communes pour toutes les opérations: π (3,14) y 1000

<p>ae = 0,25 x D    K = 0,80 ae = 0,50 x D    K = 0,40</p>	<p>ae = 1 x D    K = 0,40</p>	<p>ae = 0,25 x D    K = 1 ae = 0,50 x D    K = 0,7</p>	<p>ae = 0,30 x D    K = 0,6 ae = Light Peripheral    K = 1 ae = 0,05-0,10 x D    K = 1 ae = Finish Operation</p>
ae = Heavy Peripheral Material - Alloy Steel	ae = Heavy Peripheral	ae = Heavy Peripheral F. N. Material - Carbon Steel	

### Important: Work conditions for a longer life of the End Mill:

- For long length, reduce feed to 50%
- When the end mill is drilling, reduce feed to 50%

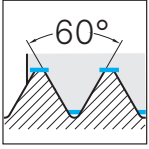
### Importante: Condiciones de trabajo para prolongar la vida de la herramienta:

- Para series largas, reducir el avance un 50%
- Cuando la fresa taladra, reducir el avance un 50%

### Important: Conditions de travail pour augmenter la vie de l'outil:

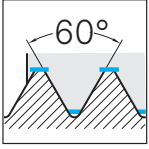
- Pour séries longues, réduire l'avance un 50%
- Quand la fraise perce, réduire l'avance un 50%





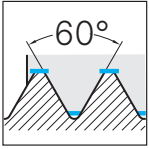
### UNC (Unified National Coarse):

U.S standard for coarse thread      Estándar americano para rosca gruesa      Norme américaine pour le filetage grossier



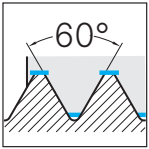
### UNF (Unified National Fine):

U.S. standard for fine thread      Estándar americano para rosca fina      Norme américaine pour le filetage fin



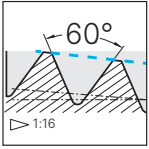
### UNEF (Unified National Extra Fine):

U.S. standard for extra fine thread      Estándar americano para rosca extra fina      Norme américaine pour le filetage extra fin



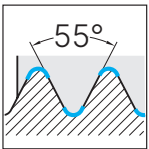
### UN (Unified National Fixed Pitch):

U.S. standard for fixed pitch (See ref. 3209)      Estándar americano para rosca de paso fijo. (el paso no varía con la medida. Ver ref. 3209)      Norme américaine pour le filetage à pas fixe. (le pas ne varie pas en fonction de la taille. Voir réf. 3209)



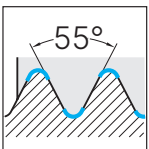
### NPT (National Pipe Thread Tapered):

U.S. standard thread for sealing pipes and fittings      Estándar americano para tubos y acoples      Norme américaine pour les tuyaux et les raccords



### BSW (British Standard Whitworth):

British standard for coarse thread      Estándar británico para rosca gruesa      Norme britannique pour le filetage grossier

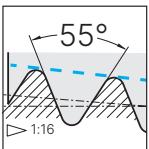


### BSP (British Standard Pipe)

Whitworth standard thread for sealing pipes and fittings which has been adopted as standard in plumbing nearly worldwide. In the catalogue all the BSP machine taps are parallel threaded (BSPP) and taper threaded (BSPT) are available upon demand. However Hand taps in BSPT are available as ref. 3109

Estándar británico Whitworth para tubos y acoples. En el catálogo, los machos de máquina sólo los tenemos de rosca paralela (BSPP), los de rosca cónica serían bajo demanda (BSPT). En machos de mano sí tenemos BSPT (ref. 3019)

Norme britannique Whitworth pour les tuyaux et les raccords. Dans le catalogue, les tarauds de machine sont uniquement disponibles en filetage parallèle (BSPP), ceux à filetage conique sont disponibles sur demande (BSPT). Pour les tarauds à main, le BSPT (réf. 3019) est disponible



### BSPT (British Standard Pipe Tapered)

British standard for coarse thread.      Estándar británico Whitworth cónica      Norme britannique Whitworth conique Tapered

**Tip:** NPT and BSPT tapered threads are used because unlike straight threads, a taper thread will compress and seal the fitting when torque is applied, and therefore they are used for fluid or air-tight seals

**Consejo:** Las roscas con forma cónica NPT y BSPT se usan porque a diferencia de las roscas rectas, estas comprimen y sellan el acople cuando se le aplica la torsión. A ello se debe su uso extendido en sellados de líquidos o gases

**Conseil :** Les filetages coniques NPT et BSPT sont utilisés car, contrairement aux filetages droits, ils compriment et rendent le raccord étanche lorsque la torsion est appliquée. C'est la raison pour laquelle ils sont largement utilisés pour l'étanchéité de liquides ou de gaz



### Condiciones Corte - Cutting Conditions - Conditions de coupe



Cutting speeds should be **DECREASED** when:

- Deep threads
- Thread pitch is coarse (UNC, BSW...)
- Few chamfer threads (for example E-type bottom lead taps)
- Poor coolant or not coolant at all is used

**REDUCIR** condiciones de corte en caso de:

- Roscas profundas
- Pasos de rosca gruesos (UNC, BSW, ...)
- Cuando la entrada del macho tiene pocos hilos (2 hilos o menos...)
- Refrigeración pobre o sin refrigeración

**RÉDUIRE** les conditions de coupe en cas de :

- Filetages profonds
- Pas de filetage grossier (UNC, BSW, ...)
- Quand l'entrée du taraud a peu de fils (2 fils ou moins...)
- Refroidissement insuffisant ou inexistant



Cutting speeds can be **INCREASED** when:

- Shallow Thread Depth
- Fine Pitch is used (UNF, UNEF...)
- Good coolant flow
- Spiral taps are used

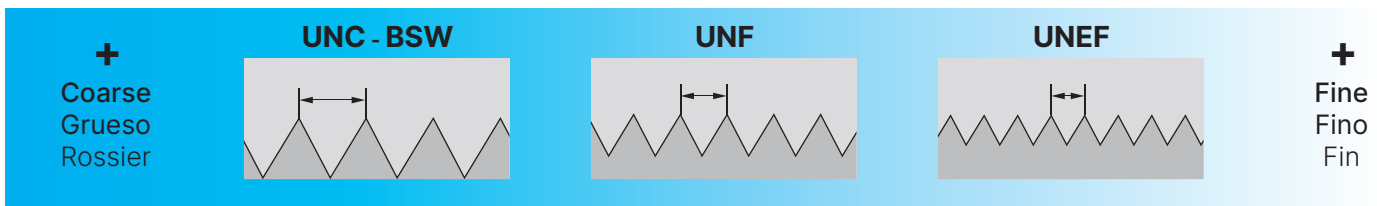
Se pueden **AUMENTAR** las condiciones de corte cuando:

- Roscados menos profundos
- Machos de paso fino
- Buena refrigeración
- Machos espirales para agujeros ciegos

Les conditions de coupe peuvent être **AUGMENTÉES** lorsque :

- Filetages moins profonds
- Tarauds à pas fin
- Bon refroidissement
- Tarauds en spirale pour trous borgnes

### General information about Thread Pitch - El Paso del Roscado según el uso Pas de filetage selon l'application



#### Coarse pitch:

- Easier assembly. Better start as cross threading is reduced
- Nicks and burrs from handling affect the assembly less than with fine threads
- Thread stripping is reduced in soft materials

#### Fine Pitch:

- Easier to tap in hard materials
- Stronger assembly than coarse threads
- They can be adjusted more precisely
- Suitable for very thin walls

#### Paso grueso:

- Ensamblados más fáciles reduciendo descentrados
- Las marcas, muescas y rebabas afectan menos el ensamblado
- En materiales blandos se reduce el riesgo de desgaste en la rosca

#### Paso fino:

- Roscado más fácil en materiales duros
- Montajes más resistentes que con roscas gruesas
- Ajustes más precisos
- Apropriados para casos donde las paredes son muy delgadas

#### Pas grossier :

- Assemblages plus faciles grâce à la réduction des décentremments
- Les marques, entailles et bavures ont moins d'effet sur l'assemblage
- Le risque d'usure des filetages est réduit dans les matériaux souples

#### Pas fin :

- Filetage plus facile dans les matériaux durs
- Assemblages plus solides qu'avec des filetages grossiers
- Réglages plus précis
- Convient aux cas où les murs sont très fins

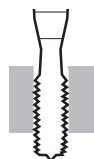
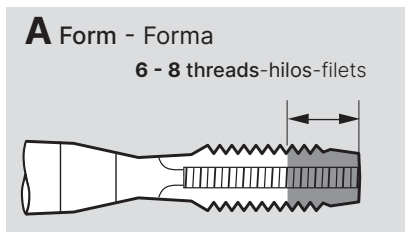
**M/MF: Metric sizes available in our IND-24 catalogue**

M/MF: Medidas métricas disponibles en nuestro catálogo IND-24.

M/MF: Tailles métriques disponibles dans notre catalogue IND-24



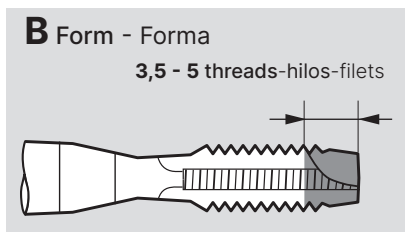
## Chamfer Type of the Threading Taps - Tipo de Entrada en Machos Type d'entrée dans tarauds



- Long chamfer, usually for shallow through-holes
- Upon demand

- Chafilán de entrada largo, normalmente para agujeros pasantes y poco profundos
- Bajo demanda

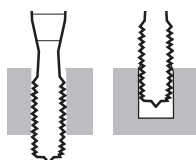
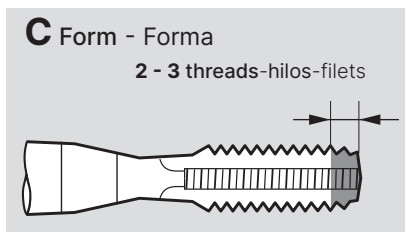
- Chanfrein d'entrée long, généralement pour les trous traversants et peu profonds
- Sur demande



- Medium-length chamfer
- Suitable for through-holes
- Typical for spiral point (GUN) straight taps

- Entrada de longitud media
- Adecuado para agujeros pasantes
- El más estándar en los machos rectos con entrada GUN

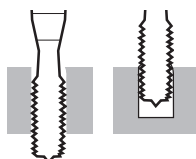
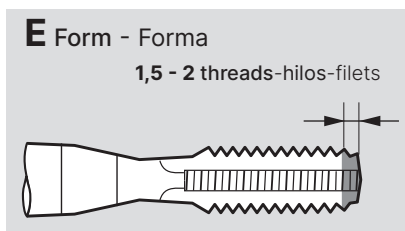
- Entrée de longueur moyenne
- Apte pour les trous traversants
- Le plus standard des tarauds droits avec entrée GUN



- Short-length chamfer
- Through holes and blind holes
- Typical for spiral flute taps of blind holes

- Entrada corta
- Agujeros pasantes y ciegos
- Estándar en machos helicoidales para agujeros ciegos

- Entrée courte
- Trous traversants et borgnes
- Standard des tarauds hélicoïdaux pour trous borgnes



- Extra short chamfer
- Blind holes with little run-out length
- Upon demand

- Entrada muy corta
- Agujeros ciegos con poco espacio en el fondo
- Bajo demanda

- Entrée très courte
- Trous borgnes avec peu d'espace dans le fond
- Sur demande

**Note:**

The pressure is lower on the long-chamfers and generally the long-chamfer taps have a higher tool-life. Normally, the longer the chamfer, the thinner the chips. So we will get thick chips when we use short-chamfer taps

**Nota:**

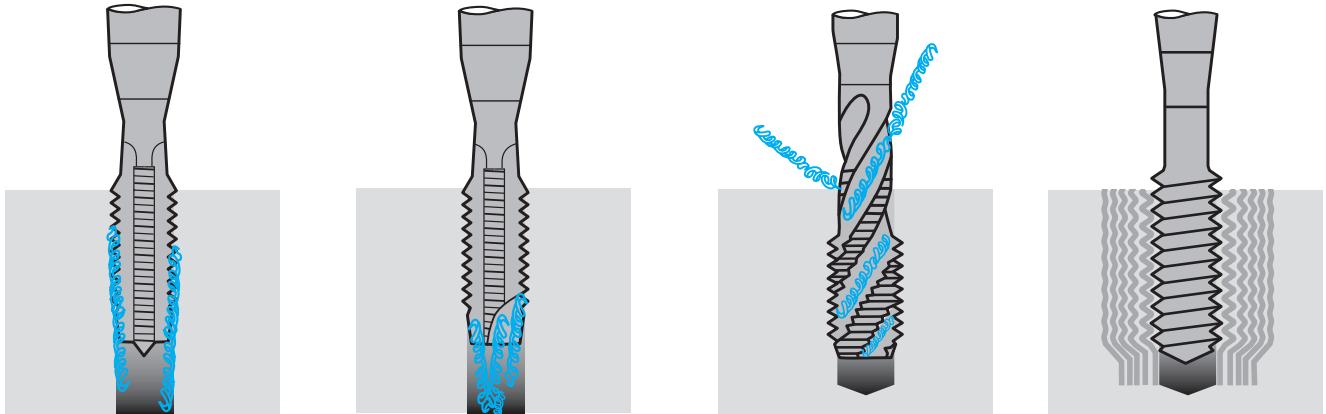
Cuanto más larga sea la entrada, la presión en esta es menor, y en general los machos tendrán mayor vida de uso. Asimismo en los machos de entrada larga las virutas son más finas, y en las de entrada corta obtendremos virutas más gruesas

**Remarque :**

Plus l'entrée est longue, plus la pression dans celle-ci est faible et, en général, les tarauds auront une plus longue durée de vie. De même, dans les tarauds à entrée longue, les copeaux sont plus fins, alors que dans les tarauds à entrée courte, nous obtiendrons des copeaux plus épais



## Types of Threading Taps - Tipos de Macho - Types de tarauds



- Straight flute tap
- Macho recto
- Taraud droit

- Spiral point (GUN) Straight tap
- Macho recto con entrada GUN
- Taraud droit avec entrée GUN

- Spiral tap
- Macho helicoidal
- Taraud hélicoïdal

- Forming tap
- Macho de laminación
- Taraud à refouler

## Shank Types - Tipos de Mango - Types de queue



### DIN 376/374:

Machine taps with reduced shank  
 Machos de máquina con mango reducido  
 Tarauds de machine à queue réduite



### DIN 371:

Machine taps with reinforced shank  
 Machos de máquina con mango reforzado  
 Tarauds de machines à queue renforcée

## Manufacturing of the fronts of the taps - Elaboración de los Frontales de los Machos Élaboration des faces des tarauds

Dimensions Dimensiones Dimensions	Norm Norma Norme	Image Imagen Image
M2 - M6	DIN-352	
	DIN-357	
	DIN-371	
	DIN-374	
	DIN-376	
	DIN-2181	
M3 - M10	DIN-2174	
M7-M10	DIN-371	
M7-M12	DIN-374	
M7-M12	DIN-376	
≥ M14	DIN-374	
≥ M14	DIN-376	
≥ M7	DIN-352	
≥ M7	DIN-2181	
≥ M7	DIN-351	
≥ M12	DIN-2174	

Conversion table  
Tabla conversión  
Table conversion

Inches Pulgadas Pouces	mm	Nº / Letra Nº / Letter Nº / Lettre	Decimal Equivalence Equivalencia
		80	0,0135
	0,35		0,0138
		79	0,0145
<b>1/64</b>	0,40		0,0156
	0,40		0,0158
		78	0,0160
	0,45		0,0177
		77	0,0180
	0,50		0,0197
		76	0,0200
		75	0,0210
	0,55		0,0217
		74	0,0225
	0,60		0,0236
		73	0,0240
		72	0,0250
	0,65		0,0256
		71	0,0260
	0,70		0,0276
		70	0,0280
		69	0,0292
	0,75		0,0295
		68	0,0310
<b>1/32</b>	0,79		0,0312
	0,80		0,0315
		67	0,0320
		66	0,0330
	0,85		0,0335
		65	0,0350
	0,90		0,0354
		64	0,0360
		63	0,0370
	0,95		0,0374
		62	0,0380
		61	0,0390
	<b>1,00</b>		0,0394
		60	0,0400
		59	0,0410
	1,05		0,0413
		58	0,0420
		57	0,0430
	1,10		0,0433
	1,15		0,0453
		56	0,0465
<b>3/64</b>	1,19		0,0469
	1,20		0,0472
	1,25		0,0492
	1,30		0,0512
		55	0,0520
	1,35		0,0531
		54	0,0550
	1,40		0,0551
	1,45		0,0571
	1,50		0,0591
		53	0,0595
	1,55		0,0610
<b>1/16</b>	1,59		0,0625
	1,60		0,0630
		52	0,0635
	1,65		0,0650
	1,70		0,0669
		51	0,0670
	1,75		0,0689
		50	0,0700
	1,80		0,0709
	1,85		0,0728

Inches Pulgadas Pouces	mm	Nº / Letra Nº / Letter Nº / Lettre	Decimal Equivalence Equivalencia
		49	0,0730
	1,90		0,0748
		48	0,0760
	1,95		0,0768
<b>5/64</b>	1,98		0,0781
		47	0,0785
	<b>2,00</b>		0,0787
	2,05		0,0807
		46	0,0810
		45	0,0820
	2,10		0,0827
	2,15		0,0846
		44	0,0860
	2,20		0,0866
	2,25		0,0886
		43	0,0890
	2,30		0,0906
	2,35		0,0925
		42	0,0935
<b>3/32</b>	2,38		0,0938
	2,40		0,0945
		41	0,0960
	2,45		0,0965
		40	0,0980
	2,50		0,0984
		39	0,0995
		38	0,1015
	2,60		0,1024
		37	0,1040
	2,70		0,1063
		36	0,1065
	2,75		0,1083
<b>7/64</b>	2,78		0,1094
		35	0,1100
	2,80		0,1102
		34	0,1110
		33	0,1130
	2,90		0,1142
		32	0,1160
	<b>3,00</b>		0,1181
		31	0,1200
	3,10		0,1220
<b>1/8</b>	3,18		0,1250
	3,20		0,1260
	3,25		0,1280
		30	0,1285
	3,30		0,1299
	3,40		0,1339
		29	0,1360
	3,50		0,1378
		28	0,1405
<b>9/64</b>	3,57		0,1406
	3,60		0,1417
		27	0,1440
	3,70		0,1457
		26	0,1470
	3,75		0,1476
		25	0,1495
	3,80		0,1496
		24	0,1520
	3,90		0,1535
		23	0,1540
<b>5/32</b>	3,97		0,1562
		22	0,1570
	<b>4,00</b>		0,1575
		21	0,1590

Inches Pulgadas Pouces	mm	Nº / Letra Nº / Letter Nº / Lettre	Decimal Equivalence Equivalencia
		20	0,1610
	4,10		0,1614
	4,20		0,1654
		19	0,1660
	4,25		0,1673
	4,30		0,1693
<b>11/64</b>	4,37	18	0,1695
		17	0,1730
	4,40		0,1732
		16	0,1770
	4,50		0,1772
		15	0,1800
	4,60		0,1811
		14	0,1820
		13	0,1850
	4,70		0,1850
	4,75		0,1870
<b>3/16</b>	4,76		0,1875
	4,80	12	0,1890
		11	0,1910
	4,90		0,1929
		10	0,1935
		9	0,1960
	<b>5,00</b>		0,1969
		8	0,1990
	5,10		0,2008
<b>13/64</b>	5,16	7	0,2010
		6	0,2031
	5,20		0,2040
		5	0,2047
		5	0,2055
	5,25		0,2067
	5,30		0,2087
		4	0,2090
	5,40		0,2126
		3	0,2130
	5,50		0,2165
<b>7/32</b>	5,56		0,2188
	5,60		0,2205
		2	0,2210
			0,2244
	5,70		0,2244
	5,75		0,2264
		1	0,2280
	5,80		0,2283
	5,90		0,2323
<b>15/64</b>	5,95	A	0,2340
	<b>6,00</b>		0,2344
			0,2362
		B	0,2380
	6,10		0,2402
		C	0,2420
	6,20		0,2441
		D	0,2460
	6,25		0,2461
	6,30		0,2480
<b>1/4</b>	6,35	E	0,2500
	6,40		0,2520
	6,50		0,2559
		F	0,2570
	6,60		0,2598
		G	0,2610
<b>17/64</b>	6,70		0,2638
	6,75		0,2656
	6,75		0,2657
		H	0,2660





Conversion table  
 Tabla conversión  
 Table conversion

Inches Pulgadas Pouces	mm	Nº / Letra Nº / Letter Nº / Lettre	Decimal Equivalence Equivalencia	Inches Pulgadas Pouces	mm	Decimal Equivalence Equivalencia	Inches Pulgadas Pouces	mm	Decimal Equivalence Equivalencia
	6,80		0,2677		10,50	0,4134	<b>63/64</b>	25,00	0,9844
	6,90		0,2717	<b>27/64</b>	10,72	0,4219	<b>1</b>	25,40	1,0000
		I	0,2720		<b>11,00</b>	0,4331	<b>1 1/64</b>	25,80	1,0156
	<b>7,00</b>		0,2756	<b>7/16</b>	11,11	0,4375	<b>1 1/32</b>	26,19	1,0313
		J	0,2770		11,50	0,4528	<b>1 3/64</b>	26,59	1,0469
	7,10		0,2795	<b>29/64</b>	11,51	0,4531	<b>1 1/16</b>	26,99	1,0625
		K	0,2810	<b>15/32</b>	11,91	0,4688	<b>1 5/64</b>	27,38	1,0781
<b>9/32</b>	7,14		0,2812		<b>12,00</b>	0,4724	<b>1 3/32</b>	27,78	1,0938
	7,20		0,2835	<b>31/64</b>	12,30	0,4844	<b>1 7/64</b>	28,18	1,1094
	7,25		0,2854		12,50	0,4921	<b>1 1/8</b>	28,58	1,1250
	7,30		0,2874	<b>1/2</b>	12,70	0,5000	<b>1 9/64</b>	28,97	1,1406
		L	0,2900		<b>13,00</b>	0,5118	<b>1 5/32</b>	29,37	1,1563
	7,40		0,2913	<b>33/64</b>	13,10	0,5156	<b>1 11/64</b>	29,77	1,1719
		M	0,2950	<b>17/32</b>	13,49	0,5312	<b>1 3/16</b>	30,16	1,1875
	7,50		0,2953		13,50	0,5315	<b>1 13/64</b>	30,56	1,2031
<b>19/64</b>	7,54		0,2969	<b>35/64</b>	13,89	0,5469	<b>1 7/32</b>	30,96	1,2188
	7,60		0,2992		<b>14,00</b>	0,5512	<b>1 15/64</b>	31,35	1,2344
		N	0,3020	<b>9/16</b>	14,29	0,5625	<b>1 1/4</b>	31,75	1,2500
	7,70		0,3031		14,50	0,5709	<b>1 17/64</b>	32,15	1,2656
	7,75		0,3051	<b>37/64</b>	14,68	0,5781	<b>1 9/32</b>	32,54	1,2813
	7,80		0,3071		<b>15,00</b>	0,5906	<b>1 19/64</b>	32,94	1,2969
	7,90		0,3110	<b>19/32</b>	15,08	0,5938	<b>1 5/16</b>	33,34	1,3125
<b>5/16</b>	7,94		0,3125	<b>39/64</b>	15,48	0,6094	<b>1 21/64</b>	33,73	1,3281
	<b>8,00</b>		0,3150		15,50	0,6102	<b>1 11/32</b>	34,13	1,3438
		O	0,3160	<b>5/8</b>	15,88	0,6250	<b>1 23/64</b>	34,53	1,3594
	8,10		0,3189		<b>16,00</b>	0,6299	<b>1 3/8</b>	34,93	1,3750
	8,20		0,3228	<b>41/64</b>	16,27	0,6406	<b>1 25/64</b>	35,32	1,3906
		P	0,3230		16,50	0,6496	<b>1 13/32</b>	35,72	1,4063
	8,25		0,3248	<b>21/32</b>	16,67	0,6562	<b>1 27/64</b>	36,12	1,4219
	8,30		0,3268		<b>17,00</b>	0,6693	<b>1 7/16</b>	36,51	1,4375
<b>21/64</b>	8,33		0,3281	<b>43/64</b>	17,07	0,6719	<b>1 29/64</b>	36,91	1,4531
	8,40		0,3307	<b>11/16</b>	17,46	0,6875	<b>1 15/32</b>	37,31	1,4688
		Q	0,3320		17,50	0,6890	<b>1 31/64</b>	37,70	1,4844
	8,50		0,3346	<b>45/64</b>	17,86	0,7031	<b>1 1/2</b>	38,10	1,5000
	8,60		0,3386		<b>18,00</b>	0,7087	<b>1 33/64</b>	38,50	1,5156
		R	0,3390	<b>23/32</b>	18,25	0,7188	<b>1 17/32</b>	38,89	1,5313
	8,70		0,3425		18,50	0,7283	<b>1 35/64</b>	39,29	1,5469
<b>11/32</b>	8,73		0,3438	<b>47/64</b>	18,65	0,7344	<b>1 9/16</b>	39,69	1,5625
	8,75		0,3445		<b>19,00</b>	0,7480	<b>1 37/64</b>	40,08	1,5781
	8,80		0,3465	<b>3/4</b>	19,05	0,7500	<b>1 19/32</b>	40,48	1,5938
		S	0,3480	<b>49/64</b>	19,45	0,7656	<b>1 39/64</b>	40,88	1,6094
	8,90		0,3504		19,50	0,7677	<b>1 5/8</b>	41,28	1,6250
	<b>9,00</b>		0,3543	<b>25/32</b>	19,84	0,7812	<b>1 41/64</b>	41,67	1,6406
		T	0,3580		<b>20,00</b>	0,7874	<b>1 21/32</b>	42,07	1,6563
	9,10		0,3583	<b>51/64</b>	20,24	0,7969	<b>1 43/64</b>	42,47	1,6719
<b>23/64</b>	9,13		0,3594		20,50	0,8071	<b>1 11/16</b>	42,86	1,6785
	9,20		0,3622	<b>13/16</b>	20,64	0,8125	<b>1 45/64</b>	43,26	1,7031
	9,25		0,3642		<b>21,00</b>	0,8268	<b>1 23/32</b>	43,66	1,7188
	9,30		0,3661	<b>53/64</b>	21,03	0,8281	<b>1 47/64</b>	44,05	1,7344
		U	0,3680	<b>27/32</b>	21,43	0,8438	<b>1 3/4</b>	44,45	1,7500
	9,40		0,3701		21,50	0,8465	<b>1 49/64</b>	44,85	1,7656
	9,50		0,3740	<b>55/64</b>	21,83	0,8594	<b>1 25/32</b>	45,24	1,7813
<b>3/8</b>	9,53		0,3750		<b>22,00</b>	0,8661	<b>1 51/64</b>	45,64	1,7969
		V	0,3770	<b>7/8</b>	22,23	0,8750	<b>1 13/16</b>	46,04	1,8125
	9,60		0,3780		22,50	0,8858	<b>1 53/64</b>	46,43	1,8281
	9,70		0,3819	<b>57/64</b>	22,62	0,8906	<b>1 27/32</b>	46,83	1,8438
	9,75		0,3839		<b>23,00</b>	0,9055	<b>1 55/64</b>	47,23	1,8594
	9,80		0,3858	<b>29/32</b>	23,02	0,9062	<b>1 7/8</b>	47,63	1,8750
		W	0,3860	<b>59/64</b>	23,42	0,9219	<b>1 57/64</b>	48,02	1,8906
	9,90		0,3898		23,50	0,9252	<b>1 29/32</b>	48,42	1,9063
<b>25/64</b>	9,92		0,3906	<b>15/16</b>	23,81	0,9375	<b>1 59/64</b>	48,82	1,9219
	<b>10,00</b>		0,3937		<b>24,00</b>	0,9449	<b>1 15/16</b>	49,21	1,9375
		X	0,3970	<b>61/64</b>	24,21	0,9531	<b>1 61/64</b>	49,61	1,9531
		Y	0,4040		24,50	0,9646	<b>1 31/32</b>	50,01	1,9688
<b>13/32</b>	10,32		0,4062	<b>31/32</b>	24,61	0,9688	<b>1 63/64</b>	50,40	1,9844
		Z	0,4130		<b>25,00</b>	0,9843	<b>2</b>	50,80	2,0000



## CARBIDE / METAL DURO / CARBURE

International Identif. Identif. Internacional Identif. internationale	Quemical Comp. Comp. Química Comp. chimique
-----------------------------------------------------------------------------	---------------------------------------------------

Carbide/MD  
Carbure  
Micrograno

Mat: Micro-grain	
Comp.	WC 89,3, Co 10%, 0,7 (Nb-Ti-Ta)
Grain/Grano/Grain	Very Fine / Muy Fino / Très fine
Hardness/Dureza/Dureté	1700 HV
Breaking Resist. Resist. Rotura Résistance ruptures	3.800 N/mm <sup>2</sup>

International Identif. Identif. Internacional Identif. internationale	Quemical Comp. Comp. Química Comp. chimique
-----------------------------------------------------------------------------	---------------------------------------------------

Carbide/MD  
Carbure  
Grano UF

Mat: Ultra-fine grain	
Comp.	WC 85,6, Ti/Ta (Ni)C 0,9, Co 12%
Grain/Grano/Grain	Ultrafine / Ultrafino / Ultrafin
Hardness/Dureza/Dureté	1750 HV
Breaking Resist. Resist. Rotura Résistance ruptures	4.200 N/mm <sup>2</sup>

Carbide/MD  
Carbure  
Micrograno+

Mat: Micro-grain+	
Comp.	WC 89,3, Co 6%, 0,7 (Nb-Ti-Ta)
Grain/Grano/Grain	Very Fine / Muy Fino / Très fine
Hardness/Dureza/Dureté	1820 HV
Breaking Resist. Resist. Rotura Résistance ruptures	3.600 N/mm <sup>2</sup>

TCT

Mat: Welded Carbide	
Comp.	Micro-grain Carbide tip / Punta MD micrograno / Foret pointe carbure très fine  HSS body / Cuerpo HSS / Corps HSS

## PMX

PMX

<b>AISI: ASP*</b> This is a brandname belonging to Erasteel
C: 1,60% / Cr: 4,80% / W: 10,50% V: 5,00% / Mo: 2,00% / Co: 8,00%

\*(or equivalents) \*(ó equivalentes) \*(Où similaires)

## COBALT HSS / ACEROS RÁPIDOS AL COBALTO / ACIERS RAPIDES AU COBALT

International Identif. Identif. Internacional Identif. internationale	Quemical Comp. Comp. Química Comp. chimique
-----------------------------------------------------------------------------	---------------------------------------------------

Cobalt  
8%

<b>AISI: M-42*</b>	C: 1,10%
DIN: 1.3247	Cr: 3,90%
AFNOR: Z110DKCWY	W: 1,40%
EN: HS 2-9-1-8	V: 1,20%
UNE: F-5617	Mo: 9,20%
	Co: 8,00%

\*(or equivalents) \*(ó equivalentes) \*(Où similaires)

International Identif. Identif. Internacional Identif. internationale	Quemical Comp. Comp. Química Comp. chimique
-----------------------------------------------------------------------------	---------------------------------------------------

Cobalt  
5%

<b>AISI: M-35*</b>	C: 0,92%
DIN: 1.3243	Cr: 4,10%
AFNOR: Z85WDKCV	W: 6,40%
EN: HS 6-5-2-5	V: 1,90%
UNE: F-5613	Mo: 5,00%
	Co: 4,80%

\*(or equivalents) \*(ó equivalentes) \*(Où similaires)

## HSS / ACEROS RÁPIDOS / ACIERS RAPIDES

International Identif. Identif. Internacional Identif. internationale	Quemical Comp. Comp. Química Comp. chimique
-----------------------------------------------------------------------------	---------------------------------------------------

HSS

<b>AISI: M-2*</b>	C: 0,90%
DIN: 1.3343*	Cr: 4,10%
AFNOR: Z85WDCV*	W: 6,40%
EN: HS 6-5-2*	V: 1,80%
UNE: F-5603*	Mo: 5,00%

\*(or equivalents) \*(ó equivalentes) \*(Où similaires)

HSS-XT

Special alloy  
Aleación especial  
Alliage spécial



BORDEAUX

<b>TiAlCrN base</b> Base TiAlCrN Base TiAlCrN	
Hardness / Dureza / Dureté HV(0,05)	2.850
Oxidation / Oxidación / Oxidation	800°C
Rubbing Coefficient Coeficiente Fricción / Coéfcient Friction	0,25
Colour / Color / Couleur: Copper Pink / Rosado cobrizo / Rose cuivré	

CROMAX

<b>AlCrN Base</b> Base AlCrN Base AlCrN	
Hardness / Dureza / Dureté HV(0,05)	3.200
Oxidation / Oxidación / Oxidation	1.100°C
Rubbing Coefficient Coeficiente Fricción / Coéfcient Friction	0,35
Colour / Color / Couleur: Copper Pink / Gris Brillante / xGris Clair	

DIAMAX

<b>Nanocrystalline Diamond</b> Diamante Nanocristalino Diamant nanocristallin	
Hardness / Dureza / Dureté HV(0,05)	10.000
Oxidation / Oxidación / Oxidation	800-850°C
Rubbing Coefficient Coeficiente Fricción / Coéfcient Friction	-
Colour / Color / Couleur: Black / Negro / Noir	

IRIS

<b>Carbon ta-C Base</b> Base Carbono ta-C Base Carbone ta-C	
Hardness / Dureza / Dureté HV(0,05)	> 6.500
Oxidation / Oxidación / Oxidation	> 500°C
Rubbing Coefficient Coeficiente Fricción / Coéfcient Friction	0,30-1,50
Colour / Color / Couleur: Rainbow / Arco Iris / Arc-en-ciel	

SUA

<b>Titanium Silicon Nitride</b> Nitruro de Titanio Silicio Nitrure de Silicium-Titanium	
Hardness / Dureza / Dureté HV(0,05)	3500+-300
Oxidation / Oxidación / Oxidation	1000-1100°C
Rubbing Coefficient Coeficiente Fricción / Coéfcient Friction	0,45
Colour / Color / Couleur: Copper / Cobre / Cuivre	

TIALCN

<b>Titanium Aluminium Carbonitride</b> Carbonitruro de Titanio-Aluminio Carbo Nitrure d'Aluminium-Titanium	
Hardness / Dureza / Dureté HV(0,05)	3.200
Oxidation / Oxidación / Oxidation	900°C
Rubbing Coefficient Coeficiente Fricción / Coéfcient Friction	0.4
Colour / Color / Couleur: Pink gold / Oro rosa / Or rose	

TIALN-  
TOP

<b>Titanium-Aluminium Carbo-Nitride</b> Carbo-Nitruro de Aluminio-Titanio Carbo-Nitrure d'Aluminium-Titanium	
Hardness / Dureza / Dureté HV(0,05)	3.300
Oxidation / Oxidación / Oxidation	900°C
Rubbing Coefficient Coeficiente Fricción / Coéfcient Friction	0,30-0,35
Colour / Color / Couleur: Violet-Grey / Violeta-Gris / Violet-Gris	

TIN

<b>Titanium Aluminium Carbonitride</b> Carbonitruro de Titanio-Aluminio Carbo Nitrure d'Aluminium-Titanium	
Hardness / Dureza / Dureté HV(0,05)	3.200
Oxidation / Oxidación / Oxidation	900°C
Rubbing Coefficient Coeficiente Fricción / Coéfcient Friction	0.4
Colour / Color / Couleur: Pink gold / Oro rosa / Or rose	

TIALSIN













<b>Titanium Nitride</b> Nitruro de Titanio Nitrure de Titanium	
Hardness / Dureza / Dureté HV(0,05)	3.500±500
Oxidation / Oxidación / Oxidation	900°C
Rubbing Coefficient Coeficiente Fricción / Coéfcient Friction	0,45
Appropriate for Dry Use Adecuado para Uso en Seco Parfait usinage sans refroidir	
Colour / Color / Couleur: Anthracite / Antracita / Anthracite	

ZIRKONIO

<b>Zirkonium Nitride</b> Nitruro de Zirconio Nitrure de Zirkonium	
Hardness / Dureza / Dureté HV(0,05)	2.300±200
Oxidation / Oxidación / Oxidation	660-1.100°C
Rubbing Coefficient Coeficiente Fricción / Coéfcient Friction	0,50
Colour / Color / Couleur: Pale Yellow / Amarillo pálido / Jaune pâle	






















Drilling - Taladrado - Perçage

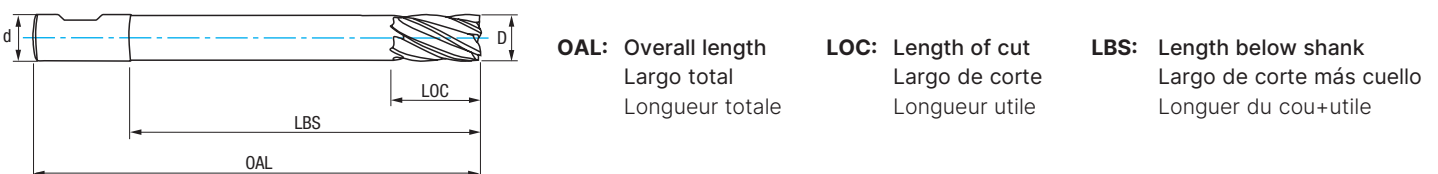
	<b>Carbide Tipped</b> Punta Metal Duro Pointe carbure		<b>Split Point DIN 1412 "C" type</b> Afilado en Cruz Tipo DIN 1412 "C" Affûtage en croix type DIN 1412 "C"		<b>Split Point DIN 1412 "A" type</b> Afilado Tipo DIN 1412 "A" Affûtage pointe type DIN 1412 "A"		<b>Universal Relieved Cone Point</b> Punta Cónica con Afilado Universal Pointe conique universel
	<b>Point Angle</b> Angulo Punta Angle de pointe		<b>Helix Angle</b> Ángulo de Hélice Angle d'hélice		<b>3-Flat Shank</b> Mango 3 Planos Attachement 3 plans		<b>Countersink</b> Avellanado Fraisage
	<b>Reduced Shank</b> Mango Rebajado Queue réduite		<b>Power Tool Special</b> Especial Taladro Bateria Spécial perceuse à main		<b>Tap Point Type</b> Tipo Entrada Macho Type d'entrée de taraud		<b>GUN Chamfer</b> Entrada GUN Entrée GUN

Threading - Roscado - Taraudage

	<b>Helix Angle</b> Ángulo de Hélice Angle d'hélice		<b>External Cooling Slots</b> Ranuras Exteriores Refrigeración Rainures extérieurs refroidissement
----------------------------------------------------------------------------------	----------------------------------------------------------	------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------

Milling - Fresado - Fraisage

	<b>1Z= 1 Flute</b> 1Z= 1 Diente 1Z= 1 Dent		<b>2Z= 2 Flutes</b> 2Z= 2 Dientes 2Z= 2 Dents		<b>3Z= 3 Flutes</b> 3Z= 3 Dientes 3Z= 3 Dents		<b>4-5 Z= 4-5 Flutes. Center Cutting</b> 4-5 Z= 4-5 Dientes. Corte al Centro 4-5 Z= 4-5 Dents. Coupe au centre
	<b>6-8 Z= 6 Flutes. Super-Finishing</b> 6-8 Z= 6 Dientes. Super-Acabado 6-8 Z= 6 Dents. Super-finition		<b>Uneven displacement 2Z</b> Desplazamiento desigual 2Z Déplacement irrégulier 2Z		<b>Uneven displacement 3Z</b> Desplazamiento desigual 3Z Déplacement irrégulier 3Z		<b>Uneven displacement 4Z</b> Desplazamiento desigual 4Z Déplacement irrégulier 4Z
	<b>Radial End Mill</b> Fresa Radial Fraise hémisphérique		<b>Trochoidal milling</b> Fresado trocoidal Fraisage trochoïdal		<b>Radius End Mill</b> Fresa Tórica Fraise torique		<b>Straight End Mill with 45° Chamfer</b> Fresa Recta con Chaflán 45° Fraise droite avec chanfrein 45°
	<b>Mirror Polished</b> Pulido Espejo Polyglass		<b>Weldon Shank</b> Mango Weldon Queue Weldon		<b>Plain Shank</b> Mango Liso Queue plane		<b>Keyway</b> Chavetero Longitudinal Rainure longitudinale
	<b>Fine Pitch Roughing</b> Desbaste Fino Ébauche pas fin		<b>Coarse Roughing</b> Desbaste Grueso Ébauche		<b>Roughing &amp; Finishing</b> Desbaste Medio Semi-finition		



## General Sale Conditions

---

### 1. PAYMENT TERMS

Payment transfer within 30 days of invoice date. NET.

### 2. FIXED DUE DATE

In the case of fixed payment dates that exceed the stipulated deadlines we will use the fixed date, but immediately before, when appropriate, with the maximum period in any event being 60 days from the invoice or shipment date.

### 3. SAFETY

The goods will travel at the sole risk and expense of the buyer, who also is in charge of premium insurance, in cases where the customer wishes to insure them.

### 4. COMPLAINTS

Complaints made within 8 days of receipt of the material will be addressed, but no returns will be accepted without the prior knowledge of the Factory.

### 5. RETURNS

Returns will only be accepted if due to manufacturing defects or errors attributable to IZAR CUTTING TOOLS S.A.L. No returns will be accepted without prior authorisation from the Factory or our delegate or representative. Returns must be via prepaid freight and accompanied by the original invoice. We do not accept returns on promotional products or gift saw blade cases. All returns will incur a debit note of 20% of the product's value for handling purposes and Quality Control inspections.

### 6. CONDITIONS

Acceptance of the goods without immediate rejection by the buyer implies approval of these general conditions of sale, and any modifications to them shall only be valid if IZAR CUTTING TOOLS S.A.L. agrees in writing.

### 7. V.A.T.

The prices are subject to Value Added Tax (VAT), while the corresponding surcharge is the customer's responsibility.

### 8. WARRANTIES

All tools are guaranteed against any manufacturing and material defect, and IZAR cannot be held responsible for any improper use of the tools. In all cases, IZAR's liability is limited to the value of the supplied tool.

We reserve the right to modify the dimensions, quality of steel and the general technical characteristics of the tools without prior notice. No tool can be replaced without a prior report from our Quality Control Department.

### 9. SHIPPING

Shipments with carriage paid will be provided for all orders with a net invoice value exceeding €/€ 180 net per shipment in the mainland and the Balearic Islands; €/€ 300 in the Canary Islands, Ceuta, Melilla, and Andorra. In any case, IZAR reserves the right to use the most economical shipping method. In cities where IZAR has established distribution depots, this clause will apply to re-shipping to other towns in the province.

### 10. MINIMUM ORDER AMOUNT

The minimum order amount is €/€ 60 net. Orders priced lower than this will require cash on delivery or be refunded.

### 11. TITLE RESERVATION

Our sales are always considered to be subject to reserved property rights according to Article 1506 of the Spanish Civil Code until all due payments have been made in full.

### 12. COMPETENT JURISDICTION

To resolve any discrepancy regarding the interpretation of these conditions, or any litigation due to a breach by either party, both parties shall submit to the jurisdiction of the Courts and Tribunals of Bilbao, waiving any other jurisdiction to which they may otherwise be entitled.

### 13. EURO / DOLLAR ROUNDING SYSTEM (2 DECIMALS)

The company applies the legal regulations in force regarding this matter in its IT systems.

## Condiciones Generales Venta

---

### 1. CONDICIONES DE PAGO

Giro a 30 días f.f. NETO.

### 2. VENCIMIENTOS FIJOS

En caso de fechas fijas de pago que rebasen los plazos estipulados giraremos a la fecha fijada pero inmediata anterior, según corresponda, siendo el plazo máximo en todo caso de 60 días, fecha factura o envío.

### 3. SEGURO

Las mercancías viajarán por exclusiva cuenta y riesgo del comprador, siendo siempre a cargo del mismo la prima del seguro que se realice, en los casos que el cliente desee asegurarla.

### 4. RECLAMACIONES

Se atenderán aquellas reclamaciones que se planteen dentro de los 8 días siguientes a la recepción del material no aceptando ninguna devolución sin el previo conocimiento de Fábrica.

### 5. DEVOLUCIONES

Sólo se aceptarán las devoluciones por defecto de fabricación o error atribuible a IZAR CUTTING TOOLS S.A.L. No se aceptarán devoluciones sin previa autorización de Fábrica o de nuestro delegado o representante. Las devoluciones serán a portes pagados e irán acompañadas de la factura original. No se admitirán devoluciones procedentes de promociones ni en estuches defectuosos. Toda devolución originará una nota de cargo por el 20 % de su valor en concepto de manipulación e inspección de control de calidad.

### 6. CONDICIONALIDAD

La aceptación de las mercancías sin el rechazo inmediato por parte del comprador supone la aprobación de estas condiciones generales de venta y su modificación sólo tendrá validez si consta por escrito la conformidad de IZAR CUTTING TOOLS S.A.L.

### 7. I.V.A.

Los precios están sujetos al Impuesto sobre el Valor Añadido, siendo a cargo del cliente el recargo correspondiente.

### 8. GARANTÍAS

Todas las herramientas están garantizadas contra cualquier defecto de fabricación y materiales, sin responsabilizarse Fábrica de la utilización inadecuada de las mismas. En todo caso, nuestra responsabilidad estará limitada al valor de la herramienta suministrada.

Nos reservamos el derecho de modificar, sin previo aviso, las dimensiones, calidades del acero y en general todas las características técnicas de las herramientas. No será sustituida ninguna herramienta sin el informe previo de nuestro Departamento de Control de Calidad.

### 9. PORTES

Se suministrarán con franquicia de portes todos aquellos envíos cuyo valor neto de factura supere los 180 €/€ netos por cada envío en territorio peninsular e Islas Baleares; 300 €/€ en Canarias, Ceuta, Melilla, Andorra y Portugal. En cualquier caso Fábrica se reserva el derecho de utilizar el medio de envío más económico.

En las capitales donde Fábrica tenga establecidos depósitos de distribución, esta cláusula se aplicará para las reexpediciones a otras poblaciones de la provincia.

### 10. IMPORTE MÍNIMO POR PEDIDO

Queda establecido como pedido mínimo la cantidad de 60 €/€ netos. Los pedidos inferiores se cobrarán al contado o por reembolso.

### 11. RESERVA DE DOMINIO

Nuestras ventas se consideran siempre bajo la condición de Reserva de dominio según el artículo 1.506 C.C. hasta que se haya hecho efectivo íntegramente el pago de todo lo adeudado.

### 12. JURISDICCIÓN COMPETENTE

Para cualquier discrepancia acerca de la interpretación de estas condiciones o litigio por razón de incumplimiento por cualquiera de las partes se someten ambas al fuero de los Juzgados y Tribunales de Bilbao, con renuncia al que pudiera corresponderles.

### 13. SISTEMA DE REDONDEO DEL EURO / DÓLAR (2 DECIMALES)

La empresa aplica en sus sistemas informáticos la normativa legal vigente en esta materia.



### 1. CONDITIONS DE PAIEMENT

Les paiements s'effectuent à 30 jours.

### 2. ECHEANCES

Quelle que soit la date fixée pour le paiement des factures, celui-ci doit être effectué au maximum 60 jours après l'envoi ou la date de facture.

### 3. ASSURANCE

Le risque lié à l'envoi des marchandises est assumé exclusivement par l'acheteur, toute latitude lui étant laissée s'il désire les assurer.

### 4. RECLAMATIONS

Seront prises en compte les réclamations portées à la connaissance de IZAR dans un délai de 8 jours suivant la réception des marchandises. Aucun retour ne sera accepté si cette condition préliminaire n'est pas satisfaite.

### 5. RETOURS

Seront acceptés les retours de marchandises pour défaut de fabrication ou erreur imputable à IZAR. Ne sera accepté aucun retour de marchandises sans accord préalable de notre part ou de notre représentant.

Les retours s'effectueront port payé et seront accompagnés de la facture originale. En aucun cas ne seront acceptés les retours de marchandises liées à des promotions ou en emballages défectueux. Les avoirs seront minorés de 20% de la valeur de la marchandise pour manipulation et inspection du contrôle de qualité.

### 6. CONDITIONNALITE

L'acceptation des marchandises de la part de l'acheteur implique l'acceptation de ces conditions générales de vente et leur modification ne sera valable qu'après approbation écrite de la part de IZAR.

### 7. T.V.A.

Les prix ne sont pas assujettis à la Taxe sur la Valeur Ajoutée.

### 8. GARANTIES

Tous les outils sont garantis contre les défauts de fabrication, IZAR ne pouvant en aucun cas être rendu responsable en cas d'utilisation inadéquate de ceux-ci. En tout état de cause, notre responsabilité se limitera à la valeur de l'outil fourni.

Nous nous réservons le droit de modifier, sans information préalable, les dimensions, qualités d'acier et en général toutes les caractéristiques techniques des outils. Aucun outil ne sera remplacé sans l'avis préalable de notre département de contrôle de qualité.

### 9. PORTS

Seront expédiées en franco de port en France Métropolitaine toutes les commandes dont le montant net dépasse ou est égal à 300 €/\$. IZAR se réserve le droit d'utiliser le moyen de transport le plus économique.

### 10. MONTANT MINIMUM DES COMMANDES

Le montant minimum des commandes est de 60 €/€ nets.

### 11. RESERVE DE PROPRIETE

IZAR conserve tous les droits de propriété sur ses ventes jusqu'au paiement intégral des sommes dues.

### 12. JURIDICTION COMPETENTE

Tout litige relatif à l'interprétation de ces conditions ou au manquement de l'une des parties à ses obligations est de la compétence du Tribunal de Commerce de Bilbao.

### 13. ARRONDI DE L'EURO / DOLLAR (2 DECIMALES)

L'entreprise utilise pour son système informatique la norme légale en vigueur sur ce sujet.



# Continuous improvement in quality control

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1721	35	3154	65	7302	142	7427	120		
1727	43	3156	95	7304	128	7437	115		
1729	33			7306	130				
1752	45	3202	85	7307	133	7521	135		
1780	20	3204	70	7320	136	7530	161		
1781	18	3209	79	7324	146	7532	162		
1785	24	3212	83	7330	129	7537	164		
		3214	61	7332	132				
3012	89	3224	71	7340	141				
3016	97	3234	63	7342	144				
3017	81	3244	73	7370	147				
3019	98	3252	87	7372	148				
3024	76	3254	66	7377	149				
3025	77			7390	145				
3026	96	3502	101	7391	134				
3032	88	3504	99						
3034	67	3505	100						
		3506	102						
		3507	100						
		3519	102						
		3534	99						





**IZAR CUTTING TOOLS, S.A.L.**

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