



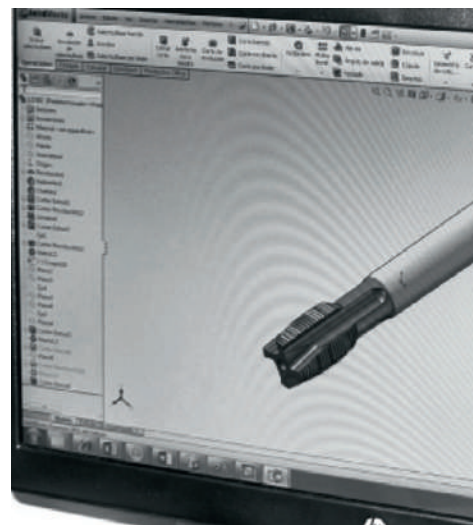
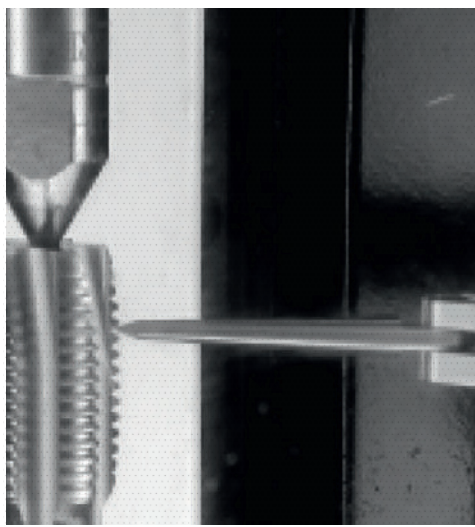
THREADING CATALOG

TARAUDAGE CATALOGUE

ROSCADO CATÁLOGO

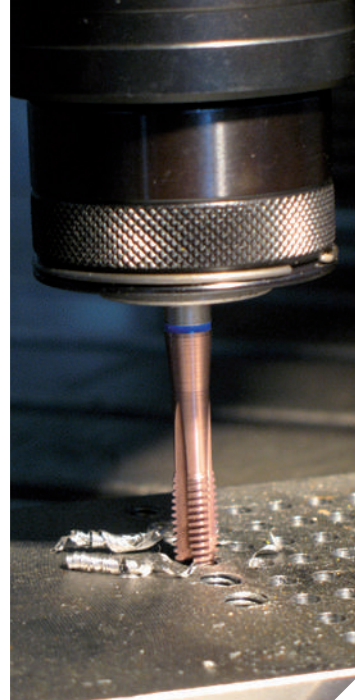


Cutting tools
Outils coupants
Herramientas de corte ▶





A	A1	Aceros debilmente aleados / Aciers non alliés et faiblement alliés / Unalloyed & low alloyed steels
	B1	Aceros de construcción / Aciers de construction / Structural steels
	B2	Aceros bonifacados / Aciers au Carbone non alliés et améliorés / Plain Carbon steels
B	B3	Aceros aleados / Aciers alliés / Steels
C	C1	Aceros para tratamiento térmico R< 1000 N/mm ² / Aciers pour traitement thermique R< 1000 N/mm ² / Heat Treatable Steels R < 1000 N/mm ²
D	D1	Aceros para tratamiento térmico R< 1200 N/mm ² / Aciers pour traitement thermique > 1200 N/mm ² / Heat Treatable Steels >1200 N/mm ²
F	F1	Aceros inoxidables ferríticos / Aciers inoxydables, ferritiques / Stainless Steels, Ferritic
G	G1	Aceros inoxidables martensíticos / Aciers inoxydables, Martensitiques / Stainless Steels, Martensitic
H	H1	Aceros inoxidables austeníticos R < 850 N/mm ² / Aciers inoxydables Austenitiques R < 850 N/mm ² / Austenitic stainless steel R < 850 N/mm ² Steels, Martensitic
	H2	Aleaciones de Ni-Cr R < 1200 N/mm ² / Alliages de nickel et chrome R < 1200 N/mm ² / Chromium and nickel alloys R < 1200 N/mm ²
I	I1	Fundición gris con grafito laminar / Fontes grises à graphite lamellaire / Cast Iron with graphite lamellar
	J1	Fundición con grafito laminar (GG) 500 < R ≤ 1000 N / mm ² / Fonte à graphite lamellaire (GG) 500 < R ≤ 1000 N / mm ² / Cast iron with lamellar graphite (GG) 500 < R ≤ 1000 N / mm ² with graphite lamellar
	J2	Fundición maleable (GGG) R ≤ 750 N / mm ² / Fonte maléable (GGG) R ≤ 750 N / mm ² / Malleable cast iron (GGG) R ≤ 750 N/mm ²
	J3	Fundición de grafito esferoidal (GGG 70-80) 750 < R ≤ 1000 N / mm ² / Fonte à graphite sphéroïdale (GGG 70-80) 750 < Spheroidal graphite cast iron (GGG 70-80) 750 < R ≤ 1000 N / mm ²
K	K1	Aluminio y magnesio no aleado / Aluminium et magnesium pas alliés / Not alloyed aluminum and magnesium 750 N / mm ² / Malleable cast iron (GGG) R ≤ 750 N/mm ²
	K2	Aleaciones de magnesio / Magnesium alliages / Magnesium alloys
	L1	Aleaciones de Aluminio con Si <0,5% R <500 N / mm ² / Alliages d'aluminium ayant Si <0,5% R <500 N / mm ² / Aluminium alloys with Si < 0,5% R < 500 N/mm ²
L	L2	Aleaciones de Aluminio con 0,5% <Si <10% R <600 N / mm ² / Alliages d'aluminium ayant 0,5% <Si <10% R <600 N / mm ² / Aluminum alloys with 0,5% < Si < 10% R < 600 N/mm ²
	M1	Aleaciones de Aluminio con Si> 10% R <600 N / mm ² / Alliages d'aluminium ayant Si> 10% R <600 N / mm ² / Aluminium alloys with Si > 10% R < 600 N/mm ²
N	N1	Cobre R ≤ 350 N / mm ² / Cuivre R ≤ 350 N / mm ² / Copper R ≤ 350 N/mm ²
	N2	Aleaciones de cobre viruta corta / Alliages de cuivre copeau court / Short chip copper alloys
	N3	Aleaciones de cobre viruta larga / Alliages de cuivre copeau long / Long chip copper alloys
Q	Q1	Niquel R ≤ 500 N/mm ² / Nickel R ≤ 500 N/mm ² / Nickel R ≤ 500 N/mm ² Niquel R ≤ 500 N/mm ² / Nickel R ≤ 500 N/mm ² / Nickel R ≤ 500 N/mm ²
	Q2	Aleaciones de niquel R <900 N / mm ² (INCONEL 600) / Alliages de nickel R <900 N / mm ² (INCONEL 600) / Nickel alloys R < 900 N/mm ² (INCONEL 600)
	Q3	Aleaciones de niquel 900 <R <1200 N / mm ² (INCONEL 625/780) / Alliages de nickel 900 <R <1200 N / mm ² (INCONEL 625/780) / Nickel alloys 900 < R < 1200 N/mm ² (INCONEL 625/780)
T	T1	Titanio R ≤ 700 N / mm ² / Titane R ≤ 700 N / mm ² / Titanium R ≤ 700 N/mm ² R ≤ 500 N/mm ² / Nickel R ≤ 500 N/mm ² / Nickel R ≤ 500 N/mm ²
	T2	Aleaciones de titanio recocidas R ≤ 900 N / mm ² / Alliages de titane recuits R ≤ 900 N / mm ² / Annealed titanium alloys R ≤ 900 N/mm ²
Ti	T3	Aleaciones de titanio 900 <R ≤ 1200 N/mm ² / Alliages de titane 900 <R ≤ 1200 N/mm ² / Titanium alloys 900 < R ≤ 1200 N/mm ²
P	P1	Plásticos / Thermoplastique / Thermoplastic



DESIGNER & MANUFACTURER

CUTTING TOOLS & POWER
TOOL ACCESSORIES

Created in 1917 in Tours-en-Savoie, TIVOLY® today is a global player in our domain with a presence on three continents.

Organized in business units, TIVOLY® covers three primary markets:

- Public, do it yourself building, with a complete line of quality tools and power tool accessories,
- Professional, marketing to the industrial and professional tradesman with a recognized quality and innovative brand of cutting tools,
- Industrial, working with mechanical and production lines with a technological base, composed of standard, special, and custom tools on demand.

TIVOLY® is recognized for our innovation and the quality of the offered products and services we offer, but also as an active participant in a globally clean environment ■

CONCEPTEUR & FABRICANT

OUTILS COUPANTS
ET ACCESSOIRES
ÉLECTROPORTATIFS

Créé en 1917 à Tours-en-Savoie, TIVOLY® est aujourd'hui un acteur de dimension mondiale dans son domaine, avec une présence sur trois continents.

Organisé en Business Units, TIVOLY® intervient sur trois marchés principaux:

- Particulier, marché du bricolage, avec des gammes complètes et qualitatives d'outils et d'accessoires électroportatifs;
- Professionnel, marché de la fourniture industrielle et de l'artisanat avec une offre d'outils coupants reconnue pour sa qualité et son innovation;
- Industriel, marché de la mécanique de production avec une offre technologique, composée d'outils standards et spéciaux "sur mesure".

TIVOLY® a l'ambition d'être reconnu pour son innovation et la qualité de son offre de produits et services, mais également contributeur actif à l'amélioration de l'environnement ■

DISEÑO Y FABRICACIÓN

HERRAMIENTAS DE CORTE
Y ACCESORIOS
PARA HERRAMIENTA
ELECTROPORTÁTIL

Creado en 1917 en Tours-en-Savoie, TIVOLY® es hoy una de las principales organizaciones de dimensión mundial en su sector, con presencia en tres continentes.

Organizado en Unidades de Negocio, TIVOLY® se dirige a 3 mercados principalmente:

- Particular, mercado del Bricolaje, con una completa gama de herramientas y accesorios para herramienta electroportátil,
- Profesional, mercado del suministro industrial y la ferretería con una oferta de herramientas de corte reconocida por su calidad e innovación,
- Industrial, mercado de la producción, con una oferta tecnológica compuesta por herramienta estándar y especial "bajo pedido".

TIVOLY® quiere ser reconocido por la innovación y la calidad de sus productos, pero también, por contribuir activamente a la mejora del medio ambiente ■

TAPPING	#01 DIN ISO NORM	A. HAND TAPS B. FLASH CUT C. MULTI- APPLICATION D. STANDARD RANGE	M - MF right hand sets NC - NF right hand sets W right hand sets BSP right hand sets Metric left hand sets Metric moulding sets M - MF cutting taps NC-NF cutting taps BSP cutting taps M - MF M - MF cutting taps M - MF Right flute cutting taps M - MF Spiral point taps M - MF Low spiral taps M - MF Fast spiral taps M - MF Extra long taps taps NC - NF Right flute taps NC - NF Spiral point taps NC - NF Low spiral taps NC - NF Fast spiral taps BSW Right flute taps BSW Spiral point taps BSW Fast spiral taps BSP Right flute taps BSP Spiral point taps BSP Low spiral taps BSP Fast spiral taps BSPT Right flute taps NPT Right flute taps PG Right flute taps
	#02 ANSI NORM	STANDARD RANGE	NC - NF right hand sets, taper, plugging and bottoming. M - MF right hand sets, taper, plugging and bottoming. NC - NF Spiral point taps M - MF Spiral point taps NC - NF Fast spiral taps M - MF Fast spiral taps NC - NF STI hand taps NC - NF Forming taps M - MF Forming taps NC - NF Performance spiral point taps M - MF performance spiral point taps NC - NF Performance fast spiral taps M - MF performance fast spiral taps NC - NF Performance forming taps M - MF performance forming taps NPT - NPTF Regular pipe taps NPS Regular pipe taps NPT - NPTF Cast iron taps
	#03 APPLICA- TION TAPS	NUT TAPS AUTOMOTIVE WIND MILLS FITTING BUILDING	
	#04 ROLL & FLAT DIES		
#05 TECHNICAL INFO			

ITEM	PAGE	ITEM	PAGE	ITEM	PAGE	ITEM	PAGE
1050031	18	9603011	61	9633911	112		
1050071	54	9603021	56	9633931	114		
1050091	75	9603031	82	9643011	116		
1050121	55	9603051	58	9643101	117		
1501511	21	9603821	72	9653011	117		
1501521	23	9603851	91	9663011	115		
1503000	123	9603911	63	9663101	116		
1523000	120	9603931	84	9704601	97		
1602521	67	9605021	68	9704611	97		
1602551	86	9605041	80	960AT21	37		
1603176	126	9605051	88	960AT51	37		
1603344	134	9605061	94	960AT91	50		
1603352	136	9605081	76	960BT11	40		
1603362	137	9605411	64	960CT11	36		
1603521	67	9605821	73	960HT21	33		
1603551	87	9605841	70	960HT31	34		
1603570	126	9605851	92	960IT21	34		
1606600	133	9605871	95	960IT51	35		
1623144	129	9605881	78	960IT91	51		
1623176	126	9605891	89	960MT21	38		
1623344	134	9606021	69	960MT51	39		
1623352	135	9606041	80	960ST21	32		
1623362	136	9606051	88	960ST51	32		
1623570	125	9606061	94	960ST91	50		
1626600	131	9606081	77	960TT21	39		
1643082	138	9606411	65	960TT51	40		
1643088	140	9606821	73	960TT91	52		
1643136	139	9606841	70	962AT21	45		
1653082	139	9606851	93	962AT51	46		
9501011	19	9606871	96	962BT11	48		
9501021	20	9606881	79	962CT11	47		
9501031	25	9606891	90	962IT21	43		
9501081	25	9612011	109	962IT51	44		
9501311	22	9612021	110	962ST21	41		
9501321	24	9612051	111	962ST51	42		
9511011	29	9613021	110	963BT11	49		
9511021	29	9613051	111	963CT11	49		
9521011	26	9622011	98				
9521021	27	9622021	101				
9521311	26	9622031	104				
9521321	28	9622051	107				
9531021	30	9622911	99				
9600621	74	9622931	105				
9600631	85	9623011	99				
9600711	66	9623021	102				
9600821	75	9623031	104				
9600831	86	9623051	107				
9600911	66	9623911	100				
9602011	60	9623931	106				
9602021	55	9625021	103				
9602031	81	9625051	108				
9602051	57	9626021	103				
9602411	62	9626051	109				
9602821	71	9633011	112				
9602851	91	9633021	113				
9602911	62	9633031	113				
9602931	83	9633051	115				

TAPPING

CATALOGUE



TAPPING
TARAUUDAGE
ROSCADO





#

TAPPING

TARAUDAGE
ROSCADO

MATERIALS AND APPLICATIONS OF HAND TAPPING
MATERIAUX ET APPLICATIONS DE TARAUDAGE A MAIN
MATERIALES Y APLICACIONES DE ROSCADO MANUAL



HAND TAPPING

		Reference / Référence / Referencia	003 HSS	101 HSS
		M-MF (DIN=50;ISO=05)	18	19
		UNC-UNF (52)		
		BSW-BSF (51)		
		BSP (53)		
A	A1	Unalloyed & low alloyed steels / Aciers non alliés et faiblement alliés / Aceros debilmente aleados	○	○
	B1	Structural steels / Aciers de construction / Aceros de construcción	○	○
	B2	Structural steels / Aciers de construction / Aceros de construcción	○	○
B	B3	Structural steels / Aceros de construcción / Aciers de construction	○	○
	C1	Heat Treatable Steels R < 1000 N/mm² / Aciers pour traitement thermique R< 1000 N/mm² / Aceros para tratamiento térmico R< 1000 N/mm²	○	○
D	D1	Heat Treatable Steels >1200 N/mm² / Aciers pour traitement thermique > 1200 N/mm² / Aceros para tratamiento térmico R< 1200 N/mm²		
F	F1	Stainless Steels, Ferritic / Aciers inoxydables, ferritiques / Aceros inoxydables ferriticos	○	○
G	G1	Stainless Steels, Martensitic / Aciers inoxydables, Martensitiques / Aceros inoxydables martensiticos		
H	H1	Austenitic stainless steel R < 850 N/mm² Steels, Martensitic / Aciers inoxydables Austenitiques R < 850 N/mm² / Aceros inoxydables austeniticos R < 850 N/mm²	○	○
	H2	Chromium and nickel alloys R < 1200 N/mm² / Alliages de nickel et chrome R < 1200 N/mm² / Aleaciones de Ni-Cr R < 1200 N/mm²		
I	I1	Cast Iron with graphite lamellar / Fontes grises à graphite lamellaire / Fundición gris con grafito laminar	○	○
	J1	Cast iron with lamellar graphite (GG) 500 < R ≤ 1000 N / mm ² with graphite lamellar / Fonte à graphite lamellaire (GG) 500 < R ≤ 1000 N / mm ² / Fundición con grafito laminar (GG) 500 < R ≤ 1000 N / mm ²	○	○
	J2	Malleable cast iron (GGG) R ≤ 750 N/mm² / Fonte malléable (GGG) R ≤ 750 N / mm ² / Fundición maleable (GGG) R ≤ 750 N / mm ²	○	○
	J3	Malleable cast iron (GGG) R ≤ 750 N/mm² / Fonte malléable (GGG) R ≤ 750 N / mm ² / Fundición maleable (GGG) R ≤ 750 N / mm ²	○	○
K	K1	Not alloyed aluminum and magnesium750 N / mm ² / Aluminium et magnesium pas allié / Aluminio y magnesio no aleado		
	K2	Magnesium alloys / Magnesium alliages / Aleaciones de magnesio		
	L1	Aluminum alloys with Si < 0,5% R < 500 N/mm² / Alliages d'aluminium ayant Si <0,5% R <500 N / mm ² / Aleaciones de Aluminio con Si <0,5% R <500 N / mm ²		
L	L2	Aluminum alloys with 0,5% < Si < 10% R < 600 N/mm² / Alliages d'aluminium ayant 0,5% <Si <10% R <600 N / mm ² / Aleaciones de Aluminio con 0,5% <Si <10% R <600 N / mm ²		
	M1	Aluminium alloys with Si > 10% R < 600 N/mm² / Alliages d'aluminium ayant Si> 10% R <600 N / mm ² / Aleaciones de Aluminio con Si> 10% R <600 N / mm ²		
N	N1	Copper R ≤ 350 N/mm² / Cuivre R ≤ 350 N / mm ² / Cobre R ≤ 350 N / mm ²		
	N2	Short chip copper alloys / Alliages de cuivre copeau court / Aleaciones de cobre viruta corta		
	N3	Long chip copper alloys / Alliages de cuivre copeau long / Aleaciones de cobre viruta larga		
Q	Q1	Nickel R ≤ 500 N/mm² / Nickel R ≤ 500 N/mm² / Niquel R ≤ 500 N/mm² / Nickel R ≤ 500 N/mm² / Nickel R ≤ 500 N/mm²		
	Q2	Nickel alloys R < 900 N/mm² (INCONEL 600) / Alliages de nickel <900 N / mm ² (INCONEL 600) / Aleaciones de niquel R <900 N / mm ² (INCONEL 600)		
	Q3	Nickel alloys 900 < R < 1200 N/mm² (INCONEL 625/780) / Alliages de nickel 900 <R <1200 N / mm ² (INCONEL 625/780) / Aleaciones de niquel 900 <R <1200 N / mm ² (INCONEL 625/780)		
Ti	T1	Titanium R ≤ 700 N/mm² R ≤ 500 N/mm² / Titane R ≤ 700 N/mm² R ≤ 500 N/mm² / Titanio R ≤ 700 N / mm ² R ≤ 500 N/mm²		
	T2	Annealed titanium alloys R ≤ 900 N/mm² / Alliages de titane recuits R ≤ 900 N / mm ² / Aleaciones de titanio recocidas R ≤ 900 N / mm ²		
	T3	Titanium alloys 900< R ≤ 1200 N/mm² / Alliages de titane 900 <R ≤ 1200 N/mm² / Aleaciones de titanio 900 <R ≤ 1200 N/mm²		
P	P1	Thermoplastic / Thermoplastique / Plásticos	○	○

								
101 HSS	151 HSS	131 HSS	102 HSS	102 HSS	152 HSS	132 HSS	108 HSS Left	103 HSS EE
	21	22	20		23	24	25	25
26		26		27		28		
29				29				
				30				
○	○	○	○	○	○	○	○	
○	○	○	○	○	○	○	○	
○	○	○	○	○	○	○	○	
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								○
								○
								○
								○
								○
			○					

● Suggested / Suggéré / Recomendado ○ Good / Bon / Bueno ○ General purpose / Usage néneral / Aplicación general

MATERIALS AND APPLICATIONS OF TAPPING

MATERIAUX ET APPLICATIONS DE TARAUDAGE

MATERIALES Y APLICACIONES DE ROSCADO

CON MACHOS

Reference / Référence / Referencia

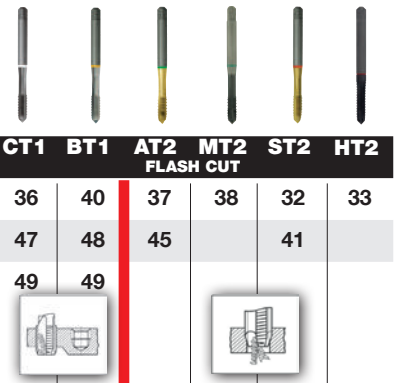
M-MF (DIN=60;ISO=05)

UNC-UNF (62)

BSP (63)

FLASH-CUT

MULTI -APPLICATIONS



		CT1	BT1	AT2	MT2	ST2	HT2
		36	40	37	38	32	33
		47	48	45		41	
		49	49				
A	A1	Unalloyed & low alloyed steels / Aciers non alliés et faiblement alliés / Aceros debilmente aleados					
	B1	Structural steels / Aciers de construction / Aceros de construcción					
	B2	Structural steels / Aciers de construction / Aceros de construcción					
	B3	Structural steels / Aceros de construcción / Aciers de construction					
C	C1	Heat Treatable Steels R < 1000 N/mm ² / Aciers pour traitement thermique R< 1000 N/mm ² / Aceros para tratamiento térmico R< 1000 N/mm ²					
	D1	Heat Treatable Steels >1200 N/mm ² / Aciers pour traitement thermique > 1200 N/mm ² / Aceros para tratamiento térmico R< 1200 N/mm ²					
G	F1	Stainless Steels, Ferritic / Aciers inoxydables, ferritiques / Aceros inoxidables ferriticos					
	G1	Stainless Steels, Martensitic / Aciers inoxydables, Martensitiques / Aceros inoxidables martensiticos					
	H1	Austenitic stainless steel R < 850 N/mm ² Steels, Martensitic / Aciers inoxydables Austenitiques R < 850 N/mm ² / Aceros inoxidables austeniticos R < 850 N/mm ²					
	H2	Chromium and nickel alloys R < 1200 N/mm ² / Alliages de nickel et chrome R < 1200 N/mm ² / Aleaciones de Ni-Cr R < 1200 N/mm ²					
I	I1	Cast Iron with graphite lamellar / Fontes grises à graphite lamellaire / Fundición gris con grafito laminar	●				
	J1	Cast iron with lamellar graphite (GG) 500 < R ≤ 1000 N / mm ² with graphite lamellar / Fonte à graphite lamellaire (GG) 500 < R ≤ 1000 N / mm ² / Fundición con grafito laminar (GG) 500 < R ≤ 1000 N / mm ²	●				
	J2	Malleable cast iron (GGG) R ≤ 750 N/mm ² / Fonte malléable (GGG) R ≤ 750 N / mm ² / Fundición maleable (GGG) R ≤ 750 N / mm ²	●				
	J3	Malleable cast iron (GGG) R ≤ 750 N/mm ² / Fonte malléable (GGG) R ≤ 750 N / mm ² / Fundición maleable (GGG) R ≤ 750 N / mm ²	●				
K	K1	Not alloyed aluminum and magnesium 750 N / mm ² / Aluminium et magnesium pas allié / Aluminio y magnesio no aleado		●			
	K2	Magnesium alloys / Magnesium alliages / Aleaciones de magnesio		●			
	L1	Aluminum alloys with Si < 0,5% R < 500 N/mm ² / Alliages d'aluminium ayant Si < 0,5% R < 500 N / mm ² / Aleaciones de Aluminio con Si < 0,5% R < 500 N / mm ²		●			
	L2	Aluminum alloys with 0,5% < Si < 10% R < 600 N/mm ² / Alliages d'aluminium ayant 0,5% < Si < 10% R < 600 N / mm ² / Aleaciones de Aluminio con 0,5% < Si < 10% R < 600 N / mm ²		●	●		
M	M1	Aluminium alloys with Si > 10% R < 600 N/mm ² / Alliages d'aluminium ayant Si> 10% R < 600 N / mm ² / Aleaciones de Aluminio con Si> 10% R < 600 N / mm ²			●		
N	N1	Copper R ≤ 350 N/mm ² / Cuivre R ≤ 350 N / mm ² / Cobre R ≤ 350 N / mm ²					
	N2	Short chip copper alloys / Alliages de cuivre copeau court / Aleaciones de cobre viruta corta	●				
	N3	Long chip copper alloys / Alliages de cuivre copeau long / Aleaciones de cobre viruta larga					
Q	Q1	Nickel R ≤ 500 N/mm ² / Nickel R ≤ 500 N/mm ² / Niquel R ≤ 500 N/mm ² / Nickel R ≤ 500 N/mm ² / Nickel R ≤ 500 N/mm ² / Niquel R ≤ 500 N/mm ²		●	●		
	Q2	Nickel alloys R < 900 N/mm ² (INCONEL 600) / Alliages de nickel R < 900 N / mm ² (INCONEL 600) / Aleaciones de niquel R < 900 N / mm ² (INCONEL 600)		●	●		
	Q3	Nickel alloys 900 < R < 1200 N/mm ² (INCONEL 625/780) / Alliages de nickel 900 < R < 1200 N / mm ² (INCONEL 625/780) / Aleaciones de niquel 900 < R < 1200 N / mm ² (INCONEL 625/780) /					
Ti	T1	Titanium R ≤ 700 N/mm ² R ≤ 500 N/mm ² / Titane R ≤ 700 N/mm ² R ≤ 500 N/mm ² / Titanio R ≤ 700 N / mm ² R ≤ 500 N/mm ²					●
	T2	Annealed titanium alloys R ≤ 900 N/mm ² / Alliages de titane recuits R ≤ 900 N / mm ² / Aleaciones de titanio recocidas R ≤ 900 N / mm ²					
	T3	Titanium alloys 900 < R ≤ 1200 N/mm ² / Alliages de titane 900 < R ≤ 1200 N/mm ² / Aleaciones de titanio 900 < R ≤ 1200 N/mm ²					●
P	P1	Thermoplastic / Thermoplastique / Plásticos		●			

IT2	TT2	AT5	MT5	ST5	IT5 FLASH CUT	TT5	HT3	AT9	ST9	IT9	TT9	007	202	302	012	205	305
34	39	37	39	32	35	40	34	50	50	51	52	54	55	56	55	57	58
43		46		42	44												107
																	111
				●				○	●			○	○	○	○	○	○
				●				○	●			○	○	○	○	○	○
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		●										○	○	○	○	○	○

● Suggested / Suggéré / Recomendado ○ Good / Bon / Bueno ○ General purpose / Usage néneral / Aplicación general

MATERIALS AND APPLICATIONS OF TAPPING
MATERIAUX ET APPLICATIONS DE TARAUDAGE
MATERIALES Y APLICACIONES DE ROSCADO
CON MACHOS



Reference / Référence / Referencia

M-MF (DIN=60;ISO=05=70)

UNC-UNF (62)

BSW-BSF (61)

BSP (63)

NPT-NPTF (64)

PG (65)

BSPT (66)

310 201 301 HSSE 241 291

60 61 62 62

A	A1	Unalloyed & low alloyed steels / Aciers non alliés et faiblement alliés / Aceros debilmente aleados	○	○	○		
	B1	Structural steels / Aciers de construction / Aceros de construcción	○	○	○		●
	B2	Structural steels / Aciers de construction / Aceros de construcción	○	○	○		●
	B3	Structural steels / Aceros de construcción / Aciers de construction					●
C	C1	Heat Treatable Steels R < 1000 N/mm ² / Aciers pour traitement thermique R< 1000 N/mm ² / Aceros para tratamiento térmico R< 1000 N/mm ²					○
D	D1	Heat Treatable Steels >1200 N/mm ² / Aciers pour traitement thermique > 1200 N/mm ² / Aceros para tratamiento térmico R< 1200 N/mm ²					
F	F1	Stainless Steels, Ferritic / Aciers inoxydables, ferritiques / Aceros inoxidables ferríticos					
G	G1	Stainless Steels, Martensitic / Aciers inoxydables, Martensitiques / Aceros inoxidables martensíticos					
H	H1	Austenitic stainless steel R < 850 N/mm ² Steels, Martensitic / Aciers inoxydables Austenitiques R < 850 N/mm ² / Aceros inoxidables austeniticos R < 850 N/mm ²					
	H2	Chromium and nickel alloys R < 1200 N/mm ² / Alliages de nickel et chrome R < 1200 N/mm ² / Aleaciones de Ni-Cr R < 1200 N/mm ²					○
I	I1	Cast Iron with graphite lamellar / Fontes grises à graphite lamellaire / Fundición gris con grafito laminar					○
	J1	Cast iron with lamellar graphite (GG) 500 < R ≤ 1000 N / mm ² with graphite lamellar / Fonte à graphite lamellaire (GG) 500 < R ≤ 1000 N / mm ² / Fundición con grafito laminar (GG) 500 < R ≤ 1000 N / mm ²					○
	J2	Malleable cast iron (GGG) R ≤ 750 N/mm ² / Fonte malléable (GGG) R ≤ 750 N / mm ² / Fundición maleable (GGG) R ≤ 750 N / mm ²					○
	J3	Malleable cast iron (GGG) R ≤ 750 N/mm ² / Fonte malléable (GGG) R ≤ 750 N / mm ² / Fundición maleable (GGG) R ≤ 750 N / mm ²					
K	K1	Not alloyed aluminum and magnesium 750 N / mm ² / Aluminium et magnesium pas allié / Aluminio y magnesio no aleado					
	K2	Magnesium alloys / Magnesium alliages / Aleaciones de magnesio					
L	L1	Aluminum alloys with Si < 0,5% R < 500 N/mm ² / Alliages d'aluminium ayant Si <0,5% R <500 N / mm ² / Aleaciones de Aluminio con Si <0,5% R <500 N / mm ²					
	L2	Aluminum alloys with 0,5% < Si < 10% R < 600 N/mm ² / Alliages d'aluminium ayant 0,5% <Si <10% R <600 N / mm ² / Aleaciones de Aluminio con 0,5% <Si <10% R <600 N / mm ²					
M	M1	Aluminium alloys with Si > 10% R < 600 N/mm ² / Alliages d'aluminium ayant Si> 10% R <600 N / mm ² / Aleaciones de Aluminio con Si> 10% R <600 N / mm ²					
N	N1	Copper R ≤ 350 N/mm ² / Cuivre R ≤ 350 N / mm ² / Cobre R ≤ 350 N / mm ²					
	N2	Short chip copper alloys / Alliages de cuivre copeau court / Aleaciones de cobre viruta corta					
	N3	Long chip copper alloys / Alliages de cuivre copeau long / Aleaciones de cobre viruta larga					
Q	Q1	Nickel R ≤ 500 N/mm ² / Nickel R ≤ 500 N/mm ² / Niquel R ≤ 500 N/mm ² / Nickel R ≤ 500 N/mm ² / Nickel R ≤ 500 N/mm ² / Niquel R ≤ 500 N/mm ²					
	Q2	Nickel alloys R < 900 N/mm ² (INCONEL 600) / Alliages de nickel R <900 N / mm ² (INCONEL 600) / Aleaciones de niquel R <900 N / mm ² (INCONEL 600)					
	Q3	Nickel alloys 900 < R < 1200 N/mm ² (INCONEL 625/780) / Alliages de nickel 900 <R <1200 N / mm ² (INCONEL 625/780) / Aleaciones de niquel 900 <R <1200 N / mm ² (INCONEL 625/780) /					
Ti	T1	Titanium R ≤ 700 N/mm ² R ≤ 500 N/mm ² / Titane R ≤ 700 N/mm ² R ≤ 500 N/mm ² / Titanio R ≤ 700 N / mm ² R ≤ 500 N/mm ²					
	T2	Annealed titanium alloys R ≤ 900 N/mm ² / Alliages de titane recuits R ≤ 900 N / mm ² / Aleaciones de titanio recocidas R ≤ 900 N / mm ²					
Ti	T3	Titanium alloys 900 < R ≤ 1200 N/mm ² / Alliages de titane 900 <R ≤ 1200 N/mm ² / Aleaciones de titanio 900 <R ≤ 1200 N/mm ²					
P	P1	Thermoplastic / Thermoplastique / Plásticos					

● Suggested / Suggéré / Recomendado ○ Good / Bon / Bueno ○ General purpose / Usage nénerál / Aplicación general

MATERIALS AND APPLICATIONS OF TAPPING

MATERIAUX ET APPLICATIONS DE TARAUDAGE

MATERIALES Y APLICACIONES DE ROSCADO

CON MACHOS

Referencia / Référence / Reference

M-MF (DIN=60;ISO=05)

UNC-UNF (62)

BSW-BSF (61)

BSP (63)

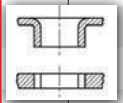
NPT-NPTF (64)

PG (65)

BSPT (66)

588 688 062 HSSEE 082 504 604 HSS

78 79 74 75 80 80



A	A1	Unalloyed & low alloyed steels / Aciers non alliés et faiblement alliés / Aceros debilmente aleados							
	B1	Structural steels / Aciers de construction / Aceros de construcción							
	B2	Structural steels / Aciers de construction / Aceros de construcción							
	B3	Structural steels / Aceros de construcción / Aciers de construction							
C	C1	Heat Treatable Steels R < 1000 N/mm² / Aciers pour traitement thermique R< 1000 N/mm² / Aceros para tratamiento térmico R< 1000 N/mm²							
D	D1	Heat Treatable Steels >1200 N/mm² / Aciers pour traitement thermique > 1200 N/mm² / Aceros para tratamiento térmico R< 1200 N/mm²							
F	F1	Stainless Steels, Ferritic / Aciers inoxydables, ferritiques / Aceros inoxidables ferríticos							
G	G1	Stainless Steels, Martensitic / Aciers inoxydables, Martensitiques / Aceros inoxidables martensíticos							
H	H1	Austenitic stainless steel R < 850 N/mm² Steels, Martensitic / Aciers inoxydables Austenitiques R < 850 N/mm² / Aceros inoxidables austeniticos R < 850 N/mm²							
	H2	Chromium and nickel alloys R < 1200 N/mm² / Alliages de nickel et chrome R < 1200 N/mm² / Aleaciones de Ni-Cr R < 1200 N/mm²							
I	I1	Cast Iron with graphite lamellar / Fontes grises à graphite lamellaire / Fundición gris con grafito laminar							
	J1	Cast iron with lamellar graphite (GG) 500 < R ≤ 1000 N / mm² with graphite lamellar / Fonte à graphite lamellaire (GG) 500 < R ≤ 1000 N / mm² / Fundición con grafito laminar (GG) 500 < R ≤ 1000 N / mm²							
	J2	Malleable cast iron (GGG) R ≤ 750 N/mm² / Fonte malléable (GGG) R ≤ 750 N / mm² / Fundición maleable (GGG) R ≤ 750 N / mm²							
J	J3	Malleable cast iron (GGG) R ≤ 750 N/mm² / Fonte malléable (GGG) R ≤ 750 N / mm² / Fundición maleable (GGG) R ≤ 750 N / mm²							
	K1	Not alloyed aluminum and magnesium 750 N / mm² / Aluminium et magnesium pas allié / Aluminio y magnesio no aleado							
	K2	Magnesium alloys / Magnesium alliages / Aleaciones de magnesio							
L	L1	Aluminum alloys with Si < 0,5% R < 500 N/mm² / Alliages d'aluminium ayant Si <0,5% R <500 N / mm² / Aleaciones de Aluminio con Si <0,5% R <500 N / mm²							
	L2	Aluminum alloys with 0,5% < Si < 10% R < 600 N/mm² / Alliages d'aluminium ayant 0,5% <Si <10% R <600 N / mm² / Aleaciones de Aluminio con 0,5% <Si <10% R <600 N / mm²							
M	M1	Aluminium alloys with Si > 10% R < 600 N/mm² / Alliages d'aluminium ayant Si> 10% R <600 N / mm² / Aleaciones de Aluminio con Si> 10% R <600 N / mm²							
N	N1	Copper R ≤ 350 N/mm² / Cuivre R ≤ 350 N / mm² / Cobre R ≤ 350 N / mm²							
	N2	Short chip copper alloys / Alliages de cuivre copeau court / Aleaciones de cobre viruta corta							
	N3	Long chip copper alloys / Alliages de cuivre copeau long / Aleaciones de cobre viruta larga							
Q	Q1	Nickel R ≤ 500 N/mm² / Nickel R ≤ 500 N/mm² / Niquel R ≤ 500 N/mm² / Nickel R ≤ 500 N/mm² / Nickel R ≤ 500 N/mm²							
	Q2	Nickel alloys R < 900 N/mm² (INCONEL 600) / Alliages de nickel R <900 N / mm² (INCONEL 600) / Aleaciones de niquel R <900 N / mm² (INCONEL 600)							
	Q3	Nickel alloys 900 < R < 1200 N/mm² (INCONEL 625/780) / Alliages de nickel 900 <R <1200 N / mm² (INCONEL 625/780) / Aleaciones de niquel 900 <R <1200 N / mm² (INCONEL 625/780)							
T	T1	Titanium R ≤ 700 N/mm² R ≤ 500 N/mm² / Titane R ≤ 700 N/mm² R ≤ 500 N/mm² / Titanio R ≤ 700 N / mm² R ≤ 500 N/mm²							
	T2	Annealed titanium alloys R ≤ 900 N/mm² / Alliages de titane recuits R ≤ 900 N / mm² / Aleaciones de titanio recocidas R ≤ 900 N / mm²							
Ti	T3	Titanium alloys 900 < R ≤ 1200 N/mm² / Alliages de titane 900 <R ≤ 1200 N/mm² / Aleaciones de titanio 900 <R ≤ 1200 N/mm²							
P	P1	Thermoplastic / Thermoplastique / Plásticos							

TAPPING

CATALOGUE



TAPPING
TARAUUDAGE
ROSCADO

#01-05

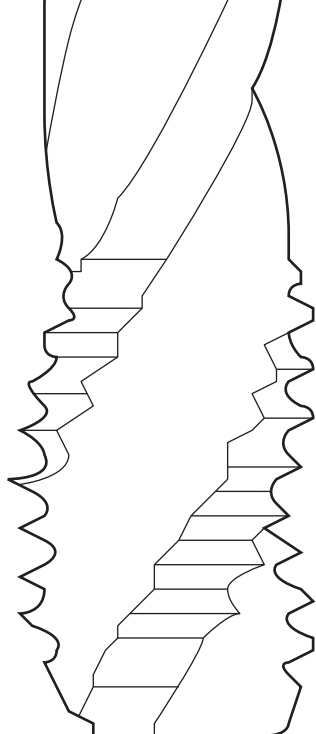


#

DIN ISO NORM

NORME DIN ISO

NORMA DIN ISO



A.

HAND TAPS

TARAUDS A MAIN
ROSCADO
MANUAL

18

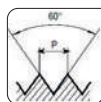
M - MF right hand sets
NC - NF right hand sets
W right hand sets
BSP right hand sets
Metric left hand sets
Metric moulding sets

#0



M
MF

Metric thread
Filet metrique
Rosca métrica



ISO 2 Norm
Norme ISO 2
Norma ISO 2

MULTIPURPOSE HAND TAPS
JEU TARAUDS MULTIAPPLICATION
JUEGO MACHOS MULTIAPLICACION

6H

ISO 529

HSS

STEAM TREATED



2,5xd



A

B

C

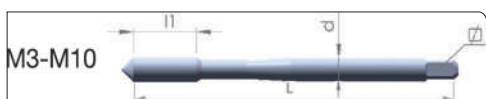
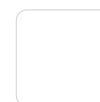
F

H1

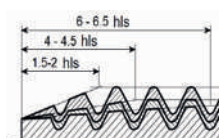
I

J

P



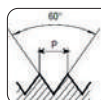
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1050031030050	M 3	0,5	48	15	3,15	529	2,5	2,5
1050031035060	M 3,5	0,6	50	20,5	3,55	529	2,8	2,9
1050031040070	M 4	0,7	53	12,5	4	529	3,15	3,3
1050031040075	M 4	0,75	53	12,5	4	529	3,15	3,25
1050031050080	M 5	0,8	58	15,5	5	529	4	4,2
1050031050090	M 5	0,9	58	15,5	5	529	4	4,1
1050031060100	M 6	1	66	19	6,3	529	5	5
1050031070100	M 7	1	66	18,5	7,1	529	4,9	6
1050031080125	M 8	1,25	72	22	8	529	6,3	6,75
1050031090125	M 9	1,25	72	22	8	529	6,3	7,75
1050031100150	M 10	1,5	80	23	10	529	8	8,5
1050031110150	M 11	1,5	85	24	8	529	6,2	9,5
1050031120175	M 12	1,75	89	29	9	529	7,1	10,25
1050031140200	M 14	2	95	30	11,2	529	9	12
1050031160200	M 16	2	102	32	12,5	529	10	14
1050031180250	M 18	2,5	112	37	14	529	11,2	15,5
1050031200250	M 20	2,5	112	37	14	529	11,2	17,5
1050031220250	M 22	2,5	118	38	16	529	14,5	19,5
1050031240300	M 24	3	130	45	18	529	14,5	21
1050031270300	M 27	3	135	45	20	529	16	24
1050031300350	M 30	3,5	138	48	20	529	16	26,5



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1050031100100	MF10	1	76	20	10	529	8	9,00
1050031100125	MF10	1,25	76	20	10	529	8	8,75
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1050031120125	MF12	1,25	84	24	9	529	7,1	10,75
1050031120150	MF12	1,5	89	29	9	529	7,1	10,50
1050031140125	MF14	1,25	90	25	11,2	529	9	12,75
1050031140150	MF14	1,5	90	30	11,2	529	9	12,50
1050031160150	MF16	1,5	102	32	12,5	529	10	14,50
1050031180150	MF18	1,5	104	29	14	529	11,2	16,50
1050031200150	MF20	1,5	104	29	14	529	11,2	19,50
1050031220150	MF22	1,5	113	38	16	529	12,5	20,50
1050031240150	MF24	1,5	120	45	18	529	14	22,50



M Metric thread
Filet metrique
Rosca métrica



ISO 2 Norm
Norme ISO 2
Norma ISO 2

MULTIPURPOSE HAND TAPS
JEU TARAUDS MULTIAPPLICATION
JUEGO MACHOS MULTIPLICACION

6H

DIN 352

HSS

STEAM TREATED



2,5xd



A

B

C

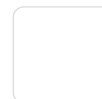
F

H1

I

J

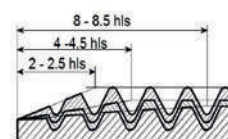
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M3-M6

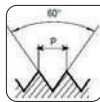
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950101100400070	M 4	0,7	45	12,5	4,5	352	3,4	3,30
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950101100800125	M 8	1,25	56	22	6	352	4,9	6,75
950101100900125	M 9	1,25	63	22	6	352	5,5	7,75
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950101101100150	M 11	1,5	70	24	8	352	6,2	9,50
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950101101400200	M 14	2	80	29	11	352	9	12,00
950101101600200	M 16	2	80	31	12	352	9	14,00
950101101800250	M 18	2,5	95	39	14	352	11	15,50
950101102000250	M 20	2,5	95	39	16	352	12	17,50
950101102200250	M 22	2,5	100	40	18	352	14,5	19,50
950101102400300	M 24	3	110	45	18	352	14,5	21,00
950101102700300	M 27	3	110	50	20	352	16	24,00
950101103000350	M 30	3,5	125	56	22	352	18	26,50
950101103300350	M 33	3,5	125	56	25	352	20	26,50
950101103600400	M 36	4	150	63	28	352	22	32,00
950101103900400	M 39	4	150	63	32	352	24	35,00
950101104200450	M 42	4,5	150	63	32	352	24	37,50

PLUS GRANDS QUE M12 PROFIL ÉCHELONNÉ
LARGER THAN M12 STEPPED PROFIL
MAS GRANDES QUE M12 PERFIL ESCALONADO



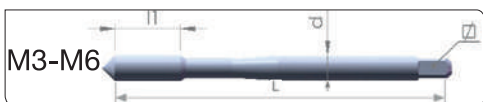
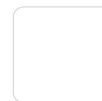


Metric fine thread
Filet metrique fine
Rosca métrica fina

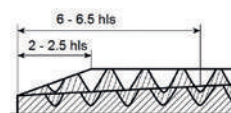


ISO 2 Norm
Norme ISO 2
Norma ISO 2

MULTIPURPOSE HAND TAPS
JEU TARAUDS MULTIAPPLICATION
JUEGO MACHOS MULTIAPLICACION

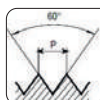


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950102100800100	MF8	1	56	22	6	2181	4,9	7,00
950102101000100	MF10	1	63	18	7	2181	5,5	9,00
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950102102400200	MF24	2	90	22	18	2181	14,5	22,00
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950102103000150	MF30	1,5	90	22	22	2181	18	28,50
950102103000200	MF30	2	90	22	22	2181	18	28,00
950102103300200	MF33	2	100	25	25	2181	20	31,00





M Metric thread
Filet metrique
Rosca métrica



ISO 2 Norm
Norme ISO 2
Norma ISO 2

SET OF 3 HAND TAPS
JEU DE 3 TARAUDS MAIN
JUEGO DE 3 MACHOS DE MANO

6H

DIN 352

HSS

BRIGHT UNCOATED



2,5xd



A

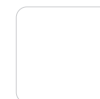
B

C

K

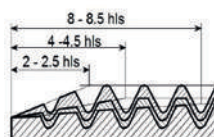
L

N



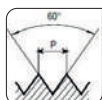
1501511	Ø	P	L	l1	d	DIN	□	●Ø
150151100200040	M 2	0,4	36	9	2,8	352	2,1	1,60
150151100250045	M 2,5	0,45	40	10	2,8	352	2,1	2,00
150151100300050	M 3	0,5	40	11	3,5	352	2,7	2,50
150151100350060	M 3,5	0,6	45	13	4	352	3	2,90
150151100400070	M 4	0,7	45	13	4,5	352	3,4	3,30
150151100500080	M 5	0,8	50	15	6	352	4,9	4,20
150151100600100	M 6	1	50	16	6	352	4,9	5,00
150151100700100	M 7	1	50	19	6	352	4,9	5,00
150151100800125	M 8	1,25	56	22	6	352	4,9	6,75
150151100900125	M 9	1,25	63	22	6	352	5,5	7,75
150151101000150	M 10	1,5	70	24	7	352	5,5	8,50
150151101100150	M 11	1,5	70	24	8	352	6,2	9,50
150151101200175	M 12	1,75	75	29	9	352	7	10,25
150151101400200	M 14	2	80	30	11	352	9	12,00
150151101600200	M 16	2	80	32	12	352	9	14,00
150151101800250	M 18	2,5	95	40	14	352	11	15,50
150151102000250	M 20	2,5	95	40	16	352	12	17,50
150151102200250	M 22	2,5	100	40	18	352	14,5	19,50
150151102400300	M 24	3	110	45	18	352	14,5	21,00
150151102700300	M 27	3	110	50	20	352	16	24,00
150151103000350	M 30	3,5	125	56	22	352	18	26,50
150151103300350	M 33	3,5	125	56	25	352	20	26,50
150151103600400	M 36	4	150	63	28	352	22	32,00
150151103900400	M 39	4	150	63	32	352	24	35,00
150151104200450	M 42	4,5	150	63	32	352	24	37,50
150151104500450	M 45	4,5	160	70	36	352	29	37,50
150151105200500	M 52	5	180	75	40	352	32	47,00

PLUS GRANDS QUE M12 PROFIL ÉCHELONNÉ
LARGER THAN M12 STEPPED PROFIL
MAS GRANDES QUE M12 PERFIL ESCALONADO





M Metric thread
Filet metrique
Rosca métrica



ISO 2 Norm
Norme ISO 2
Norma ISO 2

BOTTOMING HAND TAPS

N° 3 TARAUD MAIN

MACHO DE MANO N° 3

6H

DIN 352

HSS

BRIGHT UNCOATED



2,5xd



A

B

C

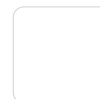
F1

H1

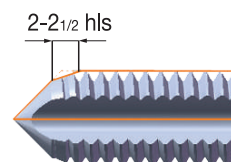
K

L

N

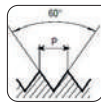


9501311	Ø	P	L	l1	d	DIN	□	•Ø
950131100200040	M 2	0,4	36	9	2,8	352	2,1	1,60
950131100250045	M 2,5	0,45	40	10	2,8	352	2,1	2,00
950131100300050	M 3	0,5	40	11	3,5	352	2,7	2,50
950131100350060	M 3,5	0,6	45	13	4	352	3	2,90
950131100400070	M 4	0,7	45	13	4,5	352	3,4	3,30
950131100500080	M 5	0,8	50	15	6	352	4,9	4,20
950131100600100	M 6	1	50	16	6	352	4,9	5,00
950131100700100	M 7	1	50	19	6	352	4,9	5,00
950131100800125	M 8	1,25	56	22	6	352	4,9	6,75
950131100900125	M 9	1,25	63	22	6	352	5,5	7,75
950131101000150	M 10	1,5	70	24	7	352	5,5	8,50
950131101100150	M 11	1,5	70	24	8	352	6,2	9,50
950131101200175	M 12	1,75	75	29	9	352	7	10,25
950131101400200	M 14	2	80	30	11	352	9	12,00
950131101600200	M 16	2	80	32	12	352	9	14,00
950131101800250	M 18	2,5	95	40	14	352	11	15,50
950131102000250	M 20	2,5	95	40	16	352	12	17,50
950131102200250	M 22	2,5	100	40	18	352	14,5	19,50
950131102400300	M 24	3	110	45	18	352	14,5	21,00
950131102700300	M 27	3	110	50	20	352	16	24,00
950131103000350	M 30	3,5	125	56	22	352	18	26,50
950131103300350	M 33	3,5	125	56	25	352	20	26,50
950131103600400	M 36	4	150	63	28	352	22	32,00
950131103900400	M 39	4	150	63	32	352	24	35,00
950131104200450	M 42	4,5	150	63	32	352	24	37,50
950131104500450	M 45	4,5	160	70	36	352	29	37,50
950131105200500	M 52	5	180	75	40	352	32	47,00



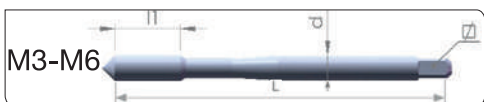
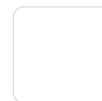
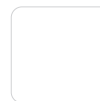
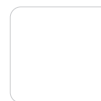


Metric fine thread
Filet metrique fine
Rosca métrica fina

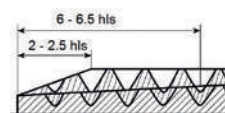


ISO 2 Norm
Norme ISO 2
Norma ISO 2

SET OF 2 HAND TAPS
JEU DE 2 TARAUDS MAIN
JUEGO DE 2 MACHOS DE MANO

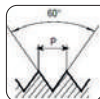


1501521	Ø	P	L	l1	d	DIN	□	●Ø
150152100400050	MF4	0,5	50	14,5	6	2181	3,4	3,50
150152100500050	MF5	0,5	50	11	6	2181	4,9	4,50
150152100600050	MF6	0,5	50	14	6	2181	4,9	5,50
150152100600075	MF6	0,75	50	14	6	2181	4,9	5,25
150152100700075	MF7	0,75	50	19	6	2181	4,9	6,25
150152100800075	MF8	0,75	50	18	6	2181	4,9	7,25
150152100800100	MF8	1	56	22	6	2181	4,9	7,00
150152101000100	MF10	1	63	18	7	2181	5,5	9,00
150152101000125	MF10	1,25	70	24	7	2181	5,5	8,75
150152101100100	MF11	1	63	20	8	2181	6,2	10,00
150152101200100	MF12	1	70	20	9	2181	7	11,00
150152101200125	MF12	1,25	70	20	9	2181	7	10,75
150152101200150	MF12	1,5	70	20	9	2181	7	10,50
150152101400100	MF14	1	70	22	11	2181	9	13,00
150152101400125	MF14	1,25	70	22	11	2181	9	12,75
150152101400150	MF14	1,5	70	22	11	2181	9	12,50
150152101600100	MF16	1	70	22	12	2181	9	15,00
150152101600150	MF16	1,5	70	22	12	2181	9	14,50
150152101800100	MF18	1	80	22	14	2181	11	17,00
150152101800150	MF18	1,5	80	22	14	2181	11	16,50
150152101800200	MF18	2	80	22	14	2181	11	16,00
150152102000100	MF20	1	80	22	16	2181	11	19,00
150152102000150	MF20	1,5	80	22	16	2181	11	18,50
150152102000200	MF20	2	80	22	16	2181	11	18,00
150152102200150	MF22	1,5	80	22	18	2181	14,5	20,50
150152102200200	MF22	2	80	22	18	2181	14,5	20,00
150152102400150	MF24	1,5	90	22	18	2181	14,5	22,50
150152102400200	MF24	2	90	22	18	2181	14,5	22,00
150152102700150	MF27	1,5	90	22	20	2181	16	25,50
150152102700200	MF27	2	90	22	18	2181	16	25,00
150152103000150	MF30	1,5	90	22	22	2181	18	28,50
150152103000200	MF30	2	90	22	22	2181	18	28,00





Metric fine thread
Filet metrique fine
Rosca métrica fina

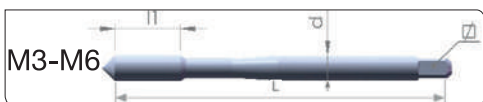
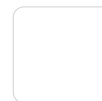


ISO 2 Norm
Norme ISO 2
Norma ISO 2

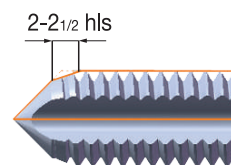
BOTTOMING HAND TAP

N° 2 TARAUD MAIN

MACHO DE MANO N° 2

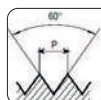


9501321	Ø	P	L	l1	d	DIN	□	●Ø
950132100400050	MF4	0,5	50	14,5	6	2181	3,4	3,50
950132100500050	MF5	0,5	50	11	6	2181	4,9	4,50
950132100600050	MF6	0,5	50	14	6	2181	4,9	5,50
950132100600075	MF6	0,75	50	14	6	2181	4,9	5,25
950132100700075	MF7	0,75	50	19	6	2181	4,9	6,25
950132100800075	MF8	0,75	50	18	6	2181	4,9	7,25
950132100800100	MF8	1	56	22	6	2181	4,9	7,00
950132101000100	MF10	1	63	18	7	2181	5,5	9,00
950132101000125	MF10	1,25	70	24	7	2181	5,5	8,75
950132101100100	MF11	1	63	20	8	2181	6,2	10,00
950132101200100	MF12	1	70	20	9	2181	7	11,00
950132101200125	MF12	1,25	70	20	9	2181	7	10,75
950132101200150	MF12	1,5	70	20	9	2181	7	10,50
950132101400100	MF14	1	70	22	11	2181	9	13,00
950132101400125	MF14	1,25	70	22	11	2181	9	12,75
950132101400150	MF14	1,5	70	22	11	2181	9	12,50
950132101600100	MF16	1	70	22	12	2181	9	15,00
950132101600150	MF16	1,5	70	22	12	2181	9	14,50
950132101800100	MF18	1	80	22	14	2181	11	17,00
950132101800150	MF18	1,5	80	22	14	2181	11	16,50
950132101800200	MF18	2	80	22	14	2181	11	16,00
950132102000100	MF20	1	80	22	16	2181	11	19,00
950132102000150	MF20	1,5	80	22	16	2181	11	18,50
950132102000200	MF20	2	80	22	16	2181	11	18,00
950132102200150	MF22	1,5	80	22	18	2181	14,5	20,50
950132102200200	MF22	2	80	22	18	2181	14,5	20,00
950132102400150	MF24	1,5	90	22	18	2181	14,5	22,50
950132102400200	MF24	2	90	22	18	2181	14,5	22,00
950132102700150	MF27	1,5	90	22	20	2181	16	25,50
950132102700200	MF27	2	90	22	18	2181	16	25,00
950132103000150	MF30	1,5	90	22	22	2181	18	28,50
950132103000200	MF30	2	90	22	22	2181	18	28,00





M Metric thread
Filet metrique
Rosca métrica



ISO 2 Norm
Norme ISO 2
Norma ISO 2

SET OF 3 LEFT HAND TAPS
JEU TARAUDS MAIN Á GAUCHE
JUEGO MACHOS DE MANO A IZDA.

6H

DIN 352

HSS

BRIGHT UNCOATED



2,5xd



A

B

C

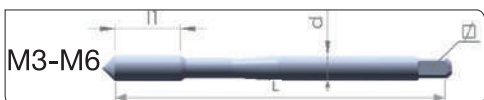
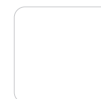
F1

H1

K

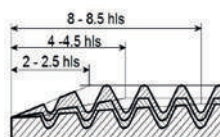
L

N

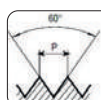


9501081	Ø	P	L	l1	d	DIN	□	●Ø
950108100400070	M 4	0,7	45	13	4,5	352	3,4	3,30
950108100500080	M 5	0,8	50	15	6	352	4,9	4,20
950108100600100	M 6	1	50	16	6	352	4,9	5,00
950108100800125	M 8	1,25	56	22	6	352	6,2	6,75
950108101000150	M 10	1,5	70	24	7	352	5,5	8,50
950108101200175	M 12	1,75	75	29	9	352	7	10,25
950108101400200	M 14	2	80	30	11	352	9	12,00
950108101600200	M 16	2	80	32	12	352	9	14,00

PLUS GRANDS QUE M12 PROFIL ÉCHELONNÉ
LARGER THAN M12 STEPPED PROFIL
MAS GRANDES QUE M12 PERFIL ESCALONADO



M Metric thread
Filet metrique
Rosca métrica



ISO 2 Norm
Norme ISO 2
Norma ISO 2

SET OF 3 HAND TAPS
JEU DE 3 TARAUDS MAIN
JUEGO DE 3 MACHOS DE MANO

6H

ISO 529

HSS EE

BRIGHT UNCOATED



2,5xd



C

D

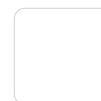
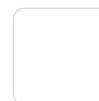
F

G

H

Q

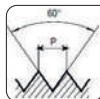
Ti



9501031	Ø	P	L	l1	d	ISO	□	●Ø
950103100300050	M 3	0,5	48	11	3,15	529	2,5	2,50
950103100400070	M 4	0,7	53	13	4	529	3,15	3,30
950103100500080	M 5	0,8	58	16	5	529	4	4,20
950103100600100	M 6	1	66	19	6,3	529	5	5,00
950103100800125	M 8	1,25	72	22	8	529	6,3	6,75
950103101000150	M 10	1,5	80	24	10	529	8	8,50
950103101200175	M 12	1,75	89	29	9	529	7,1	10,25
950103101400200	M 14	2	95	30	11,2	529	9	12,00
950103101600200	M 16	2	102	32	12,5	529	10	14,00



UNC Normal series American Unified Thread
Filet Unifié Américaine série normal
Rosca Unificada Americana serie normal



ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

SET OF 3 HAND TAPS
JEU DE 3 TARAUDS MAIN
JUEGO DE 3 MACHOS DE MANO

2B **DIN 352** **HSS** **BRIGHT UNCOATED**

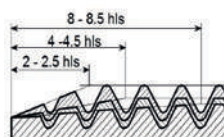
2,5xd

A **B** **C** **F1** **H1** **K** **L** **N**

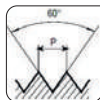


9521011	Ø	P	L	I1	d	DIN	□	●Ø
952101100003480	NC#3	48	40	11	3,5	352	2,7	2,1
952101100004400	NC#4	40	40	11	3,5	352	2,7	2,3
952101100005400	NC#5	40	40	11	3,5	352	2,7	2,6
952101100006320	NC#6	32	45	13	4	352	3	2,85
952101100008320	NC#8	32	45	13	4	352	3,4	3,5
952101100010240	NC#10	24	50	16	6	352	4,9	3,9
952101100012240	NC#12	24	50	18	6	352	4,9	4,5
952101100140200	NC1/4	20	56	22	6	352	4,9	5,1
952101100516180	NC5/16	18	63	25	6	352	4,9	6,5
952101100380160	NC3/8	16	70	28	7	352	5,5	7,9
952101100716140	NC7/16	14	75	30	8	352	6,2	9,25
952101100120130	NC1/2	13	80	32	9	352	7	10,5
952101100916120	NC9/16	12	80	32	11	352	9	12
952101100580110	NC5/8	11	90	36	12	352	9	13,5
952101100340100	NC3/4	10	105	40	14	352	11	16,5
952101100780090	NC7/8	9	110	45	18	352	14,5	19,25
952101110000080	NC1"	8	110	50	20	352	16	22

PLUS GRANDS QUE M12 PROFIL ÉCHELONNÉ
LARGER THAN M12 STEPPED PROFIL
MAS GRANDES QUE M12 PERFIL ESCALONADO



UNC Normal series American Unified Thread
Filet Unifié Américaine série normal
Rosca Unificada Americana serie normal



ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

BOTTOMING HAND TAP
N° 3 TARAUD MAIN
MACHO DE MANO N° 3

2B **DIN 352** **HSS** **BRIGHT UNCOATED**

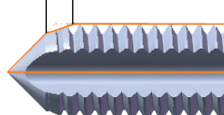
2,5xd

A **B** **C** **F1** **H1** **K** **L** **N**



9521311	Ø	P	L	I1	d	DIN	□	●Ø
952131100003480	NC#3	48	40	11	3,5	352	2,7	2,1
952131100004400	NC#4	40	40	11	3,5	352	2,7	2,3
952131100005400	NC#5	40	40	11	3,5	352	2,7	2,6
952131100006320	NC#6	32	45	13	4	352	3	2,85
952131100008320	NC#8	32	45	13	4	352	3,4	3,5
952131100010240	NC#10	24	50	16	6	352	4,9	3,9
952131100012240	NC#12	24	50	18	6	352	4,9	4,5
952131100140200	NC1/4	20	56	22	6	352	4,9	5,1

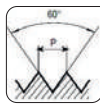
2-2 1/2 hls



9521311	Ø	P	L	l1	d	DIN	□	●Ø
952131100516180	NC5/16	18	63	25	6	352	4,9	6,5
952131100380160	NC3/8	16	70	28	7	352	5,5	7,9
952131100716140	NC7/16	14	75	30	8	352	6,2	9,25
952131100120130	NC1/2	13	80	32	9	352	7	10,5
952131100916120	NC9/16	12	80	32	11	352	9	12
952131100580110	NC5/8	11	90	36	12	352	9	13,5
952131100340100	NC3/4	10	105	40	14	352	11	16,5
952131100780090	NC7/8	9	110	45	18	352	14,5	19,25
952131110000080	NC1"	8	110	50	20	352	16	22



Fine series American Unified Thread
Filet Unifié Américaine série fine
Rosca Unificada Americana serie fina

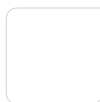


ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

SET OF 2 HAND TAPS

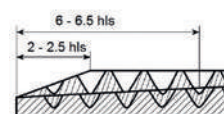
JEU DE 2 TARAUDS MAIN

JUEGO DE 2 MACHOS DE MANO



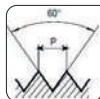
9521021

9521021	Ø	P	L	l1	d	DIN	□	●Ø
952102100003560	NF#3	56	40	11	3,5	2181	2,7	2,1
952102100004480	NF#4	48	40	11	3,5	2181	2,7	2,4
952102100005440	NF#5	44	40	11	3,5	2181	2,7	2,7
952102100006400	NF#6	40	45	13	4	2181	3	3
952102100008360	NF#8	36	45	13	4	2181	3,4	3,5
952102100010320	NF#10	32	50	16	6	2181	4,9	4,1
952102100012280	NF#12	28	50	18	6	2181	4,9	4,7
952102100140280	NF1/4	28	56	22	6	2181	4,9	5,5
952102100516240	NF5/16	24	63	25	6	2181	4,9	6,9
952102100380240	NF3/8	24	70	25	7	2181	5,5	8,5
952102100716200	NF7/16	20	75	30	8	2181	6,2	9,9
952102100120200	NF1/2	20	80	32	9	2181	7	11,5
952102100916180	NF9/16	18	90	32	12	2181	9	12,9
952102100580180	NF5/8	18	90	32	12	2181	9	14,5
952102100340160	NF3/4	16	105	35	14	2181	11	17,5
952102100780140	NF7/8	14	110	35	18	2181	14,5	20,5
952102110000120	NF1"	10	110	35	20	2181	16	23,25





Fine series American Unified Thread
Filet Unifié Américaine série fine
Rosca Unificada Americana serie fina



ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

BOTTOMING HAND TAP
N° 2 TARAUD MAIN
MACHO DE MANO N° 2

2B

DIN 2181

HSS

BRIGHT UNCOATED



2,5xd



A

B

C

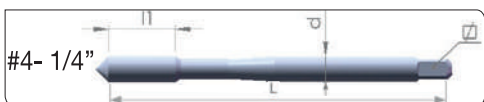
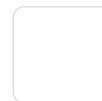
F1

H1

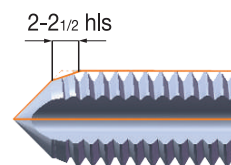
K

L

N

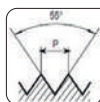


9521321	Ø	P	L	l1	d	DIN	□	●Ø
952132100003560	NF#3	56	40	11	3,5	2181	2,7	2,1
952132100004480	NF#4	48	40	11	3,5	2181	2,7	2,4
952132100005440	NF#5	44	40	11	3,5	2181	2,7	2,7
952132100006400	NF#6	40	45	13	4	2181	3	3
952132100008360	NF#8	36	45	13	4	2181	3,4	3,5
952132100010320	NF#10	32	50	16	6	2181	4,9	4,1
952132100012280	NF#12	28	50	18	6	2181	4,9	4,7
952132100140280	NF1/4	28	56	22	6	2181	4,9	5,5
952132100516240	NF5/16	24	63	25	6	2181	4,9	6,9
952132100380240	NF3/8	24	70	25	7	2181	5,5	8,5
952132100716200	NF7/16	20	75	30	8	2181	6,2	9,9
952132100120200	NF1/2	20	80	32	9	2181	7	11,5
952132100916180	NF9/16	18	90	32	12	2181	9	12,9
952132100580180	NF5/8	18	90	32	12	2181	9	14,5
952132100340160	NF3/4	16	105	35	14	2181	11	17,5
952132100780140	NF7/8	14	110	35	18	2181	14,5	20,5
952132110000120	NF1"	10	110	35	20	2181	16	23,25





BSW Thread WHITWORTH
Filet WHITWORTH
Rosca WHITWORTH



DIN 11 Norm
Norme DIN 11
Norma DIN 11

SET OF 3 HAND TAPS
JEU DE 3 TARAUDS MAIN
JUEGO DE 3 MACHOS DE MANO

NORMAL CLASS **DIN 352** **HSS** **BRIGHT UNCOATED**

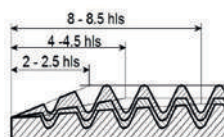
 **2,5xd** 

A B C F1 H1 K L N

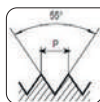


9511011	Ø	P	L	l1	d	DIN	□	●Ø
951101100180400	W 1/8"	40	40	11	3,5	352	2,7	2,55
951101100532320	W5/32"	32	45	13	4,5	352	3,4	3,2
951101100316240	W3/16"	24	50	16	6	352	4,9	3,7
951101100732240	W7/32"	24	50	18	6	352	4,9	4,5
951101100140200	W 1/4"	20	56	22	6	352	4,9	5,1
951101100516180	W5/16"	18	63	25	6	352	4,9	6,5
951101100380160	W 3/8"	16	70	28	7	352	5,5	7,9
951101100716140	W7/16"	14	75	30	8	352	6,2	9,25
951101100120120	W 1/2"	12	80	32	9	352	7	10,5
951101100916120	W9/16"	12	80	32	9	352	9	12
951101100340100	W 3/4"	10	105	40	14	352	11	16,5
951101100780090	W 7/8"	9	110	45	18	352	14,5	19,25
951101110000080	W 1"	8	110	50	20	352	16	22
951101110140070	W1*1/4	7	125	56	25	352	20	27,75

PLUS GRANDS QUE M12 PROFIL ÉCHELONNÉ
LARGER THAN M12 STEPPED PROFIL
MAS GRANDES QUE M12 PERFIL ESCALONADO



BSF Thread WHITWORTH fine
Filet WHITWORTH fine
Rosca WHITWORTH fina



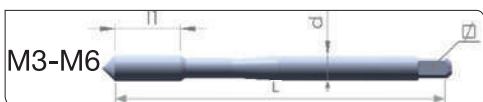
DIN 11 Norm
Norme DIN 11
Norma DIN 11

SET OF 2 HAND TAPS
JEU DE 2 TARAUDS MAIN
JUEGO DE 2 MACHOS DE MANO

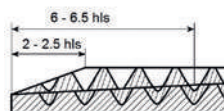
NORMAL CLASS **DIN 2181** **HSS** **BRIGHT UNCOATED**

 **2,5xd** 

A B C F1 H1 K L N

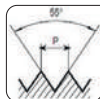


9511021	Ø	P	L	l1	d	DIN	□	●Ø
951102100140260	W 1/4"	26	56	22	6	2181	4,9	5,3
951102100380200	W 3/8"	20	70	28	7	2181	5,5	8,3
951102100716180	W7/16"	18	75	30	8	2181	6,2	9,7
951102100120160	W 1/2"	16	80	32	9	2181	7	11,1
951102100916160	W9/16"	16	80	32	11	2182	9	12,7
951102100780110	W 7/8"	19,5	45	18	14,5	2183	14,5	19,75
951102110000100	W 1"	10	110	50	20	2184	16	22,75



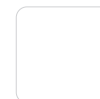


Thread Gaz Whitworth
Filet Whitworth Gaz
Rosca Whitworth Gas

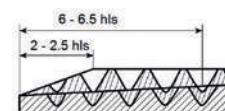


Norme DIN ISO 228
Norme DIN ISO 228
Norme DIN ISO 228

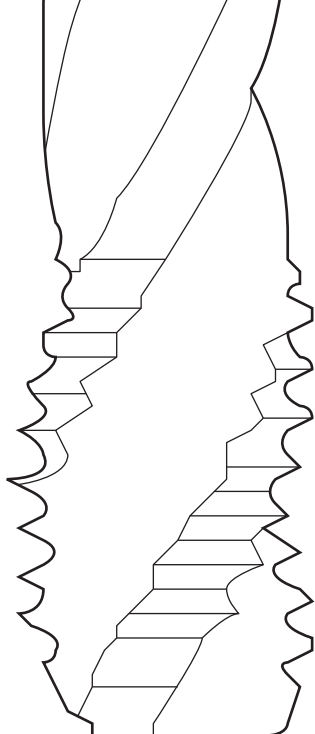
SET OF 2 HAND TAPS
JEU DE 2 TARAUDS MAIN
JUEGO DE 2 MACHOS DE MANO



9531021	Ø	P	L	l1	d	DIN	□	●Ø
953102100180280	G 1/8"	28	63	18	7	5157	5,5	8,8
953102100140190	G 1/4"	19	70	20	11	5157	9	11,8
953102100380190	G 3/8"	19	70	20	12	5157	9	15,25
953102100120140	G 1/2"	14	80	22	16	5157	12	19
953102100580140	G 5/8"	14	80	22	18	5157	14,5	21
953102100340140	G 3/4"	14	90	22	20	5157	16	24,5
953102100780140	G 7/8"	14	90	22	22	5157	18	28,25
953102110000110	G 1"	11	100	25	25	5157	20	30,75
953102110180110	G1 1/8"	11	125	32	28	5157	22	35,5
953102110140110	G1 1/4"	11	125	32	32	5157	24	39,5
953102110380110	G1 3/8"	11	125	32	36	5157	29	42
953102110120110	G1 1/2"	11	140	32	36	5157	29	45,5
953102120000110	G 2"	11	160	36	45	5157	35	57,20



B. FLASH CUT



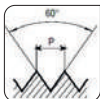
32

M - MF cutting taps
NC-NF cutting taps
BSP cutting taps

#0

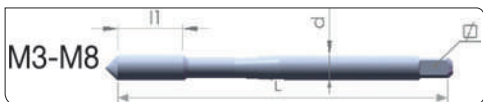


Metric
Metricque
Métrica

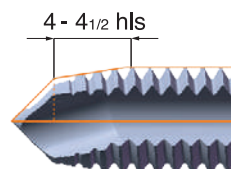


ISO 2 Norm
Norme ISO 2
Norma ISO 2

FLASHCUT MACHINE CUTTING TAP
TARAUD Á COUPE FLASHCUT
MACHO DE MÁQUINA FLASHCUT



960ST21	Ø	P	L	l1	d	DIN	□	●Ø
960ST2100300050	M 3	0,5	56	10	3,5	371	2,7	2,5
960ST2100400070	M 4	0,7	63	12	4,5	371	3,4	3,3
960ST2100500080	M 5	0,8	70	14	6	371	4,9	4,2
960ST2100600100	M 6	1	80	16	6	371	4,9	5
960ST2100800125	M 8	1,25	90	18	8	371	6,2	6,75
960ST2101000150	M 10	1,5	100	20	10	371	8	8,5
960ST2101200175	M 12	1,75	110	22	9	376	7	10,25
960ST2101400200	M 14	2	110	25	11	376	9	12
960ST2101600200	M 16	2	110	28	12	376	9	14



960ST21	Ø	P	L	l1	d	DIN	□	●Ø
960ST2100800100	MF8	1	90	18	8	371	6,2	7,00
960ST2101000100	MF10	1	90	18	10	371	8	9,00
960ST2101200150	MF12	1,5	100	22	9	374	7	10,50
960ST2101400150	MF14	1,5	100	22	11	374	9	12,50

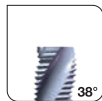


Metric
Metricque
Métrica

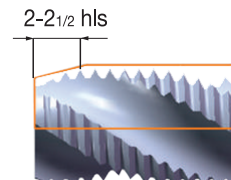


ISO 2 Norm
Norme ISO 2
Norma ISO 2

FLASHCUT MACHINE CUTTING TAP
TARAUD Á COUPE FLASHCUT
MACHO DE MÁQUINA FLASHCUT



960ST51	Ø	P	L	l1	d	DIN	□	●Ø
960ST5100300050	M 3	0,5	56	5	3,5	371	2,7	2,5
960ST5100400070	M 4	0,7	63	7	4,5	371	3,4	3,3
960ST5100500080	M 5	0,8	70	9	6	371	4,9	4,2
960ST5100600100	M 6	1	80	10	6	371	4,9	5
960ST5100800125	M 8	1,25	90	12	8	371	6,2	6,75

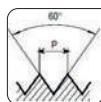


960ST51		Ø	P	L	l1	d	DIN	□	●Ø
960ST5101000150		M 10	1,5	100	14	10	371	8	8,5
960ST5101200175		M 12	1,75	110	16	9	376	7	10,25
960ST5101400200		M 14	2	110	18	11	376	9	12
960ST5101600200		M 16	2	110	18	12	376	9	14

960ST51		Ø	P	L	l1	d	DIN	□	●Ø
960ST5100800100		MF8	1	90	12	8	371	6,2	7,00
960ST5101000100		MF10	1	90	14	10	371	8	9,00
960ST5101200150		MF12	1,5	100	14	9	374	7	10,50
960ST5101400150		MF14	1,5	100	18	11	374	9	12,50

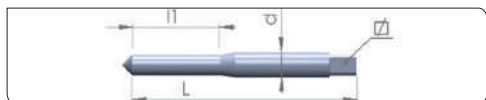
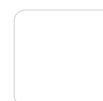
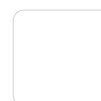
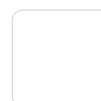
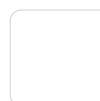
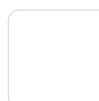


Metric
Métrique
Métrica

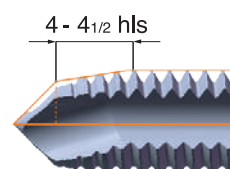


ISO 2 Norm
Norme ISO 2
Norma ISO 2

FLASHCUT MACHINE CUTTING TAP
TARAU À COUPE FLASHCUT
MACHO DE MÁQUINA FLASHCUT

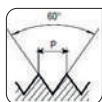


960HT21		Ø	P	L	l1	d	□	●Ø
960HT2100300050		M 3	0,5	56	12	3,5	2,7	2,5
960HT2100400070		M 4	0,7	63	15	4,5	3,4	3,3
960HT2100500080		M 5	0,8	70	15	6	4,9	4,2
960HT2100600100		M 6	1	80	23	6	6,2	5
960HT2100800125		M 8	1,25	90	29	8	8	6,75
960HT2101000150		M 10	1,5	100	38	10	9	8,5





M Metric
Metrique
Métrica



ISO 2 Norm
Norme ISO 2
Norma ISO 2

FLASHCUT MACHINE CUTTING TAP
TARAU À COUPE FLASHCUT
MACHO DE MÁQUINA FLASHCUT

6H

**TIVOLY
NORM**

**HSS
ES**

**GOGOR
COATED**



2,5xd

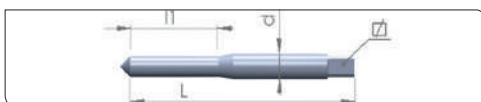
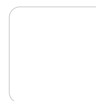
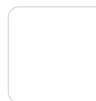
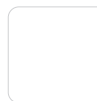
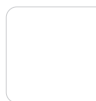
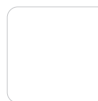


C

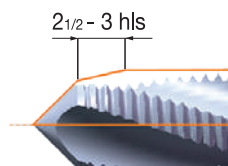
D

Q3

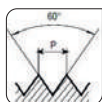
T3



960HT31	Ø	P	L	l1	d	□	●Ø
960HT3100300050	M 3	0,5	56	10	3,5	2,7	2,5
960HT3100400070	M 4	0,7	63	14	4,5	3,4	3,3
960HT3100500080	M 5	0,8	70	17	6	4,9	4,2
960HT3100600100	M 6	1	80	21	6	6,2	5
960HT3100800125	M 8	1,25	90	28	8	8	6,75
960HT3101000150	M 10	1,5	100	34	10	9	8,5



**M
MF** Metric
Metrique
Métrica



ISO 2 Norm
Norme ISO 2
Norma ISO 2

FLASHCUT MACHINE CUTTING TAP
TARAU À COUPE FLASHCUT
MACHO DE MÁQUINA FLASHCUT

6H

**DIN
371/374
376**

**HSS
EE**

**TiCN
MP
COATED**



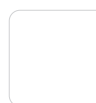
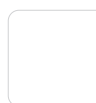
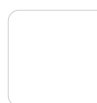
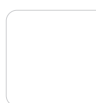
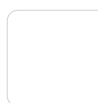
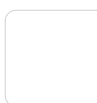
2,5xd



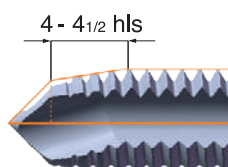
F

G

H



960IT21	Ø	P	L	l1	d	DIN	□	●Ø
960IT2100300050	M 3	0,5	56	10	3,5	371	2,7	2,50
960IT2100400070	M 4	0,7	63	12	4,5	371	3,4	3,30
960IT2100500080	M 5	0,8	70	14	6	371	4,9	4,20
960IT2100600100	M 6	1	80	16	6	371	4,9	5,00
960IT2100800125	M 8	1,25	90	18	8	371	6,2	6,75
960IT2101000150	M 10	1,5	100	20	10	371	8	8,50
960IT2101200175	M 12	1,75	110	22	9	376	7	10,25
960IT2101400200	M 14	2	110	25	11	376	9	12,00
960IT2101600200	M 16	2	110	28	12	376	9	14,00

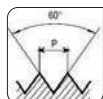


960IT21	Ø	P	L	l1	d	DIN	□	●Ø
960IT2100800100	MF8	1	90	18	8	371	6,2	7,00
960IT2101000100	MF10	1	90	18	10	371	8	9,00
960IT2101200150	MF12	1,5	100	22	9	374	7	10,50
960IT2101400150	MF14	1,5	100	22	11	374	9	12,50



M
MF

Metric
Metrique
Métrica



ISO 2 Norm
Norme ISO 2
Norma ISO 2

FLASHCUT MACHINE CUTTING TAP
TARAUD Á COUPE FLASHCUT
MACHO DE MÁQUINA FLASHCUT

6H

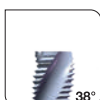
DIN
371/374
376

HSS
EE

TiCN
MP
COATED



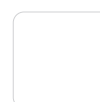
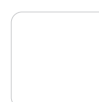
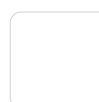
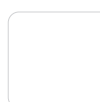
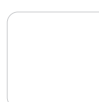
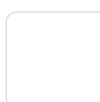
2,5xd



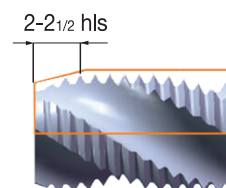
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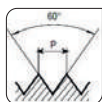
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960IT5100300050	M 3	0,5	56	5	3,5	371	2,7	2,50
960IT5100400070	M 4	0,7	63	7	4,5	371	3,4	3,30
960IT5100500080	M 5	0,8	70	9	6	371	4,9	4,20
960IT5100600100	M 6	1	80	10	6	371	4,9	5,00
960IT5100800125	M 8	1,25	90	12	8	371	6,2	6,75
960IT5101000150	M 10	1,5	100	14	10	371	8	8,50
960IT5101200175	M 12	1,75	110	16	9	376	7	10,25
960IT5101400200	M 14	2	110	18	11	376	9	12,00
960IT5101600200	M 16	2	110	18	12	376	9	14,00



960IT51	Ø	P	L	l1	d	DIN	□	●Ø
960IT5100800100	MF8	1	90	12	8	371	6,2	7,00
960IT5101000100	MF10	1	90	14	10	371	8	9,00
960IT5101200150	MF12	1,5	100	14	9	374	7	10,50
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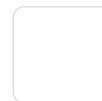
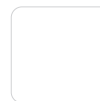
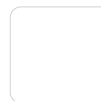
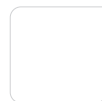
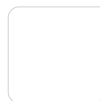


Metric
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Métrica



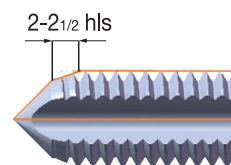
ISO 2 Norm
Norme ISO 2
Norma ISO 2

FLASHCUT MACHINE CUTTING TAP
TARAU À COUPE FLASHCUT
MACHO DE MÁQUINA FLASHCUT



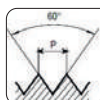
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960CT1100400070	M 4	0,7	63	12	4,5	371	3,4	3,30
960CT1100500080	M 5	0,8	70	14	6	371	4,9	4,20
960CT1100600100	M 6	1	80	16	6	371	4,9	5,00
960CT1100800125	M 8	1,25	90	18	8	371	6,2	6,75
960CT1101000150	M 10	1,5	100	20	10	371	8	8,50
960CT1101200175	M 12	1,75	110	22	9	376	7	10,25
960CT1101400200	M 14	2	110	25	11	376	9	12,00
960CT1101600200	M 16	2	110	28	12	376	9	14,00

960CT11	Ø	P	L	l1	d	DIN	□	●Ø
960CT1100800100	MF8	1	90	18	8	371	6,2	7,00
960CT1101000100	MF10	1	90	18	10	371	8	9,00
960CT1101200150	MF12	1,5	100	22	9	374	7	10,50
960CT1101400150	MF14	1,5	100	22	11	374	9	12,50





M Metric
MF Metrique
Métrica



ISO 2 Norm
Norme ISO 2
Norma ISO 2

FLASHCUT MACHINE CUTTING TAP
TARAU À COUPE FLASHCUT
MACHO DE MÁQUINA FLASHCUT

6H

DIN
371/374
376

HSS
EE

TiN
COATED



2,5xd



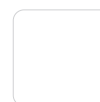
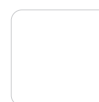
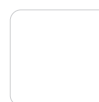
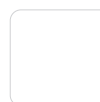
K

L

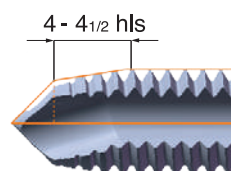
Q1

Q2

P



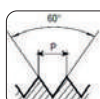
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960AT2100300050	M 3	0,5	56	10	3,5	371	2,7	2,50
960AT2100400070	M 4	0,7	63	12	4,5	371	3,4	3,30
960AT2100500080	M 5	0,8	70	14	6	371	4,9	4,20
960AT2100600100	M 6	1	80	16	6	371	4,9	5,00
960AT2100800125	M 8	1,25	90	18	8	371	6,2	6,75
960AT2101000150	M 10	1,5	100	20	10	371	8	8,50
960AT2101200175	M 12	1,75	110	22	9	376	7	10,25
960AT2101400200	M 14	2	110	28	11	376	9	12,00
960AT2101600200	M 16	2	110	28	12	376	9	14,00



960AT21	Ø	P	L	l1	d	DIN	□	●Ø
960AT2100800100	MF8	1	90	18	8	371	6,2	7,00
960AT2101000100	MF10	1	90	18	10	371	8	9,00
960AT2101200150	MF12	1,5	100	22	9	374	7	10,50
960AT2101400150	MF14	1,5	100	22	11	374	9	12,50



M Metric
MF Metrique
Métrica



ISO 2 Norm
Norme ISO 2
Norma ISO 2

FLASHCUT MACHINE CUTTING TAP
TARAU À COUPE FLASHCUT
MACHO DE MÁQUINA FLASHCUT

6H

DIN
371/374
376

HSS
EE

TiN
COATED



2,5xd



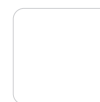
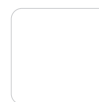
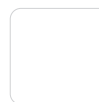
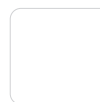
K

L

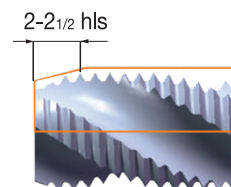
Q1

Q2

P



960AT51	Ø	P	L	l1	d	DIN	□	●Ø
960AT5100300050	M 3	0,5	56	5	3,5	371	2,7	2,50
960AT5100400070	M 4	0,7	63	7	4,5	371	3,4	3,30
960AT5100500080	M 5	0,8	70	9	6	371	4,9	4,20
960AT5100600100	M 6	1	80	10	6	371	4,9	5,00
960AT5100800125	M 8	1,25	90	12	8	371	6,2	6,75

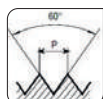


960AT51		Ø	P	L	l1	d	DIN	□	●Ø
960AT5101000150		M 10	1,5	100	14	10	371	8	8,50
960AT5101200175		M 12	1,75	110	16	9	376	7	10,25
960AT5101400200		M 14	2	110	18	11	376	9	12,00
960AT5101600200		M 16	2	110	18	12	376	9	14,00

960AT51		Ø	P	L	l1	d	DIN	□	●Ø
960AT5100800100		MF8	1	90	12	8	371	6,2	7,00
960AT5101000100		MF10	1	90	14	10	371	8	9,00
960AT5101200150		MF12	1,5	100	14	9	374	7	10,50
960AT5101400150		MF14	1,5	100	18	11	374	9	12,50



M
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ISO 2 Norm
Norme ISO 2
Norma ISO 2

FLASHCUT MACHINE CUTTING TAP
TARAUD Á COUPE FLASHCUT
MACHO DE MÁQUINA FLASHCUT

6H

DIN
371/376

HSS
EE

OSTADAR
COATED



2,5xd

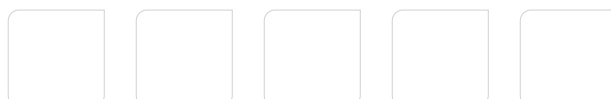


L2

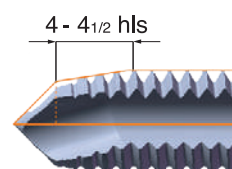
M

Q1

Q2

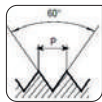


960MT21		Ø	P	L	l1	d	DIN	□	●Ø
960MT2100300050		M 3	0,5	56	10	3,5	371	2,7	2,5
960MT2100400070		M 4	0,7	63	12	4,5	371	3,4	3,3
960MT2100500080		M 5	0,8	70	14	6	371	4,9	4,2
960MT2100600100		M 6	1	80	16	6	371	4,9	5
960MT2100800125		M 8	1,25	90	18	8	371	6,2	6,75
960MT2101000150		M 10	1,5	100	20	10	371	8	8,5
960MT2101200175		M 12	1,75	110	22	9	376	7	10,25
960MT2101400200		M 14	2	110	25	11	376	9	12
960MT2101600200		M 16	2	110	28	12	376	9	14



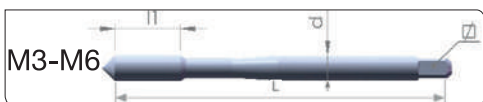
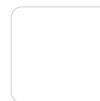
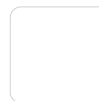
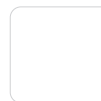
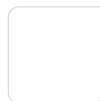
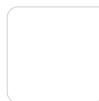


Metric
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Métrica

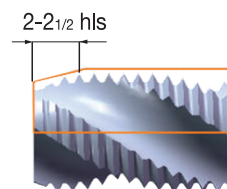


ISO 2 Norm
Norme ISO 2
Norma ISO 2

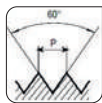
FLASHCUT MACHINE CUTTING TAP
TARAUD Á COUPE FLASHCUT
MACHO DE MÁQUINA FLASHCUT



960MT51	Ø	P	L	l1	d	DIN	□	●Ø
960MT5100300050	M 3	0,5	56	5	3,5	371	2,7	2,50
960MT5100400070	M 4	0,7	63	7	4,5	371	3,4	3,30
960MT5100500080	M 5	0,8	70	9	6	371	4,9	4,20
960MT5100600100	M 6	1	80	10	6	371	4,9	5,00
960MT5100800125	M 8	1,25	90	12	8	371	6,2	6,75
960MT5101000150	M 10	1,5	100	14	10	371	8	8,50
960MT5101200175	M 12	1,75	110	16	9	376	7	10,25
960MT5101400200	M 14	2	110	18	11	376	9	12,00
960MT5101600200	M 16	2	110	18	12	376	9	14,00

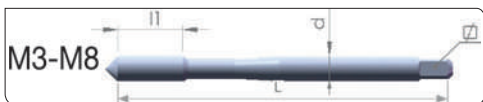
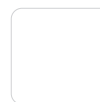
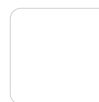
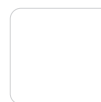
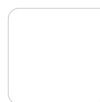
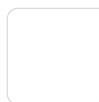
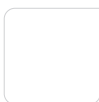


Metric
Metrique
Métrica

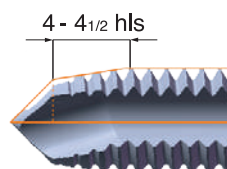


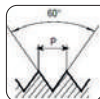
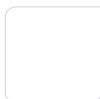
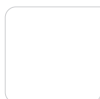
ISO 2 Norm
Norme ISO 2
Norma ISO 2

FLASHCUT MACHINE CUTTING TAP
TARAUD Á COUPE FLASHCUT
MACHO DE MÁQUINA FLASHCUT

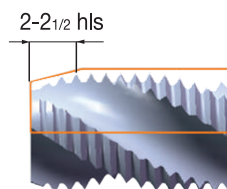
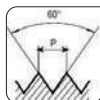
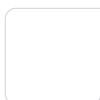
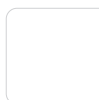
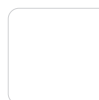
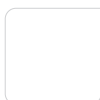
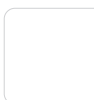
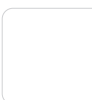


960TT21	Ø	P	L	l1	d	DIN	□	●Ø
960TT2100300050	M 3	0,5	56	10	3,5	371	2,7	2,5
960TT2100400070	M 4	0,7	63	12	4,5	371	3,4	3,3
960TT2100500080	M 5	0,8	70	14	6	371	4,9	4,2
960TT2100600100	M 6	1	80	16	6	371	4,9	5
960TT2100800125	M 8	1,25	90	18	8	371	6,2	6,75
960TT2101000150	M 10	1,5	100	20	10	371	8	8,5
960TT2101200175	M 12	1,75	110	22	9	376	7	10,25
960TT2101400200	M 14	2	110	25	11	376	9	12
960TT2101600200	M 16	2	110	28	12	376	9	14

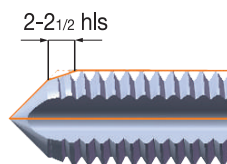


**M**Metric
Metrique
MétricaISO 2 Norm
Norme ISO 2
Norma ISO 2**FLASHCUT MACHINE CUTTING TAP**
TARAU À COUPE FLASHCUT
MACHO DE MÁQUINA FLASHCUT**6H****DIN**
371/376**HSS**
EE**NEBAR**
COATED**2,5xd****T1****T2**

960TT51	Ø	P	L	l1	d	DIN	□	●Ø
960TT5100300050	M 3	0,5	56	5	3,5	371	2,7	2,5
960TT5100400070	M 4	0,7	63	7	4,5	371	3,4	3,3
960TT5100500080	M 5	0,8	70	9	6	371	4,9	4,2
960TT5100600100	M 6	1	80	10	6	371	4,9	5
960TT5100800125	M 8	1,25	90	12	8	371	6,2	6,75
960TT5101000150	M 10	1,5	100	14	10	371	8	8,5
960TT5101200175	M 12	1,75	110	16	9	376	7	10,25
960TT5101400200	M 14	2	110	18	11	376	9	12
960TT5101600200	M 16	2	110	18	12	376	9	14

**M**
MFMetric
Metrique
MétricaISO 2 Norm
Norme ISO 2
Norma ISO 2**FLASHCUT MACHINE CUTTING TAP**
TARAU À COUPE FLASHCUT
MACHO DE MÁQUINA FLASHCUT**6H****DIN**
371/374
376**HSS**
E**BRIGHT**
UNCOATED**2,5xd****N2**

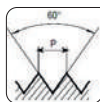
960BT11	Ø	P	L	l1	d	DIN	□	●Ø
960BT1100300050	M 3	0,5	56	10	3,5	371	2,7	2,50
960BT1100400070	M 4	0,7	63	12	4,5	371	3,4	3,30
960BT1100500080	M 5	0,8	70	14	6	371	4,9	4,20
960BT1100600100	M 6	1	80	16	6	371	4,9	5,00
960BT1100800125	M 8	1,25	90	18	8	371	6,2	6,75
960BT1101000150	M 10	1,5	100	20	10	371	8	8,50
960BT1101200175	M 12	1,75	110	22	9	376	7	10,25
960BT1101400200	M 14	2	110	25	11	376	9	12,00
960BT1101600200	M 16	2	110	28	12	376	9	14,00



960BT11	Ø	P	L	l1	d	DIN	□	●Ø
960BT1100800100	MF8	1	90	18	8	371	6,2	7,00
960BT1101000100	MF10	1	90	18	10	374	8	9,00
960BT1101200150	MF12	1,5	100	22	9	374	7	10,50
960BT1101400150	MF14	1,5	100	22	11	374	9	12,50

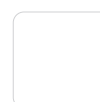
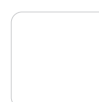
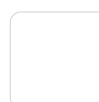
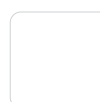
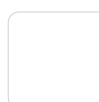
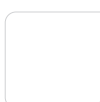
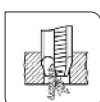


Normal series American Unified Thread
Filet Unifié Américaine série normal
Rosca Unificada Americana serie normal



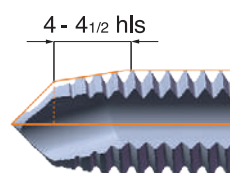
ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

FLASHCUT MACHINE CUTTING TAP
TARAU À COUPE FLASHCUT
MACHO DE MÁQUINA FLASHCUT



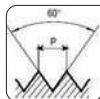
962ST21	Ø	P	L	l1	d	DIN	□	●Ø
962ST2100140200	NC 1/4	20	80	16	7	371	5,5	5,1
962ST2100380160	NC 3/8	16	90	18	9	371	7	7,9
962ST2100120130	NC 1/2	13	110	25	9	376	6,2	10,5
962ST2100340100	NC 3/4	10	125	32	14	376	11	16,5
962ST2110000080	NC 1"	8	160	36	20	376	16	22

962ST21	Ø	P	L	l1	d	DIN	□	●Ø
962ST2100140280	NF 1/4	28	80	16	7	371	4,9	5,5
962ST2100380240	NF 3/8	24	100	18	9	371	5,5	8,5
962ST2100120200	NF 1/2	20	110	25	9	374	7	11,5
962ST2100340160	NF 3/4	16	125	32	14	374	11	17,5
962ST2110000120	NF 1"	10	140	32	20	376	16	23,25



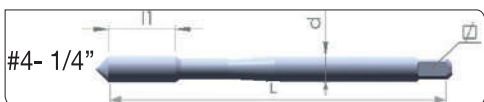
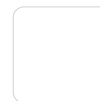
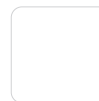
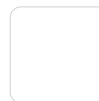
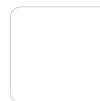
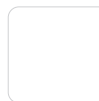
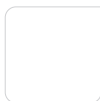
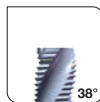


Normal series American Unified Thread
Filet Unifié Américaine série normal
Rosca Unificada Americana serie normal



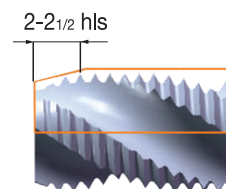
ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

FLASHCUT MACHINE CUTTING TAP
TARAUD Á COUPE FLASHCUT
MACHO DE MÁQUINA FLASHCUT



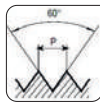
962ST51	Ø	P	L	l1	d	DIN	□	●Ø
962ST5100140200	NC 1/4	20	80	12	7	371	5,5	5,1
962ST5100380160	NC 3/8	16	90	14	9	371	7	7,9
962ST5100120130	NC 1/2	13	110	16	9	376	6,2	10,5
962ST5100340100	NC 3/4	10	125	25	14	376	11	16,5
962ST5110000080	NC 1"	8	160	30	20	376	16	22

962ST51	Ø	P	L	l1	d	DIN	□	●Ø
962ST5100140280	NF 1/4	28	80	10	7	371	4,9	5,5
962ST5100380240	NF 3/8	24	100	14	9	371	5,5	8,5
962ST5100120200	NF 1/2	20	110	16	9	374	7	11,5
962ST5100340160	NF 3/4	16	125	18	14	374	11	17,5
962ST5110000120	NF 1"	10	140	25	20	374	16	23,25



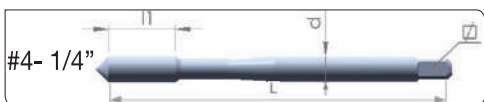
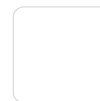
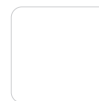
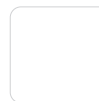
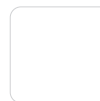
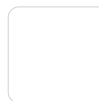
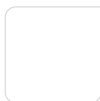


Normal series American Unified Thread
Filet Unifié Américaine série normal
Rosca Unificada Americana serie normal



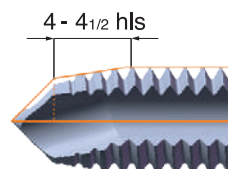
ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

FLASHCUT MACHINE CUTTING TAP
TARAU À COUPE FLASHCUT
MACHO DE MÁQUINA FLASHCUT



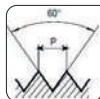
962IT21	Ø	P	L	l1	d	DIN	□	●Ø
962IT2100140200	NC 1/4	20	80	16	7	371	5,5	5,1
962IT2100380160	NC 3/8	16	90	18	9	371	7	7,9
962IT2100120130	NC 1/2	13	110	25	9	376	6,2	10,5
962IT2100340100	NC 3/4	10	125	32	14	376	11	16,5
962IT2110000080	NC 1"	8	160	36	20	376	16	22

962IT21	Ø	P	L	l1	d	DIN	□	●Ø
962IT2100140280	NF 1/4	28	80	16	7	371	4,9	5,5
962IT2100380240	NF 3/8	24	100	18	9	371	5,5	8,5
962IT2100120200	NF 1/2	20	110	25	9	374	7	11,5
962IT2100340160	NF 3/4	16	125	32	14	374	11	17,5
962IT2110000120	NF 1"	10	140	32	20	374	16	23,25



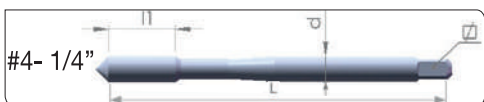
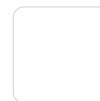
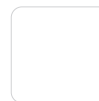
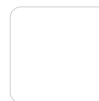
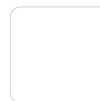
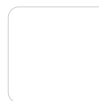
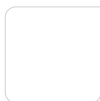
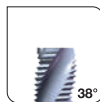


Normal series American Unified Thread
Filet Unifié Américaine série normal
Rosca Unificada Americana serie normal



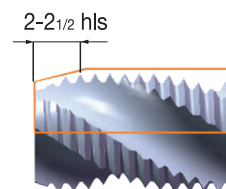
ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

FLASHCUT MACHINE CUTTING TAP
TARAUD Á COUPE FLASHCUT
MACHO DE MÁQUINA FLASHCUT



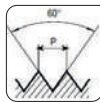
962IT51	Ø	P	L	l1	d	DIN	□	●Ø
962IT5100140200	NC 1/4	20	80	12	7	371	5,5	5,1
962IT5100380160	NC 3/8	16	90	14	9	371	7	7,9
962IT5100120130	NC 1/2	13	110	16	9	376	6,2	10,5
962IT5100340100	NC 3/4	10	125	25	14	376	11	16,5
962IT5110000080	NC 1"	8	160	30	20	376	16	22

962IT51	Ø	P	L	l1	d	DIN	□	●Ø
962IT5100140280	NF 1/4	28	80	10	7	371	4,9	5,5
962IT5100380240	NF 3/8	24	100	14	9	371	5,5	8,5
962IT5100120200	NF 1/2	20	110	16	9	374	7	11,5
962IT5100340160	NF 3/4	16	125	18	14	374	11	17,5
962IT5110000120	NF 1"	10	140	25	20	374	16	23,25



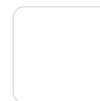
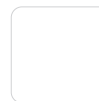
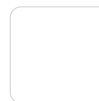
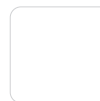


Normal series American Unified Thread
Filet Unifié Américaine série normal
Rosca Unificada Americana serie normal



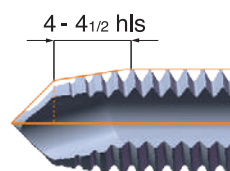
ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

FLASHCUT MACHINE CUTTING TAP
TARAU À COUPE FLASHCUT
MACHO DE MÁQUINA FLASHCUT



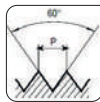
962AT21	Ø	P	L	l1	d	DIN	□	●Ø
962AT2100140200	NC 1/4	20	80	16	7	371	5,5	5,1
962AT2100380160	NC 3/8	16	90	18	9	371	7	7,9
962AT2100120130	NC 1/2	12	110	25	9	376	6,2	10,5
962AT2100340100	NC 3/4	10	125	32	14	376	11	16,5
962AT2110000080	NC 1"	8	160	36	20	376	16	22

962AT21	Ø	P	L	l1	d	DIN	□	●Ø
962AT2100140280	NF 1/4	28	80	16	7	371	4,9	5,5
962AT2100380240	NF 3/8	24	100	18	9	371	5,5	8,5
962AT2100120200	NF 1/2	20	110	25	9	374	7	11,5
962AT2100340160	NF 3/4	16	125	32	14	374	11	17,5
962AT2110000120	NF 1"	10	140	32	20	374	16	23,25



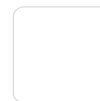
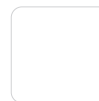
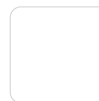
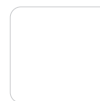


Normal series American Unified Thread
Filet Unifié Américaine série normal
Rosca Unificada Americana serie normal



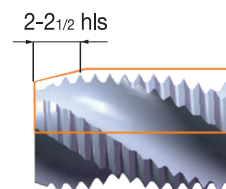
ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

FLASHCUT MACHINE CUTTING TAP
TARAUD Á COUPE FLASHCUT
MACHO DE MÁQUINA FLASHCUT



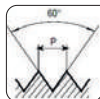
962AT51	Ø	P	L	l1	d	DIN	□	●Ø
962AT5100140200	NC 1/4	20	80	12	7	371	5,5	5,1
962AT5100380160	NC 3/8	16	90	14	9	371	7	7,9
962AT5100120130	NC 1/2	12	110	16	9	376	6,2	10,5
962AT5100340100	NC 3/4	10	125	25	14	376	11	16,5
962AT5110000080	NC 1"	8	160	30	20	376	16	22

962AT51	Ø	P	L	l1	d	DIN	□	●Ø
962AT5100140280	NF 1/4	28	80	10	7	371	4,9	5,5
962AT5100380240	NF 3/8	24	100	14	9	371	5,5	8,8
962AT5100120200	NF 1/2	20	110	16	9	374	7	11,5
962AT5100340160	NF 3/4	16	125	18	14	374	11	17,5
962AT5110000120	NF 1"	10	140	25	20	374	16	23,25



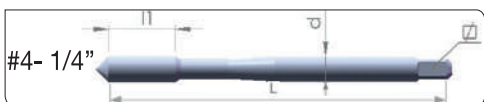
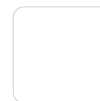
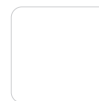
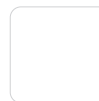
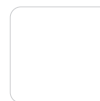
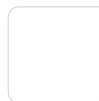
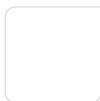
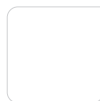


Normal series American Unified Thread
Filet Unifié Américaine série normal
Rosca Unificada Americana serie normal

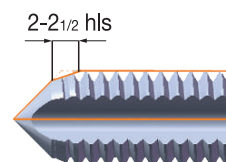


ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

FLASHCUT MACHINE CUTTING TAP
TARAU À COUPE FLASHCUT
MACHO DE MÁQUINA FLASHCUT



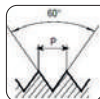
962CT11	Ø	P	L	l1	d	DIN	□	●Ø
962CT1100140200	NC 1/4	20	80	16	7	371	5,5	5,1
962CT1100380160	NC 3/8	16	90	18	9	371	7	7,9
962CT1100120130	NC 1/2	13	110	25	9	376	6,2	10,5
962CT1100340100	NC 3/4	10	125	32	14	376	11	16,5
962CT1110000080	NC 1"	8	160	36	20	376	16	22



962CT11	Ø	P	L	l1	d	DIN	□	●Ø
962CT1100140280	NF 1/4	28	80	16	7	371	4,9	5,5
962CT1100380240	NF 3/8	24	100	18	9	371	5,5	8,5
962CT1100120200	NF 1/2	20	110	25	9	374	7	11,5
962CT1100340160	NF 3/4	16	125	32	14	374	11	17,5
962CT1110000120	NF 1"	10	140	32	20	376	16	23,25

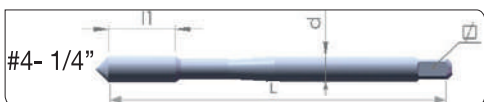
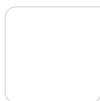
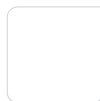
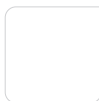


Normal series American Unified Thread
Filet Unifié Américaine série normal
Rosca Unificada Americana serie normal



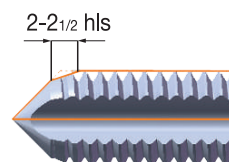
ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

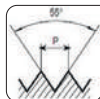
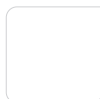
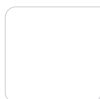
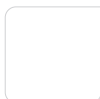
FLASHCUT MACHINE CUTTING TAP
TARAUD Á COUPE FLASHCUT
MACHO DE MÁQUINA FLASHCUT



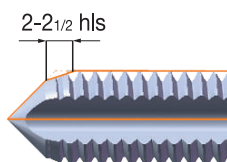
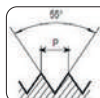
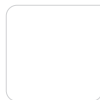
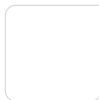
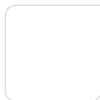
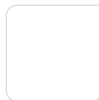
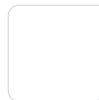
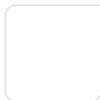
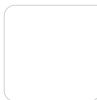
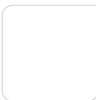
962BT11	Ø	P	L	I1	d	DIN	□	●Ø
962BT1100140200	NC 1/4	20	80	16	7	371	5,5	5,1
962BT1100380160	NC 3/8	16	90	18	9	371	7	7,9
962BT1100120130	NC 1/2	13	110	25	9	376	6,2	10,5
962BT1100340100	NC 3/4	10	125	32	14	376	11	16,5
962BT1110000080	NC 1"	8	160	36	20	376	16	22

962BT11	Ø	P	L	I1	d	DIN	□	●Ø
962BT1100140280	NF 1/4	28	80	16	7	371	4,9	5,5
962BT1100380240	NF 3/8	24	100	18	9	371	5,5	8,5
962BT1100120200	NF 1/2	20	110	25	9	374	7	11,5
962BT1100340160	NF 3/4	16	125	32	14	374	11	17,5
962BT1110000120	NF 1"	10	140	32	20	374	16	23,25

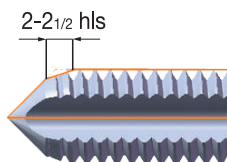


**BSP
G**Thread Gaz Whitworth
Filetage Whitworth Gaz
Rosca Whitworth GasDIN ISO 228 Norm
Norme DIN ISO 228
Norma DIN ISO 228**FLASHCUT MACHINE CUTTING TAP**
TARAU À COUPE FLASHCUT
MACHO DE MÁQUINA FLASHCUT**DIN
ISO 228****DIN
5156****HSS
EE****TiCN
COATED****2,5xd****I****J**

963CT11	Ø	P	L	I1	d	DIN	□	●Ø
963CT1100180280	G 1/8"	28	90	18	7	5156	5,5	8,8
963CT1100140190	G 1/4"	19	100	22	11	5156	9	11,8
963CT1100380190	G 3/8"	19	100	25	12	5156	9	15,3
963CT1100120140	G 1/2"	14	125	25	16	5156	12	19
963CT1100340140	G 3/4"	14	140	28	20	5156	16	24,5
963CT1110000110	G 1"	11	160	36	25	5156	20	30,8

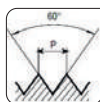
**BSP
G**Thread Gaz Whitworth
Filetage Whitworth Gaz
Rosca Whitworth GasDIN ISO 228 Norm
Norme DIN ISO 228
Norma DIN ISO 228**FLASHCUT MACHINE CUTTING TAP**
TARAU À COUPE FLASHCUT
MACHO DE MÁQUINA FLASHCUT**DIN
ISO 228****DIN
5156****HSS
E****BRIGHT
UNCOATED****2,5xd****N2**

963BT11	Ø	P	L	I1	d	DIN	□	●Ø
963BT1100180280	G 1/8"	28	90	18	7	5156	5,5	8,8
963BT1100140190	G 1/4"	19	100	22	11	5156	9	11,8
963BT1100380190	G 3/8"	19	100	25	12	5156	9	15,3
963BT1100120140	G 1/2"	14	125	25	16	5156	12	19
963BT1100340140	G 3/4"	14	140	28	20	5156	16	24,5
963BT1110000110	G 1"	11	160	36	25	5156	20	30,8



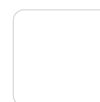
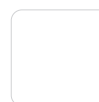
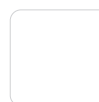
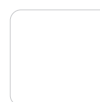


Metric
Metrique
Métrica

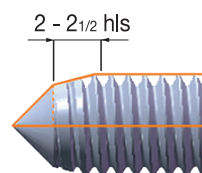


ISO 2 Norm
Norme ISO 2
Norma ISO 2

FLASHCUT ROLL FORM TAP
TARAUO Á REFOULER FLASHCUT
MACHO DE LAMINACIÓN FLASHCUT



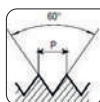
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960AT9100300050	M 3	0,5	56	10	3,5	371	4,9	5,57
960AT9100400070	M 4	0,7	63	12	4,5	371	2,7	2,79
960AT9100500080	M 5	0,8	70	14	6	371	3,4	3,7
960AT9100600100	M 6	1	80	16	6	371	4,9	4,66
960AT9100800125	M 8	1,25	90	18	8	371	6,2	7,47
960AT9101000150	M 10	4,5	100	20	10	371	8	9,36
960AT9101200175	M 12	1,76	110	22	9	376	7	11,26
960AT9101400200	M 14	2	110	25	11	376	9	13,15
960AT9101600200	M 16	2	110	28	12	376	9	15,15



960AT91	Ø	P	L	l1	d	DIN	□	●Ø
960AT9100800100	MF8	1	90	18	8	371	6,2	7,00
960AT9101000100	MF10	1	90	18	10	371	8	9,00
960AT9101200150	MF12	1,5	100	22	9	374	7	10,50
960AT9101400150	MF14	1,5	100	22	11	374	9	12,50

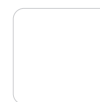
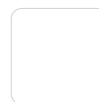
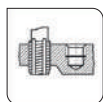


Metric
Metrique
Métrica

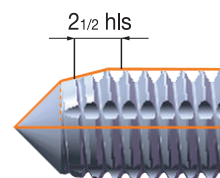


ISO 2 Norm
Norme ISO 2
Norma ISO 2

FLASHCUT ROLL FORM TAP
TARAUO Á REFOULER FLASHCUT
MACHO DE LAMINACIÓN FLASHCUT



960ST91	Ø	P	L	l1	d	DIN	□	●Ø
960ST9100300050	M 3	0,5	56	10	3,5	371	2,7	2,79
960ST9100400070	M 4	0,7	63	12	4,5	371	3,4	3,7
960ST9100500080	M 5	0,8	70	14	6	371	4,9	4,66
960ST9100600100	M 6	1	80	16	6	371	4,9	5,57

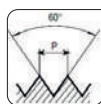


960ST91	Ø	P	L	l1	d	DIN	□	•Ø
960ST9100800125	M 8	1,25	90	18	8	371	6,2	7,47
960ST9101000150	M 10	1,5	100	20	10	371	8	9,36
960ST9101200175	M 12	1,75	110	22	9	376	7	11,26
960ST9101400200	M 14	2	110	25	11	376	9	13,15
960ST9101600200	M 16	2	110	28	12	376	9	15,15

960ST91	Ø	P	L	l1	d	DIN	□	•Ø
960ST9100800100	MF8	1	90	18	8	371	6,2	7,00
960ST9101000100	MF10	1	90	18	10	371	8	9,00
960ST9101200150	MF12	1,5	100	22	9	374	7	10,50
960ST9101400150	MF14	1,5	100	22	11	374	9	12,50

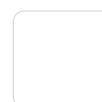
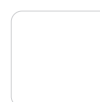
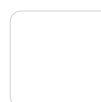
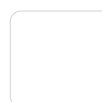
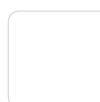
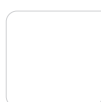


Metric
Metrique
Métrica



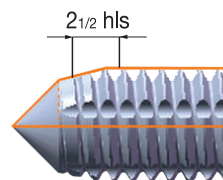
ISO 2 Norm
Norme ISO 2
Norma ISO 2

FLASHCUT ROLL FORM TAP
TARAUO Á REFOULER FLASHCUT
MACHO DE LAMINACIÓN FLASHCUT



960IT91	Ø	P	L	l1	d	DIN	□	•Ø
960IT9100300050	M 3	0,5	56	10	3,5	371	2,7	2,79
960IT9100400070	M 4	0,7	63	12	4,5	371	3,4	3,7
960IT9100500080	M 5	0,8	70	14	6	371	4,9	4,66
960IT9100600100	M 6	1	80	16	6	371	4,9	5,57
960IT9100800125	M 8	1,25	90	18	8	371	6,2	7,47
960IT9101000150	M 10	1,5	100	20	10	371	8	9,36
960IT9101200175	M 12	1,75	110	22	9	376	7	11,26
960IT9101400200	M 14	2	110	25	11	376	9	13,15
960IT9101600200	M 16	2	110	28	12	376	9	15,15

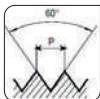
960IT91	Ø	P	L	l1	d	DIN	□	•Ø
960IT9100800100	MF8	1	90	18	8	371	6,2	7,00
960IT9101000100	MF10	1	90	18	10	371	8	9,00
960IT9101200150	MF12	1,5	100	22	9	374	7	10,50
960IT9101400150	MF14	1,5	100	22	11	371	9	12,50





M

Metric
Metrique
Métrica



ISO 2 Norm
Norme ISO 2
Norma ISO 2

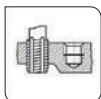
FLASHCUT ROLL FORM TAP
TARAUDE REFOULER FLASHCUT
MACHO DE LAMINACIÓN FLASHCUT

6H

DIN
371/376

HSS
EE

NEBAR
COATED



2,5xd

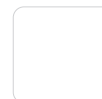
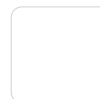
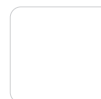
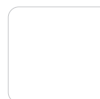


T1

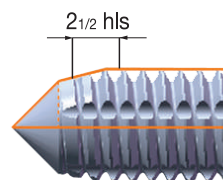
T2

Q1

Q2



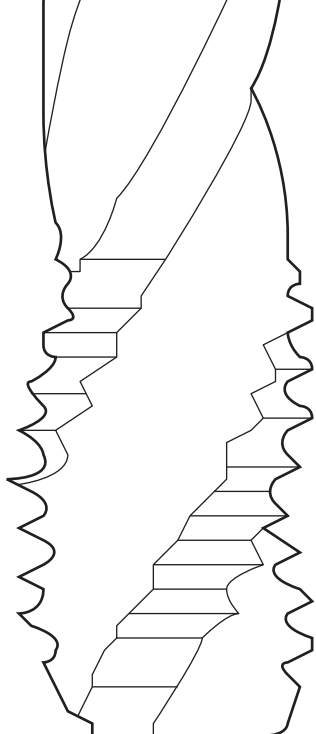
960TT91	Ø	P	L	l1	d	DIN	□	•Ø
960TT9100300050	M 3	0,5	56	10	3,5	371	2,7	2,79
960TT9100400070	M 4	0,7	63	12	4,5	371	3,4	3,7
960TT9100500080	M 5	0,8	70	14	6	371	4,9	4,66
960TT9100600100	M 6	1	80	16	6	371	4,9	5,57
960TT9100800125	M 8	1,25	90	18	8	371	6,2	7,47
960TT9101000150	M 10	1,5	100	20	10	371	8	9,36
960TT9101200175	M 12	1,75	110	22	9	376	7	11,26
960TT9101400200	M 14	2	110	25	11	376	9	13,15
960TT9101600200	M 16	2	110	28	12	376	9	15,15



C.
MULTI
APPLICATION

54

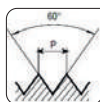
M - MF



#0

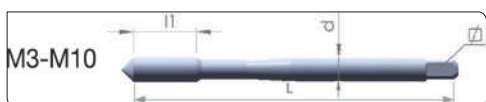
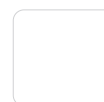


Metric
Metrique
Métrica



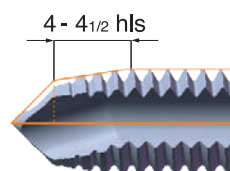
ISO 2 Norm
Norme ISO 2
Norma ISO 2

MULTI PURPOSE MACHINE TAP
TARAUD MULTIAPPLICATION
MACHO MULTIPLICACION



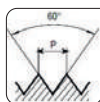
1050071	Ø	P	L	l1	d	ISO	□	●Ø
1050071030050	M 3	0,5	48	23	3,15	529	2,5	2,50
1050071035060	M 3,5	0,6	50	20,5	3,55	529	2,8	2,90
1050071040070	M 4	0,7	53	10	4	529	3,4	3,30
1050071050080	M 5	0,8	58	11	5	529	4,9	4,20
1050071060100	M 6	1	66	14	6,3	529	4,9	5,00
1050071070100	M 7	1	66	18,5	7,1	529	5,5	5,00
1050071080125	M 8	1,25	72	17,5	8	529	6,2	6,75
1050071090125	M 9	1,25	72	22	8	529	7	7,75
1050071100150	M 10	1,5	80	21	10	529	8	8,50
1050071120175	M 12	1,75	89	29	9	529	7,1	10,25
1050071140200	M 14	2	95	30	11,2	529	9	12,00
1050071160200	M 16	2	102	32	12,5	529	10	14,00
1050071180250	M 18	2,5	112	37	14	529	11,2	15,50
1050071200250	M 20	2,5	112	37	14	529	11,2	17,50
1050071220250	M 22	2,5	118	38	16	529	14,5	19,50
1050071240300	M 24	3	130	45	18	529	14,5	21,00
1050071300350	M 30	3,5	138	48	20	529	18	26,50

1050071	Ø	P	L	l1	d	ISO	□	●Ø
1050071030060	MF3	0,6	48	23	3,15	529	2,8	2,40
1050071050050	MF5	0,5	58	11	5	529	4	4,50
1050071060075	MF6	0,75	66	14	6,3	529	5	5,25
1050071080100	MF8	1	69	17,5	8	529	6,3	7,00
1050071090100	MF9	1	72	22	8	529	6,3	8,00
1050071100100	MF10	1	80	21	10	529	8	9,00
1050071100125	MF10	1,25	80	21	10	529	8	8,75
1050071120100	MF12	1	89	24	9	529	7,1	11,00
1050071120125	MF12	1,25	89	24	9	529	7,1	10,75
1050071120150	MF12	1,5	89	29	9	529	7,1	10,50
1050071140125	MF14	1,25	90	25	11,2	529	9	12,75
1050071140150	MF14	1,5	95	30	11,2	529	9	12,50
1050071160150	MF16	1,5	102	32	12,5	529	10	14,50
1050071180150	MF18	1,5	104	29	14	529	11,2	16,50





M Metric
Metrique
Métrica



ISO 2 Norm
Norme ISO 2
Norma ISO 2

MULTI PURPOSE MACHINE TAP
TARAUD MULTIAPPLICATION
MACHO MULTIPLICACION

6H

ISO 529

HSS

STEAM TREATED



2,5xd



A

B

C

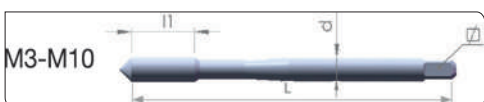
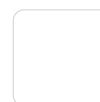
F

H1

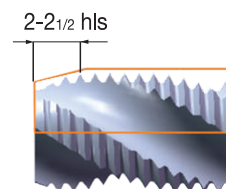
I

J

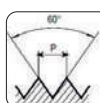
P



1050121	Ø	P	L	l1	d	ISO	□	●Ø
1050121030050	M 3	0,5	48	23	3,15	529	2,5	2,50
1050121040070	M 4	0,7	53	10	4	529	3,4	3,30
1050121050080	M 5	0,8	58	11	5	529	4,9	4,20
1050121060100	M 6	1	66	14	6,3	529	4,9	5,00
1050121080125	M 8	1,25	72	17,5	8	529	6,2	6,75
1050121100150	M 10	1,5	80	21	10	529	8	8,50
1050121120175	M 12	1,75	89	16	9	529	7,1	10,25
1050121140200	M 14	2	95	18	11,2	529	9	12,00
1050121160200	M 16	2	102	18	12,5	529	10	14,00
1050121180250	M 18	2,5	112	25	14	529	11,2	15,50
1050121200250	M 20	2,5	112	25	14	529	11,2	17,50



M MF Metric
Metrique
Métrica



ISO 2 Norm
Norme ISO 2
Norma ISO 2

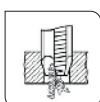
MULTI PURPOSE MACHINE TAP
TARAUD MULTIAPPLICATION
MACHO MULTIPLICACION

6H

DIN 371

HSS E

STEAM TREATED



2,5xd



A

B

C

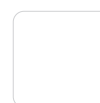
F

H1

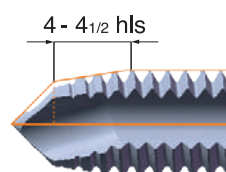
I

J

P



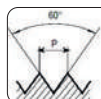
9602021	Ø	P	L	l1	d	DIN	□	●Ø
960202100200040	M 2	0,4	45	10	2,8	371	2,1	1,60
960202100250045	M 2,5	0,45	50	10	2,8	371	2,1	2,00
960202100300050	M 3	0,5	56	7	3,5	371	2,7	2,50
960202100350060	M 3,5	0,6	56	8,4	4	371	3	2,90
960202100400070	M 4	0,7	63	10	4,5	371	3,4	3,30
960202100500080	M 5	0,8	70	11,2	6	371	4,9	4,20
960202100600100	M 6	1	80	14	6	371	4,9	5,00
960202100700100	M 7	1	80	14	7	371	5,5	5,00
960202100800125	M 8	1,25	90	17,5	8	371	6,2	6,75
960202100900125	M 9	1,25	90	17,5	8	371	7	7,75
960202101000150	M 10	1,5	100	21	10	371	8	8,50



9602021	Ø	P	L	l1	d	DIN	□	●Ø
960202100400050	MF4	0,5	63	10	4,5	371	3,4	3,50
960202100500050	MF5	0,5	70	11,2	6	371	4,9	4,50
960202100600075	MF6	0,75	80	14	6	371	4,9	5,25
960202100800100	MF8	1	90	17,5	8	371	6,2	7,00
960202101000100	MF10	1	90	21	10	371	8	9,00
960202101000125	MF10	1,25	100	21	10	371	8	8,75



M Metric
MF Metrique
Métrica



ISO 2 Norm
Norme ISO 2
Norma ISO 2

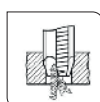
MULTI PURPOSE MACHINE TAP
TARAU MULTIAPPLICATION
MACHO MULTIPLICACION

6H

DIN
374/376

HSS
E

STEAM
TREATED



2,5xd



A

B

C

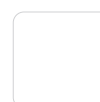
F

H1

I

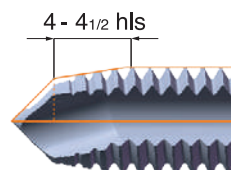
J

P



9603021	Ø	P	L	l1	d	DIN	□	●Ø
960302100300050	M 3	0,5	56	10	2,7	376	2,1	2,50
960302100350060	M 3,5	0,60	56	11	2,5	376	2,1	2,90
960302100400070	M 4	0,7	63	12	2,8	376	3,4	3,30
960302100450075	M 4,5	0,75	70	14	3,5	376	2,7	3,75
960302100500080	M 5	0,8	70	13,5	3,5	376	4,9	4,20
960302100600100	M 6	1	80	15,5	4,5	376	4,9	5,00
960302100700100	M 7	1,00	80	16	5,5	376	4,3	6,00
960302100800125	M 8	1,25	90	17	6	376	6,2	6,75
960302100900125	M 9	1,25	90	18	7,0	376	5,5	7,75
960302101000150	M 10	1,5	100	20	7	376	5,5	8,50
960302101200175	M 12	1,75	110	22	9	376	7	10,25
960302101400200	M 14	2	110	25	11	376	9	12,00
960302101600200	M 16	2	110	28	12	376	9	14,00
960302101800250	M 18	2,5	125	32	14	376	11	15,50
960302102000250	M 20	2,5	140	32	16	376	12	17,50
960302102200250	M 22	2,5	140	32	18	376	14,5	19,50
960302102400300	M 24	3	160	32	18	376	14,5	21,00
960302102700300	M 27	3	160	36	20	376	16	24,00
960302103000350	M 30	3,5	180	40	22	376	18	26,50
960302103300350	M 33	3,5	180	40	25	376	20	26,50
960302103600400	M 36	4	200	45	28	376	22	32,00
960302103900400	M 39	4	200	45	32	376	24	35,00
960302104200450	M 42	4,5	200	50	32	376	24	37,50
960302104500450	M 45	4,50	220	50	36,0	376	29	40,50
960302104800500	M 48	5	250	56	36	376	29	43,00

9603021	Ø	P	L	l1	d	DIN	□	●Ø
960302100800100	MF 8	1	93	18	6,0	374	5	7,00
960302101000100	MF 10	1	90	18	7,0	374	6	9,00
960302101000125	MF 10	1,25	100	20	7,0	374	6	8,75
960302101100125	MF 11	1,25	100	20	8,0	374	6	9,75
960302101200100	MF 12	1	100	22	9,0	374	7	11,00
960302101200125	MF 12	1,25	100	22	9,0	374	7	10,75
960302101200150	MF 12	1,5	100	22	9,0	374	7	10,50
960302101400100	MF 14	1	100	22	11,0	374	9	13,00
960302101400125	MF 14	1,25	100	22	11,0	374	9	12,75
960302101400150	MF 14	1,5	100	22	11,0	374	9	12,50
960302101500150	MF 15	1,5	100	22	12,0	374	9	13,50
960302101600100	MF 16	1	100	22	12,0	374	9	15,00

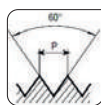


> M30 HSS

9603021	Ø	P	L	l1	d	DIN	□	●Ø
960302101600125	MF 16	1,25	100	22	12,0	374	9	14,75
960302101600150	MF 16	1,5	100	22	12,0	374	9	14,50
960302101800100	MF 18	1	110	25	14,0	374	11	17,00
960302101800150	MF 18	1,5	110	25	14,0	374	11	16,50
960302101800200	MF 18	2	125	28	14,0	374	11	16,00
960302102000100	MF 20	1	125	25	16,0	374	12	19,00
960302102000150	MF 20	1,5	125	25	16,0	374	12	18,50
960302102000200	MF 20	2	140	25	16,0	374	12	18,00
960302102200150	MF 22	1,5	125	25	18,0	374	14,5	18,50
960302102200200	MF 22	2	140	28	18,0	374	14,5	20,00
960302102400150	MF 24	1,5	140	25	18,0	374	15	22,50
960302102400200	MF 24	2	140	25	18,0	374	15	22,00
960302102500150	MF 25	1,5	140	28	18,0	374	15	23,50
960302102600100	MF 26	1,5	140	28	18,0	374	15	24,50
960302102700150	MF 27	1,5	140	28	20,0	374	16	25,50
960302102800150	MF 28	1,5	140	28	20,0	374	16	26,50
960302103000150	MF 30	1,5	150	28	22,0	374	18	28,50
960302103000200	MF 30	2	150	28	22,0	374	18	28,00
960302103200150	MF 32	1,5	150	28	22,0	374	18	30,50
960302103600150	MF 36	2	170	32	28,0	374	22	34,00
960302103600200	MF 36	3	200	56	28,0	374	22	33,00

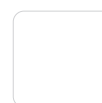
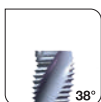


Metric
Metrique
Métrica

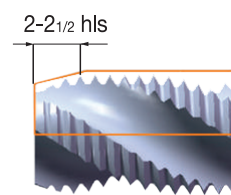


ISO 2 Norm
Norme ISO 2
Norma ISO 2

MULTI PURPOSE MACHINE TAP
TARAUD MULTIAPPLICATION
MACHO MULTIPLICACION



9602051	Ø	P	L	l1	d	DIN	□	●Ø
960205100200040	M 2	0,4	45	10	2,8	371	2,1	1,60
960205100250045	M 2,5	0,45	50	10	2,8	371	2,1	2,00
960205100300050	M 3	0,5	50	7	3,5	371	2,7	2,50
960205100350060	M 3,5	0,6	56	8,4	4	371	3	2,90
960205100400070	M 4	0,7	63	10	4,5	371	3,4	3,30
960205100450075	M 4,5	0,75	70	7	6,0	371	4,9	3,75
960205100500080	M 5	0,8	70	11,2	6	371	4,9	4,20
960205100600100	M 6	1	80	14	6	371	4,9	5,00
960205100700100	M 7	1	80	14	7	371	5,5	5,00
960205100800125	M 8	1,25	90	17,5	8	371	6,2	6,75
960205100900125	M 9	1,25	90	17,5	9	371	7	7,75
960205101000150	M 10	1,5	100	21	10	371	8	8,50



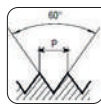
> M30 HSS

9602051	Ø	P	L	l1	d	DIN	□	●Ø
960205100400050	MF 4	0,5	67	7	4,5	371	3	3,50
960205100500050	MF 5	0,5	72	9	6,0	371	5	4,50
960205100600075	MF 6	0,75	83	10	6,0	371	5	5,25
960205100800100	MF8	1	90	17,5	8	371	6,2	7,00
960205101000100	MF10	1	90	21	6	371	8	9,00
960205101000125	MF10	1,25	100	21	10	371	8	8,75



M
MF

Metric
Metrique
Métrica



ISO 2 Norm
Norme ISO 2
Norma ISO 2

MULTI PURPOSE MACHINE TAP
TARAUD MULTIAPPLICATION
MACHO MULTIPLICACION

6H

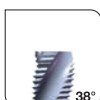
DIN
374/376

HSS
E

STEAM
TREATED



2,5xd



A

B

C

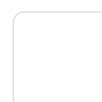
F

H1

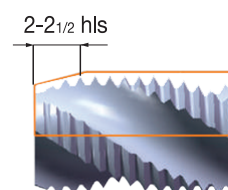
I

J

P

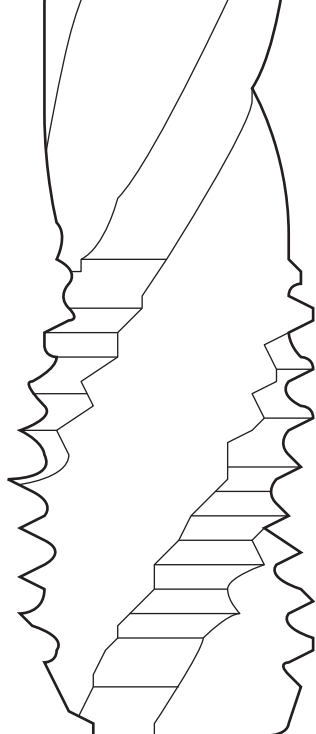


9603051	Ø	P	L	l1	d	DIN	□	●Ø
960305100400070	M 4	0,7	63	7	2,8	376	3,4	3,30
960305100500080	M 5	0,8	70	8,5	3,5	376	4,9	4,20
960305100600100	M 6	1	80	9,5	3,5	376	4,9	5,00
960305100800125	M 8	1,25	90	12	6	376	6,2	6,75
960305101000150	M 10	1,5	100	14	7	376	5,5	8,50
960305101200175	M 12	1,75	110	16	9	376	7	10,25
960305101400200	M 14	2	110	18	11	376	9	12,00
960305101600200	M 16	2	110	18	12	376	9	14,00
960305101800250	M 18	2,5	125	25	14	376	11	15,50
960305102000250	M 20	2,5	140	25	16	376	12	17,50
960305102200250	M 22	2,5	140	25	18	376	14,5	19,50
960305102400300	M 24	3	160	30	18	376	14,5	21,00
960305102700300	M 27	3	160	30	20	376	16	24,00
960305103000350	M 30	3,5	180	35	22	376	18	26,50
960305103300350	M 33	3,5	180	40	25	376	20	26,50
960305103600400	M 36	4	200	45	28	376	22	32,00



9603051	Ø	P	L	l1	d	DIN	□	●Ø
960305100800100	MF8	1	90	12	6	374	4,9	7,00
960305101000100	MF10	1	90	12	7	374	5,5	9,00
960305101000125	MF10	1,25	100	14	7	374	5,5	8,75
960305101200100	MF12	1	100	14	9	374	7	11,00
960305101200125	MF12	1,25	100	14	9	374	7	10,75
960305101200150	MF12	1,5	100	14	9	374	7	10,50
960305101400100	MF14	1	100	16	11	374	9	13,00
960305101400125	MF14	1,25	100	16	11	374	9	12,75
960305101400150	MF14	1,5	100	18	11	374	9	12,50
960305101600150	MF16	1,5	110	18	12	374	9	14,50
960305101800150	MF18	1,5	110	18	14	374	11	16,50
960305102000150	MF20	1,5	125	18	16	374	12	18,50
960305102200150	MF22	1,5	125	18	18	374	14,5	20,50
960305102400150	MF24	1,5	140	18	18	374	14,5	22,50
960305103000150	MF30	1,5	150	22	22	374	18	28,50
960305103000200	MF30	2	150	22	22	374	18	28,00

> M30 HSS



D. STANDARD RANGE

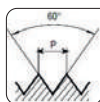
60

M - MF cutting taps
M - MF Right flute cutting taps
M - MF Spiral point taps
M - MF Low spiral taps
M - MF Fast spiral taps
M - MF Extra long taps taps
NC - NF Right flute taps
NC - NF Spiral point taps
NC - NF Low spiral taps
NC - NF Fast spiral taps
BSW Right flute taps
BSW Spiral point taps
BSW Fast spiral taps
BSP Right flute taps
BSP Spiral point taps
BSP Low spiral taps
BSP Fast spiral taps
BSPT Right flute taps
NPT Right flute taps
PG Right flute taps

#0

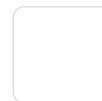
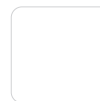
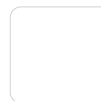
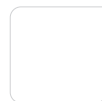


Metric
Metrique
Métrica



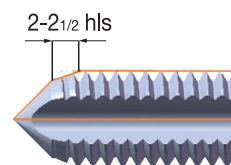
ISO 2 Norm
Norme ISO 2
Norma ISO 2

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA



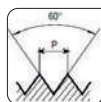
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960201100200040	M 2	0,4	45	8	2,8	371	2,1	1,60
960201100250045	M 2,5	0,45	50	9	2,8	371	2,1	2,00
960201100260045	M 2,5	0,45	50	9	2,8	371	2,1	2,10
960201100300050	M 3	0,5	56	10	3,5	371	2,7	2,50
960201100350060	M 3,5	0,6	56	11	4	371	3	2,90
960201100400070	M 4	0,7	63	12	4,5	371	3,4	3,30
960201100450075	M 4,5	0,75	70	14	6,0	371	4,9	3,75
960201100500080	M 5	0,8	70	14	6	371	4,9	4,20
960201100600100	M 6	1	80	16	6	371	4,9	5,00
960201100700100	M 7	1,00	80	16	7,0	371	5,5	6,00
960201100800125	M 8	1,25	90	18	8	371	6,2	6,75
960201100900125	M 9	1,25	90	18	9,0	371	7	7,75
960201101000150	M 10	1,5	100	20	10	371	8	8,50

9602011	Ø	P	L	l1	d	DIN	□	●Ø
960201100400050	MF4	0,5	63	10	4,5	371	3,4	3,50
960201100500050	MF5	0,5	70	11	6	371	4,9	4,50
960201100500075	MF 5	0,75	70	12	6,0	371	4,9	4,25
960201100800075	MF8	0,75	90	18	8	371	6,2	7,25
960201100800100	MF8	1	90	18	8	371	6,2	7,00
960201100900100	MF 9	1	90	18	9,0	371	7	8,00
960201101000100	MF10	1	100	20	10	371	8	9,00
960201101000125	MF10	1,25	100	20	10	371	8	8,75





M Metric
MF Metrique
Métrica



ISO 2 Norm
Norme ISO 2
Norma ISO 2

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

6H

DIN
374/376

HSS
E

BRIGHT
UNCOATED

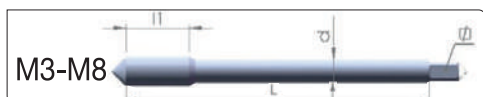
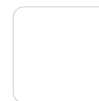
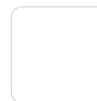
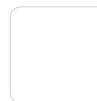
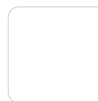
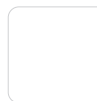
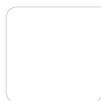
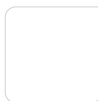


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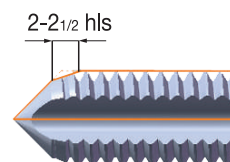


A

B



9603011	Ø	P	L	l1	d	DIN	□	●Ø
960301100600100	M 6	1	80	16	4,5	376	4,9	5,00
960301100800125	M 8	1,25	90	18	6	376	6,2	6,75
960301101000150	M 10	1,5	100	20	7	376	5,5	8,50
960301101200175	M 12	1,75	110	22	9	376	7	10,25
960301101400200	M 14	2	10	25	11	376	9	12,00
960301101600200	M 16	2	110	28	12	376	9	14,00
960301101800250	M 18	2,50	125	32	14,0	376	11	15,50
960301102000250	M 20	2,5	140	32	16	376	12	17,50
960301102200250	M 22	2,50	140	32	18,0	376	14,5	19,50
960301102400300	M 24	3	160	32	18	376	14,5	21,00
960301102700300	M 27	3,00	160	36	20,0	376	16	24,00
960301103000350	M 30	3,5	180	40	22	376	18	26,50
960301103300350	M 33	3,5	180	40	25	376	20	26,50
960301103600400	M 36	4	200	45	28	376	22	32,00
960301103900400	M 39	4	200	45	32	376	24	35,00
960301104200450	M 42	4,5	200	50	32	376	24	37,50
960301104500450	M 45	4,5	220	50	36	376	29	37,50
960301104800500	M 48	5	250	56	36	376	29	43,00
960301105200500	M 52	5,00	250	56	40,0	376	32	47,00

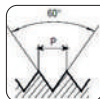


9603011	Ø	P	L	l1	d	DIN	□	●Ø
960301100800100	MF8	1	90	18	8	374	4,9	7,00
960301101000100	MF10	1	90	18	7	374	5,5	9,00
960301101000125	MF10	1,25	100	20	7	374	5,5	8,75
960301101200100	MF12	1,25	100	22	9	374	7	10,75
960301101200125	MF12	1,5	100	22	9	374	7	10,50
960301101400100	MF14	1	100	22	11	374	9	13,00
960301101400150	MF14	1,5	100	22	11	374	9	12,50
960301101600100	MF16	1	100	22	12	374	9	15,00
960301101600125	MF16	1,25	100	22	12	374	9	14,75
960301101600150	MF16	1,5	110	22	12	374	9	14,50
960301101800150	MF18	1,5	110	22	12	374	11	16,50
960301101800200	MF18	2	125	28	14,0	374	11	16,00
960301102000100	MF20	1	125	25	14	374	12	19,00
960301102000150	MF20	1,5	125	25	16,0	374	12	18,50
960301102000200	MF20	2	140	25	16,0	374	12	18,00
960301102200100	MF22	1	125	25	18	374	14,5	21,00
960301102200150	MF22	1,5	125	25	18	374	14,5	20,50
960301102200200	MF22	2	140	28	18,0	374	14,5	20,00
960301102400100	MF24	1	140	25	18,0	374	14,5	23,00
960301102400150	MF24	1,5	140	25	18,0	374	14,5	22,50
960301102400200	MF24	2	140	25	18	374	14,5	22,00
960301103000150	MF30	1,5	150	28	22,0	374	18	28,50
960301103000200	MF30	2	150	32	22	374	18	28,00
960301103200150	MF32	1,5	150	28	28	374	18	30,50
960301103200200	MF32	2	150	28	22,0	374	18	30,00
960301103600150	MF36	1,5	170	32	28	374	22	34,50
960301103600200	MF36	2	170	32	28,0	374	22	34,00
960301103800150	MF38	1,5	170	32	28,0	374	22	36,50
960301103800200	MF38	2	170	32	28,0	374	22	36,00
960301104000150	MF40	1,5	170	32	32	374	24	38,50
960301104200150	MF42	1,5	170	32	32,0	374	24	40,50

> M30 HSS



M Metric
MF Metrique
Métrica



ISO 2 Norm
Norme ISO 2
Norma ISO 2

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

6H

DIN 371

HSS E

STEAM TREATED

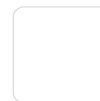
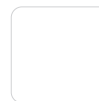
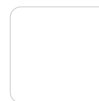
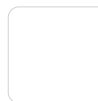
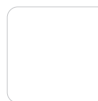
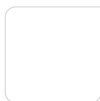
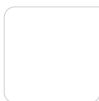


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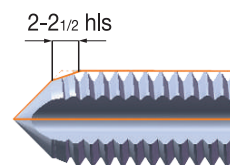


I

J1



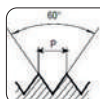
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960241100300050	M 3	0,5	56	10	3,5	371	2,7	2,50
960241100400070	M 4	0,7	63	12	4,5	371	3,4	3,30
960241100500080	M 5	0,8	70	14	6	371	4,9	4,20
960241100600100	M 6	1	80	16	6	371	4,9	5,00
960241100800125	M 8	1,25	90	18	8	371	6,2	6,75
960241101000150	M 10	1,5	100	20	10	371	8	8,50



9602411	Ø	P	L	l1	d	DIN	□	●Ø
960241100500050	MF 5	0,5	70	11	6,0	371	4,9	4,50
960241100500075	MF 5	0,75	70	12	6,0	371	4,9	4,25
960241100600075	MF 6	0,75	80	12	6,0	371	4,9	5,25
960241100800100	MF 8	1	90	18	8,0	371	6,2	7,00
960241100900100	MF 9	1	90	18	9,0	371	7	8,00
960241101000100	MF10	1	90	18	10	371	8	9,00
960241101000125	MF10	1,25	100	20	10	371	8	8,75



M Metric
MF Metrique
Métrica



ISO 2 Norm
Norme ISO 2
Norma ISO 2

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

6H

DIN 371

HSS E

TiN COATED



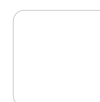
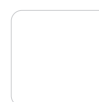
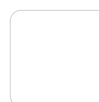
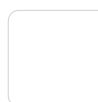
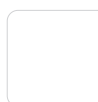
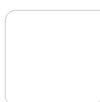
1,5xd



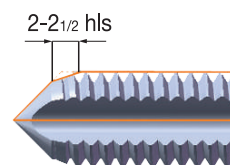
B

C

N3



9602911	Ø	P	L	l1	d	DIN	□	●Ø
960291100200040	M 2	0,40	45	9	2,8	371	2,1	1,90
960291100250045	M 2,5	0,45	50	9	2,8	371	2,1	2,05
960291100300050	M 3	0,50	56	11	3,5	371	2,7	2,50
960291100350060	M 3,5	0,60	56	11	4,0	371	3	2,50
960291100400070	M 4	0,70	63	12	4,5	371	3,4	2,90
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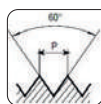


9602911	Ø	P	L	l1	d	DIN	□	•Ø
960291100500080	M 5	0,80	70	14	6,0	371	4,9	3,75
960291100600100	M 6	1,00	80	16	6,0	371	4,9	4,20
960291100700100	M 7	1,00	80	16	7,0	371	5,5	5,00
960291100800125	M 8	1,25	90	18	8,0	371	6,2	6,00
960291100900125	M 9	1,25	90	18	9,0	371	7	6,75
960291101000150	M 10	1,50	100	20	10,0	371	8	7,75

9602911	Ø	P	L	l1	d	DIN	□	•Ø
960291100500050	MF 5	0,5	70	11	6,0	371	4,9	4,50
960291100500075	MF 5	0,75	70	12	6,0	371	4,9	4,25
960291100600075	MF 6	0,75	80	12	6,0	371	4,9	5,25
960291100800100	MF 8	1	90	18	8,0	371	6,2	7,00
960291100900100	MF 9	1	90	18	9,0	371	7	8,00
960291101000100	MF 10	1	90	18	10,0	371	8	9,00
960291101000125	MF 10	1,25	100	20	10,0	371	8	8,75



M Metric
MF Métrique
Métrica



ISO 2 Norm
Norme ISO 2
Norma ISO 2

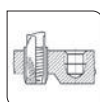
MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

6H

DIN
374/376

HSS
E

TiN
COATED



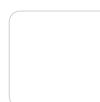
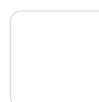
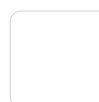
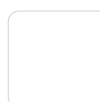
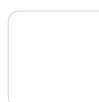
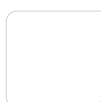
1,5xd



B

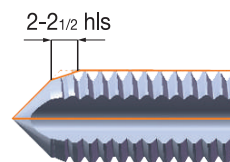
C

N3



9603911	Ø	P	L	l1	d	DIN	□	•Ø
960391100600100	M 6	1,00	80	16	4,5	376	3,4	5,00
960391100800125	M 8	1,25	90	18	6,0	376	4,9	6,75
960391101000150	M 10	1,50	100	20	7,0	376	5,5	8,50
960391101200175	M 12	1,75	110	22	9,0	376	7	10,25
960391101400200	M 14	2,00	110	25	11,0	376	9	12,00
960391101600200	M 16	2,00	110	28	12,0	376	9	14,00
960391101800250	M 18	2,50	125	32	14,0	376	11	15,50
960391102000250	M 20	2,50	140	32	16,0	376	12	17,50
960391102200250	M 22	2,50	140	32	18,0	376	14,5	19,50
960391102400300	M 24	3,00	160	32	18,0	376	14,5	21,00
960391102700300	M 27	3,00	160	36	20,0	376	16	24,00
960391103000350	M 30	3,50	180	40	22,0	376	18	26,50
960391103300350	M 33	3,50	180	40	25,0	376	20	29,50
960391103600400	M 36	4,00	200	45	28,0	376	22	32,00
960391103900400	M 39	4,00	200	45	32,0	376	24	35,00
960391104200450	M 42	4,50	200	50	32,0	376	24	37,50
960391104500450	M 45	4,50	220	50	36,0	376	29	40,50
960391104800500	M 48	5,00	250	56	36,0	376	29	43,50
960391105200500	M 52	5,00	250	56	40,0	376	32	47,00

9603911	Ø	P	L	l1	d	DIN	□	•Ø
960391100800100	MF 8	1	90	18	6,0	374	4,9	7,00
960391101000100	MF 10	1	90	18	7,0	374	5,5	9,00
960391101000125	MF 10	1,25	100	20	7,0	374	5,5	8,75
960391101200125	MF 12	1,25	100	22	9,0	374	7	10,75
960391101200150	MF 12	1,5	100	22	9,0	374	7	11,50
960391101400100	MF 14	1	100	22	11,0	374	9	13,00
960391101400150	MF 14	1,5	100	22	11,0	374	9	12,50
960391101600100	MF 16	1	100	22	12,0	374	9	15,00
960391101600150	MF 16	1,5	100	22	12,0	374	9	14,50
960391101800100	MF 18	1	110	25	14,0	374	11	17,00
960391101800150	MF 18	1,5	110	25	14,0	374	11	16,50
960391101800200	MF 18	2	125	28	14,0	374	11	16,00
960391102000100	MF 20	1	125	25	16,0	374	12	19,00
960391102000150	MF 20	1,5	125	25	16,0	374	12	18,50

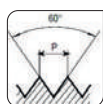


> M30 HSS

9603911	Ø	P	L	l1	d	DIN	□	•Ø
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960391102200150	MF 22	1,5	125	25	18,0	374	14,5	18,50
960391102200200	MF 22	2	140	28	18,0	374	14,5	20,00
960391102400100	MF 24	1	140	25	18,0	374	14,5	23,00
960391102400150	MF 24	1,5	140	25	18,0	374	14,5	22,50
960391102400200	MF 24	2	140	25	18,0	374	14,5	22,00
960391102800150	MF 28	1,5	140	28	20,0	374	16	26,50
960391102800200	MF 28	2	140	28	20,0	374	16	26,00
960391103000150	MF 30	1,5	150	28	22,0	374	18	28,50
960391103000200	MF 30	2	150	28	22,0	374	18	28,00
960391103200150	MF 32	1,5	150	28	22,0	374	18	30,50
960391103200200	MF 32	2	150	28	22,0	374	18	30,00
960391103400150	MF 34	1,5	170	32	28,0	374	22	32,50
960391103600150	MF 36	1,5	170	32	28,0	374	22	34,50
960391103600200	MF 36	2	170	32	28,0	374	22	34,00
960391103800150	MF 38	1,5	170	32	28,0	374	22	36,50
960391103800200	MF 38	2	170	32	28,0	374	22	36,00
960391104000150	MF 40	1,5	170	32	32,0	374	24	38,50
960391104200150	MF 42	1,5	170	32	32,0	374	24	40,50



M Metric
MF Métrique
Métrica



ISO 2 Norm
Norme ISO 2
Norma ISO 2

MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

6H

DIN 371

HSS EE

STEAM TREATED

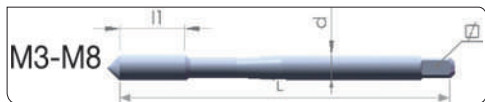
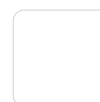
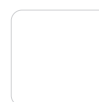
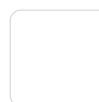
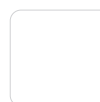
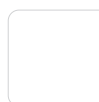
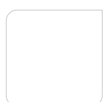


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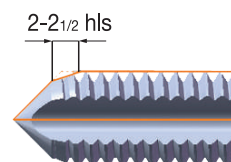
I

J



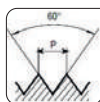
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960541100200040	M 2	0,40	45	9	2,8	371	2,1	1,90
960541100250045	M 2,5	0,45	50	9	2,8	371	2,1	2,05
960541100300050	M 3	0,5	56	10	3,5	371	2,7	2,50
960541100350060	M 3,5	0,6	56	11	4	371	3	2,90
960541100400070	M 4	0,7	63	12	4,5	371	3,4	3,30
960541100500080	M 5	0,8	70	14	6	371	4,9	4,20
960541100600100	M 6	1	80	16	6	371	4,9	5,00
960541100700100	M 7	1,00	80	16	7,0	371	5,5	6,00
960541100800125	M 8	1,25	90	18	8	371	6,2	6,75
960541101000150	M 10	1,5	100	20	10	371	8	8,50

9605411	Ø	P	L	l1	d	DIN	□	•Ø
960541100500050	MF 5	0,5	70	11	6,0	371	4,9	4,50
960541100500075	MF 5	0,75	70	12	6,0	371	4,9	4,25
960541100600075	MF 6	0,75	80	12	6,0	371	4,9	5,25
960541100800100	MF 8	1	90	18	8,0	371	6,2	7,00
960541100900100	MF 9	1	90	18	9,0	371	7	8,00
960541101000100	MF10	1	90	18	10	371	8	9,00
960541101000125	MF 10	1,25	100	20	10,0	371	8	8,75



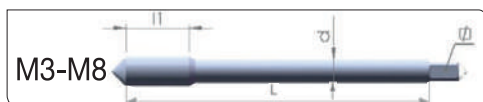
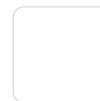
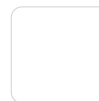
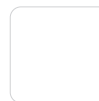
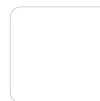
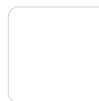
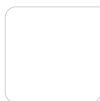
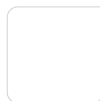


Metric
Metrique
Métrica



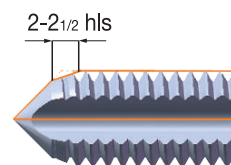
ISO 2 Norm
Norme ISO 2
Norma ISO 2

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA



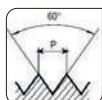
9606411	Ø	P	L	l1	d	DIN	□	●Ø
960641100600100	M 6	1,00	80	16	4,5	376	3,4	5,00
960641100800125	M 8	1,25	90	18	6,0	376	4,9	6,75
960641101000150	M 10	1,50	100	20	7,0	376	5,5	8,50
960641101200175	M 12	1,75	110	22	9,0	376	7	10,25
960641101400200	M 14	2,00	110	25	11,0	376	9	12,00
960641101600200	M 16	2,00	110	28	12,0	376	9	14,00
960641101800250	M 18	2,50	125	32	14,0	376	11	15,50
960641102000250	M 20	2,50	140	32	16,0	376	12	17,50
960641102200250	M 22	2,50	140	32	18,0	376	14,5	19,50
960641102400300	M 24	3,00	160	32	18,0	376	14,5	21,00

9606411	Ø	P	L	l1	d	DIN	□	●Ø
960641100800100	MF8	1	90	18	6	374	4,9	7,00
960641101000100	MF10	1	90	18	7	374	5,5	9,00
960641101200150	MF12	1,5	100	22	11	374	7	10,50
960641101400150	MF14	1,5	100	22	11	374	9	12,50
960641101600150	MF16	1,5	110	22	12	374	9	14,50





M Metric
Métrique
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ISO 2 Norm
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MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

6H

DIN 371

HSS ES

GOGOR COATED



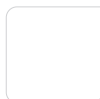
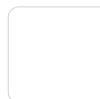
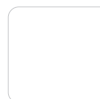
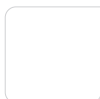
1,5xd



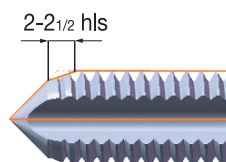
C

D

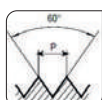
Q3



9600711	Ø	P	L	l1	d	DIN	□	●Ø
960071100300050	M 3	0,5	56	11	3,5	371	2,7	2,50
960071100400070	M 4	0,7	63	12	4,5	371	3,4	3,30
960071100500080	M 5	0,8	70	14	6,0	371	4,9	4,20
960071100600100	M 6	1	80	16	6,0	371	4,9	5,00
960071100800125	M 8	1,25	90	18	8,0	371	6,2	6,75
960071101000150	M 10	1,5	100	20	10,0	371	8	8,50



M Metric
Métrique
Métrica



ISO 2 Norm
Norme ISO 2
Norma ISO 2

MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

6H

DIN 376

HSS ES

GOGOR COATED



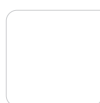
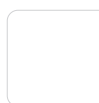
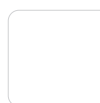
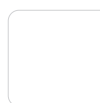
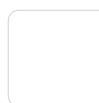
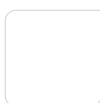
1,5xd



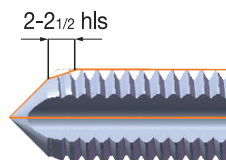
C

D

Q3

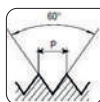


9600911	Ø	P	L	l1	d	DIN	□	●Ø
960091101200175	M 12	1,75	110	22	9,0	376	7	10,25
960091101400200	M 14	2	110	25	11,0	376	9	12,00
960091101600200	M 16	2	110	28	12,0	376	9	14,00



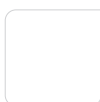


Metric
Métrique
Métrica



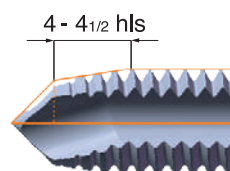
ISO 2 Norm
Norme ISO 2
Norma ISO 2

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

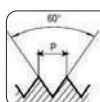


1602521	Ø	P	L	l1	d	DIN	□	●Ø
160252100200040	M 2	0,40	45	8	2,8	371	2,1	1,60
160252100250045	M 2,5	0,45	50	9	2,8	371	2,1	2,00
160252100300050	M 3	0,50	56	10	3,5	371	2,7	2,50
160252100400070	M 4	0,70	63	12	4,5	371	3,4	3,30
160252100500080	M 5	0,80	70	14	6	371	4,9	4,20
160252100600100	M 6	1	80	16	6	371	4,9	5,00
160252100800125	M 8	1,25	90	18	8	371	6,2	6,75
160252101000150	M 10	1,5	100	20	10	371	8	8,50

1602521	Ø	P	L	l1	d	DIN	□	●Ø
160252100800100	MF8	1	90	16	8	371	6,2	7,00
160252101000100	MF10	1	100	18	10	371	8	9,00

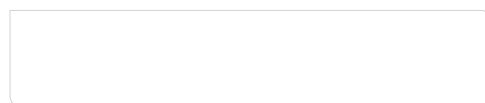
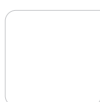


Metric
Métrique
Métrica

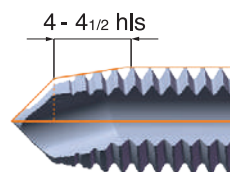


ISO 2 Norm
Norme ISO 2
Norma ISO 2

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA



1603521	Ø	P	L	l1	d	DIN	□	●Ø
160352101200175	M 12	1,75	110	22	9	376	7	10,25
160352101400200	M 14	2	110	25	11	376	9	12,00
160352101600200	M 16	2	110	28	12	376	9	14,00
160352101800250	M 18	2,5	125	32	14	376	11	15,50

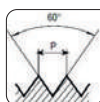


1603521	Ø	P	L	l1	d	DIN	□	●Ø
160352102000250	M 20	2,5	140	32	16	376	12	17,50
160352102400300	M 24	3	160	32	18	376	14,5	21,00
160352102700300	M 27	3	160	36	20	376	16	24,00
160352103000350	M 30	3,5	180	40	22	376	18	26,50
160352103300350	M 33	3,5	180	40	25	376	20	26,50

1603521	Ø	P	L	l1	d	DIN	□	●Ø
160352101200150	MF12	1,5	100	22	9	374	7	10,50
160352101400150	MF14	1,5	100	22	11	374	9	12,50

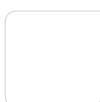


Metric
Metrique
Métrica



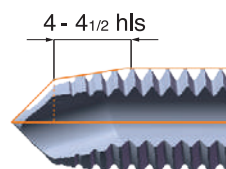
ISO 2 Norm
Norme ISO 2
Norma ISO 2

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA



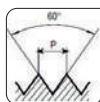
9605021	Ø	P	L	l1	d	DIN	□	●Ø
960502100200040	M 2	0,4	45	8	2,8	371	2,1	1,60
960502100250045	M 2,5	0,45	50	9	2,8	371	2,1	2,00
960502100300050	M 3	0,5	56	10	3,5	371	2,7	2,50
960502100350060	M 3,5	0,6	56	11	4	371	3	2,90
960502100400070	M 4	0,7	63	12	4,5	371	3,4	3,30
960502100500080	M 5	0,8	70	14	6	371	4,9	4,20
960502100600100	M 6	1	80	16	6	371	4,9	5,00
960502100700100	M 7	1	80	16	7	371	5,5	5,00
960502100800125	M 8	1,25	90	18	8,0	371	6,2	6,75
960502101000150	M 10	1,5	100	20	10	371	8	8,50

9605021	Ø	P	L	l1	d	DIN	□	●Ø
960502100500050	MF 5	0,5	70	11	6,0	371	4,9	4,50
960502100500075	MF 5	0,75	70	12	6,0	371	4,9	4,25
960502100600075	MF 6	0,75	80	12	6,0	371	4,9	5,25
960502100800100	MF8	1	90	18	8	371	6,2	7,00
960502100900100	MF 9	1	90	18	9,0	371	7	8,00
960502101000100	MF10	1	90	18	10	371	8	9,00
960502101000125	MF 10	1,25	100	20	10,0	371	8	8,75



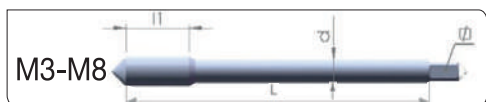
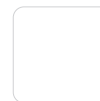
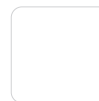
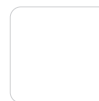
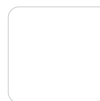
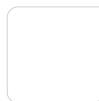
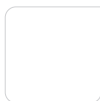


Metric
Metrique
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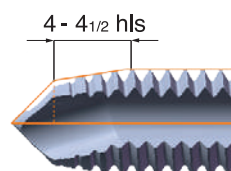
ISO 2 Norm
Norme ISO 2
Norma ISO 2

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA



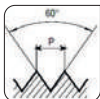
9606021	Ø	P	L	l1	d	DIN	□	●Ø
960602100300050	M 3	0,50	56	11	2,2	376	2,1	2,50
960602100400070	M 4	0,70	63	12	2,8	376	2,1	3,30
960602100500080	M 5	0,80	70	14	3,5	376	2,7	4,20
960602100600100	M 6	1,00	80	16	4,5	376	3,4	5,00
960602100800125	M 8	1,25	90	18	6,0	376	4,9	6,75
960602101000150	M 10	1,50	100	20	7,0	376	5,5	8,50
960602101200175	M 12	1,75	110	22	9,0	376	7	10,25
960602101400200	M 14	2,00	110	25	11,0	376	9	12,00
960602101600200	M 16	2,00	110	28	12,0	376	9	14,00
960602101800250	M 18	2,50	125	32	14,0	376	11	15,50
960602102000250	M 20	2,50	140	32	16,0	376	12	17,50
960602102200250	M 22	2,50	140	32	18,0	376	14,5	19,50
960602102400300	M 24	3,00	160	32	18,0	376	14,5	21,00

9606021	Ø	P	L	l1	d	DIN	□	●Ø
960602100800100	MF8	1	90	18	6	374	4,9	7,00
960602101000100	MF10	1	90	18	7	374	5,5	9,00
960602101200150	MF12	1,5	100	22	9	374	7	10,50
960602101400150	MF14	1,5	100	22	11	374	9	12,50
960602101600150	MF16	1,5	110	22	12	374	9	14,50
960602101800150	MF18	1,5	110	25	14	374	11	16,50



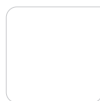
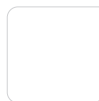
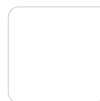
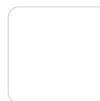
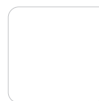


Metric
Metrique
Métrica



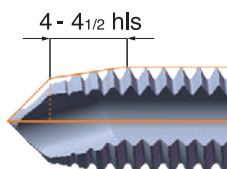
ISO 2 Norm
Norme ISO 2
Norma ISO 2

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA



9605841	Ø	P	L	l1	d	DIN	□	●Ø
960584100200040	M 2	0,40	45	9	2,8	371	2,1	1,60
960584100250045	M 2,5	0,45	50	9	2,8	371	2,1	2,05
960584100300050	M 3	0,50	56	11	3,5	371	2,7	2,50
960584100350060	M 3,5	0,60	56	11	4,0	371	3	2,90
960584100400070	M 4	0,70	63	12	4,5	371	3,4	3,30
960584100500080	M 5	0,80	70	14	6,0	371	4,9	4,20
960584100600100	M 6	1,00	80	16	6,0	371	4,9	5,00
960584100700100	M 7	1,00	80	16	7,0	371	5,5	6,00
960584100800125	M 8	1,25	90	18	8,0	371	6,2	6,75
960584101000150	M 10	1,50	100	20	10,0	371	8	8,50

9605841	Ø	P	L	l1	d	DIN	□	●Ø
960584100500075	MF 5	0,75	70	12	6,0	371	4,9	4,25
960584100600075	MF 6	0,75	80	12	6,0	371	4,9	5,25
960584100800100	MF 8	1	90	18	8	371	6,2	7
960584101000100	MF 10	1	90	18	10	371	8	9
960584101000125	MF 10	1,25	100	20	10,0	371	8	8,75

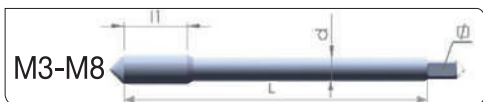
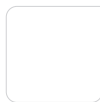
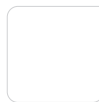
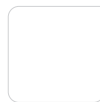
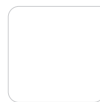
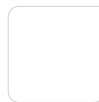


Metric
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Métrica

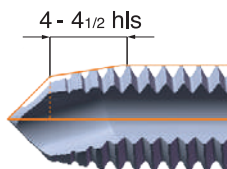


ISO 2 Norm
Norme ISO 2
Norma ISO 2

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA



9606841	Ø	P	L	l1	d	DIN	□	●Ø
960684100600100	M 6	1,00	80	16	4,5	376	3,4	5,00
960684100800125	M 8	1,25	90	18	6,0	376	4,9	6,75
960684101000150	M 10	1,50	100	20	7,0	376	5,5	8,50
960684101200175	M 12	1,75	110	22	9,0	376	7	10,25
960684101400200	M 14	2,00	110	25	11,0	376	9	12,00

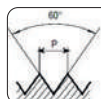


9606841		Ø	P	L	l1	d	DIN	□	●Ø
960684101600200		M 16	2,00	110	28	12,0	376	9	14,00
960684101800250		M 18	2,50	125	32	14,0	376	11	15,50
960684102000250		M 20	2,50	140	32	16,0	376	12	17,50
960684102200250		M 22	2,50	140	32	18,0	376	14,5	19,50
960684102400300		M 24	3,00	160	32	18,0	376	14,5	21,00
960684102700300		M 27	3,00	160	36	20,0	376	16	24,00
960684103000350		M 30	3,50	180	40	22,0	376	18	26,50

9606841		Ø	P	L	l1	d	DIN	□	●Ø
960684100800100		MF 8	1	90	18	6,0	374	4,9	7,00
960684101000100		MF 10	1	90	18	7,0	374	5,5	9,00
960684101200150		MF 12	1,5	100	22	9,0	374	7	11,50
960684101400150		MF 14	1,5	100	22	11,0	374	9	12,50
960684101600150		MF 16	1,5	100	22	12,0	374	9	14,50



M Metric
Metrique
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ISO 2 Norm
Norme ISO 2
Norma ISO 2

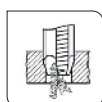
MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

6H

DIN 371

HSS E

STEAM TREATED



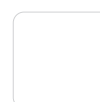
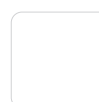
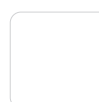
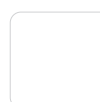
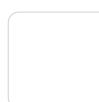
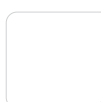
2,5xd



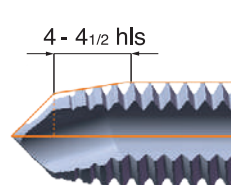
F1

H

A

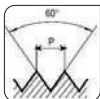


9602821		Ø	P	L	l1	d	DIN	□	●Ø
960282100200040		M 2	0,40	45	9	2,8	371	2,1	1,90
960282100250045		M 2,5	0,45	50	9	2,8	371	2,1	2,05
960282100260045		M 2,6	0,45	50	9	2,8	371	2,1	2,15
960282100300050		M 3	0,50	56	11	3,5	371	2,7	2,50
960282100350060		M 3,5	0,60	56	11	4,0	371	3	2,90
960282100400070		M 4	0,70	63	12	4,5	371	3,4	3,30
960282100450075		M 4,5	0,75	70	14	6,0	371	4,9	3,75
960282100500080		M 5	0,80	70	14	6,0	371	4,9	4,20
960282100600100		M 6	1,00	80	16	6,0	371	4,9	5,00
960282100700100		M 7	1,00	80	16	7,0	371	5,5	6,00
960282100800125		M 8	1,25	90	18	8,0	371	6,2	6,75
960282100900125		M 9	1,25	90	18	9,0	371	7	7,75
960282101000150		M 10	1,50	100	20	10,0	371	8	8,50



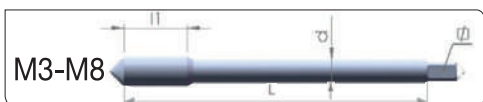
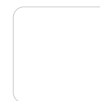
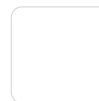
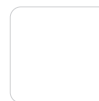
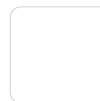
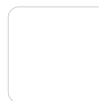


Metric
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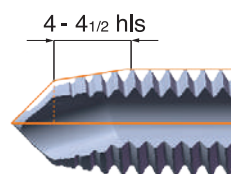


ISO 2 Norm
Norme ISO 2
Norma ISO 2

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

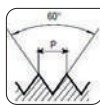


9603821	Ø	P	L	l1	d	DIN	□	●Ø
960382100300050	M 3	0,50	56	11	2,2	376	2,1	2,50
960382100350060	M 3,5	0,60	56	11	2,5	376	2,1	2,90
960382100400070	M 4	0,70	63	12	2,8	376	2,1	3,30
960382100450075	M 4,5	0,75	70	14	3,5	376	2,7	3,75
960382100500080	M 5	0,80	70	14	3,5	376	2,7	4,20
960382100600100	M 6	1,00	80	16	4,5	376	3,4	5,00
960382100700100	M 7	1,00	80	16	5,5	376	4,3	6,00
960382100800125	M 8	1,25	90	18	6,0	376	4,9	6,75
960382100900125	M 9	1,25	90	18	7,0	376	5,5	7,75
960382101000150	M 10	1,50	100	20	7,0	376	5,5	8,50
960382101100150	M 11	1,50	100	20	8,0	376	6,2	9,50
960382101200175	M 12	1,75	110	22	9,0	376	7	10,25
960382101400200	M 14	2,00	110	25	11,0	376	9	12,00
960382101600200	M 16	2,00	110	28	12,0	376	9	14,00
960382101800250	M 18	2,50	125	32	14,0	376	11	15,50
960382102000250	M 20	2,50	140	32	16,0	376	12	17,50
960382102200250	M 22	2,50	140	32	18,0	376	14,5	19,50
960382102400300	M 24	3,00	160	32	18,0	376	14,5	21,00
960382102700300	M 27	3,00	160	36	20,0	376	16	24,00
960382103000350	M 30	3,50	180	40	22,0	376	18	26,50



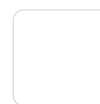
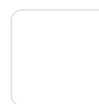
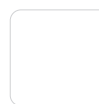
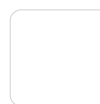
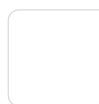
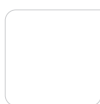


Metric
Metric
Métrica



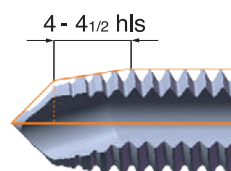
ISO 2 Norm
Norme ISO 2
Norma ISO 2

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

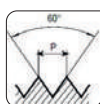


9605821	Ø	P	L	l1	d	DIN	□	●Ø
960582100200040	M 2	0,4	45	8	2,8	371	2,1	1,60
960582100250045	M 2,5	0,45	50	9	2,8	371	2,1	2,00
960582100300050	M 3	0,5	56	10	2,5	371	2,7	2,50
960582100350060	M 3,5	0,6	56	11	4	371	3	2,90
960582100400070	M 4	0,7	63	12	4,5	371	3,4	3,30
960582100500080	M 5	0,8	70	14	6	371	4,9	4,20
960582100600100	M 6	1	80	16	6	371	4,9	5,00
960582100700100	M 7	1,00	80	16	7,0	371	5,5	6,00
960582100800125	M 8	1,25	90	18	8	371	6,2	6,75
960582101000150	M 10	1,5	100	20	10	371	8	8,50

9605821	Ø	P	L	l1	d	DIN	□	●Ø
960582100500075	MF 5	0,75	70	12	6,0	371	4,9	4,25
960582100600075	MF 6	0,75	80	12	6,0	371	4,9	5,25
960582100800100	MF 8	1	90	18	8	371	6,2	7
960582101000100	MF 10	1	90	18	10	371	8	9

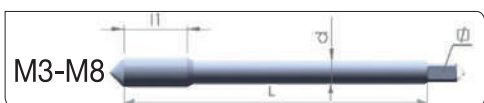
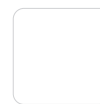
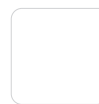
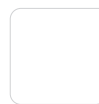
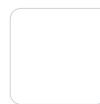
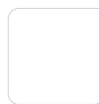
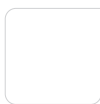


Metric
Metric
Métrica

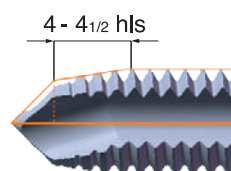


ISO 2 Norm
Norme ISO 2
Norma ISO 2

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA



9606821	Ø	P	L	l1	d	DIN	□	●Ø
960682100600100	M 6	1,00	80	16	4,5	376	3,4	5,00
960682100800125	M 8	1,25	90	18	6,0	376	4,9	6,75
960682101000150	M 10	1,50	100	20	7,0	376	5,5	8,50
960682101200175	M 12	1,75	110	22	9,0	376	7	10,25
960682101400200	M 14	2,00	110	25	11,0	376	9	12,00

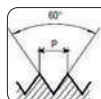


9606821		Ø	P	L	l1	d	DIN	□	•Ø
960682101600200		M 16	2,00	110	28	12,0	376	9	14,00
960682101800250		M 18	2,50	125	32	14,0	376	11	15,50
960682102000250		M 20	2,50	140	32	16,0	376	12	17,50
960682102200250		M 22	2,50	140	32	18,0	376	14,5	19,50
960682102400300		M 24	3,00	160	32	18,0	376	14,5	21,00
960682102700300		M 27	3,00	160	36	20,0	376	16	24,00
960682103000350		M 30	3,50	180	40	22,0	376	18	26,50

9606821		Ø	P	L	l1	d	DIN	□	•Ø
960682100800100		MF8	1	90	18	8	374	4,9	7,00
960682101000100		MF10	1	90	18	7	374	5,5	9,00
960682101200150		MF12	1,5	100	22	9	374	7	10,50
960682101400150		MF14	1,5	100	22	11	374	9	12,50
960682101600150		MF16	1,5	110	22	12	374	9	14,50



M Metric
Metrique
Métrica



ISO 2 Norm
Norme ISO 2
Norma ISO 2

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

6H

DIN 371

HSS EE

TiCN COATED



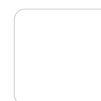
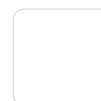
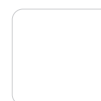
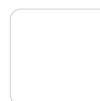
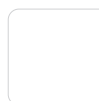
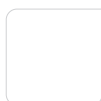
2,5xd



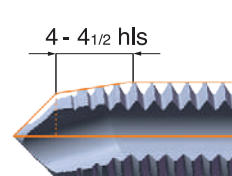
D

Q3

T3

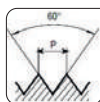


9600621		Ø	P	L	l1	d	DIN	□	•Ø
960062100300050		M 3	0,50	56	11	3,5	371	2,7	2,50
960062100400070		M 4	0,70	63	12	4,5	371	3,4	3,30
960062100500080		M 5	0,80	70	14	6,0	371	4,9	4,20
960062100600100		M 6	1,00	80	16	6,0	371	4,9	5,00
960062100800125		M 8	1,25	90	18	8,0	371	6,2	6,75
960062101000150		M 10	1,50	100	20	10,0	371	8	8,50





M Metric
Metrique
Métrica



ISO 2 Norm
Norme ISO 2
Norma ISO 2

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

6H

DIN 376

HSS EE

TiCN COATED



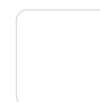
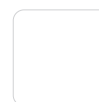
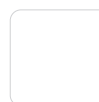
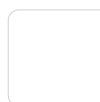
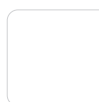
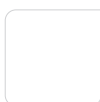
2,5xd



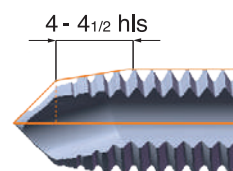
D

Q3

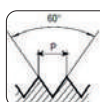
T3



9600821	Ø	P	L	l1	d	DIN	□	●Ø
960082101200175	M 12	1,75	110	22	9,0	376	7	10,25
960082101400200	M 16	2,00	110	25	11,0	376	9	12,00
960082101600200	M 16	2,00	110	28	12,0	376	9	14,00
960082101800250	M 18	2,50	125	32	14,0	376	11	15,50
960082102000250	M 20	2,50	140	32	16,0	376	12	17,50
960082102200250	M 22	2,50	140	32	18,0	376	14,5	19,50
960082102400300	M 24	3,00	160	32	18,0	376	14,5	21,00



M Metric
Metrique
Métrica



ISO 2 Norm
Norme ISO 2
Norma ISO 2

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

6H

ISO 529

HSS

BRIGHT UNCOATED



2,5xd



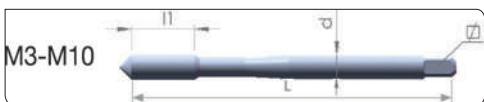
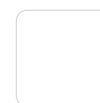
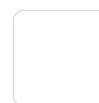
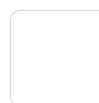
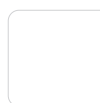
K1

L1

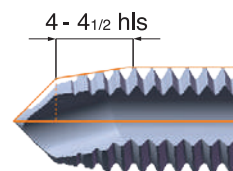
Q1

Q2

P



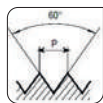
1050091	Ø	P	L	l1	d	ISO	□	●Ø
1050091030050	M 3	0,5	48	14,5	3,15	529	2,5	2,50
1050091040070	M 4	0,7	53	13	4	529	3,4	3,30
1050091050080	M 5	0,8	58	16	5	529	4,9	4,20
1050091060100	M 6	1	66	19	6,3	529	4,9	5,00
1050091080125	M 8	1,25	72	22	8	529	6,2	6,75



1050091		Ø	P	L	l1	d	ISO	□	•Ø
1050091100150		M 10	1,5	80	24	10	529	8	8,50
1050091120175		M 12	1,75	89	29	9	529	7,1	10,25
1050091140200		M 14	2	95	30	11,2	529	9	12,00
1050091160200		M 16	2	102	32	12,5	529	10	14,00
1050091180250		M 18	2,5	112	37	14	529	11,2	15,50
1050091200250		M 20	2,5	112	37	14	529	11,2	17,50



M Metric
MF Métrique
Métrica



ISO 2 Norm
Norme ISO 2
Norma ISO 2

MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

6H **DIN 371** **HSS EE** **BRIGHT UNCOATED**

2,5xd

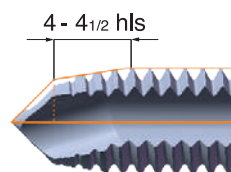


K1 **K2** **Q1** **Q2** **P**



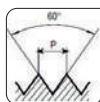
9605081	Ø	P	L	l1	d	DIN	□	•Ø
960508100200040	M 2	0,40	45	9	2,8	371	2,1	1,90
960508100250045	M 2,5	0,45	50	9	2,8	371	2,1	2,05
960508100300050	M 3	0,5	56	10	3,5	371	2,7	2,50
960508100350060	M 3,5	0,60	56	11	4,0	371	3	2,90
960508100400070	M 4	0,7	63	12	4,5	371	3,4	3,30
960508100500080	M 5	0,8	70	14	6	371	4,9	4,20
960508100600100	M 6	1	80	16	6	371	4,9	5,00
960508100700100	M 7	1	80	16	7	371	5,5	5,00
960508100800125	M 8	1,25	90	18	8	371	6,2	6,75
960508101000150	M 10	1,5	100	20	10	371	8	8,50

9605081	Ø	P	L	l1	d	DIN	□	•Ø
960508100600075	MF 6	0,75	80	12	6,0	371	4,9	5,25
960508100800100	MF 8	1	90	18	8,0	371	6,2	7,00
960508101000100	MF 10	1	90	18	10,0	371	8	9,00
960508101000125	MF 10	1,25	100	20	10,0	371	8	8,75



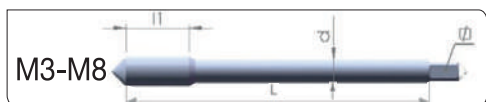
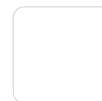
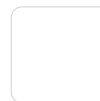
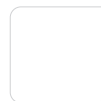
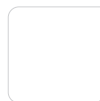


Metric
Metrique
Métrica



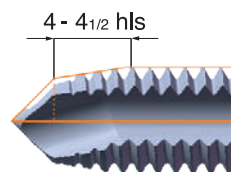
ISO 2 Norm
Norme ISO 2
Norma ISO 2

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA



9606081	Ø	P	L	l1	d	DIN	□	●Ø
960608100600100	M 6	1,00	80	16	4,5	376	3,4	5,00
960608100800125	M 8	1,25	90	18	6,0	376	4,9	6,75
960608101000150	M 10	1,50	100	20	7,0	376	5,5	8,50
960608101200175	M 12	1,75	110	22	9,0	376	7	10,25
960608101400200	M 14	2,00	110	25	11,0	376	9	12,00
960608101600200	M 16	2,00	110	28	12,0	376	9	14,00
960608101800250	M 18	2,50	125	32	14,0	376	11	15,50
960608102000250	M 20	2,50	140	32	16,0	376	12	17,50
960608102200250	M 22	2,50	140	32	18,0	376	14,5	19,50
960608102400300	M 24	3,00	160	32	18,0	376	14,5	21,00

9606081	Ø	P	L	l1	d	DIN	□	●Ø
960608100800100	MF 8	1	90	18	6,0	374	4,9	7,00
960608101000100	MF 10	1	90	18	7,0	374	5,5	9,00
960608101200150	MF 12	1,5	100	22	9,0	374	7	11,50
960608101400150	MF 14	1,5	100	22	11,0	374	9	12,50
960608101600150	MF 16	1,5	100	22	12,0	374	9	14,50
960608101800150	MF 18	1,5	110	25	14,0	374	11	16,50



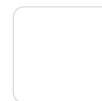
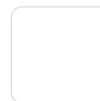
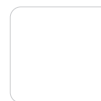
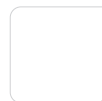
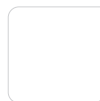
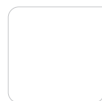
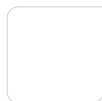


Metric
Metrique
Métrica



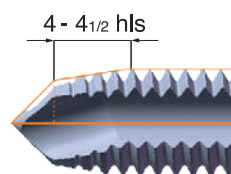
ISO 2 Norm
Norme ISO 2
Norma ISO 2

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA



9605881	Ø	P	L	l1	d	DIN	□	●Ø
960588100300050	M 3	0,5	56	11	3,5	371	2,7	2,50
960588100400070	M 4	0,7	63	12	4,5	371	3,4	3,30
960588100500080	M 5	0,8	70	14	6,0	371	4,9	4,20
960588100600100	M 6	1	80	16	6,0	371	4,9	5,00
960588100800125	M 8	1,25	90	18	8,0	371	6,2	6,75
960588101000150	M 10	1,5	100	20	10,0	371	8	8,50

9605881	Ø	P	L	l1	d	DIN	□	●Ø
960588100800100	MF 8	1	90	18	8,0	371	6,2	7,00
960588101000100	MF 10	1	90	18	10,0	371	8	9,00



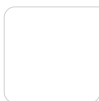


Metric
Metrique
Métrica

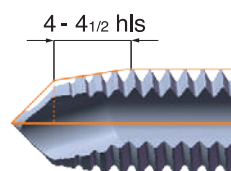


ISO 2 Norm
Norme ISO 2
Norma ISO 2

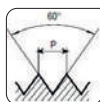
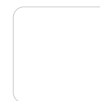
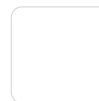
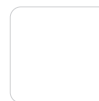
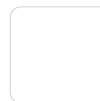
MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA



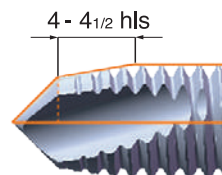
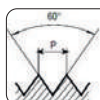
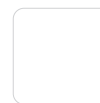
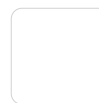
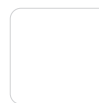
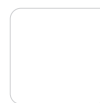
9606881	Ø	P	L	I1	d	DIN	□	●Ø
960688101200175	M 12	1,75	110	22	9,0	374	7	10,25
960688101400200	M 14	2	110	25	11,0	374	9	12,00
960688101600200	M 16	2	110	28	12,0	374	9	14,00



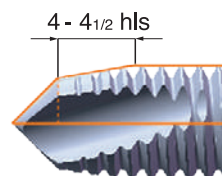
9606881	Ø	P	L	I1	d	DIN	□	●Ø
960688101200150	MF 12	1,5	100	22	9,0	374	7	11,50
960688101400150	MF 14	1,5	100	22	11,0	374	9	12,50
960688101600150	MF 16	1,5	100	22	12,0	374	9	14,50

**M**Metric
Métrique
MétricaISO 2 Norm
Norme ISO 2
Norma ISO 2**MACHINE CUTTING TAP**
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA**6H****DIN 371****HSS EE****BRIGHT UNCOATED****1xd****A****B****F1****K****L1**

9605041	Ø	P	L	l1	d	DIN	□	●Ø
960504100300050	M 3	0,50	56	5	3,5	371	2,7	2,50
960504100400070	M 4	0,70	63	7	4,5	371	3,4	3,30
960504100500080	M 5	0,80	70	9	6,0	371	4,9	4,20
960504100600100	M 6	1,00	80	10	6,0	371	4,9	5,00
960504100700100	M 7	1,00	80	10	7,0	371	5,5	6,00
960504100800125	M 8	1,25	90	12	8,0	371	6,2	6,75
960504100900125	M 9	1,25	90	12	9,0	371	7	7,75
960504101000150	M 10	1,50	100	14	10,0	371	8	8,50

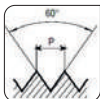
**M**Metric
Métrique
MétricaISO 2 Norm
Norme ISO 2
Norma ISO 2**MACHINE CUTTING TAP**
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA**6H****DIN 376****HSS EE****BRIGHT UNCOATED****1xd****A****B****C****K****L1**

9606041	Ø	P	L	l1	d	DIN	□	●Ø
960604100600100	M 6	1,00	80	10	4,5	376	3,4	5,00
960604100800125	M 8	1,25	90	12	6,0	376	4,9	6,75
960604101000150	M 10	1,50	100	14	7,0	376	5,5	8,50
960604101100150	M 11	1,50	100	14	8,0	376	6,2	9,50
960604101200175	M 12	1,75	110	16	9,0	376	7	10,25
960604101400200	M 14	2,00	110	18	11,0	376	9	12,00
960604101600200	M 16	2,00	110	18	12,0	376	9	14,00
960604101800250	M 18	2,50	125	25	14,0	376	11	15,50
960604102000250	M 20	2,50	140	25	16,0	376	12	17,50
960604102200250	M 22	2,50	140	25	18,0	376	14,5	19,50
960604102400300	M 24	3,00	160	30	18,0	376	14,5	21,00



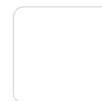
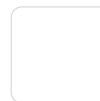
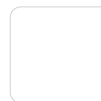
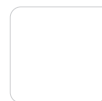
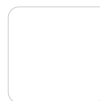
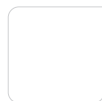
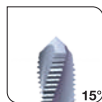


Metric
Metrique
Métrica



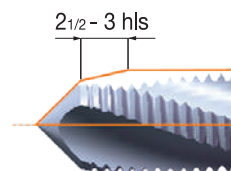
ISO 2 Norm
Norme ISO 2
Norma ISO 2

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA



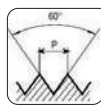
9602031	Ø	P	L	l1	d	DIN	□	●Ø
960203100200040	M 2	0,4	45	8	2,1	371	2,1	1,60
960203100250045	M 2,5	0,45	50	9	2,8	371	2,1	2,05
960203100300050	M 3	0,5	56	10	3,5	371	2,7	2,50
960203100350060	M 3,5	0,60	56	11	4,0	371	3	2,90
960203100400070	M 4	0,7	63	12	4,5	371	3,4	3,30
960203100450075	M 4,5	0,75	70	14	6,0	371	4,9	3,75
960203100500080	M 5	0,8	70	14	6	371	4,9	4,20
960203100600100	M 6	1	80	16	6	371	4,9	5,00
960203100700100	M 7	1	80	16	7	371	5,5	5,00
960203100800125	M 8	1,25	90	18	8	371	6,2	6,75
960203100900125	M 9	1,25	90	18	9	371	7	7,75
960203101000150	M 10	1,5	100	20	10	371	8	8,50

9602031	Ø	P	L	l1	d	DIN	□	●Ø
960203100500075	MF5	0,75	70	12	6	371	4,9	4,25
960203100600075	MF 6	0,75	80	12	6,0	371	4,9	5,25
960203100800100	MF8	1	90	18	8	371	6,2	7,00
960203100900100	MF 9	1	90	18	9,0	371	7	8,00
960203101000100	MF 10	1	90	18	10,0	371	8	9,00
960203101000125	MF 10	1,25	100	20	10,0	371	8	8,75



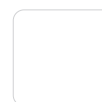
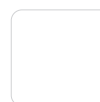
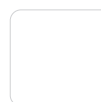
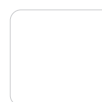
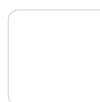
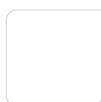


Metric
Metric
Métrica



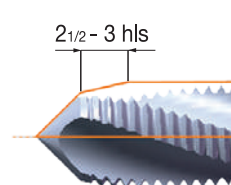
ISO 2 Norm
Norme ISO 2
Norma ISO 2

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA



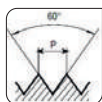
9603031	Ø	P	L	l1	d	DIN	□	●Ø
960303100300050	M 3	0,50	56	11	2,2	376	2,1	2,50
960303100350060	M 3,5	0,60	56	11	2,5	376	2,1	2,90
960303100400070	M 4	0,7	63	12	2,8	376	3,4	3,30
960303100450075	M 4,5	0,75	70	14	3,5	376	2,7	3,75
960303100500080	M 5	0,8	70	14	3,5	376	4,9	4,20
960303100600100	M 6	1	80	16	4,5	376	4,9	5,00
960303100700100	M 7	1,00	80	16	5,5	376	4,3	6,00
960303100800125	M 8	1,25	90	18	6	376	6,2	6,75
960303100900125	M 9	1,25	90	18	7,0	376	5,5	7,75
960303101000150	M 10	1,5	100	20	7	376	5,5	8,50
960303101100150	M 11	1,50	100	20	8,0	376	6,2	9,50
960303101200175	M 12	1,75	110	22	9	376	7	10,25
960303101400200	M 14	2	110	25	11	376	9	12,00
960303101600200	M 16	2	110	28	12	376	9	14,00
960303101800250	M 18	2,5	125	32	14	376	11	15,50
960303102000250	M 20	2,5	140	32	16	376	12	17,50
960303102200250	M 22	2,5	140	32	18	376	14,5	19,50
960303102400300	M 24	3	160	32	18	376	14,5	21,00
960303102700300	M 27	3	160	36	20	376	16	24,00
960303103000350	M 30	3,5	180	40	22	376	18	26,50

9603031	Ø	P	L	l1	d	DIN	□	●Ø
960303100800100	MF8	1	90	18	6	374	4,9	7,00
960303101000100	MF10	1	90	18	7	374	5,5	9,00
960303101000125	MF10	1,25	100	20	7	374	5,5	8,75
960303101200100	MF12	1	100	22	9	374	7	11,00
960303101200125	MF12	1,25	100	22	9	374	7	10,75
960303101200150	MF12	1,5	100	22	9	374	7	10,50
960303101400100	MF14	1	100	22	11	374	9	13,00
960303101400125	MF14	1,25	100	22	11	374	9	12,75
960303101400150	MF14	1,5	100	22	11	374	9	12,50
960303101600100	MF16	1	100	22	12,0	374	9	15,00
960303101600150	MF16	1,5	110	22	12	374	9	14,50
960303101800150	MF18	1,5	110	25	14	374	11	16,50
960303102000150	MF20	1,5	125	25	16	374	12	18,50
960303102200150	MF22	1,5	125	25	18	374	14,5	20,50
960303102400150	MF24	1,5	140	25	18	374	14,5	22,50
960303102400200	MF24	2	140	25	18	374	14,5	22,00
960303103000150	MF30	1,5	150	32	22	374	18	28,50
960303103000200	MF30	2	150	28	22,0	374	18	28,00



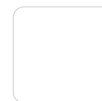
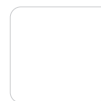
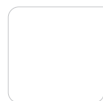
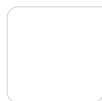
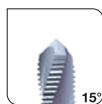


Metric
Métrique
Métrica



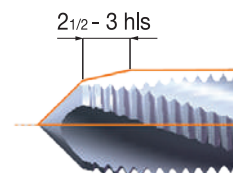
ISO 2 Norm
Norme ISO 2
Norma ISO 2

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA



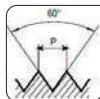
9602931	Ø	P	L	l1	d	DIN	□	●Ø
960293100200040	M 2	0,40	45	9	2,8	371	2,1	8,50
960293100250045	M 2,5	0,45	50	9	2,8	371	2,1	1,90
960293100260045	M 2,6	0,45	50	9	2,8	371	2,1	2,05
960293100300050	M 3	0,50	56	11	3,5	371	2,7	2,15
960293100350060	M 3,5	0,60	56	11	4,0	371	3	2,50
960293100400070	M 4	0,70	63	12	4,5	371	3,4	2,90
960293100450075	M 4,5	0,75	70	14	6,0	371	4,9	3,30
960293100500080	M 5	0,80	70	14	6,0	371	4,9	3,75
960293100600100	M 6	1,00	80	16	6,0	371	4,9	4,20
960293100700100	M 7	1,00	80	16	7,0	371	5,5	5,00
960293100800125	M 8	1,25	90	18	8,0	371	6,2	6,00
960293100900125	M 9	1,25	90	18	9,0	371	7	6,75
960293101000150	M 10	1,50	100	20	10,0	371	8	7,75

9602931	Ø	P	L	l1	d	DIN	□	●Ø
960293100500050	MF 5	0,5	70	11	6,0	371	4,9	4,50
960293100500075	MF 5	0,75	70	12	6,0	371	4,9	4,25
960293100600075	MF 6	0,75	80	12	6,0	371	4,9	5,25
960293100800100	MF 8	1	90	18	8,0	371	6,2	7,00
960293100900100	MF 9	1	90	18	9,0	371	7	8,00
960293101000100	MF 10	1	90	18	10,0	371	8	9,00
960293101000125	MF 10	1,25	100	20	10,0	371	8	8,75





M Metric
MF Metrique
Métrica



ISO 2 Norm
Norme ISO 2
Norma ISO 2

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

6H

DIN
374/376

HSS
E

TiN
COATED



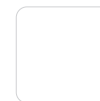
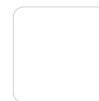
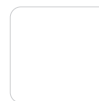
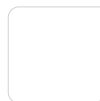
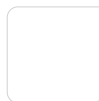
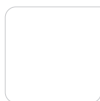
2,5xd



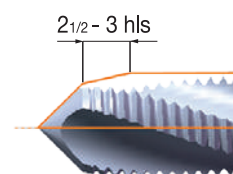
I

J1

J2



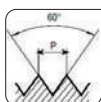
9603931	Ø	P	L	I1	d	DIN	□	●Ø
960393100300050	M 3	0,50	56	11	2,2	376	2,1	2,50
960393100350060	M 3,5	0,60	56	11	2,5	376	2,1	2,90
960393100400070	M 4	0,70	63	12	2,8	376	2,1	3,30
960393100450075	M 4,5	0,75	70	14	3,5	376	2,7	3,75
960393100500080	M 5	0,80	70	14	3,5	376	2,7	4,20
960393100600100	M 6	1,00	80	16	4,5	376	3,4	5,00
960393100700100	M 7	1,00	80	16	5,5	376	4,3	6,00
960393100800125	M 8	1,25	90	18	6,0	376	4,9	6,75
960393100900125	M 9	1,25	90	18	7,0	376	5,5	7,75
960393101000150	M 10	1,50	100	20	7,0	376	5,5	8,50
960393101100150	M 11	1,50	100	20	8,0	376	6,2	9,50
960393101200175	M 12	1,75	110	22	9,0	376	7	10,25
960393101400200	M 14	2,00	110	25	11,0	376	9	12,00
960393101600200	M 16	2,00	110	28	12,0	376	9	14,00
960393101800250	M 18	2,50	125	32	14,0	376	11	15,50
960393102000250	M 20	2,50	140	32	16,0	376	12	17,50
960393102200250	M 22	2,50	140	32	18,0	376	14,5	19,50
960393102400300	M 24	3,00	160	32	18,0	376	14,5	21,00
960393102700300	M 27	3,00	160	36	20,0	376	16	24,00
960393103000350	M 30	3,50	180	40	22,0	376	18	26,50



9603931	Ø	P	L	I1	d	DIN	□	●Ø
960393100800100	MF 8	1	90	18	6,0	374	4,9	7,00
960393100900100	MF 9	1	90	18	7,0	374	5,5	8,00
960393101000100	MF 10	1	90	18	7,0	374	5,5	9,00
960393101000125	MF 10	1,25	100	20	7,0	374	5,5	8,75
960393101200100	MF 12	1	100	22	9,0	374	7	11,00
960393101200125	MF 12	1,25	100	22	9,0	374	7	10,75
960393101200150	MF 12	1,5	100	22	9,0	374	7	11,50
960393101400100	MF 14	1	100	22	11,0	374	9	13,00
960393101400150	MF 14	1,5	100	22	11,0	374	9	12,50
960393101600100	MF 16	1	100	22	12,0	374	9	15,00
960393101600150	MF 16	1,5	100	22	12,0	374	9	14,50
960393101800100	MF 18	1	110	25	14,0	374	11	17,00
960393101800150	MF 18	1,5	110	25	14,0	374	11	16,50
960393101800200	MF 18	2	125	28	14,0	374	11	16,00
960393102000100	MF 20	1	125	25	16,0	374	12	19,00
960393102000150	MF 20	1,5	125	25	16,0	374	12	18,50
960393102000200	MF 20	2	140	25	16,0	374	12	18,00
960393102200150	MF 22	1,5	125	25	18,0	374	14,5	18,50
960393102200200	MF 22	2	140	28	18,0	374	14,5	20,00
960393102400100	MF 24	1	140	25	18,0	374	14,5	23,00
960393102400150	MF 24	1,5	140	25	18,0	374	14,5	22,50
960393102400200	MF 24	2	140	25	18,0	374	14,5	22,00
960393102800150	MF 28	1,5	140	28	20,0	374	16	26,50
960393102800200	MF 28	2	140	28	20,0	374	16	26,00
960393103000150	MF 30	1,5	150	28	22,0	374	18	28,50
960393103000200	MF 30	2	150	28	22,0	374	18	28,00



M
Metric
Metrique
Métrica



ISO 2 Norm
Norme ISO 2
Norma ISO 2

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA



6H

DIN 371

HSS EE

TiCN COATED



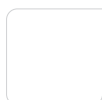
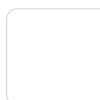
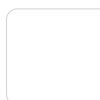
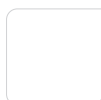
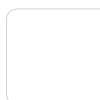
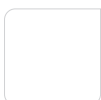
2,5xd



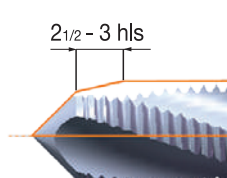
D

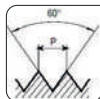
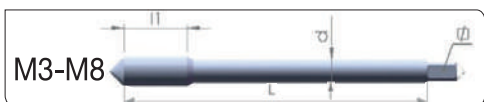
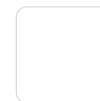
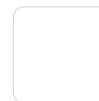
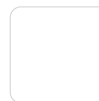
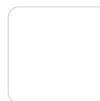
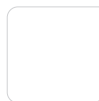
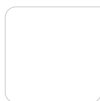
Q3

T3

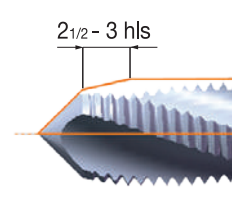
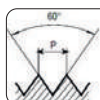
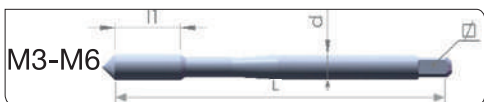
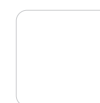
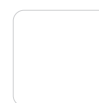
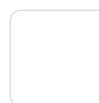
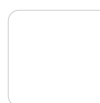
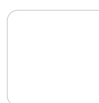
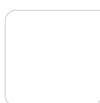


9600631	Ø	P	L	I1	d	DIN	□	●Ø
960063100300050	M 3	0,50	56	11	3,5	371	2,7	2,50
960063100400070	M 4	0,70	63	12	4,5	371	3,4	3,30
960063100500080	M 5	0,80	70	14	6,0	371	4,9	4,20
960063100600100	M 6	1,00	80	16	6,0	371	4,9	5,00
960063100800125	M 8	1,25	90	18	8,0	371	6,2	6,75
960063101000150	M 10	1,50	100	20	10,0	371	8	8,50

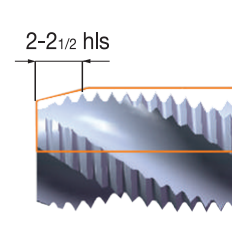


**M**Metric
Métrique
MétricaISO 2 Norm
Norme ISO 2
Norma ISO 2**MACHINE CUTTING TAP**
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA**6H****DIN 376****HSS EE****TiCN COATED****2,5xd****D****Q3****T3**

9600831	Ø	P	L	l1	d	DIN	□	●Ø
960083101200175	M 12	1,75	110	22	9,0	376	7	10,25
960083101400200	M 14	2,00	110	25	11,0	376	9	12,00
960083101600200	M 16	2,00	110	28	12,0	376	9	14,00
960083101800250	M 18	2,50	125	32	14,0	376	11	15,50
960083102000250	M 20	2,50	140	32	16,0	376	12	17,50
960083102200250	M 22	2,50	140	32	18,0	376	14,5	19,50
960083102400300	M 24	3,00	160	32	18,0	376	14,5	21,00

**M MF**Metric
Métrique
MétricaISO 2 Norm
Norme ISO 2
Norma ISO 2**MACHINE CUTTING TAP**
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA**6H****DIN 371****HSS E****BRIGHT UNCOATED****2,5xd****A****B****C**

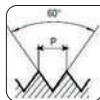
1602551	Ø	P	L	l1	d	DIN	□	●Ø
160255100200040	M 2	0,4	45	8	2,8	371	2,1	1,60
160255100250045	M 2,5	0,45	50	5	2,8	371	2,1	2,00
160255100300050	M 3	0,5	50	5	3,5	371	2,7	2,50
160255100400070	M 4	0,7	63	7	4,5	371	3,4	3,30
160255100500080	M 5	0,8	70	9	6	371	4,9	4,20
160255100600100	M 6	1	80	10	6	371	4,9	5,00
160255100800125	M 8	1,25	90	12	8	371	6,2	6,75
160255101000150	M 10	1,5	100	14	10	371	8	8,50



1602551	Ø	P	L	l1	d	DIN	□	●Ø
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160255101000100	MF10	1	100	14	10	371	8	9,00

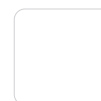
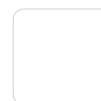
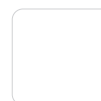
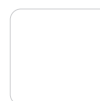
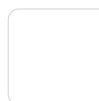
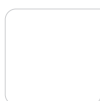
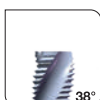


Metric
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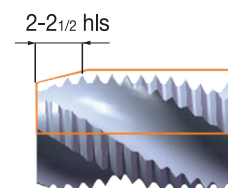


ISO 2 Norm
Norme ISO 2
Norma ISO 2

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA



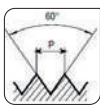
1603551	Ø	P	L	l1	d	DIN	□	●Ø
160355101200175	M 12	1,75	110	16	9	376	7	10,25
160355101400200	M 14	2	110	18	11	376	9	12,00
160355101600200	M 16	2	110	18	12	376	9	14,00
160355101800250	M 18	2,5	125	25	14	376	11	15,50
160355102000250	M 20	2,5	140	25	16	376	12	17,50
160355102400300	M 24	3	160	30	18	376	14,5	21,00
160355102700300	M 27	2	160	30	20	376	16	24,00
160355103000350	M 30	2,5	180	35	22	376	18	26,50
160355103300350	M 33	3,5	180	40	25	376	20	26,50



1603551	Ø	P	L	l1	d	DIN	□	●Ø
160355101200150	MF12	1,5	100	14	9	374	7	10,50
160355101400150	MF14	1,50	100	18	11	374	9	12,50

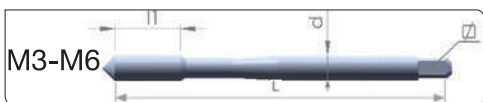
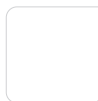
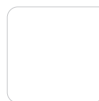
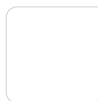
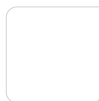
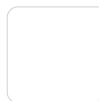


Metric
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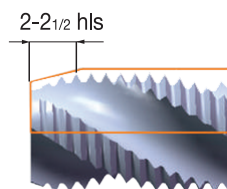
ISO 2 Norm
Norme ISO 2
Norma ISO 2

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

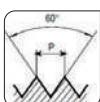


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960505100250045	M 2,5	0,45	50	5	2,8	371	2,1	2,00
960505100300050	M 3	0,5	56	5	3,5	371	2,7	2,50
960505100350060	M 3,5	0,60	56	6	4,0	371	3	2,90
960505100400070	M 4	0,7	63	7	4,5	371	3,4	3,30
960505100500080	M 5	0,8	70	9	6	371	4,9	4,20
960505100600100	M 6	1	80	10	6	371	4,9	5,00
960505100700100	M 7	1,00	80	10	7,0	371	5,5	6,00
960505100800125	M 8	1,25	90	12	8	371	6,2	6,75
960505101000150	M 10	1,5	100	14	10	371	8	8,50

9605051	Ø	P	L	l1	d	DIN	□	•Ø
960505100500050	MF 5	0,5	70	11	6,0	371	4,9	4,50
960505100500075	MF 5	0,75	70	12	6,0	371	4,9	4,25
960505100600075	MF 6	0,75	80	12	6,0	371	4,9	5,25
960505100800100	MF 8	1	90	18	8,0	371	6,2	7,00
960505100900100	MF 9	1	90	18	9,0	371	7	8,00
960505101000100	MF 10	1	90	18	10,0	371	8	9,00
960505101000125	MF 10	1,25	100	20	10,0	371	8	8,75

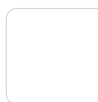
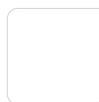
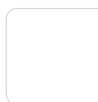
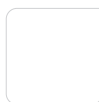
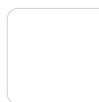


Metric
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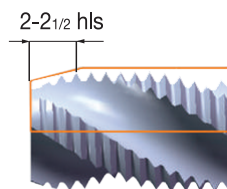


ISO 2 Norm
Norme ISO 2
Norma ISO 2

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA



9606051	Ø	P	L	l1	d	DIN	□	•Ø
960605100600100	M 6	1,00	80	10	4,5	376	3,4	5,00
960605100800125	M 8	1,25	90	12	6,0	376	4,9	6,75
960605101000150	M 10	1,50	100	14	7,0	376	5,5	8,50
960605101200175	M 12	1,75	110	16	9,0	376	7	10,25
960605101400200	M 14	2,00	110	18	11,0	376	9	12,00

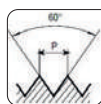


9606051	Ø	P	L	l1	d	DIN	□	●Ø
960605101600200	M 16	2,00	110	18	12,0	376	9	14,00
960605101800250	M 18	2,50	125	25	14,0	376	11	15,50
960605102000250	M 20	2,50	140	25	16,0	376	12	17,50
960605102200250	M 22	2,50	140	25	18,0	376	14,5	19,50
960605102400300	M 24	3,00	160	30	18,0	376	14,5	21,00

9606051	Ø	P	L	l1	d	DIN	□	●Ø
960605100800100	MF 8	1	90	18	6,0	374	4,9	7,00
960605101000100	MF 10	1	90	18	7,0	374	5,5	9,00
960605101200150	MF 12	1,5	100	22	9,0	374	7	11,50
960605101400150	MF 14	1,5	100	22	11,0	374	9	12,50
960605101600150	MF 16	1,5	100	22	12,0	374	9	14,50
960605101800150	MF 18	1,5	110	25	14,0	374	11	16,50

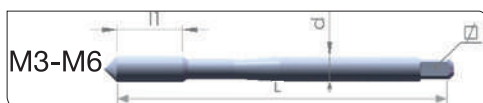
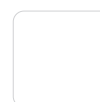
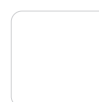
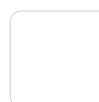
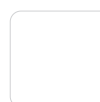
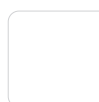
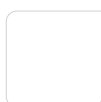
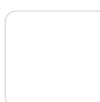


Metric
Metrique
Métrica



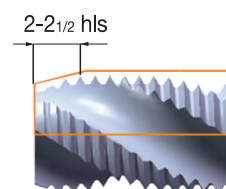
ISO 2 Norm
Norme ISO 2
Norma ISO 2

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA



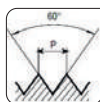
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960589100200040	M 2	0,4	45	8	2,8	371	2,1	1,60
960589100250045	M 2,5	0,45	50	5	2,8	371	2,1	2,05
960589100300050	M 3	0,5	56	5	3,5	371	2,7	2,50
960589100350060	M 3,5	0,6	56	6	4,0	371	3	2,90
960589100400070	M 4	0,7	63	7	4,5	371	3,4	3,30
960589100500080	M 5	0,8	70	9	6,0	371	4,9	4,20
960589100600100	M 6	1	80	10	6,0	371	4,9	5,00
960589100700100	M 7	1	80	10	7,0	371	5,5	6,00
960589100800125	M 8	1,25	90	12	8,0	371	6,2	6,75
960589101000150	M 10	1,5	100	14	10,0	371	8	8,50

9605891	Ø	P	L	l1	d	DIN	□	●Ø
960589100800100	MF8	1	90	14	10	371	8	9
960589101000100	MF10	1	90	14	10	371	8	9



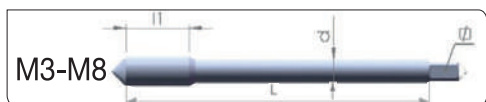
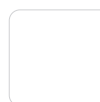
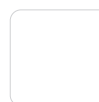
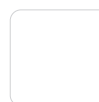
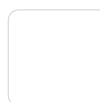
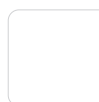
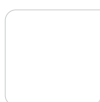
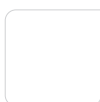
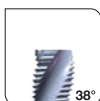


Metric
Metrique
Métrica



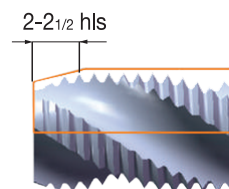
ISO 2 Norm
Norme ISO 2
Norma ISO 2

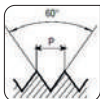
MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA



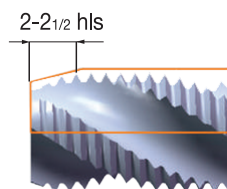
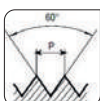
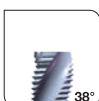
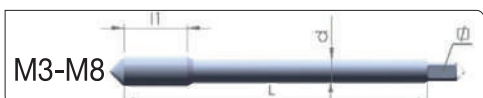
9606891	Ø	P	L	l1	d	DIN	□	●Ø
960689100600100	M 6	1	80	10	4,5	376	3,4	5,00
960689100800125	M 8	1,25	90	12	6,0	376	4,9	6,75
960689101000150	M 10	1,5	100	14	7,0	376	5,5	8,50
960689101200175	M 12	1,75	110	16	9,0	376	7	10,25
960689101400200	M 14	2	110	18	11,0	376	9	12,00
960689101600200	M 16	2	110	18	12,0	376	9	14,00
960689101800250	M 18	2,5	125	25	14,0	376	11	15,50
960689102000250	M 20	2,5	140	25	16,0	376	12	17,50
960689102200250	M 22	2,5	140	25	18,0	376	14,5	19,50
960689102400300	M 24	3	160	30	18,0	376	14,5	21,00
960689102700300	M 27	3	160	30	20,0	376	16	24,00
960689103000350	M 30	3,5	180	35	22,0	376	18	26,50

9606891	Ø	P	L	l1	d	DIN	□	●Ø
960689100800100	MF 8	1	90	18	6,0	374	4,9	7,00
960689101000100	MF 10	1	90	18	7,0	374	5,5	9,00
960689101200150	MF 12	1,5	100	22	9,0	374	7	11,50
960689101400150	MF 14	1,5	100	22	11,0	374	9	12,50
960689101600150	MF 16	1,5	100	22	12,0	374	9	14,50
960689101800150	MF 18	1,5	110	25	14,0	374	11	16,50

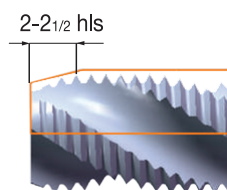


**M**Metric
Metrique
MétricaISO 2 Norm
Norme ISO 2
Norma ISO 2**MACHINE CUTTING TAP**
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA**6H****DIN 371****HSS E****STEAM TREATED****2,5xd****F1****H****A**

9602851	Ø	P	L	l1	d	DIN	□	●Ø
960285100200040	M 2	0,40	45	8	2,8	371	2,1	1,60
960285100250045	M 2,5	0,45	50	5	2,8	371	2,1	2,05
960285100260045	M 2,6	0,45	50	5	2,8	371	2,1	2,15
960285100300050	M 3	0,50	56	5	3,5	371	2,7	2,50
960285100350060	M 3,5	0,60	56	6	4,0	371	3	2,90
960285100400070	M 4	0,70	63	7	4,5	371	3,4	3,30
960285100450075	M 4,5	0,75	70	7	6,0	371	4,9	3,75
960285100500080	M 5	0,80	70	9	6,0	371	4,9	4,20
960285100600100	M 6	1,00	80	10	6,0	371	4,9	5,00
960285100700100	M 7	1,00	80	10	7,0	371	5,5	6,00
960285100800125	M 8	1,25	90	12	8,0	371	6,2	6,75
960285100900125	M 9	1,25	90	12	9,0	371	7	7,75
960285101000150	M 10	1,50	100	14	10,0	371	8	8,50

**M**Metric
Metrique
MétricaISO 2 Norm
Norme ISO 2
Norma ISO 2**MACHINE CUTTING TAP**
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA**6H****DIN 376****HSS E****STEAM TREATED****2,5xd****F1****H****A**

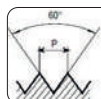
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960385100300050	M 3	0,50	56	5	2,2	376	2,1	2,50
960385100350060	M 3,5	0,60	56	6	2,5	376	2,1	2,90
960385100400070	M 4	0,70	63	7	2,8	376	2,1	3,30
960385100450075	M 4,5	0,75	70	7	3,5	376	2,7	3,75
960385100500080	M 5	0,80	70	9	3,5	376	2,7	4,20
960385100600100	M 6	1,00	80	10	4,5	376	3,4	5,00
960385100700100	M 7	1,00	80	10	5,5	376	4,3	6,00
960385100800125	M 8	1,25	90	12	6,0	376	4,9	6,75
960385100900125	M 9	1,25	90	12	7,0	376	5,5	7,75
960385101000150	M 10	1,50	100	14	7,0	376	5,5	8,50
960385101100150	M 11	1,50	100	14	8,0	376	6,2	9,50
960385101200175	M 12	1,75	110	16	9,0	376	7	10,25



9603851	Ø	P	L	l1	d	DIN	□	●Ø
960385101400200	M 14	2,00	110	18	11,0	376	9	12,00
960385101600200	M 16	2,00	110	18	12,0	376	9	14,00
960385101800250	M 18	2,50	125	25	14,0	376	11	15,50
960385102000250	M 20	2,50	140	25	16,0	376	12	17,50
960385102200250	M 22	2,50	140	25	18,0	376	14,5	19,50
960385102400300	M 24	3,00	160	30	18,0	376	14,5	21,00
960385102700300	M 27	3,00	160	30	20,0	376	16	24,00
960385103000350	M 30	3,50	180	35	22,0	376	18	26,50



M Metric
MF Métrique
Métrica



ISO 2 Norm
Norme ISO 2
Norma ISO 2

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

6H

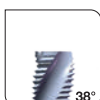
DIN 371

HSS EE

STEAM TREATED



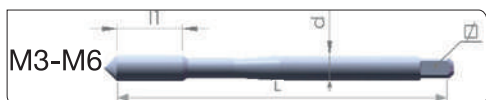
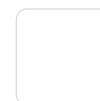
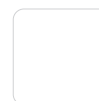
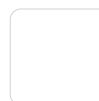
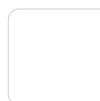
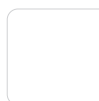
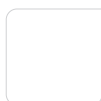
2,5xd



F

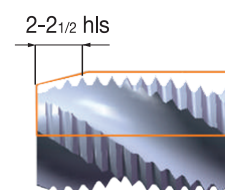
G

H



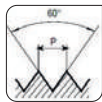
9605851	Ø	P	L	l1	d	DIN	□	●Ø
960585100200040	M 2	0,40	45	9	2,8	371	2,1	1,90
960585100250045	M 2,5	0,45	50	9	2,8	371	2,1	2,05
960585100300050	M 3	0,5	56	5	3,5	371	2,7	2,50
960585100350060	M 3,5	0,6	56	6	4	371	3	2,90
960585100400070	M 4	0,7	63	7	4,5	371	3,4	3,30
960585100500080	M 5	0,8	70	9	6	371	4,9	4,20
960585100600100	M 6	1	80	10	6	371	4,9	5,00
960585100700100	M 7	1,00	80	10	7,0	371	5,5	6,00
960585100800125	M 8	1,25	90	12	8	371	6,2	6,75
960585101000150	M 10	1,5	100	14	10	371	8	8,50

9605851	Ø	P	L	l1	d	DIN	□	●Ø
960585100800100	MF10	1	90	14	10	371	8	9
960585101000100	MF10	1	90	14	10	371	8	9



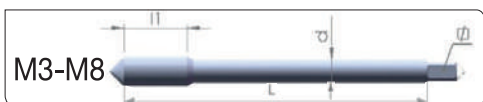
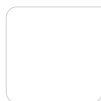
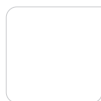
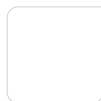
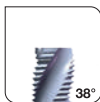


Metric
Metrique
Métrica



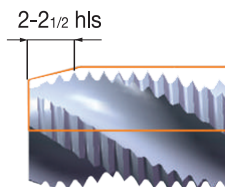
ISO 2 Norm
Norme ISO 2
Norma ISO 2

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA



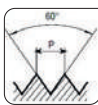
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960685100600100	M 6	1,00	80	10	4,5	376	3,4	5,00
960685100800125	M 8	1,25	90	12	6,0	376	4,9	6,75
960685101000150	M 10	1,50	100	14	7,0	376	5,5	8,50
960685101200175	M 12	1,75	110	16	9,0	376	7	10,25
960685101400200	M 14	2,00	110	18	11,0	376	9	12,00
960685101600200	M 16	2,00	110	18	12,0	376	9	14,00
960685101800250	M 18	2,50	125	25	14,0	376	11	15,50
960685102000250	M 20	2,50	140	25	16,0	376	12	17,50
960685102200250	M 22	2,50	140	25	18,0	376	14,5	19,50
960685102400300	M 24	3,00	160	30	18,0	376	14,5	21,00
960685102700300	M 27	3,00	160	30	20,0	376	16	24,00
960685103000350	M 30	3,50	180	35	22,0	376	18	26,50

9606851	Ø	P	L	l1	d	DIN	□	●Ø
960685100800100	MF8	1	90	12	6	374	4,9	7,00
960685101000100	MF10	1	90	14	7	374	5,5	9,00
960685101200150	MF12	1,5	100	14	9	374	7	10,50
960685101400150	MF14	1,5	100	18	11	374	9	12,50
960685101600150	MF16	1,5	110	18	12	374	9	14,50
960685101800150	MF18	1,5	110	18	14	374	11	16,50



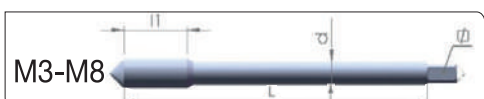
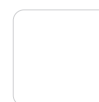
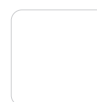
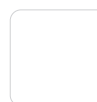
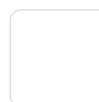


Metric
Metrique
Métrica



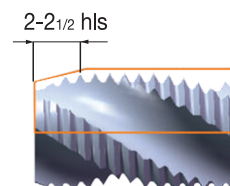
ISO 2 Norm
Norme ISO 2
Norma ISO 2

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

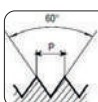


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960506100250045	M 2,5	0,45	50	9	2,8	371	2,1	2,05
960506100300050	M 3	0,5	56	10	3,5	371	2,7	2,50
960506100350060	M 3,5	0,60	56	11	4,0	371	3	2,90
960506100400070	M 4	0,7	63	12	4,5	371	3,4	3,30
960506100500080	M 5	0,8	70	14	6	371	4,9	4,20
960506100600100	M 6	1	80	16	6	371	4,9	5,00
960506100700100	M 7	1,00	80	16	7,0	371	5,5	6,00
960506100800125	M 8	1,25	90	18	8	371	6,2	6,75
960506101000150	M 10	1,5	100	20	10	371	8	8,50

9605061	Ø	P	L	l1	d	DIN	□	●Ø
960506100600075	MF 6	0,75	80	12	6,0	371	4,9	5,25
960506100800100	MF 8	1	90	18	8,0	371	6,2	7,00
960506101000100	MF 10	1	90	18	10,0	371	8	9,00
960506101000125	MF 10	1,25	100	20	10,0	371	8	8,75

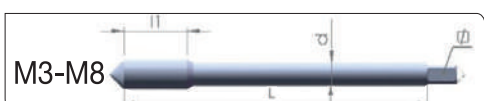
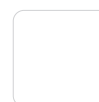
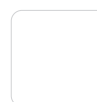
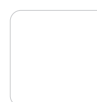
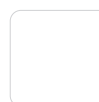


Metric
Metrique
Métrica

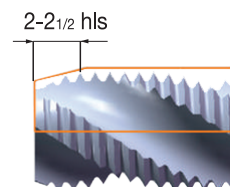


ISO 2 Norm
Norme ISO 2
Norma ISO 2

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA



9606061	Ø	P	L	l1	d	DIN	□	●Ø
960606100600100	M 6	1,00	80	10	4,5	376	3,4	5,00
960606100800125	M 8	1,25	90	12	6,0	376	4,9	6,75
960606101000150	M 10	1,50	100	14	7,0	376	5,5	8,50
960606101200175	M 12	1,75	110	16	9,0	376	7	10,25
960606101400200	M 14	2,00	110	18	11,0	376	9	12,00

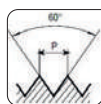


9606061		Ø	P	L	l1	d	DIN	□	●Ø
960606101600200		M 16	2,00	110	18	12,0	376	9	14,00
960606101800250		M 18	2,50	125	25	14,0	376	11	15,50
960606102000250		M 20	2,50	140	25	16,0	376	12	17,50
960606102200250		M 22	2,50	140	25	18,0	376	14,5	19,50
960606102400300		M 24	3,00	160	30	18,0	376	14,5	21,00

9606061		Ø	P	L	l1	d	DIN	□	●Ø
960606100800100		MF 8	1	90	18	6,0	374	4,9	7,00
960606101000100		MF 10	1	90	18	7,0	374	5,5	9,00
960606101200150		MF 12	1,5	100	22	9,0	374	7	11,50
960606101400150		MF 14	1,5	100	22	11,0	374	9	12,50
960606101600150		MF 16	1,5	100	22	12,0	374	9	14,50
960606101800150		MF 18	1,5	110	25	14,0	374	11	16,50

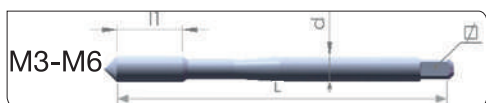
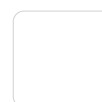
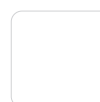
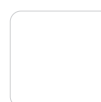
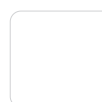
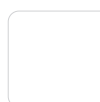
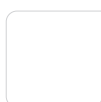
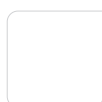


Metric
Metrique
Métrica



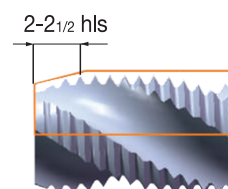
ISO 2 Norm
Norme ISO 2
Norma ISO 2

MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA



9605871		Ø	P	L	l1	d	DIN	□	●Ø
960587100300050		M 3	0,5	56	5	3,5	371	2,7	2,50
960587100400070		M 4	0,7	63	7	4,5	371	3,4	3,30
960587100500080		M 5	0,8	70	9	6,0	371	4,9	4,20
960587100600100		M 6	1	80	10	6,0	371	4,9	5,00
960587100800125		M 8	1,25	90	12	8,0	371	6,2	6,75
960587101000150		M 10	1,5	100	14	10,0	371	8	8,50

9605871		Ø	P	L	l1	d	DIN	□	●Ø
960587100800100		MF 8	1	90	18	8,0	371	6,2	7,00
960587101000100		MF 10	1	90	18	10,0	371	8	9,00



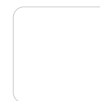
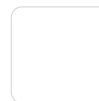
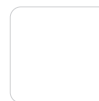
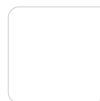
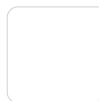
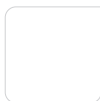
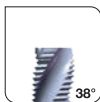


Metric
Metrique
Métrica

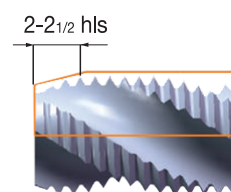


ISO 2 Norm
Norme ISO 2
Norma ISO 2

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA



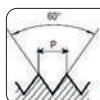
9606871	Ø	P	L	I1	d	DIN	□	●Ø
960687101200175	M 12	1,75	110	16	9,0	374	7	10,25
960687101400200	M 14	2	110	18	11,0	374	9	12,00
960687101600200	M 16	2	110	18	12,0	374	9	14,00



9606871	Ø	P	L	I1	d	DIN	□	●Ø
960687101200150	MF 12	1,5	100	22	9,0	374	7	11,50
960687101400150	MF 14	1,5	100	22	11,0	374	9	12,50



M Metric
Métrique
Métrica



ISO 2 Norm
Norme ISO 2
Norma ISO 2

MACHINE TAP LONG
TARAU MACHINE LONG
MACHO DE MÁQUINA LARGO

6H

NFE 66112

HSS E

BRIGHT UNCOATED



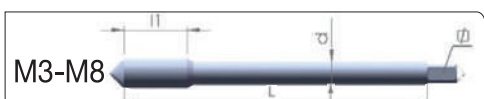
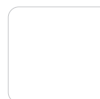
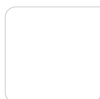
2,5xd



A

B

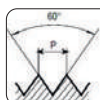
C



9704601	Ø	P	L	l1	d	NFE	□	●Ø
970460100300050	M 3	0,5	90	19	2,1	66112	1,6	2,50
970460100400070	M 4	0,7	100	20	2,9	66112	2,3	3,30
970460100500080	M 5	0,8	110	25	3,7	66112	3	4,20
970460100600100	M 6	1	120	27	4,5	66112	3,5	5,00
970460100800125	M 8	1,25	135	32	6,2	66112	5	6,75
970460101000150	M 10	1,5	150	38	7,6	66112	6	8,50
970460101200175	M 12	1,75	165	43	9	66112	7	10,25
970460101400200	M 14	2	180	50	10,5	66112	8	12,00
970460101600200	M 16	2	190	50	12,5	66112	10	14,00



M Metric
Métrique
Métrica



ISO 2 Norm
Norme ISO 2
Norma ISO 2

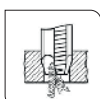
MACHINE TAP LONG
TARAU MACHINE LONG
MACHO DE MÁQUINA LARGO

6H

NFE 66112

HSS E

BRIGHT UNCOATED



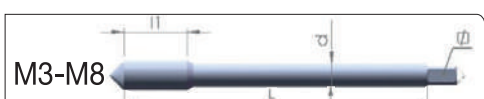
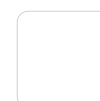
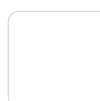
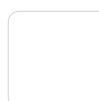
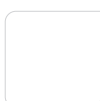
2,5xd



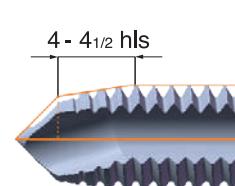
A

B

C

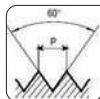


9704611	Ø	P	L	l1	d	NFE	□	●Ø
970461100300050	M 3	0,5	90	19	2,1	66112	1,6	2,50
970461100400070	M 4	0,7	100	20	2,9	66112	2,3	3,30
970461100500080	M 5	0,8	110	25	3,7	66112	3	4,20
970461100600100	M 6	1	120	27	4,5	66112	3,5	5,00
970461100800125	M 8	1,25	135	32	6,2	66112	5	6,75
970461101000150	M 10	1,5	150	38	7,6	66112	6	8,50
970461101200175	M 12	1,75	165	43	9	66112	7	10,25



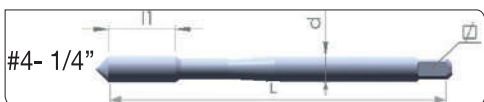
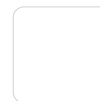
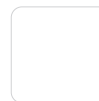
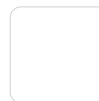
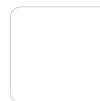
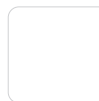
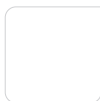
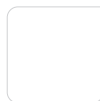


Normal series American Unified Thread
Filet Unifié Américaine série normal
Rosca Unificada Americana serie normal



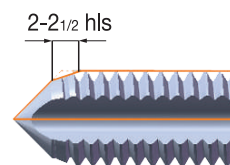
ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA



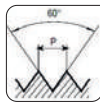
9622011	Ø	P	L	I1	d	DIN	□	●Ø
962201100004400	NC #4	40	56	11	3,5	371	2,7	2,30
962201100005400	NC #5	40	56	11	3,5	371	2,7	2,60
962201100006320	NC #6	32	56	11	4,0	371	3	2,85
962201100008320	NC #8	32	63	12	4,5	371	3,4	3,50
962201100012240	NC#12	24	80	14	6,0	371	4,9	4,50
962201100140200	NC 1/4	20	80	16	7,0	371	5,5	5,10
962201100516180	NC5/16	18	90	18	8,0	371	6,2	6,50
962201100380160	NC 3/8	16	90	18	9,0	371	7	7,90

9622011	Ø	P	L	I1	d	DIN	□	●Ø
962201100010320	NF#10	32	70	14	6	371	4,9	4,1
962201100140280	NF 1/4	28	80	16	7	371	5,5	5,5
962201100380240	NF 3/8	24	100	18	9	371	7	8,5



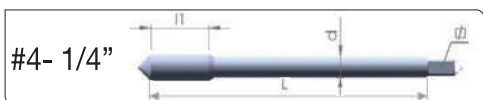
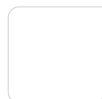
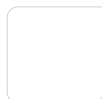


Normal series American Unified Thread
Filet Unifié Américaine série normal
Rosca Unificada Americana serie normal



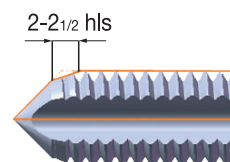
ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

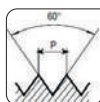


9623011	Ø	P	L	l1	d	DIN	□	●Ø
962301100140200	NC 1/4	20	80	16	4,5	376	3,4	5,1
962301100516180	NC5/16	18	90	18	6	376	4,9	6,5
962301100380160	NC 3/8	16	90	18	7	376	5,5	7,9
962301100716140	NC7/16	14	100	22	8	376	6,2	9,25
962301100120130	NC 1/2	12	110	25	9	376	7	10,5
962301100580110	NC 5/8	11	110	28	12	376	9	13,5
962301100340100	NC 3/4	10	125	32	14	376	11	16,5
962301100780090	NC 7/8	9	140	32	18	376	14,5	19,25
962301110000080	NC 1"	8	160	36	20	376	16	22

9623011	Ø	P	L	l1	d	DIN	□	●Ø
962301100716200	NF7/16	20	100	22	8	374	6,2	9,9
962301100120200	NF 1/2	20	110	25	9	374	7	11,5
962301100916180	NF9/16	18	110	25	11	374	9	12,9
962301100580180	NF5/8	18	110	25	12	374	9	14,5
962301100340160	NF 3/4	16	125	32	14	374	11	17,5

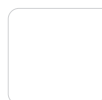


Normal series American Unified Thread
Filet Unifié Américaine série normal
Rosca Unificada Americana serie normal

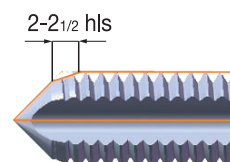


ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA



9622911	Ø	P	L	l1	d	DIN	□	●Ø
962291100004400	NC #4	40	56	11	3,5	371	2,7	2,3
962291100005400	NC #5	40	56	11	3,5	371	2,7	2,6
962291100006320	NC #6	32	56	11	4	371	3	2,85
962291100008320	NC #8	32	63	12	4,5	371	3,4	3,5
962291100010240	NC#10	24	70	14	6	371	4,9	3,9

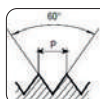


9622911	Ø	P	L	l1	d	DIN	□	●Ø
962291100012240	NC#12	24	80	14	6	371	4,9	4,5
962291100140200	NC 1/4	20	80	16	7	371	5,5	5,1
962291100516180	NC5/16	18	90	18	8	371	6,2	6,5
962291100380160	NC 3/8	16	90	18	9	371	7	7,9

9622911	Ø	P	L	l1	d	DIN	□	●Ø
962291100010320	NF#10	32	70	14	6	371	4,9	4,1
962291100140280	NF 1/4	28	80	16	7	371	5,5	5,5
962291100380240	NF 3/8	24	100	18	9	371	7	8,5

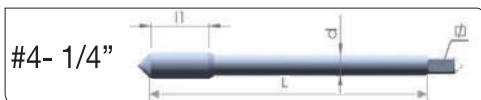
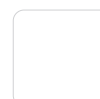
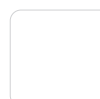
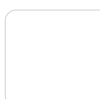


Normal series American Unified Thread
Filet Unifié Américaine série normal
Rosca Unificada Americana serie normal



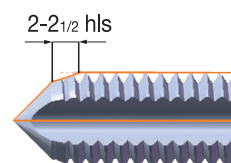
ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA



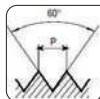
9623911	Ø	P	L	l1	d	DIN	□	●Ø
962391100140200	NC 1/4	20	80	16	4,5	376	3,4	5,1
962391100516180	NC5/16	18	90	18	6	376	4,9	6,5
962391100380160	NC 3/8	16	90	18	7	376	5,5	7,9
962391100716140	NC7/16	14	100	22	8	376	6,2	9,25
962391100120130	NC 1/2	12	110	25	9	376	7	10,5
962391100580110	NC 5/8	11	110	28	12	376	9	13,5
962391100340100	NC 3/4	10	125	32	14	376	11	16,5
962391100780090	NC 7/8	9	140	32	18	376	14,5	19,25
96239110000080	NC 1"	8	160	36	20	376	16	22

9623911	Ø	P	L	l1	d	DIN	□	●Ø
962391100716200	NF7/16	20	100	22	8	374	6,2	9,9
962391100120200	NF 1/2	20	110	25	9	374	7	11,5
962391100916180	NF9/16	18	110	25	11	374	9	12,9
962391100580180	NF5/8	18	110	25	12	374	9	14,5
962391100340160	NF 3/4	16	125	32	14	374	11	17,5



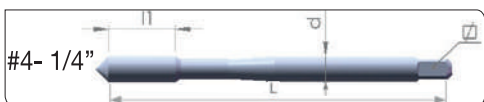
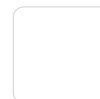


Normal series American Unified Thread
Filet Unifié Américaine série normal
Rosca Unificada Americana serie normal



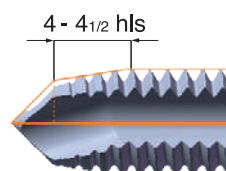
ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA



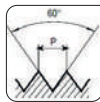
9622021	Ø	P	L	l1	d	DIN	□	●Ø
962202100004400	NC #4	40	56	11	3,5	371	2,7	2,3
962202100005400	NC #5	40	56	11	3,5	371	2,7	2,6
962202100006320	NC #6	32	56	11	4	371	3	2,85
962202100008320	NC #8	32	63	12	4,5	371	3,4	3,5
962202100010240	NC#10	24	70	14	6	371	4,9	3,9
962202100012240	NC#12	24	80	14	6	371	4,9	4,5
962202100140200	NC 1/4	20	80	16	7	371	5,5	5,1
962202100516180	NC5/16	18	90	18	8	371	6,2	6,5
962202100380160	NC 3/8	16	90	18	9	371	7	7,9

9622021	Ø	P	L	l1	d	DIN	□	●Ø
962202100010320	NF#10	32	70	14	6	371	4,9	4,1
962202100012280	NF#12	28	80	17	6	371	4,9	4,7
962202100140280	NF 1/4	28	80	16	7	371	5,5	5,5
962202100516240	NF5/16	24	90	18	8	371	6,2	6,9
962202100380240	NF 3/8	24	100	18	9	371	7	8,5



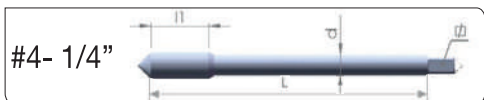
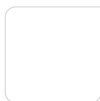


Normal series American Unified Thread
Filet Unifié Américaine série normal
Rosca Unificada Americana serie normal



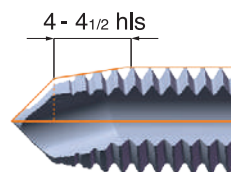
ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA



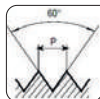
9623021	Ø	P	L	I1	d	DIN	□	●Ø
962302100140200	NC 1/4	20	80	16	4,5	376	3,4	5,1
962302100516180	NC5/16	18	90	18	6	376	4,9	6,5
962302100380160	NC 3/8	16	90	18	7	376	5,5	7,9
962302100716140	NC7/16	14	100	22	8	376	6,2	9,25
962302100120130	NC 1/2	12	110	25	9	376	7	10,5
962302100580110	NC 5/8	11	110	28	12	376	9	13,5
962302100340100	NC 3/4	10	125	32	14	376	11	16,5
962302100780090	NC 7/8	9	140	32	18	376	14,5	19,25
962302110000080	NC 1"	8	160	36	20	376	16	22

9623021	Ø	P	L	I1	d	DIN	□	●Ø
962302100380240	NF 3/8	24	100	18	7	374	5,5	8,5
962302100716200	NF7/16	20	100	22	8	374	6,2	9,9
962302100120200	NF 1/2	20	110	25	9	374	7	11,5
962302100580180	NF5/8	18	110	25	12	374	9	14,5
962302100340160	NF 3/4	16	125	32	14	374	11	17,5
962302100780140	NF 7/8	14	125	32	18	374	14,5	20,5
962302110000120	NF 1"	10	140	32	20	374	16	23,25



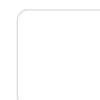
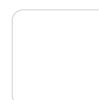
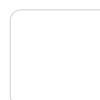
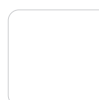
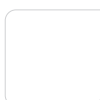
**UNC**

Normal series American Unified Thread
Filet Unifié Américaine série normal
Rosca Unificada Americana serie normal



ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

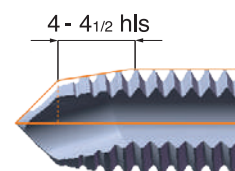
MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

2B**DIN 371****HSS EE****BRIGHT UNCOATED****2,5xd****A****B****C**

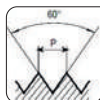
#4- 1/4"



9625021	Ø	P	L	l1	d	DIN	□	●Ø
962502100004400	NC #4	40	56	11	3,5	371	2,7	2,3
962502100005400	NC #5	40	56	11	3,5	371	2,7	2,6
962502100006320	NC #6	32	56	11	4	371	3	2,85
962502100008320	NC #8	32	63	12	4,5	371	3,4	3,5
962502100010240	NC#10	24	70	14	6	371	4,9	3,9
962502100012240	NC#12	24	80	14	6	371	4,9	4,5
962502100140200	NC 1/4	20	80	16	7	371	5,5	5,1
962502100516180	NC5/16	18	90	18	8	371	6,2	6,5
962502100380160	NC 3/8	16	90	18	9	371	7	7,9

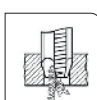
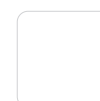
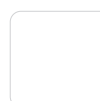
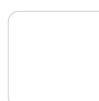
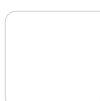
**UNC**

Normal series American Unified Thread
Filet Unifié Américaine série normal
Rosca Unificada Americana serie normal

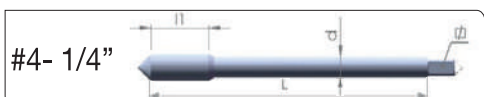


ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

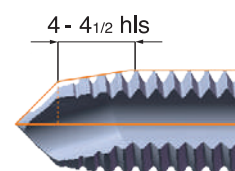
MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

2B**DIN 374/376****HSS EE****BRIGHT UNCOATED****2,5xd****A****B****C**

#4- 1/4"



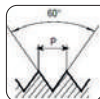
9626021	Ø	P	L	l1	d	DIN	□	●Ø
962602100140200	NC 1/4	20	80	16	4,5	376	3,4	5,1
962602100516180	NC5/16	18	90	18	6	376	4,9	6,5
962602100380160	NC 3/8	16	90	18	7	376	5,5	7,9
962602100716140	NC7/16	14	100	22	8	376	6,2	9,25
962602100120130	NC 1/2	12	110	25	9	376	7	10,5
962602100580110	NC 5/8	11	110	28	12	376	9	13,5
962602100340100	NC 3/4	10	125	32	14	376	11	16,5
962602100780090	NC 7/8	9	140	32	18	376	14,5	19,25
962602110000080	NC 1"	8	160	36	20	376	16	22





**UNC
UNF**

Normal series American Unified Thread
Filet Unifié Américaine série normal
Rosca Unificada Americana serie normal



ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

2B

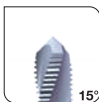
**DIN
371**

**HSS
E**

**BRIGHT
UNCOATED**

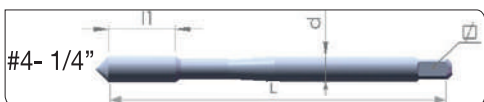
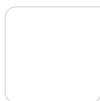
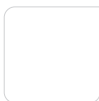


2,5xd



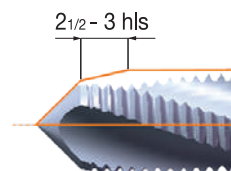
J1

J2



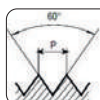
9622031	Ø	P	L	l1	d	DIN	□	●Ø
962203100004400	NC #4	40	56	11	3,5	371	2,7	2,3
962203100005400	NC #5	40	56	11	3,5	371	2,7	2,6
962203100006320	NC #6	32	56	11	4	371	3	2,85
962203100008320	NC #8	32	63	12	4,5	371	3,4	3,5
962203100010240	NC#10	24	70	14	6	371	4,9	3,9
962203100012240	NC#12	24	80	14	6	371	4,9	4,5
962203100140200	NC 1/4	20	80	16	7	371	5,5	5,1
962203100516180	NC5/16	18	90	18	8	371	6,2	6,5
962203100380160	NC 3/8	16	90	18	9	371	7	7,9

9622031	Ø	P	L	l1	d	DIN	□	●Ø
962203100010320	NF#10	32	70	14	6	371	4,9	4,1
962203100140280	NF 1/4	28	80	16	7	371	5,5	5,5
962203100380240	NF 3/8	24	100	18	9	371	7	8,5



**UNC
UNF**

Normal series American Unified Thread
Filet Unifié Américaine série normal
Rosca Unificada Americana serie normal



ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

2B

**DIN
374/376**

**HSS
E**

**BRIGHT
UNCOATED**

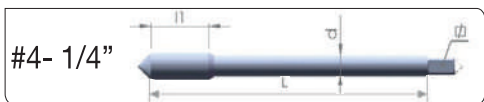
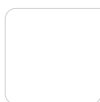
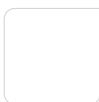


2,5xd

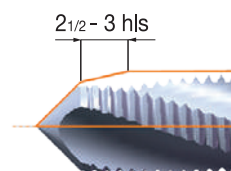


J1

J2



9623031	Ø	P	L	l1	d	DIN	□	●Ø
962303100140200	NC 1/4	20	80	16	4,5	376	3,4	5,1
962303100516180	NC5/16	18	90	18	6	376	4,9	6,5
962303100380160	NC 3/8	16	90	18	7	376	5,5	7,9
962303100716140	NC7/16	14	100	22	8	376	6,2	9,25
962303100120130	NC 1/2	12	110	25	9	376	7	10,5

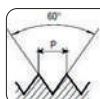


9623031		Ø	P	L	l1	d	DIN	□	●Ø
962303100580110		NC 5/8	11	110	28	12	376	9	13,5
962303100340100		NC 3/4	10	125	32	14	376	11	16,5
962303100780090		NC 7/8	9	140	32	18	376	14,5	19,25
962303110000080		NC 1"	8	160	36	20	376	16	22

9623031		Ø	P	L	l1	d	DIN	□	●Ø
962303100716200		NF7/16	20	100	22	8	374	6,2	9,9
962303100120200		NF 1/2	20	110	25	9	374	7	11,5
962303100916180		NF9/16	18	110	25	11	374	9	12,9
962303100580180		NF5/8	18	110	25	12	374	9	14,5
962303100340160		NF 3/4	16	125	32	14	374	11	17,5

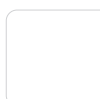
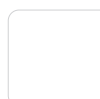
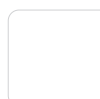
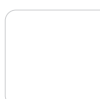
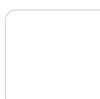


Normal series American Unified Thread
Filet Unifié Américaine série normal
Rosca Unificada Americana serie normal



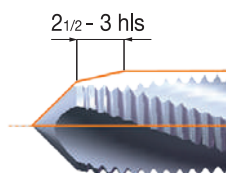
ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA



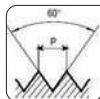
9622931		Ø	P	L	l1	d	DIN	□	●Ø
962293100004400		NC #4	40	56	11	3,5	376	2,7	2,3
962293100005400		NC #5	40	56	11	3,5	376	2,7	2,6
962293100006320		NC #6	32	56	11	4	371	3	2,85
962293100008320		NC #8	32	63	12	4,5	371	3,4	3,5
962293100010240		NC#10	24	70	14	6	371	4,9	3,9
962293100012240		NC#12	24	80	14	6	371	4,9	4,5
962293100140200		NC 1/4	20	80	16	7	371	5,5	5,1
962293100516180		NC5/16	18	90	18	8	371	6,2	6,5
962293100380160		NC 3/8	16	90	18	9	371	7	7,9

9622931		Ø	P	L	l1	d	DIN	□	●Ø
962293100010320		NF#10	32	70	14	6	371	4,9	4,1
962293100140280		NF 1/4	28	80	16	7	371	5,5	5,5
962293100380240		NF 3/8	24	100	18	9	371	7	8,5



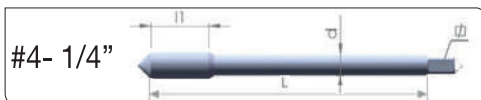
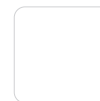
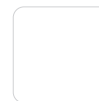
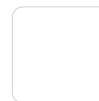
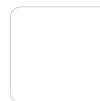
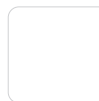
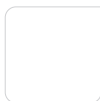
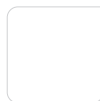


Normal series American Unified Thread
Filet Unifié Américaine série normal
Rosca Unificada Americana serie normal



ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

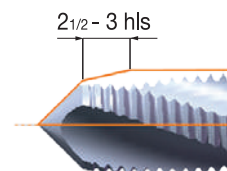
MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA



#4- 1/4"

9623931	Ø	P	L	l1	d	DIN	□	●Ø
962393100140200	NC 1/4	20	80	16	4,5	376	3,4	5,1
962393100516180	NC5/16	18	90	18	6	376	4,9	6,5
962393100380160	NC 3/8	16	90	18	7	376	5,5	7,9
962393100716140	NC7/16	14	100	22	8	376	6,2	9,25
962393100120130	NC 1/2	12	110	25	9	376	7	10,5
962393100580110	NC 5/8	11	110	28	12	376	9	13,5
962393100340100	NC 3/4	10	125	32	14	376	11	16,5
962393100780090	NC 7/8	9	140	32	18	376	14,5	19,25
962393110000080	NC 1"	8	160	36	20	376	16	22

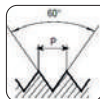
9623931	Ø	P	L	l1	d	DIN	□	●Ø
962393100716200	NF7/16	20	100	22	8	374	6,2	9,9
962393100120200	NF 1/2	20	110	25	9	374	7	11,5
962393100916180	NF9/16	18	110	25	11	374	9	12,9
962393100580180	NF5/8	18	110	25	12	374	9	14,5
962393100340160	NF 3/4	16	125	32	14	374	11	17,5





UNC
UNF

Normal series American Unified Thread
Filet Unifié Américaine série normal
Rosca Unificada Americana serie normal



ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

2B

DIN 371

HSS E

BRIGHT UNCOATED



2,5xd



A

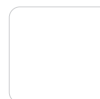
B

F1

H1

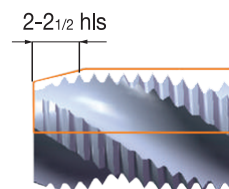
N2

N3



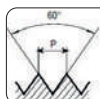
9622051	Ø	P	L	l1	d	DIN	□	●Ø
962205100004400	NC #4	40	56	5	3,5	371	2,7	2,3
962205100006320	NC #6	32	56	7	4	371	3	2,85
962205100008320	NC #8	32	63	7	4,5	371	3,4	3,5
962205100010240	NC#10	24	70	10	6	371	4,9	3,9
962205100140200	NC 1/4	20	80	12	7	371	5,5	5,1
962205100516180	NC5/16	18	90	12	8	371	6,2	6,5
962205100380160	NC 3/8	16	90	14	9	371	7	7,9

9622051	Ø	P	L	l1	d	DIN	□	●Ø
962205100010320	NF#10	32	70	9	6	371	4,9	4,1
962205100140280	NF 1/4	28	80	10	7	371	5,5	5,5
962205100516240	NF5/16	24	90	12	8	371	6,2	6,9
962205100380240	NF 3/8	24	100	14	9	371	7	8,5



UNC
UNF

Normal series American Unified Thread
Filet Unifié Américaine série normal
Rosca Unificada Americana serie normal



ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

2B

DIN 374/376

HSS E

BRIGHT UNCOATED



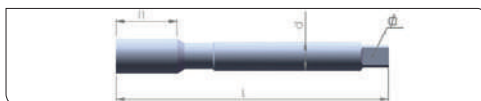
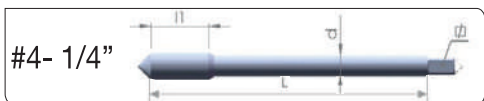
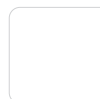
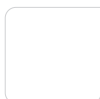
2,5xd



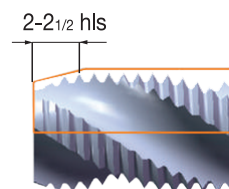
A

B

C



9623051	Ø	P	L	l1	d	DIN	□	●Ø
962305100516180	NC5/16	18	90	12	6	376	4,9	6,5
962305100380160	NC 3/8	16	90	14	7	376	5,5	7,9
962305100716140	NC7/16	14	100	16	8	376	6,2	9,25
962305100120130	NC 1/2	12	110	16	9	376	7	10,5
962305100916120	NC9/16	12	110	18	11	376	9	12
962305100580110	NC 5/8	11	110	20	12	376	9	13,5
962305100340100	NC 3/4	10	125	25	14	376	11	16,5

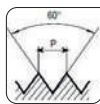


9623051	Ø	P	L	I1	d	DIN	□	●Ø
962305100780090	NC 7/8	9	140	28	18	376	14,5	19,25
962305110000080	NC 1"	8	160	30	20	376	16	22

9623051	Ø	P	L	I1	d	DIN	□	●Ø
962305100716200	NF7/16	20	100	14	8	374	6,2	9,9
962305100120200	NF 1/2	20	110	16	9	374	7	11,5
962305100916180	NF9/16	18	110	18	11	374	9	12,9
962305100580180	NF 5/8	18	110	18	12	374	9	14,5
962305100340160	NF 3/4	16	125	18	14	374	11	17,5



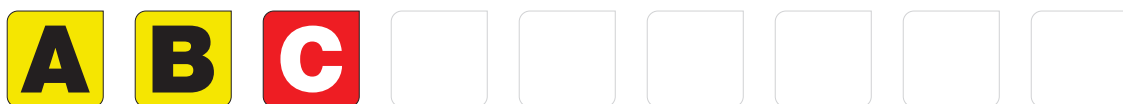
UNC
Normal series American Unified Thread
Filet Unifié Américaine série normal
Rosca Unificada Americana serie normal



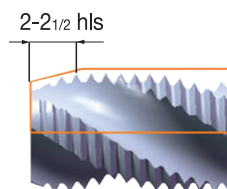
ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

2B **DIN 371** **HSS EE** **BRIGHT UNCOATED**

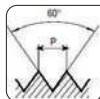


9625051	Ø	P	L	I1	d	DIN	□	●Ø
962505100004400	NC #4	40	56	5	3,5	371	2,7	2,3
962505100006320	NC #6	32	56	7	4	371	3	2,85
962505100008320	NC #8	32	63	7	4,5	371	3,4	3,5
962505100010240	NC#10	24	70	10	6	371	4,9	3,9
962505100140200	NC 1/4	20	80	12	7	371	5,5	5,1
962505100516180	NC5/16	18	90	12	8	371	6,2	6,5
962505100380160	NC 3/8	16	90	14	9	371	7	7,9



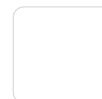
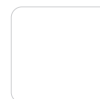
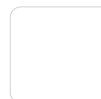
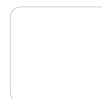
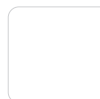
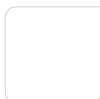
**UNC**

Normal series American Unified Thread
Filet Unifié Américaine série normal
Rosca Unificada Americana serie normal

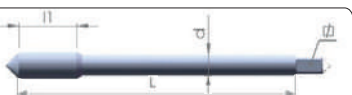


ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

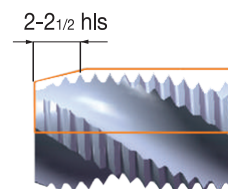
MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

2B**DIN 374/376****HSS EE****BRIGHT UNCOATED****2,5xd****A****B****C**

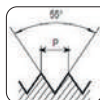
#4- 1/4"



9626051	Ø	P	L	l1	d	DIN	□	●Ø
962605100516180	NC5/16	18	90	12	6	374	4,9	6,5
962605100380160	NC 3/8	16	90	14	7	374	5,5	7,9
962605100716140	NC7/16	14	100	16	8	374	6,2	9,25
962605100120130	NC 1/2	12	110	16	9	374	7	10,5
962605100916120	NC9/16	12	110	18	11	374	9	12
962605100580110	NC 5/8	11	110	20	12	374	9	13,5
962605100340100	NC 3/4	10	125	25	14	374	11	16,5
962605100780090	NC 7/8	9	140	28	18	374	14,5	19,25
962605110000080	NC 1"	8	160	30	20	374	16	22

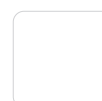
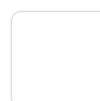
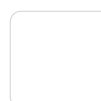
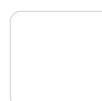
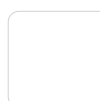
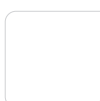
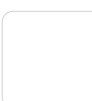
**BSW**

Thread WHITWORTH
Filetage WHITWORTH
Rosca WHITWORTH

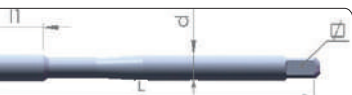


DIN 11 Norm
Norme DIN 11
Norma DIN 11

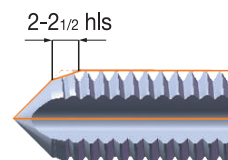
MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

NORMAL CLASS**DIN 371****HSS E****BRIGHT UNCOATED****2,5xd****A****B**

#4- 1/4"

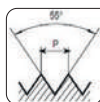


9612011	Ø	P	L	l1	d	DIN	□	●Ø
961201100180400	W 1/8"	40	56	11	3,5	371	2,7	2,55
961201100532320	W 5/32	32	63	12	4,5	371	3,4	3,2
961201100316240	W 3/16	24	70	14	6	371	4,9	3,7
961201100140200	W 1/4"	20	80	16	7	371	5,5	5,1
961201100516180	W 5/16	18	90	18	8	371	6,2	6,5
961201100380160	W 3/8"	16	90	18	9	371	7	7,9





BSW Thread WHITWORTH
Filetage WHITWORTH
Rosca WHITWORTH



DIN 11 Norm
Norme DIN 11
Norma DIN 11

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

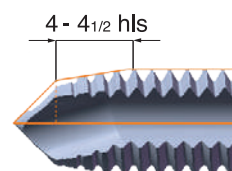
NORMAL CLASS **DIN 371** **HSS E** **BRIGHT UNCOATED**

2,5xd

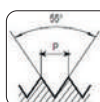
A **B** **F1** **H1** **N2** **N3**



9612021	Ø	P	L	l1	d	DIN	□	●Ø
961202100180400	W 1/8"	40	56	11	3,5	371	2,7	2,55
961202100316240	W 3/16	24	70	14	6	371	4,9	3,7
961202100140200	W 1/4"	20	80	16	7	371	5,5	5,1
961202100516180	W 5/16	18	90	18	8	371	6,2	6,5
961202100380160	W 3/8"	16	90	18	9	371	7	7,9



BSW Thread WHITWORTH
Filetage WHITWORTH
Rosca WHITWORTH



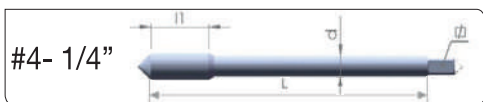
DIN 11 Norm
Norme DIN 11
Norma DIN 11

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

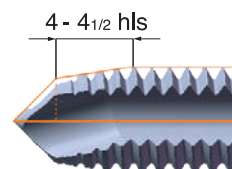
NORMAL CLASS **DIN 376** **HSS E** **BRIGHT UNCOATED**

2,5xd

A **B** **F1** **H1** **N2** **N3**

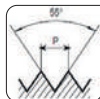


9613021	Ø	P	L	l1	d	DIN	□	●Ø
961302100140200	W 1/4"	20	80	16	4,5	376	3,4	5,1
961302100380160	W 3/8"	16	90	18	7	376	5,5	7,9
961302100716140	W 7/16	14	100	22	8	376	6,2	9,25
961302100120120	W 1/2"	12	110	25	9	376	7	10,5
961302100580110	W 5/8"	11	110	28	12	376	9	13,5
961302100340100	W 3/4"	10	125	32	14	376	11	16,5
961302110000080	W 1"	8	160	36	20	376	16	22





BSW Thread WHITWORTH
Filetage WHITWORTH
Rosca WHITWORTH



DIN 11 Norm
Norme DIN 11
Norma DIN 11

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

NORMAL CLASS **DIN 371** **HSS E** **BRIGHT UNCOATED**

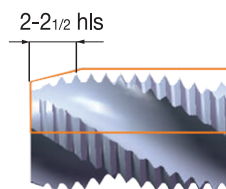
 **2,5xd** 



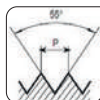
A **B** **F1** **H1** **N2** **N3**



9612051	Ø	P	L	l1	d	DIN	□	•Ø
961205100180400	W 1/8"	40	56	7	3,5	371	2,7	2,55
961205100316240	W 3/16	24	70	10	6	371	4,9	3,7
961205100140200	W 1/4"	20	80	12	7	371	5,5	5,1
961205100516180	W 5/16	18	90	12	8	371	6,2	6,5
961205100380160	W 3/8"	16	90	14	9	371	7	7,9



BSW Thread WHITWORTH
Filetage WHITWORTH
Rosca WHITWORTH



DIN 11 Norm
Norme DIN 11
Norma DIN 11

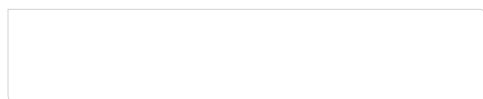
MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

NORMAL CLASS **DIN 376** **HSS E** **BRIGHT UNCOATED**

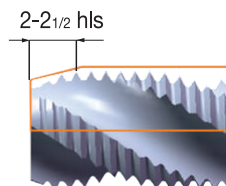
 **2,5xd** 

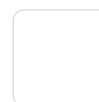
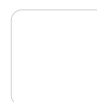
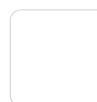
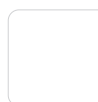
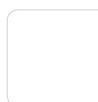


A **B** **F1** **H1** **N2** **N3**

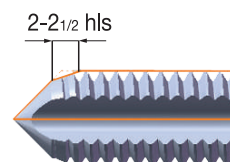
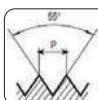
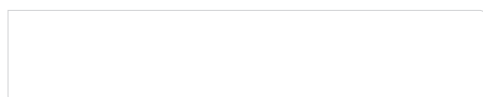
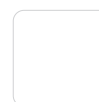
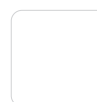
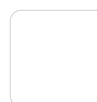


9613051	Ø	P	L	l1	d	DIN	□	•Ø
961305100120120	W 1/2"	12	110	16	9	376	7	10,5
961305100580110	W 5/8"	11	110	20	12	376	9	13,5
961305100340100	W 3/4"	10	125	25	14	376	11	16,5
961305110000080	W 1"	8	160	30	20	376	16	22

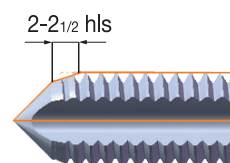


**BSP
G**Thread Gaz Whitworth
Filetage Whitworth Gaz
Rosca Whitworth GasDIN ISO 228 Norm
Norme DIN ISO 228
Norma DIN ISO 228**MACHINE CUTTING TAP**
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA**DIN
ISO 228****DIN
5156****HSS
E****BRIGHT
UNCOATED****2,5xd****A****B****L1****N2**

9633011	Ø	P	L	I1	d	DIN	□	•Ø
963301100180280	G 1/8"	28	90	18	7	5156	5,5	8,8
963301100140190	G 1/4"	19	100	22	11	5156	9	11,8
963301100380190	G 3/8"	19	100	25	12	5156	9	15,3
963301100120140	G 1/2"	14	125	25	16	5156	12	19
963301100580140	G 5/8"	14	125	25	16,0	5156	14,5	21,0
963301100340140	G 3/4"	14	140	28	20	5156	16	24,5
963301100780140	G 7/8"	14	140	28	20,0	5156	18,0	28,3
963301110000110	G 1"	11	160	36	25	5156	20	30,8
963301111800110	G1 1/8	11	160	36	25,0	5156	22,0	35,5
963301110140110	G1 1/4	11	170	40	32	5156	24	39,5
963301113800110	G1 3/8	11	170	40	32,0	5156	29,0	42,0
963301111200110	G1 1/2	11	180	40	36,0	5156	29,0	45,5
963301115800110	G1 5/8	11	190	40	36,0	5156	32,0	49,6
963301113400110	G1 3/4	11	190	40	40,0	5156	32,0	51,4
963301120000110	G 2"	11	190	40	40,0	5156	35,0	57,2

**BSP
G**Thread Gaz Whitworth
Filetage Whitworth Gaz
Rosca Whitworth GasDIN ISO 228 Norm
Norme DIN ISO 228
Norma DIN ISO 228**MACHINE CUTTING TAP**
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA**DIN
ISO 228****DIN
5156****HSS
E****TiN
COATED****2,5xd****A****B****L1****I****N2****N3**

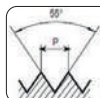
9633911	Ø	P	L	I1	d	DIN	□	•Ø
963391100180280	G 1/8"	28	90	18	6,0	5156	5,5	8,8
963391100140190	G 1/4"	19	90	18	7,0	5156	9,0	11,8
963391100380190	G 3/8"	19	100	22	11,0	5156	9,0	15,3
963391100120140	G 1/2"	14	100	25	12,0	5156	12,0	19,0
963391100580140	G 5/8"	14	125	25	16,0	5156	14,5	21,0
963391100340140	G 3/4"	14	125	25	18,0	5156	16,0	24,5
963391100780140	G 7/8"	14	140	28	20,0	5156	18,0	28,3
963391110000110	G 1"	11	150	28	22,0	5156	20,0	30,8
963391111800110	G1 1/8	11	160	36	25,0	5156	22,0	35,5
963391111400110	G 1 1/4	11	170	36	28,0	5156	24,0	39,5
963391113800110	G1 3/8	11	170	40	32,0	5156	29,0	42,0



9633911	Ø	P	L	l1	d	DIN	□	•Ø
963391111200110	G1 1/2	11	180	40	36,0	5156	29,0	45,5
963391115800110	G1 5/8	11	190	40	36,0	5156	32,0	49,6
963391113400110	G1 3/4	11	190	40	40,0	5156	32,0	51,4
963391120000110	G 2"	11	190	40	40,0	5156	35,0	57,2



BSP G
Thread Gaz Whitworth
Filetage Whitworth Gaz
Rosca Whitworth Gas



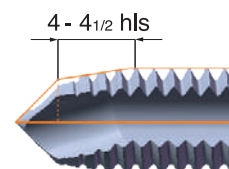
DIN ISO 228 Norm
Norme DIN ISO 228
Norma DIN ISO 228

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

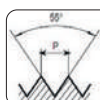
DIN ISO 228
DIN 5156
HSS E
BRIGHT UNCOATED



9633021	Ø	P	L	l1	d	DIN	□	•Ø
963302100180280	G 1/8"	28	90	18	7	5156	5,5	8,8
963302100140190	G 1/4"	19	100	22	11	5156	9	11,8
963302100380190	G 3/8"	19	100	25	12	5156	9	15,3
963302100120140	G 1/2"	14	125	25	16	5156	12	19
963302100580140	G 5/8"	14	125	25	18	5156	14,5	21,0
963302100340140	G 3/4"	14	140	28	20	5156	16	24,5
963302100780140	G 7/8"	14	140	28	20,0	5156	18,0	28,3
963302110000110	G 1"	11	160	36	25	5156	20	30,8
963302111800110	G1 1/8	11	160	36	25,0	5156	22,0	35,5
963302111400110	G1 1/4	11	170	36	28,0	5156	24	39,5
963302113800110	G1 3/8	11	170	40	32,0	5156	29,0	42,0
96330211200110	G1 1/2	11	180	40	36,0	5156	29,0	45,5
963302115800110	G1 5/8	11	190	40	36,0	5156	32,0	49,6
963302113400110	G1 3/4	11	190	40	40,0	5156	32,0	51,4
963302120000110	G 2"	11	190	40	40,0	5156	35,0	57,2



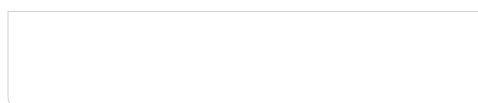
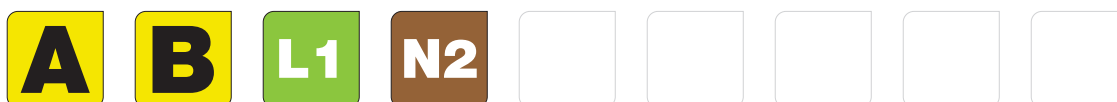
BSP G
Thread Gaz Whitworth
Filetage Whitworth Gaz
Rosca Whitworth Gas



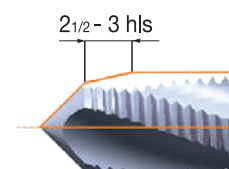
DIN ISO 228 Norm
Norme DIN ISO 228
Norma DIN ISO 228

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

DIN ISO 228
DIN 5156
HSS E
BRIGHT UNCOATED



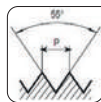
9633031	Ø	P	L	l1	d	DIN	□	•Ø
963303100180280	G 1/8"	28	90	18	7	5156	5,5	8,8
963303100140190	G 1/4"	19	100	22	11	5156	9	11,8
963303100380190	G 3/8"	19	100	25	12	5156	9	15,3



9633031	Ø	P	L	l1	d	DIN	□	•Ø
963303100120140	G 1/2"	14	125	25	16	5156	12	19
963303100580140	G 5/8"	14	125	25	16	5156	14,5	21,0
963303100340140	G 3/4"	14	140	28	20	5156	16	24,5
963303100780140	G 7/8"	14	125	25	18	5156	18,0	28,3
963303110000110	G 1"	11	160	36	25	5156	20	30,8
963303111400110	G1 1/4	11	170	36	28,0	5156	24,0	39,5
963303113800110	G1 3/8	11	170	40	32,0	5156	29,0	42,0
963303111200110	G1 1/2	11	180	40	36,0	5156	29,0	45,5
963303115800110	G1 5/8	11	190	40	36,0	5156	32,0	49,6
963303113400110	G1 3/4	11	190	40	40,0	5156	32,0	51,4
963303120000110	G 2"	11	190	40	40,0	5156	35,0	57,2

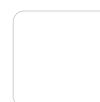
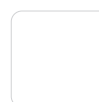
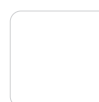


Thread Gaz Whitworth
Filetage Whitworth Gaz
Rosca Whitworth Gas

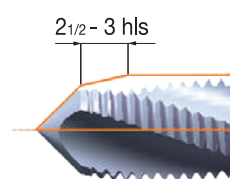


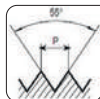
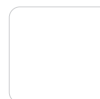
DIN ISO 228 Norm
Norme DIN ISO 228
Norma DIN ISO 228

MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

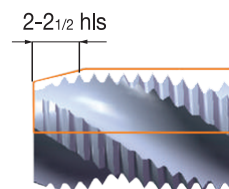
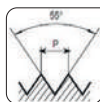
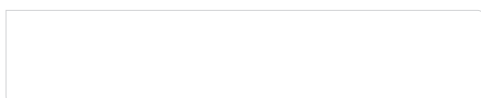
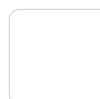


9633931	Ø	P	L	l1	d	DIN	□	•Ø
963393100180280	G 1/8"	28	90	18	6,0	5156	5,5	8,8
963393100140190	G 1/4"	19	90	18	7,0	5156	9,0	118,0
963393100380190	G 3/8"	19	100	22	11,0	5156	9,0	15,3
963393100120140	G 1/2"	14	100	25	12,0	5156	12,0	19,0
963393100580140	G 5/8"	14	125	25	16,0	5156	14,5	21,0
963393100340140	G 3/4"	14	125	25	18,0	5156	16,0	24,5
963393100780140	G 7/8"	14	140	28	20,0	5156	18,0	28,3
963393110000110	G 1"	11	150	28	22,0	5156	20,0	30,8
963393111800110	G1 1/8	11	160	36	25,0	5156	22,0	35,5
963393111400110	G1 1/4	11	170	36	28,0	5156	24,0	39,5
963393113800110	G1 3/8	11	170	40	32,0	5156	29,0	42,0
963393111200110	G1 1/2	11	180	40	36,0	5156	29,0	45,5
963393115800110	G1 5/8	11	190	40	36,0	5156	32,0	49,6
963393113400110	G1 3/4	11	190	40	40,0	5156	32,0	51,4
963393120000110	G 2"	11	190	40	40,0	5156	35,0	57,2

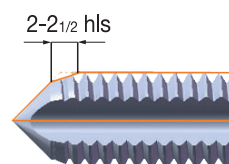


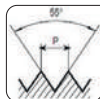
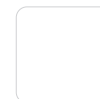
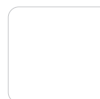
**BSP
G**Thread Gaz Whitworth
Filetage Whitworth Gaz
Rosca Whitworth GasDIN ISO 228 Norm
Norme DIN ISO 228
Norma DIN ISO 228**MACHINE CUTTING TAP**
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA**DIN
ISO 228****DIN
5156****HSS
E****BRIGHT
UNCOATED****2,5xd****A****B****F1****H1****N2****N3**

9633051	Ø	P	L	l1	d	DIN	□	•Ø
963305100180280	G 1/8"	28	90	18	7	5156	5,5	8,8
963305100140190	G 1/4"	19	100	22	11	5156	9	11,8
963305100380190	G 3/8"	19	100	25	12	5156	9	15,3
963305100120140	G 1/2"	14	125	25	16	5156	12	19
963305100580140	G 5/8"	14	125	25	16,0	5156	14,5	21,0
963305100340140	G 3/4"	14	125	25	18	5156	16	24,5
963305100780140	G 7/8"	14	140	28	20,0	5156	18,0	28,3
963305110000110	G 1"	14	140	28	20	5156	20	30,8
963305111800110	G1 1/8	11	160	36	25,0	5156	22,0	35,5
963305110140110	G1 1/4	11	160	36	25	5156	24	39,5
963305113800110	G1 3/8	11	170	40	32,0	5156	29,0	42,0
963305110120110	G1 1/2	11	190	32	36	5156	29	45,5
963305113400110	G1 3/4	11	190	40	40,0	5156	32,0	51,4
963305120000110	G 2"	11	190	40	40,0	5156	35,0	57,2

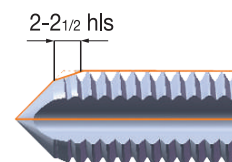
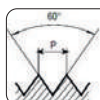
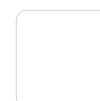
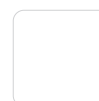
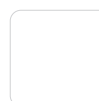
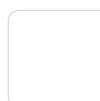
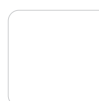
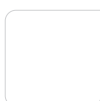
**BSPT
Rc**Taper taps
Tarauds coniques
Machos cónicosBS 21 Norm
Norme BS 21
Norma BS 21**MACHINE CUTTING TAP**
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA**simDIN
5156****HSS****BRIGHT
UNCOATED****2,5xd****A****B****C****K****L**

9663011	Ø	P	L	l1	d	DIN	□
966301100180280	RC 1/8	27	90	15	8	5156	6,2
966301100140190	RC 1/4	19	100	21	11	5156	9
966301100380190	RC 3/8	19	110	21	14	5156	11
966301100120140	RC 1/2	14	140	27	18	5156	14,5
966301100340140	RC 3/4	11,5	160	27	25	5156	18

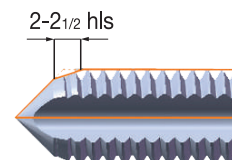


**BSPT
Rc**Taper taps
Tarauds coniques
Machos cónicosBS 21 Norm
Norme BS 21
Norma BS 21**MACHINE CUTTING TAP**
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA**simDiN
5156****HSS****BRIGHT
UNCOATED****2,5xd****A****B****C****K****L**

9663101	Ø	P	L	l1	d	DIN	□
966310100180280	RC 1/8	28	70	15	8	5156	6,2
966310100140190	RC 1/4	19	70	21	11	5156	9
966310100380190	RC 3/8	19	75	21	14	5156	11
966310100120140	RC 1/2	14	80	27	18	5156	14,5
966310100340140	RC 3/4	14	90	27	22	5156	18
966310110000110	RC 1"	11	110	39	25	5156	20

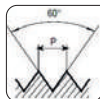
**NPT**Taper pipe thread
Filet conique gaz
Rosca cónica para tuboASA B 1.1 Norm
Norme ASA B 1.1
Norma ASA B 1.1**MACHINE CUTTING TAP**
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA**TIVOLY
NORM****HSS****BRIGHT
UNCOATED****2,5xd****A****B****C**

9643011	Ø	P	L	l1	d	□
964301100180270	NPT1/8	27	90	15	8	6,2
964301100140180	NPT1/4	18	100	21	11	9
964301100380180	NPT3/8	18	110	21	14	11
964301100120140	NPT1/2	14	140	27	18	14,5
964301100340140	NPT3/4	14	140	27	22	18
964301110000115	NPT1"	11,5	160	33	25	20





NPT
Taper pipe thread
Filet conique gaz
Rosca cónica para tubo



ASA B 1.1 Norm
Norme ASA B 1.1
Norma ASA B 1.1

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

TIVOLY NORM **HSS** **BRIGHT UNCOATED**

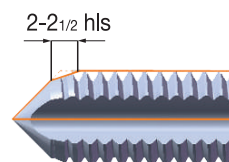
2,5xd



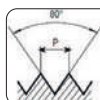
A B C K L



9643101	Ø	P	L	l1	d	□
964310100180270	NPT1/8	27	70	15	8	6,2
964310100140180	NPT1/4	18	70	21	11	9
964310100380180	NPT3/8	18	75	21	14	11
964310100120140	NPT1/2	14	80	27	18	14,5
964310100340140	NPT3/4	14	90	27	22	18
964310110000115	NPT1"	11,5	110	33	25	20



PG



Thread DIN 40430
Filet DIN 40430
Rosca DIN 40430

FOR ELECTRICAL CONDUCTIONS
FOR CONDUCTIONS ELECTRIQUES
PARA CONDUCTOS ELECTRICOS

DIN 40433 **HSS E** **BRIGHT UNCOATED**

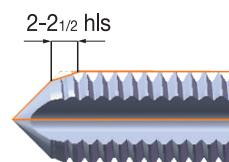
2,5xd



A B C K L



9653011	Ø	P	L	l1	d	DIN	□	●Ø
965301100700200	PG 7	20	100	22	9	40433	7	11,40
965301100900180	PG 9	18	100	25	12	40433	9	14
965301101100180	PG 11	18	110	25	14	40433	11	17,25
965301101350180	PG13,5	18	125	25	16	40433	12	19
965301101600180	PG 16	18	125	25	18	40433	14,5	21,25
965301102100160	PG 21	16	150	28	20	40433	16	27
965301102900160	PG 29	16	170	32	28	40433	22	35,5



TAPPING

CATALOGUE



TAPPING
TARAU DAGE
ROSCADO

#02-05



#

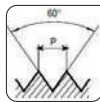
ANSI NORM

NORME ANSI (USA)

NORMA ANSI (USA)



Normal series American Unified Thread
Filet Unifié Américaine série normal
Rosca Unificada Americana serie normal



ASME B 1.1 Norm
Norme ASME B 1.1
Norma ASME B 1.1

HAND TAP
TARAU A MAIN
MACHO DE MANO

2B
3B

ANSI

HSS

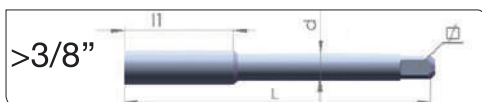
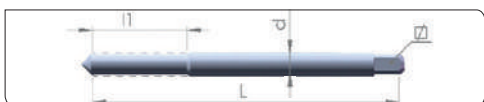
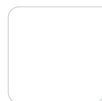
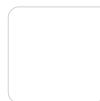
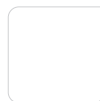
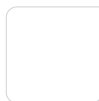
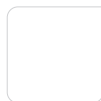
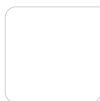
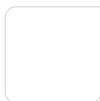
BRIGHT
UNCOATED



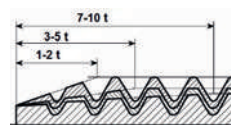
2,5xd



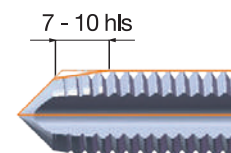
SETS



1523000	Ø	P	L	l1	d	Limit	□	●Ø
15230001010999	#0	80	1.63	.31	.1410	H1	.110	3/64
15230001011001	#1	72	1.69	.38	.1410	H1	.110	#53
15230001011000	#1	64	1.69	.38	.1410	H1	.110	#53
15230001011073	#2	64	1.75	.44	.1410	H2	.110	#50
15230001011003	#2	56	1.75	.44	.1410	H2	.110	#50
15230001011074	#3	56	1.81	.50	.1410	H2	.110	#46
15230001011005	#3	48	1.81	.50	.1410	H2	.110	#47
15230001011075	#4	48	1.88	.56	.1410	H2	.110	42
15230001011008	#4	40	1.88	.56	.1410	H2	.110	43
15230001011076	#5	44	1.94	.63	.1410	H2	.110	#38
15230001011010	#5	40	1.94	.63	.1410	H2	.110	#37
15230001011014	#6	40	2.00	.69	.1410	H2	.110	33
15230001011013	#6	32	2.00	.69	.1410	H3	.110	36
15230001011018	#8	36	2.13	.75	.1680	H2	.131	#29
15230001011017	#8	32	2.13	.75	.1680	H3	.131	#29
15230001011024	#10	32	2.38	.88	.1940	H3	.152	#21
15230001011021	#10	24	2.38	.88	.1940	H3	.152	25
15230001011026	#12	28	2.38	.94	.2200	H3	.165	#15
15230001011025	#12	24	2.38	.94	.2200	H3	.165	#17
15230001011032	1/4"	28	2.50	1.00	.2550	H3	.191	#3
15230001011029	1/4"	20	2.50	1.00	.2550	H3	.191	#7
15230001011038	5/16	24	2.72	1.13	.3180	H3	.238	I
15230001011035	5/16	18	2.72	1.13	.3180	H3	.238	F
15230001011044	3/8"	24	2.94	1.25	.3810	H3	.286	Q
15230001011041	3/8"	16	2.94	1.25	.3810	H3	.286	5/16
15230001011046	7/16	20	3.16	1.44	.3230	H3	.242	W
15230001011045	7/16	14	3.16	1.44	.3230	H3	.242	U
15230001011048	1/2"	20	3.38	1.66	.3670	H3	.275	29/64
15230001011047	1/2"	13	3.38	1.66	.3670	H3	.275	27/64
15230001011050	9/16	18	3.59	1.66	.429	H3	.322	33/64
15230001011049	9/16	12	3.59	1.66	.429	H3	.322	31/64
15230001011052	5/8"	18	3.81	1.81	.4800	H3	.360	37/64
15230001011051	5/8"	11	3.81	1.81	.4800	H3	.360	17/32
15230001011056	3/4"	16	4.25	2.00	.5900	H3	.442	11/16
15230001011055	3/4"	10	4.25	2.00	.5900	H3	.442	21/32
15230001011058	7/8	14	4.69	2.22	.6970	H4	.523	13/16
15230001011057	7/8	9	4.69	2.22	.6970	H4	.523	49/64
15230001011060	1"	12	5.13	2.50	.8000	H4	.600	59/64
15230001011059	1"	8	5.13	2.50	.8000	H4	.600	7/8
15230001011063	1-1/8	12	5.44	2.56	.8960	H4	.672	1,05
15230001011062	1-1/8	7	5.44	2.56	.8960	H4	.672	0,98
15230001011065	1-1/4	12	5.75	2.56	1.0210	H4	.766	1,17
15230001011064	1-1/4	7	5.75	2.56	1.0210	H4	.766	1,11
15230001011067	1-3/8	12	6.06	3.00	1.1080	H4	.831	1,30
15230001011066	1-3/8	6	6.06	3.00	1.1080	H4	.831	1,22
15230001011069	1-1/2	12	6.38	3.00	1.2330	H4	.925	1,42
15230001011068	1-1/1	6	6.38	3.00	1.2330	H4	.925	1,34

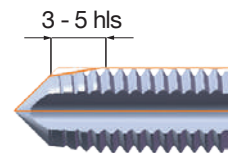


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15230001010593	#0	80	1.63	.31	.1410	H1	.110	3/64
15230001010603	#1	72	1.69	.38	.1410	H1	.110	#53
15230001010598	#1	64	1.69	.38	.1410	H1	.110	#53
15230001010618	#2	64	1.75	.44	.1410	H2	.110	#50
15230001010609	#2	56	1.75	.44	.1410	H2	.110	#50



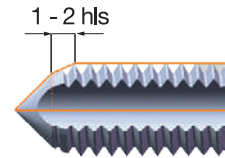
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15230001010634	#3	56	1.81	.50	.1410	H2	.110	#46
15230001010625	#3	48	1.81	.50	.1410	H2	.110	#47
15230001010653	#4	48	1.88	.56	.1410	H2	.110	42
15230001010644	#4	40	1.88	.56	.1410	H2	.110	43
15230001010669	#5	44	1.94	.63	.1410	H2	.110	#38
15230001010660	#5	40	1.94	.63	.1410	H2	.110	#37
15230001010690	#6	40	2.00	.69	.1410	H2	.110	33
15230001010677	#6	32	2.00	.69	.1410	H3	.110	36
15230001010717	#8	36	2.13	.75	.1680	H2	.131	#29
15230001010698	#8	32	2.13	.75	.1680	H3	.131	#29
15230001010746	#10	32	2.38	.88	.1940	H3	.152	#21
15230001010725	#10	24	2.38	.88	.1940	H3	.152	25
15230001010769	#12	28	2.38	.94	.2200	H3	.165	#15
15230001010765	#12	24	2.38	.94	.2200	H3	.165	#17
15230001010014	1/4"	28	2.50	1.00	.2550	H3	.191	#3
15230001010003	1/4"	20	2.50	1.00	.2550	H3	.191	#7
15230001010036	5/16	24	2.72	1.13	.3180	H3	.238	I
15230001010025	5/16	18	2.72	1.13	.3180	H3	.238	F
15230001010058	3/8"	24	2.94	1.25	.3810	H3	.286	Q
15230001010047	3/8"	16	2.94	1.25	.3810	H3	.286	5/16
15230001010076	7/16	20	3.16	1.44	.3230	H3	.242	W
15230001010067	7/16	14	3.16	1.44	.3230	H3	.242	U
15230001010094	1/2"	20	3.38	1.66	.3670	H3	.275	29/64
15230001010085	1/2"	13	3.38	1.66	.3670	H3	.275	27/64
15230001010110	9/16	18	3.59	1.66	.429	H3	.322	33/64
15230001010103	9/16	12	3.59	1.66	.429	H3	.322	31/64
15230001010125	5/8"	18	3.81	1.81	.4800	H3	.360	37/64
15230001010118	5/8"	11	3.81	1.81	.4800	H3	.360	17/32
15230001010146	3/4"	16	4.25	2.00	.5900	H3	.442	11/16
15230001010139	3/4"	10	4.25	2.00	.5900	H3	.442	21/32
15230001010160	7/8	14	4.69	2.22	.6970	H4	.523	13/16
15230001010154	7/8	9	4.69	2.22	.6970	H4	.523	49/64
15230001010173	1"	12	5.13	2.50	.8000	H4	.600	59/64
15230001010167	1"	8	5.13	2.50	.8000	H4	.600	7/8
15230001010185	1-1/8	12	5.44	2.56	.8960	H4	.672	1,05
15230001010182	1-1/8	7	5.44	2.56	.8960	H4	.672	0,98
15230001010191	1-1/4	12	5.75	2.56	1.0210	H4	.766	1,17
15230001010188	1-1/5	7	5.75	2.56	1.0210	H4	.766	1,11
15230001010197	1-3/8	12	6.06	3.00	1.1080	H4	.831	1,30
15230001010194	1-3/8	6	6.06	3.00	1.1080	H4	.831	1,22
15230001010203	1-1/2	12	6.38	3.00	1.2330	H4	.925	1,42
15230001010200	1-1/2	6	6.38	3.00	1.2330	H4	.925	1,34

1523000	Ø	P	L	I1	d	Limit	□	●Ø
15230001010594	#0	80	1.63	.31	.1410	H1	.110	3/64
15230001010604	#1	72	1.69	.38	.1410	H1	.110	#53
15230001010599	#1	64	1.69	.38	.1410	H1	.110	#53
15230001010620	#2	64	1.75	.44	.1410	H2	.110	#50
15230001010611	#2	56	1.75	.44	.1410	H2	.110	#50
15230001010636	#3	56	1.81	.50	.1410	H2	.110	#46
15230001010627	#3	48	1.81	.50	.1410	H2	.110	#47
15230001010655	#4	48	1.88	.56	.1410	H2	.110	42
15230001010646	#4	40	1.88	.56	.1410	H2	.110	42
15230001010671	#5	44	1.94	.63	.1410	H2	.110	#38
15230001010662	#5	40	1.94	.63	.1410	H2	.110	#37
15230001010692	#6	40	2.00	.69	.1410	H2	.110	33
15230001010680	#6	32	2.00	.69	.1410	H3	.110	33
15230001010719	#8	36	2.13	.75	.1680	H2	.131	#29
15230001010749	#10	32	2.38	.88	.1940	H3	.152	#21
15230001010701	#8	32	2.13	.75	.1680	H3	.131	#29
15230001010728	#10	24	2.38	.88	.1940	H3	.152	21
15230001010771	#12	28	2.38	.94	.2200	H3	.165	#15
15230001010767	#12	24	2.38	.94	.2200	H3	.165	#17
15230001010017	1/4"	28	2.50	1.00	.2550	H3	.191	#3
15230001010006	1/4"	20	2.50	1.00	.2550	H3	.191	#7
15230001010039	5/16	24	2.72	1.13	.3180	H3	.238	I
15230001010061	3/8"	24	2.94	1.25	.3810	H3	.286	Q
15230001010028	5/16	18	2.72	1.13	.3180	H3	.238	I
15230001010050	3/8"	16	2.94	1.25	.3810	H3	.286	Q
15230001010079	7/16	20	3.16	1.44	.3230	H3	.242	W
15230001010097	1/2"	20	3.38	1.66	.3670	H3	.275	29/64
15230001010070	7/16	14	3.16	1.44	.3230	H3	.242	U
15230001010088	1/2"	13	3.38	1.66	.3670	H3	.275	29/64
15230001010113	9/16	18	3.59	1.66	.429	H3	.322	33/64
15230001010128	5/8"	18	3.81	1.81	.4800	H3	.360	37/64
15230001010106	9/16	12	3.59	1.66	.429	H3	.322	33/64
15230001010149	3/4"	16	4.25	2.00	.5900	H3	.442	11/16
15230001010121	5/8"	11	3.81	1.81	.4800	H3	.360	37/64
15230001010142	3/4"	10	4.25	2.00	.5900	H3	.442	21/32
15230001010163	7/8	14	4.69	2.22	.6970	H4	.523	13/16
15230001010174	1"	12	5.13	2.50	.8000	H4	.600	59/64



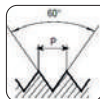
1523000		Ø	P	L	I1	d	Limit	□	●Ø
15230001010157		7/8	9	4.69	2.22	.6970	H4	.523	13/16
15230001010170		1"	8	5.13	2.50	.8000	H4	.600	7/8
15230001010186		1-1/8	12	5.44	2.56	.8960	H4	.672	1,05
15230001010192		1-1/4	12	5.75	2.56	1.0210	H4	.766	1,17
15230001010183		1-1/8	7	5.44	2.56	.8960	H4	.672	1,05
15230001010189		1-1/4	7	5.75	2.56	1.0210	H4	.766	1,17
15230001010198		1-3/8	12	6.06	3.00	1.1080	H4	.831	1,30
15230001010205		1-1/2	12	6.38	3.00	1.2330	H4	.925	1,42
15230001010204		1-1/2	12	6.38	3.00	1.2330	H4	.925	1,42
15230001010195		1-3/8	6	6.06	3.00	1.1080	H4	.831	1,30
15230001010201		1-1/2	6	6.38	3.00	1.2330	H4	.925	1,42

1523000		Ø	P	L	I1	d	Limit	□	●Ø
15230001010596		#0	80	1.63	.31	.1410	H1	.110	3/64
15230001010606		#1	72	1.69	.38	.1410	H1	.110	#53
15230001010601		#1	64	1.69	.38	.1410	H1	.110	#53
15230001010621		#2	64	1.75	.44	.1410	H2	.110	#50
15230001010613		#2	56	1.75	.44	.1410	H2	.110	#50
15230001010637		#3	56	1.81	.50	.1410	H2	.110	#46
15230001010629		#3	48	1.81	.50	.1410	H2	.110	#47
15230001010656		#4	48	1.88	.56	.1410	H2	.110	42
15230001010648		#4	40	1.88	.56	.1410	H2	.110	43
15230001010672		#5	44	1.94	.63	.1410	H2	.110	#38
15230001010664		#5	40	1.94	.63	.1410	H2	.110	#37
15230001010693		#6	40	2.00	.69	.1410	H2	.110	33
15230001010683		#6	32	2.00	.69	.1410	H3	.110	36
15230001010720		#8	36	2.13	.75	.1680	H2	.131	#29
15230001010704		#8	32	2.13	.75	.1680	H3	.131	#29
15230001010752		#10	32	2.38	.88	.1940	H3	.152	#21
15230001010731		#10	24	2.38	.88	.1940	H3	.152	25
15230001010772		#12	28	2.38	.94	.2200	H3	.165	#15
15230001010768		#12	24	2.38	.94	.2200	H3	.165	#17
15230001010021		1/4"	28	2.50	1.00	.2550	H3	.191	#3
15230001010010		1/4"	20	2.50	1.00	.2550	H3	.191	#7
15230001010043		5/16	24	2.72	1.13	.3180	H3	.238	I
15230001010032		5/16	18	2.72	1.13	.3180	H3	.238	F
15230001010065		3/8"	24	2.94	1.25	.3810	H3	.286	Q
15230001010054		3/8"	16	2.94	1.25	.3810	H3	.286	5/16
15230001010083		7/16	20	3.16	1.44	.3230	H3	.242	W
15230001010074		7/16	14	3.16	1.44	.3230	H3	.242	U
15230001010101		1/2"	20	3.38	1.66	.3670	H3	.275	29/64
15230001010092		1/2"	13	3.38	1.66	.3670	H3	.275	27/64
15230001010116		9/16	18	3.59	1.66	.429	H3	.322	33/64
15230001010108		9/16	12	3.59	1.66	.429	H3	.322	31/64
15230001010131		5/8"	18	3.81	1.81	.4800	H3	.360	37/64
15230001010123		5/8"	11	3.81	1.81	.4800	H3	.360	17/32
15230001010152		3/4"	16	4.25	2.00	.5900	H3	.442	11/16
15230001010144		3/4"	10	4.25	2.00	.5900	H3	.442	21/32
15230001010145		7/8	14	4.69	2.22	.6970	H4	.523	13/16
15230001010159		7/8	9	4.69	2.22	.6970	H4	.523	49/64
15230001010175		1"	12	5.13	2.50	.8000	H4	.600	59/64
15230001010172		1"	8	5.13	2.50	.8000	H4	.600	7/8
15230001010187		1-1/8	12	5.44	2.56	.8960	H4	.672	1,05
15230001010184		1-1/8	7	5.44	2.56	.8960	H4	.672	0,98
15230001010193		1-1/4	12	5.75	2.56	1.0210	H4	.766	1,17
15230001010190		1-1/6	7	5.75	2.56	1.0210	H4	.766	1,11
15230001010199		1-3/8	12	6.06	3.00	1.1080	H4	.831	1,30
15230001010196		1-3/8	6	6.06	3.00	1.1080	H4	.831	1,22
15230001010202		1-1/3	6	6.38	3.00	1.2330	H4	.925	1,34





Metric
Metrique
Métrica



ASME B1.13M Norm
Norme ASME B 1.13M
Norma ASME B1.13M

HAND TAP
TARAUO MAIN
MACHO DE MANO

6H

ANSI

HSS

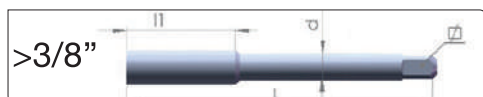
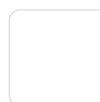
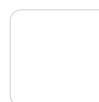
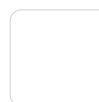
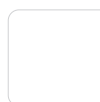
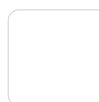
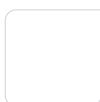
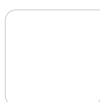
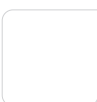
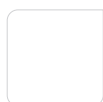
BRIGHT UNCOATED



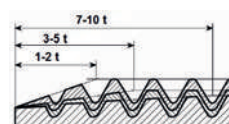
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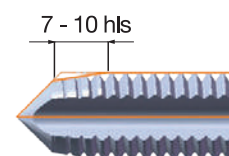
SETS



1503000	Ø	P	L	l1	d	Limit	□	●Ø
15030001012569	M1.6	0,35	1.63	.31	.1410	D3	.110	0,05
15030001012577	M8	1	2.72	1.13	.3180	D5	.238	0,28
15030001012558	M2	0,4	1.75	.44	.1410	D3	.110	0,06
15030001012578	M10	1,25	2.94	1.25	.3810	D5	.286	0,34
15030001012560	M2.5	0,45	1.81	.50	.1410	D3	.110	0,08
15030001012579	M12	1,25	3.38	1.66	.3670	D6	.275	0,42
15030001012561	M3	0,5	1.94	.63	.1410	D3	.110	0,10
15030001012562	M3.5	0,6	2.00	.69	.1410	D4	.110	0,21
15030001012563	M4	0,7	2.13	.75	.1680	D4	.131	0,13
15030001012564	M5	0,8	2.38	.88	.1940	D4	.152	0,17
15030001012565	M6	1	2.50	1.00	.2550	D5	.191	0,20
15030001012576	M7	1	2.72	1.13	.3180	D5	.238	0,24
15030001012566	M8	1,25	2.72	1.13	.3180	D5	.238	0,27
15030001012567	M10	1,5	2.94	1.25	.3810	D6	.286	0,33
15030001012568	M12	1,75	3.38	1.66	.3670	D6	.275	13/32
15030001012582	M18	2,5	4.03	1.81	.5420	D7	.406	0,61

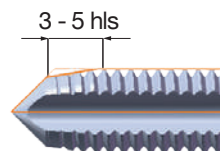


1503000	Ø	P	L	l1	d	Limit	□	●Ø
15030001012408	M1.6	0,35	1.63	.31	.1410	D3	.110	0,05
15030001012414	M2	0,4	1.75	.44	.1410	D3	.110	0,06
15030001012423	M2.5	0,45	1.81	.50	.1410	D3	.110	0,08
15030001012432	M3	0,5	1.94	.63	.1410	D3	.110	0,10
15030001012435	M3.5	0,6	2.00	.69	.1410	D4	.110	0,21
15030001012441	M4	0,7	2.13	.75	.1680	D4	.131	0,13
15030001012453	M5	0,8	2.38	.88	.1940	D4	.152	0,17
15030001012459	M6	1	2.50	1.00	.2550	D5	.191	0,20
15030001012465	M7	1	2.72	1.13	.3180	D5	.238	0,24
15030001012471	M8	1,25	2.72	1.13	.3180	D5	.238	0,27
15030001012483	M10	1,5	2.94	1.25	.3810	D6	.286	0,33
15030001012495	M12	1,75	3.38	1.66	.3670	D6	.275	13/32
15030001012504	M14	2	3.59	1.66	.429	D7	.322	0,47
15030001012516	M16	2	3.81	1.81	.4800	D7	.360	0,55
15030001012525	M18	2,5	4.03	1.81	.5420	D7	.406	0,61
15030001012537	M20	2,5	4.47	2.00	.6520	D7	.489	11/16
15030001012543	M22	2,5	4.69	2.22	.6970	D7	.523	0,77
15030001012555	M24	3	4.91	2.22	.7600	D8	.570	53/64

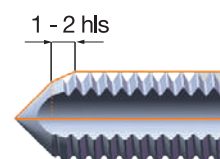


1503000	Ø	P	L	l1	d	Limit	□	●Ø
15030001012468	M8	1	2.72	1.13	.3180	D5	.238	0,28
15030001012480	M10	1,25	2.94	1.25	.3810	D5	.286	0,34
15030001012498	M12	1,25	3.38	1.66	.3670	D6	.275	0,42
15030001012501	M14	1,5	3.59	1.66	.429	D6	.322	1/2
15030001012513	M16	1,5	3.81	1.81	.4800	D6	.360	0,57
15030001012522	M18	1,5	4.03	1.81	.5420	D6	.406	0,65
15030001012534	M20	1,5	4.47	2.00	.6520	D6	.489	0,73
15030001012540	M22	1,5	4.69	2.22	.6970	D6	.523	0,81
15030001012546	M24	2	4.91	2.22	.7600	D7	.570	0,87

1503000	Ø	P	L	l1	d	Limit	□	●Ø
15030001012409	M1.6	0,35	1.63	.31	.1410	D3	.110	0,05
15030001012469	M8	1	2.72	1.13	.3180	D5	.238	0,28
15030001012415	M2	0,4	1.75	.44	.1410	D3	.110	0,06
15030001012481	M10	1,25	2.94	1.25	.3810	D5	.286	0,34
15030001012424	M2.5	0,45	1.81	.50	.1410	D3	.110	0,08
15030001012499	M12	1,25	3.38	1.66	.3670	D6	.275	0,42
15030001012433	M3	0,5	1.94	.63	.1410	D3	.110	0,10
15030001012502	M14	1,5	3.59	1.66	.429	D6	.322	1/2
15030001012436	M3.5	0,6	2.00	.69	.1410	D4	.110	0,21
15030001012514	M16	1,5	3.81	1.81	.4800	D6	.360	0,57
15030001012442	M4	0,7	2.13	.75	.1680	D4	.131	0,13
15030001012523	M18	1,5	4.03	1.81	.5420	D6	.406	0,65
15030001012454	M5	0,8	2.38	.88	.1940	D4	.152	0,17
15030001012535	M20	1,5	4.47	2.00	.6520	D6	.489	0,73
15030001012460	M6	1	2.50	1.00	.2550	D5	.191	0,20
15030001012541	M22	1,5	4.69	2.22	.6970	D6	.523	0,81
15030001012466	M7	1	2.72	1.13	.3180	D5	.238	0,24
15030001012547	M24	2	4.91	2.22	.7600	D7	.570	0,87
15030001012472	M8	1,25	2.72	1.13	.3180	D5	.238	0,27
15030001012484	M10	1,5	2.94	1.25	.3810	D6	.286	0,33
15030001012496	M12	1,75	3.38	1.66	.3670	D6	.275	13/32
15030001012505	M14	2	3.59	1.66	.429	D7	.322	0,47
15030001012517	M16	2	3.81	1.81	.4800	D7	.360	0,55
15030001012526	M18	2,5	4.03	1.81	.5420	D7	.406	0,61
15030001012538	M20	2,5	4.47	2.00	.6520	D7	.489	11/16
15030001012544	M22	2,5	4.69	2.22	.6970	D7	.523	0,77
15030001012556	M24	3	4.91	2.22	.7600	D8	.570	53/64

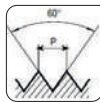


1503000	Ø	P	L	l1	d	Limit	□	●Ø
15030001012410	M1.6	0,35	1.63	.31	.1410	D3	.110	0,05
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15030001012416	M2	0,4	1.75	.44	.1410	D3	.110	0,06
15030001012482	M10	1,25	2.94	1.25	.3810	D5	.286	0,34
15030001012425	M2.5	0,45	1.81	.50	.1410	D3	.110	0,08
15030001012500	M12	1,25	3.38	1.66	.3670	D6	.275	0,42
15030001012434	M3	0,5	1.94	.63	.1410	D3	.110	0,10
15030001012503	M14	1,5	3.59	1.66	.429	D6	.322	1/2
15030001012437	M3.5	0,6	2.00	.69	.1410	D4	.110	0,21
15030001012515	M16	1,5	3.81	1.81	.4800	D6	.360	0,57
15030001012443	M4	0,7	2.13	.75	.1680	D4	.131	0,13
15030001012524	M18	1,5	4.03	1.81	.5420	D6	.406	0,65
15030001012455	M5	0,8	2.38	.88	.1940	D4	.152	0,17
15030001012536	M20	1,5	4.47	2.00	.6520	D6	.489	0,73
15030001012461	M6	1	2.50	1.00	.2550	D5	.191	0,20
15030001012542	M22	1,5	4.69	2.22	.6970	D6	.523	0,81
15030001012467	M7	1	2.72	1.13	.3180	D5	.238	0,24
15030001012548	M24	2	4.91	2.22	.7600	D7	.570	0,87
15030001012473	M8	1,25	2.72	1.13	.3180	D5	.238	0,27
15030001012485	M10	1,5	2.94	1.25	.3810	D6	.286	0,33
15030001012497	M12	1,75	3.38	1.66	.3670	D6	.275	13/32
15030001012506	M14	2	3.59	1.66	.429	D7	.322	0,47
15030001012518	M16	2	3.81	1.81	.4800	D7	.360	0,55
15030001012527	M18	2,5	4.03	1.81	.5420	D7	.406	0,61
15030001012539	M20	2,5	4.47	2.00	.6520	D7	.489	11/16
15030001012545	M22	2,5	4.69	2.22	.6970	D7	.523	0,77
15030001012557	M24	3	4.91	2.22	.7600	D8	.570	53/64





Normal series American Unified Thread
Filet Unifié Américaine série normal
Rosca Unificada Americana serie normal



ASME B 1.1 Norm
Norme ASME B 1.1
Norma ASME B 1.1

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

2B
3B

ANSI

HSS

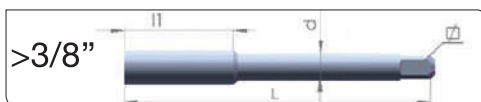
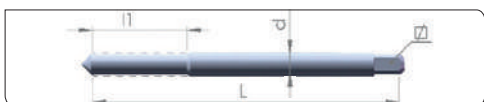
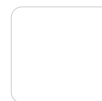
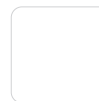
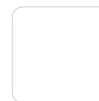
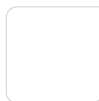
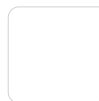
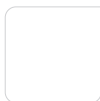
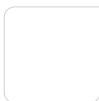
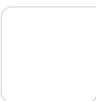
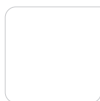
BRIGHT
UNCOATED



2,5xd

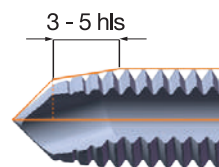


PLUG



1623570	Ø	P	L	l1	d	Limit	□	●Ø
16235701010775	#0	80	1.63	.31	.1410	H1	.110	3/64
16235701010779	#1	64	1.69	.38	.1410	H1	.110	#53
16235701010788	#2	56	1.75	.44	.1410	H2	.110	#50
16235701010796	#3	48	1.81	.50	.1410	H2	.110	#47
16235701010805	#4	40	1.88	.56	.1410	H2	.110	43
16235701012356	#5	40	1.94	.63	.1410	H2	.110	#37
16235701012361	#6	32	2.00	.69	.1410	H3	.110	36
16235701012370	#8	32	2.13	.75	.1680	H3	.131	#29
16235701012378	#10	24	2.38	.88	.1940	H3	.152	25
16235701012389	#12	24	2.38	.94	.2200	H3	.165	#17
16235701010292	1/4"	20	2.50	1.00	.2550	H3	.191	#7
16235701010306	5/16	18	2.72	1.13	.3180	H3	.238	F
16235701010320	3/8"	16	2.94	1.25	.3810	H3	.286	5/16
16235701010328	7/16	14	3.16	1.44	.3230	H3	.242	U
16235701010336	1/2"	13	3.38	1.66	.3670	H3	.275	27/64
16235701010342	5/8"	11	3.81	1.81	.4800	H3	.360	17/32
16235701010344	3/4"	10	4.25	2.00	.5900	H3	.442	21/32

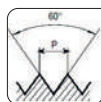
1623570	Ø	P	L	l1	d	Limit	□	●Ø
16235701010783	#1	72	1.69	.38	.1410	H1	.110	#53
16235701010792	#2	64	1.75	.44	.1410	H2	.110	#50
16235701010800	#3	56	1.81	.50	.1410	H2	.110	#46
16235701010809	#4	48	1.88	.56	.1410	H2	.110	42
16235701012358	#5	44	1.94	.63	.1410	H2	.110	#38
16235701012366	#6	40	2.00	.69	.1410	H2	.110	33
16235701012375	#8	36	2.13	.75	.1680	H2	.131	#29
16235701012383	#10	32	2.38	.88	.1940	H3	.152	#21
16235701012388	#12	28	2.38	.94	.2200	H3	.165	#15
16235701010299	1/4"	28	2.50	1.00	.2550	H3	.191	#3
16235701010313	5/16	24	2.72	1.13	.3180	H3	.238	I
16235701010324	3/8"	24	2.94	1.25	.3810	H3	.286	Q
16235701010332	7/16	20	3.16	1.44	.3230	H3	.242	W



1623570	Ø	P	L	l1	d	Limit	□	●Ø
16235701010340	1/2"	20	3.38	1.66	.3670	H3	.275	29/64
16235701012774	5/8"	18	3.81	1.81	.4800	H3	.360	37/64
16235701012775	3/4"	16	4.25	2.00	.5900	H3	.442	11/16



M Metric
Metrique
Métrica

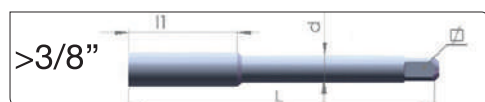
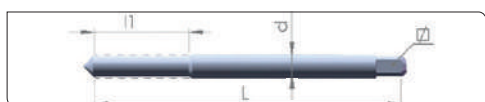
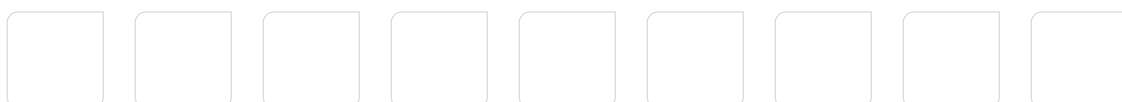


ASME B1.13M Norm
Norme ASME B 1.13M
Norma ASME B1.13M

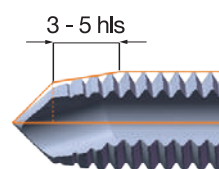
MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

6H **ANSI** **HSS** **BRIGHT UNCOATED**

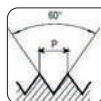
2,5xd **PLUG**



1603570	Ø	P	L	l1	d	Limit	□	●Ø
16035701012659	M2	0,4	1.75	.44	.1410	D3	.110	0,06
16035701012662	M2.5	0,45	1.81	.50	.1410	D3	.110	0,08
16035701012664	M3	0,5	1.94	.63	.1410	D3	.110	0,10
16035701012666	M3.5	0,6	2.00	.69	.1410	D4	.110	0,21
16035701012668	M4	0,7	2.13	.75	.1680	D4	.131	0,13
16035701012672	M5	0,8	2.38	.88	.1940	D4	.152	0,17
16035701012674	M6	1	2.50	1.00	.2550	D5	.191	0,20
16035701012676	M7	1	2.72	1.13	.3180	D5	.238	0,24
16035701012678	M8	1,25	2.72	1.13	.3180	D5	.238	0,27
16035701012682	M10	1,5	2.94	1.25	.3810	D6	.286	0,33
16035701012686	M12	1,75	3.38	1.66	.3670	D6	.275	13/32
16035701012689	M14	2	3.59	1.66	.429	D7	.322	0,47
16035701012693	M16	2	3.81	1.81	.4800	D7	.360	0,55
16235701012696	M18	2,5	4.03	1.81	.5420	D7	.406	0,61



UNC Normal series American Unified Thread
UNF Filet Unifié Américaine série normal
Rosca Unificada Americana serie normal

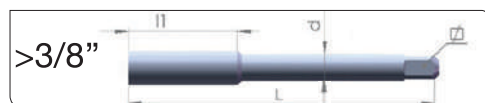
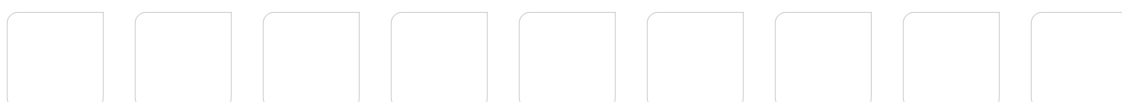


ASME B 1.1 Norm
Norme ASME B 1.1
Norma ASME B 1.1

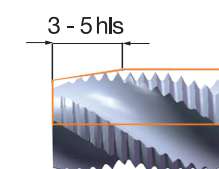
MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

2B **ANSI** **HSS** **BRIGHT UNCOATED**

2,5xd **PLUG**



1623176	Ø	P	L	l1	d	Limit	□	●Ø
16231761010885	#3	48	1.81	.50	.1410	H2	.110	#47
16231761010887	#4	40	1.88	.56	.1410	H2	.110	43
16231761010889	#5	40	1.94	.63	.1410	H2	.110	#37
16231761010891	#6	32	2.00	.69	.1410	H3	.110	36
16231761010895	#8	32	2.13	.75	.1680	H3	.131	#29
16231761010897	#10	24	2.38	.88	.1940	H3	.152	25
16231761010901	#12	24	2.38	.94	.2200	H3	.165	#17

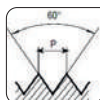


1623176		Ø	P	L	l1	d	Limit	□	●Ø
16231761010398		1/4"	20	2.50	1.00	.2550	H3	.191	#7
16231761010402		5/16	18	2.72	1.13	.3180	H3	.238	F
16231761010406		3/8"	16	2.94	1.25	.3810	H3	.286	5/16
16231761010410		7/16	14	3.16	1.44	.3230	H3	.242	U
16231761010414		1/2"	13	3.38	1.66	.3670	H3	.275	27/64

1623176		Ø	P	L	l1	d	Limit	□	●Ø
16231761010899		#10	32	2.38	.88	.1940	H3	.152	#21
16231761010400		1/4"	28	2.50	1.00	.2550	H3	.191	#3
16231761010404		5/16	24	2.72	1.13	.3180	H3	.238	I
16231761010408		3/8"	24	2.94	1.25	.3810	H3	.286	Q
16231761010412		7/16	20	3.16	1.44	.3230	H3	.242	W
16231761010416		1/2"	20	3.38	1.66	.3670	H3	.275	29/64

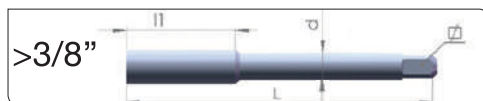
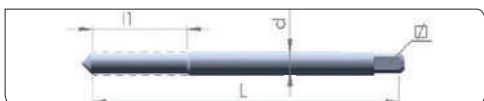
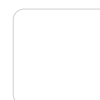
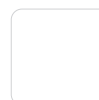
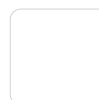
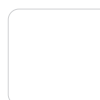
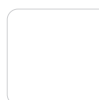
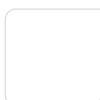
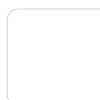
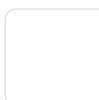
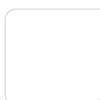


Normal series American Unified Thread
Filet Unifié Américaine série normal
Rosca Unificada Americana serie normal

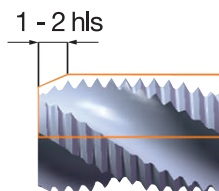


ASME B 1.1 Norm
Norme ASME B 1.1
Norma ASME B 1.1

MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA



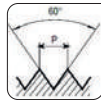
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16231761010886		#3	48	1.81	.50	.1410	H2	.110	#47
16231761010888		#4	40	1.88	.56	.1410	H2	.110	43
16231761010890		#5	40	1.94	.63	.1410	H2	.110	#37
16231761010892		#6	32	2.00	.69	.1410	H3	.110	36
16231761010896		#8	32	2.13	.75	.1680	H3	.131	#29
16231761010898		#10	24	2.38	.88	.1940	H3	.152	25
16231761010902		#12	24	2.38	.94	.2200	H3	.165	#17
16231761010399		1/4"	20	2.50	1.00	.2550	H3	.191	#7
16231761010403		5/16	18	2.72	1.13	.3180	H3	.238	F
16231761010407		3/8"	16	2.94	1.25	.3810	H3	.286	5/16
16231761010411		7/16	14	3.16	1.44	.3230	H3	.242	U
16231761010415		1/2"	13	3.38	1.66	.3670	H3	.275	27/64



1623176	Ø	P	L	l1	d	Limit	□	●Ø
16231761010900	#10	32	2.38	.88	.1940	H3	.152	#21
16231761010401	1/4"	28	2.50	1.00	.2550	H3	.191	#3
16231761010405	5/16	24	2.72	1.13	.3180	H3	.238	I
16231761010409	3/8"	24	2.94	1.25	.3810	H3	.286	Q
16231761010413	7/16	20	3.16	1.44	.3230	H3	.242	W
16231761010417	1/2"	20	3.38	1.66	.3670	H3	.275	29/64

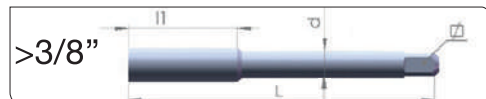
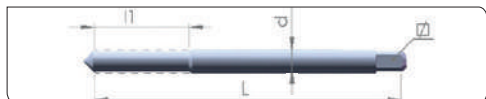
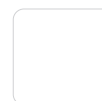
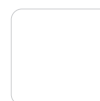
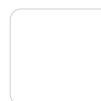
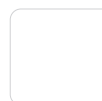
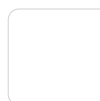
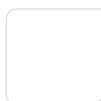
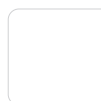
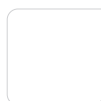
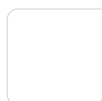


Metric
Métrique
Métrica

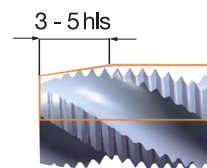


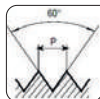
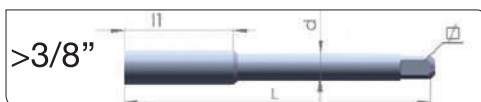
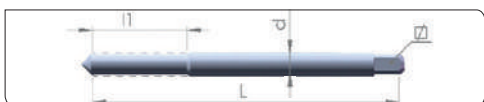
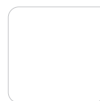
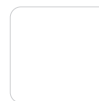
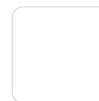
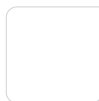
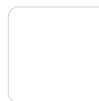
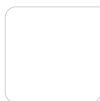
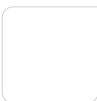
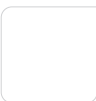
ASME B1.13M Norm
Norme ASME B 1.13M
Norma ASME B1.13M

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

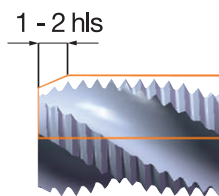
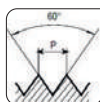
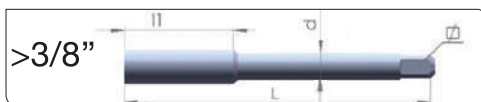
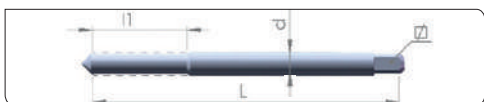
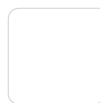
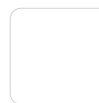
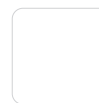
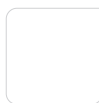
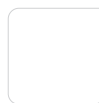
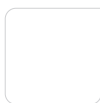
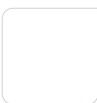
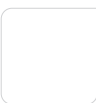


1603176	Ø	P	L	l1	d	Limit	□	●Ø
16031761012920	M3	0,5	1.94	.63	.1410	D3	.110	0,10
16031761012922	M3.5	0,6	2.00	.69	.1410	D4	.110	0,21
16031761012923	M4	0,7	2.13	.75	.1680	D4	.131	0,13
16031761012925	M5	0,8	2.38	.88	.1940	D4	.152	0,17
16031761012926	M6	1	2.50	1.00	.2550	D5	.191	0,20
16031761012928	M8	1,25	2.72	1.13	.3180	D5	.238	0,27
16031761012930	M10	1,5	2.94	1.25	.3810	D6	.286	0,33
16031761012932	M12	1,75	3.38	1.66	.3670	D6	.275	13/32

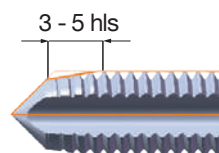


**M**Metric
Métrique
MétricaASME B1.13M Norm
Norme ASME B 1.13M
Norma ASME B1.13M**MACHINE CUTTING TAP**
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA**6H****ANSI****HSS****BRIGHT UNCOATED****1,5xd****BOTTOM**

1603176	Ø	P	L	l1	d	Limit	□	●Ø
16031761012940	M3	0,5	1.94	.63	.1410	D3	.110	0,10
16031761012942	M3.5	0,6	2.00	.69	.1410	D4	.110	0,21
16031761012943	M4	0,7	2.13	.75	.1680	D4	.131	0,13
16031761012945	M5	0,8	2.38	.88	.1940	D4	.152	0,17
16031761012946	M6	1	2.50	1.00	.2550	D5	.191	0,20
16031761012948	M8	1,25	2.72	1.13	.3180	D5	.238	0,27
16031761012950	M10	1,5	2.94	1.25	.3810	D6	.286	0,33
16031761012952	M12	1,75	3.38	1.66	.3670	D6	.275	13/32

**UNC**
UNFNormal series American Unified Thread
Filet Unifié Américaine série normal
Rosca Unificada Americana série normalASME B 1.1 Norm
Norme ASME B 1.1
Norma ASME B 1.1**MACHINE CUTTING TAP**
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA**2B**
3B**ANSI****HSS****BRIGHT UNCOATED****1,5xd****PLUG**

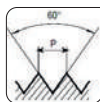
1623144	Ø	P	L	l1	d	Limit	□	●Ø
16231441010419	#4	40	2.00	.69	.1410	H2	.110	43
16231441010427	#6	32	2.38	.88	.1940	H3	.152	36
16231441010435	#8	32	2.38	.94	.2200	H3	.165	#29
16231441010438	#10	24	2.50	1.00	.2550	H2	.191	25
16231441010451	1/4"	20	2.72	1.13	.3180	H3	.238	#7
16231441010458	5/16	18	2.94	1.25	.3810	H3	.286	F
16231441010466	3/8"	16	3.38	1.66	.3670	H3	.275	5/16
16231441010474	7/16	14	3.59	1.66	.4290	H3	.322	U
16231441010482	1/2"	13	3.81	1.81	.4800	H3	.360	27/64



1623144	Ø	P	L	l1	d	Limit	□	●Ø
16231441010442	#10	32	2.50	1.00	.2550	H2	.191	#21
16231441010454	1/4"	28	2.72	1.13	.3180	H2	.238	#3
16231441010478	7/16	20	3.38	1.66	.3670	H3	.275	W
16231441010486	1/2"	20	3.59	1.66	.429	H3	.322	29/64



Normal series American Unified Thread
Filet Unifié Américaine série normal
Rosca Unificada Americana serie normal



ASME B 1.1 Norm

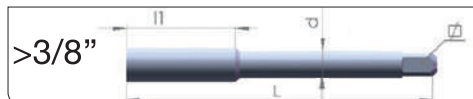
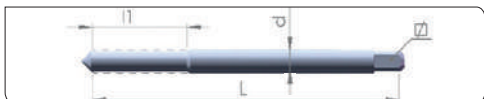
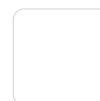
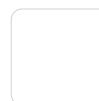
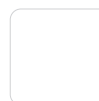
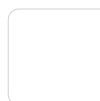
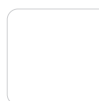
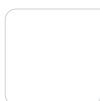
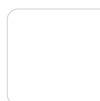
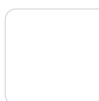
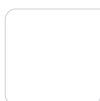
Norme ASME B 1.1

Norma ASME B 1.1

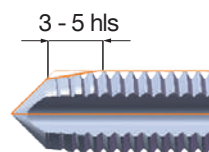
MACHINE CUTTING TAP

TARAU MACHINE Á COUPE

MACHO DE CORTE A MÁQUINA



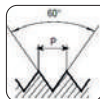
1623144	Ø	P	L	l1	d	Limit	□	●Ø
16231441010421	#4	40	2.00	.69	.1410	H2	.110	43
16231441010429	#6	32	2.38	.88	.1940	H3	.152	36
16231441010437	#8	32	2.38	.94	.2200	H3	.165	#29
16231441010440	#10	24	2.50	1.00	.2550	H2	.191	25
16231441010453	1/4"	20	2.72	1.13	.3180	H3	.238	#7
16231441010460	5/16	18	2.94	1.25	.3810	H3	.286	F
16231441010468	3/8"	16	3.38	1.66	.3670	H3	.275	5/16



1623144	Ø	P	L	l1	d	Limit	□	●Ø
16231441010444	#10	32	2.50	1.00	.2550	H2	.191	#21
16231441010456	1/4"	28	2.72	1.13	.3180	H2	.238	#3



Normal series American Unified Thread
Filet Unifié Américaine série normal
Rosca Unificada Americana serie normal



ASME B 1.1 Norm
Norme ASME B 1.1
Norma ASME B 1.1

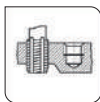
ROLL FORM TAP
TARAUO Á REFOULER
MACHO DE LAMINACIÓN

**2B
3B**

ANSI

HSS

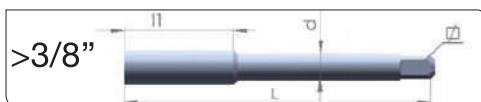
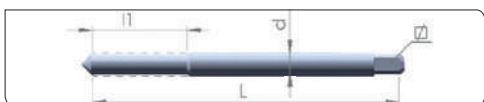
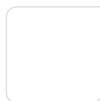
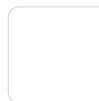
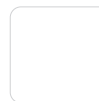
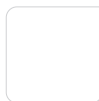
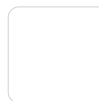
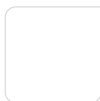
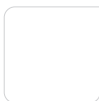
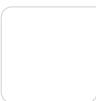
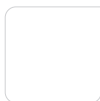
**BRIGHT
UNCOATED**



2,5xd

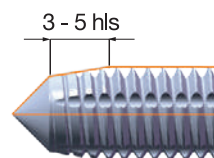


PLUG



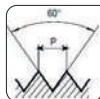
1626600	Ø	P	L	l1	d	Limit	□	●Ø
16266001310121	#4	40	1.88	.56	.1410	H3	.110	#43
16266001310129	#5	40	1.94	.63	.1410	H3	.110	#39
16266001310137	#6	32	2.00	.69	.1410	H3	.110	#33
16266001310147	#8	32	2.13	.75	.1680	H3	.131	1/8
16266001310157	#10	24	2.38	.88	.1940	H4	.152	#25
16266001310169	#12	24	2.38	.94	.2200	H4	.165	11/64
16266001310177	1/4"	20	2.50	1.00	.2550	H4	.191	7
16266001310187	5/16	18	2.72	1.13	.3180	H5	.238	#1
16266001310195	3/8	16	2.94	1.25	.3810	H5	.286	7,30
16266001310203	7/16	14	3.16	1.44	.3230	H5	.242	S
16266001310211	1/2"	13	3.38	1.66	.3670	H5	.275	27/64

1626600	Ø	P	L	l1	d	Limit	□	●Ø
16266001310125	#4	48	1.88	.56	.1410	H3	.110	#43
16266001310133	#5	44	1.94	.63	.1410	H3	.110	#39
16266001310143	#6	40	2.00	.69	.1410	H3	.110	#33
16266001310153	#8	36	2.13	.75	.1680	H3	.131	1/8
16266001310163	#10	32	2.38	.88	.1940	H4	.152	#25
16266001310173	#12	28	2.38	.94	.2200	H4	.165	11/64
16266001310183	1/4"	28	2.50	1.00	.2550	H4	.191	3
16266001310191	5/16	24	2.72	1.13	.3180	H5	.238	#1
16266001310199	3/8	24	2.94	1.25	.3810	H5	.286	7,30
16266001310207	7/16	20	3.16	1.44	.3230	H5	.242	S
16266001310215	1/2"	20	3.38	1.66	.3670	H5	.275	29/64





Normal series American Unified Thread
Filet Unifié Américaine série normal
Rosca Unificada Americana serie normal



ASME B 1.1 Norm
Norme ASME B 1.1
Norma ASME B 1.1

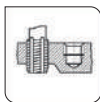
ROLL FORM TAP
TARAUO Á REFOULER
MACHO DE LAMINACIÓN

2B
3B

ANSI

HSS

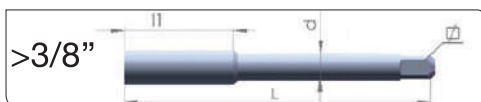
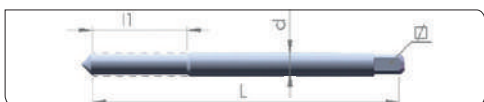
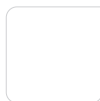
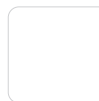
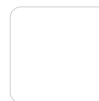
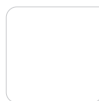
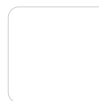
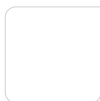
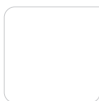
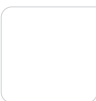
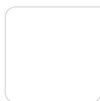
BRIGHT
UNCOATED



2,5xd

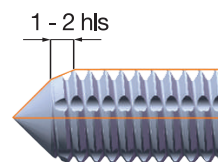


BOTTOM



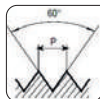
1626600	Ø	P	L	l1	d	Limit	□	●Ø
16266001310110	#0	80	1.63	.31	.1410	H2	.110	12,00
16266001310111	#1	64	1.69	.38	.1410	H2	.110	1,65
16266001310113	#2	56	1.75	.44	.1410	H2	.110	5/64
16266001310118	#3	48	1.81	.50	.1410	H3	.110	#43
16266001310123	#4	40	1.88	.56	.1410	H3	.110	#39
16266001310131	#5	40	1.94	.63	.1410	H3	.110	#33
16266001310140	#6	32	2.00	.69	.1410	H3	.110	1/8
16266001310150	#8	32	2.13	.75	.1680	H3	.131	1/8
16266001310160	#10	24	2.38	.88	.1940	H4	.152	11/64
16266001310171	#12	24	2.38	.94	.2200	H4	.165	5,00
16266001310180	1/4"	20	2.50	1.00	.2550	H4	.191	7
16266001310189	5/16	18	2.72	1.13	.3180	H5	.238	7,30
16266001310197	3/8	16	2.94	1.25	.3810	H5	.286	S
16266001310205	7/16	14	3.16	1.44	.3230	H5	.242	13/32
16266001310213	1/2"	13	3.38	1.66	.3670	H5	.275	27/64

1626600	Ø	P	L	l1	d	Limit	□	●Ø
16266001310120	#3	56	1.81	.50	.1410	H3	.110	2,30
16266001310127	#4	48	1.88	.56	.1410	H3	.110	2,60
16266001310135	#5	44	1.94	.63	.1410	H3	.110	2,90
16266001310145	#6	40	2.00	.69	.1410	H3	.110	3,20
16266001310155	#8	36	2.13	.75	.1680	H3	.131	1/8
16266001310166	#10	32	2.38	.88	.1940	H4	.152	#16
16266001310175	#12	28	2.38	.94	.2200	H4	.165	#8
16266001310185	1/4"	28	2.50	1.00	.2550	H4	.191	3
16266001310193	5/16	24	2.72	1.13	.3180	H5	.238	M
16266001310201	3/8	24	2.94	1.25	.3810	H5	.286	T
16266001310209	7/16	20	3.16	1.44	.3230	H5	.242	10,50
16266001310217	1/2"	20	3.38	1.66	.3670	H5	.275	29/64





M Metric
Metrique
Métrica

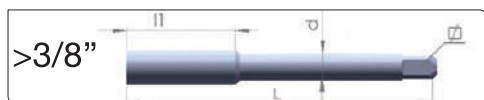
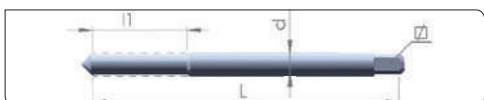
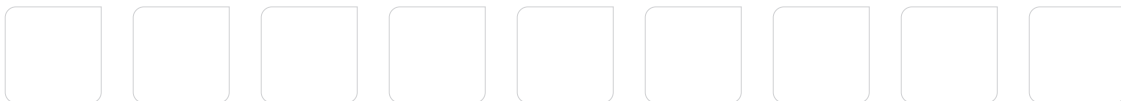


ASME B1.13M Norm
Norme ASME B 1.13M
Norma ASME B1.13M

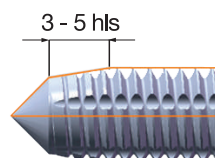
ROLL FORM TAP
TARAU D Á REFOULER
MACHO DE LAMINACIÓN

6H **ANSI** **HSS** **BRIGHT UNCOATED**

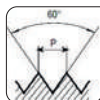
2,5xd **PLUG**



1606600	Ø	P	L	l1	d	Limit	□	•Ø
16066001310500	M3	0,5	1.94	.63	.1410	D5	.110	#34
16066001310502	M4	0,7	2.13	.75	.1680	D6	.131	0,14
16066001310504	M5	0,8	2.38	.88	.1940	D7	.152	#13
16066001310506	M6	1	2.50	1.00	.2550	D8	.191	#2
16066001310508	M8	1,25	2.72	1.13	.3180	D9	.238	M
16066001310510	M10	1,5	2.94	1.25	.3810	D10	.286	U
16066001310512	M12	1,75	3.38	1.66	.3670	D11	.275	7/16



M Metric
Metrique
Métrica

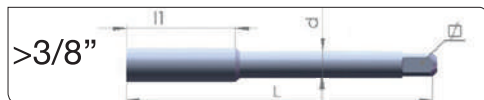
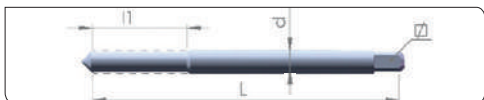
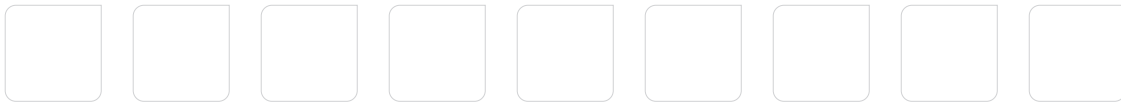


ASME B1.13M Norm
Norme ASME B 1.13M
Norma ASME B1.13M

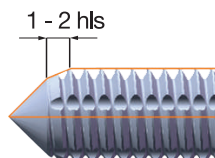
ROLL FORM TAP
TARAU D Á REFOULER
MACHO DE LAMINACIÓN

6H **ANSI** **HSS** **BRIGHT UNCOATED**

2,5xd **BOTTOM**

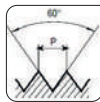


1606600	Ø	P	L	l1	d	Limit	□	•Ø
16066001310501	M3	0,5	1.94	.63	.1410	D5	.110	#34
16066001310503	M4	0,7	2.13	.75	.1680	D6	.131	0,14
16066001310505	M5	0,8	2.38	.88	.1940	D7	.152	#13
16066001310507	M6	1	2.50	1.00	.2550	D8	.191	#2
16066001310509	M8	1,25	2.72	1.13	.3180	D9	.238	M
16066001310511	M10	1,5	2.94	1.25	.3810	D10	.286	U
16066001310513	M12	1,75	3.38	1.66	.3670	D11	.275	7/16



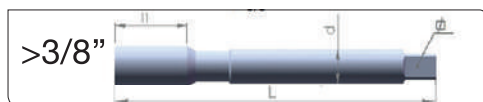
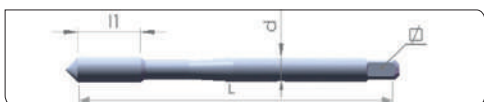
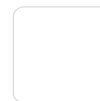
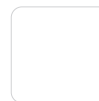
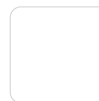
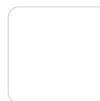
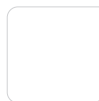
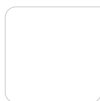
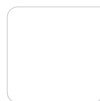
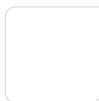
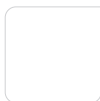


Normal series American Unified Thread
Filet Unifié Américaine série normal
Rosca Unificada Americana serie normal



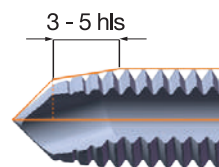
ASME B 1.1 Norm
Norme ASME B 1.1
Norma ASME B 1.1

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA



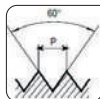
1623344	Ø	P	L	l1	d	Limit	□	●Ø
16233441756000	#4	40	2.21	.43	.1410	2B	.110	43
16233441756002	#6	32	2.21	.47	.1410	2B	.110	36
16233441756004	#8	32	2.48	.51	.1680	2B	.131	#29
16233441756006	#10	24	2.76	.59	.1940	2B	.152	25
16233441756010	1/4"	20	3.15	.67	.2550	2B	.191	#7
16233441756014	5/16	18	3.55	.79	.3180	2B	.238	F
16233441756018	3/8"	16	3.94	.87	.3810	2B	.286	5/16
16233441756030	7/16	14	3.94	.87	.3230	2B	.242	U
16233441756034	1/2"	13	4.33	.98	.3670	2B	.275	27/64
16233441756038	5/8"	11	4.33	1.06	.4800	2B	.360	17/32
16233441756042	3/4"	10	4.92	1.18	.5900	2B	.442	21/32
16233441756046	1"	8	6.30	1.42	.8000	2B	.600	7/8

1623344	Ø	P	L	l1	d	Limit	□	●Ø
16233441756008	#10	32	2.76	.51	.1940	2B	.152	#21
16233441756012	1/4"	28	3.15	.67	.2550	2B	.191	#3
16233441756016	5/16	24	3.55	.67	.3180	2B	.238	I
16233441756020	3/8"	24	3.94	.71	.3810	2B	.286	Q
16233441756032	7/16	20	3.94	.87	.3230	2B	.242	W
16233441756036	1/2"	20	3.94	.87	.3670	2B	.275	29/64
16233441756040	5/8"	18	3.94	.87	.4800	2B	.360	37/64
16233441756044	3/4"	16	4.33	.98	.5900	2B	.442	11/16
16233441756048	1"	12	5.51	1.10	.8000	2B	.600	59/64





M Metric
Metrique
Métrica



ASME B1.13M Norm
Norme ASME B 1.13M
Norma ASME B1.13M

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

6H

**ANSI
DIN**

**HSS
E**

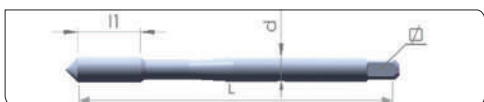
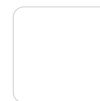
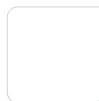
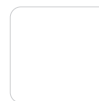
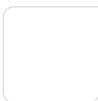
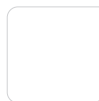
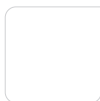
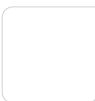
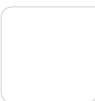
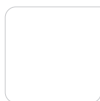
**TiAIN
COATED**



2,5xd



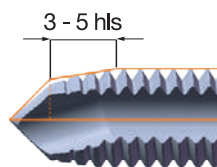
PLUG



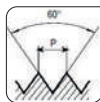
>M10



1603344	Ø	P	L	l1	d	Limit	□	●Ø
16033441756200	M4	0,7	2.48	.51	.1680	6H	.131	0,13
16033441756202	M5	0,8	2.76	.59	.1940	6H	.152	0,17
16033441756204	M6	1	3.15	.67	.2550	6H	.191	0,20
16033441756206	M8	1,25	3.55	.79	.3180	6H	.238	0,27
16033441756210	M10	1,5	3.94	.87	.3810	6H	.286	0,33
16033441756222	M12	1,75	4.33	.98	.3670	6H	.275	13/32
16033441756226	M14	2	4.33	1.02	.429	6H	.322	0,47
16033441756230	M16	2	4.33	1.06	.4800	6H	.360	0,55



**UNC
UNF** Normal series American Unified
Thread
Filet Unifié Américaine série
normal
Rosca Unificada Americana serie
normal



ASME B 1.1 Norm
Norme ASME B 1.1
Norma ASME B 1.1

MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

**2B
3B**

**ANSI
DIN**

**HSS
E**

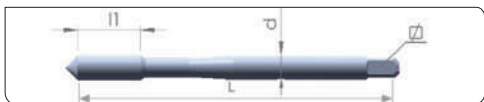
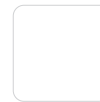
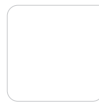
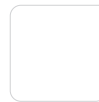
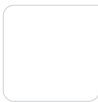
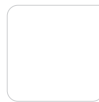
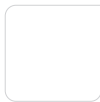
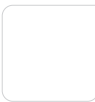
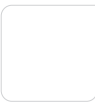
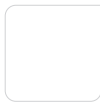
**TiAIN
COATED**



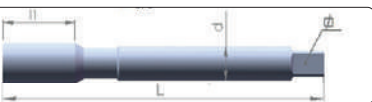
2,5xd



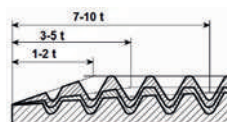
**SEMI
BOTTOM**



>3/8"



1623352	Ø	P	L	l1	d	Limit	□	●Ø
16233521757000	#4	40	2.21	.24	.1410	2B	.110	43
16233521757002	#6	32	2.21	.24	.1410	2B	.110	36
16233521757004	#8	32	2.48	.24	.1680	2B	.131	#29
16233521757006	#10	24	2.76	.35	.1940	2B	.152	25
16233521757010	1/4"	20	3.15	.43	.2550	2B	.191	#7
16233521757014	5/16	18	3.55	.47	.3180	2B	.238	F
16233521757018	3/8"	16	3.94	.55	.3810	2B	.286	5/16
16233521757030	7/16	14	3.94	.59	.3230	2B	.242	U
16233521757034	1/2"	13	4.33	.63	.3670	2B	.275	27/64
16233521757038	5/8"	11	4.33	.75	.4800	2B	.360	17/32
16233523474084	3/4"	10	4.92	.59	.5900	2B	.442	21/32
16233523474092	1"	8	6.30	1.03	.8000	2B	.600	7/8

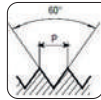


1623352	Ø	P	L	l1	d	Limit	□	●Ø
16233521757008	#10	32	2.76	.35	.1940	2B	.152	#21
16233521757012	1/4"	28	3.15	.43	.2550	2B	.191	#3
16233521757016	5/16	24	3.55	.47	.3180	2B	.238	I

1623352		Ø	P	L	l1	d	Limit	□	●Ø
16233521757020		3/8"	24	3.94	.55	.3810	2B	.286	Q
16233521757032		7/16	20	3.94	.59	.3230	2B	.242	W
16233521757036		1/2"	20	3.94	.63	.3670	2B	.275	29/64
16233523474080		5/8"	18	3.94	.75	.4800	2B	.360	37/64
16233523474088		3/4"	16	4.33	.59	.5900	2B	.442	11/16
16233523474096		1"	12	5.51	1.03	.8000	2B	.600	59/64



M
Metric
Métrique
Métrica

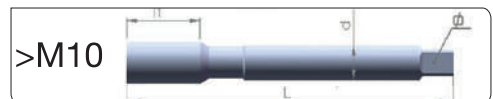
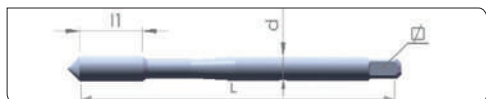
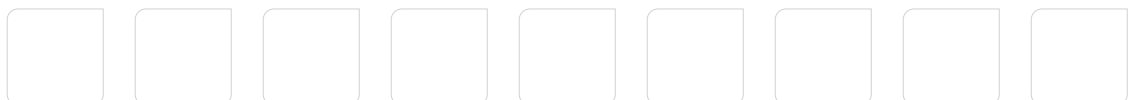


ASME B1.13M Norm
Norme ASME B 1.13M
Norma ASME B1.13M

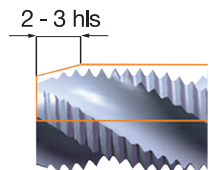
MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

6H **ANSI DIN** **HSS E** **TiAIN COATED**

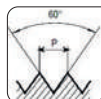
2,5xd **SEMI BOTTOM**



1603352		Ø	P	L	l1	d	Limit	□	●Ø
16033523474400		M4	0,7	2.48	.24	.1680	6H	.131	0,13
16033523474404		M5	0,8	2.76	.35	.1940	6H	.152	0,17
16033523474408		M6	1	3.15	.43	.2550	6H	.191	0,20
16033523474412		M8	1,25	3.55	.47	.3180	6H	.238	0,27
16033523474420		M10	1,5	3.94	.55	.3810	6H	.286	0,33
16033523474444		M12	1,75	4.33	.63	.3670	6H	.275	13/32
16033523474452		M14	2	4.33	.71	.429	6H	.322	0,47
16033523474460		M16	2	4.33	.75	.4800	6H	.360	0,55



UNC
UNF
Normal series American Unified Thread
Filet Unifié Américaine série normal
Rosca Unificada Americana serie normal

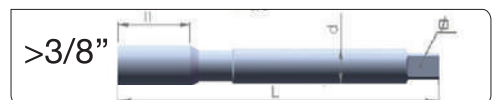
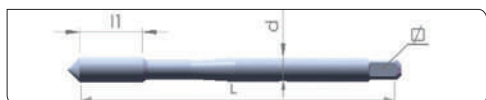
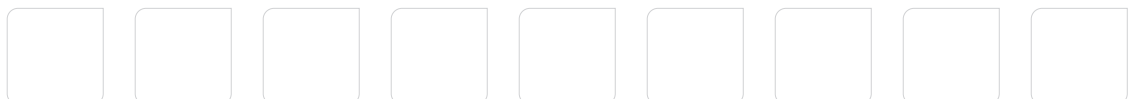


ASME B 1.1 Norm
Norme ASME B 1.1
Norma ASME B 1.1

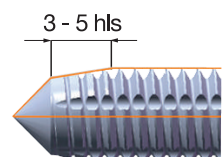
ROLL FORM TAP
TARAU Á REFOULER
MACHO DE LAMINACIÓN

2B **3B** **ANSI DIN** **HSS E** **TiN COATED**

2,5xd **SEMI BOTTOM**



1623362		Ø	P	L	l1	d	Limit	□	●Ø
16233621745060		#4	40	2.21	.43	.1410	2B	.110	#39
16233621765062		#6	32	2.21	.47	.1410	2B	.110	1/8
16233621765064		#8	32	2.48	.51	.1680	2B	.131	#35
16233621765066		#10	24	2.76	.59	.1940	2B	.152	11/64
16233621765070		1/4"	20	3.15	.67	.2550	2B	.191	#1
16233621765074		5/16	18	3.55	.79	.3180	2B	.238	0,29
16233621765078		3/8"	16	3.94	.87	.3810	2B	.286	S
16233621765090		7/16	14	3.94	.87	.3230	2B	.242	13/32

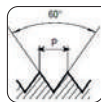


1623362	Ø	P	L	l1	d	Limit	□	●Ø
16233621765094	1/2"	13	4.33	.98	.3670	2B	.275	0,46
16233621765098	5/8"	11	4.33	1.06	.4800	2B	.360	0,58
16233621765102	3/4"	10	4.92	1.18	.5900	2B	.442	45/64
16233621765106	1"	8	6.30	1.42	.8000	2B	.600	15/16

1623362	Ø	P	L	l1	d	Limit	□	●Ø
16233621765068	#10	32	2.76	.51	.1940	2B	.152	21
16233621765072	1/4"	28	3.15	.67	.2550	2B	.191	#16
16233621765076	5/16	24	3.55	.67	.3180	2B	.238	M
16233621765080	3/8"	24	3.94	.71	.3810	2B	.286	T
16233621765092	7/16	20	3.94	.87	.3230	2B	.242	0,41
16233621765096	1/2"	20	3.94	.87	.3670	2B	.275	0,47
16233621765100	5/8"	18	3.94	.87	.4800	2B	.360	0,60
16233621765104	3/4"	16	4.33	.98	.5900	2B	.442	23/32
16233621765108	1"	12	5.51	1.10	.8000	2B	.600	15/16



M Metric
Metrique
Métrica



ASME B1.13M Norm
Norme ASME B 1.13M
Norma ASME B1.13M

ROLL FORM TAP
TARAUO Á REFOULER
MACHO DE LAMINACIÓN

6H

**ANSI
DIN**

**HSS
E**

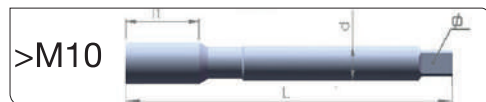
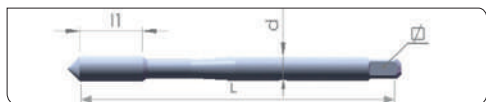
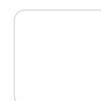
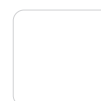
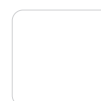
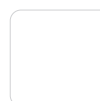
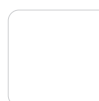
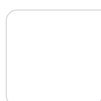
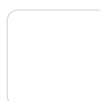
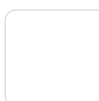
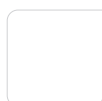
**TiN
COATED**



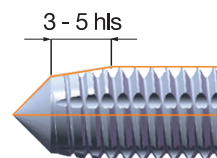
2,5xd



**SEMI
BOTTOM**

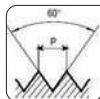


1603362	Ø	P	L	l1	d	Limit	□	●Ø
16033621765250	M4	0,7	2.48	.51	.1680	6H	.131	0,14
16033621765252	M5	0,8	2.76	.59	.1940	6H	.152	#13
16033621765254	M6	1	3.15	.67	.2550	6H	.191	#2
16033621765256	M8	1,25	3.55	.79	.3180	6H	.238	M
16033621765258	M10	1,5	3.94	.87	.3810	6H	.286	U
16033621765272	M12	1,75	4.33	.98	.3670	6H	.275	7/16
16033621765276	M14	2	4.33	1.02	.429	6H	.322	33/64
16033621765280	M16	2	4.33	1.06	.4800	6H	.360	19/32



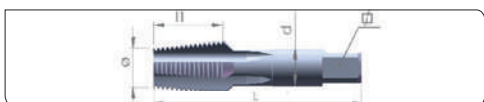
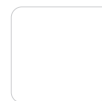
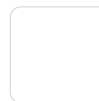
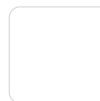
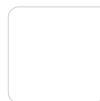
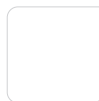
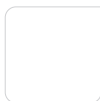
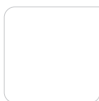
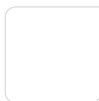
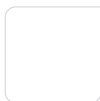
**NPT**

Taper pipe thread
Filet conique gaz
Rosca cónica para tubo



ASME B 1.20.1 Norm
Norme ASME B 1.20.1
Norma ASME B 1.20.1

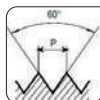
MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

**HSS****BRIGHT UNCOATED****2,5xd**

1643082	Ø	P	L	l1	d	□	●Ø
16430821010518	1/16	27	2.13	.69	.3125	.234	D
16430821010519	1/8	27	2.13	.75	.4375	.328	R
16430821010520	1/4	18	2.44	1.06	.5625	.421	7/16
16430821010521	3/8	18	2.56	1.06	.7000	.531	37/64
16430821010522	1/2	14	3.13	1.38	.6875	.515	23/62
16430821010523	3/4	14	3.25	1.38	.9063	.679	59/64
16430821010524	1"	11,5	3.75	1.75	1.1250	.843	1 5/32
16430821010525	1-1/4	11,5	4.00	1.75	1.3125	.984	1 1/2
16430821010526	1-1/2	11,5	4.25	1.75	1.5000	1.125	1 47/64
16430821010527	2"	11,5	4.25	1.75	1.8750	1.406	2 7/32

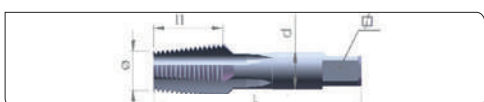
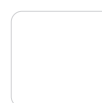
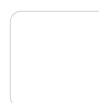
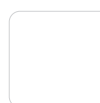
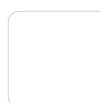
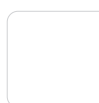
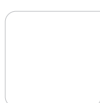
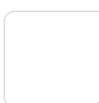
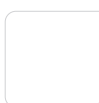
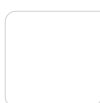
**NPTF**

Taper pipe thread
Filet conique gaz
Rosca cónica para tubo



ASME B 1.20.3 Norm
Norme ASME B 1.20.3
Norma ASME B 1.20.3

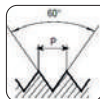
MACHINE CUTTING TAP
TARAU MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

**HSS****BRIGHT UNCOATED****2,5xd**

1643082	Ø	P	L	l1	d	□	●Ø
16430821010529	1/16	27	2.13	.69	.3125	.234	C
16430821010530	1/8	27	2.13	.75	.4375	.328	Q
16430821010531	1/4	18	2.44	1.06	.5625	.421	7/16
16430821010532	3/8	18	2.56	1.06	.7000	.531	9/16
16430821010533	1/2	14	3.13	1.38	.6875	.515	45/64
16430821010534	3/4	14	3.25	1.38	.9063	.679	29/32
16430821010535	1"	11,5	3.75	1.75	1.1250	.843	1 9/64
16430821010536	1-1/4	11,5	4.00	1.75	1.3125	.984	1 31/64
16430821010537	1-1/2	11,5	4.25	1.75	1.5000	1.125	1 23/32

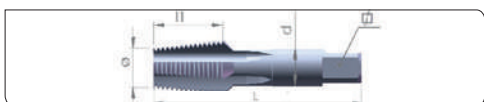
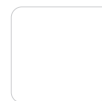
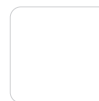
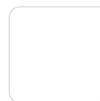
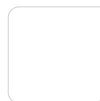
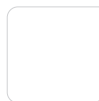
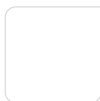
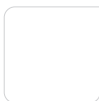
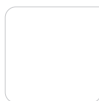
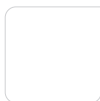
**NPS**

Taper pipe thread
Filet conique gaz
Rosca cónica para tubo



ASME B 1.20.1 Norm
Norme ASME B 1.20.1
Norma ASME B 1.20.1

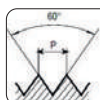
MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

**HSS****BRIGHT UNCOATED****2,5xd**

1653082	Ø	P	L	l1	d	□	●Ø
16530821010581	1/8	27	2.13	.75	.4375	.328	S
16530821010582	1/4	18	2.44	1.06	.5625	.421	29/64
16530821010583	3/8	18	2.56	1.06	.7000	.531	19/32
16530821010584	1/2	14	3.13	1.38	.6875	.515	47/64
16530821010585	3/4	14	3.25	1.38	.9063	.679	15/64
16530821010586	1"	11-1/2	3.75	1.75	1.1250	.843	1 3/16

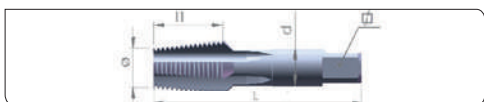
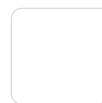
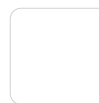
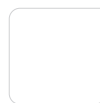
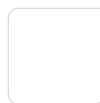
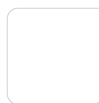
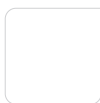
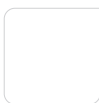
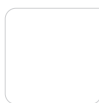
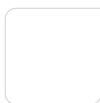
**NPT**

Taper pipe thread
Filet conique gaz
Rosca cónica para tubo



ASME B 1.20.1 Norm
Norme ASME B 1.20.1
Norma ASME B 1.20.1

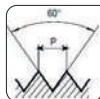
MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

**HSS****BRIGHT UNCOATED****2,5xd**

1643136	Ø	P	L	l1	d	□	●Ø
16431361010551	1/8	27	2.13	.75	.4375	.328	R
16431361010552	1/4	18	2.44	1.06	.5625	.421	7/16
16431361010553	3/8	18	2.56	1.06	.7000	.531	37/64
16431361010554	1/2	14	3.13	1.38	.6875	.515	23/62
16431361010555	3/4	14	3.25	1.38	.9063	.679	59/64
16431361010556	1"	11,5	3.75	1.75	1.1250	.843	1 5/32
16431361010557	1-1/4	11,5	4.00	1.75	1.3125	.984	1 1/2
16431361010558	1-1/2	11,5	4.25	1.75	1.5000	1.125	1 47/64
16431361010559	2"	11,5	4.25	1.75	1.8750	1.406	2 7/32

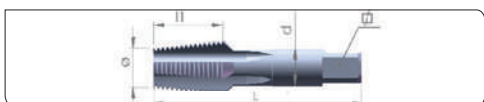
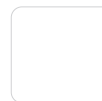
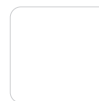
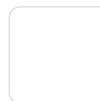
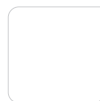
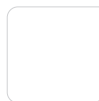
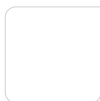
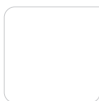
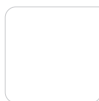
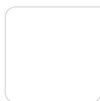
**NPTF**

Taper pipe thread
Filet conique gaz
Rosca cónica para tubo



ASME B 1.20.3 Norm
Norme ASME B 1.20.3
Norma ASME B 1.20.3

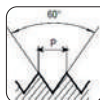
MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

**HSS****BRIGHT UNCOATED****2,5xd**

1643136	Ø	P	L	I1	d	□	●Ø
16431361010561	1/8	27	2.13	.75	.4375	.328	Q
16431361010562	1/4	18	2.44	1.06	.5625	.421	7/16
16431361010563	3/8	18	2.56	1.06	.7000	.531	9/16
16431361010564	1/2	14	3.13	1.38	.6875	.515	45/64
16431361010565	3/4	14	3.25	1.38	.9063	.679	29/32
16431361010566	1"	11,5	3.75	1.75	1.1250	.843	1 9/64
16431361010567	1-1/4	11,5	4.00	1.75	1.3125	.984	1 31/64

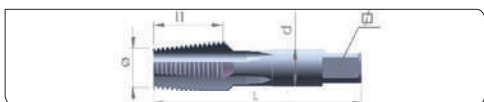
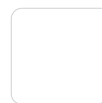
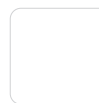
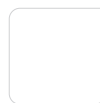
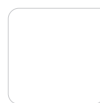
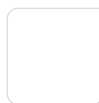
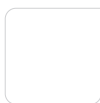
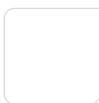
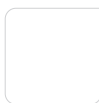
**NPT**

Taper pipe thread
Filet conique gaz
Rosca cónica para tubo



ASME B 1.20.1 Norm
Norme ASME B 1.20.1
Norma ASME B 1.20.1

MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

**HSS****BRIGHT UNCOATED****2,5xd****J**

1643088	Ø	P	L	I1	d	□	●Ø
16430881011760	1/16	27	2.13	.69	.3125	.234	D
16430881011761	1/8	27	2.13	.75	.4375	.328	R
16430881011762	1/4	18	2.44	1.06	.5625	.421	7/16
16430881011763	3/8	18	2.56	1.06	.7000	.531	37/64
16430881011764	1/2	14	3.13	1.38	.6875	.515	23/62
16430881011765	3/4	14	3.25	1.38	.9063	.679	59/64
16430881011766	1"	11,5	3.75	1.75	1.1250	.843	1 5/32
16430881011767	1-1/4	11,5	4.00	1.75	1.3125	.984	1 1/2
16430881011768	1-1/2	11,5	4.25	1.75	1.5000	1.125	1 47/64
16430881011769	2"	11,5	4.25	1.75	1.8750	1.406	2 7/32

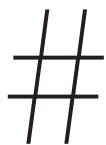
TAPPING

CATALOGUE



TAPPING
TARAU DAGE
ROSCADO

#03-05



APPLICATION TAPS

TARAUDS SPECIAUX
MACHOS ESPECIALES



INFO

🇬🇧 Taps with a special design for nuts manufacturing on automatic machines : long thread length, long chamfer and longer straight or bent shank

🇫🇷 Tarauds avec un design spécial pour la fabrication des écrous avec des machines automatiques : grande longueur filetée, longue entrée conique, et longue queue droite ou courbée

🇪🇸 Machos de roscar con un diseño especial para la fabricación de tuercas con máquinas automáticas : gran longitud roscada, entrada conica larga y mango largo recto o curvado



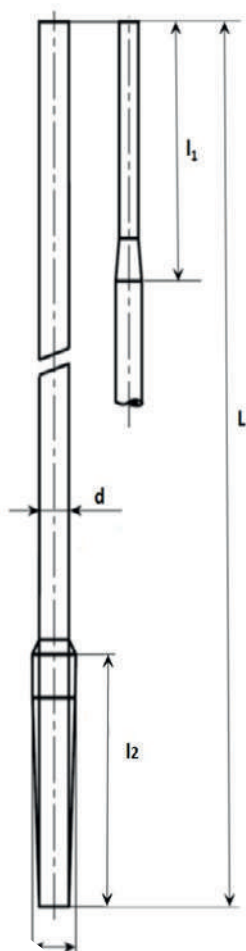
► www.tivoly.com



TIVOLY

NUT TAPS
TARAUD POUR
ÉCROUS.
MACHO
TUERQUERO.

M
MF



970401							
Ø	p	L	l ₁	l ₂	d		
M3	0,5	280	-	10	2,3	2,50	
M4	0,7	280	-	14	2,9	3,30	
M5	0,8	280	-	16	3,8	4,20	
MF6	0,5	280	25	12,5	5,1	5,50	
M6	1	280	25	20	4,5	5,00	
MF8	1	280	25	25	6,4	7,00	
M8	1,25	280	30	25	6,1	6,75	
MF10	1	280	25	25	8,4	9,00	
M10	1,5	280	38	30	7,7	8,50	
MF12	1,25	420	38	38	10,1	10,75	
M12	1,75	420	38	35	9,3	10,25	
MF14	1,5	420	39	38	11,8	12,50	
M14	2	420	39	40	10,9	12,00	
MF16	1,5	420	41	38	13,8	14,50	
M16	2	520	41	40	12,9	14,00	
MF18	1,5	520	41	38	15,8	16,50	
M18	2,5	520	41	50	14,1	15,75	
MF20	1,5	520	41	38	17,8	18,50	
M20	2,5	520	41	50	16,1	17,50	
M22	2,5	520	48	50	18	19,50	
M24	3	520	54	60	19,3	21,00	
M27	3	520	54	60	22,2	24,00	
M30	3,5	520	54	70	25,2	26,50	

UNC
UNF

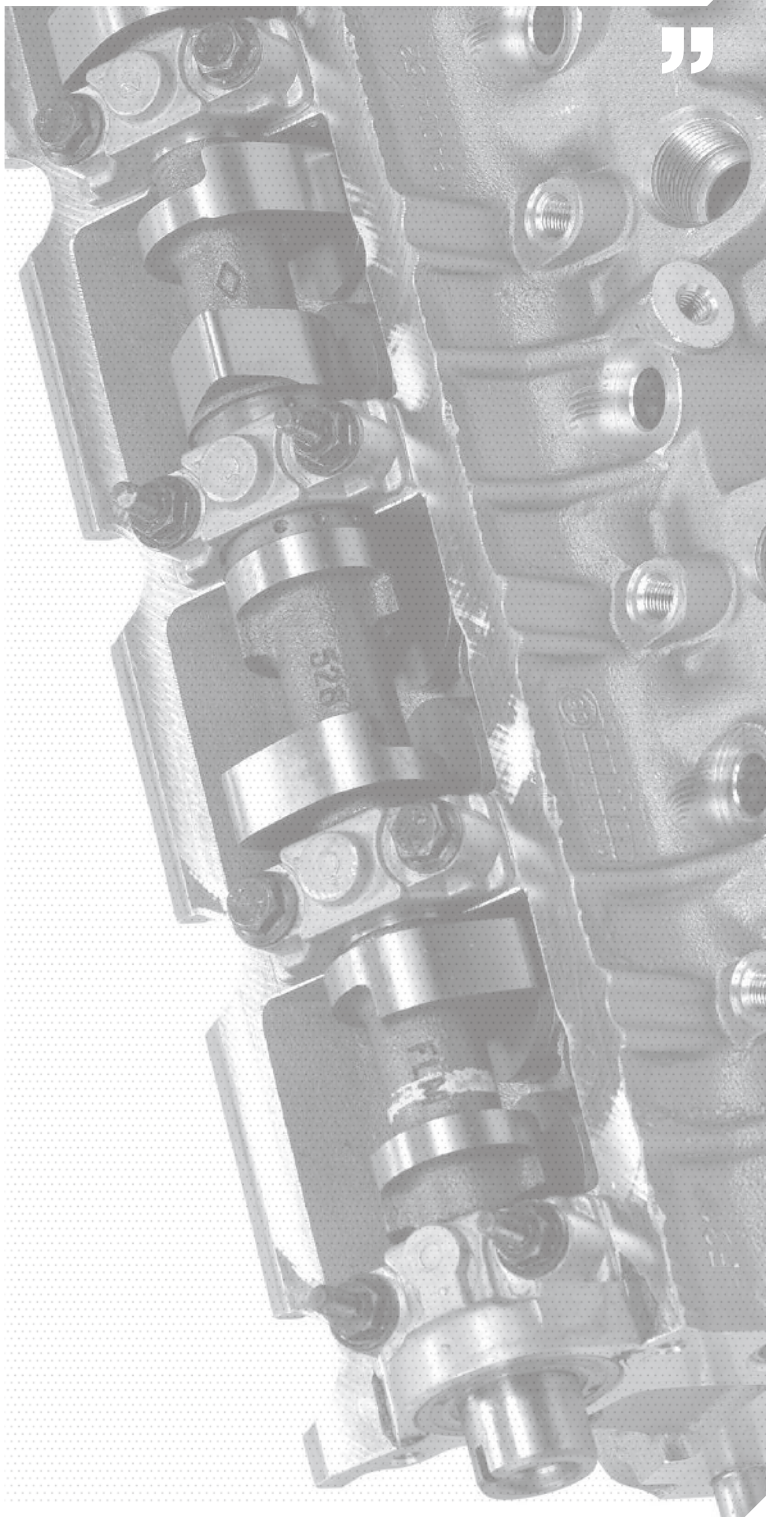
972401							
Ø	p	L	l ₁	l ₂	d		
UNC 1/4"	20	280	25	32	4,5	5,10	
UNC 5/16"	18	280	30	36	5,8	6,50	
UNC 3/8"	16	280	38	40	7,2	7,90	
UNC 7/16"	14	420	38	46	8,4	9,25	
UNC 1/2"	13	420	39	53	9,5	10,50	
UNC 9/16"	12	420	39	54	11	12,00	
UNC 5/8 "	11	520	41	58	12,2	13,50	
UNC 3/4 "	10	520	41	64	15	16,50	
UNC 7/8"	9	520	48	71	17,7	19,25	
UNC 1"	8	520	54	80	20,5	22,00	
UNF 1/4"	28	280	25	22	4,6	5,50	
UNF 5/16"	24	280	30	27	6,2	6,90	
UNF 3/8"	24	280	38	27	7,8	8,50	
UNF 7/16"	20	420	38	32	8	9,90	
UNF 1/2"	20	420	39	32	10,5	11,50	
UNF 9/16"	18	420	39	36	12	12,90	
UNF 5/8 "	18	520	41	36	13,5	14,50	
UNF 3/4 "	16	520	41	40	16,5	17,50	
UNF 7/8"	14	520	48	46	19	20,50	
UNF 1"	12	520	54	53	22	23,25	



🇬🇧 Also special manufacturing for other elements of the car with adjusted geometries and coatings

🇫🇷 Aussi, la fabrication spéciale pour d'autres éléments de la voiture avec des géométries et des revêtements ajustés

🇪🇸 Además, la fabricación especial de otros elementos del coche con geometrías y recubrimientos ajustados



► www.tivoly.com

AUTOMOTION

AUTOMOTIVE.
AUTOMOCIÓN.



Código/Code	Descripción/Description
990190E00760031	M6x1 HSSEE TiN
990190E00760614	M8x1,25 HSSEE TiN
990190E00760619	M10x1,50 HSSEE TiN
990190E00760608	MF12x1,25 HSSEE TiN
990190E00760610	MF14x1,50 HSSEE TiN
990190E00760611	MF20x1,50 HSSEE TiN

Código/Code	Descripción/Description
990220E02763292	M10x1,50 HSSEE TiCN
990220E00759645	MF14x1,25 HSSEE TiN



Código/Code	Descripción/Description
960012E00886113	M6x1 HSSE TiCN
960013E16969539	M12x1,25 HSSE TiCN
960010E12821301	MF12x1,50 HSSE TiCN
960013E16921565	MF14x1,50 HSSE TiCN



Código/Code	Descripción/Description
960013E16970426	MF12x1,50 HSSEE TiCN
960013E16970525	MF14x1,50 HSSEE TiCN
960013E16970525	MF16x1,50 HSSEE TiCN

Laminación/Forming Tap/Refoulement

Código/Code	Descripción/Description
960012E16969192	MF16x1,50 HSSEE TiN



INFO⁺

🇬🇧 Specially designed taps for threading materials such as GGG 40 or 42CrMo4 or 42CrMo6. Spiral flutes, 6H tolerance and TiCN coating. Two lengths available.

🇫🇷 Tarauds spécialement conçus pour fileter des matériaux tels que GGG 40 ou 42CrMo4 ou 42CrMo6. Goujures hélicoïdaux, tolérance 6H et revêtement TiCN. Deux longueurs disponibles.

🇪🇸 Machos especialmente diseñados para el roscado de materiales como GGG40 ó 42CrMo4 ó 42CrMo6 . Canales helicoidales, tolerancia 6H y recubrimiento TiCN. Dos largos disponibles .



► www.tivoly.com

DIN 376

	Code	Total length
M20	960013E06970888	140
M22	960013E06970889	140
M24	960012E06970834	160
M27	960013E06970890	160
M30	960013E06970741	180
M33	960013E06970885	180
M36	960013E06970886	200
M39	960013E06970891	200
M42	960013E06970887	220
M45	960013E06970917	220
M48	960013E06970918	250

EXTRA LONG

	Code	Total length
M20	960013E06970928	200
M22	960013E06970929	200
M24	960013E06970930	200
M27	960013E06970931	250
M30	960013E06970932	250
M33	960013E06970933	250
M36	960013E06970934	250
M39	960013E06970935	300
M42	960013E06970936	300





INFO

🇬🇧 Designed specifically with TiN coating for threading all types of threaded connections for fluid transport pipes made of malleable cast iron.

🇫🇷 Conçu spécifiquement avec TiN revêtement pour le filetage de tous les types de raccords filetés pour tuyaux de transport de fluides et fabriqués en fer malléable.

🇪🇸 Diseño específico con recubrimiento TiN para el roscado de todo tipo de juntas y uniones roscadas fabricadas en fundición maleable para canalizaciones de transporte de fluidos.

”

🇬🇧 Also specially made in different dimensions and coatings

🇫🇷 Fabrication spéciale également dans différentes dimensions et revêtements

🇪🇸 También fabricación especial en diferentes dimensiones y recubrimientos





FITTING INDUSTRY

FABRICATION DE
RACCORDS.
FABRICACIÓN
DE UNIONES
ROSCADAS.

Código / Code	Diámetro/Diameter/Diametre	p
960010E61949720	GAS 1/4 "	19h
999000E00950936	GAS 3/8 "	19h
999000E00951179	GAS 1/2 "	14h
999000E00951577	GAS 3/4 "	14h
999000E00951787	GAS 1 "	11h
999000E00951811	GAS 1 1/8 "	11h
999000E00951980	GAS 1 1/4 "	11h
999000E00952095	GAS 1 1/2"	11h
999000E00952147	GAS 2 "	11h
990160E66952149	GAS 2 1/4 "	11h
960010E61952155	GAS 2 1/2 "	11h
999000E00952150	GAS 2 3/4 "	11h
990160E66952236	GAS 3 "	11h
999000E00952252	GAS 4 "	11h



INFO

🇬🇧 Taps with left-hand thread with special profile for threading nuts holding ground anchors

🇫🇷 Tarauds avec filetage à gauche et profil spécial pour fileter les écrous de fixation des tirants d'ancrage

🇪🇸 Machos con rosca especial a izquierdas para el roscado de tuercas para tirantes de sujeción.

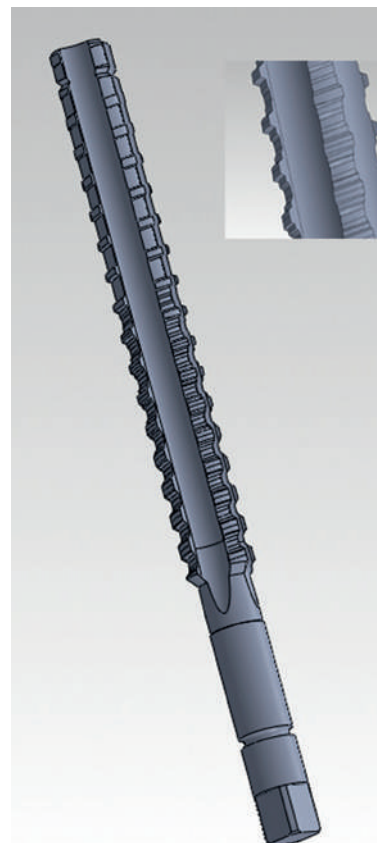


Código/Code	Diámetro/Diameter/Diametre	Paso/Pas/Pitch	L _{total}
980000E85714008	GW 20 IZDA	10 mm	350
980000E85713998	GW 25 IZDA	12,5 mm	355
980000E85713999	GW 32 IZDA	16 mm	420
980000E85714011	GW 40 IZDA	20 mm	420

► www.tivoly.com



BUILDING INDUSTRY.
INDUSTRIE DE
LA CONSTRUCTION.
CONSTRUCCIÓN.





 OUR CHALLENGE IS TO OFFER A SATISFACTORY SOLUTION

► TIVOLY, designs and manufactures on demand all kinds of taps for special applications offers its customers a full team of professionals and technical resources of its exclusive production plants taps. To give us the power to meet your needs and expectations, please provide us with as much information about the tool and the work to be done with it. To do this, complete the form and attach a technical drawing of the part to be manufactured



 NOTRE DÉFI EST D'OFFRIR UNE SOLUTION SATISFAISANTE.

► TIVOLY, conçoit et fabrique sur demande toutes sortes de tarauds pour des applications spéciales et offre à ses clients une équipe complète de professionnels et de ressources techniques de production de ses usines exclusifs tarauds. Pour nous donner le pouvoir de répondre à vos besoins et attentes, s'il vous plaît nous fournir autant d'informations sur la précision et que le travail à faire avec son outil. Pour ce faire, remplissez le formulaire et joindre un dessin technique de la pièce à fabriquer

 OFRECERLE UNA SOLUCION SATISFACTORIA ES NUESTRO RETO

► TIVOLY diseña y fabrica bajo demanda todo tipo de machos de roscar para aplicaciones especiales y pone a disposición de sus clientes un completo equipo técnico de profesionales y los recursos de sus plantas de producción exclusivas para machos de roscar. Para facilitarnos el poder satisfacer sus necesidades y expectativas, rogamos nos facilite el máximo de información sobre la herramienta que precisa y el trabajo a realizar con ella, cumplimentado para ello el formulario técnico y adjuntando un plano de la pieza a fabricar

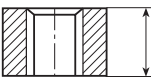
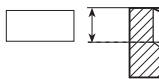
1. - TAPPING, PREVIOUS DRILLING

1.1- Thread dimensions: Tolerance:

1.2- Thread: Right-hand Left-hand Previous diameter:

1.3- Thread buffer: No Yes Go: No go:

2. - PART TO BE MACHINED

2.1- Type of hole:   According to enclosed sketch

2.2 - Material: Standard: Tensile strength, N/mm²:

2.3 - Material condition: Not treated Treated Hardness HB:

2.4 - Type of chip: Long Short Dust

2.5 - Type of previous hole: Drilling Reaming Press-forming Casting

3. - WORKING CONDITIONS

3.1 - Type of machine: Power:

3.2 - Operating mode: Horizontal Vertical Feed by master spindle: Yes No

3.3 - Type and brand of tap-holder:

Axial compensation: Yes No Torque limiter: Yes No

Radial compensation: Yes No

3.4 - Cutting conditions:

Cutting speed: R.P.M.:

Lubricant: Manual With pump

4. - CURRENTLY USED TOOL

4.1 - Tap: Tolerance: Brand:

Type/Ref.: Surface treatment:

4.2 - Flute shape: Straight Straight + rake lead Spoon type

Slow right-hand spiral. Fast right-hand spiral. Slow left-hand spiral. Fast left-hand spiral.

REMARKS

Company: _____ Tel.: _____ Fax No.: _____

SUBJECT: _____

Date: _____ Contact person: _____

**FORMULAIRE TECHNIQUE POUR DES TARAUDS**

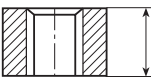
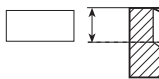
Date: _____

N°: _____

1. - TARAUDAGE, ALÉSAGE PRÉALABLE

1.1- Dimension du filet: _____	Tolérance: _____
1.2- Filet: ☐ Droite ☐ Gauche	Diamètre préalable: _____
1.3- Tampon du filet: ☐ Non ☐ Oui Il passe: _____	Il ne passe pas: _____

2. - PIÈCE À USINER

2.1- Type de trou :   ☐ Selon croquis ci-joint

2.2 - Matériel : _____ Norme: _____ Rés. à la traction, N/mm²: _____

2.3 - État du matériel : ☐ Sans traiter ☐ Traité Dureté HB: _____

2.4 - Type de copeau: ☐ Longs ☐ Courts ☐ Poudre

2.5 - Type de trou préalable : ☐ Alésé ☐ Réalésé ☐ Découpé ☐ Moulé

3. - CONDITIONS D'EMPLOI

3.1 - Type de machine: _____ Puissance : _____

3.2 - Forme de travail : ☐ Horizontal ☐ Vertical Avance. par vis-mère : ☐ Oui ☐ Non

3.3 - Type et marque porte-taroud : _____

Compensation axiale : ☐ Oui ☐ Non Limiteur de couple : ☐ Oui ☐ Non

Compensation radiale : ☐ Oui ☐ Non

3.4 - Conditions de coupe :
Vitesse de coupe : _____ R.P.M.: _____
Lubrifiant : _____ ☐ Manuel ☐ À pompe

4. - OUTIL UTILISÉ ACTUELLEMENT

4.1 - Taroud: _____ Tolérance : _____ Marque : _____

Type/Réf.: _____ Traitement en surface : _____

4.2 - Forme des stries : ☐ Droite ☐ Droite + ent. corrigée ☐ Type de poche

☐ Hélice lente à droite. ☐ Hélice rapide à droite. ☐ Hélice lente à gauche. ☐ Hélice rapide à gauche.

REMARQUES

Entreprise: _____ Tél: _____ Fax: N°: _____

SUJET: _____

Date: _____ Personne de contact : _____

**FORMULARIO TECNICO PARA MACHOS**

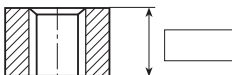
Fecha: _____

Nº: _____

1. - ROSCADO, TALADRO PREVIO

1.1- Dimensión de la rosca:		Tolerancia:	
1.2- Rosca:	Derecha Izquierda	Diámetro previo:	
1.3- Tampón de rosca:	No Si	Pasa:	
		No pasa:	

2. - PIEZA A MECANIZAR

2.1- Tipo de agujero:			Según croquis adjunto
2.2 - Material:		Norma:	
		Res.tracción, N/mm²:	
2.3 - Estado del material:	Sin tratar Tratado	Dureza HB:	
2.4 - Tipo de viruta:	Largas Cortas	Polvo	
2.5 - Tipo de agujero previo:	Taladrado Escariado Estampado	Fundido	

3. - CONDICIONES DE EMPLEO

3.1 - Tipo de máquina:		Potencia:	
3.2 - Forma de trabajo:	Horizontal Vertical	Avce. con husillo patrón:	Si No
3.3 - Tipo y marca portamacho:			
Compensación axial:	Si No	Limitado de par:	Si No
Compensación radial:	Si No		
3.4 - Condiciones de corte:			
Vdad. de corte:		R.P.M.:	
Lubricante:		Manual Con bomba	

4. - HERRAMIENTA UTILIZADA ACTUALMENTE

4.1 - Macho:		Tolerancia :		Marca:	
Tipo/Ref.:			Tratamiento superficial:		
4.2 - Forma de las estrías:	Recta Recto + ent. corregida Tipo cuchara				
	Hélice lenta dcha. Hélice rápida dcha. Hélice lenta izqda. Hélice rápida izqda.				

OBSERVACIONES

Empresa: _____ Tlfno: _____ Fax: Nº: _____

ASUNTO: _____

Fecha: _____ Persona de contacto: _____

TAPPING

CATALOGUE



THREADING

FILETAGE
ROSCADO

#04-05

#

ROLL & FLAT DIES

PEIGNES & MOLETTES
PEINES & RODILLOS



FLAT & ROLL DIES PEIGNES ET MOLETTES. PEINES Y RODILLOS.

🇬🇧 TIVOLY, designs and manufactures on demand all kinds of threading CYLINDRICAL AND FLAT ROLLING DIES

In addition, we offer our customers all our technical resources for an agile and fast recovery of their used tools.

🇫🇷 TIVOLY, conçoit et fabrique sur demande toutes sortes de PEIGNES ET MOLETTES.

En outre, nous offrons à nos clients nos ressources techniques pour la récupération agile et rapide des outils déjà utilisés.

🇪🇸 TIVOLY diseña y fabrica bajo demanda todo tipo de PEINES y RODILLOS de laminación.

Además, ofrecemos a nuestros clientes todos nuestros recursos técnicos para una ágil y rápida recuperación de sus herramientas ya utilizadas.

🇬🇧 In our production we use high speed steel HSS and alloyed steels with high wear resistance, especially recommended for cold working and great compression resistance combined with a excellent toughness.

🇫🇷 Dans notre production, nous utilisons HSS aciers et des aciers alliés à haute résistance à l'usure, particulièrement recommandés pour le travail à froid et d'une grande résistance à la compression combiné avec une excellente tenacité.

🇪🇸 En nuestra fabricación utilizamos aceros rápidos HSS así como aceros aleados con una alta resistencia al desgaste, especialmente recomendados para el trabajo en frío y con una gran resistencia a la compresión combinada con una excelente tenacidad.

► www.tivoly.com

IN-FEED OR THROUGH-FEED

MOLETTES À PLONGÉE OU ENFILADE.

RODILLOS A PLONGÉE O ENFILADA.



🇬🇧 M, MF, UNC, UNF, BSW, BSF, trapezoidal, round thread and other specials profiles

🇫🇷 Profils M, MF, UNC, UNF, BSW, BSF, trapézoïdales, fil rond et autres spécial.

🇪🇸 Perfiles M, MF, UNC, UNF, BSW, BSF, trapezoidales, rosca redonda, así como otros especiales.

CYLINDRICAL DIESTO POLISH OR TO BURNISH

MOLETTES POUR POLISSAGE OU BRUNISSAGE

RODILLOS PARA LAPEAR Y BRUÑIR



🇬🇧 Cylindrical rolling dies to end all types of profiles or with special geometries for the elimination of surface stresses

🇫🇷 Molettes pour finir toutes sortes de profils ou avec géométries spéciales pour éliminer les tensions de surface.

🇪🇸 Rodillos para el acabado de todo tipo de perfiles o con geometrías especiales para la eliminación de tensiones superficiales.

TIVOLY®

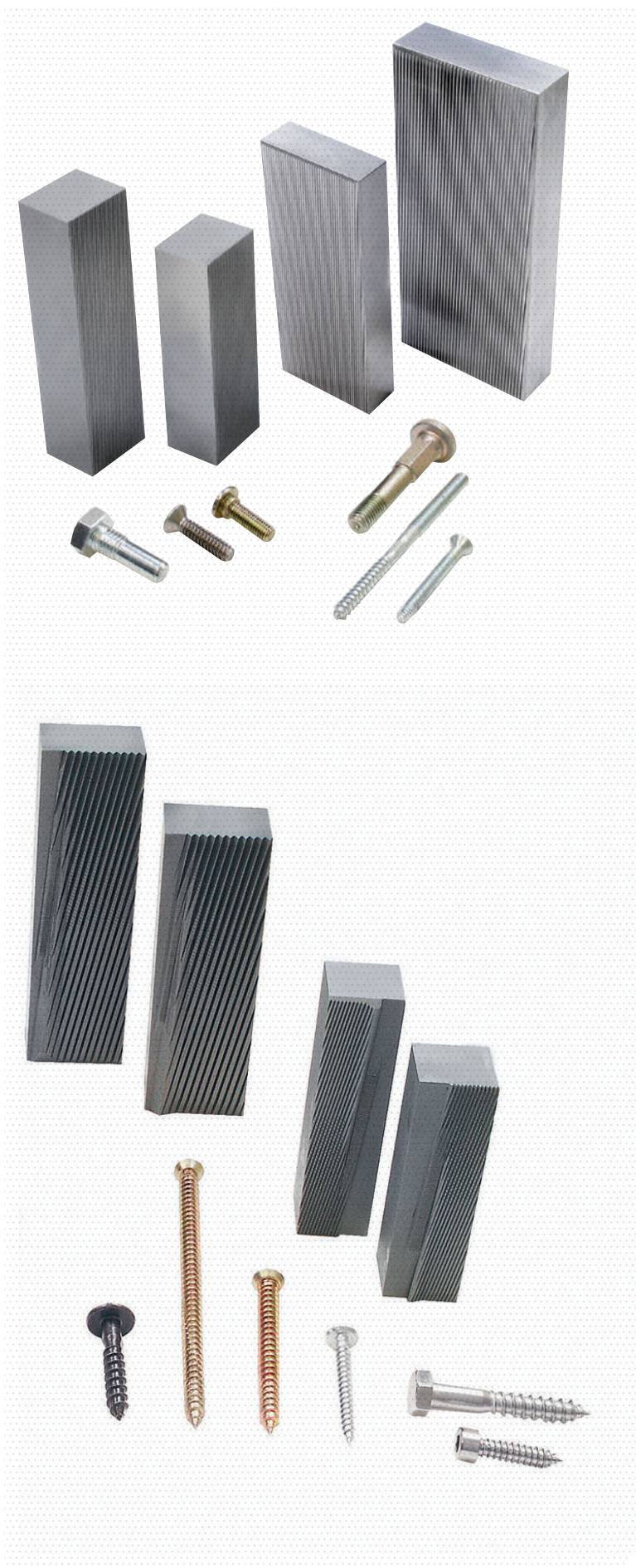
FLAT & ROLL DIES
PEIGNES ET MO-
LETTES.

**PEINES Y
RODILLOS.**

🇬🇧 Manufacture to order in
different dimensions

🇫🇷 Fabrication sur commande
dans différentes dimensions

🇪🇸 Fabricación bajo pedido en
diferentes dimensiones



GRINDED FLAT ROLLING DIES PEIGNES RECTIFIÉS. PEINES RECTIFICADOS.

🇬🇧 Flat rolling dies with progressive entry, threaded on one side, with single or double threaded area and one or two uses. And with regular entry, threaded on one side for two uses or threaded on two sides for four uses.

🇫🇷 Peignes avec entrée progressive, filetés sur un côté, avec une zone fileté simple ou double et pour un ou deux utilisations. Et avec l'entrée ordinaire, fileté sur un côté pour deux utilisations ou fileté sur deux côtés pour quatre utilisations

🇪🇸 Peines con entrada progresiva, roscados por una cara, con simple o doble zona roscada y para una o dos utilizaciones. Y con entrada normal, roscados por una cara para dos utilizaciones o roscados por dos caras para cuatro utilizaciones.

🇬🇧 Specially made in different dimensions

🇫🇷 Fabricación especial en diferentes dimensiones

🇪🇸 Fabricación spéciale dans différentes dimensions

CYLINDRICAL DIES FOR THREADING HEADS AND FLAT DIES TANGENT TYPE

MOLETTES POUR TÊTES DE FILETAGE ET PEIGNES TANGENTIELS.
RODILLOS PARA CABEZAL Y PEINES TANGENCIALES.

🇬🇧 Sets of three or four cylindrical rolling dies for threading heads and sets of four flat rolling dies tangent type.

🇫🇷 Jeux de trois ou quatre molettes pour têtes de filetage et jeux de quatre peignes tangentiels.

🇪🇸 Juegos de tres o cuatro rodillos de cabezal y juegos de cuatro peines tangenciales fabricados en HSSE.



🇬🇧 Manufacture to order in different dimensions

🇫🇷 Fabrication sur commande dans différentes dimensions

🇪🇸 Fabricación bajo pedido en diferentes dimensiones

IN-FEED OR THROUGH-FEED

MOLETTES À PLONGÉE OU ENFILADE.

RODILLOS A PLONGÉE O ENFILADA.



🇬🇧 Knurled straight, slanted, crossed or negative

🇫🇷 Moletée droite, inclinée, croisés ou négative

🇪🇸 Moleteado recto, inclinado, cruzado o negativo

► www.tivoly.com



FLAT ROLLING DIES
PEIGNES ET MOLETTES.
PEINES Y RODILLOS.

🇬🇧 Manufacture to order in different dimensions

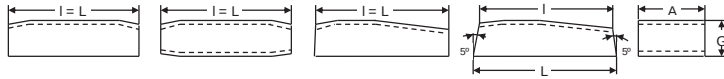
🇫🇷 Fabrication sur commande dans différentes dimensions

🇪🇸 Fabricación bajo pedido en diferentes dimensiones

DIMENSIONS OF SET OF
FLAT DIES.

DIMENSIONS DES JEUX
DE PEIGNES.

DIMENSIONES DE
JUEGOS DE PEINES.

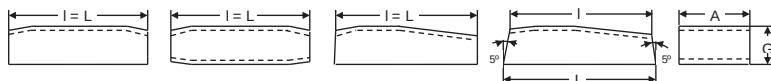


Maquina Machine	Modelo Model Modèle	I		Angulo Angle	L		Alturas más comunes Hauteurs communes Most common heights	Espesor Épaisseur Thickness
		Fijo y largo Fixet long Fixed & long	Móvil y corto Mobile et court Moving & short		Fijo y largo Fixet long Fixed & long	Móvil y corto Mobile et court Moving & short		
ABE	AR-C	111	89	0 °			76	25
	AR-D	164	152	0 °			103	38
	AR-E	190	178	0 °			103	38
AMBA		50	50	0 °			25	20
BOFORS		135	120	5 °	139,2	124,2	40 - 50	24
BOLTMAKER	3 / 16 "	106,4	88,9	5 °	108,6	91,1	25,4 - 28,6	12,7
	1 / 4 "(K6)	127	108	5 °	129,8	110,8	25,4 - 31,8 - 38,1	15,9
	5 / 16 "(K8)	146	127	5 °	148,8	129,8	25,4 - 31,8 - 38,1 - 44,5	15,9
	3 / 8 "(K10)	171,5	152,4	5 °	174,3	155,2	31,8 - 38,1 - 44,5 - 50,8 - 66,7	15,9
	1 / 2 "(K12)	215,9	190,5	5 °	219,5	194,1	38,1 - 50,8 - 63,5 - 76,2 - 82,6	20,6
	5 / 8 "(K16)	254	228,6	5 °	257,9	232,5	50,8 - 63,5 - 76,2 - 104,8	22,2
	3 / 4 "(K20)	304,8	279,4	5 °	309,2	283,8	50,8 - 57,2 - 63,5 - 76,2 - 82,6	25,4
CALOW	1 "	431,8	381	5 °	437,4	386,6	82,6 - 101,6	31,8
	GW - 1	90	90	0 °			42	35
	GW - 2	146	146	0 °			80	45
	GW - 3	200	200	0 °			85	50
	GW - 4	260	260	0 °			90	65
CHUN ZU	GW - 5	340	340	0 °			105	80
	DPR3	66	58	0 °			32 - 40	20
	DPR5	82,6	69,9	5 °	86,2	73,5	31,8 - 41,3 - 66,7	20,6
	DPR6	95	85	0 °			38 - 42 - 54	25
	DPR8	130	115	0 °			54 - 62 - 82 - 105	30
E.W. MENN	DPR20	304,8	279,4	5 °	313,4	288	66,7 - 88,9 - 104,8 - 117,5 - 130,2	49,2
	GW - 22 / 23	45	38	0 °			16 - 22	12
	GW - 31 / 32	66	58	0 °			32 - 40	20
	GW - 32 - 0	82,6	69,9	5 °	86,2	73,5	31,8 - 41,3 - 66,7	20,6
	GW - 51 / 52	95	85	0 °			25,4 - 31,8 - 38 - 42 - 48 - 54	25
	GW - 61 / 62 / 63	130	115	0 °			25,4 - 31,8 - 44,5 - 52 - 62	30
	GW - 81 / 82	150	130	0 °			31,8 - 50,8 - 58 - 65 - 82	35
GAMEY	GW - 100	170	150	0 °			31,8 - 50,8 - 68 - 82 - 105	40
	RF - 1	130	105	0 °			35	29
	RF - 2	192	192	0 °			65 - 70 - 95	34
	RF - 2A	185	165	0 °			65 - 75 - 85	34
	G. A.	375	350	0 °			100	60
GREFE	G. M.	406,4	381	0 °			130	55,5
	WES	66	58	0 °			32	20
	WFS	95	85	0 °			54	25
	WFO	130	115	0 °			48	30
	WGS	150	130	0 °			80	35
	WGA	170	150	0 °			68	40
HANREZ	WDS	220	200	0 °			90	50
	RFA0	82,8	69,8	5 °	86,5	73,5	42	21
	RFA1	126,6	107,6	5 °	131,0	112,0	54	25
	RFA2	140,6	121,6	5 °	145,8	126,8	50 - 70	30
	RFA3	170	152	5 °	175,2	157,2	80	30
	RFA4	215,9	189,9	5 °	222,0	196,0	75 - 105	35
HARTFORD	RFA5	254	228	5 °	261,5	235,5	85 - 105	43
	RFA6	305,2	280,2	5 °	313,9	288,9	120	50
	SP0-500-400	82,6	69,9	5 °	86,2	73,5	31,8 - 41,3 - 66,7	20,6
	A190H	101,6	88,9	5 °	105,2	92,5	31,8 - 41,3 - 66,7	20,6
	SP10-400, A 312 H	127	108	5 °	131,2	112,2	31,8 - 41,3 - 54 - 50,8 - 66,7	23,8
	SP20-220	171,5	152,4	5 °	176,8	157,7	41,3 - 50,8 - 63,5 - 66,7 - 79,4	30,2
	SP30-180	215,9	190,5	5 °	222,3	196,9	50,8 - 69,8 - 82,5 - 104,8	36,5
	SP40-140	254	228,6	5 °	261,5	236,1	66,7 - 82,6 - 104,8 - 117,5	42,9
	SP60-100	406,4	381	5 °	416,1	390,7	92,1 - 104,5 - 117,5 - 130,2 - 142,9	55,6

DIMENSIONS OF SET OF
FLAT DIES.

DIMENSIONS DES JEUX
DE PEIGNES.

DIMENSIONES DE
JUEGOS DE PEINES.

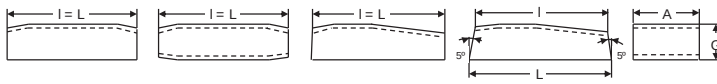


		I		Angulo Angle	L		A	G
Maquina Machine	Modelo Model Modèle	Fijo y largo Fixet long Fixed & long	Móvil y corto Mobile et court Moving & short		Fijo y largo Fixet long Fixed & long	Móvil y corto Mobile et court Moving & short	Alturas más comunes Hauteurs communes Most common heights	Espeor Épaisseur Thickness
HIGELAND	TR0	66	58	0 °			32 - 40	20
	TR1	95	85	0 °			25,4 - 31,8 - 38 - 42 - 48 - 52	25
	TR2	130	115	0 °			25,4 - 31,75 - 44,5 - 52 - 62	30
	TR3	150	130	0 °			31,75 - 51 - 58 - 65 - 83	35
	TR4	170	150	0 °			31,8 - 51 - 68 - 83 - 105	40
	TR5	210	190	0 °			83 - 105	50
	TR6	255	230	0 °			83 - 105 - 115	55
INGRAMATIC	RP0	66	58	0 °			32 - 40	20
	RP1	95	85	0 °			25,4 - 31,8 - 38 - 42 - 48 - 52	25
	RP2	130	115	0 °			25,4 - 31,8 - 44,5 - 52 - 62 - 83	30
	RP3	150	130	0 °			31,8 - 50,8 - 58 - 65 - 83 - 105	35
	RP3L	170	150	0 °			50,8 - 58 - 65 - 83 - 105	35
	RP4	170	150	0 °			58 - 65 - 83 - 105	30
	RP5	210	190	0 °			83 - 100 - 105	35
	RP6	255	230	0 °			83 - 105 - 117,5	50
KAYSER	PHCV	70	60	0 °			35	25
	N1	89,5	69,8	0 °			38,1	20,5
	PICU	120	100	0 °			48	40
	N3	130	115	0 °			48	30
	PKCU	150	150	0 °			65	50
	PLCU	190	190	0 °			85	50
	PMCU	220	220	0 °			85	50
MANVILLE	OC-130C	82,6	69,9	5 °	86,2	73,5	31,8 - 41,3	20,6
	2B - 2C	127	108	5 °	131,2	112,2	41,3 - 50,8 - 54 - 66,7	23,8
	250C	146	127	5 °	150,2	131,2	54	23,8
	3B - 3C - 375C	171,5	152,4	5 °	176,8	157,7	41,3 - 54 - 50,8 - 63,5 - 66,5 - 76,2	30,2
	4B - 500C	215,9	190,5	5 °	222,3	196,9	54 - 69,9 - 76,2 - 104,8	36,5
	5B - 625C	254	228,6	5 °	261,5	236,1	66,7 - 82,6 - 104,8 - 117,5	42,9
	6B - 750C	304,8	279,4	5 °	313,4	288,0	66,7 - 88,9 - 104,8 - 117,5 - 130,2	49,2
	7B	406,4	381	5 °	416,1	390,7	57,2 - 82,6 - 114,3 - 130,2	55,6
MALMEDIE	AG3,5	66	58	0 °			32 - 40	20
	AG5	95	85	0 °			38 - 42 - 54	25
	AG6,5	130	115	0 °			48	30
	AG8	150	130	0 °			58 - 65 - 80 - 105	35
	AG10	170	150	0 °			68	40
	AG13	210	190	0 °			83 - 105	50
	AG20	315	290	0 °			125	60
NEDSCHROEF	BV2-HTP2	146	127	5 °	148,8	129,8	25,4 - 31,7 - 38,1 - 44,4	15,9
	BV3-HTP3	171,5	152,4	0 °	174,3	155,2	31,7 - 38,1 - 44,5 - 50,8 - 66,7	15,9
	BV4-HTP4	215,9	190,5	0 °	219,5	194,1	38,1 - 50,8 - 63,5 - 76,2 - 82,6	20,6
	BV5-HTP5	254	228,5	0 °	258,2	232,7	50,8 - 63,5 - 76,2 - 104,8	23,8
	BV6-HTP6	305	279	0 °	309,4	283,4	50,8 - 63,5 - 76,2	25,4
	HTP6	304,8	279,4	0 °	313,7	288,3	50,8 - 57,2 - 63,5 - 76,2 - 82,6	51
	BV6	351,1	321,1	0 °	360,0	330,0	65 - 100 - 130	51
OMEGA	RF5	90	80	0 °			40	25
	RF6	95	85	0 °			38 - 42 - 54	25
	RA2	130	115	0 °			54 - 62 - 82 - 105	30
PELTZER EHLERS	FWK6	127	108	5 °	129,8	110,8	25,4 - 31,7 - 38	15,9
	FWK8	146	127	0 °	148,8	129,8	31,7 - 38,1 - 38	15,9
	FWK10	171,5	152,4	0 °	174,3	155,2	38,1 - 50,8 - 63,5	15,9
	FWK12	215,9	190,5	0 °	219,5	194,1	38,1 - 50,8 - 63,5	20,6
	FWK16	254	228,6	0 °	257,9	232,5	44,4 - 50,8 - 63,5	22,2
	FWK20	304,8	279,4	0 °	309,2	283,8	50,8 - 63,5 - 76,2	25,4

DIMENSIONS OF SET OF
FLAT DIES.

DIMENSIONS DES JEUX
DE PEIGNES.

DIMENSIONES DE
JUEGOS DE PEINES.



Maquina Machine	Modelo Model Modèle	I		Angulo Angle	L		A	G
		Fijo y largo Fixet long Fixed & long	Móvil y corto Mobile et court Moving & short		Fijo y largo Fixet long Fixed & long	Móvil y corto Mobile et court Moving & short	Alturas más comunes Hauteurs communes Most common heights	Esesor Épaisseur Thickness
RAT	1	130	115	0 °			48 - 51	30
	2	170	150	0 °			65 - 71	40
	3	260	130	0 °			40 - 60 - 65 - 70 - 75 - 105	45
	4	305	280	0 °			50 - 82 - 95 - 120	50
SACMA	KSO 1/R	82,6	69,9	5 °	86,2	73,5	31,8 - 41,3	20,6
	RU1 S, RU1 CL	101,6	88,9	5 °	105,2	92,5	25,4 - 31,8 - 41,3 - 50,8 - 55,6 - 67	20,6
	SP 17, SP 18	106,4	88,9	5 °	108,6	91,1	31,8 - 41,3	12,7
	SP 27	127	108	5 °	129,8	110,8	31,8 - 44,5 - 54	15,9
	RU 2, KRU 2	127	108	5 °	131,2	112,2	25,4 - 28,6 - 31,8 - 41,3 - 50,8 - 67	23,8
	SP 28	146	127	5 °	148,8	129,8	25,5 - 31,8 - 44,5 - 54	15,9
	SP 37	171,5	152,4	5 °	174,3	155,2	31,8 - 38,1 - 44,5 - 50,8 - 66,7	15,9
	SP 38 - SP 47	215,9	190,5	5 °	219,5	194,1	38,1 - 50,8 - 63,5 - 76,2 - 82,6	20,7
	SP 48	254	228,6	5 °	257,9	232,5	38,1 - 44,5 - 50,8 - 63,5 - 76,2 - 88,9	22,2
SALVI	500	100	90	0 °			50	40
	500RG	213,5	205	0 °			100	49
SASPI	GV00	45	38	0 °			28,5	12
	GV0	66	58	0 °			32	20
	GV01	95	85	0 °			38 - 42 - 54	25
	GV1 - OLS	101,6	88,9	5 °	105,2	92,5	41,3	20,6
	GV2	130	115	0 °			54 - 62 - 82 - 105	30
	GV2 - 10	127	108	5 °	131,2	112,2	41,3 - 50,8 - 54 - 66,7	23,8
	GV2 - 20	170	150	0 °			80	30
	GV3	150	130	0 °			58 - 65 - 80 - 105	35
	GV3 - 20	171,4	152,4	5 °	176,7	157,7	41,3 - 54 - 50,8 - 63,5 - 66,7 - 76,2	30,2
	GV4	170	150	0 °			40 - 63 - 68 - 105	40
	GV4 - 30	215,9	190,5	5 °	222,3	196,9	54 - 69,9 - 76,2 - 104,8	36,5
	GV5 - 40	254	228,6	5 °	261,5	236,1	66,7 - 82,6 - 104,8 - 117,5	42,9
SIMA	R6	82,6	69,9	5 °	86,2	73,5	25,4 - 31,8 - 41,3 - 66,7	20,6
	R6-L-R8	101,6	88,9	5 °	105,2	92,5	25,4 - 31,8 - 41,3 - 50,8 - 55,6 - 66,7	20,6
	R10	127	108	5 °	131,2	112,2	25,4 - 31,8 - 41,3 - 50,8 - 55,6 - 66,7	23,8
	RP4	66	58	0 °			32	20
TLM	RP6	95	85	0 °			38 - 42 - 54	25
	RP8	130	115	0 °			54 - 62 - 82 - 105	30
	RP10	150	130	0 °			58 - 65 - 80 - 105	35
	RP10 L	170	150	0 °			68 - 105	40
	P	75	70	0 °			30	30
TRIVULCIO	H	95	90	0 °			50	30
	G	130	125	0 °			50	40
URBIS	K-2HS	95	85	0 °			42	25
	K-20(n)	150	130	0 °			58	35
	K-20(r)	170	150	0 °			65	40
	K-20(e)	171,5	152,4	5 °	176,8	157,7	79,4	30,2
	K-30(n)	210	190	0 °			83	50
	K-30(e)	215,9	190,5	5 °	222,3	196,9	104,8	36,5
WATERBURY FARREL	WF000	45,2	38,1	5 °	47,3	40,2	28,5	12
	WF00	50,8	44,5	5 °	53,9	47,6	15,9 - 28,6	17,5
	WF0 / GW 32-0	82,6	69,9	5 °	86,2	73,5	19 - 25,4 - 31,8 - 42	20,6
	WF10-15	101,6	88,9	5 °	105,2	92,5	19 - 25,4 - 31,8 - 42	20,6
	WF10	127	107,9	5 °	131,2	112,1	25,4 - 28,6 - 31,8 - 41,3 - 50,8 - 66,7	23,8
	WF20	171,5	152,4	5 °	176,8	157,7	31,8 - 41,3 - 50,8 - 66,7 - 79,4	30,2
	WF30	215,9	190,5	5 °	222,3	196,9	50,8 - 69,9 - 82,6 - 104,8	36,5
	WF40	254	228,6	5 °	261,5	236,1	66,8 - 82,6 - 104,8 - 117,5	42,9
	WF50	304,8	279,4	5 °	313,4	288,0	66,7 - 82,6 - 104,8 - 117,5 - 130,2	49,2
	WF60	406,4	381	5 °	416,1	390,7	92,1 - 104,8 - 117,5 - 130,2 - 142,9	55,6
	WF70	508	482,6	5 °	518,8	493,4	92,1 - 104,8 - 117,5 - 130,2 - 142,9	61,9

OUTER DIAMETER OF CYLINDRICAL (METRIC THREAD)
DIAMÈTRE EXTÉRIEUR DES MOLETTES (FILET MÉTRIQUE).
DIAMETRO EXTERIOR DE LOS RODILLOS (ROSCA MÉTRICA).



Ø	Paso Pas Pitch		Diam. Prev.		No. Entr.	Para diámetro exterior teórico / Pour diamètre extérieur théorique For theoretical outer diameter								
						+1 Ent.	+2 Ent.	+3 Ent.	+4 Ent.	+5 Ent.	+6 Ent.	+7 Ent.	+8 Ent.	+9 Ent.
3	0,50		2,65	117	44	120	122	125	128	130	133	135	138	141
4	0,70		3,51	116	33	120	123	127	130	134	137	141	144	148
5	0,50		4,65	117	25	121	126	131	135	140	144	149	154	158
5	0,80		4,44	116	26	120	125	129	134	138	143	147	151	156
6	0,50		5,65	119	21	125	130	136	142	147	153	159	164	170
6	1,00		5,30	117	22	123	128	133	138	144	149	154	160	165
7	1,00		6,30	120	19	127	133	139	146	152	158	164	171	177
8	1,00		7,30	117	16	125	132	139	147	154	161	169	176	183
8	1,25		7,13	122	17	129	136	143	151	158	165	172	179	186
9	1,00		8,30	117	14	125	133	142	150	158	167	175	183	192
9	1,25		8,13	115	14	123	131	139	147	155	163	172	180	188
10	1,00		9,30	122	13	131	140	149	159	168	177	187	196	205
10	1,25		9,13	120	13	129	138	147	156	165	174	183	193	202
10	1,50		8,96	117	13	126	135	144	153	162	171	180	189	198
11	1,00		10,30	124	12	135	145	155	165	176	186	196	207	217
11	1,25		10,13	122	12	133	143	153	163	173	183	193	203	214
11	1,50		9,96	120	12	130	140	150	160	170	180	190	200	210
12	1,00		11,30	125	11	136	148	159	170	181	193	204	215	227
12	1,25		11,13	123	11	134	146	157	168	179	190	201	212	223
12	1,50		10,96	122	11	132	143	154	165	176	187	198	209	220
12	1,75		10,80	120	11	131	142	152	163	174	185	196	206	217
14	1,00		13,30	120	9	134	147	160	174	187	200	213	227	240
14	1,25		13,13	119	9	132	145	158	172	185	198	211	224	237
14	1,50		12,96	118	9	131	144	156	169	182	195	208	221	234
14	2,00		12,63	115	9	128	140	153	165	178	191	203	216	229
16	1,50		14,96	121	8	136	151	166	180	195	210	225	240	255
16	2,00		14,63	118	8	133	148	162	177	191	206	221	235	250
18	1,50		16,96	120	7	137	154	171	188	204	221	238	255	272
18	2,00		16,63	118	7	134	151	168	184	201	217	234	251	267
18	2,50		16,29	116	7	132	148	165	181	197	213	230	246	262
20	1,50		18,96	115	6	134	153	172	191	210	228	247	266	285
20	2,00		18,63	132	7	150	169	188	206	225	243	262	281	299
20	2,50		18,29	130	7	148	166	185	203	221	239	258	276	294
22	1,50		20,96	127	6	148	169	190	211	232	252	273	294	
22	2,00		20,62	125	6	146	166	187	208	228	249	269	290	
22	2,50		20,29	123	6	144	164	184	205	225	245	265	286	
24	1,50		22,96	116	5	139	162	185	208	231	254	276	299	
24	2,00		22,62	137	6	160	182	205	228	250	273	295		
24	3,00		21,96	134	6	156	178	200	222	244	265	287		
26	1,50		24,96	126	5	151	176	201	226	251	276	300		
26	2,00		24,62	124	5	149	174	198	223	248	272	297		
27	2,00		25,62	129	5	155	181	206	232	258	283	309		
27	3,00		24,96	127	5	152	177	202	227	252	277	301		
28	1,50		26,95	136	5	163	190	217	244	270	297			
28	2,00		26,62	134	5	161	188	214	241	268	294			
28	3,00		25,96	132	5	158	184	210	236	262	288			
30	1,50		28,95	146	5	175	204	233	262	290				
30	2,00		28,62	144	5	173	202	230	259	288				
30	3,00		27,96	142	5	170	198	226	254	282				
30	3,50		27,63	140	5	168	196	223	251	279				
32	2,00		30,62	154	5	185	216	246	277	308				
32	3,00		29,96	152	5	182	212	242	272	302				
33	3,50		30,62	155	5	186	217	247	278	308				
36	4,00		33,29	136	4	169	202	236	269	302				
38	1,50		36,95	149	4	186	223	260	297					
39	4,00		36,29	148	4	184	220	257	293					
40	1,50		38,95	157	4	196	235	274	313					
40	4,00		37,29	152	4	189	226	264	301					
42	4,50		38,96	120	3	159	198	237	276					
45	4,50		41,96	129	3	171	213	255	297					
48	5,00		44,63	137	3	182	226	271						
52	5,00		48,62	149	3	198	246	295						
56	5,50		52,29	160	3	213	265							
60	5,50		56,29	172	3	229	285							
64	6,00		59,96	184	3	244	304							

OUTER DIAMETER OF CYLINDRICAL (UNC/UNF THREAD)
 DIAMÈTRE EXTÉRIEUR DES MOLETTES (FILET UNC/UNF).
 DIAMETRO EXTERIOR DE LOS RODILLOS (ROSCA UNC/UNF).



Ø	Paso Pas Pitch	Ø mm	P mm	Diam. Prev. mm		No.	Para diámetro exterior teórico / Pour diamètre extérieur theorique For theoretical outer diameter								
							Entr.	+1 Ent.	+2 Ent.	+3 Ent.	+4 Ent.	+5 Ent.	+6 Ent.	+7 Ent.	+8 Ent.
Nº4	44	3,18	0,58	2,78	117	42	120	123	125	128	131	134	137	139	142
Nº5	40	3,18	0,64	2,74	115	42	118	121	124	126	129	132	135	137	140
Nº6	40	3,51	0,64	3,07	117	38	120	123	126	129	132	135	139	142	145
Nº6	32	3,51	0,79	2,97	116	39	119	122	125	128	131	134	137	140	143
Nº8	36	4,17	0,71	3,68	118	32	122	126	129	133	137	140	144	148	151
Nº8	32	4,17	0,79	3,62	116	32	120	124	127	131	134	138	142	145	149
Nº10	32	4,83	0,79	4,28	116	27	120	125	129	133	137	142	146	150	155
Nº10	24	4,83	1,06	4,10	115	28	120	124	128	132	136	140	144	148	152
Nº12	28	5,49	0,91	4,86	117	24	122	127	132	137	142	146	151	156	161
Nº12	24	5,49	1,06	4,76	115	24	120	124	129	134	139	143	148	153	158
1/4	32	6,35	0,79	5,80	117	20	122	128	134	140	146	151	157	163	169
1/4	28	6,35	0,91	5,72	115	20	121	126	132	138	144	149	155	161	166
1/4	20	6,35	1,27	5,48	116	21	121	127	132	138	143	149	154	160	165
5/16	24	7,94	1,06	7,21	116	16	123	130	138	145	152	159	167	174	181
5/16	18	7,94	1,41	6,98	120	17	127	134	141	147	154	161	168	175	182
3/8	24	9,53	1,06	8,80	115	13	124	133	141	150	159	168	177	185	194
3/8	16	9,53	1,59	8,45	119	14	128	136	145	153	162	170	178	187	195
7/16	28	11,11	0,91	10,48	116	11	126	137	147	158	168	179	189	200	210
7/16	20	11,11	1,27	10,24	124	12	134	144	154	165	175	185	195	206	216
7/16	14	11,11	1,81	9,88	120	12	130	139	149	159	169	179	189	199	209
1/2	28	12,70	0,91	12,07	121	10	133	145	158	170	182	194	206	218	230
1/2	20	12,70	1,27	11,83	119	10	131	143	155	166	178	190	202	214	226
1/2	13	12,70	1,95	11,38	126	11	138	149	161	172	183	195	206	217	229
9/16	18	14,29	1,41	13,33	121	9	134	148	161	174	188	201	214	228	241
9/16	12	14,29	2,12	12,86	130	10	143	156	169	181	194	207	220	233	246
5/8	24	15,88	1,06	15,15	122	8	137	152	167	182	198	213	228	243	258
5/8	18	15,88	1,41	14,91	120	8	135	150	165	180	195	210	225	239	254
5/8	11	15,88	2,31	14,32	130	9	145	159	173	188	202	216	231	245	259
3/4	20	19,05	1,27	18,18	128	7	146	164	183	201	219	237	255	274	292
3/4	16	19,05	1,59	17,96	127	7	145	163	181	199	217	235	252	270	288
3/4	10	19,05	2,54	17,34	123	7	140	158	175	192	210	227	244	262	279
7/8	14	22,23	1,81	21,00	127	6	148	169	190	211	232	253	274	295	
7/8	9	22,23	2,82	20,34	124	6	144	165	185	205	226	246	266	287	
15/16	20	23,81	1,27	22,93	115	5	138	161	184	207	230	253	276	299	
1"	20	25,40	1,27	24,52	123	5	148	172	197	222	246	271	295		
1"	12	25,40	2,12	23,96	121	5	145	169	193	217	241	265	289		
1"	8	25,40	3,18	23,27	142	6	165	188	211	235	258	281	305		
1"1/16	18	26,99	1,41	26,02	131	5	157	183	209	235	261	287			
1"1/8	12	28,58	2,12	27,14	137	5	164	191	218	246	273	300			
1"1/8	7	28,58	3,63	26,16	133	5	159	185	212	238	264	290			
1"3/16	18	30,16	1,41	29,19	147	5	176	205	234	264	293				
1"1/4	18	31,75	1,41	30,78	124	4	155	186	216	247	278	309			
1"1/4	12	31,75	2,12	30,31	123	4	153	183	214	244	274	304			
1"1/4	7	31,75	3,63	29,33	120	4	149	178	208	237	266	296			
1"5/16	18	33,34	1,41	32,37	130	4	163	195	228	260	292				
1"3/8	18	34,93	1,41	33,96	137	4	171	205	239	273	307				
1"3/8	12	34,93	2,12	33,49	135	4	169	202	236	269	303				
1"3/8	6	34,93	4,23	32,11	131	4	163	195	228	260	292				
1"7/16	18	36,51	1,41	35,53	143	4	179	214	250	285					
1"1/2	18	38,10	1,41	37,12	149	4	187	224	261	298					
1"1/2	12	38,10	2,12	36,66	148	4	185	221	258	295					
1"1/2	6	38,10	4,23	35,28	144	4	179	214	250	285					
1"9/16	18	39,69	1,41	38,71	156	4	194	233	272	311					
1"5/8	18	41,28	1,41	40,30	122	3	162	202	243	283					
1"11/16	18	42,86	1,41	41,88	127	3	168	210	252	294					
1"3/4	5	44,45	5,08	41,07	127	3	168	209	250	291					
2"	4,5	50,80	5,64	47,06	145	3	192	239	286						
2"1/4	4,5	57,15	5,64	53,40	164	3	217	271							
2"1/2	4	63,50	6,35	59,29	123	2	182	241	301						
2"3/4	4	69,85	6,35	65,64	135	2	201	267							
3"	4	76,20	6,35	71,98	148	2	220	292							
3"1/4	4	82,55	6,35	78,33	161	2	239	317							
3"1/2	4	88,90	6,35	84,68	173	2	258								
3-3/4	4	95,25	6,35	91,02	186	2	277								
4"	4	101,60	6,35	97,37	199	2	296								

OUTER DIAMETER OF CYLINDRICAL (UNC/UNF THREAD)
 DIAMÈTRE EXTÉRIEUR DES MOLETTES (FILET UNC/UNF).
 DIÁMETRO EXTERIOR DE LOS RODILLOS (ROSCA UNC/UNF).



Ø	Paso Pas Pitch	Ø mm	P mm	Diam. Prev. mm		No.	Para diámetro exterior teórico / Pour diamètre extérieur theorique For theoretical outer diameter								
							Entr.	+1 Ent.	+2 Ent.	+3 Ent.	+4 Ent.	+5 Ent.	+6 Ent.	+7 Ent.	+8 Ent.
Nº4	44	3,18	0,58	2,78	117	42	120	123	125	128	131	134	137	139	142
Nº5	40	3,18	0,64	2,74	115	42	118	121	124	126	129	132	135	137	140
Nº6	40	3,51	0,64	3,07	117	38	120	123	126	129	132	135	139	142	145
Nº6	32	3,51	0,79	2,97	116	39	119	122	125	128	131	134	137	140	143
Nº8	36	4,17	0,71	3,68	118	32	122	126	129	133	137	140	144	148	151
Nº8	32	4,17	0,79	3,62	116	32	120	124	127	131	134	138	142	145	149
Nº10	32	4,83	0,79	4,28	116	27	120	125	129	133	137	142	146	150	155
Nº10	24	4,83	1,06	4,10	115	28	120	124	128	132	136	140	144	148	152
Nº12	28	5,49	0,91	4,86	117	24	122	127	132	137	142	146	151	156	161
Nº12	24	5,49	1,06	4,76	115	24	120	124	129	134	139	143	148	153	158
1/4	32	6,35	0,79	5,80	117	20	122	128	134	140	146	151	157	163	169
1/4	28	6,35	0,91	5,72	115	20	121	126	132	138	144	149	155	161	166
1/4	20	6,35	1,27	5,48	116	21	121	127	132	138	143	149	154	160	165
5/16	24	7,94	1,06	7,21	116	16	123	130	138	145	152	159	167	174	181
5/16	18	7,94	1,41	6,98	120	17	127	134	141	147	154	161	168	175	182
3/8	24	9,53	1,06	8,80	115	13	124	133	141	150	159	168	177	185	194
3/8	16	9,53	1,59	8,45	119	14	128	136	145	153	162	170	178	187	195
7/16	28	11,11	0,91	10,48	116	11	126	137	147	158	168	179	189	200	210
7/16	20	11,11	1,27	10,24	124	12	134	144	154	165	175	185	195	206	216
7/16	14	11,11	1,81	9,88	120	12	130	139	149	159	169	179	189	199	209
1/2	28	12,70	0,91	12,07	121	10	133	145	158	170	182	194	206	218	230
1/2	20	12,70	1,27	11,83	119	10	131	143	155	166	178	190	202	214	226
1/2	13	12,70	1,95	11,38	126	11	138	149	161	172	183	195	206	217	229
9/16	18	14,29	1,41	13,33	121	9	134	148	161	174	188	201	214	228	241
9/16	12	14,29	2,12	12,86	130	10	143	156	169	181	194	207	220	233	246
5/8	24	15,88	1,06	15,15	122	8	137	152	167	182	198	213	228	243	258
5/8	18	15,88	1,41	14,91	120	8	135	150	165	180	195	210	225	239	254
5/8	11	15,88	2,31	14,32	130	9	145	159	173	188	202	216	231	245	259
3/4	20	19,05	1,27	18,18	128	7	146	164	183	201	219	237	255	274	292
3/4	16	19,05	1,59	17,96	127	7	145	163	181	199	217	235	252	270	288
3/4	10	19,05	2,54	17,34	123	7	140	158	175	192	210	227	244	262	279
7/8	14	22,23	1,81	21,00	127	6	148	169	190	211	232	253	274	295	
7/8	9	22,23	2,82	20,34	124	6	144	165	185	205	226	246	266	287	
15/16	20	23,81	1,27	22,93	115	5	138	161	184	207	230	253	276	299	
1"	20	25,40	1,27	24,52	123	5	148	172	197	222	246	271	295		
1"	12	25,40	2,12	23,96	121	5	145	169	193	217	241	265	289		
1"	8	25,40	3,18	23,27	142	6	165	188	211	235	258	281	305		
1"1/16	18	26,99	1,41	26,02	131	5	157	183	209	235	261	287			
1"1/8	12	28,58	2,12	27,14	137	5	164	191	218	246	273	300			
1"1/8	7	28,58	3,63	26,16	133	5	159	185	212	238	264	290			
1"3/16	18	30,16	1,41	29,19	147	5	176	205	234	264	293				
1"1/4	18	31,75	1,41	30,78	124	4	155	186	216	247	278	309			
1"1/4	12	31,75	2,12	30,31	123	4	153	183	214	244	274	304			
1"1/4	7	31,75	3,63	29,33	120	4	149	178	208	237	266	296			
1"5/16	18	33,34	1,41	32,37	130	4	163	195	228	260	292				
1"3/8	18	34,93	1,41	33,96	137	4	171	205	239	273	307				
1"3/8	12	34,93	2,12	33,49	135	4	169	202	236	269	303				
1"3/8	6	34,93	4,23	32,11	131	4	163	195	228	260	292				
1"7/16	18	36,51	1,41	35,53	143	4	179	214	250	285					
1"1/2	18	38,10	1,41	37,12	149	4	187	224	261	298					
1"1/2	12	38,10	2,12	36,66	148	4	185	221	258	295					
1"1/2	6	38,10	4,23	35,28	144	4	179	214	250	285					
1"9/16	18	39,69	1,41	38,71	156	4	194	233	272	311					
1"5/8	18	41,28	1,41	40,30	122	3	162	202	243	283					
1"11/16	18	42,86	1,41	41,88	127	3	168	210	252	294					
1"3/4	5	44,45	5,08	41,07	127	3	168	209	250	291					
2"	4,5	50,80	5,64	47,06	145	3	192	239	286						
2"1/4	4,5	57,15	5,64	53,40	164	3	217	271							
2"1/2	4	63,50	6,35	59,29	123	2	182	241	301						
2"3/4	4	69,85	6,35	65,64	135	2	201	267							
3"	4	76,20	6,35	71,98	148	2	220	292							
3"1/4	4	82,55	6,35	78,33	161	2	239	317							
3"1/2	4	88,90	6,35	84,68	173	2	258								
3-3/4	4	95,25	6,35	91,02	186	2	277								
4"	4	101,60	6,35	97,37	199	2	296								

OUTER DIAMETER OF CYLINDRICAL (BSW-BSF THREAD).
 DIAMÈTRE EXTÉRIEUR DES MOLETTES (FILET BSW-BSF).
 DIÁMETRO EXTERIOR DE LOS RODILLOS (ROSCA BSW-BSF).

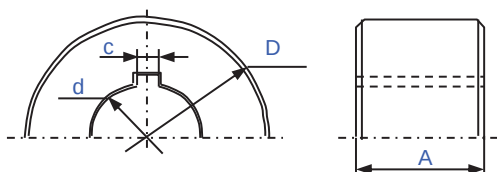


Ø	Paso Pas Pitch	Ø mm	P mm	Diam. Prev. mm		No. Entr.	Para diámetro exterior teórico / Pour diamètre extérieur theorique For theoretical outer diameter								
							+1 Ent.	+2 Ent.	+3 Ent.	+4 Ent.	+5 Ent.	+6 Ent.	+7 Ent.	+8 Ent.	+9 Ent.
1/8	40	3,18	0,64	2,74	115	42	118	121	124	126	129	132	135	137	140
5/32	32	3,97	0,79	3,42	117	34	120	124	127	130	134	137	141	144	148
3/16	24	4,76	1,06	4,03	118	29	122	126	130	134	138	142	146	150	154
7/32	28	5,56	0,91	4,93	119	24	124	129	134	139	144	148	153	158	163
7/32	24	5,56	1,06	4,83	117	24	121	126	131	136	141	146	150	155	160
1/4	26	6,35	0,98	5,68	120	21	126	131	137	143	148	154	160	165	171
1/4	20	6,35	1,27	5,48	116	21	121	127	132	138	143	149	154	160	165
9/32	25	7,14	1,02	6,44	117	18	123	129	136	142	149	155	162	168	175
5/16	22	7,94	1,15	7,15	115	16	122	129	137	144	151	158	165	172	179
5/16	18	7,94	1,41	6,98	120	17	127	134	141	147	154	161	168	175	182
3/8	20	9,53	1,27	8,66	122	14	131	139	148	157	165	174	183	191	200
3/8	16	9,53	1,59	8,45	119	14	128	136	145	153	162	170	178	187	195
7/16	18	11,11	1,41	10,15	123	12	133	143	153	163	173	184	194	204	214
7/16	14	11,11	1,81	9,88	120	12	130	139	149	159	169	179	189	199	209
1/2	16	12,70	1,59	11,62	117	10	129	140	152	164	175	187	199	210	222
1/2	12	12,70	2,12	11,27	125	11	137	148	159	170	182	193	204	216	227
9/16	16	14,29	1,59	13,21	120	9	133	146	160	173	186	199	212	226	239
9/16	12	14,29	2,12	12,86	130	10	143	156	169	181	194	207	220	233	246
5/8	14	15,88	1,81	14,65	133	9	148	162	177	192	206	221	236	250	265
5/8	11	15,88	2,31	14,32	130	9	145	159	173	188	202	216	231	245	259
11/16	14	17,46	1,81	16,23	131	8	147	163	180	196	212	228	245	261	277
11/16	11	17,46	2,31	15,90	129	8	145	161	176	192	208	224	240	256	272
3/4	12	19,05	2,12	17,62	125	7	142	160	178	195	213	230	248	266	283
3/4	10	19,05	2,54	17,34	123	7	140	158	175	192	210	227	244	262	279
13/16	12	20,63	2,12	19,20	136	7	155	174	193	213	232	251	270	289	309
7/8	11	22,23	2,31	20,67	126	6	146	167	188	208	229	250	270	291	312
7/8	9	22,23	2,82	20,34	124	6	144	165	185	205	226	246	266	287	307
1"	10	25,40	2,54	23,69	120	5	144	167	191	215	239	262	286	310	
1"	8	25,40	3,18	23,27	118	5	142	165	188	211	235	258	281	305	
1"1/8	9	28,58	2,82	26,68	135	5	162	189	215	242	269	295			
1"1/8	7	28,58	3,63	26,16	107	4	133	159	185	212	238	264	290		
1"1/4	9	31,75	2,82	29,85	121	4	151	181	211	241	270	300			
1"1/4	7	31,75	3,63	29,33	120	4	149	178	208	237	266	296			
1"3/8	8	34,93	3,18	32,80	133	4	166	199	232	264	297				
1"3/8	6	34,93	4,23	32,11	131	4	163	195	228	260	292				
1"1/2	8	38,10	3,18	35,97	146	4	182	218	254	290					
1"1/2	6	38,10	4,23	35,28	144	4	179	214	250	285					
1"5/8	8	41,28	3,18	39,14	159	4	198	237	276						
1"5/8	5	41,28	5,08	37,91	155	4	193	231	269	307					
1"3/4	7	44,45	3,63	42,02	128	3	170	212	254	296					
1"3/4	5	44,45	5,08	41,07	127	3	168	209	250	291					
1"7/8	4,5	47,63	5,64	43,89	135	3	179	223	267	311					
2"	7	50,80	3,63	48,37	147	3	196	244	293						
2"	4,5	50,80	5,64	47,06	145	3	192	239	286						
2"1/4	4	57,14	6,35	52,93	163	3	216	269							
2"1/2	4	63,50	6,35	59,29	123	2	182	241	301						
2"3/4	3,5	69,85	7,26	65,04	135	2	200	265							
3"	3,5	76,11	7,26	71,30	147	2	219	290							
3"1/4	3,25	82,55	7,82	77,37	160	2	237	315							
3"1/2	3,25	88,90	7,28	84,07	173	2	257								
3"3/4	3	95,25	8,47	89,64	185	2	274								
4"	3	101,60	8,47	95,99	197	2	293								
4"1/4	2,88	107,95	8,82	102,11	210	2	312								
4"1/2	2,88	114,30	8,82	108,46	114	1	223								
4"3/4	2,75	120,66	9,24	114,54	121	1	235								
5"	2,75	127,01	9,24	120,89	127	1	248								
5"1/4	2,63	133,36	9,66	126,96	133	1	260								
5"1/2	2,63	139,71	9,66	133,31	140	1	273								
5"3/4	2,5	146,06	10,16	139,33	146	1	285								
6"	2,5	152,41	10,16	145,68	152	1	298								

OUTER DIAMETER OF CYLINDRICAL (BSW-BSF THREAD).
 DIAMÈTRE EXTÉRIEUR DES MOLETTES (FILET BSW-BSF).
 DIAMETRO EXTERIOR DE LOS RODILLOS (ROSCA BSW-BSF).



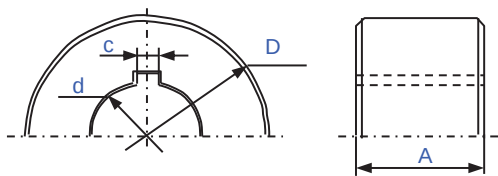
Ø	Paso Pas Pitch	Ø mm	P mm	Diam. Prev. mm		No. Entr.	Para diámetro exterior teórico / Pour diamètre extérieur théorique For theoretical outer diameter									
							+1 Ent.	+2 Ent.	+3 Ent.	+4 Ent.	+5 Ent.	+6 Ent.	+7 Ent.	+8 Ent.	+9 Ent.	
1/8	40	3,18	0,64	2,74	115	42	118	121	124	126	129	132	135	137	140	
5/32	32	3,97	0,79	3,42	117	34	120	124	127	130	134	137	141	144	148	
3/16	24	4,76	1,06	4,03	118	29	122	126	130	134	138	142	146	150	154	
7/32	28	5,56	0,91	4,93	119	24	124	129	134	139	144	148	153	158	163	
7/32	24	5,56	1,06	4,83	117	24	121	126	131	136	141	146	150	155	160	
1/4	26	6,35	0,98	5,68	120	21	126	131	137	143	148	154	160	165	171	
1/4	20	6,35	1,27	5,48	116	21	121	127	132	138	143	149	154	160	165	
9/32	25	7,14	1,02	6,44	117	18	123	129	136	142	149	155	162	168	175	
5/16	22	7,94	1,15	7,15	115	16	122	129	137	144	151	158	165	172	179	
5/16	18	7,94	1,41	6,98	120	17	127	134	141	147	154	161	168	175	182	
3/8	20	9,53	1,27	8,66	122	14	131	139	148	157	165	174	183	191	200	
3/8	16	9,53	1,59	8,45	119	14	128	136	145	153	162	170	178	187	195	
7/16	18	11,11	1,41	10,15	123	12	133	143	153	163	173	184	194	204	214	
7/16	14	11,11	1,81	9,88	120	12	130	139	149	159	169	179	189	199	209	
1/2	16	12,70	1,59	11,62	117	10	129	140	152	164	175	187	199	210	222	
1/2	12	12,70	2,12	11,27	125	11	137	148	159	170	182	193	204	216	227	
9/16	16	14,29	1,59	13,21	120	9	133	146	160	173	186	199	212	226	239	
9/16	12	14,29	2,12	12,86	130	10	143	156	169	181	194	207	220	233	246	
5/8	14	15,88	1,81	14,65	133	9	148	162	177	192	206	221	236	250	265	
5/8	11	15,88	2,31	14,32	130	9	145	159	173	188	202	216	231	245	259	
11/16	14	17,46	1,81	16,23	131	8	147	163	180	196	212	228	245	261	277	
11/16	11	17,46	2,31	15,90	129	8	145	161	176	192	208	224	240	256	272	
3/4	12	19,05	2,12	17,62	125	7	142	160	178	195	213	230	248	266	283	
3/4	10	19,05	2,54	17,34	123	7	140	158	175	192	210	227	244	262	279	
13/16	12	20,63	2,12	19,20	136	7	155	174	193	213	232	251	270	289	309	
7/8	11	22,23	2,31	20,67	126	6	146	167	188	208	229	250	270	291	312	
7/8	9	22,23	2,82	20,34	124	6	144	165	185	205	226	246	266	287	307	
1"	10	25,40	2,54	23,69	120	5	144	167	191	215	239	262	286	310		
1"	8	25,40	3,18	23,27	118	5	142	165	188	211	235	258	281	305		
1 1/8"	9	28,58	2,82	26,68	135	5	162	189	215	242	269	295				
1 1/8"	7	28,58	3,63	26,16	107	4	133	159	185	212	238	264	290			
1 1/4"	9	31,75	2,82	29,85	121	4	151	181	211	241	270	300				
1 1/4"	7	31,75	3,63	29,33	120	4	149	178	208	237	266	296				
1 3/8"	8	34,93	3,18	32,80	133	4	166	199	232	264	297					
1 3/8"	6	34,93	4,23	32,11	131	4	163	195	228	260	292					
1 1/2"	8	38,10	3,18	35,97	146	4	182	218	254	290						
1 1/2"	6	38,10	4,23	35,28	144	4	179	214	250	285						
1 5/8"	8	41,28	3,18	39,14	159	4	198	237	276							
1 5/8"	5	41,28	5,08	37,91	155	4	193	231	269	307						
1 3/4"	7	44,45	3,63	42,02	128	3	170	212	254	296						
1 3/4"	5	44,45	5,08	41,07	127	3	168	209	250	291						
1 7/8"	4,5	47,63	5,64	43,89	135	3	179	223	267	311						
2"	7	50,80	3,63	48,37	147	3	196	244	293							
2"	4,5	50,80	5,64	47,06	145	3	192	239	286							
2 1/4"	4	57,14	6,35	52,93	163	3	216	269								
2 1/2"	4	63,50	6,35	59,29	123	2	182	241	301							
2 3/4"	3,5	69,85	7,26	65,04	135	2	200	265								
3"	3,5	76,11	7,26	71,30	147	2	219	290								
3 1/4"	3,25	82,55	7,82	77,37	160	2	237	315								
3 1/2"	3,25	88,90	7,28	84,07	173	2	257									
3 3/4"	3	95,25	8,47	89,64	185	2	274									
4"	3	101,60	8,47	95,99	197	2	293									
4 1/4"	2,88	107,95	8,82	102,11	210	2	312									
4 1/2"	2,88	114,30	8,82	108,46	114	1	223									
4 3/4"	2,75	120,66	9,24	114,54	121	1	235									
5"	2,75	127,01	9,24	120,89	127	1	248									
5 1/4"	2,63	133,36	9,66	126,96	133	1	260									
5 1/2"	2,63	139,71	9,66	133,31	140	1	273									
5 3/4"	2,5	146,06	10,16	139,33	146	1	285									
6"	2,5	152,41	10,16	145,68	152	1	298									



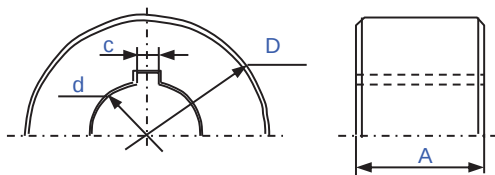
DIMENSIONS SET OF
THREADING ROLLERS
DIMENSIONS DES JEUX
DE ROULEAUX.
DIMENSIONES DE JUEGOS
DE RODILLOS.

Maquina Machine	MODELO Model Modèle	D _{máx}	A _{máx}	d	c	Juego Set Jeu
ALONSO	P 10	170	90	54	12	2
	P 15	170	130	54	12	2
	P 25	195	220	69,85	12,7	2
	P 25 A	195	220	69,85	12,7	2
BSA	Nº 3	190	160	69,85	12,7	2
COMPORESI	RB 7	120	60	28	8	2
ESCOFIER	H 12	170	130	54	12	2
	H 24	220	160	68,85	12,7	2
	H 30	220	260	69,85	12,7	2
	H 80	300	300	120	32	2
GROB	RM 28X	80	70	28	6	2
	RM 54A	150	160	54	12	2
IZPE	RSC 300	160	120	54	12	2
	RSC 300H	220	200	54	12	2
KINEFAC	MC 5F	100	65	38,1		2
	MC 5F	100	90	50,8		2
	MC 25F	150	114	50,8		2
	MC 50	230	180	76,2		2
LANDIS	UN	115	60	38,1		2
	HY	220	150	50,8		2
	32 T	220	150	50,8		2
	HY	300	260	76,2		2
MAGNACHI	T 12	175	200	54	12	2
	T 30	215	280	69,85	12,7	2
MAPRE	2 B	110	130	54	12	2
	3 B	190	150	69,85	12,7	2
NISSEI	FA 3S	60	30	26,05		2
	FA 5S	100	50	40		2
	FA 10	140	80	54		2
	FA 16	160	150	54		2
ORT	RTM 10H	135	60	40	12	2
	RTM 18H	185	150	54	12	2
	RTM 30H	195	200	69,85	12,7	2
	RTM 50H	235	220	80	16	2
	RTM 75H	300	300	100		2
	RTM 100H	315	330	100		2
	3 RP8	80	150	28	6	2
	18 B	185	150	40	12	2
	3 RP15	175	80	69,85	12,7	2
	3 RP42	215	150	80	16	2
	RP 50	215	150	80	16	2
	RP 75	300	200	80	16	2
	2RTM 20H		150	54	12	2
	2RTM 30H		200	68,85	12,7	2

DIMENSIONS SET OF
THREADING ROLLERS
DIMENSIONS DES JEUX
DE ROULEAUX.
DIMENSIONES DE JUEGOS
DE RODILLOS.



Maquina Machine	MODELO Model Modèle	D _{máx}	A _{máx}	d	c	Juego Set Jeu
ORT	2RTM 50H		220	80	16	2
	2RTM 65H		250	80	16	2
	2RTM 80H		280	100		2
	2RTM 100H		300	100		2
	2RTM 120H		320	120		2
	2RTM 150H		350	150		2
	3RTM 10H	80	60	28		3
	3RTM 18H	175	80	40	12	3
	3RTM 24H	185	90	69,85	12,7	3
	3RTM 48H	200	140	69,85	12,7	3
	3RTM 60H	210	140	80	16	3
	3RTM 75H	210	140	80	16	3
	3RTM 90H	300	200	100		3
	3RTM 120H	300	220	120		3
	3RTM 150H	330	270	120		3
PEE WEE	P 5	120	40	40	10	2
	P 12	195	130	54	12	2
	P 20	195	160	54	12	2
	P 15	200	160	69,85	12,7	2
	P 24	195	150	69,85	12,7	2
	P 25	195	150	69,85	12,7	2
	P 50	260	260	92	estriado	2
REED	A 25	152	80	25,4 - 38,1	6,35	2
	B 112	150	80	54		2
	B 210	140	80	54		2
	B 220	200	150	54		2
	B 230	300	300	79,4		2
	B 250	250	300	100		2
SENY	5	110	60	40	12	2
	10	180	120	54	12	2
	20	200	180	54 - 69,85	12 - 12,70	2
	24	230	200	69,85	12,7	2
	30	260	225	80 - 100	16 -	2
	40	260	225	80 - 100	16 -	2
	50	280	250	100		2
	60	280	250	100		2
	85	280	230	100		2
	100	280	240	100 - 120		2
	D 25	125	50	40	12	2
	D 30	100	50	40	12	2
	D 40H	120	70	40	12	2
	D 44H	120	80	40	12	2
	D 50H	170	100	54	12	2
	D 75B	170	160	54	12	2



**DIMENSIONS SET OF
THREADING ROLLERS
DIMENSIONS DES JEUX
DE ROULEAUX.
DIMENSIONES DE JUEGOS
DE RODILLOS.**

Maquina Machine	MODELO Model Modèle	D _{máx}	A _{máx}	d	c	Juego Set Jeu
STEINLE	N 01	132	80	68,85	6,35	2
THOMMEN	G 07	95	55	28	6	2
	G 15	150	130	54	12	2
	G 17	148	130	54	12	3
TESKER	175	115	65	31,75	varios	2
	200	127	85	varios	"	2
	215	152	115	"	"	2
	320	203	140	"	"	2
	425	203	200	76,2	"	2
	635	254	205	varios	"	2
	840	400	380	139,7		2
TSUGAMI	T 15	180	150	54	12	2
	T 20D	200	180	70		2
	T 25D	210	300	85	18	2
UPW	6.3 X 40	140	58	54	12	2
	12.5 X 70	195	125	63	12	2
	25 X 100	230	180	80	16	2
	31.5 X 100	195	160	80	16	2
YIEH CHEN	30 A	80	40	25,4	6,35	3
	60 A - AP	140	50	40	12	3
	420	150	80	54	12	2
	530	180	150	54	12	2

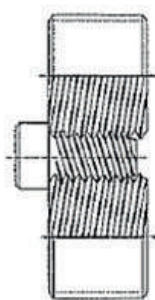
To respond to your needs and expectations, please provide us with all the information about the tool and the work to be done. For this, fill out the form and attach a technical drawing of the workpiece.

Pour pouvoir répondre à vos besoins et attentes, s'il vous plaît nous fournir toutes les informations sur l'outil et le travail à faire. Pour ça, remplissez le formulaire et joindre un dessin technique de la pièce à fabriquer.

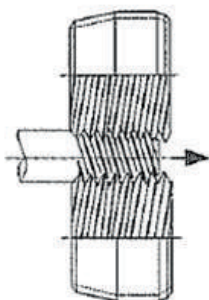
Para poder responder a sus necesidades y expectativas, rogamos nos facilite el máximo de información sobre la herramienta que precisa y el trabajo a realizar con ella. Para ello, rellene el formulario técnico y adjunte un plano de la pieza a fabricar.



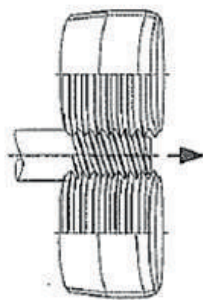
1.- DIMENSIONES Y MAQUINA / DIMENSIONS AND MACHINE



PLONGEE
IN-FEED

☐


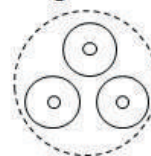
ENFILADA / THROUGH FEED / ENFILADE
HELICOIDAL

☐


ENFILADA / THROUGH FEED / ENFILADE
CIRCULAR

☐

Juegos de 3 / Set of 3 / Jeux à 3

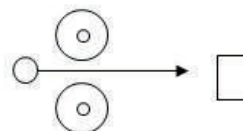

☐

Type AXIAL

☐

Type RADIAL

Juegos de 2 / Set of 2 / Jeux à 2


☐

Máquina/Machine

Potencia/Powder/Puissance

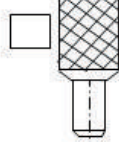
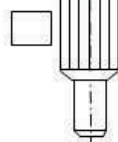
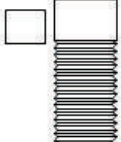
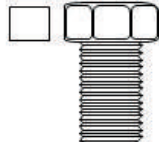
Tn

Cabezal / Tête / Head

2.- TORNILLO / SCREW / VIS



Trapezoidal / Trapezoidal



Otros / Others / Autres

Muestra/Sample/Echantillon

2.1- Plano ó norma / Plan ou norme / Drawing or norm

2.2- Tipo de rosca:

Type de filet:
Type of thread:

☐

M-MF-UNC-UNF
BSW-BSF- ...

☐

Según croquis adjunto / Attached drawing / Dessin ci-joint

2.3- Medidas del tornillo / Screw dimensions / Dimensions du vis

2.4- Material / Material / Matière

Resistencia/Tensile/Resistance
N/mm²:

2.5- Estado / State / Etat:

Sin tratar / Untreated
Non traité

☐

Tratado / Traité / Treated

☐

Dureza / Hardness / Dureté (HB):

3.- HERRAMIENTA ACTUAL / CURRENT TOOL / OUTIL ACTUEL

3.1- Herramienta:

Tool / Outil:

Marca / Brand

Marque:

Norma o plano / Norm or drawing

Plan ou norme:

Material:

Matière:

Tratamiento superficial:

Traitement surface

OBSERVACIONES / REMARKS / NOTES

Empresa/Company/Entreprise:

Teléfono/Nº tél.:

Fax Nº.:

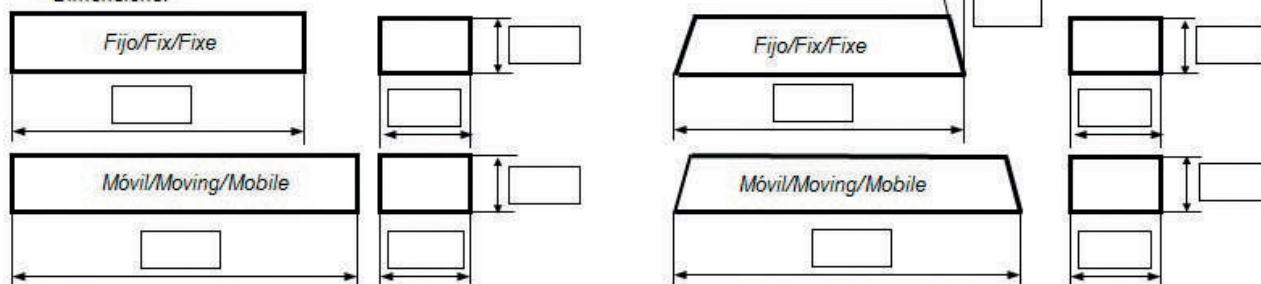
ASUNTO/MATTER/SUJET:

Contacto/Contact/ À contacter:



1.- DIMENSIONES Y MAQUINA / DIMENSIONS AND MACHINE

1.1- Dimensiones::
Dimensions:



Según croquis adjunto/Attached drawing/Dessin ci-joint

1.2.- Rosca/Thread/Filet

1 cara/side/face

2 caras/sides/faces

Nº usos/uses/utilisations

1.3- Entrada/Entry/Entrée

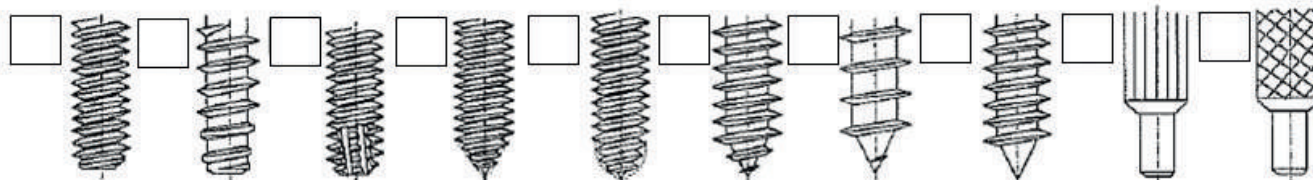
Normal/Ordinary

Progresiva
Progressive

1.4- Máquina/Machine

Potencia/Powder/Puissance

2.- TORNILLO / SCREW / VIS



2.1- Plano ó norma / Plan ou norme / Drawing or norm

2.2- Tipo de rosca:

Type de filet:

Type of thread:

M-MF-UNC-UNF

BSW-BSF-...

Rosca chapa / Sheet metal screw

Vis a tôle

Rosca madera / Wood screw thread

Vis a bois

Según croquis adjunto / Attached drawing / Dessin ci-joint

2.3- Medidas del tornillo / Screw dimensions / Dimensions du vis

2.4- Material / Material / Matière

Resistencia/Tensile/Resistance
N/mm²:

2.5- Estado / State / Etat:

Sin tratar / Untreated
Non traité

Tratado / Traité / Treated

Dureza / Hardness / Dureté (HB):

3.- HERRAMIENTA ACTUAL / CURRENT TOOL / OUTIL ACTUEL

3.1- Herramienta:

Tool / Outil :

Marca / Brand

Marque:

Norma o plano / Norm or drawing

Plan ou norme:

Material:

Matière:

Tratamiento superficial:

Traitement surface

3.2- Picadura de arrastre:

Piqure de entraînement:

Si

Oui

No

Non

Chorreado / Blasting

Blesagè:

Si /yes

Oui

No

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TAPPING

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TECHNICAL INFORMATION
INFORMATIONS TECHNIQUES
INFORMACIÓN TÉCNICA

#05-05

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TECHNICAL INFORMATION

INFORMATIONS

TECHNIQUES

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INTRODUCTION / INTRODUCTION / INTRODUCCIÓN

In any cutting process there are some factors beyond the tool itself that affect the final result to be obtained in terms of quality and cost of operation. Basically, the following types of taps can be differentiated :

Dans tout processus de coupe, il y a des facteurs indépendants de l'outil lui-même qui affectent le résultat final à obtenir en termes de qualité et de coût de fonctionnement. Essentiellement, on peut distinguer les types suivants de tarauds :

En todo proceso de corte y en el de roscado también, hay factores más allá de la propia herramienta que inciden en el resultado final a obtener en cuanto a calidad y costo de la operación. Básicamente se pueden distinguir los siguientes tipos de machos :

HAND TAPS

They are usually manufactured in standardized dimensions and provided with straight flutes and presented in :

- ▶ sets of 2 or 3 taps per size, with stepped thread or progressive shape
- ▶ sets of 3 taps per size, with full thread or finished shape or single taps normally finishing taps ■

TARAUDS À MAIN

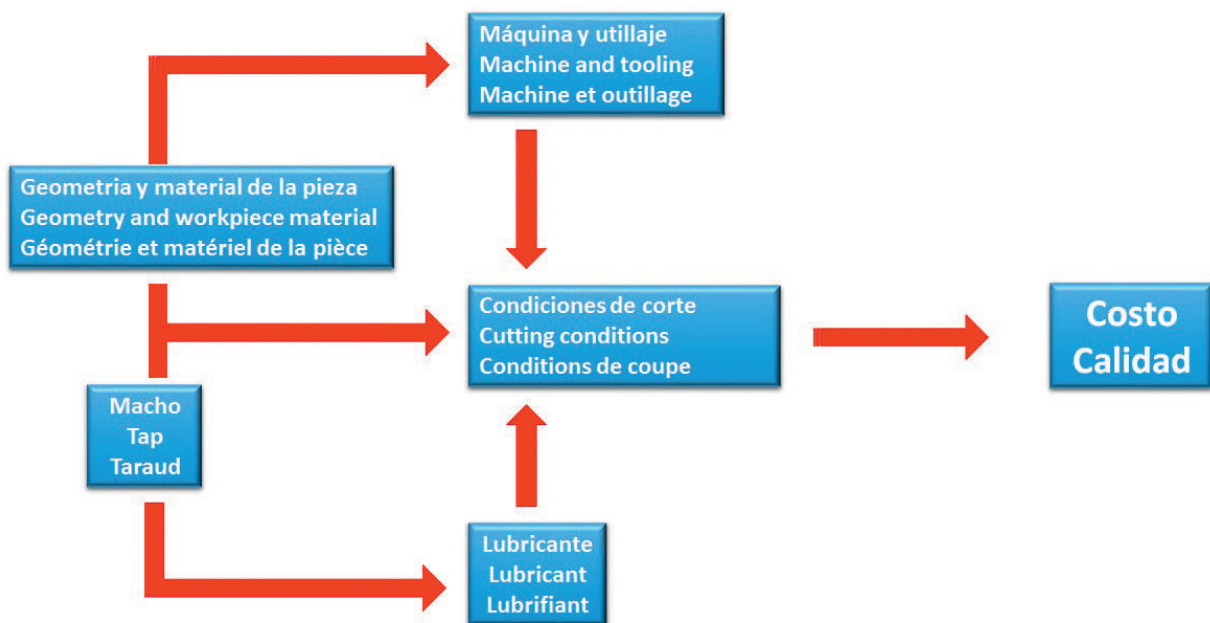
Ils sont généralement construits avec des dimensions standardisées, équipés de rainures droites, et présentés en :

- ▶ jeux de 2 ou 3 tarauds par mesure, à filet étalonné ou profil progressif
- ▶ jeux à 3 tarauds par mesure, à filet complet, profil fini ou tarauds uniques généralement le taraud de finition ■

MACHOS DE MANO

Se construyen normalmente con dimensiones estandarizadas y provistos de canales rectos y se presentan en :

- ▶ juegos de 2 ó 3 machos por medida con rosca escalonada o perfil progresivo
- ▶ juegos de 3 machos por medida con rosca completa o perfil acabado o machos únicos, normalmente el de acabado ■



■ MACHINE LONG TAPS FOR NUT TAPPING

Generic designation of kind of tap used for nut tapping in mass production. They are manufactured with long shank, generally curved in various shapes, according to the type of machine they are intended for, or like points or heads for cold-welding the shank ■

■ SPECIAL TAPS

All types of taps manufactured as per drawing or for a special application ■

■ MACHINE TAPS

They are manufactured in standardized dimensions and presented as single taps. Based on the cutting geometry, they could be divided into two basic groups :

- ▶ cutting taps whose geometry may be with straight flutes or helical flutes or spiral pointed
- ▶ forming taps with or without oil grooves ■

- ▶ **STRAIGHT FLUTE**
- ▶ **GOUJURE DROITE**
- ▶ **CANAL RECTO**

■ TARAUDS À MACHINE LONGS POUR TARAUDAGE D'ÉCROUS

Dénomination générique du type employé pour le taraudage d'écrous en grandes séries en machines automatiques. Ils sont fabriqués avec des queues longues, généralement courbées de formes différentes. Selon le type de machine à laquelle sont destinés ou comme pointe de tête pour souder les queues à froid ■

■ TARAUDS SPÉCIAUX

Tout type de tarauds fabriqués à partir de plan ou pour une application spéciale ■

■ TARAUDS À MACHINE COURTS

Ils sont construits avec des dimensions standardisées et présentés comme des tarauds uniques. Selon la géométrie, on pourrait les réunir dans deux groupes :

- ▶ taraud de coupe avec rainures droites ou rainures hélicoïdaux
- ▶ tarauds à refouler avec ou sans rainures ■

- ▶ **SPIRAL POINT**
- ▶ **ENTRÉE GUN**
- ▶ **ENTRADA GUN**

■ MACHOS DE MAQUINA LARGOS PARA ROSCADO DE TUERCAS

Denominación genérica del tipo empleado para roscado de tuercas en grandes series. Se fabrican con mango largo, generalmente curvado de diversas formas, según el tipo de máquina a que se destinen o como puntas o cabezas para soldar el mango en frío ■

■ MACHOS ESPECIALES

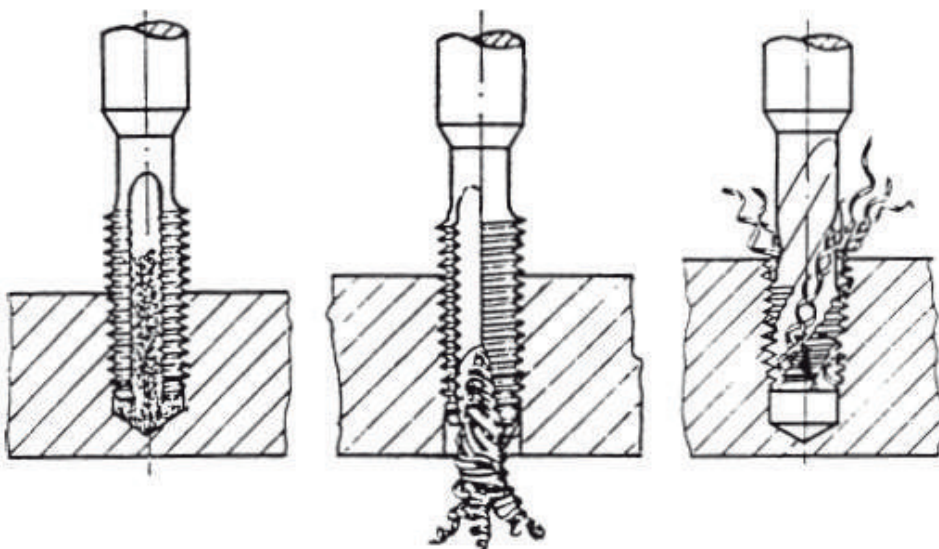
Todo tipo de machos fabricados bajo plano o para una aplicación especial ■

■ MACHOS DE MAQUINA

Se construyen en dimensiones estandarizadas y se presentan como machos únicos. Atendiendo a su geometría se podrían agrupar en dos grupos básicos :

- ▶ machos de corte cuya geometría podría ser con canales rectos o canales rectos y entrada corregida (GUN) o canales helicoidales
- ▶ machos de laminación con o sin estrías de lubricación ■

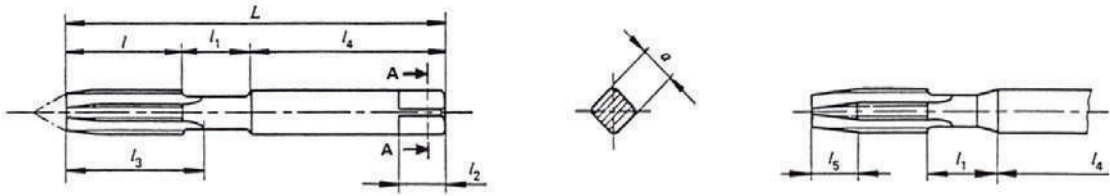
- ▶ **SPIRAL FLUTE**
- ▶ **GOUJURE HELICOIDALE**
- ▶ **CANNELURE HÉLICOÏDALE**





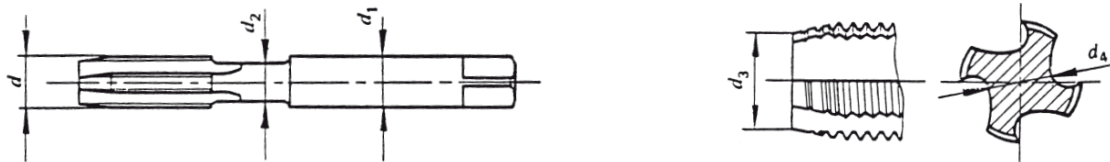
TERMINOLOGY / TERMINOLOGIE TERMINOLOGIA

LENGTHS / LONGUEURS / LONGITUDES

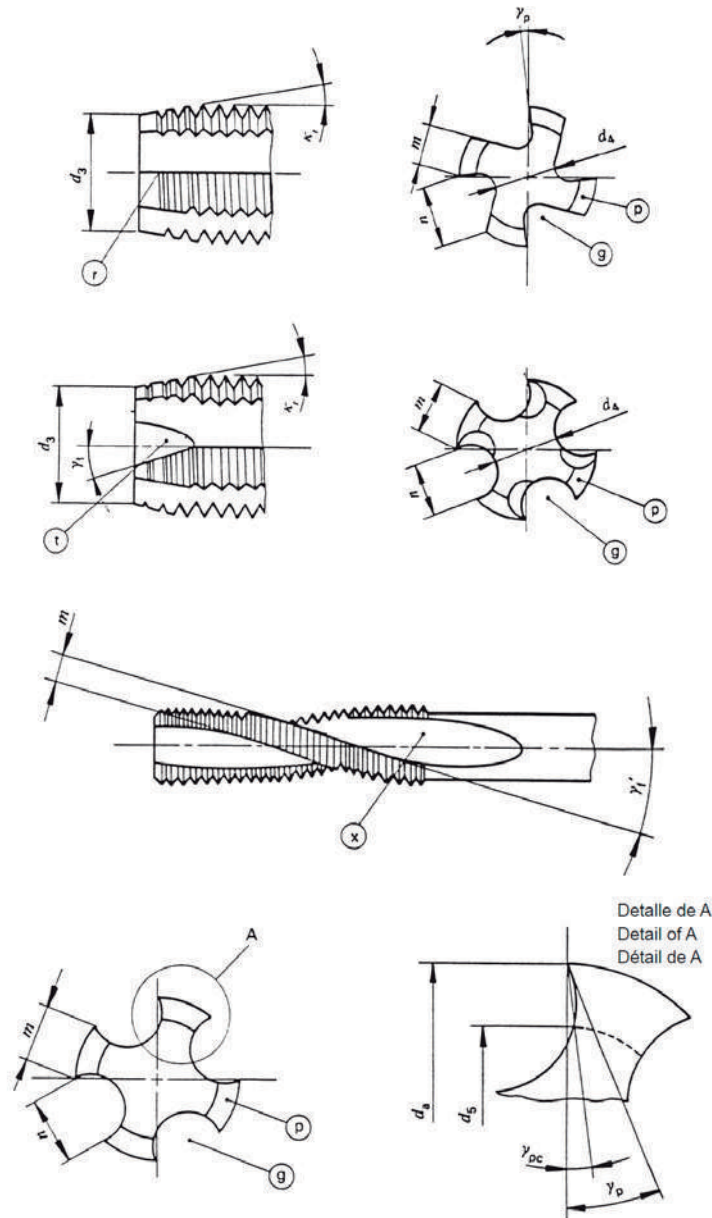


L	Overall length	Longueur totale	Longitud total
l	Thread length	Longueur filetée	Longitud de rosca
l1	Neck length	Longueur de gorge	Longitud del cuello
l2	Length of driving square	Longueur du carré	Longitud del cuadrado
l3	Flute length	Longueur de goujure	Longitud del canal
l4	Shank length	Longueur de queue	Longitud del mango
l5	Chamfer length	Longueur de l'entrée conique	Longitud del cono
a	Size across flats of square	Surplat du carré	Entre caras del cuadrado

GENERAL DIAMETERS / DIAMÈTRES GÉNÉRAUX / DIAMETROS GENERALES

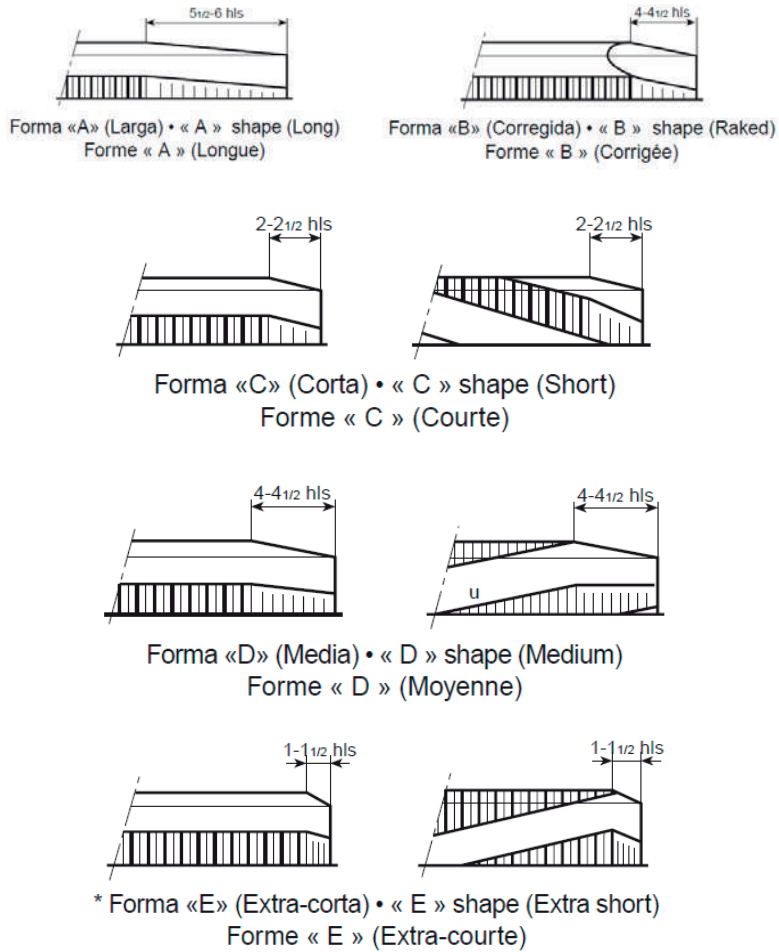


d*	Overall nominal diameter	Diamètre extérieur nominal	Diámetro exterior nominal
d1	Shank diameter	Diamètre de queue	Diámetro de mango
d2	Neck diameter	Diamètre de gorge	Diámetro del rebaje
d3	Chamfer point diameter	Diamètre d'entrée	Diámetro punta de la entrada
d4	Web core diameter	Diamètre de l'âme	Diámetro del núcleo (ranuras)



r	Straight flute	Goulure droite	Canal recto
t	Spiral point	Entrée GUN	Entrada corregida (GUN)
x	Spiral flute	Goujure hélicoïdale	Canal helicoidal
g	Flute	Goujure	Canal
p	Land	Lèvre	Labio
m	Width of land	Largeur de lèvre	Ancho de labio
n	Width of flute	Largeur de goujure	Ancho de ranura
N	Number of flutes	Nombre de goujures	Número de ranuras
d3	Chamfer point diameter	Diamètre de l'entrée conique	Diámetro de punta
d4	Web core diameter	Diamètre de l'âme	Diámetro núcleo canales
Kr	Chamfer angle	Angle de l'entrée conique	Angulo de la entrada
γf'	Angle of helical flute	Angle d'hélice de la goujure	Angulo hélice canal
γf	Spiral point angle	Angle d'inclinaison de GUN	Angulo de inclinación GUN
γp	Rake angle	Angle de coupe	Angulo de corte
γp	Hook angle	Angle de coupe mesuré sur la corde	Angulo de corte según la cuerda.

■ CHAMFER / ENTRÉE CONIQUE / CONO DE ENTRADA

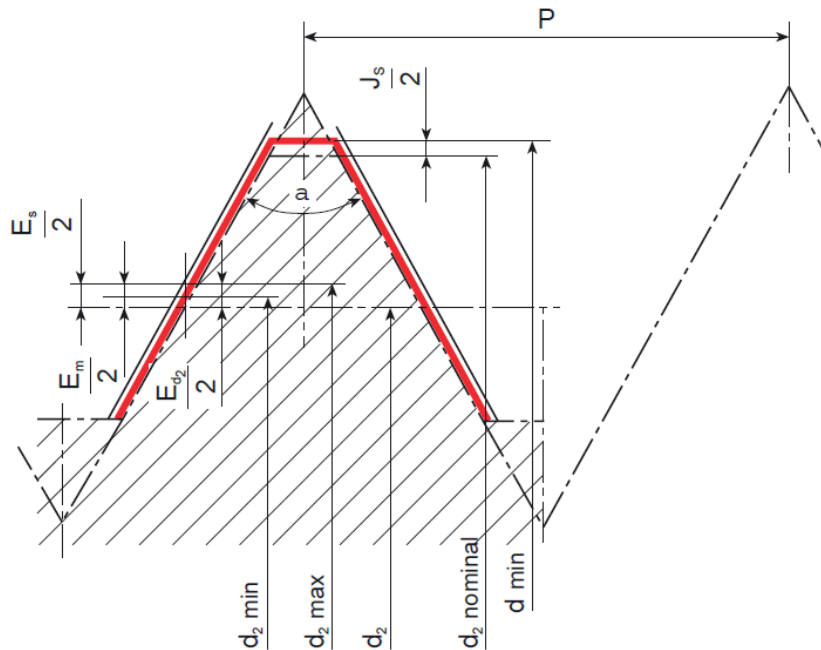


* Not recommended. To be avoided in as many cases as possible.

* Pas recommandable. On doit l'éviter dans tous les cas possibles.

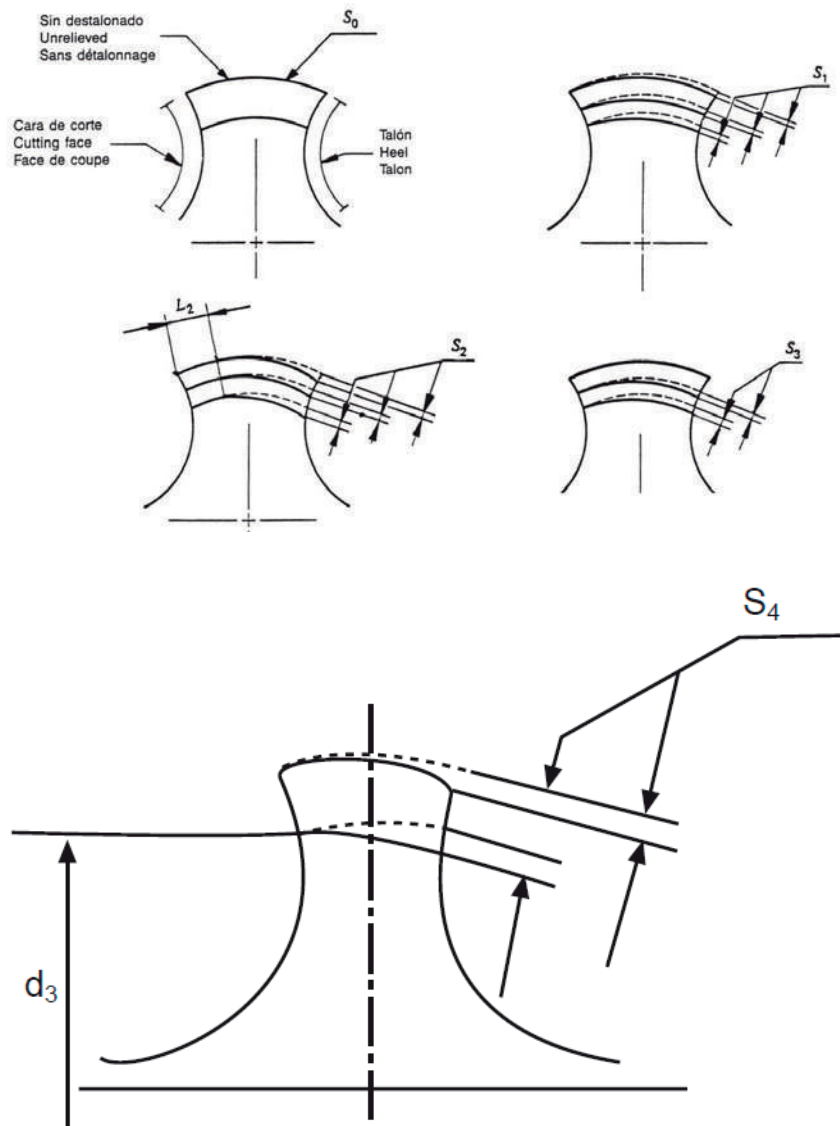
* No recomendable. Se debe evitar en todos los casos posibles.

■ THREAD PROFILE / PROFIL DU FILET / PERFIL DE ROSCA



S0	Concentric - unrelieved	Sans détalonnage	Sin destalonado
S1	Eccentric thread relief on thread	Détalonnage radial complet sur filet	Destalonado en rosca y exterior
S2	Con-eccentric thread relief on thread	Détalonnage radial incomplet sur filet	Destalonado parcial en rosca
S3	Eccentric thread relief	Détalonnage sur filet	Destalonado en rosca
S4	Con-eccentric thread relief	Détalonnage sur filet	Destalonado parcial en rosca
d3	Chamfer point diameter	Détalonnage incomplet sur filet	Diámetro punta del cono
L2	Width of concentric land with no relief	Diamètre de l'entrée conique	Anchura sin destalonado
d	Nominal diameter	Largeur sans détalonnage	Diámetro nominal
dmin	Permissible minimum tap OD	Diamètre nominal	Diámetro exterior mínimo
Js	Minimum clearance on OD	Diamètre extérieur minimal admissible	Demasia mínima en el Ø ext.
d2	Theoretical pitch diameter	Ecart inférieur sur diamètre extérieur	Diámetro de flancos teórico
d2 min	Minimum pitch diameter	Diamètre sur flancs théorique	Diámetro mínimo de flancos
d2 max	Maximum pitch diameter	Diamètre sur flancs minimal	Diámetro máximo de flancos
Ed2	Tolerance on pitch diameter	Diamètre sur flancs maximal	Tolerancia de d2
Em	Lower deviation of pitch diameter	Tolérance sur diamètre sur flancs	Tolerancia superior
Es	Upper deviation of pitch diameter	Ecart inférieur sur diamètre sur flancs	Tolerancia inferior
P	Pitch of thread	Ecart supérieur sur diamètre sur flancs	Paso de la rosca
A	Angle of thread	Angle du filet	Angulo del perfil de rosca

■ TYPES OF THREAD RELIEF , FORMES DE DETALONNAGE, FORMAS DE DESTALONADO



STEELS APPLIED IN TAP MANUFACTURE / ACIERS APPLIQUÉS DANS LA FABRICATION DES TARAUDS / ACEROS APLICADOS EN LA FABRICACION DE LOS MACHOS

■ HIGH-SPEED STEELS

High-speed steels (or high-speed cutting steels) are those steels reaching a high hardness by means of heat treatment and the composition and characteristics of which allows tooling to work at high cutting speeds, which requires a proper combination of mechanical strength, wear resistance, hardness and roughness. The properties of high speed steels are related to a microstructure consisting of a matrix of tempered martensite, with a distribution of carbides of high hardness and wear resistance is achieved by alloying elements which comprise between 15 and 30% in weight of carbide formers. Such elements are basically the following:

- ▶ **CARBON** : It forms carbides, increases the wear resistance and determines the hardness of the steel base matrix.
- ▶ **CHROMIUM** : Ensures the hardening depth and forms easily soluble carbides.
- ▶ **TUNGSTEN AND MOLYBDENUM** : They improve the hot-hardness, the tempering and martensitic matrix heat resistance. They form very hard special carbides of M6C type.
- ▶ **VANADIUM** : It forms very hard carbides of MC type and increases the abrasive resistance.
- ▶ **COBALT** : It increases the hot-hardness and matrix tempering resistance ■

■ ACIERS RAPIDES

On nomme aciers rapides (ou à coupe rapide), les aciers qui arrivent à une grande dureté par traitement thermique et dont leur composition et caractéristiques facilitent aux outils le travail à grandes vitesses de coupe, ce qui demande une combinaison adéquate de résistance mécanique, résistance à l'usure, dureté et ténacité. Les propriétés des aciers rapides sont liées à une microstructure constituée d'une matrice de martensite revenue, avec une répartition des carbures de grande dureté et résistance à l'usure obtenue avec des éléments l'alliage qui comprennent entre 15 et 30% en poids des formateurs de carbure. Ces éléments sont essentiellement les suivants :

- ▶ **CARBONE** : Forme carbure qui augmente la résistance à l'usure et détermine la dureté de la matrice, base de l'acier.
- ▶ **CHROME** : Assure la pénétration de la trempe et forme des carbures facilement solubles.
- ▶ **TUNGSTENE ET MOLYBDENE**: Améliorent la dureté à chaud, la résistance au revenu et à la chaleur de la matrice martensitique. Ils forment des carbures spéciaux très durs, du type M6C.
- ▶ **VANADIUM** : Il forme des carbures très durs du type MC, et augmente la résistance à l'usure abrasive
- ▶ **COBALT** : Il augmente la dureté à chaud et la résistance au revenu de la matrice ■

■ ACEROS RAPIDOS

Se denominan aceros rápidos o de corte rápido los aceros que alcanzan una alta dureza por tratamiento térmico y cuya composición y características facilitan a las herramientas el trabajo a altas velocidades de corte, lo que requiere una adecuada combinación de resistencia mecánica, resistencia al desgaste, dureza y tenacidad. Las propiedades de los Aceros Rápidos están relacionadas con una microestructura formada por una matriz de martensita revenida, con una distribución de carburos de elevada dureza y resistencia al desgaste que se consigue gracias a los elementos de aleación que suponen entre un 15 y un 30% en peso de formadores de carburos. Dichos elementos son básicamente los siguientes:

- ▶ **CARBONO** : Forma carburos, aumenta la resistencia al desgaste y determina la dureza de la matriz base del acero.
- ▶ **CROMO** : Asegura la penetración del temple y forma carburos fácilmente solubles.
- ▶ **TUNGSTENO Y MOLIBDENO** : Mejoran la dureza en caliente, la resistencia al revenido y al calor de la matriz martensítica. Forman carburos especiales muy duros del tipo M6C.
- ▶ **VANADIO** : Forma carburos muy duros, del tipo MC, e incrementa la resistencia al desgaste abrasivo.
- ▶ **COBALTO** : Aumenta la dureza en caliente y la resistencia al revenido de la matriz ■

	C	Cr	Mo	W	Co	V
M1	0,83	3,80	8,70	1,60	1,15	
M2	0,85	4,00	5,00	6,00		1,85
M3:2	1,20	4,00	5,00	6,00		3,00
M4	1,27	4,50	4,50	5,50		4,00
M7	1,00	3,75	8,25	1,75		2,05
M35	0,90	4,00	5,00	6,40	5,00	1,85
M42	1,10	3,90	9,40	1,50	8,00	1,20
T15	1,57	4,75	0,65	12,50	5,00	5,00
PM 23	1,30	4,20	5,00	6,40		3,10
PM 30	1,30	4,20	5,00	6,40	8,50	3,10
PM 60	2,30	4,20	7,00	6,50	10,50	6,50

■ HIGH SPEED STEELS BY POWDER METALLURGY (P.M.)

The manufacturing process by powder metallurgy ASP, (Asea Stora Process), provides steels with small, even and well-distributed carbides, giving rise to fine and uniform structures (Isometric). The two major factors affecting the steel efficiency are its Hardness (wear resistance capacity) and Toughness (fracture strength capacity). Hardness and Toughness have opposed effects; Toughness is reduced by increasing Hardness, and Hardness is reduced by increasing Toughness.

The greatest significant advantages of high-speed steels elaborated by the ASP system are as follows:

- ▶ Absence of segregations and alignments of carbides.
- ▶ Increase in toughness.
- ▶ Higher dimensional stability.
- ▶ Better grindability.
- ▶ Longer lifetime of tool by the increase in hardness.

These higher quality steels are more expensive than the conventionally elaborated high-speed steels. However, the decisive evaluation factor is the result from the tool PRICE/EFFICIENCY ratio ■

■ ACIERS RAPIDES MÉTALLURGIE DES POUDRES (P.M.)

La procédure de fabrication par métallurgie des poudres ASP, (Asea Stora Process), proportionne des aciers à carbures petits' uniformes et bien distribués donnant lieu à des structures fines et uniformes (Isométriques). Les deux facteurs les plus importants qui touchent au rendement d'un acier, sont sa dureté, (capacité de résistance à l'usure), et sa Ténacité (capacité de résistance à la cassure) Dureté et Ténacité sont opposées; en augmentant la dureté, on diminue la ténacité et en augmentant la ténacité, on diminue la dureté.

Les avantages les plus significatifs des aciers rapides élaborés par le système ASP sont:

- ▶ Carence de ségrégations et d'alignements de carbures.
- ▶ Incrément de la ténacité.
- ▶ Plus grande stabilité dimensionnelle.
- ▶ Meilleure rectification.
- ▶ Plus grande durée de vie de l'outil par l'incrément de la dureté.

Ces aciers à qualités supérieures sont plus chers que les aciers rapides de fabrication conventionnelle ■

■ ACEROS RAPIDOS PULVIMETALURGIA (P.M.)

El proceso de fabricación por pulvimetalurgia ASP (Asea Stora Process) proporciona aceros con carburos pequeños, uniformes y bien distribuidos, dando lugar a estructuras finas y uniformes (Isométricas). Los dos factores más importantes que afectan al rendimiento de un acero son su Dureza (capacidad de resistencia al desgaste) y su Tenacidad (capacidad de resistir la fractura). Dureza y Tenacidad son contrapuestas; aumentando la Dureza disminuye la Tenacidad y aumentando la Tenacidad disminuye la dureza.

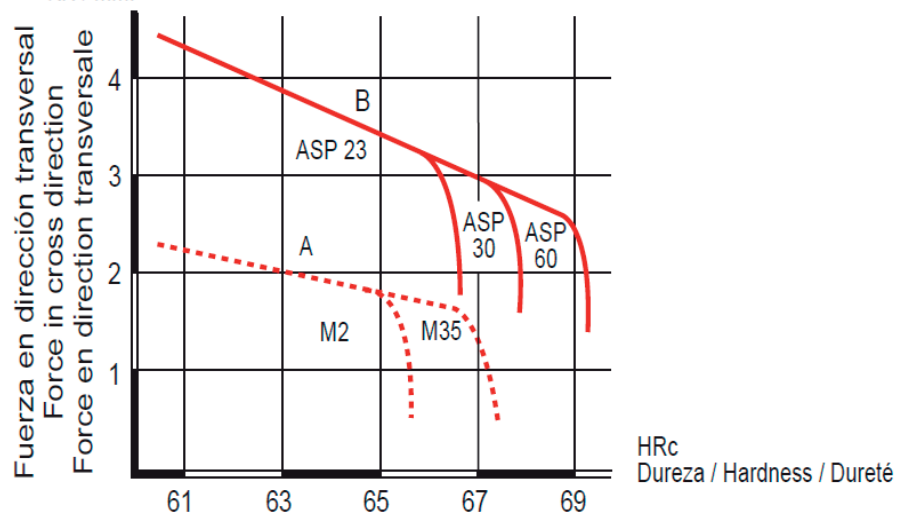
Las ventajas más significativas de los aceros rápidos elaborados por el sistema ASP son:

- ▶ Carencia de segregaciones y alineaciones de carburos.
- ▶ Incremento de la tenacidad.
- ▶ Mayor estabilidad dimensional.
- ▶ Mejor rectificabilidad.
- ▶ Mayor vida de la herramienta por incremento de dureza.

Estos aceros de cualidades superiores son más caros que los aceros rápidos de fabricación convencional. Sin embargo, el factor decisivo de valoración debe ser el resultado de la relación PRECIO/RENDIMIENTO de la herramienta. ■

Resistencia / Strength / Résistance
KN / mm.²

Ø 80mm.



Hardness/strength ratio in different types of steel.

A) It is the limit line for a conventionally manufactured steel.

B) It shows the limit for a powder metallurgically manufactured steel, (ASP) ■

Rapport dureté/résistance en divers genres d'acier.

A) C'est la ligne limite pour un acier fabriqué conventionnellement.

B) Montre la limite pour un acier fabriqué par métallurgie des poudres, (ASP) ■

Relación dureza/resistencia en diferentes tipos de acero

A) Es la línea límite para un acero fabricado convencionalmente.

B) Muestra el límite para un acero fabricado por pulvimetalurgia, (ASP) ■

SURFACE TREATMENTS / TRAITEMENTS SURFACE / TRATAMIENTOS SUPERFICIALES

The bright finish is for the most basic and universal use. Provides a moderately correct results except for machining soft and low alloyed ferrous materials that adhere to the tools generally. On the contrary, it is especially recommended for aluminum, brass, copper and their alloys as well as fibers , plastics , PVC , wood, paper , rubber ...

La finition brillante est pour une utilisation la plus simple et universel pour obtenir de résultats modérément corrects sauf pour l'usinage de matériaux ferreux pas durs et faiblement alliés qui adhèrent aux outils. Au contraire, il est particulièrement recommandé pour l'aluminium, le laiton, le cuivre et ses alliages, ainsi que des fibres, des matières plastiques, le PVC, le bois, le papier, ...

El acabado brillante es el más básico y de uso universal. Proporciona resultados moderadamente correctos en general, salvo en mecanizados de materiales férricos (de baja aleación y blandos) que se adhieren a las herramientas. Por el contrario, resulta especialmente recomendado para aluminio, latón, cobre y sus aleaciones así como fibras, plástico, PVC, madera, papel, goma...

■ STEAM

It provides a surface film reducing the sliding or frictional resistance, so that it delays the cold welds or adherence of the worked material, which is likely to be produced in the machining of ferrous materials. It is not recommended for nonferrous materials such as aluminum, copper, brass...

■ VAPORISATION

On proportionne une couche superficielle qui réduit la résistance au glissement ou à la friction, retardant les soudures à froid ou adhérence du matériel travaillé, tendance générale à l'usinage des matériaux ferreux. Il n'est pas recommandable en matériaux non ferreux tels que l'aluminium, le cuivre, le laiton...

■ URDIN

Proporciona una capa superficial que reduce la resistencia al deslizamiento o rozamiento, por lo que retarda las soldaduras en frío o adherencia del material trabajado, tendencia general en el mecanizado de materiales férricos. No es recomendable en materiales no férricos como aluminio, cobre, latón...

■ NITRIDING

It increases the wear resistance because of the formation of a higher hardness nitrided layer, although, on the contrary, it has a possible irregularity in the results of the tool due essentially to the fragility of such a layer ■

■ NITRURATION

Il augmente la résistance à l'usure par la formation d'une couche nitrurée à plus grande dureté, quoique il a comme contrepartie une possible irrégularité des résultats de l'outil, dû principalement à la fragilité de cette couche ■

■ NITRURACION

Aumenta la resistencia al desgaste mediante la formación de una capa nitrurada de mayor dureza, si bien tiene como contrapartida una posible irregularidad en los resultados de la herramienta debido fundamentalmente a la fragilidad de dicha capa ■

COATINGS REVÊTEMENTS / RECUBRIMIENTOS

Coatings lengthen the lifetime and/or make it possible to use the same tool at higher speeds. This is mainly due to the reduction of coefficient of friction, which produces a lower cutting stress and a lower thermal load on the tap cutting edges when tapping ■

Les revêtements allongent la vie et/ou font possible l'usage du même outil à vitesses plus grandes. C'est dû principalement à la réduction du coefficient de friction, ce qui produit un effort de coupe plus petit et une charge thermique plus petites aux arêtes de coupe du taraud à l'heure de tarauder ■

Los recubrimientos alargan la vida y/o hacen posible el uso de la misma herramienta a mayores velocidades. Esto es debido principalmente a la reducción del coeficiente de fricción, lo que genera un menor esfuerzo de corte y una menor carga térmica en los filos del macho a la hora de roscar ■

Nombre Name Nom	DESCRIPCION	Dureza Hardness Dureté (HV 0.05)	T. máxima Maximun T. (°C)	Color Color Couleur
TIN	El nitruro de titanio (TiN) es el que recomendamos para una aplicación universal siendo especialmente adecuado para aceros de baja o media resistencia a la tracción. The titanium nitride (TiN) is the recommended for universal use especially suitable for low or medium tensile strength steels Le nitrure de titane (TiN) est le recommandé pour une utilisation universelle particulièrement adaptés à des aciers avec une résistance à la traction moyenne.	2300	600	Dorado Golden Dorée
TICN	Similares prestaciones que el TiN pero con una mayor resistencia al desgaste debido a su mayor dureza lo que lo hace de gran utilidad en el roscado de piezas fundidas. Similar benefits TiN but with a higher wear resistance due to its increased hardness which makes it very useful in the tapping of castings. Des avantages similaires au TiN, mais avec une résistance à l'usure plus élevée en raison de sa dureté et qui rend très utile dans le filetage de pièces coulées.	3000	400	Gris azulado Bluish gray Gris bleuté
BAKAR	Con un coeficiente de fricción menor que el TiCN convencional y una dureza superior es recomendado para el roscado de aceros inoxidables. With a lower coefficient of friction than the conventional TiCN and a higher hardness is recommended for tapping of stainless steels. À un coefficient de frottement inférieur à la TiCN classique et une dureté supérieure est recommandée pour le taraudage des aciers inoxydables.	3200	400	Cobrizo Copper Cuivre
GOGOR	Su alta dureza lo hace ideal para el roscado de aceros templados y aceros de alta resistencia ya que mantiene sus características incluso a altas temperaturas Its high hardness makes it ideal for tapping hardened steels and high strength steels because it maintains its characteristics even at high temperatures Sa grande dureté le rend idéal pour le filetage des aciers trempés et des aciers à haute résistance, car il maintient ses caractéristiques, même à des températures élevées	3700	1100	Negro Black Noir
OSTADAR	Recubrimiento especialmente diseñado para proporcionar al macho una alta resistencia al desgaste por abrasión. La superficie muy fina obtenida evita que se pegue material y favorezca la evacuación de la viruta. Indicado para el roscado de aleaciones de aluminio con un contenido de Si<12% Revêtement spécialement conçu pour fournir au taraud une résistance élevée à l'usure par abrasion. La surface, très fine, obtenue, empêche le collage du material et améliore l'évacuation des copeaux. Il est adapté pour fileter des alliages d'aluminium contenant Si <12% Coating designed to provide to the tap high resistance to wear by abrasion. The surface, very fine, obtained, prevents sticking of the material and improves the chip evacuation. It is suitable for threading aluminum alloys containing Si <12%	5000	500	Negro Black Noir
NEBAR	Recubrimiento específico para el roscado de materiales de alta dureza, de difícil mecanización o para trabajo en seco o MQL por su mayor lubricidad que facilita la evacuación de viruta Specific coating for tapping materials of high hardness, hard machining or MQL or dry operation for its higher lubricity which facilitates chip evacuation Revêtement spécifique pour les filetage des matériaux de haute dureté, l'usinage dur avec MQL ou à sec pour son lubrilité plus élevée qui facilite l'évacuation des copeaux	3000	800	Gris oscuro Dark gray Gris foncé
SIDAR	Este recubrimiento se propone por su buena resistencia al desgaste adhesivo siendo especialmente útil para el roscado de materiales y aleaciones no ferreas como cobre, latones y bronzes This coating is proposed for its good resistance to adhesive wear and is especially useful to threading materials and nonferrous alloys such as copper, brasses and bronzes Ce revêtement est proposé pour sa bonne résistance à l'usure adhésive et il est particulièrement utile pour le filetage des matériaux et des alliages non ferreux tels que le cuivre, les laitons et les bronzes	1750	700	Gris plata Silver gray Gris argent



TERMS USE /CONDITIONS D'UTILISATION CONDICIONES DE USO

It is necessary to pay as much attention as possible to the design of tapped holes. An improper design made, results in many technical and productive problems, which involve an unavoidable increase in economic costs.

Il est nécessaire de faire grand attention au dessin des orifices taraudés. Un dessin devient en multiples problèmes technico-productifs qui causent des inévitables augmentations de coûts économiques.

Es necesario poner la máxima atención en el diseño de los orificios roscados. Un diseño inadecuado, se traduce en múltiples problemas técnico - productivos que originan inevitables incrementos de costes económicos.

■ ITEMS TO BE AVOIDED :

- ▶ Blind-ended holes with no chip clearance. They cause an unavoidable limitation of the tap lifetime as well as a great risk of breakage because of impacts with the bottom.
- ▶ In general, holes with tapped length longer than $2 \times \varnothing$. It should be taken into consideration that lengths longer than $1.5 \times \varnothing$ do not provide any type of advantages in tensile strength, or the fastening reliability of threaded unions.

As a general criteria, the vertical tapping makes the chip removal easier in through holes. The horizontal tapping produces the same in blind holes, and both details increase productivity and lifetime of taps.

The regular control of the conditions or factors involved in the process is essential.

- ▶ Suitable cutting speed
- ▶ Control the good condition of drills used for the implementation of the previous hole.
- ▶ To use proper holding systems for both the part and tap.
- ▶ Avoid the use of feeding systems not controlled or guided
- ▶ The own characteristics of the fluid, as well as the flow rates, pressures and directions are to be carefully ensured ■

■ ON RECOMMANDE D'ÉVITER :

- ▶ Orifices borgnes sans marge de soulagement. Ils causent une inévitable limitation de la vie du taraud ainsi comme un grand risque de casser par chocs contre le fond.
- ▶ En général des orifices à longueur taraudée supérieure à $2 \times \varnothing$. Il faut considérer que les longueurs supérieures à $1,5 \times \varnothing$ n'apportent aucun type d'avantages sur la résistance à la traction, et non plus de la fiabilité de fixation des jonctions taraudées.

Comme critère général le filetage vertical aide à l'évacuation de copeaux aux orifices débouchants. Le filetage horizontal fait pareil aux orifices borgnes, les deux détails augmentent la productivité et la vie des tarauds.

Il est fondamental de contrôler systématiquement les conditions ou les facteurs qui interviennent dans le processus.

- ▶ Vitesse de coupe adaptée.
- ▶ Contrôler le bon état des forets utilisés pour l'exécution de l'avant trou.
- ▶ Utiliser des fixations appropriées tant pour la pièce que pour le taraud.
- ▶ Éviter l'utilisation des systèmes d'avance non contrôlés
- ▶ Assurer soigneusement tant les propres caractéristiques du fluide que les débits, pressions et sens du flux ■

■ SE RECOMIENDA EVITAR :

- ▶ Orificios ciegos sin margen de desahogo. Originan una inevitable limitación de la vida del macho así como un elevado riesgo de roturas por colisiones con el fondo.
- ▶ En general orificios con longitud roscada superior a $2 \times \varnothing$. A considerar que longitudes superiores a $1,5 \times \varnothing$ no aportan ningún tipo de ventajas en la resistencia a la tracción, ni en la fiabilidad de fijación de las uniones roscadas.

Como criterio general el roscado vertical facilita la evacuación de viruta en orificios pasantes. El roscado horizontal hace lo propio en orificios ciegos. Ambos detalles incrementan la productividad y vida de los machos.

Es fundamental controlar sistemáticamente las condiciones ó factores que intervienen en el proceso. :

- ▶ Velocidad de corte adecuada
- ▶ Control del buen estado de las brocas utilizadas para la ejecución del orificio previo.
- ▶ Utilizar fijaciones apropiadas tanto para la pieza como para el macho.
- ▶ Evitar la utilización de sistemas de avance no controlados ó guiados
- ▶ Asegurar cuidadosamente tanto las propias características del fluido como los caudales, presiones y direcciones del flujo ■

■ MATERIALS TO BE MACHINED :

Given the wide range used in the Industry, we have selected 31 variations, which cover from mild steels to special alloys as well as non-ferrous materials. They have been included in the following families:

- ▶ Steels
- ▶ Stainless Steels
- ▶ Casting
- ▶ Titanium and alloys
- ▶ Nickel and alloys
- ▶ Brass, Copper, Bronze
- ▶ Aluminum
- ▶ Synthetics

Each type of material presents some specific characteristics as for tensile strength, elongation coefficient and crystalline structure, and the cutting forces as well as the type of resulting chip, which can be tear or continuous chip, will depend on this assembly. The previously mentioned characteristics specify the selection of either the suitable tap or the operating conditions to be applied, mainly the speed, machine power and cutting fluid ■

■ MATÉRIAUX À MÉCANISER :

Étant donné la grande variété utilisée dans l'industrie, on a sélectionné 31 variantes, qui comprennent depuis les aciers doux jusqu'aux alliages spéciaux ainsi comme des matériaux non ferriques. On les a groupés dans les familles suivantes :

- ▶ Aciers.
- ▶ Aciers inoxydables.
- ▶ Fontes.
- ▶ Titane and alliages
- ▶ Nickel and alliages
- ▶ Laiton, Cuivre, Bronze.
- ▶ Aluminium
- ▶ Synthétiques

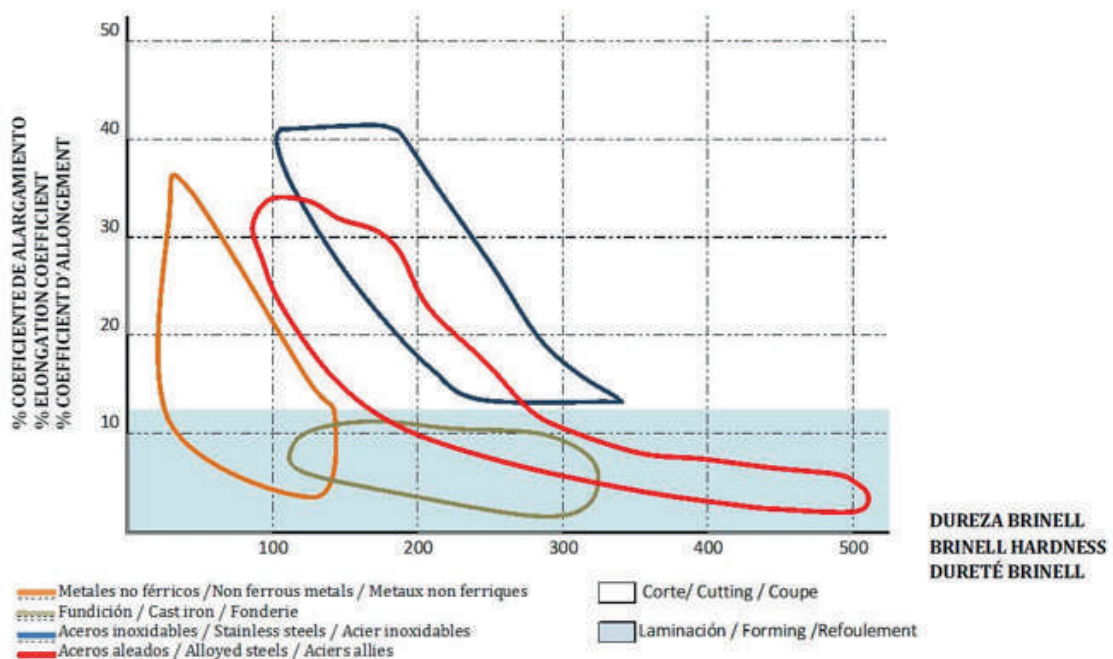
Chaque genre de matériel présente des caractéristiques spécifiques en ce qui concerne la résistance à la traction, le coefficient d'allongement et la structure cristalline, dépendant de cet ensemble, les forces de coupe, ainsi comme le type de copeau résultant, fragmenté ou continu. Les caractéristiques mentionnées déterminent la sélection tant du taraud approprié comme des conditions de travail à appliquer, vitesse, puissance de la machine et fluide de coupe, principalement ■

■ MATERIALES A MECANIZAR :

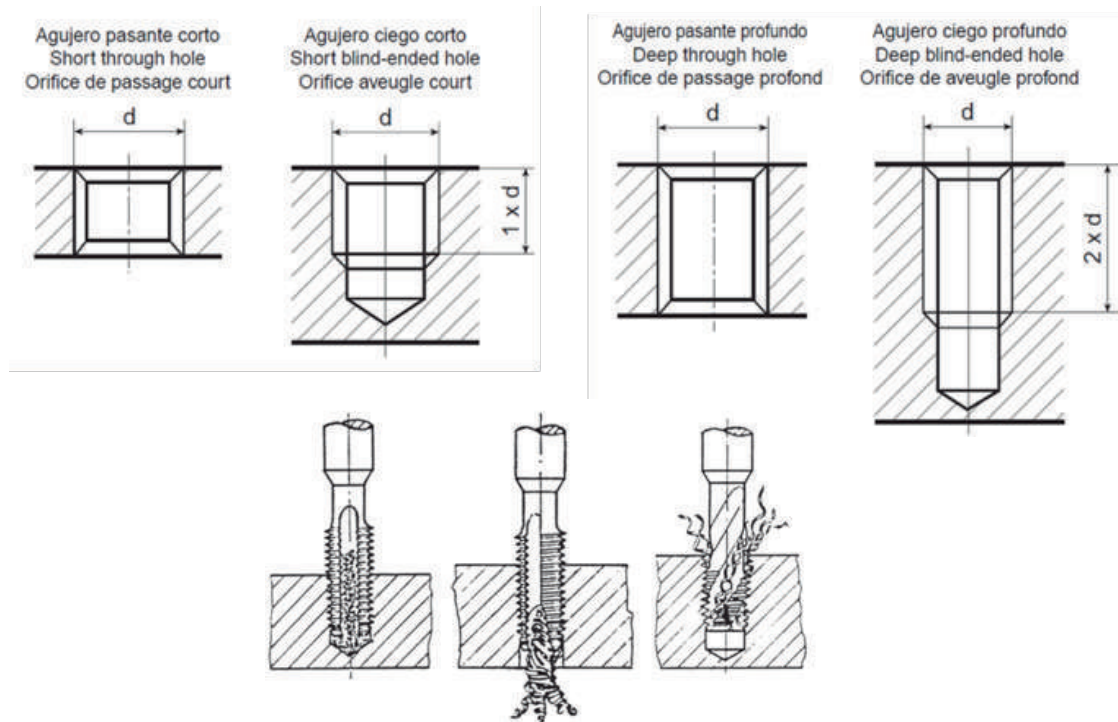
Dada la gran variedad utilizada en la Industria, hemos seleccionado 31 variantes que cubren desde los aceros dulces hasta las aleaciones especiales así otros materiales no férricos. Se han agrupado en las siguientes familias:

- ▶ Aceros
- ▶ Aceros Inoxidables
- ▶ Fundiciones
- ▶ Titanio y aleaciones
- ▶ Níquel y aleaciones
- ▶ Latón, Cobre, Bronce
- ▶ Aluminio
- ▶ Sintéticos

Cada tipo de material presenta unas características específicas en cuanto a resistencia a la tracción, coeficiente de alargamiento y estructura cristalina. Dependiendo de este conjunto, las fuerzas de corte presentan variaciones al igual que el tipo de viruta resultante, la cual puede ser fragmentada o continua. Las características citadas determinan la selección tanto del macho apropiado como de las condiciones de trabajo a aplicar: velocidad, potencia de la máquina y fluido de corte, principalmente ■



■ TYPES OF HOLES / TYPES D'ORIFICES / TIPOS DE AGUJERO



■ RAKE ANGLE

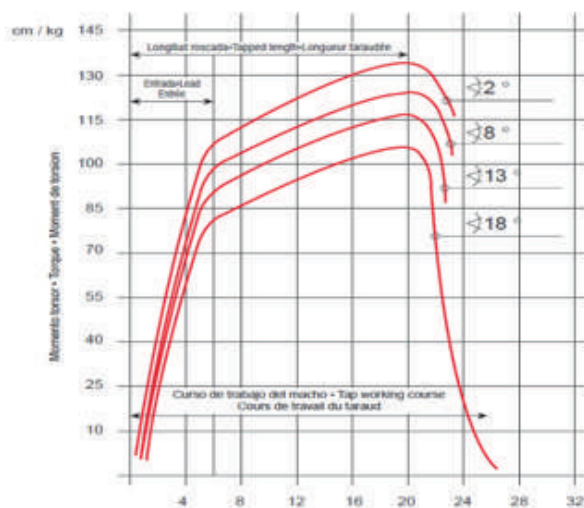
Due to the fact that their effect is so decisive, even though it has been observed in a theoretical study, we present a chart in which the results obtained when tapping a through hole of 20 mm. thickness in a 800 N/mm² strength steel by of a 3-flutes M10 tap, with a chamfer of 4 profiles, but varying the cutting angle, as shown. Increasing smooth-faced thread flanks are achieved by reducing the torque and enabling the chip forming ■

■ ANGLE DE COUPE

Dû à leur grande influences, même si on l'a vu dans une étude théorique, il est si important qu'on présente un diagramme où on montre les résultats obtenus en taraudant un orifice de débouchante à 20 mm. d'épaisseur et en acier de 800 N/mm² de résistance, avec un taraud M10, à 3 goujures et entrée conique à 4 profils, mais en variant l'angle de coupe. En diminuant le moment de torsion selon augmente facilitant la formation des copeaux, on obtient une surface de flancs à filet poli ■

■ ANGULO DE CORTE

Debido a su gran Influencia, aún a pesar de haber sido analizado en un estudio teórico, es tan decisivo que presentamos un diagrama en el que se demuestran los resultados obtenidos al roscar un orificio pasante de 20 mm. de espesor y en un acero de 800 N/mm² de resistencia, con un macho M10, de 3 canales y cono de entrada de 4 perfiles, pero variando el ángulo de corte. Disminuir el momento torsor según aumenta facilitando la formación de la viruta favorece una superficie de rosca pulida ■



■ THE MACHINE

In machine-tapping, the role played by the machine is to be provided with the necessary conditions for power, speed, stability and precision so as to acquire tapping guarantees.

■ FEEDING SYSTEM

The feeding system has a great importance, as it is essential to comply accurately with the ratio:

$$\text{FEED} = 1 \text{ PITCH} \times 1 \text{ rpm}$$

The standard spindle system usually guarantees the achievement of this ratio. In NC machines, the use of tap-holder with axial compensation for the neutralization of possible precision errors in synchronization (tracking errors) is, in general, recommended. Pneumatic, manual and, in general, those feeds not being controlled, are not recommended.

■ F HOLDING SYSTEM

The holding system or tap holder is one of the significant factors in tapping so as to avoid and/or neutralize the risk effects which could be originated because of different causes:

- ▶ Aligning errors.
- ▶ Positioning errors.
- ▶ Possible traveling inertias
- ▶ Feeding errors.
- ▶ Cutting and other overstresses.

At the same time, it is to provide a safe and reliable fastening, as well as an easy and simple assembly and disassembly of the tap. Its importance becomes greater when dealing with 2 or more taps working simultaneously ■

■ LA MACHINE

Au filetage à la machine, celle-ci doit posséder les conditions nécessaires en ce qui concerne la puissance, vitesse, stabilité et précision pour obtenir des garanties de filetage.

■ SYSTÈME D'AVANCE

Le système d'avance a une grande importance, car il est impératif d'accomplir avec précision le ratio:

$$\text{AVANCE} = 1 \text{ PAS} \times 1 \text{ R.P.M.}$$

Le système de vis-mère garantit normalement la consécution, de ce ratio. En machines CN en général on conseille d'utiliser des porte-tarauds à compensation axiale pour la absorption des possibles erreurs de précision dans la synchronisation (erreurs de poursuite). Les avances pneumatiques, manuels et en général ceux non contrôlés, ne sont pas souhaitables.

■ F SYSTÈME DE FIXATION

Le système de fixation ou porte-tarauds est un des facteurs décisifs au filetage pour éviter et/ou absorber des effets de risque qui peuvent se produire par des causes différentes:

- ▶ Erreurs d'alignement.
- ▶ Erreurs de positionnement.
- ▶ Possibles inerties de parcours.
- ▶ Erreurs d'avance.
- ▶ Sur-efforts de coupe et d'autres.

En même temps, il doit proportionner une fixation sûre et fiable et un facile et simple montage et démontage du taraud. Son importance augmente quand on traite de 2 ou plus tarauds travaillant simultanément ■

■ LA MAQUINA

En el roscado a máquina, ésta debe poseer las condiciones necesarias en cuanto a potencia, velocidad, estabilidad y precisión para obtener garantías de roscado.

■ SISTEMA DE AVANCE

El sistema de avance tiene una gran importancia ya que es imperativo cumplir con precisión el ratio:

$$\text{AVANCE} = 1 \text{ PASO} \times 1 \text{ rpm}$$

El sistema de husillo patrón garantiza normalmente la consecución de este ratio. En máquinas CNC en general, es aconsejable la utilización de portamachos con compensación axial para la absorción de posibles errores de precisión en la sincronización (errores de seguimiento). Los avances neumáticos, manuales y en general los no controlados, no son aconsejables.

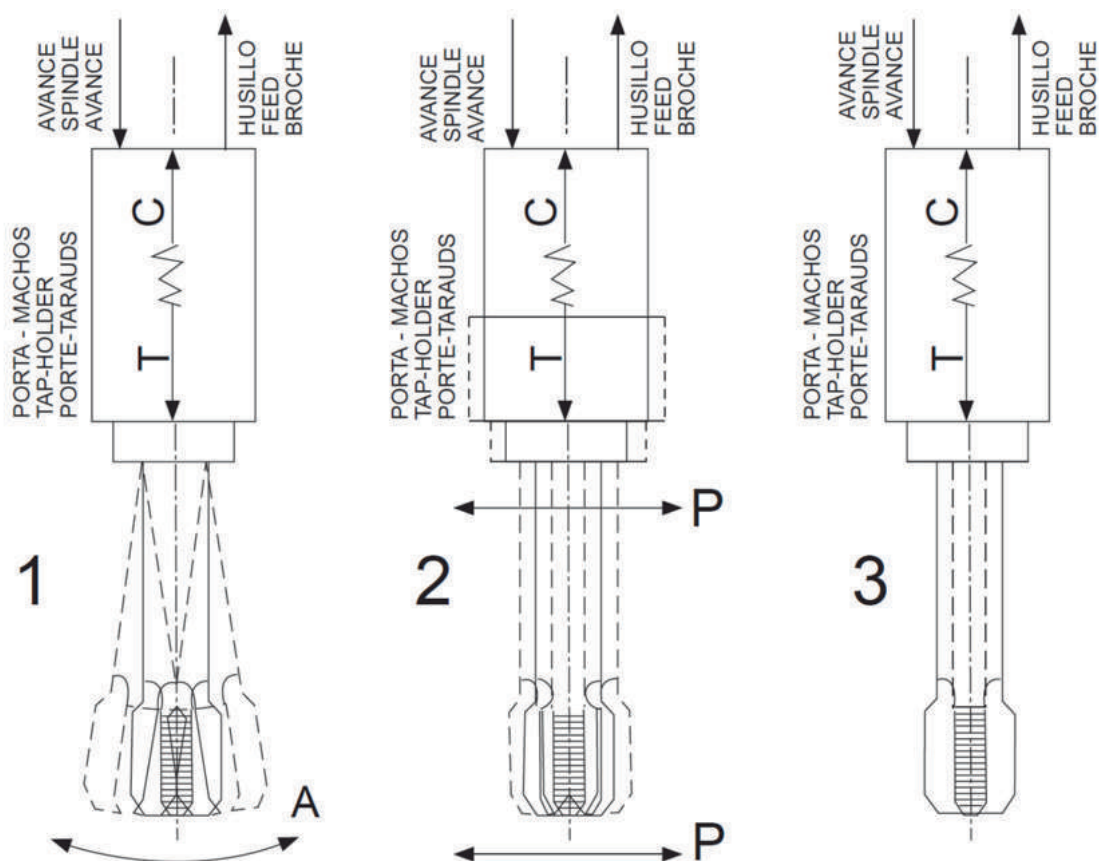
■ F SISTEMA DE FIJACION

El sistema de fijación o portamachos resulta uno de los factores decisivos en el roscado para evitar y/o absorber efectos de riesgo que se pueden originar por diversas causas:

- ▶ Errores de alineación.
- ▶ Errores de posicionamiento.
- ▶ Posibles inercias de recorrido.
- ▶ Errores de avance.
- ▶ Sobreesfuerzos de corte y otros.

Al mismo tiempo debe proporcionar una fijación segura y fiable y un fácil y sencillo montaje y desmontaje del macho. Su importancia aumenta cuando se trata de 2 o más machos trabajando simultáneamente ■

INFLUENCE DU PORTE-TARAUDS / INFLUENCE OF TAP-HOLDER / INFLUENCIA DEL PORTE-MACHOS



				SISTEMA DE AVANCE-FEEDING SYSTEM-SYSTEME D'AVANCE							
				A	P	T	C	Husillo patrón spindle	Standard Vis-mère	CNC mecánico Mechanical NC CN mécanique	Sin guiado Without guide Sans guide
1				●		●	●		●	●	●
				●		●			●	●	●
				●					●	●	●
2					●	●	●		●	●	●
					●	●			●	●	●
					●				●	●	●
3						●	●		●	●	●
						●			●	●	●
									●	●	●

■ CUTTING STRESSES

The cutting forces operating in the course of tapping are three: the tangential F_t , radial F_r and axial F_x . The torque is determined by the value of tangential component. However, the nature and variations of F_r and F_x components have a great influence on the precision of tapped profile and they can be the cause a disfunction. The axial force F_x has an effect at the tapping start on the motion or reducing of threads in starting threads.

The value of this action is lowered as the tap is penetrating into the hole and the surface of cut flanks is increasing. As a consequence of that previously mentioned, the tapping start is improperly formed and the surface of one of the flanks is stepped, mainly at the chamfer area.

The best solution to solve this problem is the use of tapping machines controlled by standard spindle. In addition, the resultant of radial forces F_r existing at each cutting edge is to be zero, as if the tap cutting edges do not cut evenly, because of any eccentricity, they will make any resultant be produced, which will cause a tap bending if it is rigidly joined to the spindle (b) or a motion in the case of a floating tap-holder (a), which will not prevent the hole from being likely to become

enlarged. In the same way, in the fixed holding systems (b) there is a lack of alignment between the hole and tap axis. That is the reason why it is very important to thread always with at least a radial-floating tap-holder ■

■ EFFORTS DE COUPE

Les forces de coupe qui agissent pendant le taraudage sont trois : celle tangentielle F_t , la radiale F_r et l'axiale F_x . La valeur du composant tangential F_t détermine le moment de torsion. Par contre, la nature et les variations des composants F_r et F_x ont une grande influence sur la précision du taraudage et peuvent être la cause du dysfonctionnement. La force axiale F_x influe sur le début du taraudage sur le déplacement ou amincissement des fils en filets initiaux. La valeur de cette action se réduit à mesure que le taraud rentre dans l'orifice et la surface des flancs coupés augmente. A la suite de tout ce précédent, le début du taraudage se forme de façon incorrecte et la surface d'un des flancs est étalonnée, principalement dans la zone du cône d'entrée.

La meilleure solution pour résoudre ce problème est l'usage de machines à fileter contrôlées par vis-mère. D'autre part, la résultante des forces radiales F_r qui existent dans chaque arête doit être nulle, car si les arêtes du taraud ne coupent pas tous égale, dû à quelque excentricité, elles font qu'existe quelque résultante, qui provoque une flexion du taraud si elle rigidement unie à la broche (b) ou un déplacement au cas où le porte-taraud soit flottant (a) ce que n'empêchera pas que l'orifice taraudé veuille s'agrandir. De la même façon dans les systèmes de fixation fixes (b) il y a une manque d'alignement entre l'orifice et l'axe du taraud. C'est pour cela l'importance de tarauder toujours avec un porte-taraud qui ait comme minimum flottation radiale ■

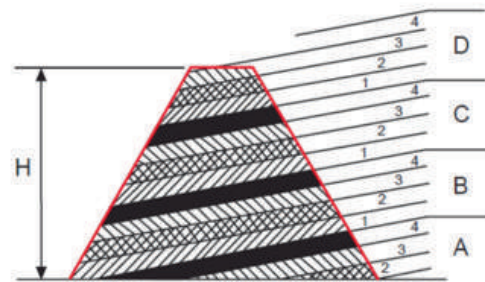
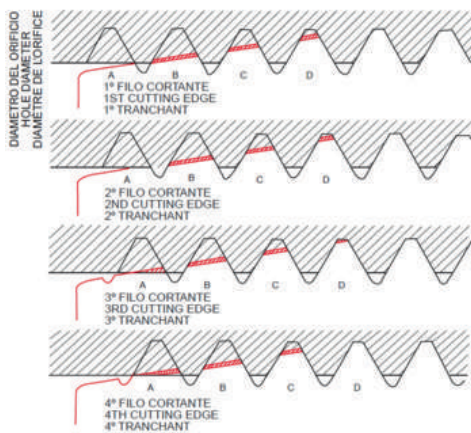
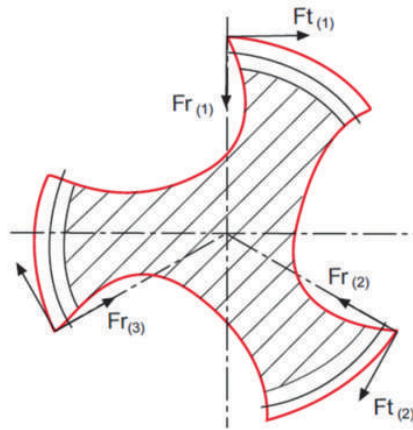
■ ESFUERZOS DE CORTE

Las fuerzas de corte que actúan durante el roscado son tres: la tangencial F_t , la radial F_r , y la axial F_x . El valor de la componente tangencial F_t determina el momento torsor. En cambio, la naturaleza y las variaciones de los componentes F_r y F_x tienen una gran influencia sobre la precisión del perfil roscado y pueden ser causa de disfuncionamientos.

La fuerza axial F_x influye en el inicio de roscado sobre el desplazamiento ó adelgazamiento de los hilos en filetes iniciales.

El valor de esta acción se reduce a medida que el macho penetra en el orificio y la superficie de los flancos cortados va en aumento. A resultados de lo que antecede, el inicio de roscado se produce incorrectamente y la superficie de uno de los flancos es escalonada, principalmente, en la zona del cono de entrada.

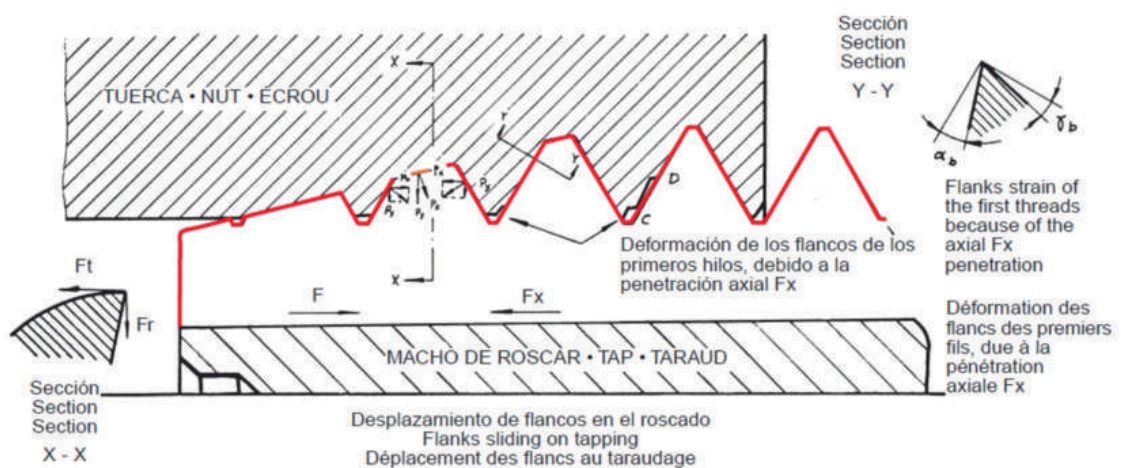
La mejor solución para resolver este problema es la utilización de máquinas roscadoras controladas por husillo patrón. Por otra parte, la resultante de las fuerzas radiales F_r que existen en cada filo debe de ser nula, ya que si los filos del macho no cortan por igual, debido a alguna excentricidad, hacen que exista alguna resultante que provoca una flexión del macho si está rigidamente unida al husillo (b) ó un desplazamiento en el caso de que el porta-machos sea flotante (a), lo que no impedirá que el orificio roscado tienda a agrandarse. Así mismo, en los sistemas de sujeción fijos (b) existen riesgos de alta de alineación entre el orificio y el eje del macho. De ahí la importancia de roscar siempre con un porta-machos que, como mínimo, tenga flotación radial ■



Distribución sobre perfil del espesor de viruta por diente

Distribution over the chip thickness profile per tooth

Distribution sur profil de l'épaisseur de copeau par dent



■ NECESSARY POWER

Is the true power to be applied to the spindle of tap holder and it's determined by:

- ▶ Torque (Mt) -. Determined by the diameter of the tap, the work material and the surface to be machined.
- ▶ Cutting speed (Vc) -. Appropriate speed depending on the material to work It be chosen.
- ▶ Efficiency of the machine (η).- This coefficient is applied depending on the condition of the machine, and will be between 0.5 and 0.9.
- ▶ Dulling coefficient (K) -. As the tool is dull is necessary to consider an increase in the cutting force, which can reach 200%, higher than the initial ■

■ PUISSANCE NÉCESSAIRE

Est la puissance réelle à appliquer à l'arbre du porte taraud et il est déterminée par:

- ▶ Torque (Mt) -. Déterminé par le diamètre du taraud, le matériau de travail et la surface à usiner.
- ▶ Vitesse de coupe (Vc) -. Une vitesse appropriée en fonction de la matière à travailler doit être choisi.
- ▶ L'efficacité de la machine (η).- Ce coefficient est appliqué en fonction de l'état de la machine, et sera comprise entre 0,5 et 0,9.
- ▶ Coefficient d'émoussé (K) -. Comme l'outil est terne est nécessaire d'envisager une augmentation de la force de coupe, qui peut atteindre 200%, supérieure à la première ■

■ POTENCIA NECESARIA

Es la potencia real a aplicar en el accionamiento del eje porta-machos y está determinada por:

- ▶ Momento torsor (Mt).- Determinado a su vez por el diámetro del macho, el material a trabajar y la superficie a mecanizar.
- ▶ Velocidad de corte (Vc).- Se elegirá la velocidad adecuada en función del material a trabajar.
- ▶ Coeficiente de rendimiento de la máquina (η).- Este coeficiente se aplicará en función del estado de conservación de la máquina, y estará comprendido entre 0,5 y 0,9.
- ▶ Coeficiente de desafilado (K).- A medida que la herramienta se desafilas es preciso tener en cuenta un aumento del esfuerzo de corte, que puede ser un 200% del inicial ■

$$P(w) = \frac{M_t * 2 * \pi * n}{60 * \eta} * K$$

M_t = momento torsor / torque (N m)

n = velocidad de giro / speed / vitesse (rpm)

η = rendimiento / efficiency / performance

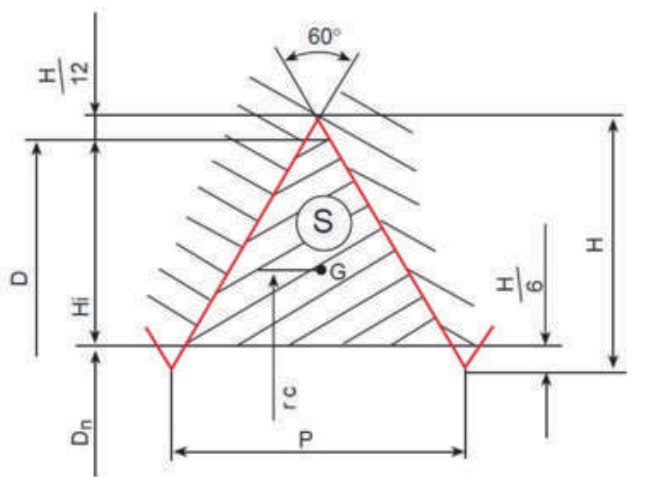
K = coeficiente de desafilado / dulling coefficient / coefficient d'émoussé

■ TORQUE / TORQUE / MOMENTO TORSOR

The torque (Mt) in threading is caused by the cutting stress. It is expressed in Nm and is determined by the pitch of thread, the cross section, the specific cutting force and the diameter of the tap.

Le couple de torsion (Mt) en taraudage est provoquée par la contrainte de cisaillement. Il est exprimée en Nm et est déterminée par le pas, la section transversale, la force de coupe spécifique et le diamètre du taraud.

El momento torsor (Mt) en el rosado es el PAR DE FUERZA originado por el ESFUERZO DE CORTE. Se expresa en N.m y está determinado por el paso de rosca, la sección de corte, la fuerza específica de corte y el diámetro del macho.



For threads with angles of 60 and 55°, and a profile height of 75%, the section to be cut will be approximately equal to:

Pour des filets à angles de 60 et 55° et à une hauteur de profil de 75%, la section à couper sera approximativement égale à :

Para roscas con ángulos de 60 y 55° y con una altura de perfil del 75%, la sección a cortar será aproximadamente igual a:

$$S = 0.25 * p^2$$

p= paso / pitch / pas

It is known that the specific cutting force depends on the strength of the material to be tapped and chip thickness. The chip thickness (e) is determined by the length of the chamfer and the number of flutes. The thickness cut by each profile can be calculated. If the number of chamfer profiles or the number of flutes are reduced, the chip section increases and, therefore, stress becomes higher.

On sait que la force spécifique de coupe est fonction de la résistance du matériel à tarauder et de l'épaisseur des copeaux.

C'est la longueur de l'entrée conique celle qui, conjointement avec le nombre de goujures, détermine l'épaisseur des copeaux (e). On peut calculer l'épaisseur qui coupe chaque profil. Si on diminue soit le nombre de profils de l'entrée conique, soit le nombre de goujures, la section de copeaux augmente, et pourtant on augmente l'effort.

La fuerza específica de corte es función de la resistencia del material a roscar y del espesor de viruta. Es la longitud del cono de entrada la que, junto con el número de canales, determina el espesor de la viruta (e). Puede calcularse el espesor que corta cada perfil. Si disminuimos el número de perfiles del cono ó bien el número de canales, la sección de viruta aumenta y, por tanto, se incrementa el esfuerzo.

$$e = \frac{0,61 * p}{C * H}$$

e = espesor / thickness / épaisseur (mm)

C = n° canales / # of flutes / n° of goujures

H = número hilos cono / # chanfer threads / n de filet á l' entrée

p = paso / pitch / pas

For a approximate calculation, we can assume for cutting taps the following values in specific cutting force (Ks) for a number of flutes and chamfer lengths adjusted to our standard and based our practice experience:

Pour une estimation approximative, nous pouvons prendre pour la force spécifique de coupe (Ks) des tarauds à coupe pour un nombre de goujures et la longueur de l'entrée ajusté à notre standard et en fonction de notre expérience de la pratique, les valeurs suivantes:

Para un cálculo aproximado, podemos suponer para machos de corte los siguientes valores de la fuerza específica de corte (Ks) para un número de canales y longitudes del cono ajustados a nuestro estándar y en base a nuestra experiencia práctica:

	K _s
Aceros al carbono y aleados / Carbon and alloyed steels	3,5 * R
Aceros inoxidables / Stainless steels / Aciers inoxydables	4 * R
Fundición y materiales de viruta corta / Cast iron and short chip materials / Fonte et matériaux avec copeau courte	3 * R
Aluminio con Si > 6% / Aluminun with Si > 6% / Aluminium avec Si > 6%	3 * R
Aluminio con Si < 6% / Aluminun with Si < 6% / Aluminium avec Si < 6%	4 * R
Aleaciones de Cr- Ni / Cr-Ni alloys / Alliages Cr-Ni	4 * R
Aleaciones de titanio / Titanium alloys / Alliages de titanium	4,5 * R

R = Resistencia a tracción / Tensile Strength / Résistance à la Traction (N / mm²)

For forming taps we increase 200% this value. The calculation formula for the torque will be :

Pour les tarauds à refouler on augmentera 200% le valeur . La formule de calcul du torque sera :

Para machos de laminación incrementaremos el valor en un 200%. La formula de cálculo del momento torsor será :

$$M_t (N.m) = \frac{K_s * p^2 * \emptyset}{8000}$$

K_s = Fuerza específica de corte / Specific cutting stress / Force de coupe spécifique (N/mm²)

∅ = diámetro nominal / nominal diameter / diametre nominal

p = paso / pitch / pas

■ CUTTING SPEED

On the one hand, the speed the tap is working at has a direct effect on its lifetime and the quality of thread cut. On the other hand, optimum cutting speeds are out of reach, as the tool feed, which is invariably the thread pitch, will always be the same. Therefore, a so important factor in all the cutting processes as the feed one is, does not force you to limit in the speed selection. The high cutting speed allows the parts to be tapped in a shorter time, but temperatures reached at the cutting area rise, which is the cause of small particle microwelding. In addition, the temperature rise reduces the hot hardness of tap. Sometimes it is better to increase the cutting speed and reduce the tap lifetime, achieving an economy in tapping times. Consequently, it is necessary to study thoroughly each case in order to attain a low market cost.

As a general rule, the cutting speed should be slowed down in the following cases:

- ▶ A coarse-pitch thread
- ▶ A blind-ended hole and it is necessary to remove the chip
- ▶ A depth hole
- ▶ The Ø to be tapped is large

On the contrary, it could be increased in these cases:

- ▶ The tap feeds by means of a standard spindle
- ▶ Short holes to be tapped
- ▶ The tap is coated
- ▶ On roll tapping

As we have said before, the cutting speed to use depends on some factors that are beyond the geometry of the tool and thus the attached table must be understood as a starting point. Each user's experience will enable him to adjust to that data to his reality.

■ VITESSE DE COUPE

La vitesse à laquelle travaille le taraud, affecte directement à la durée du même et à la qualité du filet coupé. D'autre part, les vitesses optimales de coupe sont inaccessibles, car l'avance de l'outil, étant invariablement le passage du filet, sera toujours pareil. Pourtant, un facteur si important dans tous les procédés de coupe comme est l'avance, n'oblige nous limiter dans la sélection de la vitesse. La haute vitesse de coupe, permet de tarauder les pièces dans un temps plus court, mais d'autre part on arrive à des températures plus élevées dans la zone de travail, ce qui cause des micro-soudures de petites particules. En plus l'élévation de la température diminue la dureté à chaud du taraud.

Quelques fois, il est mieux d'augmenter la vitesse de coupe et de diminuer la vie du taraud, obtenant une économie dans les temps de taraudage. Par conséquent, il est nécessaire d'examiner avec attention chaque cas afin d'obtenir un petit coût de taraudage.

En générale on doit diminuer la vitesse de coupe :

- ▶ Quand le pas du filet est grand
 - ▶ Quand l'orifice est aveugle et il faut extraire les copeaux
 - ▶ Quand l'orifice est long
 - ▶ Quand le Ø à tarauder est grand
- Au contraire on peut l'augmenter :

- ▶ Quand le taraud avance au moyen d'une vis-mère
- ▶ Quand les orifices à tarauder sont courts
- ▶ Quand le taraud a un revêtement

Comme nous l'avons dit précédemment, la vitesse de coupe à utiliser dépend de certains facteurs qui sont indépendants de la géométrie de l'outil et donc, le tableau ci-joint doit être comprise comme un point de départ. L'expérience de chaque utilisateur lui permettra adapter ces données à sa réalité.

■ VELOCIDAD DE CORTE

La velocidad con que trabaja el macho afecta directamente a la duración del mismo y a la calidad de la rosca cortada. Por otra parte, las velocidades óptimas de corte son inalcanzables, ya que el avance de la herramienta, al ser invariable el paso de la rosca, siempre será el mismo. Por tanto, un factor tan importante en todos los procesos de corte como es el avance, nos obliga a limitarnos en la elección de la velocidad. La velocidad de corte alta permite roscar las piezas en un tiempo más corto, pero, por otra parte, las temperaturas que se alcanzan en la zona de corte se elevan, siendo la causa de micro-soldaduras de pequeñas partículas. Además, la elevación de la temperatura disminuye la dureza en caliente del macho. Algunas veces es mejor aumentar la velocidad de corte y disminuir la vida del macho logrando una economía en los tiempos de roscado. Por consiguiente, es preciso estudiar con detenimiento cada caso a fin de obtener un bajo costo de roscado. Como regla general se debe disminuir la velocidad de corte

- ▶ Cuando el paso de rosca es grande
- ▶ Cuando el orificio es ciego y es preciso extraer la viruta.
- ▶ Cuando el orificio es largo.
- ▶ Cuando el Ø a roscar es grande.

A la inversa puede aumentarse:

- ▶ Cuando el macho avanza mediante husillo patrón.
- ▶ Cuando los orificios a roscar son cortos.
- ▶ Cuando el macho se recubre superficialmente.
- ▶ Cuando se rosca por laminación

Tal y como hemos dicho con anterioridad, la velocidad de corte a utilizar depende de algunos factores que se escapan a la propia geometría de la herramienta y por ello, la tabla adjunta la debemos entender como un punto de partida. La experiencia de cada utilizador le permitirá ajustar ese dato a su realidad

Velocidad de corte / Cutting speed / Vitesse de coupe			m/min
A	A1	Aceros debilmente aleados Aciers non alliés / faiblement alliés Unalloyed & low alloyed steels	20 - 25
B	B1	Aceros de construcción Aciers de construction Structural steels	20 - 25
	B2	Aceros bonificados Aciers au carbon non alliés et ameillisés Plain carbon steels	20 - 25
	B3	Aceros aleados Aciers alliés Alloyed steels	10 - 15
C	C1	Aceros para tratamiento térmico R < 1000 N/mm ² Aciers pour traitement thermique R < 1000 N/mm ² Heat Treatable Steels R < 1000 N/mm ²	5 - 10
D	D1	Aceros para tratamiento térmico R > 1200 N/mm ² Aciers pour traitement thermique > 1200 N/mm ² Heat Treatable Steels > 1200 N/mm ²	3 - 5
F	F1	Aceros inoxidables ferríticos Aciers inoxydables, ferritiques Stainless Steels, Ferritic	4 - 8
G	G1	Aceros inoxidables martensíticos Aciers inoxydables, Martensitiques Stainless Steels, Martensitic	2 - 5
H	H1	Aceros inoxidables austeníticos R < 850 N/mm ² Aciers inoxydables Austenitiques R < 850 N/mm ² Austenitic stainless steel R < 850 N/mm ²	3 - 7
	H2	Aleaciones de Ni-Cr R < 1200 N/mm ² Alliages de nickel et chrome R < 1200 N/mm ² Chromium and nickel alloys R < 1200 N/mm ²	2 - 5
I	I1	Fundición gris con grafito laminar Fontes grises à graphite lamellaire Cast iron with graphite lamellar	10 - 15
J	J1	Fundición con grafito laminar (GG) 500 < R ≤ 1000 N / mm ² Fonte à graphite lamellaire (GG) 500 < R ≤ 1000 N / mm ² Cast iron with lamellar graphite (GG) 500 < R ≤ 1000 N / mm ²	4 - 8
	J2	Fundición maleable (GGG) R ≤ 750 N / mm ² Fonte malléable (GGG) R ≤ 750 N / mm ² Malleable cast iron (GGG) R ≤ 750 N/mm ²	5 - 10
	J3	Fundición de grafito esferoidal (GGG 70-80) 750 < R ≤ 1000 N / mm ² Fonte à graphite spheroidal (GGG 70-80) 750 < R ≤ 1000 N / mm ² Spheroidal graphite cast iron (GGG 70-80) 750 < R ≤ 1000 N/mm ²	5 - 10
K	K1	Aluminio y magnesio no aleado Aluminium et magnesium pas alliés Not alloyed aluminum and magnesium	15 - 20
	K2	Aleaciones de magnesio Magnesium alliages Magnesium alloys	7 - 12
L	L1	Aleaciones de Aluminio con Si < 0,5% R < 500 N / mm ² Alliages d'aluminium ayant Si < 0,5% R < 500 N / mm ² Aluminum alloys with Si < 0,5% R < 500 N/mm ²	10 - 15
	L2	Aleaciones de Aluminio con 0,5% < Si < 10% R < 600 N / mm ² Alliages d'aluminium ayant 0,5% < Si < 10% R < 600 N / mm ² Aluminum alloys with 0,5% < Si < 10% R < 600 N/mm ²	10 - 15
M	M1	Aleaciones de Aluminio con Si > 10% R < 600 N / mm ² Alliages d'aluminium ayant Si > 10% R < 600 N / mm ² Aluminum alloys with Si > 10% R < 600 N/mm ²	6 - 12
N	N1	Cobre R ≤ 350 N / mm ² Cuivre R ≤ 350 N / mm ² Copper R ≤ 350 N/mm ²	15 - 18
	N2	Aleaciones de cobre viruta corta Short chip copper alloys Alliages de cuivre copeau court	25 - 35
	N3	Aleaciones de cobre viruta larga Long chip copper alloys Alliages de cuivre copeau long	15 - 20
Q	Q1	Niquel R ≤ 500 N/mm ² Nickel R ≤ 500 N/mm ² Nickel R ≤ 500 N/mm ²	5 - 10
	Q2	Aleaciones de niquel R < 900 N / mm ² (INCONEL 600) Alliages de nickel R < 900 N / mm ² (INCONEL 600) Nickel alloys R < 900 N/mm ² (INCONEL 600)	3 - 6
	Q3	Aleaciones de niquel 900 < R < 1200 N / mm ² (INCONEL 625/780) Alliages de nickel 900 < R < 1200 N / mm ² (INCONEL 625/780) Nickel alloys 900 < R < 1200 N/mm ² (INCONEL 625/780)	2 - 5
T	T1	Titanio R ≤ 700 N / mm ² Titane R ≤ 700 N / mm ² Titanium R ≤ 700 N/mm ²	7 - 12
	T2	Aleaciones de titanio recocidas R ≤ 900 N / mm ² Alliages de titane recuits R ≤ 900 N / mm ² Annealed titanium alloys R ≤ 900 N/mm ²	5 - 12
	T3	Aleaciones de titanio 900 < R ≤ 1200 N/mm ² Alliages de titane 900 < R ≤ 1200 N/mm ² Titanium alloys 900 < R ≤ 1200 N/mm ²	2 - 5
P	P1	Plásticos Thermoplastique Thermoplastic	6 - 15

As a guideline criteria, we can take as our coated taps can work at twice the speed of an uncoated tap and for spiral taps must use 65% of the reference value ■

En tant que critères d'orientation, nous pouvons prendre que nos tarauds revêtus peuvent travailler à deux fois la vitesse d'un taraud non revêtu et pour tarauds helicoidaux on doit utiliser 65% de la valeur de reference ■

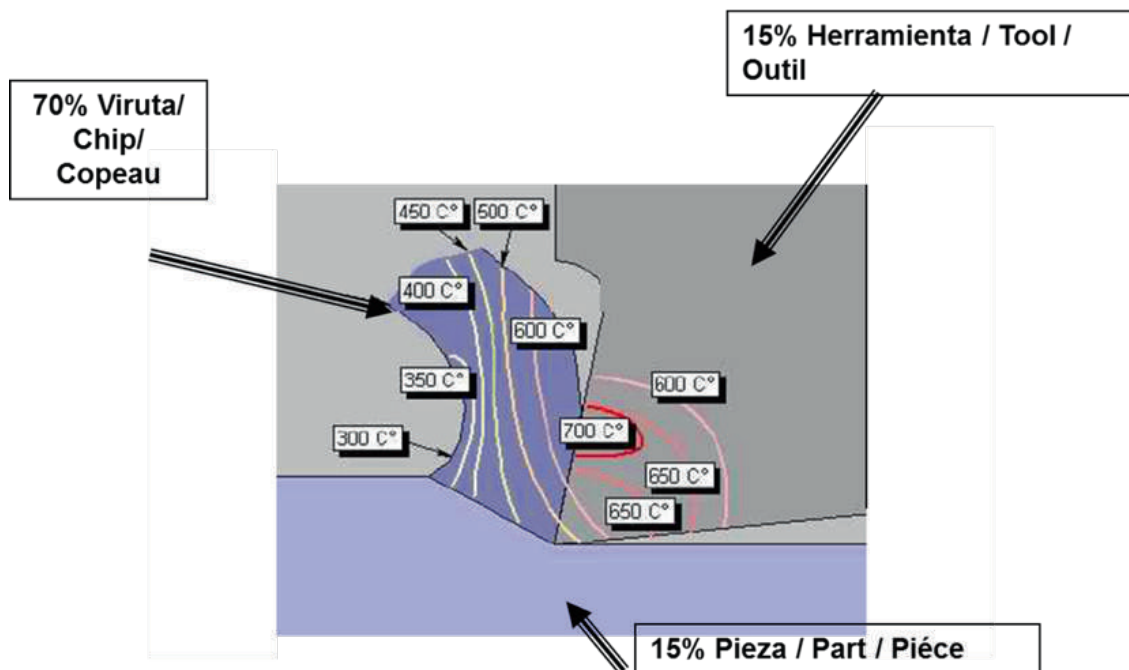
Como criterio orientativo podemos tomar como base que nuestros machos con recubrimiento pueden trabajar al doble de la velocidad de un macho sin él y los machos helicoidales deberán hacerlo a un 65% del valor de referencia ■

■ COOLING / REFRIGÉRANTE / REFRIGERANTE

The main role required a coolant, is the reduction of heat generated in the cutting process, mainly due to: friction of the chip against the tool and internal shear stress and compression. Therefore, we must: be lubricated to reduce metal to metal friction and facilitate the sliding of the chip over the tool, get a shorter chip and efforts in terms of weaker shear and cooling to dissipate the heat generated in the tool, the chips and the workpiece.

Le rôle principal d'un réfrigérant tenu, est la réduction de la chaleur générée dans le processus de coupe, en raison principalement de: le frottement entre les copeaux et l'outil et les forces internes de cisaillement et de compression. Par conséquent, nous devons: lubrifier afin de réduire la friction métal en métal et faciliter le glissement de les copeaux sur l'outil, obtenir une copeau plus courte et les efforts en cisaillement plus faibles et de refroidir pour dissiper la chaleur générée dans l'outil, les copeaux et la pièce à usiner.

El principal rol exigible a un REFRI-GERANTE, es la reducción del calor generado en el proceso de corte, básicamente debido a: rozamiento de la viruta contra la herramienta y los esfuerzos internos de cizallamiento y de compresión. Por tanto, debemos: lubricar para disminuir el roce metal contra metal y facilitar el deslizamiento de la viruta sobre la herramienta, obtener una viruta más corta y esfuerzos en el plano de cizallamiento más débiles y refrigerar para disipar el calor generado: en la herramienta, las virutas y la pieza a mecanizar.



Accuracy of the tapped hole, the life of the tool and the torque dependent on the correct choice of refrigerant. Often with appropriate taps good results in tolerance are not obtained, because the coolant is not correct. When the materials are high strength and sticky, such as stainless steel, the influence of proper lubrication is essential.

Schematically we can say that to analyze the influence of the cooling of workpieces minimally we need to verify:

- The refrigerant types (emulsions, oils, ...): Given the importance of the surface quality of the thread, has been reached the conclusion that when possible you must use a quality oil. Where coolant is used, its concentration should be increased to the maximum recommended by the supplier (10% - 12%).
- Application systems on the piece: External irrigation, internal irrigation, MQL, ...
- Maintenance and cleaning filters, pumps, ...

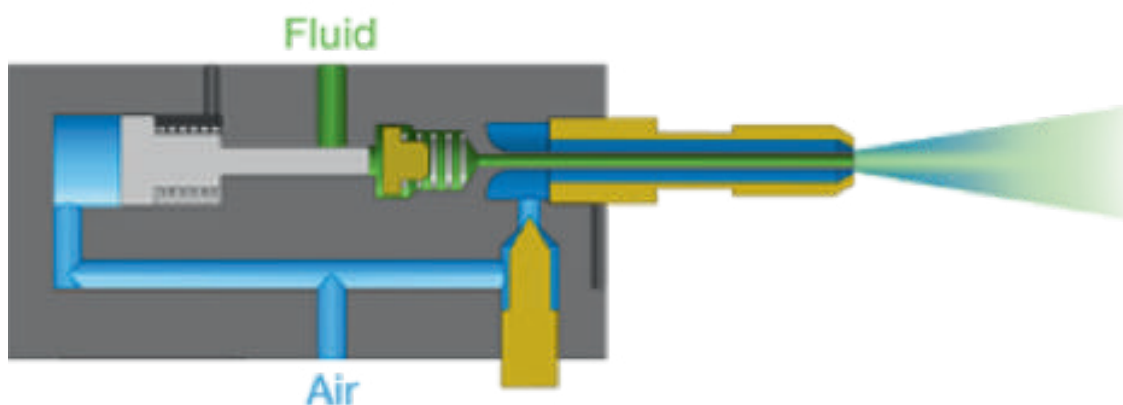
La précision du trou taraudé, la durée de vie de l'outil et le torque dépendent du choix correct de réfrigérant. Souvent avec des tarauds appropriés de bons résultats en tolérance ne sont pas obtenus, parce que le liquide de refroidissement n'est pas correct. Lorsque les matériaux sont de haute résistance et collantes, tels que les aciers inoxydables, l'influence de la lubrification appropriée est essentielle. Schématiquement, on peut dire que d'analyser l'influence du refroidissement des pièces minimum nous devons vérifier:

- Les différents types de fluides (émulsions, huiles, ...): Compte tenu de l'importance de la qualité du filet de surface, il est venu à la conclusion que chaque fois que possible, vous devez utiliser une huile de qualité. Lorsque des émulsions sont utilisés, sa concentration doit être augmentée à un maximum recommandée par le fournisseur (10% - 12%).
- Les systèmes d'application sur la pièce: irrigation externe, irrigation interne, MQL, ...
- Les filtres d'entretien : nettoyage, pompes,...

De la correcta elección del refrigerante, depende la precisión del orificio roscado, la vida de la herramienta y el momento torsor. Es frecuente que con un macho correcto en cuanto a medidas no se obtenga un orificio a las tolerancias requeridas, debido a que el refrigerante no es el adecuado. Cuando los materiales son de elevada resistencia y pegajosos, tales como los aceros inoxidable, la influencia de una correcta lubricación es vital.

De manera esquemática podemos afirmar que para analizar la influencia de la refrigeración de las piezas a mecanizar mínimamente debemos controlar:

- Los tipos de refrigerante (emulsiones, aceites, ...) : Teniendo en cuenta la importancia que tiene la calidad superficial de la rosca, se ha llegado a la conclusión de que siempre que sea posible hay que utilizar un aceite de calidad. En aquellos casos en que se use taladrina, es preciso aumentar su concentración hasta el máximo recomendado por el suministrador (10% - 12 %).
- Los sistemas de aplicación sobre la pieza: riego externo, riego interno, MQL, ...
- El mantenimiento y limpieza : filtros, bombas,...



Dispositivo refrigeración interna MQL
MQL internal cooling device
Dispositif de refrigeration interne

FORMING TAP / TARAUD À REFOULER / MACHO DE LAMINACION

The roll tapping consists of forming the material without cutting its fibrous structure. This system can be used indistinctly in either through or blind-ended holes, but it requires materials with a elongation coefficient of 10 - 12% and a maximum tensile strength of 900 N/mm2 ■

Les tarauds à refoiler taraudent en conformant le matériel sans couper la structure fibreuse de celui-ci. Ce système peut être employé indistinctement tant pour des trous de débouchantes comme pour ceux borgnes, mais il demande que les matériaux aient un coefficient d'allongement minimum 10 - 12% et une résistance à la traction maximum de 900 N/mm2 ■

Los machos de laminación roscan conformando el material sin cortar la estructura fibrosa de éste. Este sistema se puede emplear tanto en agujeros pasantes como ciegos indistintamente, pero requiere que los materiales tengan un coeficiente de alargamiento mínimo del 10 -12%.y una resistencia a la tracción máxima de 900 N/mm2 ■

PREVIOUS HOLE

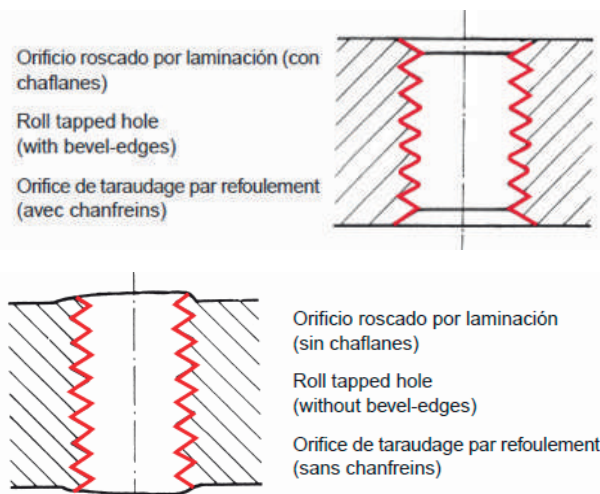
The previous hole is a significant factor with regard to the result to be achieved and, therefore, a thorough control is necessary for the size and surface quality. In addition, it is advisable to make bevel edges at the ends of these holes in order to prevent built-up material from being produced. The following formulas will be applied for the calculation of the diameter to be drilled and profiles of 60° and 55°:

ORIFICE PRÉALABLE

L'orifice préalable est un facteur très important de face au résultat à obtenir et pourtant il est nécessaire un sévère contrôle tant de la mesure que de la qualité en surface. D'autre part il est convenable de réaliser des chanfreins aux bouts de ces orifices afin d'éviter du matériel à bûchilles. Pour le calcul du diamètre à perçer, et profils de 60° et 55°, on appliquera les formules suivantes :

ORIFICIO PREVIO

El orificio previo es un factor muy importante de cara al resultado a obtener y, por tanto, es necesario un severo control tanto de la medida como de la calidad superficial. Por otra parte, es conveniente realizar chaflanes en los extremos de estos orificios con el fin de evitar material recrecido. Para el cálculo del diámetro a taladrar para roscas con perfiles de 60° y 55°, se aplicarán las fórmulas siguientes :

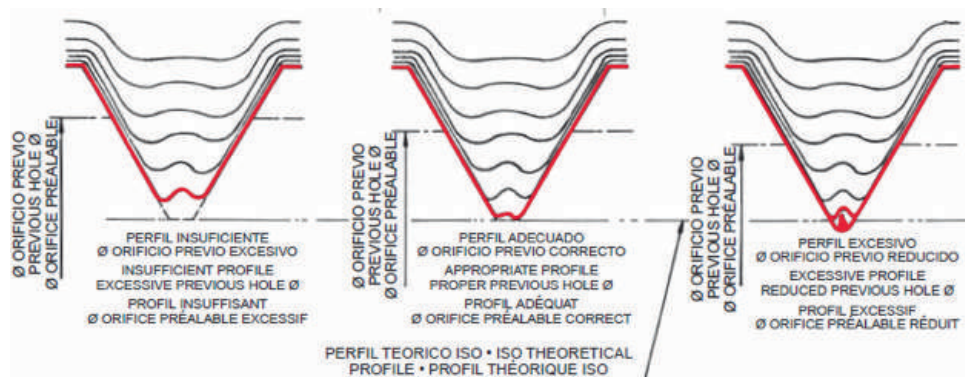


Tolerancia Tolerance : 6H

$$\begin{aligned} \text{Máx} &= \varnothing_{\text{nominal}} - 0.48 * p \\ \text{mín} &= \varnothing_{\text{nominal}} - 0.43 * p \end{aligned}$$

Tolerancia Tolerance : 6G

$$\begin{aligned} \text{Máx} &= \varnothing_{\text{nominal}} - 0.46 * p \\ \text{mín} &= \varnothing_{\text{nominal}} - 0.41 * p \end{aligned}$$



■ ROLLING SPEED

The optimum rolling speed is to be confirmed in the proper process, to reach up to the suitable speed. Friction reaches very high values and, therefore, generates high temperatures, so that the application of coatings taking up the mentioned effects will be highly required. As a general guidance, the rolling speeds are 50% higher than those of a conventional cutting tapping ■

■ TORQUE

The torque (Mt) of these taps is higher and it can be up to 2 times that of a conventional tapping. The twisting torque can become increased in tappings of length longer than 2xd ■

■ COOLING

Lubrication is of great significance and the system is to be provided with the suitable conditions to avoid the previously mentioned effects. In general, oils with suitable high pressure characteristics and formulas are recommended ■

■ VITESSE DE REFOULEMENT

La vitesse optimale de refolement doit être confirmée dans la propre procédure, jusqu'à arriver à la vitesse apte. Le frottement arrive à des valeurs très grands et pourtant il produit des températures élevées, pour cela, il est très nécessaire l'application de revêtements qui compensent les effets mentionnés. Comme orientation générale les vitesses de refolement sont un 50% supérieures à celles d'un taraudage conventionnel par coupe ■

■ MOMENT DE TORSION

Le moment de torsion (Mt) de ces tarauds est supérieur et il peut être jusqu'à 2 fois celui d'un filetage conventionnel. Le couple de torsion peut être augmentés en filetages à longueur supérieure à 2xd ■

■ RÉFRIGÉRANT

La lubrification est très important et le système doit réunir les conditions appropriées pour éviter les effets préalablement mentionnés. En général on recommande des huiles à caractéristiques et formulations appropriées à pression haute ■

■ VELOCIDAD DE LAMINACION

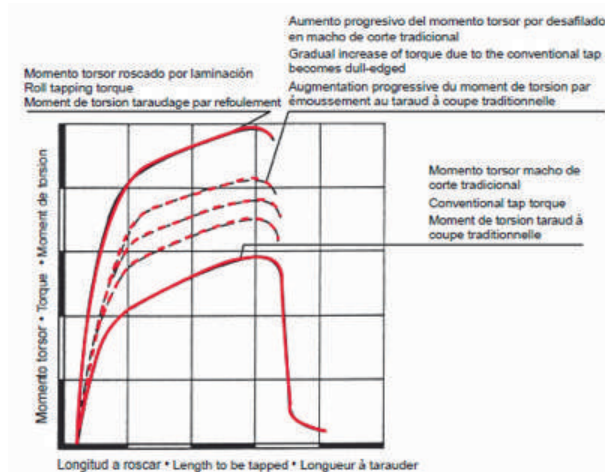
La velocidad óptima de laminación debe de ser confirmada en el propio proceso, hasta alcanzar la velocidad idónea. La fricción alcanza valores muy altos y, por tanto genera temperaturas elevadas, por lo que es muy necesaria la aplicación de recubrimientos superficiales que contrarresten los efectos citados. Como orientación general las velocidades de laminación son , un 50% superiores a las de un roscado convencional por corte ■

■ MOMENTO TORSOR

El momento torsor (Mt) de estos machos es superior y puede ser hasta 2 veces el de un roscado convencional. El par torsor puede verse incrementado en roscados de longitud superior a 2xd ■

■ REFRIGERANTE

La lubricación es muy importante y el sistema debe reunir las condiciones adecuadas para evitar los efectos citados anteriormente. En general, se recomiendan aceites con características y formulaciones adecuadas de alta presión ■



■ ADVANTAGES OF ROLL TAPS

The roll taps have very significant advantages:

- No chips produced
- Higher accuracy of measurement.
- Higher quality of surface finish.
- Improvement in the engineering properties of the thread.
- Higher productivity: tap lifetime, cutting speed ■

■ AVANTAGES DU TARAUD À REFOULER

Les tarauds à refoiler offrent des avantages très importants:

- Absence de copeaux
- Précision supérieure de mesure.
- Plus grande qualité de finissage.
- Amélioration des propriétés mécaniques du filet.
- Plus grande productivité: vie du taraud, vitesse de coupe ■

■ VENTAJAS DEL MACHO DE LAMINACION

Los machos de laminación ofrecen ventajas muy importantes:

- Ausencia de virutas
- Superior precisión de medida.
- Mayor calidad de acabado
- Mejora de las propiedades mecánicas de la rosca.
- Mayor productividad: vida del macho, velocidad de corte ■



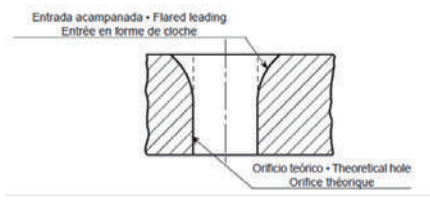
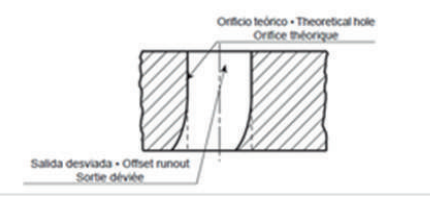
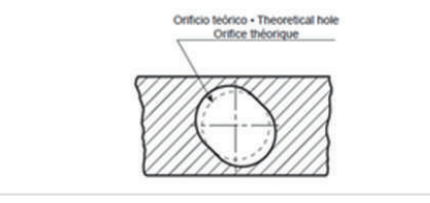
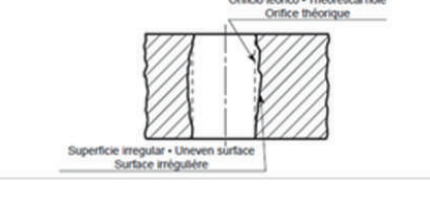
ERRORS AND DIFFICULTIES IN TAPPING / ERREURS ET DIFFICULTÉS EN TARAUDAGE / ERRORES Y DIFFICULTADES EN EL ROSCADO

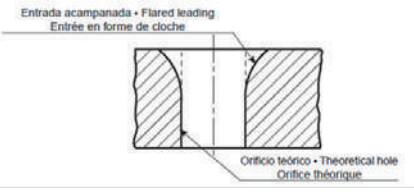
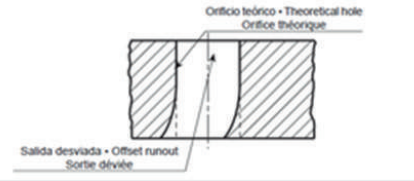
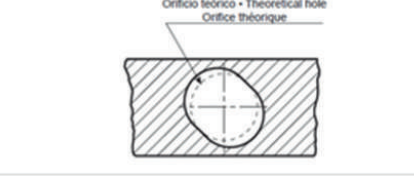
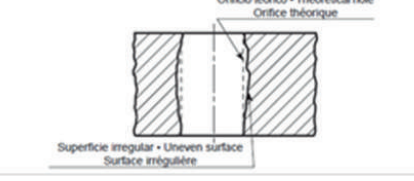
	Posibles causas / Possible causes / Causes possibles	Soluciones / Solutions
Desgaste prematuro Prematurely worn tap Usure prématurée du taraud	Velocidad de corte excesiva Excessive cutting speed Vitesse de coupe excessive	Reducir la velocidad hasta las recomendaciones Slow down the speed to the specifications Réduire la vitesse jusqu'aux recommandations
	Material abrasivo Abrasive material Material abrasif	Control de la herramienta Tool control Control de l'outil
	Orificio previo mal ejecutado o endurecido Previous hole wrongly performed or hardened Orifice préalable mauvais exécuté ou endurci.	Utilizar brocas bien afiladas y revisar las condiciones de taladrado y refrigeración Use well-sharpened drills and check the drilling and cooling conditions
	Mala refrigeración Poor cooling Mauvaise réfrigération	Control del sistema de refrigeración Coolant system control Control du system de réfrigération
Perfiles de rosca rotos o arrancados Thread profiles broken or torn Profils de filet cassés ou arrachés	Mala evacuación de la viruta Poor chip evacuation Mauvais évacuation des copeaux	Elección correcta del tipo del macho y controlar la velocidad de corte Correct selection of the type of tap and control de cutting speed Choix correct du type du taraud and contrôler la vitesse de coupe
	Roscas repasadas Threads reset Filets repassés	Elección correcta del tipo del macho Correct selection of the type of tap Choix correct du type du taraud.
	El macho choca contra el fondo del orificio The tap impacts against the drilled hole bottom Le taraud heurte contre le fond de l'orifice	Control de la longitud roscada Control of tapped length Contrôle de la longueur taraudée.
	Ángulo de corte incorrecto Incorrect cutting angle Mauvaise angle de coupe	Corrección del ángulo de corte Cutting angle correction Correction de l'angle de coupe.
Mala calidad superficial de la rosca Poor thread surface quality Mauvaise qualité en surface du filet	Embotamiento o desgaste del macho Tap dulling or wear Émoussage ou usure du taraud.	Sustitución del macho Tap replacement Remplacement du taraud.
	Refrigerante no adecuado o insuficiente Unsuitable or insufficient coolant Réfrigérant non approprié ou insuffisant.	Control de la refrigeración : caudal y presión Cooling control: flow and pressure Contrôle de la réfrigération débit et pression
	Mala evacuación de la viruta Poor chip evacuation Mauvais évacuation des copeaux	Elección correcta del tipo del macho Correct selection of the type of tap Choix correct du type du taraud.

	Posibles causas / Possible causes / Causes possibles	Soluciones / Solutions
Sobremedida en el roscado Oversize in tapping Démasure au taraudage	Falta de alineación macho y orificio Lack of alignment between hole and tap Manque d'alignement entre trou et taraud.	Control de la alineación Alignment control Contrôle de l'alignement
	Material soldado en los filos de corte. (Soldadura en frío) Welded material on cutting edges. (Cold welding) Matériel soudé aux arêtes de coupe (Soudure à froid)	Control de la refrigeración y la velocidad o recubrir con un tratamiento superficial Control of cooling and speed or choose a coated tap Contrôle de la réfrigération et la vitesse ou recouvrir avec un traitement superficiel
	Velocidad de corte excesiva Excessive cutting speed Vitesse de coupe excessif	Reducir la velocidad hasta las recomendaciones Slow down the speed to the specifications Réduire la vitesse jusqu'aux recommandations
	Geometría no adecuada para la aplicación Geometry not suitable for the application. Géométrie pas adapté pour l'application.	Elección correcta del tipo del macho Correct selection of the type of tap Choix correct du type du taraud.
Flancos desplazados en los primeros hilos Flanks with first threads shifted Flancs déplacés les premiers fils	Excesiva presión axial de penetración en machos helicoidales o insuficiente en machos E/C Excessive penetration axial pressure for spiral taps or insufficient for spiral pointed Pression de pénétration axiale excessive pour les tarauds hélicoïdaux ou insuffisante pour les entrée gun	Utilización de porta machos con compensación axial Use of tap-holder with axial compensation Utilisation de porte-tarauds à compensation axiale.
	Falta de sincronización entre avance y rotación Lack of synchronization between feed and rotation Manque de synchronisation entre avance et rotation.	Utilización de porta machos con compensación axial, corrección de la programación del paso en el CNC, utilización de husillo patrón. Use of tap-holder with axial compensation, control of pitch programming in CNC machines, use of standard spindle. Utilisation de porte-tarauds à compensation axiale, contrôle de la programmation du pas en machines CNC, utilisation de vis-mère.
	Excesiva presión de avance al retroceso Excessive forward pressure to reverse Pression axiale de recul excessive.	Utilización de porta machos con compensación axial Use of tap-holder with axial compensation Utilisation de porte-tarauds à compensation axiale.
Rotura del macho Tap breakage Rupture du taraud	Orificio previo pequeño Small previous hole Orifice préalable petit	Control del orificio Hole control Contrôle de l'orifice
	El macho choca contra el fondo del orificio taladrado The tap impacts against the drilled hole bottom. Le taraud heurte contre le fond de l'orifice.	Control de la longitud roscada Control of tapped length Contrôle de la longueur taraudée
	El ángulo de corte del macho no es el correcto para ese material The tap cutting angle is not the correct one for this material L'angle de coupe du taraud n'est pas l'approprié pour ce matériel.	Elección correcta del tipo de macho Correct selection of the type of tap Choix correct du type de taraud
	Falta de alineación entre pieza y macho Lack of alignment between part and tap Manque d'alignement entre pièce et taraud	Control de la alineación Alignment control Contrôle de l'alignement
	Material soldado en los filos de corte. (Soldadura en frío) Welded material on cutting edges. (Cold welding) Matériel soudé aux arêtes de coupe (Soudure à froid)	Control de la refrigeración y la velocidad o recubrir con un tratamiento superficial Control of cooling and speed or choose a coated tap Contrôle de la réfrigération et la vitesse ou recouvrir avec un traitement superficiel



PREVIOUS HOLE QUALITY QUALITÉ DU AVANT TROU / CALIDAD DEL ORIFICIO PREVIO

ORIFICIO CON ENTRADA CONICA ACAMPANADA Las roscas efectuadas en estos tipos de orificios tienden a salir también deformadas en medida, pasando el calibre "NO PASA" en la embocadura. HOLE WITH FLARED TAPER LEAD Threads performed, in these types of holes, are also likely to become dimensionally strained at the runout, passing the « NO-GO » gauge through the entrance. ORIFICE À ENTRÉE CONIQUE EN FORME DE CLOCHE Les filets réalisés dans ce type d'orifices, sortent normalement déformés aussi en mesure, passant le calibre « NE PASSE PAS » à l'entrée.	
ORIFICIOS CON SALIDA DE BROCA DESVIADA Generalmente se producen cuando las herramientas están desafiladas. Las roscas tienden a seguir la forma del taladro, sufriendo los machos esfuerzos de flexión. HOLES WITH OFFSET DRILL RUNOUT In general, these are produced when tools are dull-edged. Threads are likely to follow the drilling machine shape, producing bending stresses on taps. ORIFICES À SORTIE DU FORET DÉVIÉ Généralement ils se produisent quand les outils sont émoussés. Les filets suivent normalement la forme de l'alésage, souffrant les tarauds des efforts de flexion.	
ORIFICIOS NO CIRCULARES Estos orificios se producen al trabajar con brocas afiladas inadecuadamente y/o impropias al material a trabajar. Al roscar estos orificios, las crestas de las roscas salen con anchos diferentes. NON CIRCULAR HOLES These holes are produced when operating with improperly dressed drills and not according to the material to work with. On tapping these holes, the tips of threads are produced with different widths. ORIFICES NON CIRCULAIRES Ces orifices se produisent en travaillant avec des foret incorrectement affilés et impropres du matériel à travailler. En taraudant ces orifices les sommets du filetage sortent à des largeurs différentes.	
ORIFICIOS CON PERFIL IRREGULAR Estos orificios tienen mala superficie, por lo cual resultan variaciones en las dimensiones de la rosca. HOLES WITH UNEVEN PROFILE These holes have a bad surface, resulting in variations in the thread dimensions. ORIFICES À PROFIL IRRÉGULIER Ces orifices ont une mauvaise surface, pour cela il y a des variations dans les dimensions du filet.	
ORIFICIOS CON SOBREMEDIDA Normalmente todas las brocas producen este defecto. Cuando la rosca es precisa, conviene controlar la altura del perfil de la rosca y controlar la holgura en la caña del taladro. OVERSIZED HOLES Usually, all the drills produce this fault. When the thread is accurate, it should be advisable to control the thread profile height as well as the clearance in the drilling machine shank. ORIFICES SURMESURÉS	

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THREAD TABLES AND TOLERANCES

TABLEAUX ET TOLÉRANCES DES FILETS

TABLAS Y TOLERANCIAS DE ROSCAS

TAPS FOR ISO METRIC THREADS

The tolerances established in these standards are useful for making the ISO metric thread from 1 mm. of diameter. They correspond to the tolerances established in the ISO 965 standard, sections 1, 2 and 3 ■

TARAUDS POUR FILETAGE MÉTRIQUE ISO

Les tolérances fixées dans cette norme, servent pour la fabrication du filetage métrique ISO à partir de 1 mm de diamètre. Elles se correspondent avec les tolérances établies dans la norme ISO 965 parties 1, 2 et 3 ■

MACHOS DE ROSCAR PARA ROSCA ISO-METRICA

Las tolerancias fijadas en esta norma sirven para la fabricación de rosca ISO métrica a partir de 1 mm de diámetro. Se corresponden con las tolerancias establecidas en la norma ISO 965 partes 1, 2 y 3 ■

A NUT PROFILE. ABBREVIATIONS AND DESIGNATIONS

A PROFIL D'ECROU. ABRÉVIATIONS ET DÉNOMINATIONS

A PERFIL DE TUERCA. ABREVIATURAS Y DENOMINACIONES

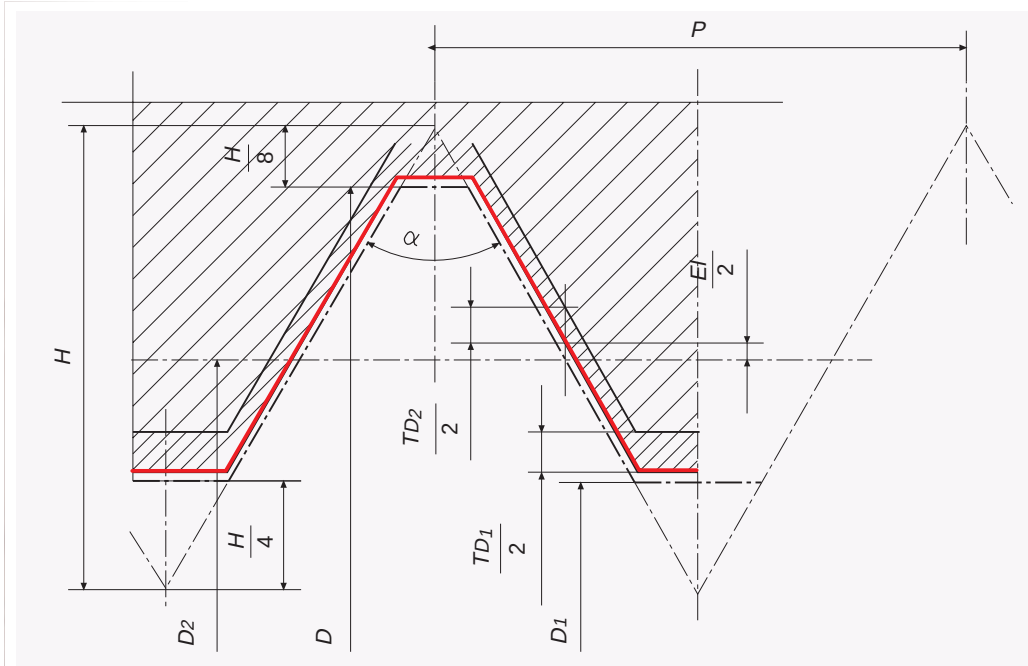


FIGURA / FIGURE / FIGURE 1

1.1. Nut thread

D	Nominal outside diameter.
D1	Nominal core diameter.
D2	Diameter at nominal flank.
P	Thread pitch.
H	Theoretical profile height.
EI	Essential difference.
TD1	Core diameter tolerance.
TD2	Diameter at flanks tolerance.

1.1. Filet à écrou

D	Diamètre extérieur nominal.
D1	Diamètre du noyau nominal.
D2	Diamètre au flanc nominal.
P	Pas du filet.
H	Hauteur du profil théorique.
EI	Différence fondamentale.
TD1	Tolérance du diamètre du noyau.
TD2	Tolérance du diamètre aux flancs.

1.1. Rosca de tuerca

D	Diámetro exterior nominal.
D1	Diámetro del núcleo nominal.
D2	Diámetro en el flanco nominal.
P	Paso de rosca.
H	Altura del perfil teórico.
EI	Diferencia fundamental.
TD1	Tolerancia del diámetro del núcleo.
TD2	Tolerancia del diámetro en los flancos.

■ **TAP PROFILE.**
ABBREVIATIONS AND
DESIGNATIONS

■ **PROFIL DE TARAUD.**
ABRÉVIATIONS ET
DÉNOMINATIONS

■ **PERFIL DEL MACHO.**
ABREVIATURAS Y
DENOMINACIONES

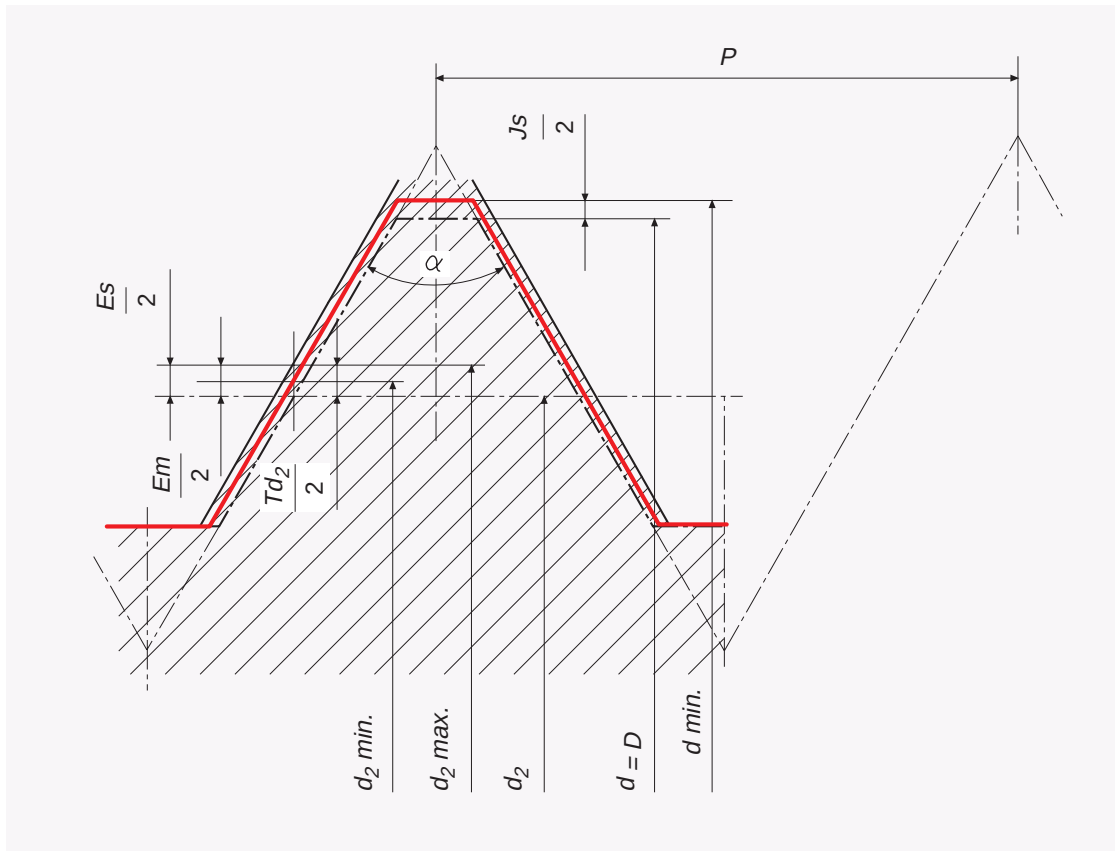


FIGURA / FIGURE / FIGURE 2

2.1. Tap thread

d = D	Nominal diameter.
d.min.	Minimum outside diameter.
Js	Tolerance at outside diameter.
d2 = D2	Nominal flank diameter.
d2 min.	Minimum flank diameter.
d2 máx.	Maximum flank diameter.
Es	Maximum tolerance value in flank diameter.
Em	Minimum tolerance value in flank diameter.
TD2	Flank diameter tolerance.

2.1. Filet de taraud

d = D	Diamètre nominal.
d.min.	Diamètre extérieur minimum.
Js	Tolérance en diamètre extérieur.
d2 = D2	Diamètre des flancs nominal.
d2 min.	Diamètre des flancs maximum.
d2 máx.	Diamètre des flancs minimum.
Es	Valeur maximale de tolérance en diamètre des flancs.
Em	Valeur minimum de tolérance en diamètre des flancs.
TD2	Tolérance du diamètre des flancs.

2.1. Rosca del macho

d = D	Diámetro nominal.
d.min.	Diámetro exterior mínimo.
Js	Tolerancia en diámetro Exterior.
d2 = D2	Diámetro de flancos nominal.
d2 min.	Diámetro de flancos mínimo.
d2 máx.	Diámetro de flancos máximo.
Es	Valor máximo de tolerancia en diámetro de flancos.
Em	Valor mínimo de tolerancia en diámetro de flancos.
TD2	Tolerancia del diámetro de flancos.

TAPS FOR ISO / DIN METRIC THREADS

TARAUDS POUR FILETAGE MÉTRIQUE ISO /

MACHOS PARA ROSCAS METRICAS ISO

COMPARAISON BETWEEN TOLERANCE SCOPES OF FEMALE THREADS AND TOLERANCE SCOPES OF CORRESPONDING TAPS

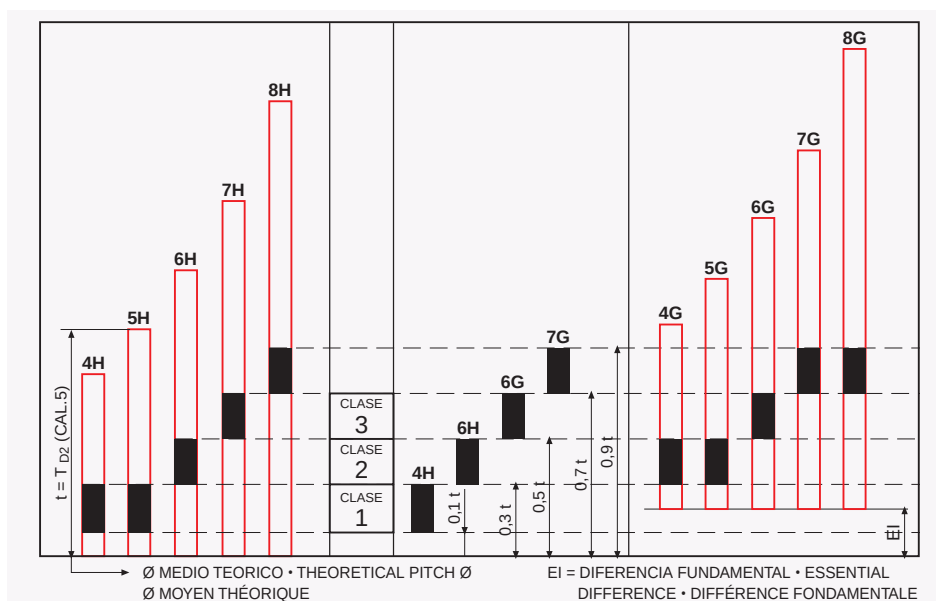
COMPARAISON ENTRE MARGES DE TOLÉRANCE DES FILETS FEMELLES ET LES MARGES DE TOLÉRANCE DES TARAUDS CORRESPONDANTS

COMPARACIÓN ENTRE CAMPOS DE TOLERANCIA DE LAS ROSCAS INTERIORES Y CAMPOS DE TOLERANCIA DE LOS MACHOS DE ROSCAR CORRESPONDIENTES

DIN EN 22 857		
CLASE DE APLICACION DE LOS MACHOS		
TAP APPLICATION CLASS		
CLASSE D'APPLICATION DES TARAUDS		
DESIGNACIÓN DESIGNATION DESIGNATION	IDENTIFICACIÓN IDENTIFICATION IDENTIFICATION	
CLASE 1	ISO 1	
CLASS 2	ISO 2	
CLASSE 3	ISO 3	
-	-	

CAMPOS DE TOLERANCIA DE LA ROSCA DE LA TUERCA				
NUT THREAD TOLERANCE SCOPE				
MARGES DE TOLÉRANCE DES FILETS À ÉCROU				
4H	5H			
4G	5G	6H		
		6G	7H	8H
			7G	8G

DIN 802	
CLASE DE TOLERANCIA DEL MACHO	
TAP TOLERANCE CLASS	
CLASSE DE TOLÉRANCE DE TARAUD	
4H	
6H	
6G	
7G	



La norma permite modificaciones de las Tolerancias arriba indicadas, para casos específicos (materiales, tipos de orificios, etc.) al objeto de adecuarlas a la obtención de la tolerancia deseada en los orificios roscados. Ejemplo 4HX - 6HX - 6GX etc. Salvo expresa indicación en contra, los machos se fabricarán en tolerancia 6H (ISO 2) como norma STANDARD ■

La norme permet des modifications des Tolérances indiquées ci-dessus, en cas spécifiques (matériaux, genres de trous, etc.) afin de les accorder à l'obtention de la tolérance désirée dans les trous taraudés. Exemple 4HX - 6HX - 6GX etc. Sauf indication expresse en contre, les tarauds seront fabriqués dans la tolérance 6H (ISO 2) comme norme STANDARD ■

The standard allows the above mentioned Tolerances to be modified for specific cases (materials, types of holes, etc.) in order to match them for achieving the required tolerance in threaded holes. Example 4HX - 6HX - 6GX etc. Unless otherwise expressly stated to the contrary, taps will be manufactured with 6H (ISO 2) tolerance as a STANDARD ■

■ DIAMÈTRE EXTÉRIEUR OUTSIDE DIAMETER

Only has the minimum admissible dimension been fixed for the outside nut thread diameter. It is for nut thread of tolerance position H equal to the nominal outside diameter of nut thread D (see figure 3). For nut threads with positive essential difference (tolerance position G) the minimum admissible dimension in the essential difference Au increases (see figure 4). In order to take up the tap wear, the minimum admissible dimension $d_{\min.}$ of the new tap is given a surplus, which is the 40% of the tolerance of the nominal diameter at flanks D2 for quality 5 of the nut thread according to DIN 13, page 32. The maximum admissible dimension $d_{\max.}$ is left free ■

■ DIAMÈTRE EXTÉRIEUR

Pour le diamètre extérieur du filet à écrou on a fixé seulement la mesure minimum admissible. C'est pour le filet à écrou de la position de tolérance H égale au diamètre extérieur nominal du filet à écrou D (voir figure 3). Pour les filets à écrou à différence fondamentale positive (position de tolérance G) augmente la mesure minimum admissible dans la différence fondamentale Au (voir figure 4). Pour compenser l'usure du taraud, il reçoit la mesure minimum admissible $d_{\min.}$ du nouveau taraud, une surépaisseur qui est 40% de la tolérance du diamètre aux flancs nominal D2 pour qualité 5 du filet à écrou selon DIN 13, page 32. La mesure maximum admissible $d_{\max.}$ reste libre. ■

■ DIAMETRO EXTERIOR

Para el diámetro exterior de la rosca de tuerca se ha fijado sólo la medida mínima admisible. Es para rosca de tuerca de la posición de tolerancia H igual al diámetro exterior nominal de la rosca de tuerca D (véase figura 1). Para roscas de tuerca con diferencia fundamental positiva (posición de tolerancia G) aumenta la medida mínima admisible en la diferencia fundamental Ei (véase figura 4). Para compensar el desgaste del macho de roscar recibe la medida mínima admisible $d_{\min.}$ del macho de roscar nuevo una demasía que es 40% de la tolerancia del diámetro en los flancos nominal D2 para calidad 5 de la rosca de tuerca según DIN 13, hoja 32. La medida máxima admisible $d_{\max.}$ queda libre. ■

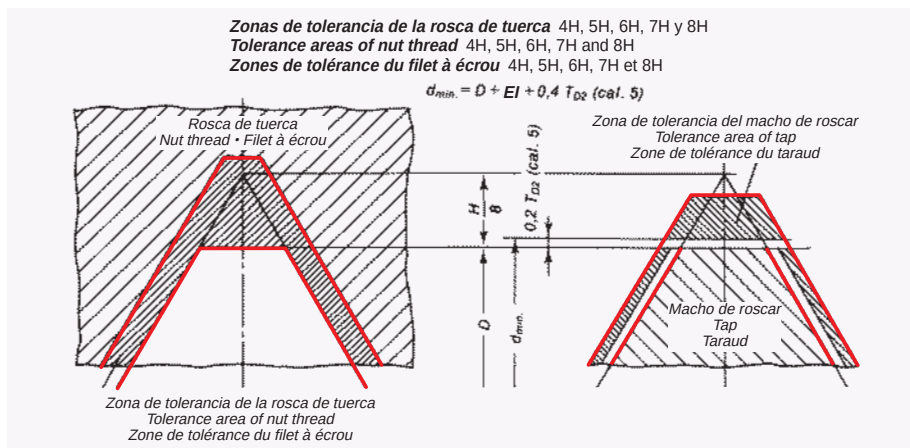


FIGURA 3 • FIGURE 3 • FIGURE 3

Mínimo diámetro exterior admisible $d_{\min.}$ para machos de roscar para rosca de tuerca con zona de tolerancia 4H, 5H, 6H, 7H y 8H.
Minimum admissible outside diameter $d_{\min.}$ for nut thread taps with tolerance area 4H, 5H, 6H, 7H and 8H.
Diamètre minimum admissible $d_{\min.}$ pour tarauds, pour filets à écrou a zone de tolérance 4H, 5H, 6H, 7H et 8H.

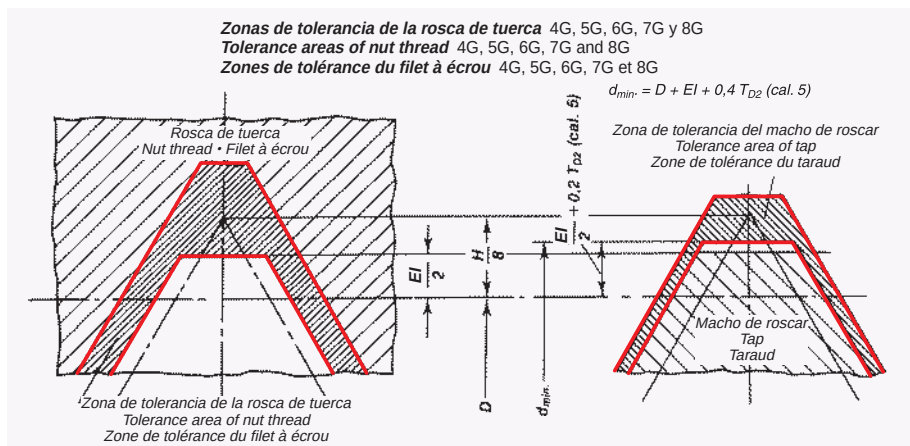


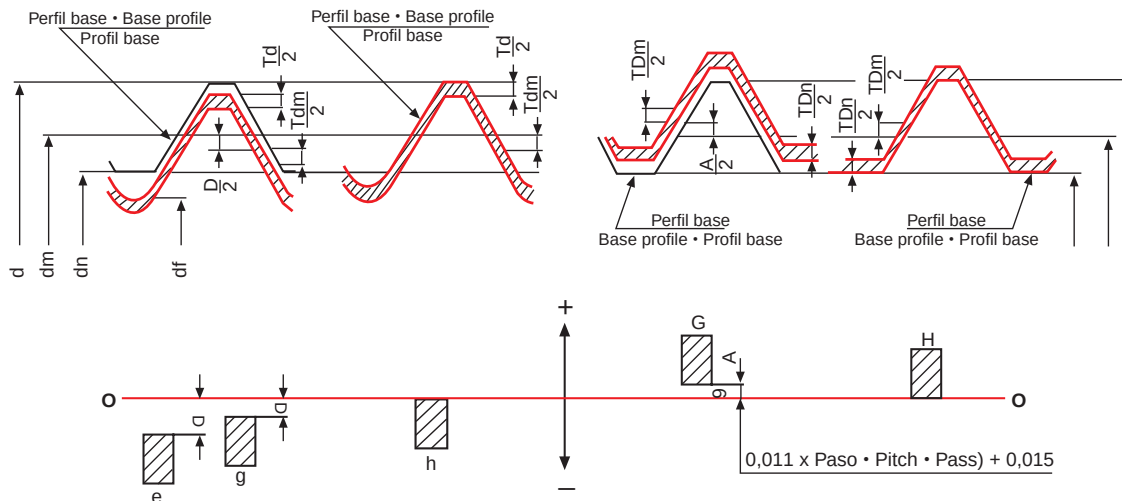
FIGURA 4 • FIGURE 4 • FIGURE 4

Mínimo diámetro exterior admisible $d_{\min.}$ para machos de roscar para rosca de tuerca con zona de tolerancia 4G, 5G, 6G, 7G y 8G.
Minimum admissible outside diameter $d_{\min.}$ for nut thread taps with tolerance area 4G, 5G, 6G, 7G and 8G.
Diamètre minimum admissible $d_{\min.}$ pour tarauds, pour filets à écrou a zone de tolérance 4G, 5G, 6G, 7G et 8G.

SETS OF NUTS AND SCREWS

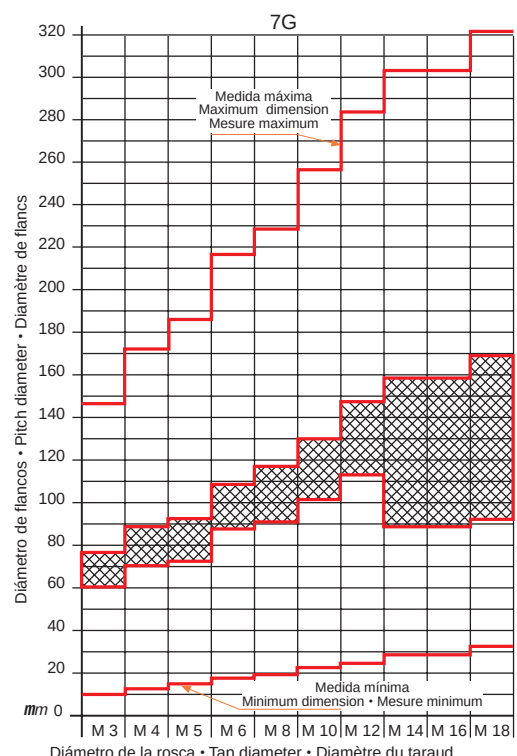
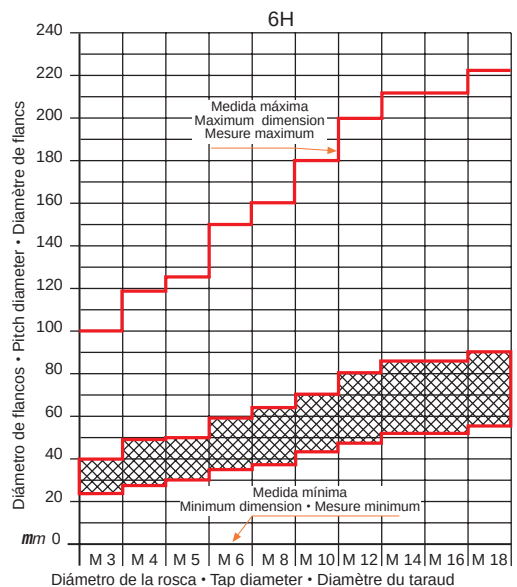
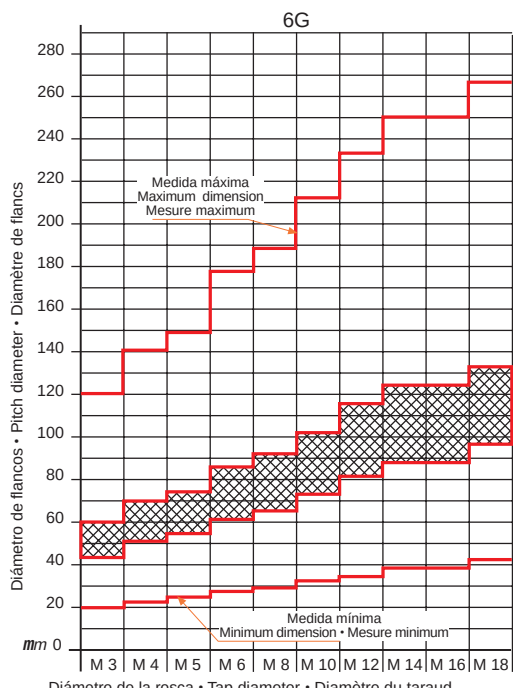
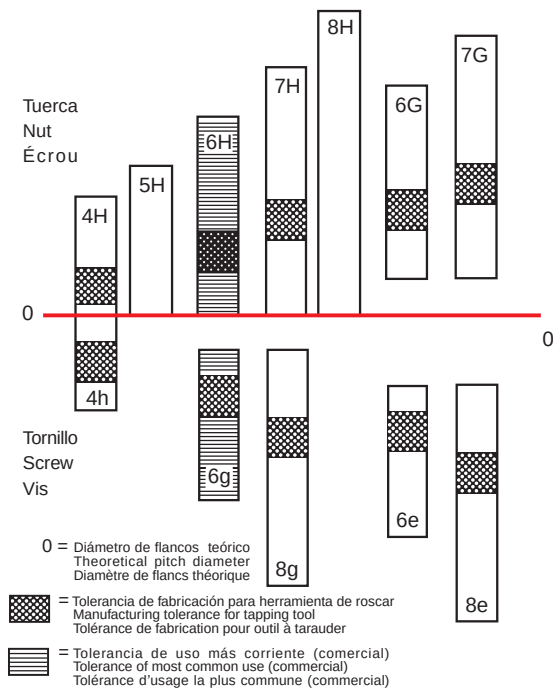
JEUX D'ÉCROUS ET DE VIS

JUEGO DE TUERCAS Y TORNILLOS



Paso Pitch Pass P mm	Desviaciones fundamentales Essential deviations • Déviations fondamentales				
	Para d, dm y dn del tornillo For d, dm and dn of the screw Pour d, dm et dn de la vis a en μ			Para D, Dm y Dn de la tuerca For D, Dm and Dn of the nut Pour D, Dm et Dn de l'écrou A en μ	
	Posiciones • Positions • Positions			Posiciones Positions • Positions	
	e	g	h	G	H
0,2	-	-17	0	+17	0
0,25	-	-18	0	+18	0
0,3	-	-18	0	+18	0
0,35	-	-19	0	+19	0
0,4	-	-19	0	+19	0
0,45	-	-20	0	+20	0
0,5	-50	-20	0	+20	0
0,6	-53	-21	0	+21	0
0,7	-56	-22	0	+22	0
0,75	-56	-22	0	+22	0
0,8	-60	-24	0	+24	0
1	-60	-26	0	+26	0
1,25	-63	-28	0	+28	0
1,5	-67	-32	0	+32	0
1,75	-71	-34	0	+34	0
2	-71	-38	0	+38	0
2,5	-80	-42	0	+42	0
3	-85	-48	0	+48	0
3,5	-90	-53	0	+53	0
4	-95	-60	0	+60	0
4,5	-100	-63	0	+63	0
5	-106	-71	0	+71	0
5,5	-112	-75	0	+75	0
6	-118	-80	0	+80	0

GRAPH OF TOLERANCE POSITION OF TAPS IN MAIN THREAD QUALITIES **GRAPHIQUE SUR LA POSITION DE TOLÉRANCE DES TARAUDS AUX QUALITÉS DE TARAUDAGE PRINCIPALES** **GRAFICO SOBRE LA POSICION DE TOLERANCIA DE LOS MACHOS EN LAS CALIDADES DE ROSCAS PRINCIPALES**

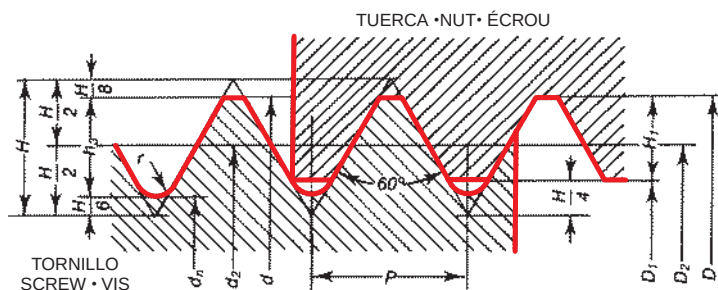


THEORETICAL PROFILE
PROFIL THÉORIQUE
PERFIL TEORICO



DIN 13

ISO-METRIC THREAD
FILETAGE MÉTRIQUE ISO
ROSCA ISO-METRICA



$$\begin{aligned} D_1 &= d - 2H_1 \\ d_2 &= D_2 = d - 0,64953 P \\ d_3 &= d - 1,22687 P \\ H &= 0,86603 P \\ H_1 &= 0,54127 P \\ h_3 &= 0,61343 P \\ r &= \frac{H}{6} = 0,14434 P \end{aligned}$$

Diámetro nominal de la rosca Nominal thread diameter Diamètre nominal du filet		d = D	Paso Pitch Pass	Ø Medio Pitch Ø Ø Moyen	Diámetro del núcleo Core diameter Diamètre du noyau	
Serie 1	Serie 2	Serie 3	P mm.	d = D ₂ mm.	d _n mm.	D ₁ mm.
M 1*	M 1,1*		0,25	0,838	0,693	0,729
M 1,2*	M 1,4		0,25	0,938	0,793	0,829
			0,25	1,038	0,893	0,929
			0,3	1,2105	1,032	1,075
M 1,6	M 1,8		0,35	1,373	1,170	1,221
M 2	M 2,2		0,35	1,573	1,370	1,421
			0,4	1,740	1,509	1,567
			0,45	1,908	1,648	1,713
M 2,5			0,45	2,208	1,948	2,013
M 3	M 3,5		0,5	2,675	2,387	2,459
M 4			0,6	3,110	2,764	2,850
			0,7	3,545	3,141	3,242
M 5	M 4,5		0,75	4,013	3,580	3,688
M 6			0,8	4,480	4,019	4,134
		M 7	1	5,350	4,773	4,917
			1	6,350	5,773	5,917
M 8		M 9	1,25	7,188	6,466	6,647
M 10		M 11	1,25	8,188	7,466	7,647
			1,5	9,026	8,160	8,376
			1,5	10,026	9,160	9,376
M 12	M 14		1,75	10,863	9,853	10,106
M 16	M 18		2	12,701	11,546	11,835
			2	14,701	13,546	13,835
			2,5	16,376	14,933	15,294
M 20	M 22		2,5	18,376	16,933	17,294
M 24	M 27		2,5	20,376	18,933	19,294
			3	22,051	20,319	20,752
			3	25,051	23,319	23,752
M 30	M 33		3,5	27,727	25,706	26,211
M 36	M 39		3,5	30,727	28,706	29,211
			4	33,402	31,093	31,670
			4	36,402	34,093	34,670
M 42	M 45		4,5	39,077	36,479	37,129
M 48	M 52		4,5	42,077	39,479	40,129
			5	44,752	41,866	42,587
			5	48,752	45,866	46,587
M 56	M 60		5,5	52,428	49,252	50,046
M 64	M 68		5,5	56,428	53,252	54,046
			6	60,103	56,639	57,505
			6	64,103	60,639	61,505

NUT
ÉCROU
TUERCA



DIN 13

ISO-METRIC THREAD
FILETAGE MÉTRIQUE ISO
ROSCA ISO-METRICA

Rosca Thread Filet	Paso Pitch Pass	Tolerancia Tolerance Tolérance	Ø Exterior Outside Ø Ø Extérieur	Ø Medio Pitch Ø Ø Moyen		Ø Núcleo Core Ø Ø Noyau		Rosca Thread Filet	Paso Pitch Pass	Tolerancia Tolerance Tolérance	Ø Exterior Outside Ø Ø Extérieur	Ø Medio Pitch Ø Ø Moyen		Ø Núcleo Core Ø Ø Noyau	
				D ₂ mín.	D ₂ máx.	D ₁ mín.	D ₁ máx.					D ₂ mín.	D ₂ máx.	D ₁ mín.	D ₁ máx.
M 1	0,25	4H 5H	1 1	0,838 0,838	0,883 0,894	0,729 0,729	0,774 0,785	M 14	2	5H 6H 7H	14 14 14	12,701 12,701 12,701	12,871 12,913 12,966	11,835 11,835 11,835	12,135 12,210 12,310
M 1,1	0,25	4H 5H	1,1 1,1	0,938 0,938	0,983 0,994	0,829 0,829	0,874 0,885	M 16	2	5H 6H 7H	16 16 16	14,701 14,701 14,701	14,871 14,913 14,966	13,835 13,835 13,835	14,135 14,210 14,310
M 1,2	0,25	4H 5H	1,2 1,2	1,038 1,038	1,083 1,094	0,929 0,929	0,974 0,985	M 18	2,5	5H 6H 7H	18 18 18	16,376 16,376 16,376	16,556 16,600 16,656	15,294 15,294 15,294	15,649 15,744 15,854
M 1,4	0,3	4H 5H	1,4 1,4	1,205 1,205	1,253 1,265	1,075 1,075	1,128 1,142	M 20	2,5	5H 6H 7H	20 20 20	18,376 18,376 18,376	18,556 18,600 18,656	17,294 17,294 17,294	17,649 17,444 17,854
M 1,5	0,35	4H 5H 6H	1,6 1,6 1,6	1,373 1,373 1,373	1,426 1,440 1,458	1,221 1,221 1,221	1,284 1,301 1,321	M 22	2,5	5H 6H 7H	22 22 22	20,376 20,376 20,376	20,556 20,600 20,656	19,294 19,294 19,294	19,649 19,744 19,854
M 1,8	0,35	4H 5H 6H	1,8 1,8 1,8	1,573 1,573 1,573	1,626 1,640 1,658	1,421 1,421 1,421	1,484 1,501 1,521	M 24	3	5H 6H 7H	24 24 24	22,051 22,051 22,051	22,263 22,316 22,386	20,752 20,752 20,752	21,152 21,252 21,382
M 2	0,4	5H 6H	2 2	1,740 1,740	1,811 1,830	1,567 1,567	1,657 1,679	M 27	3	5H 6H 7H	27 27 27	25,051 25,051 25,051	25,263 25,316 25,386	23,752 23,752 23,752	24,152 24,252 24,382
M 2,2	0,45	5H 6H	2,2 2,2	1,908 1,908	1,983 2,003	1,713 1,713	1,813 1,838	M 30	3,5	5H 6H 7H	30 30 30	27,727 27,727 27,727	27,951 28,007 28,082	26,211 26,211 26,211	26,661 26,771 26,921
M 2,5	0,45	5H 6H	2,5 2,5	2,208 2,208	2,283 2,303	2,013 2,013	2,113 2,138	M 33	3,5	5H 6H 7H	33 33 33	30,727 30,727 30,727	30,951 31,007 31,082	29,211 29,211 29,211	29,661 29,771 29,921
M 3	0,5	5H 6H 7H	3 3 3	2,675 2,675 2,675	2,755 2,775 2,800	2,459 2,459 2,459	2,571 2,599 2,639	M 36	4	5H 6H 7H	36 36 36	33,402 33,402 33,402	33,638 33,702 33,777	31,670 31,670 31,670	32,145 32,270 32,420
M 3,5	0,6	5H 6H 7H	3,5 3,5 3,5	3,110 3,110 3,110	3,200 3,222 3,250	2,850 2,850 2,850	2,975 3,010 3,050	M 39	4	5H 6H 7H	39 39 39	36,402 36,402 36,402	36,638 36,702 36,777	34,670 34,670 34,670	35,145 35,270 35,420
M 4	0,7	5H 6H 7H	4 4 4	3,545 3,545 3,545	3,640 3,663 3,695	3,242 3,242 3,242	3,382 3,422 3,466	M 42	4,5	5H 6H 7H	42 42 42	39,077 39,077 39,077	39,327 39,392 39,477	37,129 37,129 37,129	37,659 37,799 37,979
M 4,5	0,75	5H 6H 7H	4,5 4,5 4,5	4,013 4,013 4,013	4,108 4,131 4,163	3,688 3,688 3,688	3,838 3,878 3,924	M 45	4,5	5H 6H 7H	45 45 45	42,077 42,077 42,077	42,327 42,392 42,477	40,129 40,129 40,129	40,659 40,799 40,979
M 5	0,8	5H 6H 7H	5 5 5	4,480 4,480 4,480	4,580 4,605 4,640	4,134 4,134 4,134	4,294 4,334 4,384	M 48	5	5H 6H 7H	48 48 48	44,752 44,752 44,752	45,017 45,087 45,177	42,587 42,587 42,587	43,147 43,297 43,487
M 6	1	5H 6H 7H	6 6 6	5,350 5,350 5,350	5,468 5,500 5,540	4,917 4,917 4,917	5,107 5,153 5,217	M 52	5	5H 6H 7H	52 52 52	48,752 48,752 48,752	48,017 49,087 49,177	46,587 46,587 46,587	47,147 47,297 47,487
M 7	1	5H 6H 7H	7 7 7	6,350 6,350 6,350	6,468 6,500 6,540	5,917 5,917 5,917	6,107 6,153 6,217	M 56	5,5	5H 6H 7H	56 56 56	52,428 52,428 52,428	52,708 52,783 52,878	50,046 50,046 50,046	50,646 50,796 50,996
M 8	1,25	5H 6H 7H	8 8 8	7,188 7,188 7,188	7,313 7,348 7,388	6,647 6,647 6,647	6,859 6,912 6,982	M 60	5,5	6H 6H 7H	60 60 60	56,428 56,428 56,428	56,708 56,783 56,878	54,046 54,046 54,046	54,646 54,796 54,996
M 9	1,25	5H 6H 7H	9 9 9	8,188 8,188 8,188	8,313 8,348 8,388	7,647 7,647 7,647	7,859 7,912 7,982	M 64	6	5H 6H 7H	64 64 64	60,103 60,103 60,103	60,403 60,478 60,578	57,505 57,505 57,505	58,135 58,305 58,505
M 10	1,5	5H 6H 7H	10 10 10	9,026 9,026 9,026	9,166 9,206 9,250	8,376 8,376 8,376	8,612 8,676 8,751	M 68	6	5H 6H 7H	68 68 68	64,103 64,103 64,103	64,403 64,478 64,578	61,505 61,505 61,505	62,135 62,305 62,505
M 11	1,50	5H 6H 7H	11 11 11	10,026 10,026 10,026	10,166 10,206 10,250	9,376 9,376 9,376	9,612 9,676 9,751								
M 12	1,75	5H 6H 7H	12 12 12	10,863 10,863 10,863	11,023 11,063 11,113	10,106 10,106 10,108	10,371 10,441 10,531								

NUT
ÉCROU
TORNILLO

M

DIN 13

ISO-METRIC THREAD
FILETAGE MÉTRIQUE ISO
ROSCA ISO-METRICA

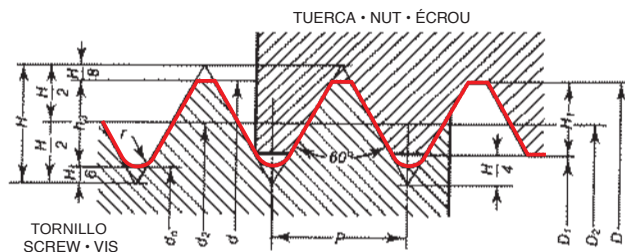
Rosca Thread Filet	Paso Pitch Pass	Tolerancia Tolerance Tolérance	Ø Exterior Outside Ø Ø Extérieur		Ø Medio Pitch Ø Ø Moyen		Ø Núcleo Core Ø Ø Noyau		Rosca Thread Filet	Paso Pitch Pass	Tolerancia Tolerance Tolérance	Ø Exterior Outside Ø Ø Extérieur		Ø Medio Pitch Ø Ø Moyen		Ø Núcleo Core Ø Ø Noyau	
			D ₂ máx.	D ₂ mín.	D ₂ máx.	D ₂ mín.	D ₁ máx.	D ₁ mín.				D ₂ máx.	D ₂ mín.	D ₂ máx.	D ₂ mín.	D ₁ máx.	D ₁ mín.
M 1	0,25	4h 6h 6e	1 0,955	0,958 0,933 0,888	0,838 0,838 0,793	0,804 0,785 0,740	0,693 0,693 0,648	0,649 0,630 0,596	M 18	2,5	4h 6g 8g	18 17,958 17,920	17,788 17,623 17,428	16,376 16,334 16,334	16,270 16,164 16,069	14,933 14,891 14,891	14,731 14,625 14,530
M 1,1	0,25	4h 6h 6e	1,1 1,1 1,055	1,058 1,033 0,988	0,938 0,938 0,893	0,904 0,855 0,840	0,793 0,793 0,748	0,749 0,730 0,696	M 20	2,5	4h 6g 8e	20 19,958 19,920	19,788 19,623 19,428	18,376 18,334 18,334	18,270 18,164 18,069	16,933 16,891 16,891	16,731 16,625 16,530
M 1,2	0,25	4h 6h 6e	1,2 1,2 1,155	1,158 1,133 1,088	1,038 1,038 0,993	1,004 0,895 0,940	0,893 0,893 0,848	0,849 0,830 0,796	M 22	2,5	4h 6g 8e	22 21,958 21,920	21,788 21,623 21,428	20,376 20,334 20,334	20,270 20,164 20,164	18,933 18,891 18,891	18,731 18,625 18,625
M 1,4	0,3	4h 6h 6e	1,4 1,4 1,354	1,352 1,325 1,279	1,205 1,205 1,159	1,169 1,149 1,103	1,032 1,032 0,986	0,984 0,964 0,929	M 24	3	4h 6g 8e	24 23,952 23,952	23,764 23,577 23,352	22,051 22,003 22,003	21,926 21,803 21,688	20,319 20,271 20,271	19,078 19,955 19,840
M 1,6	0,35	4h 6h 6e	1,6 1,581 1,554	1,547 1,496 1,469	1,373 1,354 1,327	1,333 1,291 1,264	1,170 1,151 1,124	1,117 1,075 1,048	M 27	3	4h 6g 8e	27 26,952 26,952	26,764 26,577 26,577	25,051 25,003 25,003	24,926 24,803 24,688	23,319 23,271 23,271	22,078 22,955 22,840
M 1,8	0,35	4h 6g 6e	1,8 1,781 1,754	1,747 1,696 1,669	1,573 1,554 1,527	1,533 1,491 1,464	1,370 1,351 1,324	1,317 1,275 1,248	M 30	3,5	4h 6g 8e	30 29,947 29,910	29,735 29,522 29,485	27,727 27,674 27,637	27,595 27,462 27,425	25,706 25,653 25,616	25,439 25,306 25,269
M 2	0,4	4h 6g 6e	2 1,981 1,952	1,940 1,886 1,857	1,740 1,721 1,692	1,698 1,654 1,625	1,509 1,490 1,461	1,451 1,407 1,378	M 33	3,5	4h 6g 8e	33 32,947 32,947	32,735 32,522 32,277	30,727 30,674 30,674	30,595 30,462 30,339	28,706 28,653 28,653	28,439 28,306 28,183
M 2,2	0,45	4h 6g 6e	2,2 2,180 2,152	2,137 2,080 2,052	1,908 1,888 1,860	1,863 1,817 1,789	1,648 1,628 1,600	1,586 1,540 1,512	M 36	4	4h 6g 8e	36 35,940 35,905	35,700 35,465 35,195	33,402 33,342 33,307	33,262 33,118 33,083	31,093 31,033 30,998	30,799 30,655 30,620
M 2,5	0,45	4h 6g 6e	2,5 2,480 2,452	2,437 2,380 2,352	2,208 2,188 2,160	2,163 2,117 2,089	1,948 1,928 1,900	1,886 1,840 1,812	M 39	4	4h 6g 8e	39 38,940 38,905	38,700 38,465 38,190	36,402 36,342 36,307	36,262 36,118 36,083	34,093 34,033 33,998	33,799 33,655 33,620
M 3	0,5	4h 6g 6e	3 2,980 2,950	2,933 2,874 2,844	2,675 2,655 2,625	2,627 2,580 2,550	2,387 2,367 2,337	2,320 2,273 2,243	M 42	4,5	4h 6g 8e	42 41,937 41,937	41,685 41,137 41,377	39,077 39,014 39,014	38,927 38,778 38,639	36,479 36,416 36,416	36,156 35,007 35,868
M 3,5	0,6	4h 6g 6e	3,5 3,479 3,447	3,420 3,354 3,322	3,110 3,089 3,057	3,057 3,004 2,972	2,764 2,743 2,711	2,688 2,635 2,603	M 45	4,5	4h 6g 8e	45 44,937 44,937	44,685 44,437 44,137	42,077 42,014 42,014	41,927 41,778 41,639	39,479 39,416 39,416	39,156 38,007 38,868
M 4	0,7	4h 6g 6e	4 3,978 3,944	3,910 3,838 3,804	3,545 3,523 3,489	3,489 3,433 3,399	3,141 3,119 3,085	3,058 3,002 2,968	M 48	5	4h 6g 8e	48 47,929 47,894	47,665 47,399 47,364	44,752 44,681 44,646	44,592 44,431 44,396	41,866 41,795 41,760	41,513 41,352 41,202
M 4,5	0,75	4h 6g 6e	4,5 4,478 4,444	4,410 4,338 4,304	4,013 3,991 3,957	3,957 3,901 3,867	3,580 3,558 3,524	3,495 3,439 3,405	M 52	5	4h 6g 8e	52 51,929 51,894	51,665 51,399 51,079	48,752 48,681 48,646	48,592 48,431 48,396	45,866 45,795 45,760	45,613 45,352 45,317
M 5	0,8	4h 6g 8g 6e	5 4,976 4,976 4,940	4,905 4,826 4,740 4,790	4,480 4,456 4,456 4,420	4,420 4,361 4,306 4,325	4,019 3,995 3,995 3,959	3,928 3,869 3,814 3,833	M 56	5,5	4h 6g 8e	56 55,925 55,888	55,645 55,365 55,328	52,428 52,353 52,316	52,258 52,088 52,151	49,252 49,177 49,140	48,870 48,700 48,663
M 6	1	4h 6g 8g 6e	6 5,974 5,974 5,940	5,888 5,794 5,694 5,760	5,350 5,324 5,324 5,290	5,279 5,212 5,144 5,178	4,773 4,747 4,747 4,713	4,663 4,596 4,528 4,562	M 60	5,5	4h 6g 8e	60 59,925 59,888	59,645 59,385 59,328	56,428 56,353 56,316	56,258 56,088 56,151	53,252 53,177 53,140	52,870 52,700 52,663
M 7	1	4h 6g 8g 6e	7 6,974 6,974 6,940	6,888 6,794 6,894 6,760	6,350 6,324 6,324 6,290	6,279 6,212 6,144 6,178	5,773 5,747 5,747 5,713	5,663 5,596 5,528 5,562	M 64	6	4h 6g 8e	64 63,920 63,920	63,625 63,320 62,970	60,103 60,023 59,985	59,923 59,743 59,573	56,639 56,659 56,521	56,228 55,048 55,878
M 8	1,25	4h 6g 8g 8e	8 7,972 7,972 7,937	7,868 7,760 7,637 7,725	7,188 7,160 7,160 7,125	7,113 7,042 6,970 7,007	6,466 6,438 6,438 6,403	6,343 6,272 6,200 6,237	M 68	6	4h 6g 8e	68 67,920 67,882	67,625 67,320 67,282	64,103 64,023 63,985	63,923 63,743 63,705	60,639 60,559 60,521	60,228 59,048 59,010
M 9	1,25	4h 6g 8g 6e	9 8,972 8,972 8,937	8,868 8,760 8,637 8,725	8,188 8,160 8,160 8,125	8,113 8,042 7,970 8,007	7,466 7,438 7,438 7,403	7,343 7,272 7,200 7,237	M 11	1,5	4h 6g 8e	11 10,968 10,933	10,850 10,732 10,593	10,026 9,994 9,959	9,941 9,862 9,819	9,160 9,128 9,128	9,017 8,938 8,858
M 10	1,5	4h 6g 8g 6e	10 9,968 9,968 9,933	9,850 9,732 9,593 9,697	9,026 8,994 8,994 8,959	8,941 8,862 8,828 8,787	8,160 8,128 8,093 8,093	8,017 7,938 7,858 7,903	M 12	1,75	4h 6g 8e	12 11,966 11,929	11,830 11,701 11,541	10,863 10,829 10,792	10,768 10,679 10,642	9,853 9,819 9,782	9,691 9,602 9,565
M 11	1,5	4h 6g 8g 8e	11 10,968 10,933	10,850 10,732 10,593	10,026 9,994 9,959	9,941 9,862 9,819	9,160 9,128 9,128	9,017 8,938 8,858	M 14	2	4h 6g 8e	14 13,962 13,962	13,820 12,682 12,663	12,601 12,503 12,503	11,546 11,508 11,508	11,369 11,171 11,171	
M 12	1,75	4h 6g 8g 8e	12 11,966 11,929	11,830 11,701 11,541	10,863 10,829 10,792	10,768 10,679 10,642	9,853 9,819 9,782	9,691 9,602 9,565	M 16	2	4h 6g 8e	16 15,962 15,929	15,820 14,682 14,663	14,701 14,503 14,503	13,546 13,508 13,508	13,369 13,181 13,181	
M 14	2	4h 6g 8g 8e	14 13,962 13,962	13,820 12,682 12,663	12,601 12,503 12,503	11,546 11,508 11,508	11,369 11,171 11,171	M 18	2,5	4h 6g 8e	18 17,958 17,920	17,788 17,623 17,428	16,376 16,334 16,334	16,270 16,164 16,069	14,933 14,891 14,891	14,731 14,625 14,530	
M 16	2	4h 6g 8e	16 15,962 15,929	15,820 14,682 14,663	14,701 14,503 14,503	13,546 13,508 13,508	13,369 13,181 13,181	M 20	2,5	4h 6g 8e	20 19,958 19,920	19,788 19,623 19,428	18,376 18,334 18,334	18,270 18,164 18,069	16,933 16,891 16,891	16,731 16,625 16,530	
M 18	2,5	4h 6g 8e	18 17,958 17,920	17,788 17,623 17,428	16,376 16,334 16,334	16,270 16,164 16,069	14,933 14,891 14,891	14,731 14,625 14,530	M 22	2,5	4h 6g 8e	22 21,958 21,920	21,788 21,623 21,428	20,376 20,334 20,334	20,270 20,164 20,164	18,933 18,891 18,891	18,731 18,625 18,625
M 20	2,5	4h 6g 8e	20 19,958 19,920	19,788 19,623 19,428	18,376 18,334 18,334	18,270 18,164 18,069	16,933 16,891 16,891	16,731 16,625 16,530	M 24	3	4h 6g 8e	24 23,952 23,952	23,764 23,577 23,352	22,051 22,003 22,003	21,926 21,803 21,688	20,319 20,271 20,271	19,078 19,955 19,840
M 22	2,5	4h 6g 8e	22 21,958 21,920	21,788 21,623 21,428	20,376 20,334 20,334	20,270 20,164 20,164	18,933 18,891 18,891	18,731 18,625 18,625	M 27	3	4h 6g 8e	27 26,952 26,952	26,764 26,577 26,577	25,051 25,003 25,003	24,926 24,803 24,688	23,319 23,271 23,271	22,078 22,955 22,840
M 24	3	4h 6g 8e	24 23,952 23,952	23,764 23,577 23,352	22,051 22,003 22,003	21,926 21,803 21,688	20,319 20,271 20,271	19,078 19,955 19,840	M 30	3,5	4h 6g 8e	30 29,947 29,910	29,735 29,522 29,485	27,727 27,674 27,637	27,595 27,462 27,425	25,706 25,653 25,616	25,439 25,306 25,269
M 27	3	4h 6g 8e	27 26,952 26,952	26,764 26,577 26,577	25,051 25,003 25,003	24,926 24,803 24,688	23,319 23,271 23,271	22,078 22,955 22,840	M 33	3,5	4h 6g 8e	33 32,947 32,947	32,735 32,522 32,277	30,727 30,674 30,674	30,595 30,462 30,339	28,706 28,653 28,653	28,439 28,306 28,183
M 30	3,5	4h 6g 8e	30 29,947 29,910	29,735 29,522 29,485	27,727 27,674 27,637	27,595 27,462 27,425	25,706 25,653 25,616	25,439 25,306 25,269	M 36	4	4h 6g 8e	36 35,940 35,905	35,700 35,465 35,195	33,402 33,342 33,307	33,262 33,118 33,083	31,093 31,033 30,998	30,799 30,655 30,620
M 33	3,5	4h 6g 8e	33 32,947 32,947	32,735 32,522 32,277	30,727 30,674 30,674	30,595 30,462 30,339	28,706 28,653 28,653	28,439 28,306 28,183	M 39	4	4h 6g 8e	39 38,940 38,905	38,700 38,465 38,190	36,402 36,342 36,307	36,262 36,118 36,083	34,093 34,033 33,998	33,799 33,655 33,620
M 36	4	4h 6g 8e	36 35,940 35,905	35,700 35,465 35,195	33,402 33,342 33,307	33,262 33,118 33,083	31,093 31,033 30,998	30,799 30,655 30,620	M 42	4,5	4h 6g 8e	42 41,937 41,937	41,685 41,137 41,377	39,077 39,014 39,014	38,927 38,778 38,639	36,479 36,416 36,416	36,156 35,007 35,868
M 39	4	4h 6g 8e	39 38,940 38,905	38,700 38,465 38,190	36,402 36,342 36,307	36,262 36,118 36,083	34,093 34,033 33,998	33,799 33,655 33,620	M 45	4,5	4h 6g 8e	45 44,937 44,937	44,685 44,437 44,137	42,077 42,014 42,014	41,927 41,778 41,639	39,479 39,416 39,416	39,156 38,007

PROFIL THÉORIQUE
THEORICAL PROFILE
PERFIL TEORICO



ISO-METRIC THREAD
FILETAGE MÉTRIQUE ISO
ROSCA ISO-METRICA

DIN 13



$$\begin{aligned} D_1 &= d - 2H_1 \\ d_2 &= D_2 = d - 0,64953 P \\ d_3 &= d - 1,22687 P \\ H &= 0,86603 P \\ H_1 &= 0,54127 P \\ h_3 &= 0,61343 P \\ r &= \frac{H}{6} = 0,14434 P \end{aligned}$$

Diámetro nominal de la rosca Nominal thread diameter Diamètre nominal du filet			Paso Pitch Pass	Ø Medio Pitch Ø Ø Moyen	Diámetro del núcleo Core diameter Diamètre du noyau	
Serie 1	Serie 2	Serie 3	P mm.	d = D ₂ mm.	d _n mm.	D ₁ mm.
M 1*	M 1,1*		0,2	0,870	0,755	0,783
M 1,2*	M 1,4*		0,2	0,970	0,855	0,883
			0,2	1,070	0,955	0,983
			0,2	1,270	1,155	1,183
M 1,6*	M 1,8*		0,2	1,470	1,355	1,383
M 2*	M 2,2*		0,2	1,670	1,555	1,583
			0,25	1,838	1,693	1,729
			0,25	2,038	1,893	1,929
M 2,5			0,35	2,273	2,071	2,121
M 3	M 3,5		0,35	2,773	2,571	2,621
			0,35	3,273	3,071	3,121
M 4			0,50	3,675	3,387	3,459
M 5	M 4,5		0,50	4,175	3,887	3,959
		M 5,5	0,50	4,675	4,387	4,459
M 6			0,50	5,175	4,887	4,959
			0,50	5,675	5,387	5,459
M 6		M 7	0,75	5,513	5,080	5,188
M 8			0,75	6,513	6,080	6,188
M 8			0,50	7,675	7,387	7,459
M 8			0,75	7,513	7,080	7,188
M 8		M 9	1	7,350	6,773	6,917
M 10			1	8,350	7,773	7,917
M 10			0,75	9,513	9,080	9,188
M 10			1	9,350	8,773	8,917
M 10		M 11	1,25	9,188	8,466	8,647
M 12			1	10,350	9,773	9,917
M 12			1	10,350	10,773	10,917
M 12			1,25	11,188	10,466	10,647
M 12	M 14		1,5	11,026	10,160	10,376
	M 14		1	13,350	12,773	12,917
	M 14		1,25	13,188	12,466	12,647
	M 14		1,5	13,026	12,160	12,376
M 16		M 15	1	14,350	13,773	13,917
M 16		M 15	1,5	14,026	13,160	13,376
			1	15,350	14,773	14,917
			1,5	15,026	14,160	14,376
	M 18	M 17	1	16,350	15,773	15,917
	M 18	M 17	1,5	16,026	15,160	15,376
	M 18		1	17,350	16,773	16,917
			1,5	17,026	16,160	16,376
M 20	M 18		2	16,701	15,546	15,835
M 20			1	19,350	18,773	18,917
M 20			1,5	19,026	18,160	18,376
M 20			2	18,701	17,546	17,835
	M 22		1	21,350	20,773	20,917
	M 22		1,5	21,026	20,160	20,376
	M 22		2	20,701	19,546	19,835
M 24			1	23,350	22,773	22,917

* Macho en tolerancia 4H • Dimensions in tolerance 4H • Mesures en tolérance 4H

THEORICAL PROFILE
PROFIL THÉORIQUE
PERFIL TEORICO



ISO-METRIC FINE THREAD
FILETAGE MÉTRIQUE ISO FINE
ROSCA ISO-METRICA FINA

DIN 13

Diámetro nominal de la rosca Nominal thread diameter Diamètre nominal du filet d = D			Paso Pitch Pass	Ø Medio Pitch Ø Ø Moyen	Diámetro del núcleo Core diameter Diamètre du noyau		Diámetro nominal de la rosca Nominal thread diameter Diamètre nominal du filet d = D			Paso Pitch Pass	Ø Medio Pitch Ø Ø Moyen	Diámetro del núcleo Core diameter Diamètre du noyau	
Serie 1	Serie 2	Serie 3		d ₂ = D ₂	D _n	D ₁	Serie 1	Serie 2	Serie 3		d ₂ = D ₂	D _n	D ₁
M 24 M 24			1,5 2	23,026 22,701	22,160 21,546	22,376 21,835			M 58 M 58	3 4	56,051 55,402	54,319 53,093	54,752 53,670
		M 25 M 25	1 1,5	24,350 24,026	23,773 23,160	23,917 23,376		M 60 M 60		1,5 2	59,026 58,701	58,160 57,546	58,376 57,835
	M 27 M 27 M 27	M 25	2 1 1,5 2	23,701 26,350 26,026 25,701	22,546 25,773 25,160 24,546	22,835 25,917 25,376 24,835		M 60 M 60		3 4 1,5 2	58,051 57,402 61,026 60,701	56,319 55,093 60,160 59,546	56,752 55,670 60,376 59,835
		M 28 M 28 M 28	1 1,5 2 1	27,350 27,026 26,701 29,350	26,773 26,160 25,546 28,773	26,917 26,376 25,835 28,917	M 64 M 64		M 62 M 62	3 4 1,5 2	60,051 59,402 63,026 62,701	58,319 57,093 62,160 61,546	58,752 57,670 62,376 61,835
M 30			1,5 2 3 1,5	29,026 28,701 28,051 31,026	28,160 27,546 26,319 30,160	28,376 27,835 26,752 30,376	M 64 M 64			3 4 1,5 2	62,051 61,402 64,026 63,701	60,319 59,093 63,160 62,546	60,752 59,670 63,376 62,835
		M 32	2 1,5 2 3	30,701 32,026 31,701 31,051	29,546 31,160 30,546 29,319	29,835 31,376 30,835 29,752			M 65 M 65	3 4 1,5 2	63,051 62,402 67,026 66,701	61,319 60,093 66,160 65,546	61,752 60,670 66,376 65,835
	M 33 M 33 M 33	M 32	1,5 1,5 2 3	34,026 35,026 34,701 34,051	33,160 34,160 33,546 32,319	33,376 34,376 33,835 32,752		M 68 M 68		3 4 1,5 2	66,051 65,402 69,026 68,701	64,319 63,093 68,160 67,546	64,752 63,670 68,376 67,835
M 36 M 36 M 36		M 35	1,5 1,5 2 3	37,026 38,026 37,701 37,051	36,160 37,160 36,546 35,319	36,376 37,376 36,835 35,752		M 68 M 68		3 4 1,5 2	68,051 67,402 66,103 71,026	66,319 65,093 62,639 70,160	66,752 65,670 63,505 70,376
		M 38	1,5 1,5 2 3	37,026 38,026 37,701 37,051	36,160 37,160 36,546 35,319	36,376 37,376 36,835 35,752		M 70 M 70		3 4 6 1,5	68,051 67,402 66,103 71,026	66,319 65,093 62,639 70,160	66,752 65,670 63,505 70,376
	M 39 M 39 M 39	M 38	1,5 1,5 2 3	37,026 38,026 37,701 37,051	36,160 37,160 36,546 35,319	36,376 37,376 36,835 35,752	M 72		M 70 M 70	3 4 6 1,5	68,051 67,402 66,103 71,026	66,319 65,093 62,639 70,160	66,752 65,670 63,505 70,376
		M 40 M 40 M 40	1,5 2 3 1,5	39,026 38,701 38,051 41,026	38,160 37,546 36,319 40,160	38,376 37,835 36,752 40,376	M 72 M 72 M 72 M 72			2 3 4 6	70,701 70,051 69,402 68,103	69,546 68,319 67,093 64,639	69,835 68,752 67,670 65,505
M 42 M 42 M 42			2 3 4 1,5	40,701 40,051 39,402 44,026	39,546 38,319 37,039 43,160	39,835 38,752 37,670 43,376			M 75 M 75	1,5 2 3 4	74,026 73,701 73,051 72,402	73,160 72,546 71,319 70,093	73,376 72,835 71,752 70,670
	M 45 M 45 M 45		2 3 4 1,5	43,701 43,051 42,402 47,026	42,546 41,319 40,093 46,160	42,835 41,752 40,670 46,376		M 76 M 76 M 76 M 76		1,5 2 3 4	75,026 74,701 74,051 73,402	74,160 73,546 72,319 71,093	74,376 73,835 72,752 71,670
M 48 M 48 M 48			2 3 4 1,5	46,701 46,051 45,402 49,026	45,546 44,319 43,093 48,160	45,835 44,752 43,670 48,376	M 80 M 80 M 80 M 80			6 1,5 2 3	72,103 79,026 78,701 78,051	68,639 78,160 77,546 76,319	69,505 78,376 77,835 76,752
		M 50 M 50	2 3 1,5 2	48,701 48,051 51,026 50,701	47,546 46,319 50,160 49,546	47,835 46,752 50,376 49,835	M 80 M 80			4 6 2 3	77,402 76,103 83,701 83,051	75,093 72,639 82,546 81,319	75,670 73,505 82,835 81,752
		M 50 M 50	2 3 1,5 2	48,701 48,051 51,026 50,701	47,546 46,319 50,160 49,546	47,835 46,752 50,376 49,835		M 85 M 85		4 6 2 3	77,402 76,103 83,701 83,051	75,093 72,639 82,546 81,319	75,670 73,505 82,835 81,752
	M 52 M 52	M 55 M 55	3 4 1,5 2	50,051 49,402 54,026 53,701	48,319 47,093 53,160 52,546	48,752 47,670 53,376 52,835	M 90 M 90			4 6 2 3	82,402 81,103 88,701 88,051	80,093 77,639 87,546 86,319	80,670 78,505 87,835 86,752
		M 55 M 55	3 4 1,5 2	53,051 52,402 55,026 54,701	51,319 50,093 54,160 53,546	51,752 50,670 54,376 53,835	M 90 M 90			4 6 2 3	87,402 86,103 93,701 93,051	85,093 82,639 92,546 91,319	85,670 83,505 92,835 91,752
M 56 M 56			3 4 1,5 2	54,051 53,402 57,026 56,701	52,319 51,093 56,160 55,546	52,752 51,670 56,376 55,835	M 100 M 100		M 95 M 95	4 6 2 3	92,402 91,103 98,701 98,051	90,093 87,639 97,546 96,319	90,670 88,505 97,835 96,752
		M 58 M 58	3 4 1,5 2	54,051 53,402 57,026 56,701	52,319 51,093 56,160 55,546	52,752 51,670 56,376 55,835	M 100 M 100			4 6 2 3	97,402 96,103	95,093 92,639	95,670 93,505

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ISO-METRIC FINE THREAD
FILETAGE MÉTRIQUE ISO FINE
ROSCA ISO-METRICA FINA

DIN 13

Rosca Thread Filet D x P	Tolerancia Tolerance Tolérance	Ø Exterior Outside Ø Ø Extérieur	Ø Medio Pitch Ø / Ø Moyen		Ø Núcleo Core Ø / Ø Noyau		Rosca Thread Filet D x P	Tolerancia Tolerance Tolérance	Ø Exterior Outside Ø Ø Extérieur	Ø Medio Pitch Ø / Ø Moyen		Ø Núcleo Core Ø / Ø Noyau	
			D ₂ min.	D ₂ máx.	D ₁ min.	D ₁ máx.				D ₂ min.	D ₂ máx.	D ₁ min.	D ₁ máx.
M 1 x 0,2	4H	1,000	0,870	0,910	0,783	0,821	M 12 x 1,25	5H	12,000	11,188	11,328	10,647	10,859
M 1,1 x 0,2	4H	1,100	0,970	1,010	0,883	0,921		6H	12,000	11,188	11,368	10,647	10,912
								7H	12,000	11,188	11,412	10,647	10,982
M 1,2 x 0,2	4H	1,200	1,070	1,110	0,983	1,021	M 12 x 1,5	5H	12,000	11,026	11,176	10,376	10,612
M 1,4 x 0,2	4H	1,400	1,270	1,310	1,183	1,221		6H	12,000	11,026	11,216	10,376	10,676
								7H	12,000	11,026	11,262	10,376	10,751
M 1,6 x 0,2	4H	1,600	1,470	1,512	1,383	1,421	M 14 x 1	5H	14,000	13,350	13,475	12,917	13,107
M 1,8 x 0,2	4H	1,800	1,670	1,712	1,583	1,621		6H	14,000	13,350	13,510	12,917	13,153
								7H	14,000	13,350	13,550	12,917	13,217
M 2 x 0,25	4H	2,000	1,838	1,886	1,729	1,774	M 14 x 1,25	5H	14,000	13,188	13,300	12,647	12,859
M 2,2 x 0,25	4H	2,200	2,038	2,086	1,929	1,974		6H	14,000	13,188	13,368	12,647	12,912
								7H	14,000	13,188	13,412	12,647	12,982
M 2,5 x 0,35	4H 6H	2,500 2,500	2,273 2,273	2,326 2,358	2,121 2,121	2,184 2,221	M 14 x 1,5	5H	14,000	13,026	13,176	12,376	12,612
								6H	14,000	13,026	13,216	12,376	12,676
								7H	14,000	13,026	13,262	12,376	12,751
M 3 x 0,35	4H	3,000	2,773	2,829	2,621	2,684	M 15 x 1	5H	15,000	14,350	14,475	13,917	14,107
M 3,5 x 0,35	4H	3,500	3,273	3,329	3,121	3,184		6H	15,000	14,350	14,510	13,917	14,153
								7H	15,000	14,350	14,550	13,917	14,217
M 4 x 0,5	5H 6H 7H	4,000 4,000 4,000	3,675 3,675 3,675	3,755 3,775 3,800	3,459 3,459 3,459	3,571 3,599 3,639	M 15 x 1,5	5H	15,000	14,026	14,176	13,376	13,612
								6H	15,000	14,026	14,216	13,376	13,676
								7H	15,000	14,026	14,262	13,376	13,751
M 4,5 x 0,5	5H 6H 7H	4,500 4,500 4,500	4,175 4,175 4,175	4,255 4,275 4,300	3,959 3,959 3,959	4,071 4,099 4,139	M 16 x 1	5H	16,000	15,350	15,475	14,917	15,107
								6H	16,000	15,350	15,510	14,917	15,153
								7H	16,000	15,350	15,550	14,917	15,217
M 5 x 0,5	5H 6H 7H	5,000 5,000 5,000	4,675 4,675 4,675	4,755 4,775 4,800	4,459 4,459 4,459	4,571 4,599 4,639	M 16 x 1,5	5H	16,000	15,026	15,176	14,376	14,612
								6H	16,000	15,026	15,216	14,376	14,676
								7H	16,000	15,026	15,262	14,376	14,751
M 5,5 x 0,5	5H 6H 7H	5,500 5,500 5,500	5,175 5,175 5,175	5,255 5,275 5,300	4,959 4,959 4,959	5,071 5,099 5,139	M 17 x 1	5H	17,000	16,350	16,475	15,917	16,107
								6H	17,000	16,350	16,510	15,917	16,153
								7H	17,000	16,350	16,550	15,917	16,217
M 6 x 0,5	5H 6H	6,000 6,000	5,675 5,675	5,765 5,787	5,459 5,459	5,571 5,599	M 17 x 1,5	5H	17,000	16,026	16,176	15,376	15,612
								6H	17,000	16,026	16,216	15,376	15,676
								7H	17,000	16,026	16,262	15,376	15,751
M 6 x 0,75	5H 6H 7H	6,000 6,000 6,000	5,513 5,513 5,513	5,619 5,645 5,683	5,188 5,188 5,188	5,338 5,378 5,424	M 18 x 1	5H	18,000	17,350	17,475	16,917	17,107
								6H	18,000	17,350	17,510	16,917	17,153
								7H	18,000	17,350	17,550	16,917	17,217
M 7 x 0,75	5H 6H 7H	7,000 7,000 7,000	6,513 6,513 6,513	6,619 6,645 6,683	6,188 6,188 6,188	6,338 6,378 6,424	M 18 x 1,5	5H	18,000	17,026	17,176	16,376	16,612
								6H	18,000	17,026	17,216	16,376	16,676
								7H	18,000	17,026	17,262	16,376	16,751
M 8 x 0,5	5H 6H	8,000 8,000	7,675 7,675	7,765 7,787	7,459 7,459	7,571 7,599	M 18 x 2	5H	18,000	16,701	16,871	15,835	16,135
								6H	18,000	16,701	16,913	15,835	16,210
								7H	18,000	16,701	16,966	15,835	16,310
M 8 x 0,75	5H 6H 7H	8,000 8,000 8,000	7,513 7,513 7,513	7,619 7,645 7,683	7,188 7,188 7,188	7,338 7,378 7,424	M 20 x 1	5H	20,000	19,350	19,475	18,917	19,107
								6H	20,000	19,350	19,510	18,917	19,153
								7H	20,000	19,350	19,550	18,917	19,217
M 8 x 1	5H 6H 7H	8,000 8,000 8,000	7,350 7,350 7,350	7,468 7,500 7,540	6,917 6,917 6,917	7,107 7,153 7,217	M 20x1,5	5H	20,000	19,026	19,176	18,376	18,612
								6H	20,000	19,026	19,216	18,376	18,676
								7H	20,000	19,026	19,262	18,376	18,751
M 9 x 1	5H 6H 7H	9,000 9,000 9,000	8,350 8,350 8,350	8,468 8,500 8,540	7,917 7,917 7,917	8,107 8,153 8,217	M 20 x2	5H	20,000	18,701	18,871	17,835	18,135
								6H	20,000	18,701	18,913	17,835	18,210
								7H	20,000	18,701	18,966	17,835	18,310
M 10 x 0,75	5H 6H 7H	10,000 10,000 10,000	9,513 9,513 9,513	9,619 9,645 9,683	9,188 9,188 9,188	9,338 9,378 9,424	M 22 x 1	5H	22,000	21,350	21,475	20,917	21,107
								6H	22,000	21,350	21,510	20,917	21,153
								7H	22,000	21,350	21,550	20,917	21,217
M 10 x 1	5H 6H 7H	10,000 10,000 10,000	9,350 9,350 9,350	9,468 9,500 9,540	8,917 8,917 8,917	9,107 8,153 9,217	M 22 x 1,5	5H	22,000	21,026	21,176	20,376	20,612
								6H	22,000	21,026	21,216	20,376	20,676
								7H	22,000	21,026	21,262	20,376	20,751
M 10 x 1,25	5H 6H 7H	10,000 10,000 10,000	9,188 9,188 9,188	9,313 9,348 9,388	8,647 8,647 8,647	8,859 8,912 8,982	M 22 x 2	5H	22,000	20,701	20,871	19,835	20,135
								6H	22,000	20,701	20,913	19,835	20,210
								7H	22,000	20,701	20,966	19,835	20,310
M 11 x 1	5H 6H 7H	11,000 11,000 11,000	10,350 10,350 10,350	10,468 10,500 10,540	9,917 9,917 9,917	10,107 10,153 10,217	M 24 x 1	5H	24,000	23,350	23,482	22,917	23,107
								6H	24,000	23,350	23,520	22,917	23,153
								7H	24,000	23,350	23,562	22,917	23,217

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ISO-METRIC FINE THREAD
FILETAGE MÉTRIQUE ISO FINE
ROSCA ISO-METRICA FINA

DIN 13

Rosca Thread Filet D x P	Tolerancia Tolerance Tolérance	Ø Exterior Outside Ø Ø Extérieur	Ø Medio Pitch Ø / Ø Moyen		Ø Núcleo Core Ø / Ø Noyau		Rosca Thread Filet D x P	Tolerancia Tolerance Tolérance	Ø Exterior Outside Ø Ø Extérieur	Ø Medio Pitch Ø / Ø Moyen		Ø Núcleo Core Ø / Ø Noyau	
			D ₂ mín.	D ₂ máx.	D ₁ mín.	D ₁ máx.				D ₂ mín.	D ₂ máx.	D ₁ mín.	D ₁ máx.
M 24 x 1,5	5H	24,000	23,026	23,186	22,376	22,612	M 36 x 1,5	5H	36,000	35,026	35,186	34,376	34,612
	6H	24,000	23,026	23,226	22,376	22,676		6H	36,000	35,026	35,226	34,376	34,676
	7H	24,000	23,026	23,276	22,376	22,751		7H	36,000	35,026	35,276	34,376	34,751
M 24 x 2	5H	24,000	22,701	22,881	21,835	22,135	M 36 x 2	5H	36,000	34,701	34,881	33,835	34,135
	6H	24,000	22,701	22,925	21,835	22,210		6H	36,000	34,701	34,925	33,835	34,210
	7H	24,000	22,701	22,981	21,835	22,310		7H	36,000	34,701	34,981	33,835	34,310
M 25 x 1	5H	25,000	24,350	24,482	23,917	24,107	M 36 x 3	5H	36,000	34,051	34,263	32,752	33,152
	6H	25,000	24,350	24,520	23,917	24,153		6H	36,000	34,051	34,316	32,752	33,252
	7H	25,000	24,350	24,562	23,917	24,217		7H	36,000	34,051	34,386	32,752	33,382
M 25 x 1,5	5H	25,000	24,026	24,186	23,376	23,612	M 38 x 1,5	5H	38,000	37,026	37,186	36,376	36,612
	6H	25,000	24,026	24,226	23,376	23,676		6H	38,000	37,026	37,226	36,376	36,676
	7H	25,000	24,026	24,276	23,376	23,751		7H	38,000	37,026	37,276	36,376	36,751
M 25 x 2	5H	25,000	23,701	23,881	22,835	23,135	M 39 x 1,5	5H	39,000	38,026	38,186	37,376	37,612
	6H	25,000	23,701	23,925	22,835	23,210		6H	39,000	38,026	38,226	37,376	37,676
	7H	25,000	23,701	23,981	22,835	23,310		7H	39,000	38,026	38,276	37,376	37,751
M 27 x 1	5H	27,000	26,350	26,482	25,917	26,107	M 39 x 2	5H	39,000	37,701	37,881	36,835	37,135
	6H	27,000	26,350	26,520	25,917	26,153		6H	39,000	37,701	37,925	36,835	37,210
	7H	27,000	26,350	26,562	25,917	26,217		7H	39,000	37,701	37,981	36,835	37,310
M 27 x 1,5	5H	27,000	26,026	26,186	25,376	25,612	M 39 x 3	5H	39,000	37,051	37,263	35,752	36,152
	6H	27,000	26,026	26,226	25,376	25,676		6H	39,000	37,051	37,316	35,752	36,252
	7H	27,000	26,026	26,276	25,376	25,751		7H	39,000	37,051	37,386	35,752	36,382
M 27 x 2	5H	27,000	25,701	25,881	24,835	25,135	M 40 x 1,5	5H	40,000	39,026	39,186	38,376	38,612
	6H	27,000	25,701	25,925	24,835	25,210		6H	40,000	39,026	39,226	38,376	38,676
	7H	27,000	25,701	25,981	24,835	25,310		7H	40,000	39,026	39,276	38,376	38,751
M 28 x 1	5H	28,000	27,350	27,482	26,917	27,107	M 40 x 2	5H	40,000	38,701	38,881	37,835	38,135
	6H	28,000	27,350	27,520	26,917	27,153		6H	40,000	38,701	38,925	37,835	38,210
	7H	28,000	27,350	27,562	26,917	27,217		7H	40,000	38,701	38,981	37,835	38,310
M 28 x 1,5	5H	28,000	27,026	27,186	26,376	26,612	M 40 x 3	5H	40,000	38,051	38,263	36,752	37,152
	6H	28,000	27,026	27,226	26,376	26,676		6H	40,000	38,051	38,316	36,752	37,252
	7H	28,000	27,026	27,276	26,376	26,751		7H	40,000	38,051	38,386	36,752	37,382
M 28 x 2	5H	28,000	26,701	26,881	25,835	26,135	M 42 x 1,5	5H	42,000	41,026	41,186	40,376	40,612
	6H	28,000	26,701	26,925	25,835	26,210		6H	42,000	41,026	41,226	40,376	40,676
	7H	28,000	26,701	26,981	25,835	26,310		7H	42,000	41,026	41,276	40,376	40,751
M 30 x 1	5H	30,000	29,350	29,482	28,917	29,107	M 42 x 2	5H	42,000	40,701	40,881	39,835	40,135
	6H	30,000	29,350	29,520	28,917	29,153		6H	42,000	40,701	40,925	39,835	40,210
	7H	30,000	29,350	29,562	28,917	29,217		7H	42,000	40,701	40,981	39,835	40,310
M 30 x 1,5	5H	30,000	29,026	29,186	28,376	28,612	M 42 x 3	5H	42,000	40,051	40,263	38,752	39,152
	6H	30,000	29,026	29,226	28,376	28,676		6H	42,000	40,051	40,316	38,752	39,252
	7H	30,000	29,026	29,276	28,376	28,751		7H	42,000	40,051	40,386	38,752	39,382
M 30 x 2	5H	30,000	28,701	28,881	27,835	28,135	M 42 x 4	5H	42,000	39,402	39,638	37,670	38,145
	6H	30,000	28,701	28,925	27,835	28,210		6H	42,000	39,402	39,702	37,670	38,270
	7H	30,000	28,701	28,981	27,835	28,310		7H	42,000	39,402	39,777	37,670	38,420
M 30 x 3	5H	30,000	28,051	28,263	26,752	27,152	M 45 x1,5	5H	45,000	44,026	44,186	43,376	43,612
	6H	30,000	28,051	28,316	26,752	27,252		6H	45,000	44,026	44,226	43,376	43,676
	7H	30,000	28,051	28,386	26,752	27,382		7H	45,000	44,026	44,276	43,376	43,751
M 32 x 1,5	5H	32,000	31,026	31,186	30,376	30,612	M 45 x 2	5H	45,000	43,701	43,881	42,835	43,135
	6H	32,000	31,026	31,226	30,376	30,676		6H	45,000	43,701	43,925	42,835	43,210
	7H	32,000	31,026	31,276	30,376	30,751		7H	45,000	43,701	43,981	42,835	43,310
M 32 x 2	5H	32,000	30,701	30,881	29,835	30,135	M 45 x 3	5H	45,000	43,051	43,263	41,752	42,152
	6H	32,000	30,701	30,925	29,835	30,210		6H	45,000	43,051	43,316	41,752	42,252
	7H	32,000	30,701	30,981	29,835	30,310		7H	45,000	43,051	43,386	41,752	42,382
M 33 x 1,5	5H	33,000	32,026	32,186	31,376	31,612	M 45 x 4	5H	45,000	42,402	42,638	40,670	41,145
	6H	33,000	32,026	32,226	31,376	31,676		6H	45,000	42,402	42,702	40,670	41,270
	7H	33,000	32,026	32,276	31,376	31,751		7H	45,000	42,402	42,777	40,670	41,420
M 33 x 2	5H	33,000	31,701	31,881	30,835	31,135	M 48 x 1,5	5H	48,000	47,026	47,196	46,376	46,612
	6H	33,000	31,701	31,925	30,835	31,210		6H	48,000	47,026	47,238	46,376	46,676
	7H	33,000	31,701	31,981	30,835	31,310		7H	48,000	47,026	47,291	46,376	46,751
M 33 x 3	5H	33,000	31,051	31,263	29,752	30,152	M 48 x 2	5H	48,000	46,701	46,891	45,835	46,135
	6H	33,000	31,051	31,316	29,752	30,252		6H	48,000	46,701	46,937	45,835	46,210
	7H	33,000	31,051	31,386	29,752	30,382		7H	48,000	46,701	47,001	45,835	46,310
M 35 x 1,5	5H	35,000	34,026	34,186	33,376	33,612	M 48 x 3	5H	48,000	46,051	46,275	44,752	45,152
	6H	35,000	34,026	34,226	33,376	33,676		6H	48,000	46,051	46,331	44,752	45,252
	7H	35,000	34,026	34,276	33,376	33,751		7H	48,000	46,051	46,406	44,752	45,382

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ISO-METRIC FINE THREAD
FILETAGE MÉTRIQUE ISO FINE
ROSCA ISO-METRICA FINA

DIN 13

Rosca Thread Filet D x P	Tolerancia Tolerance Tolérance	Ø Exterior Outside Ø Ø Extérieur	Ø Medio Pitch Ø / Ø Moyen		Ø Núcleo Core Ø / Ø Noyau		Rosca Thread Filet D x P	Tolerancia Tolerance Tolérance	Ø Exterior Outside Ø Ø Extérieur	Ø Medio Pitch Ø / Ø Moyen		Ø Núcleo Core Ø / Ø Noyau	
			D ₂ min.	D ₂ máx.	D ₁ min.	D ₁ máx.				D ₂ min.	D ₂ máx.	D ₁ min.	D ₁ máx.
M 48x4	5H	48,000	45,402	45,652	43,670	44,145	M 60 x 1,5	5H	60,000	59,026	59,196	58,376	58,612
	6H	48,000	45,402	45,717	43,670	44,270		6H	60,000	59,026	59,238	58,376	58,676
	7H	48,000	45,402	45,802	43,670	44,420		7H	60,000	59,026	59,291	58,376	58,751
M 50 x 15	5H	50,000	49,026	49,196	48,376	48,612	M 60 x 2	5H	60,000	58,701	58,891	57,835	58,135
	6H	50,000	49,026	49,238	48,376	48,676		6H	60,000	58,701	58,937	57,835	58,210
	7H	50,000	49,026	49,291	48,376	48,751		7H	60,000	58,701	59,001	57,835	58,310
M 50 x 2	5H	50,000	48,701	48,891	47,835	48,135	M 60 x 3	5H	60,000	58,051	58,275	56,752	57,152
	6H	50,000	48,701	48,937	47,835	48,210		6H	60,000	58,051	58,331	56,752	57,252
	7H	50,000	48,701	49,001	47,835	48,310		7H	60,000	58,051	58,406	56,752	57,382
M 50 x 3	5H	50,000	48,051	48,275	46,752	47,152	M 60 x 4	5H	60,000	57,402	57,652	55,670	56,145
	6H	50,000	48,051	48,331	46,752	47,252		6H	60,000	57,402	57,717	55,670	56,270
	7H	50,000	48,051	48,406	46,752	47,382		7H	60,000	57,402	57,802	55,670	56,420
M 52 x 1,5	5H	52,000	51,026	51,196	50,376	50,612	M 62 x 1,5	5H	62,000	61,026	61,196	60,376	60,612
	6H	52,000	51,026	51,238	50,376	50,676		6H	62,000	61,026	61,238	60,376	60,676
	7H	52,000	51,026	51,291	50,376	50,751		7H	62,000	61,026	61,291	60,376	60,751
M 52 x 2	5H	52,000	50,701	50,891	49,835	50,135	M 62 x 2	5H	62,000	60,701	60,891	59,835	60,135
	6H	52,000	50,701	50,937	49,835	50,210		6H	62,000	60,701	60,937	59,835	60,210
	7H	52,000	50,701	51,001	49,835	50,310		7H	62,000	60,701	61,001	59,835	60,310
M 52 x 3	5H	52,000	50,051	50,275	48,752	49,152	M 62 x 3	5H	62,000	60,051	60,275	58,752	59,152
	6H	52,000	50,051	50,331	48,752	49,252		6H	62,000	60,051	60,331	58,752	59,252
	7H	52,000	50,051	50,406	48,752	49,382		7H	62,000	60,051	60,406	58,752	59,382
M 52 x 4	5H	52,000	49,402	49,652	47,670	48,145	M 62 x 4	5H	62,000	59,402	59,652	57,670	58,145
	6H	52,000	49,402	49,717	47,670	48,270		6H	62,000	59,402	59,717	57,670	58,270
	7H	52,000	49,402	49,802	47,670	48,420		7H	62,000	59,402	59,802	57,670	58,420
M 55 x 1,5	5H	55,000	54,026	54,196	53,376	53,612	M 64 x 1,5	5H	64,000	63,026	63,196	62,376	62,612
	6H	55,000	54,026	54,238	53,376	53,676		6H	64,000	63,026	63,238	62,376	62,676
	7H	55,000	54,026	54,291	53,376	53,751		7H	64,000	63,026	63,291	62,376	62,751
M 55 x 2	5H	55,000	53,701	53,891	52,835	53,135	M 64 x 2	5H	64,000	62,701	62,891	61,835	62,135
	6H	55,000	53,701	53,937	52,835	53,210		6H	64,000	62,701	62,937	61,835	62,210
	7H	55,000	53,701	54,001	52,835	53,310		7H	64,000	62,701	63,001	61,835	62,310
M 55 x 3	5H	55,000	53,051	53,275	51,752	52,152	M 64 x 3	5H	64,000	62,051	62,275	60,752	61,152
	6H	55,000	53,051	53,331	51,752	52,252		6H	64,000	62,051	62,331	60,752	61,252
	7H	55,000	53,051	53,406	51,752	52,382		7H	64,000	62,051	62,406	60,752	61,382
M 55 x 4	5H	55,000	52,402	52,652	50,670	51,145	M 64 x 4	5H	64,000	61,402	61,652	59,670	60,145
	6H	55,000	52,402	52,717	50,670	51,270		6H	64,000	61,402	61,717	59,670	60,270
	7H	55,000	52,402	52,802	50,670	51,420		7H	64,000	61,402	61,802	59,670	60,420
M 56 x 1,5	5H	56,000	55,026	54,196	54,376	54,612	M 65 x 1,5	5H	65,000	64,026	64,196	63,376	64,612
	6H	56,000	55,026	55,238	54,376	54,676		6H	65,000	64,026	64,238	63,376	63,676
	7H	56,000	55,026	55,291	54,376	54,751		7H	65,000	64,026	64,291	63,376	63,751
M 56 x 2	5H	56,000	54,701	54,891	53,835	54,135	M 65 x 2	5H	65,000	63,701	63,891	62,835	63,135
	6H	56,000	54,701	54,937	53,835	54,210		6H	65,000	63,701	63,937	62,835	63,210
	7H	56,000	54,701	55,001	53,835	54,310		7H	65,000	63,701	64,001	62,835	63,310
M 56 x 3	5H	56,000	54,051	54,275	52,752	53,152	M 65 x 3	5H	65,000	63,051	63,275	61,752	62,152
	6H	56,000	54,051	54,331	52,752	53,252		6H	65,000	63,051	63,331	61,752	62,252
	7H	56,000	54,051	54,406	52,752	53,382		7H	65,000	63,051	63,406	61,752	62,382
M 56 x4	5H	56,000	53,402	53,652	51,670	52,145	M 65 x 4	5H	65,000	62,402	62,652	60,670	61,145
	6H	56,000	53,402	53,717	51,670	52,270		6H	65,000	62,402	62,717	60,670	61,270
	7H	56,000	53,402	53,802	51,670	52,420		7H	65,000	62,402	62,802	60,670	61,420
M 58 x 1,5	5H	58,000	57,026	57,196	56,376	56,612	M 68 x 1,5	5H	68,000	67,026	67,196	66,376	66,612
	6H	58,000	57,026	57,238	56,376	56,676		6H	68,000	67,026	67,238	66,376	66,676
	7H	58,000	57,026	57,291	56,376	56,751		7H	68,000	67,026	67,291	66,376	66,751
M 58 x 2	5H	58,000	56,701	56,891	55,835	56,135	M 68 x 2	5H	68,000	66,701	66,891	65,835	66,135
	6H	58,000	56,701	56,937	55,835	56,210		6H	68,000	66,701	66,937	65,835	66,210
	7H	58,000	56,701	57,001	55,835	56,310		7H	68,000	66,701	67,001	65,835	66,310
M 58 x3	5H	58,000	56,051	56,275	54,752	55,152	M 68 x 3	5H	68,000	66,051	66,275	64,752	65,152
	6H	58,000	56,051	56,331	54,752	55,252		6H	68,000	66,051	66,331	64,752	65,252
	7H	58,000	56,051	56,406	54,752	55,382		7H	68,000	66,051	66,406	64,752	65,382
M 58 x 4	5H	58,000	55,402	55,652	53,670	54,145	M 68 x 4	5H	68,000	65,402	65,652	63,670	64,145
	6H	58,000	55,402	55,717	53,670	54,270		6H	68,000	65,402	65,717	63,670	64,270
	7H	58,000	55,402	55,802	53,670	54,420		7H	68,000	65,402	65,802	63,670	64,420

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ISO-METRIC FINE THREAD
FILETAGE MÉTRIQUE ISO FINE
ROSCA ISO-METRICA FINA

DIN 13

Rosca Thread Filet D x P	Tolerancia Tolerance Tolérance	Ø Exterior Outside Ø Ø Extérieur	Ø Medio Pitch Ø / Ø Moyen		Ø Núcleo Core Ø / Ø Noyau		Rosca Thread Filet D x P	Tolerancia Tolerance Tolérance	Ø Exterior Outside Ø Ø Extérieur	Ø Medio Pitch Ø / Ø Moyen		Ø Núcleo Core Ø / Ø Noyau	
			D ₂ min.	D ₂ máx.	D ₁ min.	D ₁ máx.				D ₂ min.	D ₂ máx.	D ₁ min.	D ₁ máx.
M 70 x 1,5	5H	70,000	69,026	69,196	68,376	68,612	M 80 x 2	5H	80,000	78,701	78,891	77,835	78,135
	6H	70,000	69,026	69,238	68,376	68,676		6H	80,000	78,701	78,937	77,835	78,210
	7H	70,000	69,026	69,291	68,376	68,751		7H	80,000	78,701	79,001	77,835	78,310
M 70 x 2	5H	70,000	68,701	68,891	67,835	68,135	M 80 x 3	5H	80,000	78,051	78,275	76,752	77,152
	6H	70,000	68,701	68,937	67,835	68,210		6H	80,000	78,051	78,331	76,752	77,252
	7H	70,000	68,701	69,001	67,835	68,310		7H	80,000	78,051	78,406	76,752	77,382
M 70 x 3	5H	70,000	68,051	68,275	66,752	67,152	M 80 x 4	5H	80,000	77,402	77,652	75,670	76,145
	6H	70,000	68,051	68,331	66,752	67,252		6H	80,000	77,402	77,717	75,670	76,270
	7H	70,000	68,051	68,406	66,752	67,382		7H	80,000	77,402	77,802	75,670	76,420
M 70 x 4	5H	70,000	67,402	67,652	65,670	66,145	M 80 x 6	5H	80,000	76,103	76,403	73,505	74,135
	6H	70,000	67,402	67,717	65,670	66,270		6H	80,000	76,103	76,478	73,505	74,305
	7H	70,000	67,402	67,802	65,670	66,420		7H	80,000	76,103	76,578	73,505	74,505
M 70 x 6	5H	70,000	66,103	66,403	63,505	64,135	M 85 x 2	5H	85,000	83,701	83,891	82,835	83,135
	6H	70,000	66,103	66,478	63,505	64,305		6H	85,000	83,701	83,937	82,835	83,210
	7H	70,000	66,103	66,578	63,505	64,505		7H	85,000	83,701	84,001	82,835	83,310
M 72 x 1,5	5H	72,000	71,026	71,196	70,376	70,612	M 85 x 3	5H	85,000	83,051	83,275	81,752	82,152
	6H	72,000	71,026	71,238	70,376	70,676		6H	85,000	83,051	83,331	81,752	82,252
	7H	72,000	71,026	71,291	70,376	70,751		7H	85,000	83,051	83,406	81,752	82,382
M 72 x 2	5H	72,000	70,701	70,891	69,835	70,135	M 85 x 4	5H	85,000	82,402	82,652	80,670	81,145
	6H	72,000	70,701	70,937	69,835	70,210		6H	85,000	82,402	82,717	80,670	81,270
	7H	72,000	70,701	71,001	69,835	70,310		7H	85,000	82,402	82,802	80,670	81,420
M 72 x 3	5H	72,000	70,051	70,275	68,752	69,152	M 85 x 6	5H	85,000	81,103	81,403	78,505	79,135
	6H	72,000	70,051	70,331	68,752	69,252		6H	85,000	81,103	81,478	78,505	79,305
	7H	72,000	70,051	70,406	68,752	69,382		7H	85,000	81,103	81,578	78,505	79,505
M 72 x 4	5H	72,000	69,402	69,652	67,670	68,145	M 90 x 2	5H	90,000	88,701	88,891	87,835	88,135
	6H	72,000	69,402	69,717	67,670	68,270		6H	90,000	88,701	88,937	87,835	88,210
	7H	72,000	69,402	69,802	67,670	68,420		7H	90,000	88,701	89,001	87,835	88,310
M 72 x 6	5H	72,000	68,103	68,403	65,505	66,135	M 90 x 3	5H	90,000	88,051	88,275	86,752	87,152
	6H	72,000	68,103	68,478	65,505	66,305		6H	90,000	88,051	88,331	86,752	87,252
	7H	72,000	68,103	68,578	65,505	66,505		7H	90,000	88,051	88,406	86,752	87,382
M 75 x 1,5	5H	75,000	74,026	74,196	73,376	73,612	M 90 x 4	5H	90,000	87,402	87,652	85,670	86,145
	6H	75,000	74,026	74,238	73,376	73,676		6H	90,000	87,402	87,717	85,670	86,270
	7H	75,000	74,026	74,291	73,376	73,751		7H	90,000	87,402	87,802	85,670	86,420
M 75 x 2	5H	75,000	73,701	73,891	72,835	73,135	M 90 x 6	5H	90,000	86,103	86,403	83,505	84,135
	6H	75,000	73,701	73,937	72,835	73,210		6H	90,000	86,103	86,478	83,505	84,305
	7H	75,000	73,701	74,001	72,835	73,310		7H	90,000	86,103	86,578	83,505	84,505
M 75 x 3	5H	75,000	73,051	73,275	71,752	72,152	M 95 x 2	5H	95,000	93,701	93,901	92,835	93,135
	6H	75,000	73,051	73,331	71,752	72,252		6H	95,000	93,701	93,951	92,835	93,210
	7H	75,000	73,051	73,406	71,752	72,382		7H	95,000	93,701	94,016	92,835	93,310
M 75 x 4	5H	75,000	72,402	72,652	70,670	71,145	M 95 x 3	5H	95,000	93,051	93,287	91,752	92,152
	6H	75,000	72,402	72,717	70,670	71,270		6H	95,000	93,051	93,351	91,752	92,252
	7H	75,000	72,402	72,802	70,670	71,420		7H	95,000	93,051	93,426	91,752	92,382
M 76 x 1,5	5H	76,000	75,026	75,196	74,376	74,612	M 95 x 4	5H	95,000	92,402	92,667	90,670	91,145
	6H	76,000	75,026	75,238	74,376	74,676		6H	95,000	92,402	92,737	90,670	91,270
	7H	76,000	75,026	75,291	74,376	74,751		7H	95,000	92,402	92,827	90,670	91,420
M 76 x 2	5H	76,000	74,701	74,891	73,835	74,135	M 95 x 6	5H	95,000	91,103	91,418	88,505	89,135
	6H	76,000	74,701	74,937	73,835	74,210		6H	95,000	91,103	91,503	88,505	89,305
	7H	76,000	74,701	75,001	73,835	74,310		7H	95,000	91,103	91,603	88,505	89,505
M 76 x 3	5H	76,000	74,051	74,275	72,752	73,152	M 100 x 2	5H	100,000	98,701	98,901	97,835	98,135
	6H	76,000	74,051	74,331	72,752	73,252		6H	100,000	98,701	98,951	97,835	98,210
	7H	76,000	74,051	74,406	72,752	73,382		7H	100,000	98,701	99,016	97,835	98,310
M 76 x 4	5H	76,000	73,402	73,652	71,670	72,145	M 100 x 3	5H	100,000	98,051	98,287	96,752	97,152
	6H	76,000	73,402	73,717	71,670	72,270		6H	100,000	98,051	98,351	96,752	97,252
	7H	76,000	73,402	73,802	71,670	72,420		7H	100,000	98,051	98,426	96,752	97,382
M 76 x 6	5H	76,000	72,103	72,403	69,505	70,135	M 100 x 4	5H	100,000	97,402	97,667	95,670	96,145
	6H	76,000	72,103	72,478	69,505	70,305		6H	100,000	97,402	97,737	95,670	96,270
	7H	76,000	72,103	72,576	69,505	70,505		7H	100,000	97,402	97,824	95,670	96,420
M 80 x 1,5	5H	80,000	79,026	79,196	78,376	78,612	M 100 x 6	5H	100,000	96,103	96,418	93,505	94,135
	6H	80,000	79,026	79,238	78,376	78,676		6H	100,000	96,103	96,503	93,505	94,305
	7H	80,000	79,026	79,291	78,376	78,751		7H	100,000	96,103	96,603	93,505	94,505

SCREW
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ISO-METRIC FINE THREAD
FILETAGE MÉTRIQUE ISO FINE
ROSCA ISO-METRICA FINA

DIN 13

Rosca Thread Filet D x P	Tolerancia Tolerance Tolérance	Ø Exterior Outside Ø / Ø Extérieur		Ø Medio Pitch Ø / Ø Moyen		Ø Núcleo Core Ø / Ø Noyau		Rosca Thread Filet D x P	Tolerancia Tolerance Tolérance	Ø Exterior Outside Ø / Ø Extérieur		Ø Medio Pitch Ø / Ø Moyen		Ø Núcleo Core Ø / Ø Noyau	
		d máx.	d mín.	d ₂ máx.	d ₂ mín.	d _n máx.	d _n mín.			d máx.	d mín.	d ₂ máx.	d ₂ mín.	d _n máx.	d _n mín.
M 1 x 0,2	4h	1,000	0,964	0,870	0,840	0,755	0,718	M 12 x 1	4h	12,000	11,888	11,350	11,275	10,773	10,659
	6h	1,000	0,944	0,870	0,822	0,755	0,700		6g	11,974	11,794	11,324	11,206	10,747	10,590
M 1,1 x 0,2	4h	1,100	1,064	0,970	0,940	0,855	0,818	M 12 x 1,25	4h	12,000	11,868	11,188	11,103	10,466	10,333
	6h	1,100	1,044	0,970	0,922	0,855	0,800		6g	11,972	11,760	11,160	11,028	10,438	10,258
M 1,2 x 0,2	4h	1,200	1,164	1,070	1,040	0,955	0,918	M 12 x 1,5	4h	12,000	11,850	11,026	10,936	10,160	10,012
	6h	1,200	1,144	1,070	1,022	0,955	0,900		6g	11,968	11,732	10,994	10,854	10,128	9,930
M 1,4 x 0,2	4h	1,400	1,364	1,270	1,240	1,155	1,118	M 14 x 1	4h	14,000	13,888	13,350	13,275	12,773	12,659
	6h	1,400	1,344	1,270	1,222	1,155	1,100		6g	13,974	13,794	13,324	13,206	12,747	12,590
M 1,6 x 0,2	4h	1,600	1,564	1,470	1,438	1,355	1,316	M 14 x 1,25	4h	14,000	13,868	13,188	13,103	12,466	12,333
	6g	1,583	1,527	1,453	1,403	1,338	1,281		6g	13,972	13,760	13,160	13,028	12,438	12,258
M 1,8 x 0,2	4h	1,800	1,764	1,670	1,638	1,555	1,516	M 14 x 1,5	4h	14,000	13,850	13,026	12,936	12,160	12,012
	6g	1,783	1,727	1,653	1,603	1,538	1,481		6g	13,968	13,732	12,994	12,854	12,128	11,930
M 2 x 0,25	4h	2,000	1,958	1,838	1,802	1,693	1,647	M 15 x 1	4h	15,000	14,888	14,350	14,275	13,773	13,659
	6g	1,982	1,915	1,820	1,764	1,675	1,609		6g	14,974	14,794	14,324	14,206	13,747	13,590
M 2,2 x 0,25	4h	2,200	2,158	2,038	2,002	1,893	1,847	M 15 x 1,5	4h	15,000	14,850	14,026	13,936	13,160	13,012
	6g	2,182	2,115	2,020	1,964	1,875	1,809		6g	14,968	14,732	13,994	13,854	13,128	12,930
M 2,5 x 0,35	4h	2,400	2,447	2,273	2,233	2,071	2,018	M 16 x 1	4h	16,000	15,888	15,350	15,275	14,773	14,659
	6g	2,481	2,396	2,254	2,191	2,052	1,976		6g	15,974	15,794	15,324	15,206	14,747	14,590
M 3 x 0,35	4h	3,000	2,947	2,773	2,731	2,571	2,516	M 16 x 1,5	4h	16,000	15,850	15,026	14,936	14,160	14,012
	6g	2,981	2,896	2,754	2,687	2,552	2,472		6g	15,968	15,732	14,994	14,854	14,128	13,930
M 3,5 x 0,35	4h	3,500	3,447	3,273	3,231	3,071	3,016	M 17 x 1	4h	17,000	16,888	16,350	16,275	15,773	15,659
	6g	3,481	3,396	3,254	3,187	3,052	2,972		6g	16,974	16,794	16,324	16,206	15,747	15,590
M 4 x 0,5	4h	4,000	3,933	3,675	3,627	3,387	3,320	M 17 x 1,5	4h	17,000	16,850	16,026	15,936	15,160	15,012
	6g	3,980	3,874	3,655	3,580	3,367	3,273		6g	16,968	16,732	15,994	15,854	15,128	14,930
M 4,5 x 0,5	4h	4,500	4,433	4,175	4,127	3,867	3,820	M 18 x 1	4h	18,000	17,888	17,350	17,275	16,773	16,659
	6g	4,480	4,374	4,155	4,080	3,867	3,773		6g	17,974	17,794	17,324	17,206	16,747	16,590
M 5 x 0,5	4h	5,000	4,933	4,675	4,627	4,387	4,320	M 18 x 1,5	4h	18,000	17,850	17,026	16,936	16,160	15,012
	6g	4,980	4,874	4,655	4,580	4,367	4,273		6g	17,968	17,732	16,994	16,854	16,128	15,930
M 5,5 x 0,5	4h	5,500	5,433	5,175	5,127	4,887	4,820	M 18 x 2	4h	18,000	17,820	16,701	16,601	15,546	15,369
	6g	5,480	5,374	5,155	5,080	4,867	4,773		6g	17,962	17,682	16,663	16,503	15,508	15,271
M 6 x 0,5	4h	6,000	5,933	5,675	5,622	5,387	5,315	M 20 x 1	4h	20,000	19,888	19,350	19,275	18,773	18,659
	6g	5,980	5,874	5,655	5,570	5,367	5,263		6g	19,974	19,794	19,324	19,206	18,747	18,590
M 6 x 0,75	4h	6,000	5,910	5,513	5,450	5,080	4,988	M 20 x 1,5	4h	20,000	19,850	19,026	18,936	18,160	18,012
	6g	5,978	5,838	5,491	5,391	5,058	4,929		6g	19,968	19,732	18,994	18,854	18,128	17,930
M 7 x 0,75	4h	7,000	6,910	6,513	6,450	6,080	5,988	M 20 x 2	4h	20,000	19,820	18,701	18,601	17,546	17,369
	6g	6,978	6,838	6,491	6,391	6,058	5,929		6g	19,962	19,682	18,663	18,503	17,508	17,271
M 8 x 0,5	4h	8,000	7,933	7,675	7,622	7,387	7,315	M 22 x 1	4h	22,000	21,888	21,350	21,275	20,773	20,659
	6g	7,980	7,874	7,655	7,570	7,367	7,263		6g	21,974	21,794	21,324	21,206	20,747	20,590
M 8 x 0,75	4h	8,000	7,910	7,513	7,450	7,080	6,988	M 22 x 1,5	4h	22,000	21,850	21,026	20,936	20,160	20,012
	6g	7,978	7,838	7,491	7,391	7,058	6,929		6g	21,968	21,732	20,994	20,854	20,128	19,930
M 8 x 1	4h	8,000	7,888	7,350	7,279	6,773	6,663	M 22 x 2	4h	22,000	21,820	20,701	20,601	19,546	19,369
	6g	7,974	7,794	7,324	7,212	6,747	6,596		6g	21,962	21,682	20,663	20,503	19,508	19,271
M 9 x 1	4h	9,000	8,888	8,350	8,279	7,773	7,663		8g	21,962	21,512	20,663	20,413	19,508	19,181
	6g	8,974	8,794	8,324	8,212	7,747	7,596								
M 10 x 0,75	4h	10,000	9,910	9,513	9,450	9,080	8,988								
	6g	9,978	9,838	9,491	9,391	9,058	8,929								
M 10 x 1	4h	10,000	9,888	9,350	9,279	8,773	8,663								
	6g	9,974	9,794	9,324	9,212	8,747	8,596								
M 10 x 1,25	4h	10,000	9,868	9,188	9,113	8,466	8,343								
	6g	9,972	9,760	9,160	9,042	8,438	8,272								
M 11 x 1	4h	11,000	10,988	10,350	10,279	9,773	9,663								
	6g	10,974	10,794	10,324	10,212	9,747	9,596								
	8g	10,974	10,694	10,324	10,144	9,747	9,528								

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ISO-METRIC FINE THREAD
FILETAGE MÉTRIQUE ISO FINE
ROSCA ISO-METRICA FINA

DIN 13

Rosca Thread Filet D x P	Tolerancia Tolerance Tolérance	Ø Exterior Outside Ø / Ø Extérieur		Ø Medio Pitch Ø / Ø Moyen		Ø Núcleo Core Ø / Ø Noyau		Rosca Thread Filet D x P	Tolerancia Tolerance Tolérance	Ø Exterior Outside Ø / Ø Extérieur		Ø Medio Pitch Ø / Ø Moyen		Ø Núcleo Core Ø / Ø Noyau	
		d máx.	d mín.	d ₂ máx.	d ₂ mín.	d _n máx.	d _n mín.			d máx.	d mín.	d ₂ máx.	d ₂ mín.	d _n máx.	d _n mín.
M 24 x 1	4h 6g 8g	24,000 23,974 23,974	23,888 23,794 23,694	23,350 23,324 23,324	23,270 23,199 23,124	22,773 22,747 22,747	22,654 22,593 22,508	M 35 x 1,5	4h 6g 8g	35,000 34,968 34,968	34,850 34,732 34,593	34,026 33,994 33,994	33,931 33,844 33,758	33,160 33,128 33,128	33,007 32,920 32,834
M 24 x 1,5	4h 6g 8g	24,000 23,968 23,968	23,850 23,732 23,593	23,026 22,994 22,994	22,931 22,844 22,758	22,160 22,128 22,128	22,007 21,920 21,834	M 36 x 1,5	4h 6g 8g	36,000 35,968 35,968	35,850 35,732 35,593	35,026 34,994 34,994	34,931 34,844 34,758	34,160 34,128 34,128	34,007 33,920 33,834
M 24 x 2	4h 6g 8g	24,000 23,962 23,962	23,820 23,682 23,512	22,701 22,663 22,663	22,595 22,493 22,398	21,546 21,508 21,508	21,363 21,261 21,166	M 36 x 2	4h 6g 8g	36,000 35,962 35,962	35,820 35,682 35,512	34,701 34,663 34,663	34,595 34,493 34,398	33,546 33,508 33,508	33,363 33,261 33,166
M 25 x 1	4h 6g 8g	25,000 24,974 24,974	24,888 24,794 24,694	24,350 24,324 24,324	24,270 24,199 24,124	23,773 23,747 23,747	23,654 23,583 23,508	M 36 x 3	4h 6g 8g	36,000 35,952 35,952	35,764 35,577 35,352	34,051 34,003 34,003	33,926 33,803 33,688	32,319 32,271 32,271	32,078 31,955 31,840
M 25 x 1,5	4h 6g 8g	25,000 24,968 24,968	24,850 24,732 24,593	24,026 23,994 23,994	23,931 23,844 23,758	23,160 23,128 23,128	23,007 22,920 22,834	M 38 x 1,5	4h 6g 8g	38,000 37,968 37,968	37,850 37,732 37,593	37,026 36,994 36,994	36,931 36,844 36,758	36,160 36,128 36,128	36,007 35,920 35,834
M 25 x 2	4h 6g 8g	25,000 24,962 24,962	24,820 24,682 24,512	23,701 23,663 23,663	23,595 23,493 23,398	22,546 22,508 22,508	22,363 22,261 22,166	M 39 x 1,5	4h 6g 8g	39,000 38,968 38,968	38,850 38,732 38,593	38,026 37,994 37,994	37,931 37,844 37,758	37,160 37,128 37,128	37,007 36,920 36,834
M 27 x 1	4h 6g 8g	27,000 26,974 26,974	26,888 26,794 26,694	26,350 26,324 26,324	26,270 26,199 26,124	25,773 25,747 25,747	25,654 25,583 25,508	M 39 x 2	4h 6g 8g	39,000 38,962 38,962	38,820 38,682 38,512	37,701 37,663 37,663	37,595 37,493 37,398	36,546 36,508 36,508	36,363 36,261 36,166
M 27 x 1,5	4h 6g 8g	27,000 26,968 26,968	26,850 26,732 26,593	26,026 25,994 25,994	25,931 25,844 25,758	25,160 25,128 25,128	25,007 24,920 24,834	M 39 x 3	4h 6g 8g	39,000 38,952 38,952	38,764 38,577 38,352	37,051 37,003 37,003	36,926 36,803 36,688	35,319 35,271 35,271	35,078 34,955 34,840
M 27 x 2	4h 6g 8g	27,000 26,962 26,962	26,820 26,682 26,512	25,701 25,663 25,663	25,595 25,493 25,398	24,546 24,508 24,508	24,363 24,261 24,166	M 40 x 1,5	4h 6g 8g	40,000 39,968 39,968	39,850 39,732 39,593	39,026 38,994 38,994	38,931 38,844 38,758	38,160 38,128 38,128	38,007 37,920 37,834
M 28 x 1	4h 6g 8g	28,000 27,974 27,974	27,888 27,794 27,694	27,350 27,324 27,324	27,270 27,199 27,124	26,773 26,747 26,747	26,654 26,583 26,508	M 40 x 2	4h 6g 8g	40,000 39,962 39,962	39,820 39,682 39,512	38,701 38,663 38,663	38,595 38,493 38,398	37,546 37,508 37,508	37,363 37,261 37,166
M 28 x 1,5	4h 6g 8g	28,000 27,968 27,968	27,850 27,732 27,593	27,026 26,994 26,994	26,931 26,844 26,758	26,160 26,128 26,128	26,007 25,920 25,834	M 40 x 3	4h 6g 8g	40,000 39,952 39,952	39,764 39,577 39,352	38,051 38,003 38,003	37,926 37,803 37,688	36,319 36,271 36,271	36,078 35,955 35,840
M 28 x 2	4h 6g 8g	28,000 27,962 27,962	27,820 27,682 27,512	26,701 26,663 26,663	26,595 26,493 26,398	25,546 25,508 25,508	25,363 25,261 25,166	M 42 x 1,5	4h 6g 8g	42,000 41,968 41,968	41,850 41,732 41,593	41,026 40,994 40,994	40,931 40,844 40,758	40,160 40,128 40,128	40,007 39,920 39,834
M 30 x 1	4h 6g 8g	30,000 29,974 29,974	29,888 29,794 29,694	29,350 29,324 29,324	29,270 29,199 29,124	28,773 28,747 28,747	28,654 28,583 28,508	M 42 x 2	4h 6g 8g	42,000 41,962 41,962	41,820 41,682 41,512	40,701 40,663 40,663	40,595 40,493 40,398	39,546 39,508 39,508	39,363 39,261 39,166
M 30 x 1,5	4h 6g 8g	30,000 29,968 29,968	29,850 29,732 29,593	29,026 28,994 28,994	28,931 28,844 28,758	28,160 28,128 28,128	28,007 27,920 27,834	M 42 x 3	4h 6g 8g	42,000 41,952 41,952	41,764 41,577 41,352	40,051 40,003 40,003	39,926 39,803 39,688	38,319 38,271 38,271	38,078 37,955 37,840
M 30 x 2	4h 6g 8g	30,000 29,962 29,962	29,820 29,682 29,512	28,701 28,663 28,663	28,595 28,493 28,398	27,546 27,508 27,508	27,363 27,261 27,166	M 42 x 4	4h 6g 8g	42,000 41,940 41,940	41,720 41,490 41,220	39,402 39,342 39,342	39,262 39,118 38,987	37,093 37,033 37,033	36,799 36,655 36,524
M 30 x 3	4h 6g 8g	30,000 29,952 29,952	29,764 29,577 29,352	28,051 28,003 28,002	27,926 27,803 27,688	26,319 26,271 26,271	26,078 25,955 25,840	M 45 x 1,5	4h 6g 8g	45,000 44,968 44,968	44,850 44,732 44,593	44,026 43,994 43,994	43,931 43,844 43,758	43,160 43,128 43,128	43,007 42,920 42,834
M 32 x 1,5	4h 6g 8g	32,000 31,968 31,968	31,850 31,732 31,593	31,026 30,994 30,994	30,931 30,844 30,758	30,160 30,128 30,128	30,007 29,920 29,834	M 45 x 2	4h 6g 8g	45,000 44,962 44,962	44,820 44,682 44,512	43,701 43,663 43,663	43,595 43,493 43,398	42,546 42,508 42,508	42,363 42,261 42,166
M 32 x 2	4h 6g 8g	32,000 31,962 31,962	31,820 31,682 31,512	30,701 30,663 30,663	30,595 30,493 30,398	29,546 29,508 29,508	29,363 29,261 29,166	M 45 x 3	4h 6g 8g	45,000 44,952 44,952	44,764 44,577 44,352	43,051 43,003 43,003	42,926 42,803 42,688	41,319 41,271 41,271	41,078 40,955 40,840
M 33 x 1,5	4h 6g 8g	33,000 32,968 32,968	32,850 32,732 32,593	32,026 31,994 31,994	31,931 31,844 31,758	31,160 31,128 31,128	31,007 30,920 30,834	M 45 x 4	4h 6g 8g	45,000 44,940 44,940	44,720 44,490 44,220	42,402 42,342 42,342	42,262 42,118 41,987	40,093 40,033 40,033	39,799 39,655 39,524
M 33 x 2	4h 6g 8g	33,000 32,962 32,962	32,820 32,682 32,512	31,701 31,663 31,663	31,595 31,493 31,398	30,546 30,508 30,508	30,363 30,261 30,166	M 48 x 1,5	4h 6g 8g	48,000 47,968 47,968	47,850 47,732 47,593	47,026 46,994 46,994	46,926 46,834 46,744	46,160 46,128 46,128	46,002 45,910 45,820
M 33 x 3	4h 6g 8g	33,000 32,952 32,952	32,764 32,577 32,352	31,051 31,003 31,003	30,926 30,803 30,688	29,919 29,271 29,271	29,078 28,955 28,840	M 48 x 2	4h 6g 8g	48,000 47,962 47,962	47,820 47,682 47,512	46,701 46,663 46,663	46,589 46,483 46,383	45,546 45,508 45,508	45,357 45,251 45,151

SCREW
VIS
TORNILLO



ISO-METRIC FINE THREAD
FILETAGE MÉTRIQUE ISO FINE
ROSCA ISO-METRICA FINA

DIN 13

Rosca Thread Filet D x P	Tolerancia Tolerance Tolérance	Ø Exterior Outside Ø / Ø Extérieur		Ø Medio Pitch Ø / Ø Moyen		Ø Núcleo Core Ø / Ø Noyau		Rosca Thread Filet D x P	Tolerancia Tolerance Tolérance	Ø Exterior Outside Ø / Ø Extérieur		Ø Medio Pitch Ø / Ø Moyen		Ø Núcleo Core Ø / Ø Noyau	
		d máx.	d mín.	d ₂ máx.	d ₂ mín.	d _n máx.	d _n mín.			d máx.	d mín.	d ₂ máx.	d ₂ mín.	d _n máx.	d _n mín.
M 48 x 3	4h 6g 8g	48,000 47,952 47,952	47,764 47,577 47,352	46,051 46,003 46,003	45,919 45,791 45,668	44,319 44,271 44,271	44,071 43,943 43,820	M 60 x 1,5	4h 6g 8g	60,000 59,968 59,968	59,850 59,732 59,593	59,026 58,934 58,994	58,926 58,834 58,744	58,160 58,128 58,128	58,002 57,910 57,820
M 48 x 4	4h 6g 8g	48,000 47,940 47,940	47,720 47,490 47,220	45,402 45,342 45,342	45,252 45,106 44,967	43,093 43,033 43,033	42,789 42,643 42,504	M 60 x 2	4h 6g 8g	60,000 59,962 59,962	59,820 59,682 59,512	58,701 58,663 58,663	58,589 58,483 58,383	57,546 57,508 57,508	57,357 57,251 57,151
M 50 x 1,5	4h 6g 8g	50,000 49,968 49,968	49,850 49,732 49,593	49,026 48,994 48,994	48,926 48,834 48,744	48,160 48,128 48,128	48,002 47,910 47,820	M 60 x 3	4h 6g 8g	60,000 59,952 59,952	59,764 59,577 59,352	58,051 58,003 58,003	57,919 57,791 57,668	56,319 56,271 56,271	56,071 55,943 55,820
M 50 x 2	4h 6g 8g	50,000 49,962 49,962	49,820 49,682 49,512	48,701 48,663 48,663	48,589 48,483 48,383	47,546 47,508 47,508	47,357 47,251 47,151	M 60 x 4	4h 6g 8g	60,000 59,940 59,940	59,700 59,465 59,190	57,402 57,342 57,342	57,252 57,106 56,967	55,093 55,033 55,033	54,789 54,643 54,504
M 50 x 3	4h 6g 8g	50,000 49,952 49,952	49,764 49,577 49,352	48,051 48,003 48,003	47,919 47,791 47,668	46,319 46,271 46,271	46,071 45,943 45,820	M 62 x 1,5	4h 6g 8g	62,000 61,968 61,968	61,850 61,732 61,593	61,026 60,994 60,994	60,926 60,834 60,744	60,160 60,128 60,128	60,002 59,910 59,820
M 52 x 1,5	4h 6g 8g	52,000 51,968 51,968	51,850 51,732 51,593	51,026 50,994 50,994	50,926 50,834 50,744	50,160 50,128 50,128	50,002 49,910 49,820	M 62 x 2	4h 6g 8g	62,000 61,962 61,962	61,820 61,682 61,512	60,701 60,663 60,663	60,589 60,483 60,383	59,546 59,508 59,508	59,957 59,251 59,151
M 52 x 2	4h 6g 8g	52,000 51,962 51,962	51,820 51,682 51,512	50,701 50,663 50,663	50,589 50,483 50,383	49,546 49,508 49,508	49,357 49,251 49,151	M 62 x 3	4h 6g 8g	62,000 61,952 61,952	61,764 61,577 61,352	60,051 60,003 60,003	59,919 59,791 59,668	58,319 58,271 58,271	58,071 57,943 57,820
M 52 x 3	4h 6g 8g	52,000 51,952 51,952	51,764 51,577 51,352	50,051 50,003 50,003	49,919 49,791 49,668	48,319 48,271 48,271	48,071 47,943 47,820	M 62 x 4	4h 6g 8g	62,000 61,940 61,940	61,700 61,465 61,190	59,402 59,342 59,342	59,252 59,106 58,967	57,093 57,033 57,033	56,789 56,643 56,504
M 52 x 4	4h 6g 8g	52,000 51,940 51,940	51,720 51,490 51,220	49,402 49,342 49,342	49,252 49,106 48,967	47,093 47,033 47,033	46,789 46,643 46,504	M 64 x 1,5	4h 6g 8g	64,000 63,968 63,968	63,850 63,732 63,593	63,026 62,994 62,994	62,926 62,834 62,744	62,160 62,128 62,128	62,002 61,910 61,820
M 55 x 1,5	4h 6g 8g	55,000 54,968 54,968	54,850 54,732 54,593	54,026 53,994 53,994	53,926 53,834 53,744	53,160 53,128 53,128	53,002 52,910 52,820	M 64 x 2	4h 6g 8g	64,000 63,962 63,962	63,820 63,682 63,512	62,701 62,663 62,663	62,589 62,483 62,383	61,546 61,508 61,508	61,357 61,251 61,151
M 55 x 2	4h 6g 8g	55,000 54,962 54,962	54,820 54,682 54,512	53,701 53,663 53,663	53,589 53,483 53,383	52,546 52,508 52,508	52,357 52,251 52,151	M 64 x 3	4h 6g 8g	64,000 63,952 63,952	63,764 63,577 63,352	62,051 62,003 62,003	61,919 61,791 61,668	60,319 60,271 60,271	60,071 59,943 59,820
M 55 x 3	4h 6g 8g	55,000 54,952 54,952	54,764 54,577 54,352	53,051 53,003 53,003	52,919 52,791 52,668	51,319 51,271 51,271	51,071 50,943 50,820	M 64 x 4	4h 6g 8g	64,000 63,940 63,940	63,700 63,465 63,190	61,402 61,342 61,342	61,252 61,106 60,967	59,093 59,033 59,033	58,789 58,643 58,504
M 55 x 4	4h 6g 8g	55,000 54,940 54,940	54,700 54,465 54,190	52,402 52,342 52,342	52,252 52,106 51,967	50,093 50,033 50,033	49,789 49,643 49,504	M 65 x 1,5	4h 6g 8g	65,000 64,968 64,968	64,850 64,732 64,593	64,026 63,994 63,994	63,926 63,834 63,744	63,160 63,128 63,128	63,002 62,910 62,820
M 56 x 1,5	4h 6g 8g	56,000 55,968 55,968	55,850 55,732 55,593	55,026 54,994 54,994	54,926 54,834 54,744	54,160 54,128 54,128	54,002 53,910 53,820	M 65 x 2	4h 6g 8g	65,000 64,962 64,962	64,820 64,682 64,512	63,701 63,663 63,663	63,589 63,483 63,383	62,546 62,508 62,508	62,357 62,251 62,151
M 56 x 2	4h 6g 8g	56,000 55,962 55,962	55,820 55,682 55,512	54,701 54,663 54,663	54,589 54,483 54,383	53,546 53,508 53,508	53,357 53,251 53,151	M 65 x 3	4h 6g 8g	65,000 64,952 64,952	64,764 64,577 64,352	63,051 63,003 63,003	62,919 62,791 62,668	61,319 61,271 61,271	61,071 60,943 60,820
M 56 x 3	4h 6g 8g	56,000 55,952 55,952	55,764 55,577 55,352	54,051 54,003 54,003	53,919 53,791 53,688	52,319 52,271 52,271	52,071 51,943 51,820	M 65 x 4	4h 6g 8g	65,000 64,940 64,940	64,700 64,465 64,190	62,402 62,342 62,342	62,252 62,106 61,967	60,093 60,033 60,033	59,789 59,643 59,504
M 56 x 4	4h 6g 8g	56,000 55,940 55,940	55,700 55,465 55,190	53,402 53,342 53,342	53,252 53,106 52,967	51,093 51,033 51,033	50,789 50,643 50,504	M 68 x 1,5	4h 6g 8g	68,000 67,968 67,968	67,850 67,732 67,593	67,026 66,994 66,994	66,926 66,834 66,744	66,160 66,128 66,128	66,002 65,910 65,820
M 58 x 1,5	4h 6g 8g	58,000 57,968 57,968	57,850 57,732 57,593	57,026 56,994 56,994	56,926 56,834 56,744	56,160 56,128 56,128	56,002 55,910 55,820	M 68 x 2	4h 6g 8g	68,000 67,962 67,962	67,820 67,682 67,512	66,701 66,663 66,663	66,589 66,483 66,383	65,546 65,508 65,508	65,357 65,251 65,151
M 58 x 2	4h 6g 8g	58,000 57,962 57,962	57,820 57,682 57,512	56,701 56,663 56,663	56,589 56,483 56,383	55,546 55,508 55,508	55,357 55,251 55,151	M 68 x 3	4h 6g 8g	68,000 67,952 67,952	67,764 67,577 67,352	66,051 66,003 66,003	65,919 65,791 65,668	64,319 64,271 64,271	64,071 63,943 63,820
M 58 x 3	4h 6g 8g	58,000 57,952 57,952	57,764 57,577 57,352	56,051 56,003 56,003	55,919 55,791 55,668	54,319 54,271 54,271	54,071 53,943 53,820	M 68 x 4	4h 6g 8g	68,000 67,940 67,940	67,700 67,465 67,190	65,402 65,342 65,342	65,252 65,106 64,967	63,093 63,033 63,033	62,789 62,643 62,504
M 58 x 4	4h 6g 8g	58,000 57,940 57,940	57,700 57,465 57,190	55,402 55,342 55,342	55,252 55,106 54,967	53,093 53,033 53,033	52,789 52,643 52,504	M 70 x 1,5	4h 6g 8g	70,000 69,968 69,968	69,850 69,732 69,593	69,025 68,994 68,994	68,926 68,834 68,744	68,160 68,128 68,128	68,002 67,910 67,820

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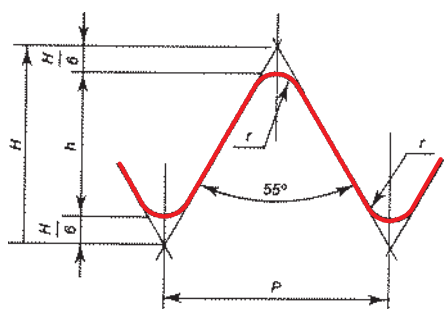
ISO-METRIC FINE THREAD
FILETAGE MÉTRIQUE ISO FINE
ROSCA ISO-METRICA FINA

DIN 13

Rosca Thread Filet D x P	Tolerancia Tolerance Tolérance	Ø Exterior Outside Ø / Ø Extérieur		Ø Medio Pitch Ø / Ø Moyen		Ø Núcleo Core Ø / Ø Noyau		Rosca Thread Filet D x P	Tolerancia Tolerance Tolérance	Ø Exterior Outside Ø / Ø Extérieur		Ø Medio Pitch Ø / Ø Moyen		Ø Núcleo Core Ø / Ø Noyau	
		d máx.	d mín.	d ₂ máx.	d ₂ mín.	d _n máx.	d _n mín.			d máx.	d mín.	d ₂ máx.	d ₂ mín.	d _n máx.	d _n mín.
M 70 x 2	4h	70,000	69,820	68,701	68,589	67,546	67,357	M 80 x 3	4h	80,000	79,764	78,051	77,919	76,319	76,071
	6g	69,962	69,682	68,663	68,483	67,508	67,251		6g	79,952	79,577	78,003	77,791	76,271	75,943
	8g	69,962	69,512	68,663	68,383	67,508	67,151		8g	79,952	79,352	78,003	77,668	76,271	75,820
M 70 x 3	4h	70,000	69,764	68,051	67,919	66,319	66,071	M 80 x 4	4h	80,000	79,700	77,402	77,252	75,093	74,789
	6g	69,952	69,577	68,003	67,791	66,271	65,943		6g	79,940	79,465	77,342	77,106	75,033	74,643
	8g	69,952	69,352	68,003	67,668	66,271	65,820		8g	79,940	79,190	77,342	76,967	75,033	74,504
M 70 x 4	4h	70,000	69,700	67,402	67,252	65,093	64,789	M 80 x 6	4h	80,000	79,625	76,103	75,923	72,639	72,228
	6g	69,940	69,465	67,342	67,106	65,033	64,643		6g	79,920	79,320	76,023	75,743	72,508	72,048
	8g	69,940	69,190	67,342	66,967	65,033	64,504		8g	79,920	78,970	76,023	75,573	72,559	71,878
M 70 x 6	4h	70,000	69,625	66,103	65,923	62,639	62,228	M 85 x 2	4h	85,000	84,820	83,701	83,589	82,546	82,357
	6g	69,920	69,320	66,023	65,743	62,559	62,048		6g	84,962	84,682	83,663	83,483	82,508	82,251
	8g	69,920	68,970	66,023	65,573	62,559	61,878		8g	84,962	84,512	83,663	83,383	82,508	82,151
M 72 x 1,5	4h	72,000	71,850	71,026	70,926	70,160	70,002	M 85 x 3	4h	85,000	84,764	83,051	82,919	81,319	81,071
	6g	71,968	71,732	70,994	70,834	70,128	69,910		6g	84,952	84,577	83,003	82,791	81,271	80,943
	8g	71,968	71,593	70,994	70,744	70,128	69,820		8g	84,952	84,352	83,003	82,668	81,271	80,820
M 72 x 2	4h	72,000	71,820	70,701	70,589	69,546	69,357	M 85 x 4	4h	85,000	84,700	82,402	82,252	80,093	79,789
	6g	71,962	71,682	70,663	70,483	69,508	69,251		6g	84,940	84,465	82,342	82,106	80,033	79,643
	8g	71,962	71,512	70,663	70,383	69,508	69,151		8g	84,940	84,190	82,342	81,967	80,033	79,504
M 72 x 3	4h	72,000	71,764	70,051	69,919	68,319	68,071	M 85 x 6	4h	85,000	84,625	81,103	80,923	77,639	77,228
	6g	71,952	71,577	70,003	69,791	68,271	67,943		6g	84,920	84,320	81,023	80,743	77,559	77,048
	8g	71,952	71,352	70,003	69,668	68,271	67,820		8g	84,920	83,970	81,023	80,573	77,559	76,878
M 72 x 4	4h	72,000	71,700	69,402	69,252	67,093	66,789	M 90 x 2	4h	90,000	89,820	88,701	88,589	87,546	87,357
	6g	71,940	71,465	69,342	69,106	67,033	66,643		6g	89,962	89,682	88,663	88,483	87,508	87,251
	8g	71,940	71,190	69,342	68,967	67,033	66,504		8g	89,962	89,512	88,663	88,383	87,508	87,151
M 72 x 6	4h	72,000	71,625	68,103	67,923	64,639	64,228	M 90 x 3	4h	90,000	89,764	88,051	87,919	86,319	86,071
	6g	71,920	71,320	68,023	67,743	64,559	64,048		6g	89,952	89,577	88,003	87,791	86,271	85,943
	8g	71,920	70,970	68,023	67,573	64,559	63,878		8g	89,952	89,352	88,003	87,668	86,271	85,820
M 75 x 1,5	4h	75,000	74,850	74,026	73,926	73,160	73,002	M 90 x 4	4h	90,000	89,700	87,402	87,252	85,093	84,789
	6g	74,968	74,732	73,994	73,834	73,128	72,910		6g	89,940	89,465	87,342	87,106	85,033	84,643
	8g	74,968	74,593	73,994	73,744	73,128	72,820		8g	89,940	89,190	87,342	86,967	85,033	84,504
M 75 x 2	4h	75,000	74,820	73,701	73,589	72,546	72,357	M 90 x 6	4h	90,000	89,625	86,103	85,923	82,639	82,228
	6g	74,962	74,682	73,663	73,483	72,508	72,251		6g	89,920	89,320	86,023	85,743	82,559	82,048
	8g	74,962	74,512	73,663	73,383	72,508	72,151		8g	89,920	88,970	86,023	85,573	82,559	81,878
M 75 x 3	4h	75,000	74,764	73,051	72,919	71,319	71,071	M 95 x 2	4h	95,000	94,820	93,701	93,583	92,546	92,351
	6g	74,952	74,577	73,003	72,791	71,271	70,943		6g	94,962	94,682	93,663	93,473	92,508	92,241
	8g	74,952	74,352	73,003	72,668	71,271	70,820		8g	94,962	94,512	93,663	93,363	92,508	92,131
M 75 x 4	4h	75,000	74,700	72,402	72,252	70,093	69,789	M 95 x 3	4h	95,000	94,764	93,051	92,911	91,319	91,063
	6g	74,940	74,465	72,342	72,106	70,033	69,643		6g	94,952	94,577	93,003	92,779	91,271	90,931
	8g	74,940	74,190	72,342	71,967	70,033	69,504		8g	94,952	94,352	93,003	92,648	91,271	90,800
M 76 x 1,5	4h	76,000	75,850	75,026	74,926	74,160	74,002	M 95 x 4	4h	95,000	94,700	92,402	92,242	90,093	89,779
	6g	75,968	75,732	74,994	74,834	74,128	73,910		6g	94,940	94,465	92,342	92,092	90,033	89,629
	8g	75,968	75,593	74,994	74,444	74,128	73,820		8g	94,940	94,190	92,342	91,942	90,033	89,479
M 76 x 2	4h	76,000	75,820	74,701	74,589	73,546	73,357	M 95 x 6	4h	95,000	94,625	91,103	90,913	87,639	87,218
	6g	75,962	75,682	74,663	74,483	73,508	73,251		6g	94,920	94,320	91,023	90,723	87,559	87,028
	8g	75,962	75,512	74,663	74,383	73,508	73,151		8g	94,920	93,970	91,023	90,548	87,559	86,853
M 76 x 3	4h	76,000	75,764	74,051	73,919	72,319	72,071	M 100 x 2	4h	100,000	99,820	98,701	98,583	97,546	97,351
	6g	75,952	75,577	74,003	73,791	72,271	71,943		6g	99,962	99,682	98,663	98,472	97,508	97,241
	8g	75,952	75,352	74,003	73,668	72,271	71,820		8g	99,962	99,512	98,663	98,363	97,508	97,131
M 76 x 4	4h	76,000	75,700	73,402	73,252	71,093	70,789	M 100 x 3	4h	100,000	99,764	98,051	97,911	96,319	96,063
	6g	75,940	75,465	73,342	73,106	71,033	70,643		6g	99,952	99,577	98,003	97,779	96,271	95,931
	8g	75,940	75,190	73,342	72,967	71,033	70,504		8g	99,952	99,352	98,003	97,648	96,271	95,800
M 76 x 6	4h	76,000	76,625	72,103	71,923	68,639	68,228	M 100 x 4	4h	100,000	99,700	97,402	97,242	95,093	94,799
	6g	75,920	75,320	72,023	71,743	68,559	68,048		6g	99,940	99,465	97,342	97,092	95,033	94,629
	8g	75,920	74,970	72,023	71,573	68,559	67,878		8g	99,940	99,190	97,342	96,942	95,033	94,479
M 80 x 1,5	4h	80,000	79,850	79,026	78,926	78,160	78,002	M 100 x 6	4h	100,000	99,625	96,103	95,913	92,639	92,218
	6g	79,968	79,732	78,994	78,834	78,128	77,910		6g	99,920	99,320	96,023	95,723	92,559	92,028
	8g	79,968	79,593	78,994	78,744	78,128	77,820		8g	99,920	98,970	96,023	95,548	92,559	91,853
M 80 x 2	4h	80,000	79,620	78,701	78,589	77,546	77,257								
	6g	79,962	79,682	78,663	78,483	77,508	77,251								
	8g	79,962	79,512	78,663	78,383	77,508	77,151								

(B.S 84 - 1956)

ISO-METRIC FINE THREAD
ROSCA whitworth
FILETAGE MÉTRIQUE ISO FINE

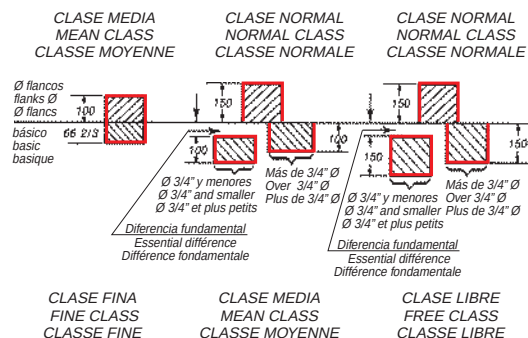


$$H = 0.960491 P \quad \frac{H}{6} = 0.160082 P$$

$$h = \frac{2}{3} H = 0.610327 P \quad r = 0.137329 P$$

FORMA BASICA DE LA ROSCA WHITWORTH
 BASIC SHAPE OF WHITWORTH THREAD
 FORME BASIQUE DU FILET WHITWORTH

TUERCA / NUT / ÉCROU



TORNILLO

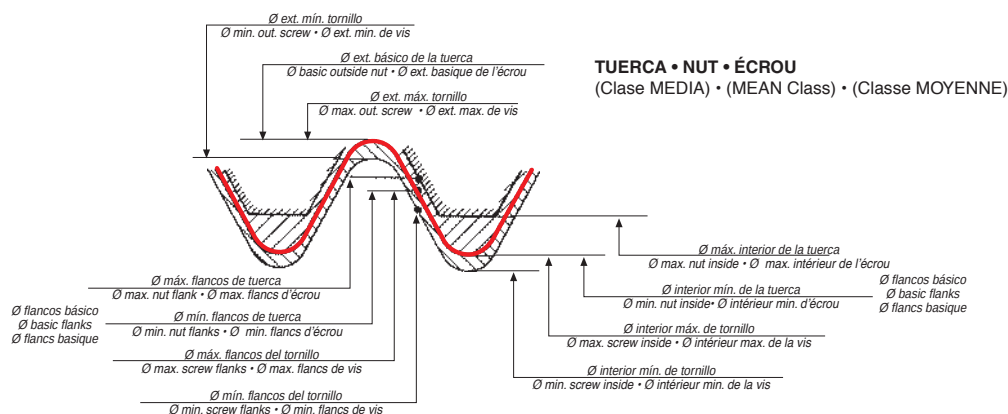
Zonas de tolerancia de diámetro de flancos de combinaciones recomendadas de clases de tornillos y tuercas de rosca Whitworth.
 NOTA: La tolerancia de diámetro de flancos de tornillo clase media se muestra en el dibujo como 100 unid. y los otros valores están expresados % de esta tolerancia.

SCREW

Flank diameter tolerance areas of recommended combinations of Whitworth thread screw and nut classes.
 NOTE: The flank diameter tolerance for mean class screws is shown in the drawing as 100 units and the other values are expressed in % of this tolerance.

VIS

Zones de tolérance de diamètre de flancs de combinaisons recommandées de classes de vis et d'écrous à filet Whitworth.
 NOTE: La tolérance de diamètre de flancs à vis classe moyenne est montrée dans le dessin comme 100 unit. et les autres valeurs son exprimées % de cette tolérance.



TUERCA • NUT • ÉCROU
 (Clase MEDIA) • (MEAN Class) • (Classe MOYENNE)

TORNILLO • SCREW • VIS
 (Clase FINA) • (FINE Class) • (Classe FINE)

Zona de tolerancia para tornillo clase FINA y para tuerca clase MEDIA.
 Tolerance area for FINE class screw and MEAN class nut
 Zone de tolérance pour vis classe FINE et pour écrou classe MOYENNE.

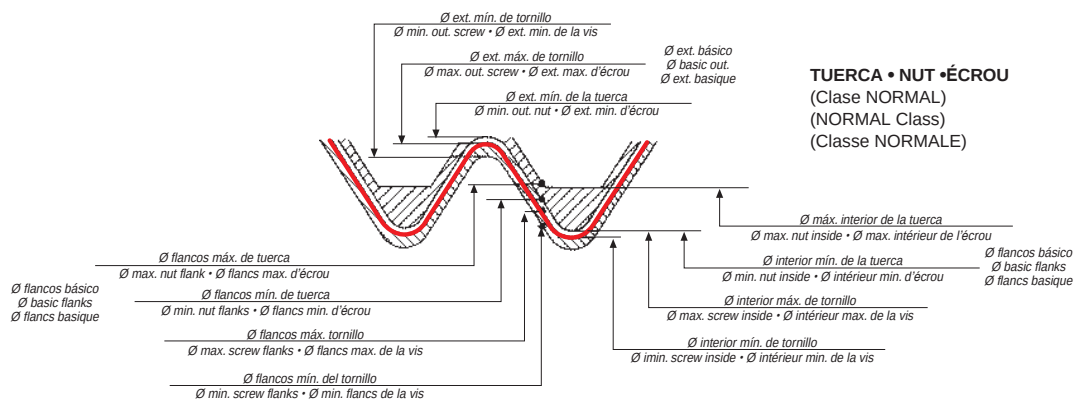
(B.S 84 - 1956)

BSW

WHITWORTH THREAD

FILET WHITWORTH

ROSCA WHITWORTH



TORNILLO • SCREW • VIS

(Clase MEDIA)

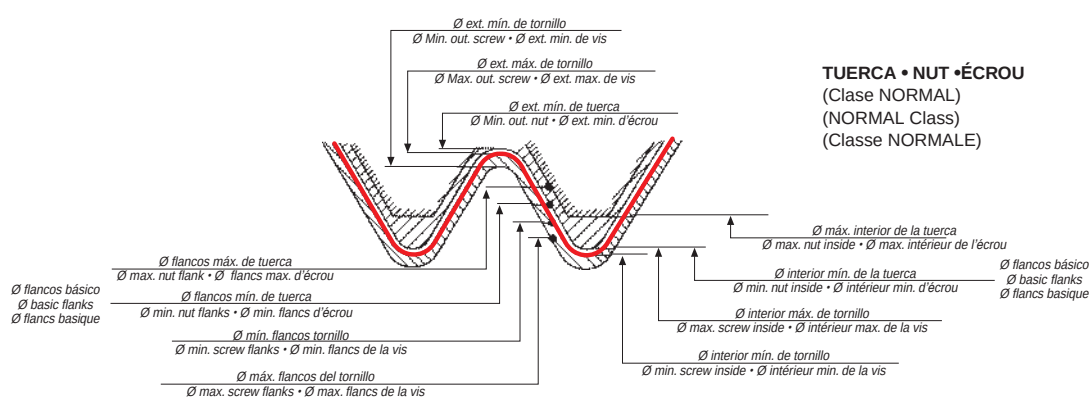
(MEAN Class)

(Classe MOYENNE)

Zona de tolerancia para tornillo clase MEDIA y tuerca clase NORMAL

Tolerance area for MEAN class screw and NORMAL class

Zone de tolérance pour vis classe MOYENNE et pour écrou classe NORMALE



TORNILLO • SCREW • VIS

(Clase LIBRE)

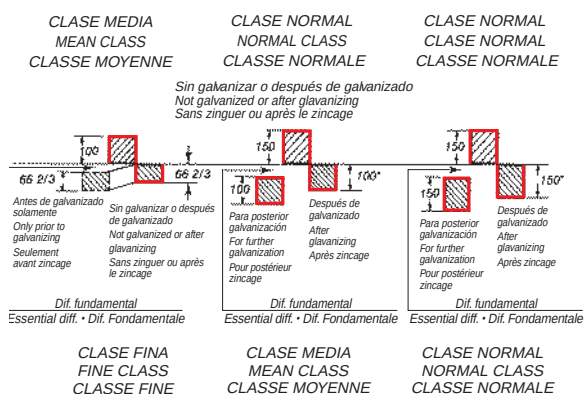
(FREE Class)

(Classe LIBRE)

Zona de tolerancia para tornillo clase LIBRE y tuerca clase NORMAL

Tolerance area for FREE class screw and NORMAL class nut

Zone de tolérance pour vis classe LIBRE et pour écrou classe NORMALE



TORNILLO

Zonas de tolerancia de diámetro flancos para tuercas y tornillos Whitworth, sin galvanizar o antes de galvanizar y después de galvanizar de medidas de Ø nominal de 3/4" y menores.

SCREW

Tolerance areas of flank diameters for Whitworth nuts and screws, not galvanized or prior to galvanizing and after galvanizing of 3/4" and smaller nominal Ø sizes.

VIS

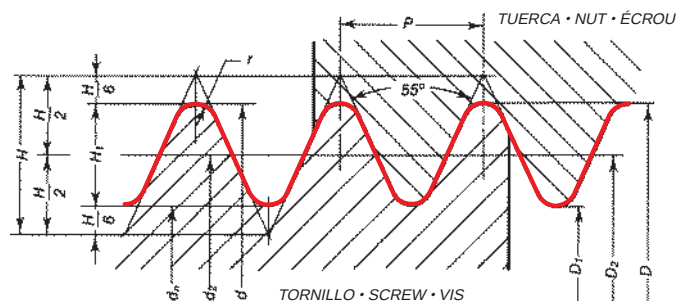
Zonas de tolerancia de diámetros flancos para écrous et vis Whitworth, sans zinguer ou avant le zincage et après le zincage de mesures à Ø nominal de 3/4" et plus petits.

THEORICAL PROFILE
PROFIL THÉORIQUE
PERFIL TEORICO

BSW

DIN 11 (BS - 84)

WHITWORTH THREAD
FILET WHITWORTH
ROSCA WHITWORTH



$$P_1 = \frac{25,4}{N}$$

$$r = 0,13733 P$$

$$H = 0,9605 P$$

$$H_1 = 0,64033 P$$

$$d_2 = d - H_1$$

$$d_1 = d - 2H_1$$

PERFIL TEORICO • PROFIL THÉORIQUE • THEORICAL PROFILE

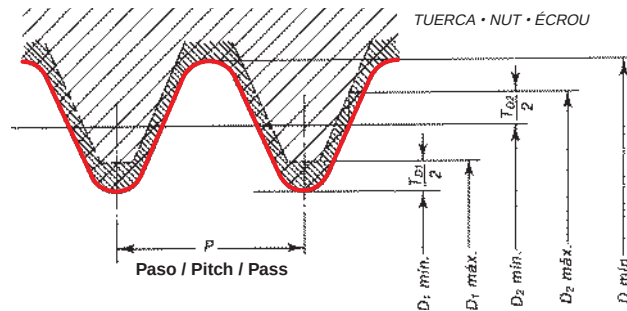
Rosca Thread Filet	Paso / Pitch / Pass		Ø Exterior Outside Ø / Ø Extérieur d = D	Ø Medio Pitch Ø / Ø Moyen d ₂ = D ₂	Ø Núcleo Core Ø / Ø Noyau d _n = D ₁
	Hilos / Thread / fils	mm			
1/16	60	0,423	1,587	1,317	1,045
3/32	48	0,529	2,381	2,042	1,703
1/8	40	0,635	3,175	2,768	2,362
5/32	32	0,793	3,969	3,461	2,952
3/16	24	1,058	4,762	4,084	3,407
7/32	24	1,058	5,556	4,878	4,201
1/4	20	1,270	6,350	5,537	4,724
5/16	18	1,411	7,938	7,034	6,131
3/8	16	1,588	9,525	8,509	7,492
7/16	14	1,814	11,113	9,951	8,789
1/2	12	2,117	12,700	11,345	9,990
9/16	12	2,117	14,288	12,933	11,578
5/8	11	2,309	15,876	14,397	12,918
11/16	11	2,309	17,463	15,984	14,506
3/4	10	2,540	19,051	17,424	15,798
7/8	9	2,822	22,226	20,419	18,611
1	8	3,175	25,401	23,368	21,335
1 1/8	7	3,629	28,576	26,253	23,929
1 1/4	7	3,629	31,751	29,428	27,104
1 3/8	6	4,233	34,926	32,215	29,505
1 1/2	6	4,233	38,101	35,391	32,680
1 5/8	5	5,080	41,277	38,024	34,771
1 3/4	5	5,080	44,452	41,199	37,946
1 7/8	4 1/2	5,645	47,627	44,012	40,398
2	4 1/2	5,645	50,802	47,187	43,573
2 1/4	4	6,350	57,152	53,086	49,020
2 1/2	4	6,350	63,502	59,436	55,370
2 3/4	3 1/2	7,257	69,853	65,205	60,558
3	3 1/2	7,257	76,203	71,556	66,909
3 1/4	3 1/4	7,815	82,553	77,548	72,544
3 1/2	3 1/4	7,815	88,903	83,899	78,894
3 3/4	3	8,466	95,254	89,832	84,410
4	3	8,466	101,604	96,182	90,760
4 1/4	2 7/8	8,834	107,954	102,297	96,639
4 1/2	2 7/8	8,834	114,304	108,647	102,990
4 3/4	2 3/4	9,236	120,655	114,740	108,825
5	2 3/4	9,236	127,005	121,090	115,176
5 1/4	2 5/8	9,676	133,355	127,159	120,963
5 1/2	2 5/8	9,676	139,705	133,509	127,313
5 3/4	2 1/2	10,160	146,055	139,954	133,043
6	2 1/2	10,160	152,406	145,900	139,394

NUT
ÉCROU
TUERCA
DIN (B.S 84 - 1956)

BSW



ROSCA WHITWORTH
FILET WHITWORTH
WHITWORTH THREAD



f = fina • fine • fin
m = media • mean • moyen
g = basta • rough • grossier

TUERCA • ÉCROU • NUT

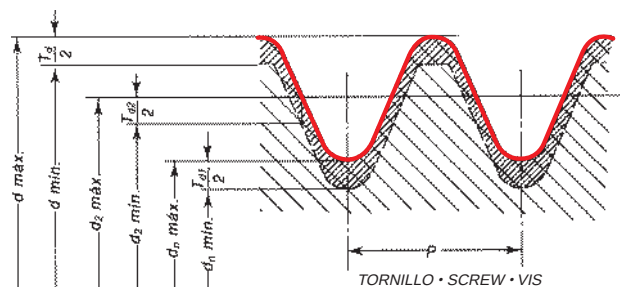
Rosca Thread Filet	Paso Pitch Pass H/1"	Ø Exterior Outside Ø Ø Extérieur D min.	Ø Medio / Pitch Ø / Ø Moyen				Ø Núcleo / Core Ø / Ø Noyau			
			D ₂ min. f.m.g.	f	D ₂ máx. m	g	D ₁ mm f	D ₁ mm m.g.	D ₁ máx. f	D ₁ máx. m.g.
1/8	40	3,175	2,769		2,842			2,362		2,591
3/16	24	4,763	4,084		4,173			3,406		3,744
1/4	20	6,350	5,537	5,613	5,650	5,726	4,820	4,744	5,104	5,224
5/16	18	7,938	7,034	7,114	7,153	7,233	6,231	6,151	6,531	6,661
3/8	16	9,525	8,509	8,593	8,636	8,720	7,596	7,512	7,912	8,052
7/16	14	11,113	9,951	10,041	10,086	10,175	8,899	8,809	9,229	9,379
1/2	12	12,700	11,345	11,442	11,491	11,589	10,112	10,015	10,460	10,610
9/16	12	14,288	12,933		12,079			11,603		11,198
5/8	11	15,876	14,397	14,499	14,550	14,652	13,050	12,948	13,428	13,598
11/16	11	17,463	15,984		16,132			14,506		15,146
3/4	10	19,051	17,424	17,531	17,584	17,691	15,938	15,831	16,348	16,538
7/8	9	22,226	20,419	20,532	20,588	20,700	18,760	18,647	19,201	19,411
1	8	25,401	23,368	23,487	23,547	23,666	21,494	21,375	21,965	22,185
1 1/8	7	28,576	26,253	26,381	26,444	26,572	24,104	23,976	24,629	24,879
1 1/4	7	31,751	29,428	29,556	29,619	29,747	27,279	27,151	27,804	28,054
1 3/8	6	34,926	32,215	32,353	32,422	32,560	29,696	29,558	30,275	30,555
1 1/2	6	38,101	35,391	35,529	35,598	35,736	32,871	32,733	33,450	33,730
1 5/8	5	41,277	38,024	38,175	38,251	38,402	34,985	34,834	35,611	35,921
1 3/4	5	44,452	41,199	41,350	41,426	41,577	38,160	38,009	38,786	39,096
1 7/8	4 1/2	47,627	44,012	44,171	44,251	44,410	40,627	40,468	41,308	41,648
2	4 1/2	50,802	47,187	47,346	47,426	47,585	43,802	43,643	44,483	44,823
2 1/4	4	57,152	53,086	53,255	53,339	53,508	49,269	49,100	50,030	50,420
2 1/2	4	63,502	59,436	59,605	59,689	59,858	55,619	55,450	56,380	56,770
2 3/4	3 1/2	69,853	65,205	65,385	65,476	65,656	60,828	60,648	61,668	62,108
3	3 1/2	76,203	71,556	71,736	71,827	72,007	67,179	66,999	68,019	68,459
3 1/4	3 1/4	82,553	77,548	77,735	77,829	78,016	72,828	72,641	73,754	74,244
3 1/2	3 1/4	88,903	83,899	84,086	84,180	84,367	79,178	78,991	80,104	80,594
3 3/4	3	95,254	89,832	90,027	90,027	90,319	84,708	84,513	85,690	86,210
4	3	101,604	96,182	96,377	96,474	96,669	91,058	90,863	92,040	92,560
4 1/4	2 7/8	107,954	102,297	102,496	102,596	102,795	96,948	96,749	97,979	98,539
4 1/2	2 7/8	114,304	108,647	108,846	108,946	109,145	103,299	103,100	104,330	104,890
4 3/4	2 3/4	120,655	114,740	114,944	115,045	115,249	109,142	108,938	110,225	110,825
5	2 3/4	127,005	121,090	121,294	121,395	121,599	115,493	115,289	116,576	117,176
5 1/4	2 5/8	133,355	127,159	127,367	127,472	127,680	121,291	121,083	122,433	123,063
5 1/2	2 5/8	139,705	133,509	133,717	133,822	134,030	127,641	127,433	128,783	129,413
5 3/4	2 1/2	146,055	139,549	139,763	139,869	140,083	133,384	133,170	134,573	135,243
6	2 1/2	152,406	145,900	146,114	146,220	146,434	139,750	139,521	140,924	141,594

SCREW
VIS
TORNILLO

BSW

DIN 11(B.S 84 - 1956)

WHITWORTH THREAD
FILET WHITWORTH
ROSCA WHITWORTH



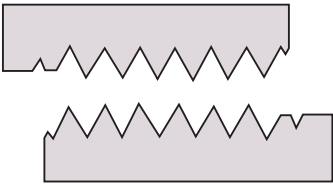
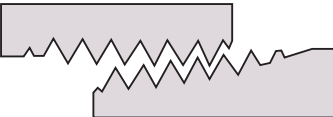
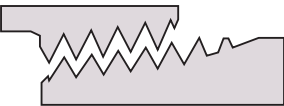
f = fina • fine • fin
m = media • mean • moyen
g = basta • rough • grossier

Ø Rosca Ø Thread Ø Filet	Paso Pitch Pass H/1"	Ø Exterior / Outside Ø / Ø Extérieur			Ø Medio / Pitch Ø / Ø Moyen				Ø Núcleo / Core Ø / Ø Noyau		
		d máx. f.m.g.	d mín. f	d mín. m.g.	d2 máx. f.m.g.	f	d2 mín. m	g	d _n máx. f.m.g.	d _n mín. f	d _n mín. m.g.
1/8	40	3,175		3,061	2,769		2,695		2,362		2,207
3/16	24	4,763		4,623	4,084		3,995		3,406		3,213
1/4	20	6,330	6,200	6,000	5,537	5,461	5,424	5,348	4,724	4,572	4,422
5/16	18	7,918	7,800	7,600	7,034	6,954	6,915	6,835	6,131	5,971	5,813
3/8	16	9,505	9,400	9,100	8,059	8,425	8,382	8,298	7,492	7,324	7,154
7/16	14	11,093	10,900	10,700	9,951	9,861	9,816	9,727	8,789	8,609	8,430
1/2	12	12,675	12,500	12,200	11,345	11,248	11,199	11,101	9,990	9,796	9,600
9/16	12	14,263		13,778	12,933		12,787		11,578		11,188
5/8	11	15,846	15,700	15,400	14,397	14,295	14,244	14,142	12,918	12,714	12,510
11/16	11	17,463		17,239	15,984		15,837		14,506		14,206
3/4	10	19,018	18,850	18,500	17,424	17,317	17,264	17,157	15,798	15,584	15,371
7/8	9	22,190	21,950	21,600	20,419	20,306	20,250	20,138	18,611	18,385	18,161
1	8	25,361	25,150	24,800	23,368	23,249	23,189	23,070	21,335	21,097	20,858
1 1/8	7	28,529	28,350	27,900	26,253	26,125	26,062	25,934	23,929	23,673	23,419
1 1/4	7	31,704	31,550	31,000	29,428	29,300	29,237	29,109	27,104	26,848	26,594
1 3/8	6	34,873	34,650	34,100	32,215	32,077	32,008	31,870	29,505	29,229	28,953
1 1/2	6	38,048	37,850	37,300	35,391	35,253	35,184	35,046	32,680	32,404	32,128
1 5/8	5	41,214	41,050	40,300	38,024	37,873	37,797	37,646	34,771	34,469	34,166
1 3/4	5	44,389	44,150	43,500	41,199	41,048	40,972	40,821	37,946	37,644	37,341
1 7/8	4 1/2	47,557	47,350	46,600	44,012	43,853	43,773	43,614	40,398	40,080	39,761
2	4 1/2	50,732	50,500	49,800	47,187	47,028	46,948	46,789	43,573	43,255	42,936
2 1/4	4	57,072	56,800	56,200	53,086	52,917	52,833	52,664	49,020	48,682	48,345
2 1/2	4	63,422	63,200	62,500	59,436	59,267	59,183	59,014	55,370	55,032	54,695
2 3/4	3 1/2	69,763	69,500	68,800	65,205	65,025	64,934	64,754	60,558	60,198	59,836
3	3 1/2	76,113	75,900	75,100	71,556	71,376	71,285	71,105	66,909	66,549	66,187
3 1/4	3 1/4	82,456	82,200	81,400	77,548	77,361	77,267	77,080	72,544	72,170	71,795
3 1/2	3 1/4	88,806	88,600	87,700	83,899	83,712	83,618	83,431	78,894	78,520	78,145
3 3/4	3	95,151	94,900	94,100	89,832	89,637	89,540	89,345	84,410	84,020	83,631
4	3	101,501	101,300	100,400	96,182	95,987	95,890	95,695	90,760	90,370	89,981
4 1/4	2 7/8	107,844	107,600	106,700	102,297	102,098	101,998	101,799	96,639	96,241	95,842
4 1/2	2 7/8	114,194	113,900	113,000	108,647	108,448	108,348	108,149	102,990	102,592	102,193
4 3/4	2 3/4	120,542	120,250	119,300	114,740	114,536	114,435	114,231	114,825	108,417	108,011
5	2 3/4	126,892	126,550	125,600	121,090	120,886	120,785	120,581	115,176	114,768	114,362
5 1/4	2 5/8	133,235	132,950	132,000	127,159	126,951	126,846	126,638	120,963	120,547	120,129
5 1/2	2 5/8	139,585	139,250	138,300	133,509	133,301	133,196	132,988	127,313	126,897	126,479
5 3/4	2 1/2	145,928	145,600	144,700	139,549	139,335	139,229	139,015	133,043	132,615	132,189
6	2 1/2	152,279	151,950	151,000	145,900	145,686	145,580	145,366	139,394	138,966	138,540

SUMMARY OF THREADS FOR FITTINGS

BILAN DE FILETAGE WHITWORTH POUR TUYAUTERIE

RESUMEN DE ROSCAS WHITWORTH PARA TUBOS

NO ESTANCAS • NOT DRYSEAL • SANS ETAINCHEITE					
NORMA	ROSCA INTERIOR INTERNAL THREAD FILETAGE INTERNE		ROSCA EXTERIOR EXTERNAL THREAD FILETAGE EXTERNE		FIG.
	CILINDRICA PARALELL CILINDRIQUE	CONICA TAPER CONIQUE	CILINDRICA PARALELL CILINDRIQUE	CONICA TAPER CONIQUE	
DIN 259	R	–	R	–	
INGLESA-ENGLISH-ANGLAIS	BSP	–	BSP	–	
JAPONESA-JAPANESE-JAPONAIS	PF	–	PF	–	
ISO 228	G	–	G	–	
INGLESA-ENGLISH-ANGLAIS	BSP	–	BSP	–	
JAPONESA-JAPANESE-JAPONAIS	PF	–	PF	–	
ESTANCAS - DRYSEAL - AVEC ETAINCHEITE					
NORMA	ROSCA INTERIOR INTERNAL THREAD FILETAGE INTERNE		ROSCA EXTERIOR EXTERNAL THREAD FILETAGE EXTERNE		FIG.
	CILINDRICA PARALELL CILINDRIQUE	CONICA TAPER CONIQUE	CILINDRICA PARALELL CILINDRIQUE	CONICA TAPER CONIQUE	
DIN 2999	Rp	–	–	R	
INGLESA-ENGLISH-ANGLAIS	BSPP	–	–	BSPT	
JAPONESA-JAPANESE-JAPONAIS	PS	–	–	PT	
ISO 7/1	Rp	Rc	–	R	
INGLESA-ENGLISH-ANGLAIS	BSPP	BSPT	–	BSPT	
JAPONESA-JAPANESE-JAPONAIS	PS	PT	–	PT	
ESQUEMA DE TOLERANCIAS • ESCHEME OF ALLOWANCES • ESCHEMA DE TOLERANCES					
DIN 259 - ISO 228			DIN 2999 - ISO 7/1		
TUERCA NUT ECROU O NOMINAL TORNILLO SCREW VIS			ISO 2999 e ISO 7/1 TUERCA NUT ECROU Tol. R TORNILLO SCREW VIS		
DIN 259 ISO 228 ISO 228 A ISO 228 B			Rp Rc CONICIDAD TAPER CONICITE 1:16 0 R		

THREADS FOR PIPES WITHOUT SEALED CONNECTIONS IN THREADS

Abbreviations of threads have been included in the ISO 7/1-1978 and ISO 228/1-1978 standards. That is the reason why there has been some confusion concerning them, as the abbreviation of a thread according to ISO 7/1-1978 is identical to the designation used to date in accordance with DIN 259, section 1. The risk of confusion about the male taper thread according to ISO 7/1 with the male parallel thread corresponding to DIN 259 implies safety risks. In order to make this clear, the different sealing functions of thread connections are indicated. The parallel thread according to DIN 259 (ISO 228/1) requires an additional sealed element at the front face of parts to be threaded. As far as the taper pipe thread is concerned according to ISO 7/1 (DIN 2999, section 1), a solution (hemp or PTFE tape) to seal will be used.

CHANGES IN RELATION TO DIN 259, Sections 1,2 and 3.

- The abbreviation has been changed from R to G.
 - Abbreviations for male thread tolerances have been changed.
- The tolerance class A of this standard corresponds to « mean » (m) and B corresponds to « rough » (g) according to DIN 259, section 2.

The letter A or B will always be added to the symbol for the male thread.

- The nominal average for R 1/16 has been adapted as a novelty.
- There is no specifications, in this standard, on how the minor diameter of male and female threads will be.

1 SCOPE OF USE

These threads are used in non sealed mechanical connections of parts: Fittings, cocks, valves, etc. For sealed connections in pipe thread, see ISO 7/1.

2 SYMBOLS AND ITS MEANING

G Threads for pipe without sealed connections in threads

A Class of narrow thread tolerance for pipes without sealed connections in threads

B Class of wide thread tolerance for pipes without sealed connections in threads

H Height of profile triangle

h Height of the thread profile with round thread crests and round thread root (thread depth)

r Radius of the round thread crests and the round thread root

P Pitch

d Outside diameter of male thread

d1 = d - 1,280 654 P Core diameter of male thread

d2 = d - 0,640 327 P Flank diameter of male thread

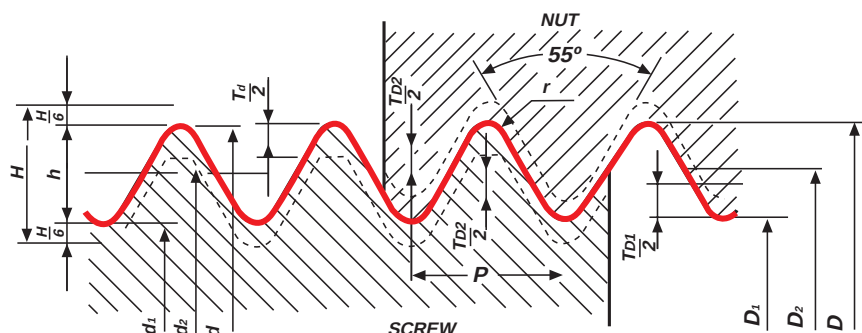
3 DIMENSIONS

The base profile of this thread is identical to that of the parallel thread according to ISO 7/1. Both female and male threads according to ISO 228/1 are parallel. Crest of threads can be flat up to the differences of limit dimensions, except for the female threads, so as to they can be matched to the male threads according to ISO 7/1. Two classes of tolerances for the flank diameter have been specified for male threads. Class A. For negative differences of dimensions; values equal to the positive differences of dimensions for the female thread. Class B. For negative differences of dimensions; values two times those of class A.

4 NUT SYMBOLS

The pipe threads corresponding to this standard will be designated as follows:

- Female threads (only a class of tolerance)
- Letter G, followed by the nominal thread size.
- Letter G, followed by the nominal thread size and letter A or B, according to the class of tolerance ■





FILETS POUR TUYAUTERIES SANS RACCORDEMENTS ÉTANCHES AUX FILETS

Dans les normes ISO 7/1-1978 et ISO 228/1-1978 on a compris les abréviations des filets. Pour cela il y a eu un danger de confusion, puisque l'abréviation d'un filet selon ISO 7/1-1978 est identique à la dénomination utilisée jusqu'à ce moment-là par DIN 259, partie 1. Le danger de confusion entre le filet mâle conique selon ISO 7/1 et le filet mâle cylindrique selon DIN 259 cache des risques de sécurité. Pour éclairer tout cela, on indique les différentes fonctions étanches des raccords de filets. Le filet cylindrique selon DIN 259 (ISO 228/1) exige un élément additionnel étanche dans la face frontale des parties à filer. Au filet pour tube conique selon ISO 7/1 (DIN 2999, partie 1), on utilisera remède pour étancher (chanvre ou bande PTFE).

CHANGEMENTS PAR RAPPORT AU DIN 259, Parties 1, 2 et 3.

- L'abréviation a changé de R à G.
- On a changé les abréviations pour la tolérance du filet mâle. La classe de tolérance A de cette norme correspond à « moyenne » (m) et la B correspond à « grossière » (g) selon DIN 259, partie 2.
- La lettre A ou B doit toujours être ajoutée au symbole, pour le filet mâle.

- La moyenne nominale pour R 1/16 a été adaptée comme nouveauté.
- Dans cette norme, on n'indique pas comment doit être le diamètre le plus petit des filets femelle et mâle.

1 DOMAINE D'UTILISATION

Ces filets sont utilisés en raccords mécaniques non étanches de pièces : Fittings, robinets, soupapes, etc. Pour des raccords étanches au filet à tuyauterie, voir ISO 7/1.

2 SYMBOLES et leur signification

G Filets pour tubes sans raccords étanches aux filets.

A Classe de tolérance étroite de filets pour tubes sans raccords étanches aux filets.

B Classe de tolérance vaste de filets pour tubes sans raccords étanches aux filets.

H Hauteur du triangle de profil.

h Hauteur du profil du filet à crêtes de filet rond et fond de filet rond (profondeur du filet).

r Rayon des crêtes du filet rond et du fond de filet rond.

P Pass.

d Diamètre extérieur du filet mâle.

d1 = d - 1,280 654 P Diamètre du noyau du filet mâle.

d2 = d - 0,640 327 P Diamètre des flancs du filet mâle.

3 MESURES

Le profil basique de ce filet est identique à celui du filet cylindrique selon ISO 7/1. Les filets femelles et mâles sont selon ISO 228/1 les deux cylindriques. Les crêtes des filets peuvent être plates jusqu'aux différences de mesures limites, sauf les filets femelles, au cas où ils pourraient se coupler avec les filets mâles selon ISO 7/1. On a déterminé des genres de tolérance pour le diamètre de flancs des filets mâles.

Classe A. Pour différences de mesures négatives ; valeurs égales que les différences des mesures positives pour le filet femelle.

Classe B. Pour différences de mesures négatives ; valeurs doubles que dans la classe A.

4 SYMBOLES D'ÉCROU

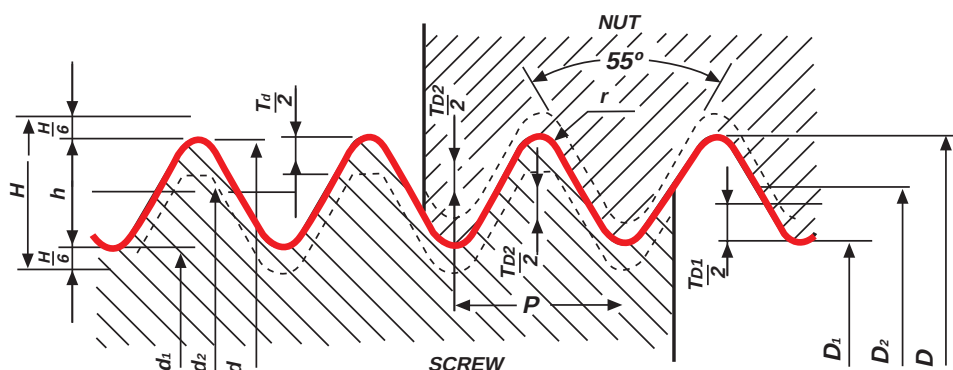
Les filets pour tubes qui correspondent à cette norme seront nommés de la façon suivante :

- Filets femelles (seulement une classe de tolérance)

La lettre G, suivie de la mesure nominale du filet.

- Filets mâles (classe de tolérance A ou B)

La lettre G, suivie de la mesure nominale du filet et de la lettre A ou B, selon la classe de tolérance ■





ROSCAS PARA TUBOS SIN CONEXIONES ESTANCAS EN LAS ROSCAS

En las normas ISO 7/1-1978 e ISO 228/1-1978 se han incluido las abreviaturas de roscas. Por ello, se produjo un peligro de confusión, ya que la abreviatura para una rosca según ISO 7/1-1978 es idéntica con la denominación usada hasta ahora según DIN 259, parte 1. El peligro de confusión de la rosca exterior cónica según ISO 7/1 con la rosca exterior cilíndrica según DIN 259 esconde riesgos de seguridad. Para aclarar esto se indican las diferentes funciones estancas de las conexiones de roscas. La rosca cilíndrica según DIN 259 (ISO 228/1) exige un elemento adicional estanco en la cara frontal de las partes a roscar. En la rosca para tubo cónica según ISO 7/1 (DIN 2999, parte 1) se usará un remedio para estancar (cáñamo o cinta PTFE).

CAMBIOS CON RELACION AL DIN 259, Parte 1, 2 y 3.

- La abreviatura se ha cambiado de R a G.
- Se han cambiado las abreviaturas para la tolerancia de la rosca exterior. La clase de tolerancia A de esta norma corresponde a "medio" (m) y la B corresponde a "basto" (g) según DIN 259, Parte 2.
- La letra A o B se debe añadir siempre al símbolo para la rosca exterior.
- La media nominal para R 1/16 se ha adaptado como novedad.

- En esta norma no hay indicaciones de cómo debe ser el diámetro menor de la rosca interior y exterior.

1 CAMPO DE UTILIZACION

Estas roscas se utilizan en conexiones mecánicas no estancas de piezas: Fittings, grifos, válvulas, etc. Para conexiones estancas en la rosca para tubería, ver ISO 7/1.

2 SIMBOLOS Y SU SIGNIFICADO

G Roscas para tubería sin conexiones estancas en las roscas.

A Clase de tolerancia estrecha de roscas para tubos sin conexiones estancas en las roscas.

B Clase de tolerancia amplia de roscas para tubos sin conexiones estancas en las roscas.

H Altura del triángulo de perfil.

h Altura del perfil de la rosca con crestas de rosca redondeadas y fondo de rosca redondeada (profundidad de la rosca).

r Radio de las crestas de rosca redondeadas y del fondo de rosca redondeada.

P Paso.

d Diámetro exterior de la rosca exterior.

d₁ = d - 1,280 654 P Diámetro de núcleo de la rosca exterior.

d₂ = d - 0,640 327 P Diámetro de flancos de la rosca exterior.

3 MEDIDAS

El perfil base de esta rosca es idéntico con el de la rosca cilíndrica según ISO 7/1: Las roscas interiores y exteriores según ISO 228/1 son ambas cilíndricas. Las crestas de las roscas pueden ser planas hasta las diferencias de medidas límites, con excepción de las roscas interiores, para el caso de que estas puedan aparejarse con las roscas exteriores según ISO 7/1.

Para roscas exteriores se han determinado dos clases de tolerancia para el diámetro de flancos.

Clase A: Para diferencias de medidas negativas; valores iguales que las diferencias de medidas positivas para la rosca interior.

Clase B: Para diferencias de medidas negativas; valores dobles que en la clase A.

4 SIMBOLOS DE ROSCA

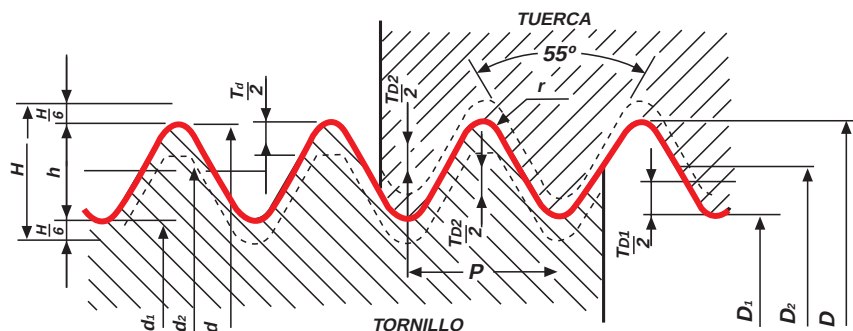
Las roscas para tuberías que correspondan a esta norma se denominarán como sigue:

- Roscas interiores (solamente una clase de tolerancia)

La letra G, seguida de la medida nominal de la rosca.

- Roscas exteriores (clase de tolerancia A o B)

La letra G, seguida de la medida nominal de la rosca y de la letra A o B, según la clase de tolerancia ■

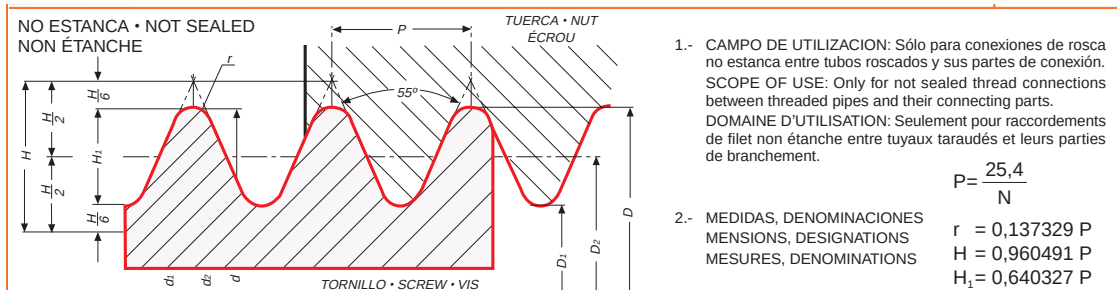


MESURES NOMINALES
MESURES NOMINALES
MEDIDAS NOMINALES

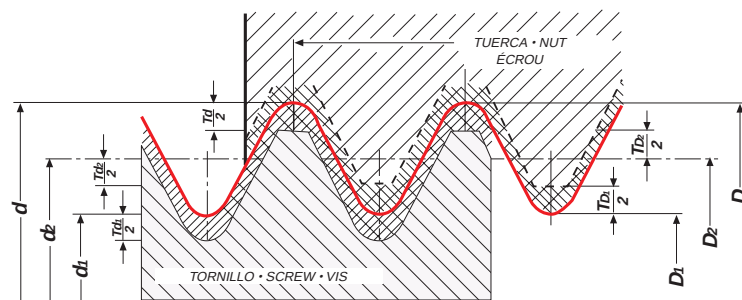


DIN 180 228

WHITWORTH PIPE THREAD
FILETAGE WHITWORTH GAZ
ROSCA WHITWORTH PARA TUBO



Rosca • Thread Filet	Paso • Pitch • Pass		Ø Exterior Outside Ø • Ø Extérieur	Ø Medio Pitch Ø • Ø Moyen	Ø Núcleo Core Ø • Ø Noyau
	N h/1"	P mm.	d = D mm.	d ₂ = D ₂ mm.	d ₁ = D ₁ mm.
G 1/8	28	0.907	9.728	9.147	8.566
G 1/4	19	1.337	13.157	12.301	11.445
G 3/8	19	1.337	16.662	15.806	14.950
G 1/2	14	1.814	20.955	19.793	18.631
(G 5/8)	14	1.814	22.911	21.749	20.587
G 3/4	14	1.814	26.441	25.279	24.117
(G 7/8)	14	1.814	30.201	29.039	27.877
G 1	11	2.309	33.249	31.770	30.291
(G 1 1/8)	11	2.309	37.897	36.418	34.939
(G 1 1/4)	11	2.309	41.910	40.431	38.952
(G 1 3/8)	11	2.309	44.323	42.844	41.365
G 1 1/2	11	2.309	47.803	46.324	44.845
(G 1 3/4)	11	2.309	53.746	52.267	50.788
G 2	11	2.309	59.614	58.135	56.656
(G 2 1/4)	11	2.309	65.710	64.231	62.752
G 2 1/2	11	2.309	75.184	73.705	72.226
(G 2 3/4)	11	2.309	81.534	80.055	78.576
G 3	11	2.309	87.884	86.405	84.926
(G 3 1/4)	11	2.309	93.980	92.501	91.022
G 3 1/2	11	2.309	100.330	98.851	97.372
(G 3 3/4)	11	2.309	106.680	105.201	103.722
G 4	11	2.309	113.030	111.551	110.072
(G 4 1/2)	11	2.309	125.730	124.251	122.772
G 5	11	2.309	138.430	136.951	135.472
(G 5 1/2)	11	2.309	151.130	149.651	148.172
G 6	11	2.309	163.830	162.351	160.872



TOLERANCIAS
TOLERANCES
TOLÉRANCES

A = media • mean • moyenne
B = basta • rough • grossière

Rosca Thread Filet	Long. de acoplamiento Coupling length Long.	Rosca exterior • Male thread • Filet mâle						Rosca interior • Female thread • Filet femelle			
		Tolerancia Ø exterior • Outside Ø tolerance • Tolérance Ø extérieur		Tolerancia Ø medio • Pitch Ø Tolerance • Tolérance Ø moyen			T _{D2}	Tolerancia Ø medio • Average Ø Tolerance • Tolérance Ø moyen		Tolerancia Ø núcleo • Core Ø tolerance • Tolérance Ø noyau	
		µm.	µm.	µm.	T _{d2} (A)	(B)		µm.	µm.	µm.	µm.
G 1/8	12,5		-214		-107	-214		+107		+282	
G 1/4	16	0	-250	0	-125	-250	0	+125	0	+445	
G 3/8	18		-250		-125	-250		+125		+445	
G 1/2 a G 5/8	22		-284		-142	-284		+142		+541	
G 3/4 a G 7/8	25		-284		-142	-284		+142		+541	
G 1 a G 1 1/8	28		-360		-180	-360		+180		+640	
G 1 1/4 a G 2	32		-360		-180	-360		+180		+640	
G 2 1/4 a G 3 1/4	36		-434		-217	-434		+217		+640	
G 3 1/2 a G 4	40		-434		-217	-434		+217		+640	

NUT AND SCREW
ÉCROU ET VIS
TUERCA Y TORNILLO



WHITWORTH PIPE THREAD
FILETAGE WHITWORTH GAZ
ROSCA WHITWORTH PARA TUBO

DIN 190 228

NO ESTANCA • NOT SEALED • NON ÉTANCHE								
ROSCA EXTERIOR • TORNILLO • MALE THREAD – SCREW • FILET MÂLE – VIS								
Rosca Thread Filet	d Ø Exterior d Ø Outside • d Ø Extérieur		d ₂ Ø Medio • d ₂ Pitch Ø • d ₂ Ø Moyen			d ₁ Ø Nucleo • d ₁ Ø Core • d ₁ Ø Noyau		
	Máx. mm.	Min. mm.	Máx. mm.	Min. (A) mm.	Min. (B) mm.	Máx. mm.	Min. (A) mm.	Min. (B) mm.
G 1/8	9,728	9,514	9,147	9,040	8,933	8,566	8,432	8,298
G 1/4	13,157	12,907	12,301	12,176	12,051	11,445	11,289	11,133
G 3/8	16,662	16,412	15,806	15,681	14,556	14,950	14,794	14,638
G 1/2	20,955	20,671	19,793	19,651	18,509	18,631	18,453	18,276
(G 5/8)	22,911	22,627	21,749	21,607	21,465	20,587	20,409	20,232
G 3/4	26,441	26,157	25,279	25,137	24,995	24,117	23,939	23,762
(G 7/8)	30,201	29,917	29,039	28,897	28,755	27,877	27,699	27,522
G 1	33,249	32,889	31,770	31,590	31,410	30,291	30,066	28,941
(G 1 1/8)	37,897	37,537	36,418	36,238	36,058	34,939	34,714	34,489
G 1 1/4	41,910	41,550	40,431	40,251	40,071	38,952	38,727	38,502
(G 1 3/8)	44,323	43,963	42,844	42,664	42,484	41,365	41,140	40,915
(G 1 1/2)	47,803	47,443	46,324	46,144	45,964	44,845	44,620	44,395
(G 1 3/4)	53,746	53,386	52,267	52,087	51,907	50,788	50,563	50,338
G 2	59,614	59,254	58,135	57,955	57,775	56,656	56,431	56,206
(G 2 1/4)	65,710	65,276	64,231	64,014	63,797	62,752	62,481	62,210
G 2 1/2	75,184	74,750	73,705	73,488	73,271	72,226	71,955	71,684
(G 2 3/4)	81,534	81,100	80,055	79,838	79,621	78,576	78,305	78,034
G 3	87,884	87,450	86,405	86,188	85,971	84,926	84,655	84,384
(G 3 1/4)	93,980	93,546	92,501	92,284	92,067	91,022	90,751	90,480
G 3 1/2	100,330	99,896	98,851	98,634	98,417	97,372	97,101	96,830
(G 3 3/4)	106,680	106,246	105,201	104,984	104,767	103,722	103,451	103,180
G 4	113,030	112,596	111,551	111,334	111,117	110,072	109,801	109,530
(G 4 1/2)	125,730	125,296	124,251	124,034	123,817	122,772	122,501	122,230
G 5	138,430	137,996	136,951	136,734	136,517	135,472	135,201	134,930
(G 5 1/2)	151,130	150,696	149,651	149,434	149,217	148,172	147,901	147,630
G 6	163,830	163,396	162,351	162,134	161,917	160,872	160,601	160,330
ROSCA INTERIOR • TUERCA • FEMALE THREAD – NUT • FILET FEMELLE – ÉCROU								
Abreviatura Abbreviation Abréviation	D Ø Exterior D Ø Outside • D Ø Extérieur		D ₂ Ø Medio • D ₂ Pitch Ø • D ₂ Ø Moyen		D ₁ Ø Nucleo • D ₁ Ø Core • D ₁ Ø Noyau			
	Min. mm.		Min. mm.	Máx. mm.	Min. mm.	Máx. mm.		
G 1/8	9,728		9,147	9,254	8,566	8,848		
G 1/4	13,157		12,301	12,426	11,445	11,890		
G 3/8	16,662		15,806	15,931	14,950	15,395		
G 1/2	20,955		19,793	19,935	18,631	19,172		
(G 5/8)	22,911		21,749	21,891	20,587	21,128		
G 3/4	26,441		25,279	25,421	24,117	24,658		
(G 7/8)	30,201		29,039	29,181	27,877	28,418		
G 1	33,249		31,770	31,950	30,291	30,931		
(G 1 1/8)	37,897		36,418	36,598	34,939	35,579		
G 1 1/4	41,910		40,431	40,611	38,952	39,592		
(G 1 3/8)	44,323		42,844	43,024	41,365	42,005		
(G 1 1/2)	47,803		46,324	46,504	44,845	45,485		
(G 1 1/4)	53,746		52,267	52,447	50,788	51,428		
G 2	59,614		58,135	58,315	56,656	57,296		
(G 2 1/4)	65,710		64,231	64,448	62,752	63,392		
G 2 1/2	75,184		73,705	73,922	72,226	72,866		
(G 2 3/4)	81,534		80,055	80,272	78,576	79,216		
G 3	87,884		86,405	86,622	84,926	85,566		
(G 3 1/4)	93,980		92,501	92,718	91,022	91,662		
G 3 1/2	100,330		98,851	99,068	97,372	98,012		
(G 3 3/4)	106,680		105,201	105,418	103,722	104,362		
G 4	113,030		111,551	111,768	110,072	110,712		
(G 4 1/2)	125,730		124,251	124,468	122,772	123,412		
G 5	138,430		136,951	137,168	135,472	136,112		
(G 5 1/2)	151,130		149,651	149,868	148,172	148,812		
G 6	163,830		162,351	162,568	160,872	161,512		

**PARALLEL FEMALE
THREAD,
TAPER MALE THREAD**

FILET FEMELLE
CYLINDRIQUE,
FILET MÂLE CONIQUE
ROSCA INT. CILÍNDRICA,
ROSCA EXT. CÓNICA

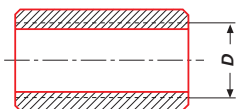
R-Rp

**WHITWORTH PIPE THREAD
FILETAGE WHITWORTH GAZ
ROSCA WHITWORTH PARA TUBO**

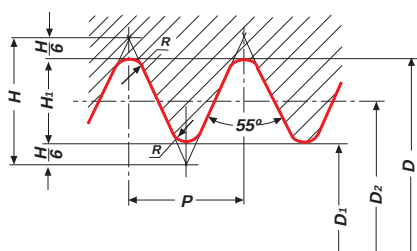
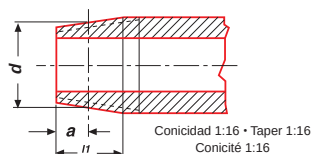
DIN 2999

• R - Rp SEALED • R - Rp ÉTANCHE • R - Rp ESTANCA

Rosca interior cilíndrica (Rp)
Female parallel thread (Rp)
Filet femelle cylindrique (Rp)



Rosca exterior cónica (R)
Male taper thread (R)
Filet mâle conique (R)

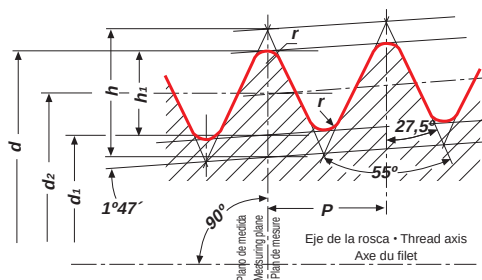


$$P = \frac{25,4}{N}$$

$$H = 0,960491 P$$

$$H_1 = 0,640327 P$$

$$R = 0,137329 P$$



$$P = \frac{25,4}{N}$$

$$h = 0,960237 P$$

$$h_1 = 0,640327 P$$

$$r = 0,137278 P$$

Rosca Thread Filet	Ø Nominal del tubo Ø Pipe nominal Ø Nominal du tube	Dist. plano de medida Meas. plane dist. Dist. plan de mesure	Ø Exterior Outside Ø Ø Extérieur	Ø Medio Pitch Ø Ø Moyen	Ø Nucleo Core Ø Ø Noyau	Paso Pitch • Pass		Radio Radius Rayon	Altura Height Hauteur	Longitud Length Longueur
	mm.	mm.	d = D mm.	d ₂ = D ₂ mm.	d ₁ = D ₁ mm.	P mm.	N h/1"	r = R mm.	h ₁ = H ₁ mm.	l ₁ mm.
a										
Rp y R 1/16	3	4,0	7,723	7,142	6,561	0,907	28	0,125	0,581	6,5
Rp y R 1/8	6	4,0	9,728	9,147	8,566	0,907	28	0,125	0,581	6,5
Rp y R 1/4	8	6,0	13,157	12,301	11,445	1,337	19	0,184	0,856	9,7
Rp y R 3/8	10	6,4	16,662	15,806	14,950	1,337	19	0,184	0,856	10,1
Rp y R 1/2	15	8,2	20,955	19,793	18,631	1,814	14	0,249	1,162	13,2
Rp y R 3/4	20	9,5	26,441	25,279	24,117	1,814	14	0,249	1,162	14,5
Rp y R 1	25	10,4	33,249	31,770	30,291	2,309	11	0,317	1,479	16,8
Rp y R 1 1/4	32	12,7	41,910	40,431	38,952	2,309	11	0,317	1,479	19,1
Rp y R 1 1/2	40	12,7	47,803	46,324	44,845	2,309	11	0,317	1,479	19,1
Rp y R 2	50	15,9	59,614	58,135	56,656	2,309	11	0,317	1,479	23,4
Rp y R 1 1/2	65	17,5	75,184	73,705	72,226	2,309	11	0,317	1,479	26,7
Rp y R 3	80	20,6	87,884	86,405	84,926	2,309	11	0,317	1,479	29,8
Rp y R 4	100	25,4	113,030	111,551	110,072	2,309	11	0,317	1,479	35,8
Rp y R 5	125	28,6	138,430	136,951	135,472	2,309	11	0,317	1,479	40,1
Rp y R 6	150	28,6	163,830	162,351	160,872	2,309	11	0,317	1,479	40,1

**PARALLEL FEMALE
THREAD,
TAPER MALE THREAD**

FILET FEMELLE
CYLINDRIQUE,
FILET MÂLE CONIQUE
ROSCA INT. CILÍNDRICA,
ROSCA EXT. CÓNICA

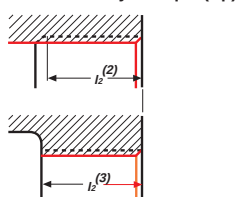
R-Rp

**WHITWORTH PIPE THREAD
FILETAGE WHITWORTH GAZ
ROSCA WHITWORTH PARA TUBO**

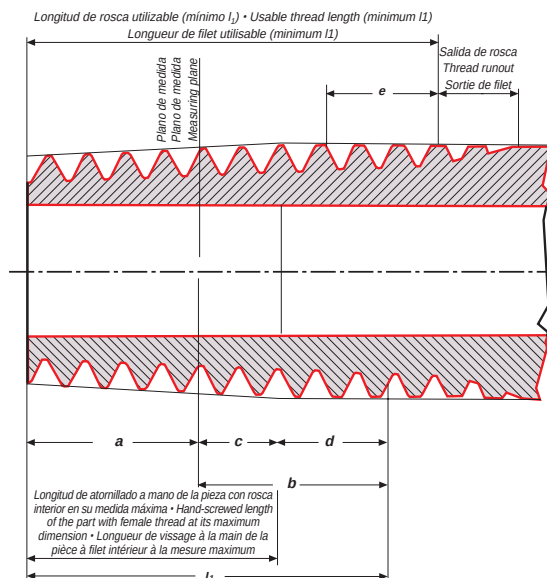
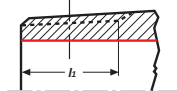
DIN 2999

R - Rp ESTANCA • R - Rp ÉTANCHE • R - Rp SEALED

**Rosca interior cilíndrica (Rp)
Female parallel thread (Rp)
Filet femelle cylindrique (Rp)**



**Rosca exterior cónica (R)
Male taper thread (R)
Filet mâle conique (R)**



- a = Distancia entre el plano de medida y el principio de la rosca.
b = Campo de atornillado medio con herramienta.
c = Ampliación de la longitud de atornillado causada por diferencias en más de la rosca interior.
d = Ampliación de la longitud de atornillado mediante el apriete con herramienta.
e = Longitud de rosca insuficiente en la cresta del diente causada por diferencias en menos del material de la pieza

- a = Distance between the measuring plane and the thread start.
b = Distance of average screwing with tool.
c = Screwing length extension caused by plus differences of female thread.
d = Screwing length extension by means of tool tightening.
e = Insufficient thread length at the tooth crest caused by minus differences of part material.

- a = Distance entre le plan de mesure et le début de filet.
b = Domaine de vissage moyen à outil.
c = Agrandissement de la longueur de vissage causé par des différences en plus du filet femelle.
d = Agrandissement de la longueur de vissage au moyen du serrage à outil.
e = Longueur de filet insuffisante dans la crête du dent causée par des différences en moins du matériel de la pièce.

Rosca Thread Filet	Rosca exterior • Male thread • Filet mâle R								Rosca interior Rp • Female threadRp Filet femelle Rp		
	a				b		l ₁		c		
	Diferencias permitidas Permissible differences Différences permises		Medidas límites Limit dimensions Mesures limites				Para a en máximo For a as a maximum Pour a au maximum	Para a en mínimo For a as a minimum Pour a au minimum	Dif. perm. Ø ext. Outside Ø perm. differen. Ø Dif. Perm. ext.	Diferencias permitidas en longitud de la rosca • Permissible differences in thread length • Différences en longueur du filet permises	
	N (hls)	mm.	Máx. mm.	Min. mm.	N (hls)	mm.			mm.	N (hls)	mm.
R y Rp 1/16	±1	±0,9	4,9	3,1	2 3/4	2,5	7,4	5,6	±0,071	±1 1/4	±1,1
R y Rp 1/8	±1	±0,9	4,9	3,1	2 3/4	2,5	7,4	5,6	±0,071	±1 1/4	±1,1
R y Rp 1/4	±1	±1,3	7,3	4,7	2 3/4	3,7	11,0	8,4	±0,104	±1 1/4	±1,7
R y Rp 3/8	±1	±1,3	7,7	5,1	2 3/4	3,7	11,4	8,8	±0,104	±1 1/4	±1,7
R y Rp 1/2	±1	±1,8	10,0	6,4	2 3/4	5,0	15,0	11,4	±0,142	±1 1/4	±2,3
R y Rp 3/4	±1	±1,8	11,3	7,7	2 3/4	5,0	16,3	12,7	±0,142	±1 1/4	±2,3
R y Rp 1	±1	±2,3	12,7	8,1	2 3/4	6,4	19,1	14,5	±0,180	±1 1/4	±2,9
R y Rp 1 1/4	±1	±2,3	15,0	10,4	2 3/4	6,4	21,4	16,8	±0,180	±1 1/4	±2,9
R y Rp 1 1/2	±1	±2,3	15,0	10,4	2 3/4	6,4	21,4	16,8	±0,180	±1 1/4	±2,9
R y Rp 2	±1	±2,3	18,2	13,6	3 1/4	7,5	25,7	21,1	±0,180	±1 1/4	±2,9
R y Rp 2 1/2	±1 1/2	±3,5	21,0	14,0	4	9,2	30,2	23,2	±0,217	±1 1/2	±3,5
R y Rp 3	±1 1/2	±3,5	24,1	17,1	4	9,2	33,3	26,3	±0,217	±1 1/2	±3,5
R y Rp 4	±1 1/2	±3,5	28,9	21,9	4 1/2	10,4	39,3	32,3	±0,217	±1 1/2	±3,5
R y Rp 5	±1 1/2	±3,5	32,1	25,1	5	11,5	43,6	36,6	±0,217	±1 1/2	±3,5
R y Rp 6	±1 1/2	±3,5	32,1	25,1	5	11,5	43,6	36,6	±0,217	±1 1/2	±3,5

PARALLEL FEMALE THREAD,
TAPER MALE THREAD
FILET FEMELLE
CYLINDRIQUE,
FILET MÂLE CONIQUE

Rc

WHITWORTH PIPE THREAD
FILETAGE WHITWORTH GAZ
ROSCA WHITWORTH PARA TUBO

**ROSCA INT. CILÍNDRICA,
ROSCA EXT. CÓNICA**

DIN 2999

ESTANCA • ÉTANCHE • DRYSEAL

ISO 7/1

**Rosca interior cónica (Rc) o cilíndrica (Rp)
Rosca exterior cónica (R)**

La norma británica BS 21:1973 prevé conexiones entre las roscas que con unas tuercas se hacen herméticas. Las roscas exteriores son cónicas 1:16, las roscas interiores son cilíndricas o cónicas. La norma BS 21:1973 corresponde por lo tanto -con excepción de la rosca interior cónica- a la norma DIN 2999.

Los machos empleados para la rosca interior cónica se marcan: Rc 1/2" según BS 21.

Male taper thread (R) Female taper thread (Rc) or parallel (Rp) Male taper thread (R)

The BS 21:1973 British standard provides connections between the threads which become sealed by means of some nuts. The male threads are taper 1:16, the female threads are parallel or taper. The BS 21:1973 corresponds, therefore, - except for the female taper thread - to the DIN 2999 standard.

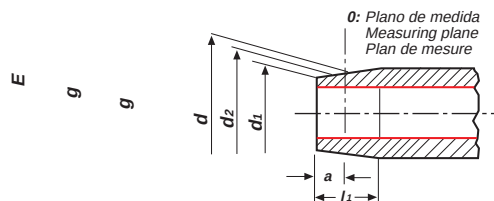
The taps used for the female taper thread are marked: Rc 1/2" according to BS 21.

Filet mâle conique (R) Filet femelle conique (Rc) ou cylindrique (Rp) Filet mâle conique (R)

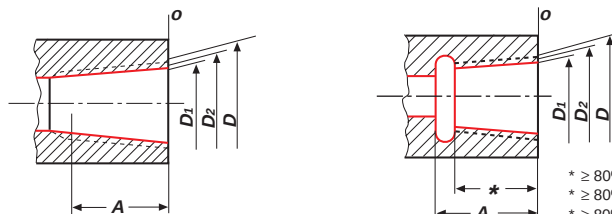
La norme anglaise BS 21:1973 prévoit des raccordement parmi les filets, lesquels avec des écrous deviennent hermétiques. Les filets mâles sont coniques 1:16, les filets mâles sont cylindriques ou coniques. La norme BS 21:1973 correspond pourtant, sauf le filet femelle conique, à la norme DIN 2999.

Les tarauds utilisés pour le filet femelle conique sont marqués: Rc 1/2" selon BS 21.

**Rosca exterior conica (R) • Male taper thread (R)
Filet mâle conique (R)**



**Rosca interior conica (Rc) • Female taper thread (Rc)
Filet femelle conique (Rc)**



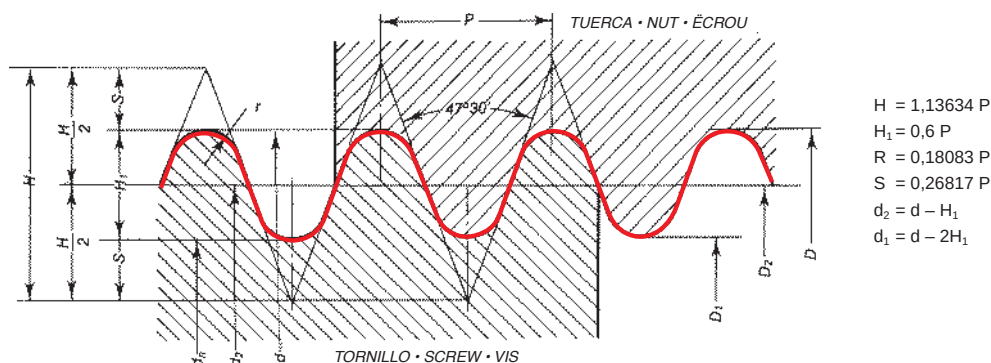
* ≥ 80% de L1 para a mín. (DIN 2999 parte 1)
* ≥ 80% of L1 for a min. (DIN 2999 section 1)
* ≥ 80% de L1 pour a min. (DIN 2999 partie 1)

Rosca Thread Filet	Paso Pitch Pass		Diámetro nominal Nominal diameter Diamètre nominal			Longitud de rosca A A thread length Longueur du filet A		
	h/1"	mm.	Exterior D = d	Flancos D ₂ = d ₂	Núcleo D ₁ = d ₁	máx.	teórico teórico	min.
Rc 1/16"	28	0,907	7,723	7,142	6,561	7,40	6,20	5,10
Rc 1/8"	28	0,907	9,728	9,147	8,566	7,40	6,20	5,10
Rc 1/4"	19	1,337	13,157	12,301	11,445	11,00	9,30	7,70
Rc 3/8"	19	1,337	16,662	15,806	14,950	11,40	9,70	8,00
Rc 1/2"	14	1,814	20,955	19,793	18,631	15,00	12,70	10,40
Rc 3/4"	14	1,814	26,441	25,279	24,117	16,30	14,10	11,70
Rc 1"	11	2,309	33,249	31,770	30,291	19,00	16,20	13,30
Rc 1 1/4"	11	2,309	41,910	40,431	38,952	21,40	18,50	15,60
Rc 1 1/2"	11	2,309	47,803	46,324	44,845	21,40	18,50	15,60
Rc 2"	11	2,309	59,614	58,135	56,656	25,70	22,80	19,90
Rc 2 1/2"	11	2,309	75,184	73,705	72,226	30,10	26,70	23,20
Rc 3"	11	2,309	87,884	86,405	84,926	33,30	29,90	26,40
Rc 4"	11	2,309	113,030	111,551	110,072	39,30	35,60	32,30
Rc 5"	11	2,309	138,430	136,951	135,472	43,60	40,10	36,60
Rc 6"	11	2,309	163,830	162,351	160,872	43,60	40,10	36,60

BS 93 (1951)

BA

FILET BA
BA THREAD
ROSCA BA



PERFIL TEORICO • PROFIL THÉORIQUE • THEORICAL PROFILE

Rosca / Thread / Filet D	Paso / Pitch / Pass mm	Ø Exterior Outside Ø / Ø Extérieur d = D	Ø Medio Pitch Ø / Ø Moyen d ₂ = D ₂	Ø Núcleo Core Ø / Ø Noyau d _n = D ₁	Altura / Height / Hauteur H ₁
BA- 0	1	6,00	5,400	4,80	0,600
BA- 1	0,9	5,30	4,760	4,22	0,540
BA- 2	0,81	4,70	4,215	3,73	0,485
BA- 3	0,73	4,10	3,660	3,22	0,440
BA- 4	0,66	3,60	3,205	2,81	0,395
BA- 5	0,59	3,20	2,845	2,49	0,355
BA- 6	0,53	2,80	2,480	2,16	0,320
BA- 7	0,48	2,50	2,210	1,92	0,290
BA- 8	0,43	2,20	1,940	1,68	0,260
BA- 9	0,39	1,90	1,665	1,43	0,235
BA-10	0,35	1,70	1,490	1,28	0,210
BA-11	0,31	1,50	1,315	1,13	0,185
BA-12	0,28	1,30	1,130	0,96	0,170
BA-13	0,25	1,20	1,050	0,90	0,150
BA-14	0,23	1,00	0,860	0,72	0,140

TUERCA • ÉCROU • NUT

TORNILLO • VIS • SCREW

Rosca Thread Filet D	Paso Pitch Pass mm	Ø Exterior Outside Ø Ø Extérieur D mín.	Ø Medio Pitch Ø / Ø Moyen		Ø Núcleo Core Ø / Ø Noyau		Ø Exterior Outside Ø / Ø Extérieur		Ø Medio Pitch Ø / Ø Moyen		Ø Núcleo Core Ø / Ø Noyau	
			D ₂ mín.	D ₂ máx.	D ₁ máx.	D ₁ mín.	d máx.	d mín.	d ₂ máx.	d ₂ mín.	d _n máx.	d _n mín.
BA- 0	1	6,000	5,400	5,550	4,800	5,175	6,000	5,850	5,400	5,300	4,800	4,600
BA- 1	0,9	5,300	4,760	4,900	4,220	4,560	5,300	5,165	4,760	4,670	4,220	4,035
BA- 2	0,81	4,700	4,215	4,340	3,730	4,035	4,700	4,580	4,215	4,130	3,730	3,560
BA- 3	0,73	4,100	3,660	3,780	3,220	3,495	4,100	3,990	3,660	3,580	3,220	3,065
BA- 4	0,66	3,600	3,205	3,315	2,810	3,060	3,600	3,500	3,205	3,130	2,810	2,665
BA- 5	0,59	3,200	2,845	2,945	2,490	2,710	3,200	3,110	2,845	2,775	2,490	2,355
BA- 6	0,53	2,800	2,480	2,575	2,160	2,360	2,800	2,720	2,480	2,420	2,160	2,035
BA- 7	0,48	2,500	2,210	2,300	1,920	2,100	2,500	2,430	2,210	2,150	1,920	1,805
BA- 8	0,43	2,200	1,940	2,020	1,680	1,840	2,200	2,135	1,940	1,885	1,680	1,570
BA- 9	0,39	1,900	1,665	1,740	1,430	1,575	1,900	1,840	1,665	1,615	1,430	1,330
BA-10	0,35	1,700	1,490	1,560	1,280	1,410	1,700	1,645	1,490	1,440	1,280	1,185
BA-11	0,31	1,500	1,315	1,380	1,130	1,245	1,500	1,420	1,315	1,260	1,130	1,020
BA-12	0,28	1,300	1,130	1,195	0,960	1,065	1,300	1,230	1,130	1,075	0,960	0,855
BA-13	0,25	1,200	1,050	1,110	0,900	0,995	1,200	1,135	1,050	1,000	0,900	0,800
BA-14	0,23	1,000	0,860	0,920	0,720	0,805	1,000	0,940	0,860	0,810	0,720	0,625

TAP FOR AMERICAN THREAD

TARAUD POUR FILET AMÉRICAIN

MACHO PARA ROSCA AMERICANA

PITCH Ø TOLERANCES FOR GROUND THREAD TAPS

G : ground thread tap
H : pitch Ø of tap over the theoretical average Ø in multiples of 0.0005" (0.0127 mm.)
L : pitch Ø of tap under the theoretical average in multiples of 0.0005" (0.0127 mm.)

TOLÉRANCES Ø MOYEN POUR DES TARAUDS À FILET RECTIFIÉ

G : filet du taraud rectifié
H : Ø moyen du taraud au dessus du moyen théorique en multiples de 0.0005" (0.0127 mm.)
L : Ø moyen du taraud au dessous du moyen théorique en multiples de 0.0005" (0.0127 mm.)

TOLERANCIAS Ø MEDIO PARA MACHOS ROSCA RECTIFICADA

G : rosca del macho rectificada.
H : Ø medio del macho por encima del Ø medio teórico en múltiplos de 0,0005" (0,0127 mm.)
L : Ø medio del macho por debajo del Ø medio teórico en múltiplos de 0,0005" (0,0127 mm.)

1 FOR TAPS UP TO Ø 1" POUR TARAUDS JUSQU'À Ø 1" PARA MACHOS HASTA Ø 1"

H1 = Ø medio teórico / theoretical pitch Ø / Ø moyen théorique	+0,0005" +0	(0,0127 mm.)
H2 = Ø medio teórico / theoretical pitch Ø / Ø moyen théorique	+0,001" +0,0005"	(0,0254 mm.) (0,0127 mm.)
H3 = Ø medio teórico / theoretical pitch Ø / Ø moyen théorique	+0,0015" +0,001"	(0,0381 mm.) (0,0254 mm.)
H4 = Ø medio teórico / theoretical pitch Ø / Ø moyen théorique	+0,002" +0,0015"	(0,0508 mm.) (0,0381 mm.)
H5 = Ø medio teórico / theoretical pitch Ø / Ø moyen théorique	+0,0025" +0,002"	(0,0635 mm.) (0,0508 mm.)
H6 = Ø medio teórico / theoretical pitch Ø / Ø moyen théorique	+0,003" +0,0025"	(0,0762 mm.) (0,0635 mm.)

2 FOR TAP FROM 1" TO 1 1/2" POUR TARAUDS À PARTIR DE 1" JUSQU'À 1 1/2" PARA MACHOS A PARTIR DE 1" HASTA 1 1/2"

H4 = Ø medio teórico / theoretical pitch Ø / Ø moyen théorique	+ 0,002" + 0,001"	(0,0508 mm.) (0,0254 mm.)
H6 = Ø medio teórico / theoretical pitch Ø / Ø moyen théorique	+ 0,003" + 0,002"	(0,0762 mm.) (0,0508 mm.)
H8 = Ø medio teórico / theoretical pitch Ø / Ø moyen théorique	+ 0,004" + 0,003"	(0,1016 mm.) (0,0762 mm.)

OUTSIDE Ø TOLERANCE FOR GROUND THREAD TAPS

maximum outside Ø (dmáx.)
 = Ø outside (d) + A.
minimum outside Ø (dmín.)
 = maximum theoretical outside Ø exterior teórico máximo (dmáx.)-B
 A and B values in the next table.

GENERAL REMARKS

The following tables and formulas are used for specifying the limits and tolerances for ground thread taps of special , special pitch, or both of them Ø. This table is not applied to threads UNC and UNF up to 1 1/2".

maximum outside Ø (dmáx.)
 = outside Ø d) + A
minimum outside Ø (dmín.)
 = outside Ø (dmáx.) - B
maximum average Ø (d2máx.)
 = Ø min. average (d2mín.) + D
minimum average Ø (d2mín.)
 = Ø average theoretical (d2) + C

TOLÉRANCE Ø EXTÉRIEUR DES TARAUDS À FILET RECTIFIÉ

Ø extérieur max. (dmáx.)
 = Ø extérieur (d) + A.
Ø extérieur min. (dmín.) = Ø extérieur théorique maximum (dmáx.)-B
 Valeurs de A et B sur le tableau suivant.

GENERAL

Le tableau et les formules ensuite, sont utilisés pour déterminer les limites et tolérances pour des tarauds à filet rectifié de Ø spécial, de pas spécial ou les deux. Ce tableau ne s'applique pas aux filets UNC et UNF jusqu'à 1 1/2".

Ø extérieur maximum (dmáx.)
 = Ø extérieur théorique (d) + A
Ø extérieur minimum (dmín.)
 = Ø exterior maximum (dmáx.) - B
Ø moyen maximum (d2máx.)
 = Ø moyen minimum (d2mín.) + D
Ø moyen minimum (d2mín.)
 = Ø moyen théorique (d2) + C

TOLERANCIA Ø EXTERIOR PARA MACHOS ROSCA RECTIFICADA

Ø exterior máximo (dmáx.)
 = Ø exterior (d) + A.
Ø exterior mínimo (dmín.)
 = Ø exterior teórico máximo (dmáx.)-B
 Valores de A y B en la siguiente tabla.

GENERAL

La tabla y fórmulas que siguen son usadas para determinar los límites y tolerancias para achos rosca rectificada de Ø especial, de paso especial, o ambos. Esta tabla no se aplica para las roscas UNC y UNF hasta 1 1/2".

Ø exterior máximo (dmáx.)
 = Ø exterior teórico (d) + A
Ø exterior mínimo (dmín.)
 = Ø exterior máximo (dmáx.) - B
Ø medio máximo (d2máx.)
 = Ø medio mínimo (d2mín.) + D
Ø medio mínimo (d2mín.)
 = Ø medio teórico (d2) + C



TAP RECOMMENDED FOR TAPPING NUTS OF CLASS 2,3; 2B AND 3B TOLERANCE

TARAUD RECOMMANDÉ POUR TARAUDER DES ÉCROUS À TOLÉRANCES CLASSE 2,3; 2B ET 3B

MACHO RECOMENDADO PARA ROSCAR TUERCAS DE TOLERANCIAS CLASE 2,3; 2B Y 3B

Medida Measure Mesure	Hilo por pulgada Threads per inch Fils par pouce		Macho recomendado para tuerca Tap recommended for nut Taraud recommandé pour écrou			
	NC UNC	NF UNF	Clase • Classe 2	Clase • Classe 3	Clase • Classe 2B	Clase • Classe 3B
No. 0		80	GH1	GH1	GH2	GH1
No. 1	64	72	GH1	GH1	GH2	GH1
No. 1			GH1	GH1	GH2	GH1
No. 2	56	64	GH1	GH1	GH2	GH1
No. 2			GH1	GH1	GH2	GH1
No. 3	48		GH1	GH1	GH2	GH1
No. 3		56	GH1	GH1	GH2	GH1
No. 4	40	48	GH2	GH1	GH2	GH2
No. 4			GH1	GH1	GH2	GH1
No. 5	40	44	GH2	GH1	GH2	GH2
No. 5			GH1	GH1	GH2	GH1
No. 6	32	40	GH2	GH1	GH3	GH2
No. 6			GH2	GH1	GH2	GH2
No. 8	32	36	GH2	GH1	GH3	GH2
No. 8			GH2	GH1	GH2	GH2
No. 10	24		GH3	GH1	GH3	GH3
No. 10		32	GH2	GH1	GH3	GH2
No. 12	24		GH3	GH1	GH3	GH3
No. 12		28	GH3	GH1	GH3	GH3
1/4	20		GH3	GH2	GH5	GH3
1/4		28	GH3	GH1	GH4	GH3
5/16	18		GH3	GH2	GH5	GH3
5/16		24	GH3	GH1	GH4	GH3
3/8	16		GH3	GH2	GH5	GH3
3/8		24	GH3	GH1	GH4	GH3
7/16	14		GH5	GH3	GH5	GH3
7/16		20	GH3	GH1	GH5	GH3
1/2	13		GH5	GH3	GH5	GH3
1/2		20	GH3	GH1	GH5	GH3
9/16	12		GH5	GH3	GH5	GH3
9/16		18	GH3	GH2	GH5	GH3
5/8	11		GH5	GH3	GH5	GH3
5/8		18	GH3	GH2	GH5	GH3
3/4	10		GH5	GH3	GH5	GH5
3/4		16	GH3	GH2	GH6	GH3
7/8	9		GH6	GH4	GH6	GH4
7/8		14	GH4	GH2	GH6	GH4
1	8		GH6	GH4	GH6	GH4
1		12	GH4	GH2	GH6	GH4
1		NS	GH4	GH4	GH6	GH4
1 1/8			GH8	GH4	GH6	GH4
1 1/8	7	12	GH4	GH4	GH8	GH4
1 1/4			GH8	GH4	GH8	GH4
1 1/4	7	12	GH4	GH4	GH6	GH4
1 3/8			GH8	GH4	GH8	GH4
1 3/8	6	12	GH4	GH4	GH6	GH4
1 1/2			GH8	GH4	GH8	GH4
1 1/2	6	12	GH4	GH4	GH6	GH4

Hilos por pulgada Threads per inch Fils par pouce N	A mm.	B mm.	C (mm.)			D (mm.)			
			Hasta 5/8" inclusive Up to 5/8" inclusive Jusqu'à 5/8" inclusive	A partir de 5/8 hasta 2 1/2" inclusive From 5/8 to 2 1/2" inclusive A partir de 5/8 jusqu'à 2 1/2" inclusive	A partir de 2 1/2" inclusive From 2 1/2" inclusive A partir de 2 1/2" inclusive	Hasta 1" inclusive Up to 1" inclusive Jusqu'à 1" inclusive	A partir de 1" hasta 1 1/2" inclusive From 1" to 1 1/2" inclusive A partir de 1" jusqu'à 1 1/2" inclusive	A partir de 1 1/2" hasta 2 1/2" inclusive From 1 1/2" to 2 1/2" inclusive A partir de 1 1/2" jusqu'à 2 1/2" inclusive	A partir de 2 1/2" inclusive From 2 1/2" inclusive A partir de 2 1/2" inclusive
80	0.0381	0.0254	0.0127	0.0254	0.0381	0.0127	0.0254	0.0254	0.0381
56	0.0381	0.0254	0.0127	0.0254	0.0381	0.0127	0.0254	0.0254	0.0381
48	0.0508	0.0254	0.0127	0.0254	0.0381	0.0127	0.0254	0.0254	0.0381
44	0.0508	0.0254	0.0127	0.0254	0.0381	0.0127	0.0254	0.0254	0.0381
40	0.0635	0.0254	0.0127	0.0254	0.0381	0.0127	0.0254	0.0254	0.0381
36	0.0635	0.0254	0.0127	0.0254	0.0381	0.0127	0.0254	0.0254	0.0381
32	0.0762	0.0254	0.0254	0.0254	0.0381	0.0127	0.0254	0.0254	0.0381
28	0.0889	0.0254	0.0254	0.0254	0.0381	0.0127	0.0254	0.0254	0.0381
24	0.1016	0.0254	0.0254	0.0254	0.0381	0.0127	0.0254	0.0381	0.0381
20	0.1270	0.0254	0.0254	0.0254	0.0381	0.0127	0.0254	0.0381	0.0381
18	0.1397	0.0254	0.0254	0.0254	0.0381	0.0127	0.0254	0.0381	0.0381
16	0.1524	0.0254	0.0254	0.0254	0.0381	0.0127	0.0254	0.0381	0.0508
14	0.1778	0.0254	0.0254	0.0381	0.0381	0.0127	0.0254	0.0381	0.0508
13	0.1905	0.0254	0.0254	0.0381	0.0381	0.0127	0.0254	0.0381	0.0508
12	0.1905	0.0254	0.0254	0.0381	0.0381	0.0127	0.0254	0.0381	0.0508
11	0.2032	0.0254	0.0381	0.0381	0.0508	0.0127	0.0254	0.0381	0.0508
10	0.2286	0.0381	0.0381	0.0381	0.0508	0.0127	0.0254	0.0381	0.0508
9	0.2540	0.0381	0.0381	0.0381	0.0508	0.0127	0.0254	0.0381	0.0508
8	0.2794	0.0381		0.0381	0.0508	0.0127	0.0254	0.0381	0.0508
7	0.3048	0.0508		0.0381	0.0508	0.0254	0.0254	0.0508	0.0635
6	0.3556	0.0508		0.0381	0.0508	0.0254	0.0254	0.0508	0.0635
5 1/2	0.4064	0.0635		0.0381	0.0508	0.0254	0.0381	0.0508	0.0635
5	0.4064	0.0635		0.0381	0.0508	0.0254	0.0381	0.0508	0.0635
4 1/2	0.4318	0.0635		0.0381	0.0508	0.0254	0.0381	0.0508	0.0635
4	0.4826	0.0635		0.0381	0.0508	0.0254	0.0381	0.0508	0.0635

Para pasos intermedios, usar los valores del paso superior más basto • For intermediate pitches, use the values corresponding to the rougher upper pitch. • Pour Passs Intermédiaires, on doit utiliser les valeurs de Pass supérieurs plus grossière

THEORETICAL PROFILE

PROFIL THÉORIQUE

PERFIL TEORICO

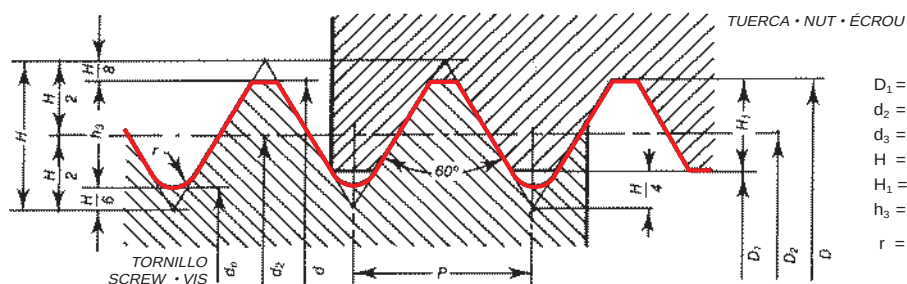


ASA B 1.1 (1960)

UNC - FILET UNIFIÉ AMÉRI-CAINE SÉRIE NORMALE

UNC - NORMAL SERIES AMERICAN UNIFIED THREAD

UNC - ROSCA UNIFICADA AMERICANA SERIE NORMAL



$$D_1 = d - 2H_1$$

$$d_2 = D_2 = d - 0,64953 P$$

$$d_3 = d - 1,22687 P$$

$$H = 0,86603 P$$

$$H_1 = 0,54127 P$$

$$h_3 = 0,61343 P$$

$$r = \frac{H}{6} = 0,14434 P$$

• PROFIL THÉORIQUE •

THEORETICAL PROFILE • PERFIL TEORICO

• TAP • TARAUD • MACHO

Rosca Thread Filet	Ø Exterior Outside Ø Ø Extérieur d = D	Ø Medio Pitch Ø Ø Moyen d ₂ = D ₂	Ø Núcleo Core Ø / Ø Noyau		Ø Exterior Outside Ø Ø Extérieur d min.	Tolerancia Tolerance Tolérance	Ø Medio Pitch Ø / Ø Moyen		Ø Núcleo Core Ø Ø Noyau d ₂ max.
			D ₁	d _n			D ₂ min.	d ₂ max.	
No. 1-64	1,854	1,598	1,425	1,367	1,867	GH-2	1,611	1,623	1,380
No. 2-56	2,184	1,890	1,694	1,628	2,197	GH-2	1,903	1,915	1,641
No. 3-48	2,515	2,172	1,941	1,864	2,540	GH-2	2,185	2,197	1,877
No. 4-40	2,845	2,433	2,156	2,065	2,883	GH-2	2,446	2,458	2,078
No. 5-40	3,175	2,764	2,487	2,395	3,213	GH-2	2,777	2,789	2,408
No. 6-32	3,505	2,990	2,647	2,532	3,556	GH-3	3,015	3,028	2,557
No. 8-32	4,166	3,650	3,307	3,193	4,217	GH-3	3,675	3,688	3,218
No. 10-24	4,826	4,138	3,680	3,528	4,902	GH-3	4,163	4,176	3,553
No. 12-24	5,486	4,798	4,341	4,188	5,562	GH-3	4,823	4,836	4,213
1/4-20	6,350	5,524	4,976	4,793	6,452	GH-3	5,549	5,562	4,818
5/16-18	7,938	7,021	6,411	6,205	8,052	GH-4	7,059	7,072	6,243
3/8-16	9,525	8,494	7,805	7,577	9,652	GH-4	8,532	8,545	7,615
7/16-14	11,112	9,934	9,149	8,887	11,264	GH-4	9,972	9,985	8,925
1/2-13	12,700	11,430	10,584	10,302	12,865	GH-4	11,468	11,481	10,340
9/16-12	14,288	12,913	11,996	11,692	14,453	GH-4	12,951	12,964	11,730
5/8-11	15,875	14,376	13,376	13,043	16,053	GH-5	14,427	14,440	13,094
3/4-10	19,050	17,399	16,299	15,933	19,240	GH-5	17,450	17,463	15,984
7/8-9	22,225	20,391	19,169	18,763	22,441	GH-5	20,442	20,455	18,814
1-8	25,400	23,338	21,963	21,504	25,641	GH-6	23,402	23,414	21,568
1 1/8-7	28,575	26,218	24,648	24,122	28,829	GH-6	26,269	26,294	24,173
1 1/4-7	31,750	29,393	27,823	27,297	32,004	GH-6	29,444	29,469	27,348
1 3/8-6	34,925	32,174	30,343	29,731	35,230	GH-6	32,225	32,250	29,782
1 1/2-6	38,100	35,349	33,518	32,906	38,405	GH-6	35,400	35,425	32,957
1 3/4-5	44,450	41,151	38,951	38,217	44,792		41,189	41,240	38,255
2-4 1/2	50,800	47,135	44,689	43,876	51,168		47,173	47,224	43,914
2 1/4-4 1/2	57,150	53,485	51,039	50,226	57,518		53,523	53,574	50,264
2 1/2-4	63,500	59,375	56,627	55,710	63,919		59,413	59,464	55,748
2 3/4-4	69,850	65,725	62,977	62,060	70,269		65,776	65,840	62,111
3-4	76,200	72,075	69,327	68,410	76,619		72,126	72,190	68,461
3 1/4-4	82,550	78,425	75,677	74,760	82,969		78,476	78,540	74,811
3 1/2-4	88,900	84,775	82,027	81,110	89,319		84,826	84,890	81,161
3 3/4-4	95,250	91,125	88,377	87,460	95,669		91,176	91,240	87,511
4-4	101,600	97,475	94,727	93,810	102,019		97,526	97,590	93,861

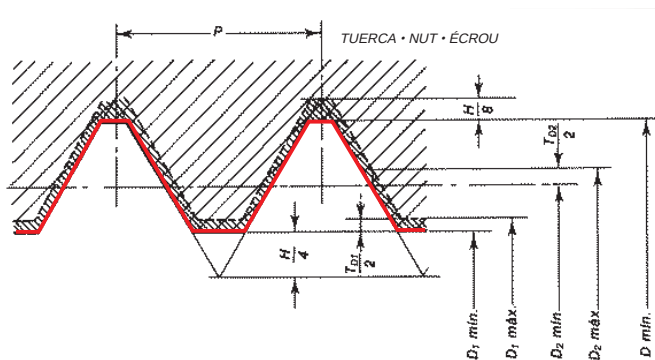
NUT
ÉCROU
TUERCA

UNC

ASA B 1.1 (1960) 2B Y 3B

**UNC - NORMAL SERIES AMERICAN
UNIFIED THREAD**
UNC - FILET UNIFIÉ
AMÉRICAINNE SÉRIE NORMALE
UNC - ROSCA UNIFICADA AMERICANA
SERIE NORMAL

TOLERANCIA 2B / 3B
TOLERANCE 2B / 3B
TOLERANCE 2B / 3B



Rosca Thread Filet	Ø Exterior Outside Ø Ø Extérieur D min. 2B/3B	Ø Medio / Pitch Ø / Ø Moyen			Ø Núcleo / Core Ø / Ø Noyau		
		D ₂ min. 2B / 3B	D ₂ máx. 2B	3B	D ₁ min. 2B / 3B	D ₁ máx. 2B	3B
No. 1-64	1,854	1,598	1,664	1,646	1,425	1,582	1,582
No. 2-56	2,184	1,890	1,961	1,943	1,694	1,872	1,872
No. 3-48	2,515	2,172	2,248	2,228	1,941	2,146	2,146
No. 4-40	2,845	2,433	2,517	2,494	2,156	2,385	2,385
No. 5-40	3,175	2,764	2,847	2,827	2,487	2,697	2,697
No. 6-32	3,505	2,990	3,084	3,058	2,642	2,896	2,896
No. 8-32	4,166	3,650	3,746	3,721	3,302	3,531	3,528
No. 10-24	4,826	4,138	4,247	4,219	3,683	3,962	3,950
No. 12-24	5,486	4,798	4,910	4,882	4,343	4,597	4,590
1/4-20	6,350	5,524	5,646	5,616	4,978	5,258	5,250
5/16-18	7,938	7,021	7,155	7,120	6,401	6,731	6,680
3/8-16	9,525	8,494	8,639	8,603	7,798	8,153	8,082
7/16-14	11,112	9,934	10,089	10,051	9,144	9,550	9,441
1/2-13	12,700	11,430	11,595	11,552	10,592	11,024	10,881
9/16-12	14,288	12,913	13,086	13,043	11,989	12,446	12,301
5/8-11	15,875	14,376	14,559	14,514	13,386	13,868	13,693
3/4-10	19,050	17,399	17,595	17,544	16,307	16,840	16,624
7/8- 9	22,225	20,391	20,599	20,546	19,177	19,761	19,520
1 - 8	25,400	23,338	23,561	23,505	21,971	22,606	22,344
1 1/8- 7	28,575	26,218	26,457	26,398	24,638	25,349	25,082
1 1/4- 7	31,750	29,393	29,637	29,576	27,813	28,524	28,258
1 3/8- 6	34,925	32,174	32,438	32,372	30,353	31,115	30,851
1 1/2- 6	38,100	35,349	35,616	35,550	33,528	34,290	34,026
1 3/4- 5	44,450	41,151	41,445	41,372	38,964	39,827	39,560
2 - 4 1/2	50,800	47,135	47,450	47,371	44,679	45,593	45,367
2 1/4- 4 1/2	57,150	53,485	53,805	53,726	51,029	51,943	51,717
2 1/2- 4	63,500	59,375	59,718	59,632	56,617	57,582	57,389
2 3/4- 4	69,850	65,725	66,073	65,987	62,967	63,932	63,739
3 - 4	76,200	72,075	72,428	72,339	69,317	70,282	70,089
3 1/4- 4	82,550	78,425	78,783	78,694	75,667	76,632	76,439
3 1/2- 4	88,900	84,775	85,138	85,049	82,017	82,982	82,789
3 3/4- 4	95,250	91,125	91,493	91,402	88,367	89,332	89,139
4 - 4	101,600	97,475	97,848	97,757	94,717	95,682	95,489

TORNILLO
SCREW
VIS

UNC

**UNC - NORMAL SERIES AMERICAN
UNIFIED THREAD**

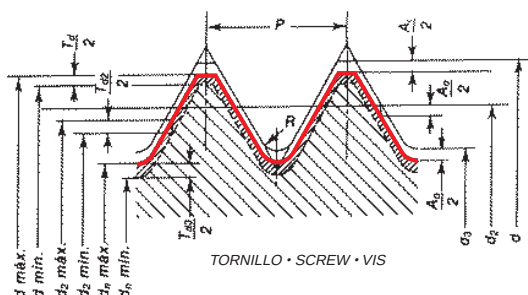
UNC - FILET UNIFIÉ

AMÉRICAINNE SÉRIE NORMALE

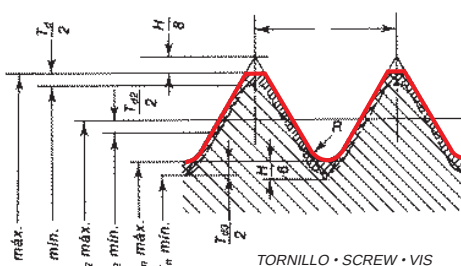
UNC - ROSCA UNIFICADA AMERICANA
SÉRIE NORMAL

ASA B 1.1 (1960) 2BY 3B

TOLERANCIA 2A • TOLERANCE 2A • TOLERANCE 2A



TOLERANCIA 3A • TOLERANCE 3A • TOLERANCE 3A



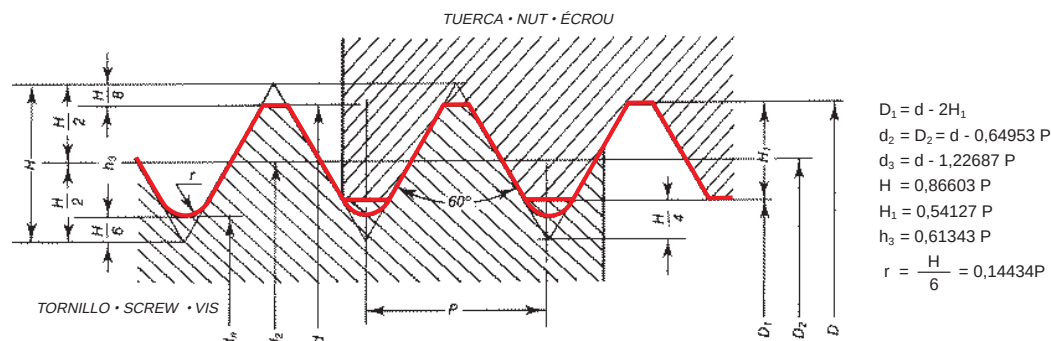
Rosca Thread Filet	Ø Exterior / Outside Ø / Ø Extérieur				Ø Medio / Pitch Ø / Ø Moyen				Ø Núcleo Core Ø / Ø Noyau	
	d. máx.		d. mín.		d ₂ máx.		d ₂ mín.		d _n mín.	
	2A	3A	2A	3A	2A	3A	2A	3A	2A	3A
No. 1-84	1,839	1,854	1,742	1,758	1,582	1,598	1,532	1,560	1,351	1,367
No. 2-56	2,169	2,184	2,065	2,080	1,875	1,890	1,821	1,849	1,613	1,628
No. 3-48	2,497	2,515	2,383	2,400	2,154	2,172	2,096	2,129	1,847	1,864
No. 4-40	2,824	2,845	2,695	2,715	2,413	2,433	2,350	2,385	2,045	2,065
No. 5-40	3,155	3,175	3,025	3,045	2,743	2,764	2,677	2,715	2,375	2,395
No. 6-32	3,485	3,505	3,332	3,353	2,969	2,990	2,898	2,936	2,512	2,532
No. 8-32	4,143	4,166	3,990	4,013	3,627	3,650	3,553	3,594	3,170	3,193
No. 10-24	4,801	4,826	4,618	4,643	4,112	4,138	4,028	4,074	3,503	3,528
No. 12-24	5,461	5,486	5,278	5,304	4,773	4,798	4,686	4,732	4,163	4,188
1/4-20	6,322	6,350	6,116	6,144	5,497	5,524	5,403	5,453	4,765	4,793
5/16-18	7,907	7,938	7,686	7,717	6,990	7,021	6,888	6,944	6,175	6,205
3/8-16	9,492	9,525	9,253	9,286	8,461	8,494	8,349	8,410	7,544	7,577
7/16-14	11,077	11,112	10,815	10,851	9,898	9,934	9,779	9,845	8,852	8,887
1/2-13	12,662	12,700	12,385	12,423	11,392	11,430	11,265	11,336	10,264	10,302
9/16-12	14,247	14,288	13,957	13,998	12,873	12,913	12,741	12,814	11,651	11,692
5/8-11	15,834	15,875	15,527	15,568	14,336	14,376	14,196	14,272	13,002	13,043
3/4-10	19,004	19,050	18,677	18,722	17,353	17,399	17,203	17,287	15,888	15,933
7/8- 9	22,177	22,225	21,824	21,872	20,343	20,391	20,183	20,272	18,715	18,763
1 - 8	25,349	25,400	24,968	25,019	23,287	23,338	23,114	23,208	21,453	21,504
1 1/8- 7	28,519	28,575	28,103	28,158	26,162	26,218	25,979	26,081	24,066	24,122
1 1/4- 7	31,694	31,750	31,278	31,333	29,337	29,393	29,149	29,253	27,242	27,297
1 3/8- 6	34,864	34,925	34,402	34,463	32,113	32,174	31,910	32,022	29,670	29,731
1 1/2- 6	38,039	38,100	37,577	37,638	35,288	35,349	35,082	35,194	32,845	32,906
1 3/4- 5	44,381	44,450	43,861	43,929	41,082	41,151	40,856	40,980	38,148	38,217
2- 4 1/2	50,726	50,800	50,168	50,241	47,061	47,135	46,820	46,954	43,802	43,876
2 1/4- 4 1/2	57,076	57,150	56,518	56,591	53,411	53,485	53,165	53,299	50,152	50,226
2 1/2- 4	63,421	63,500	62,817	62,895	59,296	59,375	59,032	59,177	55,631	55,710
2 3/4- 4	69,769	69,850	69,164	69,245	65,644	65,725	65,377	65,524	61,979	62,060
3 - 4	76,119	76,200	75,514	75,595	71,994	72,075	71,722	71,872	68,329	68,410
3 1/4- 4	82,466	82,550	81,862	81,945	78,341	78,425	78,064	78,217	74,678	74,760
3 1/2- 4	88,816	88,900	88,212	88,295	84,691	84,775	84,412	84,564	81,026	81,110
3 3/4- 4	95,164	95,250	94,559	94,645	91,039	91,125	90,754	90,912	87,373	87,460
4 - 4	101,514	101,600	100,909	100,995	97,389	97,475	97,102	97,259	93,723	93,810

THEORETICAL PROFILE
PROFIL THÉORIQUE
PERFIL TEORICO



ASA B 1.1 (1960)

UNC - NORMAL SERIES
AMERICAN UNIFIED THREAD
UNC - FILET UNIFIÉ
AMÉRICAINNE SÉRIE NORMALE
UNC - ROSCA UNIFICADA AMERI-
CANA SERIE NORMAL



THEORETICAL PROFILE • PROFIL THÉORIQUE • PERFIL TEORICO

Rosca / Thread / Filet D x P	Ø Exterior Outside Ø / Ø Extérieur D	Ø Medio Pitch Ø / Ø Moyen $d_2 = D_2$	Ø Núcleo / Core Ø / Ø Noyau	
			D_1	d_n
No. 0-80	1,524	1,318	1,181	1,135
No. 1-72	1,854	1,626	1,473	1,422
No. 2-64	2,184	1,928	1,755	1,697
No. 3-56	2,515	2,220	2,024	1,958
No. 4-48	2,845	2,502	2,271	2,195
No. 5-44	3,175	2,799	2,550	2,466
No. 6-40	3,505	3,094	2,817	2,725
No. 8-36	4,166	3,708	3,401	3,299
No. 10-32	4,826	4,310	3,967	3,853
No. 12-28	5,486	4,897	4,503	4,374
1/4-28	6,350	5,761	5,367	5,237
5/16-24	7,938	7,249	6,792	6,640
3/8-24	9,525	8,837	8,379	8,227
7/16-20	11,112	10,287	9,738	9,555
1/2-20	12,700	11,874	11,326	11,143
9/16-18	14,288	13,371	12,761	12,555
5/8-18	15,875	14,958	14,348	14,143
3/4-16	19,050	18,019	17,330	17,102
7/8-14	22,225	21,046	20,262	20,000
1 -12	25,400	24,026	23,109	22,804
1 1/8-12	28,575	27,201	26,284	25,979
1 1/4-12	31,750	30,376	29,459	29,154
1 3/8-12	34,925	33,551	32,634	32,329
1 1/2-12	38,100	36,726	35,809	35,504

ASA B 1.1 (1960)
2BY 3B + 2AY 3A



UNC - NORMAL SERIES
AMERICAN UNIFIED THREAD
UNC - FILET UNIFIÉ
AMÉRICAINNE SÉRIE NORMALE
UNC - ROSCA UNIFICADA AMERICANA
NA SERIE NORMAL

• ÉCROU • NUT • TUERCA

Rosca Thread Filet	Ø Exterior Outside Ø Ø Extérieur D min. 2B / 3B	Ø Medio / Pitch Ø / Ø Moyen			Ø Núcleo / Core Ø / Ø Noyau		
		D ₂ min. 2B / 3B	2B	D ₂ máx. 3B	2B / 3B	D ₁ min. 2B	D ₁ máx. 3B
No. 0-80	1,524	1,318	1,377	1,361	1,181	1,306	1,306
No. 1-72	1,854	1,626	1,689	1,674	1,473	1,613	1,613
No. 2-64	2,184	1,928	1,996	1,979	1,755	1,913	1,913
No. 3-56	2,515	2,220	2,291	2,273	2,024	2,197	2,197
No. 4-48	2,845	2,502	2,581	2,560	2,271	2,459	2,459
No. 5-44	3,175	2,799	2,880	2,860	2,550	2,741	2,741
No. 6-40	3,505	3,094	3,180	3,157	2,819	3,023	3,012
No. 8-36	4,166	3,708	3,800	3,777	3,404	3,607	3,597
No. 10-32	4,826	4,310	4,409	4,384	3,962	4,166	4,168
No. 12-28	5,486	4,897	5,004	4,976	4,496	4,724	4,717
1/4-28	6,350	5,761	5,870	5,842	5,359	5,588	5,563
5/16-24	7,938	7,249	7,371	7,341	6,782	7,036	6,995
3/8-24	9,525	8,837	8,961	8,931	8,382	8,636	8,565
7/16-20	11,112	10,287	10,424	10,391	9,728	10,033	9,947
1/2-20	12,700	11,874	12,017	11,981	11,328	11,608	11,524
9/16-18	14,288	13,371	13,520	13,482	12,751	13,081	12,969
5/8-18	15,875	14,958	15,110	15,072	14,351	14,681	14,554
3/4-16	19,050	18,019	18,184	18,143	17,323	17,678	17,546
7/8-14	22,225	21,046	21,224	21,181	20,269	20,676	20,493
1 -12	25,400	24,026	24,219	24,171	23,114	23,571	23,363
1 1/8-12	28,575	27,201	27,399	27,351	26,289	26,746	26,538
1 1/4-12	31,750	30,376	30,579	30,528	29,464	29,921	29,713
1 3/8-12	34,925	33,551	33,759	33,706	32,639	33,096	32,888
1 1/2-12	38,100	36,726	36,937	36,886	35,814	36,271	36,063

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Rosca Thread Filet	Ø Exterior / Outside Ø / Ø Extérieur				Ø Medio / Pitch Ø / Ø Moyen				Ø Núcleo Core Ø / Ø Noyau	
	d máx.		d mín.		d ₂ máx.		d ₂ mín.		d ₁ mín.	
	2A	3A	2A	3A	2A	3A	2A	3A	2A	3A
No. 0-80	1,511	1,524	1,430	1,443	1,306	1,318	1,260	1,285	1,123	1,135
No. 1-72	1,839	1,854	1,750	1,765	1,610	1,626	1,562	1,590	1,407	1,422
No. 2-64	2,169	2,184	2,073	2,088	1,913	1,928	1,862	1,890	1,681	1,697
No. 3-56	2,497	2,515	2,393	2,410	2,202	2,220	2,146	2,179	1,941	1,950
No. 4-48	2,827	2,845	2,713	2,730	2,484	2,502	2,423	2,456	2,177	2,195
No. 5-44	3,157	3,175	3,035	3,053	2,781	2,799	2,718	2,751	2,449	2,466
No. 6-40	3,485	3,505	3,355	3,376	3,073	3,094	3,007	3,043	2,705	2,725
No. 8-36	4,145	4,166	4,006	4,026	3,688	3,708	3,617	3,655	3,279	3,299
No. 10-32	4,803	4,826	4,651	4,674	4,288	4,310	4,211	4,252	3,830	3,853
No. 12-28	5,461	5,486	5,296	5,321	4,872	4,897	4,790	4,836	4,348	4,374
1/4-28	6,325	6,350	6,160	6,185	5,735	5,761	5,652	5,697	5,212	5,237
5/16-24	7,910	7,938	7,727	7,755	7,221	7,249	7,127	7,181	6,612	6,640
3/8-24	9,497	9,525	9,314	9,342	8,809	8,837	8,712	8,763	8,199	8,227
7/16-20	11,079	11,112	10,874	10,907	10,254	10,287	10,147	10,208	9,522	9,555
1/2-20	12,667	12,700	12,461	12,494	11,841	11,874	11,732	11,793	11,110	11,143
9/16-18	14,252	14,288	14,031	14,067	13,335	13,371	13,221	13,284	12,520	12,555
5/8-18	15,839	15,875	15,618	15,654	14,922	14,958	14,803	14,869	14,107	14,143
3/4-16	19,012	19,050	18,773	18,811	17,981	18,019	17,854	17,922	17,064	17,102
7/8-14	22,184	22,225	21,923	21,963	21,006	21,046	20,869	20,942	19,959	20,000
1 -12	25,354	25,400	25,065	25,110	23,980	24,026	23,830	23,914	22,758	22,804
1 1/8-12	28,529	28,575	28,240	28,285	27,155	27,201	27,003	27,087	25,933	25,979
1 1/4-12	31,704	31,750	31,415	31,460	30,330	30,376	30,173	30,259	29,108	29,154
1 3/8-12	34,877	34,925	34,587	34,635	33,503	33,551	33,343	33,431	32,281	32,329
1 1/2-12	38,052	38,100	37,762	37,810	36,678	36,726	36,515	36,604	35,456	35,504

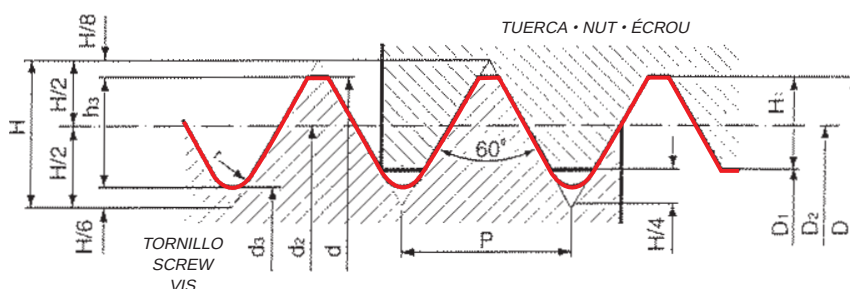
NOMINAL DIMENSIONS
MESURES NOMINALES
MEDIDAS NOMINALES

UNEF

ASME B 1.1

**UNIFIED THREAD,
EXTRAFINE PITCH**
FILET UNIFIÉ, PAS EXTRA FIN
ROSCA UNIFICADA
PASO EXTRA FINO

$$\begin{aligned} D_1 &= D - 2H_1 \\ d_2 &= D_2 = d - 0,64952 P \\ d_3 &= d - 1,22687 P \\ H &= 0,86603 P \\ H_1 &= 0,54127 P \\ h_3 &= 0,61343 P \\ r &= H/6 = 0,14434 P \end{aligned}$$



Rosca Thread Filet D	Paso Pitch Pass P h/1"	Perfil teórico / Theoretical profile / Profil théorique				Macho de roscar / Tap / Taraud			
		Ø Exterior Outside Ø Ø Extérieur d = D mm.	Ø Medio Pitch Ø Ø Moyen d ₂ = D ₂ mm.	Ø Núcleo • Core Ø • Ø Noyau d ₃ mm.	D ₁ mm.	Ø Exterior Outside Ø Ø Extérieur d _{min} mm.	d ₂ máx. mm.	d ₂ mín. mm.	Ø Núcleo Core Ø Ø Noyau d ₃ máx. mm.
Nr.12	- 32	5,486	4,971	4,514	4,628	5,537	5,009	4,996	4,537
	1/4 - 32	6,350	5,834	5,377	5,491	6,401	5,872	5,859	5,402
	5/16 - 32	7,938	7,422	6,965	7,079	7,989	7,460	7,447	6,990
	3/8 - 32	9,525	9,009	8,552	8,666	9,576	9,047	9,034	8,577
	7/16 - 28	11,112	10,523	10,000	10,130	11,176	10,561	10,548	10,025
	1/2 - 28	12,700	12,111	11,587	11,717	12,764	12,149	12,136	11,612
	9/16 - 24	14,288	13,599	12,990	13,142	14,365	13,637	13,624	13,015
	5/8 - 24	15,875	15,187	14,577	14,729	15,952	15,225	15,212	14,602
	11/16 - 24	17,462	16,774	16,165	16,317	17,539	16,812	16,799	16,190
	3/4 - 20	19,050	18,224	17,493	17,676	19,152	18,262	18,249	17,518
	13/16 - 20	20,638	19,812	19,080	19,263	20,740	19,850	19,837	19,105
	7/8 - 20	22,225	21,400	20,668	20,851	22,327	21,438	21,425	20,693
1	15/16 - 20	23,812	22,987	22,225	22,438	23,914	23,025	23,012	22,279
	- 20	25,400	24,574	23,843	24,026	25,502	24,612	24,599	23,868
	1 1/16 - 18	26,988	26,071	25,255	25,461	27,103	26,121	26,096	25,280
	1 1/8 - 18	28,575	27,658	26,843	27,048	28,690	27,708	27,683	26,868
1	13/16 - 18	30,162	29,246	28,430	28,636	30,277	29,296	29,271	28,455
	1 1/4 - 18	31,750	30,833	30,018	30,223	31,865	30,883	30,858	30,043
	15/16 - 18	33,338	32,421	31,605	31,811	33,453	32,471	32,446	31,630
	1 3/8 - 18	34,925	34,008	33,193	33,398	35,040	34,058	34,033	33,218
1	17/16 - 18	36,512	35,596	34,780	34,986	36,627	35,646	35,621	34,805
	1 1/2 - 18	38,100	37,183	36,368	36,573	38,215	37,233	37,208	36,393
	1 9/16 - 18	39,688	38,771	37,955	38,161	39,803	38,834	38,796	37,980
	1 5/8 - 18	41,275	40,358	39,543	39,748	41,390	40,421	40,383	39,568
	1 11/16 - 18	42,862	41,946	41,130	41,336	42,977	42,009	41,971	41,155

NUT
ÉCROU
TUERCA

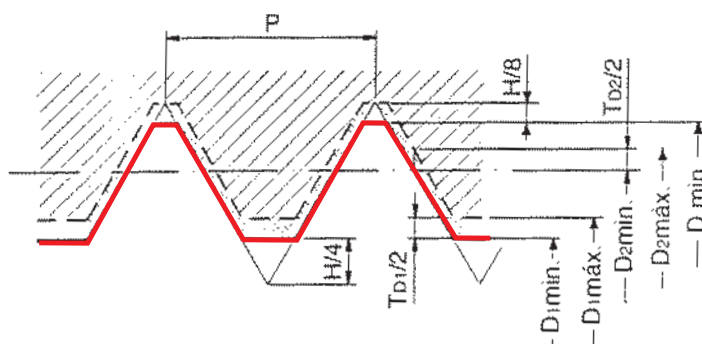
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ASME B 1.1

**UNIFIED THREAD,
EXTRAFINE PITCH**
FILET UNIFIÉ, PAS EXTRA FIN
ROSCA UNIFICADA
PASO EXTRA FINO

TUERCA • NUT • ÉCROU

Tolerancia • Tolerance • Tolerance
2B / 3B



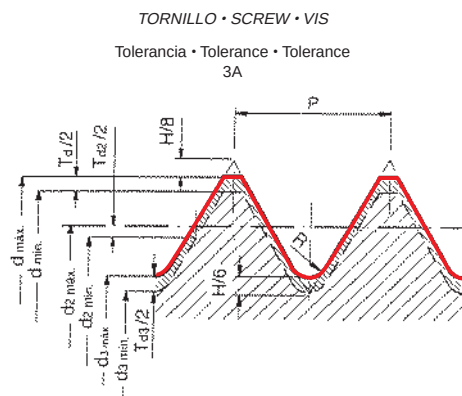
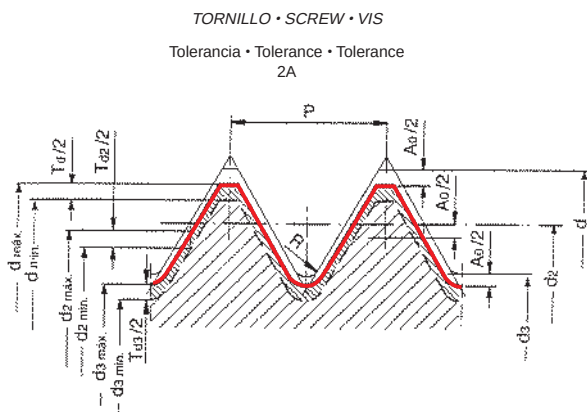
Rosca Thread Filet D	Paso Pitch Pass P h/1"	Ø Exterior Outside Ø Ø Extérieur D _{min.} mm. 2B / 3B	Ø Medio / Pitch Ø / Ø Moyen			Ø Núcleo / Core Ø / Ø Noyau		
			D ₂ min. 2B / 3B mm.	D ₂ máx. 2B mm.	3B mm.	D ₁ min. 2B / 3B mm.	D ₁ máx. 2B mm.	3B mm.
Nr.	12 - 32	5,486	4,971	5,075	5,050	4,623	4,826	4,813
	1/4 - 32	6,350	5,834	5,941	5,913	5,487	5,690	5,662
	5/16 - 32	7,938	7,422	7,529	7,501	7,087	7,264	7,231
	3/8 - 32	9,525	9,009	9,121	9,093	8,662	8,865	8,811
	7/16 - 28	11,112	10,523	10,640	10,612	10,135	10,338	10,290
	1/2 - 28	12,700	12,111	12,233	12,202	11,710	11,938	11,877
	9/16 - 24	14,288	13,599	13,729	13,696	13,132	13,386	13,320
	5/8 - 24	15,875	15,187	15,319	15,286	14,732	14,986	14,907
	11/16 - 24	17,462	16,774	16,906	16,873	16,307	16,561	16,495
	3/4 - 20	19,050	18,224	18,369	18,334	17,679	17,958	17,874
	13/16 - 20	20,638	19,812	19,957	19,921	19,254	19,558	19,461
	7/8 - 20	22,225	21,400	21,544	21,509	20,854	21,133	21,049
	15/16 - 20	23,812	22,987	23,137	23,099	22,429	22,733	22,636
	1 - 20	25,400	24,574	24,724	24,686	24,029	24,308	24,224
1	1/16 - 18	26,988	26,071	26,228	26,187	25,451	25,781	25,667
1	1/8 - 18	28,575	27,658	27,816	27,775	27,051	27,381	27,254
1	3/16 - 18	30,162	29,246	29,406	29,365	28,626	28,956	28,842
1	1/4 - 18	31,750	30,833	30,993	30,952	30,226	30,556	30,429
1	5/16 - 18	33,338	32,421	32,581	32,540	31,801	32,131	32,017
1	3/8 - 18	34,925	34,008	34,168	34,127	33,401	33,731	33,604
1	7/16 - 18	36,512	35,596	35,761	35,717	34,976	35,306	35,192
1	1/2 - 18	38,100	37,183	37,348	37,305	36,576	36,881	36,779
1	9/16 - 18	39,688	38,771	38,936	38,892	38,151	38,481	38,367
1	5/8 - 18	41,275	40,358	40,523	40,480	39,751	40,081	39,954
1	11/16 - 18	42,862	41,946	42,113	42,070	41,326	41,656	41,542

SCREW
VIS
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ASME B 1.1

UNIFIED THREAD; EXTRA-FINE PITCH
FILET UNIFIÉ, PAS EXTRA FIN
ROSCA UNIFICADA PASO EXTRA FINO



Rosca Thread Filet D	Paso Pitch Pass P h/1"	Ø Exterior / Outside Ø / Ø Extérieur				Ø Medio / Pitch Ø / Ø Moyen				Ø Núcleo / Core Ø / Ø Noyau	
		d _{máx.} 2A mm.	d _{máx.} 3A mm.	d _{mín.} 2A mm.	d _{mín.} 3A mm.	d _{2 máx.} 2A mm.	d _{2 máx.} 3A mm.	d _{2 mín.} 2A mm.	d _{2 mín.} 3A mm.	d _{3 máx.} 2A mm.	d _{3 máx.} 3A mm.
Nr.	12 - 32	5,464	5,486	5,311	5,334	4,948	4,971	4,869	4,910	4,491	4,514
	1/4 - 32	6,325	6,350	6,172	6,198	5,809	5,834	5,728	5,773	5,352	5,377
	5/16 - 32	7,912	7,938	7,760	7,785	7,396	7,422	7,315	7,361	6,939	6,965
	3/8 - 32	9,500	9,525	9,347	9,373	8,984	9,009	8,898	8,946	8,527	8,552
	7/16 - 28	11,085	11,112	10,919	10,947	10,495	10,523	10,404	10,455	9,972	10,000
	1/2 - 28	12,672	12,700	12,507	12,535	12,083	12,111	11,989	12,040	11,560	11,587
	9/16 - 24	14,257	14,288	14,074	14,105	13,569	13,599	13,410	13,525	12,959	12,990
	5/8 - 24	15,845	15,875	15,662	15,692	15,156	15,187	15,055	15,110	14,547	14,577
	11/16 - 24	17,432	17,462	17,249	17,280	16,744	16,774	16,642	16,698	16,134	16,165
	3/4 - 20	19,017	19,050	18,811	18,844	18,191	18,224	18,080	18,141	17,460	17,493
	13/16 - 20	20,604	20,638	20,399	20,432	19,779	19,812	19,667	19,728	19,045	19,080
	7/8 - 20	22,192	22,225	21,986	22,019	21,366	21,400	21,255	21,316	20,635	20,668
	15/16 - 20	23,777	23,812	23,571	23,607	22,951	22,987	22,837	22,901	22,220	22,255
	1 - 20	25,364	25,400	25,159	25,194	24,539	24,574	24,425	24,488	23,807	23,843
1	1 1/16 - 18	26,952	26,988	26,731	26,767	26,035	26,071	25,916	25,979	25,220	25,255
1	1 1/8 - 18	28,539	28,575	28,318	28,354	27,622	27,658	27,503	27,567	26,807	26,843
1	1 3/16 - 18	30,124	30,162	29,903	29,942	29,207	29,246	29,083	29,154	28,392	28,430
1	1 1/4 - 18	31,712	31,750	31,491	31,529	30,795	30,833	30,670	30,742	29,980	30,018
1	1 5/16 - 18	33,299	33,338	33,078	33,117	32,382	32,421	32,258	32,329	31,567	31,605
1	1 3/8 - 18	34,887	34,925	34,666	34,704	33,970	34,008	33,846	33,917	33,155	33,193
1	1 7/16 - 18	36,474	36,512	36,253	36,292	35,557	35,596	35,430	35,502	34,742	34,780
1	1 1/2 - 18	38,062	38,100	37,841	37,879	37,145	37,183	37,018	37,089	36,330	36,368
1	1 9/16 - 18	39,649	39,688	39,428	39,467	38,732	38,771	38,605	38,677	37,917	37,955
1	1 5/8 - 18	41,237	41,275	41,016	41,054	40,320	40,358	40,193	40,264	39,505	39,543
1	1 11/16 - 18	42,824	42,862	42,603	42,642	41,907	41,946	41,778	41,849	41,092	41,130

NPT - ASA B 1.1 (1960)
NPTF - ASA B 2.2 (1960)

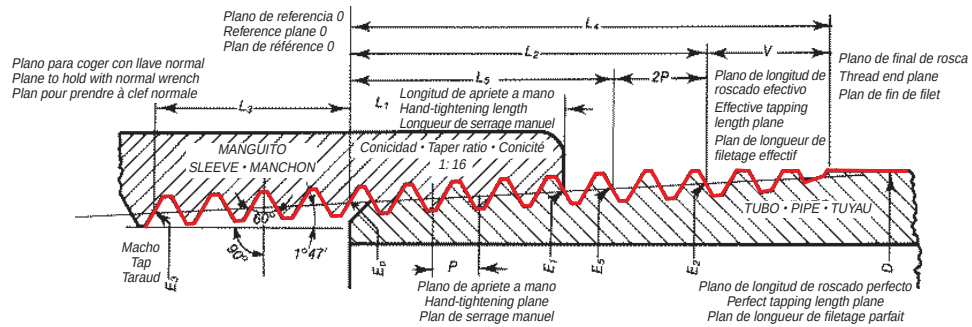
NPT-NPTF

AMERICAN TAPER PIPE
THREAD NPT-NPTF

FILET CONIQUE AMÉRICAIN

GAZ NPT-NPTF

ROSCA CONICA AMERICANA PARA
TUBO NPT-NPTF



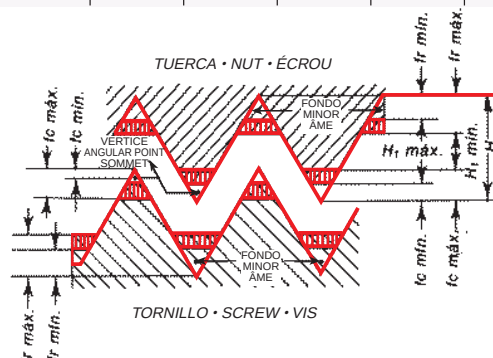
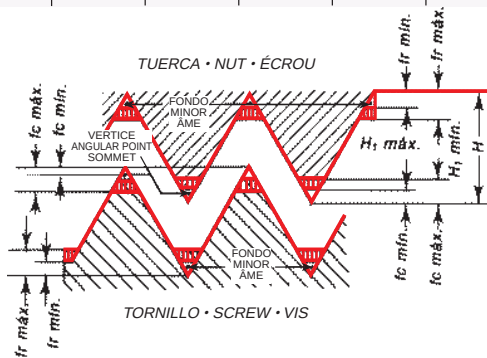
Rosca Thread Filet	Paso Pitch Pass h/1"	Ø Tubo Ø Pipe Ø Tuyau D	Ø Medio Pitch Ø Ø Moyen E ₀	Apriete a mano Hand-tightening Serrage manuel		Rosca efectiva exterior Male effective thread Filet effectif mâle		Apriete a mano rosca interior Hand-tightening female thread Serrage manuel filet femelle		Rosca imperfecta Imperfect thread Filet imparfait	Rosca exterior Male thread Filet mâle	Rosca ext. nominalmente perfecta Nominally perfect male thread Filet mâle nominallement parfait	
				L ₁	E ₁	L ₂	E ₂	L ₃	E ₃			L ₅	E ₅
1/16	27	7,937	6,888	4,064	7,142	6,632	7,302	2,822	6,712	3,264	9,896	4,750	7,185
1/8	27	10,287	9,238	4,102	9,489	6,703	9,652	2,822	9,057	3,264	9,967	4,821	9,534
1/4	18	13,716	12,126	5,786	12,487	10,206	12,763	4,234	11,861	4,897	15,103	7,384	12,587
3/8	18	17,145	15,545	6,096	15,926	10,358	16,192	4,234	15,281	4,897	15,255	7,536	16,016
1/2	14	21,336	19,264	8,128	19,772	13,556	20,111	5,443	18,924	6,294	19,850	9,929	19,885
3/4	14	26,670	24,579	8,611	25,117	13,861	25,445	5,443	24,239	6,294	20,155	10,234	25,219
1	11 1/2	33,401	30,826	10,160	31,461	17,343	31,910	6,627	30,412	7,663	25,006	12,926	31,634
1 1/4	11 1/2	42,164	39,551	10,668	40,218	17,953	40,673	6,627	39,137	7,663	25,616	13,536	40,397
1 1/2	11 1/2	48,260	45,621	10,668	46,287	18,377	46,769	6,627	45,206	7,663	26,040	13,960	46,493
2	11 1/2	60,325	57,633	11,074	58,325	19,215	58,834	6,627	57,219	7,663	26,878	14,798	58,558
2 1/2	8	73,025	69,076	17,323	70,159	28,892	70,882	6,350	68,679	11,016	39,908	22,542	70,485
3	8	88,900	84,852	19,456	86,068	30,480	86,757	6,350	84,455	11,016	41,496	24,130	86,360
3 1/2	8	101,600	97,472	20,853	98,776	31,750	99,457	6,350	97,076	11,016	42,766	25,400	99,060
4	8	114,300	110,093	21,438	111,433	33,020	112,157	6,350	109,696	11,016	44,036	26,670	111,760
5	8	141,300	136,925	23,800	138,412	35,720	139,157	6,350	136,528	11,016	46,736	29,370	138,760
6	8	168,275	163,731	24,333	165,252	38,417	166,132	6,350	163,334	11,016	49,433	32,067	165,735
8	8	219,075	214,213	27,000	215,900	43,497	216,932	6,350	213,816	11,016	54,513	37,147	216,535
10	8	273,050	267,851	30,734	269,772	48,895	270,907	6,350	267,454	11,016	59,911	42,545	270,510
12	8	323,850	318,333	34,544	320,492	53,975	321,707	6,350	317,937	11,016	64,990	47,625	321,310

TRUNCATURA ROSCA NPT NPT THREAD FLATT ON CREST • TRONCAGE FILET NPT

h / 1"	H	fc		fr	
		Min.	Máx.	Min.	Máx.
27	0,8148	0,030	0,091	0,030	0,091
18	1,2220	0,046	0,124	0,046	0,124
14	1,5712	0,061	0,142	0,061	0,142
11 1/2	1,9129	0,074	0,160	0,074	0,160
8	2,7496	0,104	0,198	0,104	0,198

TRUNCATURA ROSCA NPTF NPTF THREAD FLATT ON CREST • TRONCAGE FILET NPTF

h / 1"	H	fc		fr	
		Min.	Máx.	Min.	Máx.
27	0,8148	0,043	0,089	0,089	0,132
18	0,1220	0,066	0,109	0,109	0,155
14	1,5712	0,066	0,109	0,109	0,155
11 1/2	1,9129	0,089	0,132	0,132	0,198
8	2,7496	0,132	0,175	0,175	0,241



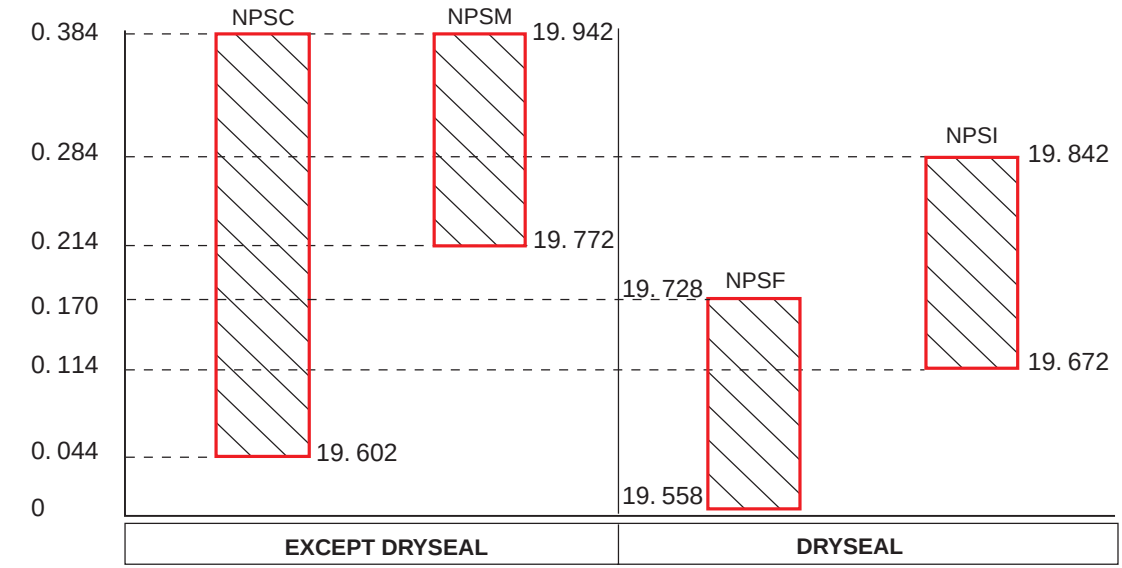


NORMAS "USA" STANDARD PIPE THREADS

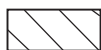
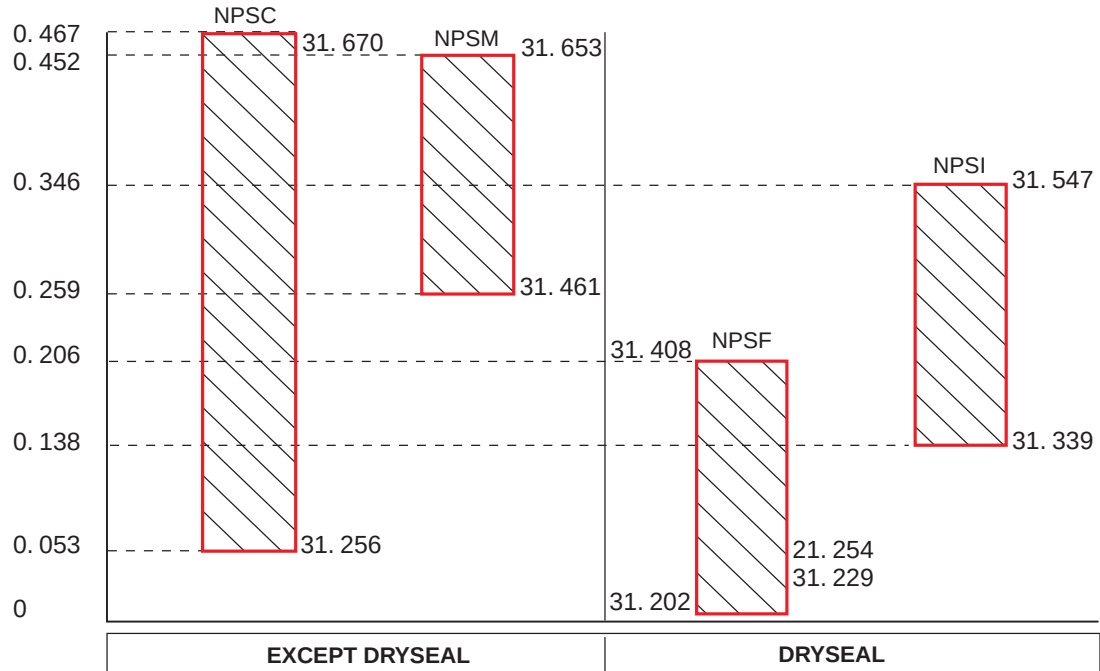
ROSCAS NPSC - NPSM - NPSF - NPSI

EJEMPLOS DE ROSCAS ESTANCAS Y NO ESTANCAS
EXAMPLES OF SEALED AND NOT SEALED THREADS
EXEMPLES DE FILETS ÉTANCHES ET NON ÉTANCHES

1 / 2 - 14 HILOS • THREADS • FILETS GH5 - 2B



1" - 11 1/2 HILOS • THREADS • FILETS GH4 - 2B



TOLERANCIAS DE ROSCAS INTERNAS • INTERNAL THREAD TOLERANCES
TABLEAUX ET TOLÉRANCES DES TARAUDS

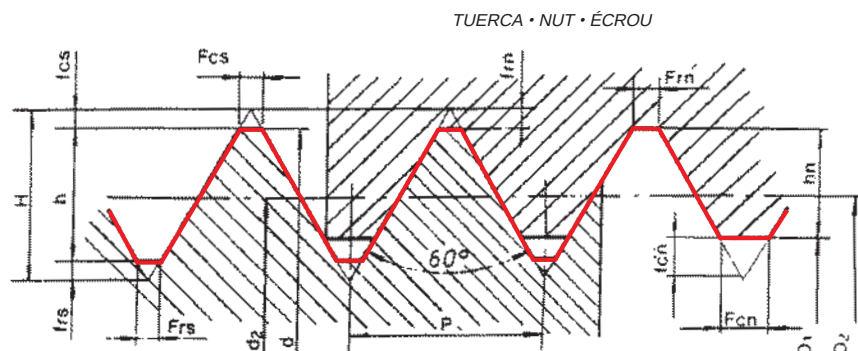
AMERICAN PARALLEL PIPE THREAD

FILET AMÉRICAINE GAZ,
CYLINDRIQUE
ROSCA AMERICANA
PARA TUBO, CILINDRICA

NOMINAL DIMENSIONS
MESURES NOMINALES
MEDIDAS NOMINALES

NPSM

ANSI B 1.1. 20. 1



$$\begin{aligned} H &= 0,866025 P \\ h &= 0,64952 P \\ R &= 0,18083 P \\ h_n &= 0,54126 P \end{aligned}$$

TORNILLO • SCREW • VIS

Rosca Thread Filet D	Paso Pitch Pass P h/1”	Tuerca - Tolerancia 2B Nut – Tolerance 2B • Ecrou – tolérance 2B					Tuerca - Tolerancia 2B Screw – Tolerance 2B • Vis – Tolérance 2B				
		Ø ext. del tubo Outside pipe Ø Ø Ext. du tuyau mm.		Ø Medio / Average Ø Ø Moyen		Ø Núcleo / Ø Core Ø Noyau		Ø Exterior / Outside Ø Ø Extérieur		Ø Medio / Average Ø Ø Moyen	
		D ₂ mín. mm.	D ₂ máx. mm.	D ₁ mín. mm.	D ₁ máx. mm.	d ₁ máx. mm.	d ₁ mín mm.	d ₂ máx. mm.	d ₂ mín. mm.		
NPSM 1/8	27	10,287	9,489	9,609	9,093	9,246	10,084	9,906	9,461	9,370	
NPSM 1/4	18	13,716	12,487	12,634	11,887	12,217	13,360	13,132	12,454	12,342	
NPSM 3/8	18	17,145	15,926	16,076	15,316	15,545	16,815	16,586	15,890	15,776	
NPSM 1/2	14	21,336	19,772	19,941	18,974	19,279	20,904	20,650	19,733	19,604	
NPSM 3/4	14	26,670	25,117	25,293	24,333	24,638	26,264	26,010	25,077	24,943	
NPSM 1	11,5	33,401	31,461	31,653	30,505	30,759	32,842	32,537	31,417	31,270	
NPSM 1 1/4	11,5	42,164	40,218	40,416	39,268	39,497	41,605 4	41,300	40,173	40,020	
NPSM 1 1/2	11,5	48,260	46,287	46,487	45,339	45,568	7,676	47,371	46,241	46,086	
NPSM 2	11,5	60,325	58,325	58,532	57,379	57,607	59,715	59,411	58,278	58,120	
NPSM 2 1/2	8	73,025	70,159	70,409	68,783	69,266	72,161	71,780	70,104	69,916	
NPSM 3	8	88,900	86,068	86,319	84,684	85,166	88,062	87,681	86,010	85,816	
NPSM 3 1/2	8	101,600	98,776	99,029	97,409	97,739	100,787	100,406	98,717	98,521	
NPSM 4	8	114,300	111,433	111,686	110,058	110,388	113,436	113,055	111,374	111,178	
NPSM 5	8	141,300	138,412	138,679	137,033	137,363	140,411	140,030	138,351	138,151	
NPSM 6	8	168,275	165,252	165,519	163,881	164,186	167,259	166,878	165,191	164,986	

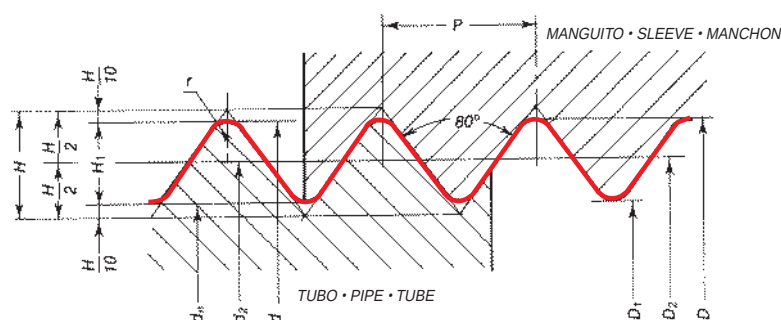
Paso Pitch • Pass N h/1"	TORNILLO • SCREW • VIS				TUERCA • NUT • ÉCROU			
	Fcs mm.	fcs mm.	Frs mm.	frs mm.	Frn mm.	frn mm.	Fcn mm.	fcn mm.
27	0,1176	0,1018	0,1175	0,1018	0,1176	0,1018	0,2352	0,2037
18	0,1164	0,1528	0,1764	0,1528	0,1764	0,1528	0,3528	0,3055
14	0,2268	0,1964	0,2268	0,1964	0,2268	0,1964	0,4536	0,3928
11,5	0,2761	0,2390	0,2761	0,2391	0,2761	0,2391	0,5522	0,4782
8	0,3969	0,3437	0,3969	0,3437	0,3969	0,3437	0,7938	0,6874

DIN 40430

PG

ELECTRICAL CONDUCTIONS PIPE THREAD

FILET POUR TUBE
CONDUCTIONS ÉLECTRIQUES
ROSCAS PARA
CONDUCCIONES ELECTRICAS



$$P = \frac{25,4}{N}$$

$$r = 0,107 P$$

$$H = 0,595875 P$$

$$H_1 = 0,8 H = 0,4767 P$$

PERFIL TEORICO • PROFIL THÉORIQUE • THEORETICAL PROFILE

Rosca Thread Filet	Paso / Pitch / Pass		Ø Exterior Outside Ø Ø Extérieur d = D	Ø Medio Pitch Ø Ø Moyen d ₂ = D ₂	Ø Núcleo Core Ø Ø Noyau d _n = D ₁	Altura Height Hauteur H ₁	Radio Radius Rayon r
	mm	h/1"					
Pg 7	1,27	20	12,50	11,89	11,28	0,61	0,14
Pg 9	1,41	18	15,20	14,53	13,86	0,67	0,15
Pg 11	1,41	18	18,60	17,93	17,26	0,67	0,15
Pg 13,5	1,41	18	20,40	19,73	19,06	0,67	0,15
Pg 16	1,41	18	22,50	21,83	21,16	0,67	0,15
Pg 21	1,588	16	28,30	27,54	26,78	0,76	0,17
Pg 29	1,588	16	37,00	36,24	35,48	0,76	0,17
Pg 36	1,588	16	47,00	46,24	45,48	0,76	0,17
Pg 42	1,588	16	54,00	53,24	52,48	0,76	0,17
Pg 48	1,588	16	59,30	58,54	57,78	0,76	0,17

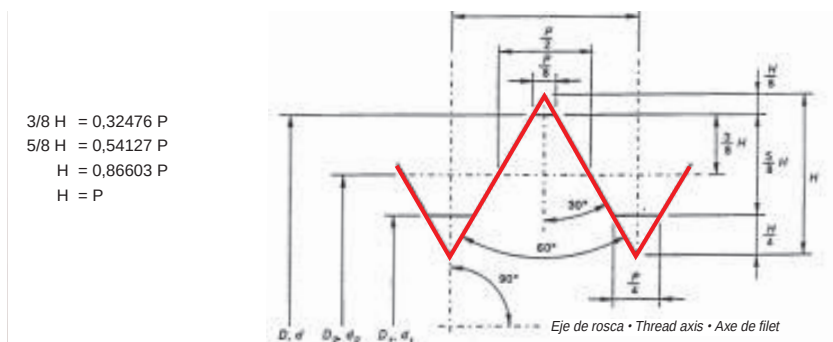
MANGUITO • MANCHON • SLEEVE

TUBO • TUBE • PIPE

Rosca Thread Filet	Ø Exterior Outside Ø / Ø Extérieur		Ø Medio Pitch Ø / Ø Moyen		Ø Núcleo Core Ø / Ø Noyau		Ø Exterior Outside Ø / Ø Extérieur		Ø Medio Pitch Ø / Ø Moyen		Ø Núcleo Core Ø / Ø Noyau	
	D min.	D máx.	D ₂ min.	D ₂ máx.	D ₁ min.	D ₁ máx.	d máx.	d min.	d ₂ máx.	d ₂ min.	d _n máx.	d _n min.
Pg 7	12,50	12,65	11,89	12,04	11,28	11,43	12,50	12,30	11,89	11,69	11,28	11,08
Pg 9	15,20	15,35	14,53	14,68	13,86	14,01	15,20	15,00	14,53	14,33	13,86	13,66
Pg 11	18,60	18,75	17,93	18,08	17,26	17,41	18,60	18,40	17,93	17,73	17,26	17,06
Pg 13,5	20,40	20,55	19,73	19,88	19,06	19,21	20,40	20,20	19,73	19,53	19,06	18,86
Pg 16	22,50	22,65	21,83	21,98	21,16	21,31	22,50	22,30	21,83	21,63	21,16	20,96
Pg 21	28,30	28,55	27,54	27,79	26,78	27,03	28,30	28,00	27,54	27,24	26,78	26,48
Pg 29	37,00	37,25	36,24	36,49	35,48	35,73	37,00	36,70	36,24	35,94	35,48	35,18
Pg 36	47,00	47,25	46,24	46,49	45,48	45,73	47,00	46,70	46,24	45,94	45,48	45,18
Pg 42	54,00	54,25	53,24	53,49	52,48	52,73	54,00	53,70	53,24	52,94	52,48	52,18
Pg 48	59,30	59,55	58,54	58,79	57,78	58,03	59,30	59,00	58,54	58,24	57,78	57,48

UNE-EN 60423

**ELECTRICAL CONDUIT
PIPE THREAD**
FILET POUR TUBE
CONDUCTEUR ÉLECTRIQUE
ROSCA PARA
CONDUCCIONES ELECTRICAS



• MALE THREAD - PIPE • ROSCA EXTERIOR - • TUBO • FILET MÂLE - TUBE

Rosca metrica Metric thread Filetage métrique	Paso Pitch Pass	Tol. Tol. Tol.	Ø Exterior Outside Ø Ø Extérieur		Ø Medio Pitch Ø Ø Moyen		Ø Núcleo Core Ø Ø Noyau	
			d _{min.}	d _{máx.}	d _{2min.}	d _{2máx.}	d _{1min.}	d _{1máx.}
M 6	0,75	6g	5,838	5,978	5,391	5,491	4,929	5,058
M 8	1,00	8g	7,694	7,974	7,144	7,324	6,528	6,747
M 10	1,00	8g	9,694	9,974	9,144	9,324	8,528	8,747
M 12	1,50	8g	11,593	11,968	10,770	10,994	9,846	10,128
M 16	1,50	8g	15,593	15,968	14,770	14,994	13,846	14,128
M 20	1,50	8g	19,593	19,968	18,770	18,994	17,846	18,128
M 25	1,50	8g	24,593	24,968	23,758	23,994	22,834	23,128
M 32	1,50	8g	31,593	31,968	30,758	30,994	29,834	30,128
M 40	1,50	8g	39,593	39,968	38,758	38,994	37,834	39,128
M 50	1,50	8g	49,593	49,968	48,744	48,994	47,820	48,128
M 63	1,50	8g	62,593	62,968	61,744	61,994	60,820	61,128
M 75	1,50	8g	74,593	74,968	73,744	73,994	72,820	73,128

NOTA: Dimensiones 50 mm, 63 mm y 75 mm: para los tubos roscados las tolerancias sobre las dimensiones exteriores se reducen a (+ 0 / - 0,04) en cada caso.

NOTE: Dimensions 50 mm, 63 mm and 75 mm: for threaded pipes, the tolerances on overall dimensions are reduced to (+ 0 / - 0.04) in each case.

NOTE: Dimensions 50 mm, 63 mm et 75 mm: pour les tuyaux taraudés les tolérances sur les dimensions extérieures sont réduites à (+ 0 / - 0.04) dans chaque cas.

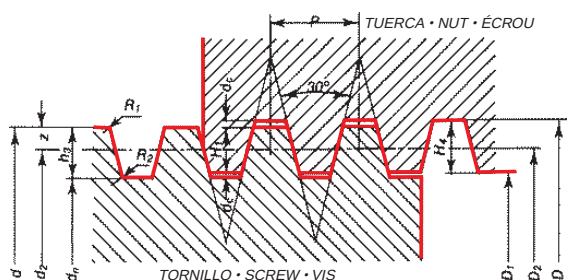
ROSCA INTERIOR - MANGUITO • FEMALE THREAD - SLEEVE • FILET FEMELLE - MANCHON

Rosca metrica Metric thread Filetage métrique	Paso Pitch Pass	Tol. Tol. Tol.	Ø Exterior Outside Ø Ø Extérieur	Ø Medio Pitch Ø Ø Moyen		Ø Núcleo Core Ø Ø Noyau	
			d _{min.}	d _{2min.}	d _{2máx.}	d _{1min.}	d _{1máx.}
M 6	0,75	6H	6,000	5,513	5,645	5,188	5,378
M 8	1,00	7H	8,000	7,350	7,540	6,917	7,217
M 10	1,00	7H	10,000	9,350	9,540	8,917	9,217
M 12	1,50	7H	12,000	11,026	11,262	10,376	10,751
M 16	1,50	7H	16,000	15,026	15,262	14,376	14,751
M 20	1,50	7H	20,000	19,026	19,262	18,376	18,751
M 25	1,50	7H	25,000	24,026	24,276	23,376	23,751
M 32	1,50	7H	32,000	31,026	31,276	30,376	30,751
M 40	1,50	7H	40,000	39,026	39,276	38,376	38,751
M 50	1,50	7H	50,000	49,026	49,291	48,376	48,751
M 63	1,50	7H	63,000	62,026	62,291	61,376	61,751
M 75	1,50	7H	75,000	74,026	74,291	73,376	73,751

PROFIL THÉORIQUE
THEORETICAL PROFILE
PERFIL TEORICO

DIN 103

TRAPEZIAL THREAD
METRAIC - ISO
FILET TRAPÉZOÏDAL
MÉTRIQUE - ISO
ROSCA TRAPEZOIDAL
METRICA - ISO



$$D_1 \times d - 2 H_1 = d - P$$

$$H_1 = 0,5 P$$

$$H_4 = H_1 + a_c = 0,5 P + a_c$$

$$h_3 = H_1 + a_c = 0,5 P + a_c$$

$$z = 0,25 P = \frac{H_1}{2}$$

$$D = d + 2 a_c$$

$$d_n = d - 2 h_3$$

$$d_2 = D_2 = d - 2 z = d - 0,5 P$$

$$R_1 = \text{máx. } 0,5 a_c$$

$$R_1 = \text{máx. } a_c$$

P	1,5	2 × 5	6 × 12	14 × 20
a _c	0,15	0,25	0,5	1

Ø Nominal Ø Nominal Ø Nominal		Paso Pitch Pass	Ø Medio Pitch Ø Ø Moyen d ₂ = D ₂	Ø Exterior Outside Ø Ø Extérieur D	Ø Núcleo Core Ø Ø Noyau d _n D ₁		Ø Nominal Ø Nominal Ø Nominal		Paso Pitch Pass	Ø Medio Pitch Ø Ø Moyen d ₂ = D ₂	Ø Exterior Outside Ø Ø Extérieur D	Ø Núcleo Core Ø Ø Noyau d _n D ₁	
Serie 1	Serie 2	P					Serie 1	Serie 2	P				
Tr 8		1,5	7,250	8,300	6,200	6,500			3	40,500	42,500	38,500	39,000
	Tr 9	1,5 2	8,250 8,000	9,300 9,500	7,200 6,500	7,500 7,000		Tr 42	7 10	38,500 37,000	43,000 43,000	34,000 31,000	35,000 32,000
Tr 10		1,5 2	9,250 9,000	10,300 10,500	8,200 7,500	8,500 8,000		Tr 44	3 7 12	42,500 40,500 38,000	44,500 45,000 45,000	40,500 36,000 31,000	41,000 37,000 32,000
	Tr 11	2 3	10,000 9,500	11,500 11,500	8,500 7,500	9,000 8,000		Tr 46	3 8 12	44,500 42,000 40,000	46,500 47,000 47,000	42,500 37,000 33,000	43,000 38,000 34,000
Tr 12		2 3	11,000 10,500	12,500 12,500	9,500 8,500	10,000 9,000		Tr 48	3 8 12	46,500 44,000 42,000	48,500 49,000 49,000	44,500 39,000 35,000	45,000 40,000 36,000
	Tr 14	2 3	13,000 12,500	14,500 14,500	11,500 10,500	12,000 11,000		Tr 50	3 8 12	48,500 46,000 44,000	50,500 51,000 51,000	46,500 41,000 37,000	47,000 42,000 38,000
Tr 16		2 4	15,000 14,000	16,500 16,500	13,500 11,500	14,000 12,000		Tr 52	3 8 12	50,500 48,000 46,000	52,500 53,000 53,000	48,500 43,000 39,000	49,000 44,000 40,000
	Tr 18	2 4	17,000 16,000	18,500 18,500	15,500 13,500	16,000 14,000		Tr 55	3 9 14	50,500 50,500 48,000	52,500 56,000 57,000	48,500 45,000 39,000	49,000 46,000 41,000
Tr 20		2 4	19,000 18,000	20,500 20,500	17,500 15,500	18,000 16,000		Tr 60	3 9 14	53,500 55,500 53,000	55,500 61,000 62,000	51,500 50,000 44,000	52,000 51,000 46,000
	Tr 22	3 5 8	20,500 19,500 18,000	22,500 22,500 23,000	18,500 16,500 13,000	19,000 17,000 14,000		Tr 85	4 10 16	63,000 60,000 57,000	65,500 66,000 67,000	60,500 54,000 47,000	61,000 55,000 49,000
Tr 24		3 5 8	22,500 21,500 20,000	24,500 24,500 25,000	20,500 18,500 15,000	21,000 19,000 16,000		Tr 70	4 10 16	68,000 65,000 62,000	70,500 71,000 72,000	65,500 59,000 52,000	66,000 60,000 54,000
	Tr 26	3 5 8	24,500 23,500 22,000	26,500 26,500 27,000	22,500 20,500 17,000	23,000 21,000 18,000		Tr 75	4 10 16	73,000 70,000 67,000	75,500 76,000 77,000	70,500 64,000 57,000	71,000 65,000 59,000
Tr 28		3 5 8	26,500 25,500 24,000	28,500 28,500 29,000	24,500 22,500 19,000	25,000 23,000 20,000		Tr 80	4 10 16	78,000 75,000 72,000	80,500 81,000 82,000	75,500 69,000 62,000	76,000 70,000 64,000
	Tr 30	3 6 10	28,500 27,000 25,000	30,500 31,000 31,000	26,500 23,000 19,000	27,000 24,000 20,000		Tr 85	4 12 18	83,000 79,000 76,000	85,500 86,000 87,000	80,500 72,000 65,000	81,000 73,000 67,000
Tr 32		3 6 10	30,500 29,000 27,000	32,500 33,000 33,000	28,500 25,000 21,000	29,000 26,000 22,000		Tr 90	4 12 18	88,000 84,000 81,000	90,500 91,000 92,000	85,500 77,000 70,000	86,000 78,000 72,000
	Tr 34	3 6 10	32,500 31,000 29,000	34,500 35,000 35,000	30,500 27,000 23,000	31,000 28,000 24,000		Tr 95	4 12 18	93,000 89,000 86,000	95,500 96,000 97,000	90,500 82,000 75,000	91,000 83,000 77,000
Tr 36		3 6 10	34,500 33,000 31,000	36,500 37,000 37,000	32,500 29,000 25,000	33,000 30,000 26,000		Tr 100	4 12 20	98,000 94,000 90,000	100,500 101,000 102,000	95,500 87,000 78,000	96,000 88,000 80,000

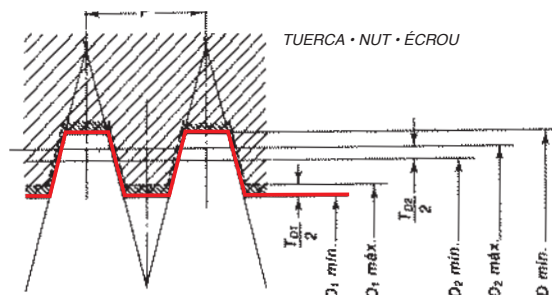
NUT
ÉCROU
TUERCA

DIN 103

TOLERANCIA 7H EN EL Ø MEDIO
Y 4H EN EL Ø NÚCLEO
TOLERANCE 7H IN PITCH Ø
AND 4H IN CORE
TOLÉRANCE 7H AU Ø MOYEN
ET 4H AU NOYAU



ROSCA TRAPEZOIDAL
METRICA - ISO
FILET TRAPÉZOÏDAL
MÉTRIQUE - ISO
METRIC BASTARD
THREAD - ISO



Ø Nominal Ø Nominal dxP	Ø Exterior Outside Ø Ø Extérieur D min.	Ø Medio Pitch Ø Ø Moyen D2 mín. D2 máx.		Ø Núcleo Core Ø Ø Noyau D1 mín. D1 máx.		Ø Nominal Ø Nominal dxP	Ø Exterior Outside Ø Ø Extérieur D min.	Ø Medio Pitch Ø Ø Moyen D2 mín. D2 máx.		Ø Núcleo Core Ø Ø Noyau D1 mín. D1 máx.	
Tr 8 x 1,5	8,300	7,250	7,474	6,500	6,690	Tr 42 x 3	42,500	40,500	40,835	39,000	39,315
Tr 9 x 1,5	9,300	8,250	8,474	7,500	7,690	Tr 42 x 7	43,000	38,500	38,975	35,000	35,560
Tr 9 x 2	9,500	8,000	8,250	7,000	7,236	Tr 42 x 10	43,000	37,000	37,530	32,000	32,710
Tr 10 x 1,5	10,300	9,250	9,474	8,500	8,690	Tr 44 x 3	44,500	42,500	42,835	41,000	41,315
Tr 10 x 2	10,500	9,000	9,250	8,000	8,236	Tr 44 x 7	45,000	40,500	40,975	37,000	37,560
Tr 11 x 2	11,500	10,000	10,250	9,000	9,236	Tr 44 x 12	45,000	38,000	38,560	32,000	32,800
Tr 11 x 3	11,500	10,000	9,780	9,000	8,315	Tr 46 x 3	46,500	44,500	44,855	43,000	43,315
Tr 12 x 2	12,500	11,000	11,265	10,000	10,236	Tr 46 x 8	47,000	42,000	42,530	38,000	38,630
Tr 12 x 3	12,500	10,500	10,800	9,000	9,315	Tr 46 x 12	47,000	40,000	40,630	34,000	34,800
Tr 14 x 2	14,500	13,030	13,265	12,000	12,326	Tr 48 x 3	48,500	46,500	46,855	45,000	45,315
Tr 14 x 3	14,500	12,500	12,800	11,000	11,315	Tr 48 x 8	49,000	44,000	44,530	40,000	40,630
Tr 16 x 2	16,500	15,000	15,265	14,000	14,236	Tr 48 x 12	49,000	42,000	42,630	36,000	36,800
Tr 16 x 4	16,500	14,000	14,355	12,000	12,375	Tr 50 x 3	50,500	48,500	48,855	47,000	47,315
Tr 18 x 2	18,500	17,000	17,265	16,000	16,236	Tr 50 x 8	51,000	46,000	46,530	42,000	42,630
Tr 18 x 4	18,500	16,000	16,355	14,000	14,375	Tr 50 x 12	51,000	44,000	44,630	38,000	38,800
Tr 20 x 2	20,500	19,000	19,265	18,000	18,236	Tr 52 x 3	52,500	50,500	50,855	49,000	49,315
Tr 20 x 4	20,500	18,000	18,355	16,000	16,375	Tr 52 x 8	53,000	48,000	48,530	44,000	44,630
Tr 22 x 3	22,500	20,500	20,800	19,000	19,315	Tr 52 x 12	53,000	46,000	46,630	40,000	40,800
Tr 22 x 5	22,500	19,500	19,875	17,000	17,450	Tr 55 x 3	55,500	53,500	53,855	52,000	52,315
Tr 22 x 8	23,000	18,000	18,475	14,000	14,630	Tr 55 x 9	56,000	50,500	51,060	46,000	46,670
Tr 24 x 3	24,500	22,500	22,835	21,000	21,315	Tr 55 x 14	57,000	48,000	48,670	41,000	41,900
Tr 24 x 5	24,500	21,500	21,900	19,000	19,450	Tr 60 x 3	60,500	58,500	58,855	57,000	57,315
Tr 24 x 8	25,000	20,000	20,500	16,000	16,630	Tr 60 x 9	61,000	55,500	56,060	51,000	51,670
Tr 26 x 3	26,500	24,500	24,835	23,000	23,315	Tr 60 x 14	62,000	53,000	53,670	46,000	46,900
Tr 26 x 5	26,500	23,500	23,900	21,000	21,450	Tr 65 x 4	65,500	63,000	63,400	61,000	61,375
Tr 26 x 8	27,000	22,000	22,500	18,000	18,630	Tr 65 x 10	66,000	60,000	60,560	55,000	55,710
Tr 28 x 3	28,500	26,500	26,835	25,000	25,315	Tr 65 x 16	67,000	57,000	57,710	49,000	50,000
Tr 28 x 5	28,500	25,500	25,900	23,000	23,450	Tr 70 x 4	70,500	68,000	68,400	66,000	66,375
Tr 28 x 8	29,000	24,000	24,500	20,000	20,630	Tr 70 x 10	71,000	65,000	65,560	60,000	60,710
Tr 30 x 3	30,500	28,500	28,835	27,000	27,315	Tr 70 x 16	72,000	62,000	62,710	54,000	55,000
Tr 30 x 6	31,000	27,000	27,450	24,000	24,500	Tr 75 x 4	75,500	73,000	73,400	71,000	71,375
Tr 30 x 10	31,000	25,000	25,530	20,000	20,710	Tr 75 x 10	76,000	70,000	70,560	65,000	65,710
Tr 32 x 3	32,500	30,500	30,835	29,000	29,315	Tr 75 x 16	77,000	67,000	67,710	59,000	60,000
Tr 32 x 6	33,000	29,000	29,450	26,000	26,500	Tr 80 x 4	80,500	78,000	78,400	76,000	76,375
Tr 32 x 10	33,000	27,000	27,530	22,000	22,710	Tr 80 x 10	81,000	75,000	75,560	70,000	70,710
Tr 34 x 3	34,500	32,500	32,835	31,000	31,315	Tr 80 x 16	82,000	72,000	72,710	64,000	65,000
Tr 34 x 6	35,000	31,000	31,450	28,000	28,500	Tr 85 x 4	85,500	83,000	83,400	81,000	81,375
Tr 34 x 10	35,000	29,000	29,530	24,000	24,710	Tr 85 x 12	86,000	79,000	79,630	73,000	73,800
Tr 36 x 3	36,500	34,500	34,835	33,000	33,315	Tr 85 x 18	87,000	76,000	76,750	67,000	68,120
Tr 36 x 6	37,000	33,000	33,450	30,000	30,500	Tr 90 x 4	90,500	88,000	88,400	86,000	86,375
Tr 36 x 10	37,000	31,000	31,530	26,000	26,710	Tr 90 x 12	91,000	84,000	84,630	78,000	78,800
Tr 38 x 3	38,500	36,500	36,835	35,000	35,315	Tr 90 x 18	92,000	81,000	81,750	72,000	73,120
Tr 38 x 7	39,000	34,500	34,975	31,000	31,560	Tr 95 x 4	95,500	93,000	93,425	91,000	91,375
Tr 38 x 10	39,000	33,000	33,530	28,000	28,710	Tr 95 x 12	96,000	89,000	89,670	83,000	83,800
Tr 40 x 3	40,500	38,500	38,835	37,000	37,315	Tr 95 x 18	97,000	86,000	86,800	77,000	78,120
Tr 40 x 7	41,000	36,500	36,975	33,000	33,560	Tr 100 x 4	100,500	98,000	98,425	96,000	96,375
Tr 40 x 10	41,000	35,000	35,530	30,000	30,710	Tr 100 x 12	101,000	94,000	94,670	88,000	88,800
						Tr 100 x 20	102,000	90,000	90,800	80,000	81,180

SCREW
VIS
TORNILLO

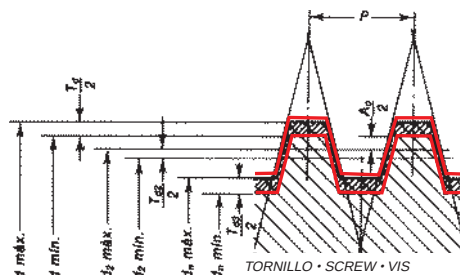
DIN 103

METRIC BASTARD
THREAD - ISO
FILET TRAPÉZOÏDAL
MÉTRIQUE - ISO
ROSCA TRAPEZOIDAL
METRICA - ISO

TOLERANCIA 7e EN EL Ø MEDIO
Y 4h EN EL Ø NÚCLEO

TOLERANCE 7e IN PITCH Ø
AND 4h IN CORE

TOLÉRANCE 7e AU Ø MOYEN
ET 4h AU NOYAU



Ø Nominal Ø Nominal Ø Nominal	Ø Exterior Outside Ø Ø Extérieur		Ø Medio Pitch Ø Ø Moyen		Ø Núcleo Core Ø Ø Noyau		Ø Nominal Ø Nominal Ø Nominal	Ø Exterior Outside Ø Ø Extérieur		Ø Medio Pitch Ø Ø Moyen		Ø Núcleo Core Ø Ø Noyau	
dxP	D máx.	D mín.	D ₂ máx.	D ₂ mín.	D _n máx.	D _n mín.	dxP	D máx.	D mín.	D ₂ máx.	D ₂ mín.	D _n máx.	D _n mín.
Tr 8 x 1,5	8,00	7,850	7,183	7,013	6,200	5,921	Tr 42 x 3	42,000	41,764	40,415	40,165	38,500	38,103
Tr 9 x 1,5	9,000	8,850	8,183	8,013	7,200	6,921	Tr 42 x 7	42,000	41,575	38,375	38,020	34,000	33,431
Tr 9 x 2	9,000	8,820	7,929	7,739	6,500	6,191	Tr 42 x 10	42,000	41,470	36,850	36,450	31,000	30,350
Tr 10 x 1,5	10,000	9,850	9,183	9,013	8,200	7,921	Tr 44 x 3	44,000	43,764	42,415	42,165	40,500	40,103
Tr 10 x 2	10,000	9,820	8,929	8,739	7,500	7,191	Tr 44 x 7	44,000	43,575	40,375	40,020	36,000	35,431
Tr 11 x 2	11,000	10,820	9,929	9,739	8,500	8,191	Tr 44 x 12	44,000	43,400	37,830	37,405	31,000	30,309
Tr 11 x 3	11,000	10,764	9,415	9,203	7,500	7,150	Tr 46 x 3	46,000	45,764	44,415	44,150	42,500	42,084
Tr 12 x 2	12,000	11,820	10,929	10,729	9,500	9,179	Tr 46 x 8	46,000	45,500	41,868	41,468	37,000	36,368
Tr 12 x 3	12,000	11,764	10,415	10,191	8,500	8,135	Tr 46 x 12	46,000	45,400	39,830	39,355	33,000	32,246
Tr 14 x 2	14,000	13,820	12,929	12,729	11,500	11,179	Tr 48 x 3	48,000	47,764	46,415	46,150	44,500	44,084
Tr 14 x 3	14,000	13,764	12,415	12,191	10,500	10,135	Tr 48 x 8	48,000	47,550	43,868	43,468	39,000	38,368
Tr 16 x 2	16,000	15,820	14,929	14,729	13,500	13,179	Tr 48 x 12	48,000	47,400	41,830	41,355	35,000	34,246
Tr 16 x 4	16,000	15,700	13,905	13,640	11,500	11,074	Tr 50 x 3	50,000	49,764	48,415	48,150	46,500	46,084
Tr 18 x 2	18,000	17,820	16,929	16,729	15,500	15,179	Tr 50 x 8	50,000	49,550	45,868	45,468	41,000	40,368
Tr 18 x 4	18,000	17,700	15,905	15,640	13,500	13,074	Tr 50 x 12	50,000	49,400	43,830	43,355	37,000	36,246
Tr 20 x 2	20,000	19,820	18,929	18,729	17,500	17,179	Tr 52 x 3	52,000	51,764	50,415	50,150	48,500	48,084
Tr 20 x 4	20,000	19,700	17,905	17,640	15,500	15,074	Tr 52 x 8	52,000	51,550	47,868	47,468	43,000	42,368
Tr 22 x 3	22,000	21,764	20,415	20,191	18,500	18,135	Tr 52 x 12	52,000	51,400	45,830	45,355	39,000	38,246
Tr 22 x 5	22,000	21,665	19,394	19,114	16,500	16,044	Tr 55 x 3	55,000	54,764	53,415	53,150	51,500	51,084
Tr 22 x 8	22,000	21,550	17,868	17,513	13,000	12,424	Tr 55 x 9	55,000	54,500	50,360	49,935	45,000	44,329
Tr 24 x 3	24,000	23,764	22,415	22,165	20,500	20,103	Tr 55 x 14	55,000	54,330	47,820	47,320	39,000	38,195
Tr 24 x 5	24,000	23,665	21,394	21,094	18,500	18,019	Tr 60 x 3	60,000	59,764	58,415	58,150	56,500	56,084
Tr 24 x 8	24,000	23,550	19,868	19,493	15,000	14,399	Tr 60 x 9	60,000	59,500	55,360	54,935	50,000	49,329
Tr 26 x 3	26,000	25,764	24,415	24,165	22,500	22,103	Tr 60 x 14	60,000	59,330	52,820	52,320	44,000	43,195
Tr 26 x 5	26,000	25,665	23,394	23,094	20,500	20,019	Tr 65 x 4	65,000	64,700	62,905	62,605	60,500	60,030
Tr 26 x 8	26,000	25,500	21,868	21,493	17,000	16,399	Tr 65 x 10	65,000	64,470	59,850	59,425	54,000	53,319
Tr 28 x 3	28,000	27,764	26,415	26,165	24,500	24,103	Tr 65 x 16	65,000	64,290	56,810	56,280	47,000	46,147
Tr 28 x 5	28,000	27,665	25,394	25,094	22,500	22,019	Tr 70 x 4	70,000	69,700	67,905	67,605	65,500	65,030
Tr 28 x 8	28,000	27,550	23,868	23,493	19,000	18,399	Tr 70 x 10	70,000	69,470	64,850	64,425	59,000	58,319
Tr 30 x 3	30,000	29,764	28,415	28,165	26,500	26,103	Tr 70 x 16	70,000	69,290	61,810	61,280	52,000	51,147
Tr 30 x 6	30,000	29,625	26,882	26,547	23,000	22,463	Tr 75 x 4	75,000	74,700	72,905	72,605	70,500	70,030
Tr 30 x 10	30,000	29,470	24,850	24,450	19,000	18,350	Tr 75 x 10	75,000	74,470	69,850	69,425	64,000	63,319
Tr 32 x 3	32,000	31,764	30,415	30,165	28,500	28,103	Tr 75 x 16	75,000	74,290	66,810	66,280	57,000	56,147
Tr 32 x 6	32,000	31,625	28,882	28,547	25,000	24,463	Tr 80 x 4	80,000	79,700	77,905	77,605	75,500	75,030
Tr 32 x 10	32,000	31,470	26,850	26,450	21,000	20,350	Tr 80 x 10	80,000	79,470	74,850	74,425	69,000	68,319
Tr 34 x 3	34,000	33,764	32,415	32,165	30,500	30,103	Tr 80 x 16	80,000	79,290	71,810	71,280	62,000	61,147
Tr 34 x 6	34,000	33,625	30,882	30,547	27,000	26,463	Tr 85 x 4	85,000	84,700	82,905	82,605	80,500	80,030
Tr 34 x 10	34,000	33,470	28,850	28,450	23,000	22,350	Tr 85 x 12	85,000	84,400	78,830	78,355	72,000	71,246
Tr 36 x 3	36,000	35,764	34,415	34,165	32,500	32,103	Tr 85 x 18	85,000	84,200	75,800	75,240	65,000	64,100
Tr 36 x 6	36,000	35,625	32,882	32,547	29,000	28,463	Tr 90 x 4	90,000	89,700	87,905	87,605	85,500	85,030
Tr 36 x 10	36,000	35,470	30,850	30,450	25,000	24,350	Tr 90 x 12	90,000	89,400	83,830	83,355	77,000	76,246
Tr 38 x 3	38,000	37,764	36,415	36,165	34,500	34,103	Tr 90 x 18	90,000	89,200	80,800	80,240	70,000	69,100
Tr 38 x 7	38,000	37,575	34,375	34,020	30,000	29,431	Tr 95 x 4	95,000	94,700	92,905	92,590	90,500	90,011
Tr 38 x 10	38,000	37,470	32,850	32,450	27,000	26,350	Tr 95 x 12	95,000	94,400	88,830	88,330	82,000	81,215
Tr 40 x 3	40,000	39,764	38,415	38,165	36,500	36,103	Tr 95 x 18	95,000	94,200	85,800	85,200	75,000	74,050
Tr 40 x 7	40,000	39,575	36,575	36,020	32,000	31,431	Tr 100 x 4	100,000	99,700	97,905	97,590	95,500	95,011
Tr 40 x 10	40,000	39,470	34,850	34,450	29,000	28,350	Tr 100 x 12	100,000	99,400	93,830	93,330	87,000	86,215
							Tr 100 x 20	100,000	99,150	89,788	89,188	78,000	77,038



MATERIAL / MATIÈRES / MATERIAL

A1 • UNALLOYED & LOW ALLOYED STEELS • ACIERS NON ALLIÉS - FAIBLEMENT ALLIÉS • ACEROS DEBILMENTE ALEADOS

Dureza / Hardness / Dureté : < 120 HB 30						
Resistencia a la tracción / Tensile strength / Resistance à la traction : < 400 N/mm²						
Viruta muy larga/ Very long chips / Copeau tres long						
DIN		UNE	UNI	AFNOR	BS	AISI
Aceros magnéticos blandos-Hierro dulce • Mild magnetic steels-Soft iron • Aciers magnétiques doux-Fer doux						
1.1013	Rfe 100					
1.1014	Rfe 80					
1.1015	Rfe 60					

A

B1 • STRUCTURAL STEELS • ACIERS DE CONSTRUCTION • ACEROS DE CONSTRUCCIÓN

Dureza / Hardness / Dureté : < 200 HB 30						
Resistencia a la tracción / Tensile strength / Resistance à la traction : < 700 N/mm²						
Viruta media / Chip middle / Copeau moyen						
DIN	UNE	UNI	AFNOR	BS	AISI	
1.Aceros de construcción en general • General structural steels • Aciers de construction en général						
1.0035	Fe 310-0 (St 33)	A310-0, Fe310-0	Fe 320	A 33	Fe 310-0	
1.0036	Fe 360 (St 37-2)	AE235B, Fe360B	Fe 360 B FU	(E 24-2)	Fe 360 B	A 570 Gr.33,36
1.0037	Fe 360 B (ST 37-2)	AE235B, Fe360B	Fe 360 B, F, C	E 24-2	Fe 360 B	A 283 Gr.C
1.0044	Fe 430 B (ST 44-2)	AE275B, Fe430BFN	Fe 430 B	E 28-3	Fe 430 B FN	A 570 Gr.40
1.0050	Fe 490-2 (ST 50-2)	A490-2, Fe490-2FN	Fe 490	A 50-2	Fe 490-2 FN	A 570 Gr.50
1.0060	Fe 590-2 (ST 60-2)	A590-2, Fe590-2FN	Fe 60-2	A 60-2	Fe 590-2 FN	A 570 Gr.65
1.0070	Fe 690-2 (ST 70-2)	A690-2, Fe690-2FN	Fe 70-2, Fe 690	A 70-2	Fe 690-2 FN	
1.0116	Fe 360 D1 (ST 37-3)	AE235D, Fe360D1FF	Fe 360 C, D	E 24-3	Fe 360 D1 FF	A 284 Gr.D
1.0144	Fe 430 D1 (ST 44-3)	AE275D, Fe430D1FF	Fe 430 B	E 28-3,E 28-4	Fe 430 D1 FF	A 573 Gr.70
2.Aceros de cementación • Carburizing steels • Aciers de cémentation						
1.0301	C 10	F.1511, F.1511-A	C 10	AF 34 C 10	040 A 10	M 1015
1.0401	C 15	F.111	C 15	AF 37 C 12	080 A 15	M 1011
1.1121	Ck 10	F.1510-C10K	C 10	XC 10	040 A 10	1010
1.1141	Ck 15	F.1110-C15K	C 15, C 16	XC 12	040 A 15	1015
1.5732	14 NiCr 10	F.1540-C15NiCr11	16 Ni Cr 11	14 NC 11		3415
1.7131	16 MnCr 5	F.1516-16MnCr5	16 Mn Cr 5	16 MC 4	527 M 17	5115
1.7147	20 MnCr 5	F.150-D	20 Mn Cr 5	20 MC 5		5120
3.Aceros de fácil mecanización • Easy-machining steels • Aciers à facile mécanisation						
1.0710	15 S 10					
1.0715	9 SMn 28	F.2111 - 11SMn28	CF 9SMn 28	S 250	230 M 07	1213
1.0718	9 SMnPb 28	F.2112 - 11SMnPb28	CF 9SMn Pb 28	S 250 Pb		12 L 13
1.0721	10 S 20	F.2121 - 10S20	CF 10 S 20	10 F1	210 M 15	1108 , 1109
1.0722	10 SPb 20	F.2122 - 10SPb20	CF 10 S Pb 20	10 Pb F2		11 L 08
1.0723	15 S 20	F.210-F				
1.0726	35 S 20	F.210-G		35 MF 6	210 A 15	1140
1.0727	45 S 20			45 MF 4	212 M 36	1146
1.0736	9 SMn 36	F.2113 - 12SMn35	CF 9 SMn 36	S 300		1215
1.0737	9 SMnPb 36	F.2114 - 12SMnPb35	CF 9 SMn Pb 36	S 300 Pb		12 L 14
4.Aceros de construcción fundidos • Cast structural steels • Aciers de construction fondus						
1.0416	GS - 36					
1.0446	GS - 45					
1.0552	GS - 52					
1.0553	GS - 60					
1.0554	GS - 70					

B

B2 • PLAIN CARBON STEELS • ACIERS CARBONES NON ALLIÉS ET AMÉLIORÉS • ACEROS BONIFICADOS

Dureza / Hardness / Dureté : < 250 HB 30						
Resistencia a la tracción / Tensile strength / Resistance à la traction : < 850 N/mm²						
Viruta larga/ Long chips / Copeau long						
DIN	UNE	UNI	AFNOR	BS	AISI	
1.0402	C 22	F-112	C 25	1 C 22	070 M 20	M 1023
1.0501	C 35	F-113	C 35	1 C 35	080 A 32	1035
1.0503	C 45	F-114	C 45	1 C 45	060 A 47	1045
1.0535	C 55	F-115	C 55	1 C 55	070 M 55	1055
1.0601	C 60		C 60	1 C 60	060 A 62	1060
1.1151	Ck 22	F-1120-C25K	C 20, C 25	2 C 22	055 M 15	1020,1023
1.1157	40 Mn 4			35 M 5	150 M 36	1035,1041
1.1181	Ck 35	F-1130-C35K	C 35	2 C 35	080 A 35	1035,1038
1.1191	Ck 45	F-1140-C45K,F1142-C48K	C 45, C 46	2 C 45	080 M 46	1045
1.1203	Ck 55	F-1150-C55K	C 55	2 C 55	060 A 57	1055
1.1221	Ck 60		C 60	2 C 60	060 A 62	1060,1064

B

Dureza / Hardness / Dureté : < 250 HB 30						
Resistencia a la tracción / Tensile strength / Resistance à la traction : < 800 N/mm²						
Viruta larga / Long chip / Copeau long						
DIN	UNE	UNI	AFNOR	BS	AISI	
1.Para herramientas de trabajo en frío • Cold-work tool steels • Pour des outils de travail à froid						
1.2056	90 Cr 3					
1.2067	100 Cr 6	F.5230-100Cr6		Y 100 C 6	BL 3	L1,L3
1.2080	X 210 Cr12	F.5212-X210Cr12	X 205 Cr12 KU	Z 200 C 12	BD 3	D3
1.2083	X 42 Cr 13			Z 40 C 14		420
1.2363	X 100 CrMoV5 1	F.5227-X100CrMoV5	X 100 CrMoV5 1 KU	Z 100 CDV 5	BA 2	A2
1.2379	X 155 CrVMo 12 1		X 155CrVMo12 1 KU	Z 160 CDV 12	BD 2	D2
1.2510	100 MnCrW 4	F.5220-95MnCrW5	95 MnWCr 5 KU	90 MWCV 5	BO 1	O1
1.2550	60 WCrV 7		55 WCrV 8 KU	55WC 20	BS 1	S1
1.2823	70 Si 7					
1.2826	60 MnSiCr 4					
1.2842	90 MnCrV 8		90 MnVCr 8 KU	90 MV 8	BO 2	O2
2. Aceros Rápidos • High-speed Steels • Aciers Rapides						
1.3202	S 12 4 4 5	F.5563.12-1-5-5		Z130WKCV.1205.04.05	BT 15	T 15
1.3207	S 10 4 3 10	F.5553.10-4-3-10	HS 10-4-3-10	Z130WKCDV.10.1004.04.03	BT 42	T 42
1.3243	S 6 5 2 5	F.5613.6-5-2-5	HS 6-5-2-5	Z85WDKCV.06.05.05.04.02	BM 35	M 35
1.3247	S 2 10 1 8	F.5617.2-10-1-8	HS 9-2-1-8	Z110DKCVV.09.08.04.02.01	BM 42	M 42
1.3243	S 6 5 2	F.5603.6-5-2	HS 6-5-2	Z85WDCV.06.05.04.02	BM 2	M 2
1.3344	S 6 5 3	F.5605.6-5-3	HS 6-5-3	Z120WDCV.06.05.04.03		M 3/2
1.3348	S 2 9 2	F.5607.2-9-2	HS 2-9-2	Z100DCWV.09.04.02.02		M 7
3. Fundición aleada • Alloyed cast steel • Acier fonte et allié						
1.5919	GS-15 CrNi 6			16 NC 6		3115
1.7218	GS-25 CrMo 4	F.8372-AM26CrMo4	25 CrMo4	25 CD 4	70 8A 25	4130
		F.8330-AM25CrMo4				
1.7220	GS-34 CrMo 4	F.8331-AM34CrMo4	25 CrMo4 F	35 CD 4	70 8A 37	4135,4137
		F.8231-34CrMo4				
		F.1250-35CrMo4				
1.7379	GS-18 CrMo 9 10					
4. Aceros bonificados • Hardened and tempered steels • Aciers amélorés						
1.0503	C 45	F.114	C 45	1 C 45	O60 A 47	1045
1.7220	34 CrMo 4	F.8331-AM34CrMo4	34 CrMo4 KB	34 Cr Mo 4	708 A 37	4135,4137
		F.8231-34CrMo4				
		F.1520-35CrMo4				
		F.1254-35CrMo4DF				
1.7225	42 CrMo 4	F.8332-AM42CrMo4	38 CrMo4 KB	42 CD 4	708 A 42	4140,4142
		F.8232-42CrMo4				
		F.1252-40CrMo4				
1.7228	50 CrMo 4			50 Cr Mo 4	708 A 47	4150
5. Aceros de nitruración • Nitriding steels • Aciers de nitruration						
1.7779	20 CrMoV 13.5					
1.8504	34 CrAl 6					
1.8506	34 CrAlS 5					
1.8507	34 CrAlMo 5	F.1741-34CrAlMo5	34 CrAlMo 7	30 CAD 6.12		A 335 Cl.D
1.8509	41 CrAlMo 7	F.1740-41CrAlMo7	41 CrAlMo 7	40 CAD 6.12	905 M 39	A 335 Cl.D
1.8515	31 CrMo 12	F.1712-31CrMo12	30 CrMo 12	30 CD 12	722 M 24	

C1-D1 • HEAT TREATABLE STEELS • ACIERS POUR TRAITEMENT THERMIQUE • ACEROS PARA TRATAMIENTO TÉRMICO

Dureza / Hardness / Dureté : < 350 HB 30						
Resistencia a la tracción / Tensile strength / Resistance à la traction : 850 < R < 1200 N/mm²						
Viruta corta / Short chip / Copeau court						
DIN		UNE	UNI	AFNOR	BS	AISI
1. Aceros aleados-Aceros bonificados • Alloyed steels-Hardened and tempered steels • Aciers alliés-Aciers améliorés						
1.2311	40 CrMnMo 7					
1.2312	40 CrMnMoS 8 6					
1.2436	X 210 CrW 12	F.5213-X210CrW12	X 215 CrW 12 1 KU	Z 200 CW 12		
1.2711	54 NiCrMoV 6					
1.2713	55 NiCrMoV 6			55 NCDV 7	BH 224/5	L 6
1.2714	56 NiCrMoV 7					
1.2743	60 NiCrMoV 12 4					
1.2766	35 NiCrMo 16					
2. Para herramientas de trabajo en caliente • Hot-work tool steels • Pour des outils à chaud						
1.2343	X 38 CrMoV 51	F.5317-X37CrMoV5	X 37 CrMoV51KU	Z 38 CDV 5	BH 11	H 11
1.2344	X 40 CrMoV 51	F.5318-X40CrMoV5	X 40 CrMoV511KU	Z 40 CDV 5	BH 13	H 13
1.2365	X 32 CrMoV 3 3	F.5313-30CrMoV12		32 DCV 28	BH 10	H 10
1.2367	X 40 CrMoV 5 3		30 CrMoV12227KU	Z 38 CDV 5.3		
1.2581	X 30 WMoV 9 3	F.5223-X30WCrV9			BH 21	H 21
1.2622	X 60 WCrMoV 9					
1.2678	X 45 CoCrWV 5 5 5		X 30 WCrV93KU	Z 30 WCV 9.3		
1.2550	60 WCrV 7		55 WCrV8KU	55 WC 20	BS 1	S 1
1.2567	X 30 WCrV 5 3		X 30 WCrV53KU	Z 32 WCV 5		
3. Aceros bonificados • Hardened and tempered steels • Aciers améliorés						
1.5864	35 NiCr 18					
1.6580	30 NiCrMo 8		30 NiCrMo 8	30 Cr Ni Mo 8		
1.7361	32 CrMo 12	F.124-A	32 CrMo 12	30 CD 12	722 M 24	
1.7707	30 CrMoV 9					
1.8161	58 CrV 4					
4. Aceros de nitruración • Nitriding steels • Aciers de nitruration						
1.8515	31 CrMo 12	F.1712-31CrMo12	30 CrMo12	30 CD 12	722 M 24	
1.8519	31 CrMoV 9					
1.8523	39 CrMoV 13 9				897 M 39	
1.8550	34 CrAlNi 7					

F1 • FERRITIC STAINLESS STEELS • ACIERS INOXYDABLES, FERRITIQUES • ACEROS INOXIDABLES FERRÍTICOS

Dureza / Hardness / Dureté : < 250 HB 30						
Resistencia a la tracción / Tensile strength / Resistance à la traction : < 850 N/mm²						
Viruta media / Chip middle / Copeau moyen						
DIN		UNE	UNI	AFNOR	BS	AISI
1. Aceros inoxidables azufrados • Sulfured stainless steels • Aciers inoxydables soufrés						
1.4104	X 12 CrMoS 17	F.3117-X10CrS17	X 10 CrS 17	Z 13CF17		430 F
1.4305	X 10 CrNiS 18 09	F.3508-X10CrNiS18.09	X 10 CrNiS 18 09	Z 8CNF 18.09	303 S 21	303
2. Aceros inoxidables ferríticos • Ferritic stainless steels • Aciers inoxydables ferritiques						
1.4002	X 6 CrAl 13	F.3111-X6CrAl13	X 6 CrAl 13	Z 8CA 12	405	405
1.4006	X 10 Cr 13	F.3401-X10Cr13	X 12 Cr 13	Z 10C 13	410	410
1.4016	X 6 Cr 17	F.3113-X6Cr17	X 8 Cr 17	Z 8C 17	430	430
1.4510	X 6 CrTi 17	F.3115-X5CrTi17	X 6 CrTi 17	Z 8CT 17	430 Ti	430 Ti
1.4512	X 6 CrTi 12		X 6 CrTi 12	Z 6CT 12	409 S 19	409



G1 • MARTENSITIC STAINLESS STEELS • ACIERS INOXYDABLES, MARTENSITIQUES • ACEROS INOXIDABLES MARTENSÍTICOS

Dureza / Hardness / Dureté : < 320 HB 30 Resistencia a la tracción / Tensile strength / Resistance à la traction : < 1100 N/mm² Viruta media / Chip middle / Copeau moyen						
DIN	UNE	UNI	AFNOR	BS	AISI	
1.4021	X 20 Cr 13	F.3402-X20Cr13	X 20 Cr 13	Z 20C13	420 S 37	420
1.4034	X 46 Cr 13	F.3405-X45Cr13	X 40 Cr 14	Z 44C14		
1.4057	X 20 CrNi 17 2	F.3427-X19CrNi17-2	X 16 CrNi 16	Z 15CN16.02	431 S 29	431
1.4112	X 90 CrMoV 18					
1.4116	X 45 CrMoV 15					
1.4125	X 105 CrMo 17			Z 100CD17		440 C
1.4718	X 45 CrSi 9 3	F.3220-X45CrSi09-03	X 45 CrSi 8	Z 45CS9	401 S 45	HNV 3
1.4747	X 80 CrNiSi 20	F.3222-X80CrSiNi20-02	X 80 CrSiNi 20	Z 80CSN20.02	443 S 65	HNV 6
1.4086	G-X 120 Cr 29					
1.4106	G-X 10 CrMo 13					
1.4138	G-X 120 CrMo 29 2					



H1 • AUSTENITIC STAINLESS STEELS • ACIERS INOXYDABLES, AUSTÉNITIQUES • ACEROS INOXIDABLES AUSTENÍTICOS

Dureza / Hardness / Dureté : < 250 HB 30 Resistencia a la tracción / Tensile strength / Resistance à la traction : < 850 N/mm² Viruta larga / Long chip / Copeau long						
DIN	UNE	UNI	AFNOR	BS	AISI	
1.4300	X 12 CrNi 18 8	F.3507-X 10CrNi18-08				
1.4301	X 5 CrNiN 18 10	F.3504-X 5CrNi18-10	X 5 CrNi 18 10	6 CN 18.09	304 S 15	304
1.4311	X 2 CrNiN 18 10	F.3541-X 2CrNiN18-10	X 2 CrNiN 18 10	Z 3 CN 18.07AZ	304 S 61	304 LN
1.4406	X 2 CrNiMoN 17 12 2	F.3542-X2CrNiMoN 17 12 2	X 2 CrNiMoN 17 12	Z 3CND17.11.02	316 S 61	316 LN
1.4433	X 2 CrNiMo 18 15					
1.4435	X 2 CrNiMo 18 14 3	F.3533-X2CrNiMo17.12.03	X 2 CrNiMo17.13	Z 3CND17.12.03	316 S 11	316 L
1.4539	X 1 CrNiMoCu 25 20 5			Z 1NCU25.20		UNS N08904
1.4541	X 6 CrNiTi 18 10	F.3523-X6CrNiTi18-10	X 6 CrNiTi 18 11	Z 6 CrNiTi 18 11	321 S 18	321
1.4551				Z 6CNNb20.10		534788
1.4571	X 6 CrNiMoTi 17 12 2	F.3535-X6CrNiTi17.12.2	X 6 CrNiMoTi 17.12		320 S 18	316 Ti
1.4573	X 10 CrNiMoTi 18 12	F.3535-X15CrNiSi20-12	X 6 CrNiMoTi 17.13		320 S 33	316 Ti
1.4828	X 15 CrNiMoSi 20 12	F.3312-X15CrNiSi20-12	X 16 CrNi 23 14	Z 15 CNS20-12	309 S 24	309
1.4308	G-X 6 CrNi 18 9			Z 6 CN 18.10M	304 C 15	CF-8
1.4313	G-X 5 CrNi 13 4		GX6 CrNi 13.04	Z 8CD17.01	425 C 12	CA-6NM
1.4408	G-X 5 CrNiMo 18 10	F.8414AM-X7CrNCMo20-10			316 C 16	CF-8M
1.4581	G-X 6 CrNiMoNb 18 10		GX6 CrNiMoNb20.11	Z 4CNDNb18.12M	318 C 17	



H2 • CHROMIUM AND NICKEL ALLOYS • ALLIAGES DE NICKEL ET CHROME • ALEACIONES DE CÓMO NIQUEL

Dureza / Hardness / Dureté : < 350 HB 30 Resistencia a la tracción / Tensile strength / Resistance à la traction : < 1000 N/mm² Viruta media / Chip middle / Copeau medium						
DIN	UNE	UNI	AFNOR	BS	AISI	
1.4460	X 8 CrNiMo 27 5	F.3309-X8CrNiMo27-05		Z 5CND27.05AZ		329
		F.3552-X8CrNiMo26-6				
1.4582	X 4 CrNiMoNb 25 7					
1.4821	X 20 CrNiSi 25 4	X 15CrNiSi25-04		Z 20CNS25.04		
2.4821	X 20 CrNiSi 25 5					
3.4821	X 20 CrNiSi 25 6					



I1 • CAST IRON WITH GRAPHITE LAMELLAR • FONTES GRISES À GRAPHITE LAMELLAIRE • FUNDICIÓN GRIS CON GRAFITO LAMINAR

I1.- Fundición gris con grafito laminar / Fontes grises à graphite lamellaire / Cast Iron with graphite lamellar Dureza / Hardness / Dureté : < 150 HB 30 Resistencia a la tracción / Tensile strength / Resistance à la traction : < 500 N/mm² Viruta muy corta / very short chip / Copeau tres court						
DIN	UNE	UNI	AFNOR	BS	AISI	
0.6010	FG-10	G 10	Ft 10 D		A 48-20 II	
0.6015	FG-15	G 15	Ft 20 D	Grade 150	A 48-25 II	
0.6020	FG-20	G 20	Ft 25 D	Grade 220	A 48-30 II	
0.6025	FG-25	G 25	Ft 30 D	Grade 260	A 48-40 II	
0.6030	FG-30	G 30	Ft 30 D	Grade 300	A 48-45 II	
0.6035	FG-35	G 35	Ft 35 D	Grade 350	A 48-50 II	
0.6040			Ft 40 D	Grade 400	A 48-60 II	



Dureza / Hardness / Dureté : < 300 HB 30						
Resistencia a la tracción / Tensile strength / Resistance à la traction : < 1000 N/mm²						
Viruta muy corta / very short chip / Copeau tres court						
DIN		UNE	UNI	AFNOR	BS	AISI
0.6020	GG-20	FG 20	G 20	FT 25 D	Grade 220	A 48-30 B
0.6025	GG-25	FG 25	G 25	FT 30 D	Grade 260	A 48-40 B
0.6030	GG-30	FG 30	G 30	FT 35 D	Grade 300	A 48-45 B
0.6035	GG-35	FG 35	G 35	FT 40 D	Grade 350	A 48-50 B
0.6040	GG-40				Grade 400	A 48-60 B

J2 • MALLEABLE CAST IRON (GGG) • FONTE MALLÉABLE (GGG) • FUNDICIÓN MALEABLE (GGG)

Dureza / Hardness / Dureté : < 200HB 30						
Resistencia a la tracción / Tensile strength / Resistance à la traction : < 700 N/mm²						
Viruta corta / Short chip / Copeau court						
DIN		UNE	UNI	AFNOR	BS	AISI
0.7033	GGG-35 3					
0.7040	GGG-40			FGS 400.12	400/12	60-40-18
0.7043	GGG-40 3			FGS 370.17	370/17	
0.7050	GGG-50			FGS 500.7	500/7	65-45-12
0.7060	GGG-60			FGS 600.3	600/3	80-55-06
0.8035	GTW-35					
0.8040	GTW-40					
0.8045	GTW-45					
0.8055	GTW-55					
0.8065	GTW-65					
0.8135	GTS-35					
0.8145	GTS-45					
0.8155	GTS-55					
0.8165	GTS-65					

J3 • SPHEROIDAL GRAPHITE CAST IRON (GGG 70-80) • FONTE À GRAPHITE SPHEROIDAL (GGG 70-80) • FUNDICIÓN DE GRAFITO ESFEROIDAL (GGG 70-80)

Dureza / Hardness / Dureté : < 300 HB 30						
Resistencia a la tracción / Tensile strength / Resistance à la traction : < 1000 N/mm²						
Viruta corta / Short chip / Copeau court						
DIN		UNE	UNI	AFNOR	BS	AISI
0.7070	GGG-70		GS 700/2	FGS 700.2	700/2	100-70-03
0.7080	GGG-80		GS 800/2	FGS 800.2	800/2	120-90-02

K1 • ALUMINIUM ET MAGNESIUM PAS ALLIÉS • NOT ALLOYED ALUMINUM AND MAGNESIUM • ALUMINIO Y MAGNESIO NO ALEADO

Dureza / Hardness / Dureté : < 100 HB 30						
Resistencia a la tracción / Tensile strength / Resistance à la traction : < 350 N/mm²						
Viruta muy larga / Very long chip / Copeau tres long						
DIN		UNE	UNI	AFNOR	BS	AISI
3.0250	Al 99,5 H					
3.0280	Al 99,8 H					
3.0305	Al 99,9			A-9		
3.3308	Al 99,9 Mo 0,5			A-9-G0,5		

K2 • MAGNESIUM ALLIAGES • MAGNESIUM ALLOYS • ALEACIONES DE MAGNESIO

Dureza / Hardness / Dureté : < 100 HB 30						
Resistencia a la tracción / Tensile strength / Resistance à la traction : < 300 N/mm²						
Viruta muy larga / Very long chip / Copeau tres long						
DIN		UNE	UNI	AFNOR	BS	AISI
	MgAl 2,AM 20	AM20	AM20	G-A2,AM20	AM20	AM20
	MgAl 15,AM 50	AM50	AM50	G-A5,AM50	AM50	AM50
	MgAl 10,AM 100	AM100	AM100	AM100	AM100	AM100,SAE502
	MgAl 16,AM 60	AM60	AM60	G-06,AM60	AM60	AM60
	MgAlSi 1 , AS 41	AS41	AS41	G-A4S1,AS41	AS41	AS41
3.5312	MgAl 3 Zn, AZ 31	AZ31	AZ31	G-A3Z1,AZ31	AZ31,MAG11	SAE52,SAE510
3.5632	MgAl 16 Zn 3, AZ 63	AZ63	AZ63	AZ63	AZ63	SAE50,AZ63
3.5812	MgAl 18 Zn 1, AZ 81	AZ81hp	AZ81hp	G-A9,AZ81	MAG1,MAG2	AZ81
3.5912	MgAl 19 Zn 1	AZ91hp	AZ61	G-A6Z1,AZ61	MAG1,MAG2	SAE520,531

L1 • ALLIAGES D'ALUMINIUM AYANT SI <0,5% • ALUMINUM ALLOYS WITH SI < 0,5% • ALEACIONES DE ALUMINIO CON SI <0,5%

Dureza / Hardness / Dureté : < 180 HB 30						
Resistencia a la tracción / Tensile strength / Resistance à la traction : < 600 N/mm²						
Viruta media / Chip middle / Copeau moyen						
DIN		UNE	UNI	AFNOR	BS	AISI
1. Aleaciones de aluminio de forja • Forged aluminium alloys • Alliages d'aluminium de forge						
3.0515	AlMn 1	L-3811	3568		N 3	3103
3.0516	S-AlMn				NG 3	3005
3.0525	AlMn 1 Mg 0,5			A-M1G0,5		
3.0615	AlMgSiPb	L-3452-38.344				
3.1325	AlCuMg 1	L-3120,38.312	3579	A-U4G	H14	2017A
3.1355	AlCuMg 2	L-3140,38314	3583	A-U4G1	2L97	2024
3.3315	AlMg 1	L-3350,38.335	5764	A-G0,6	N41	5005A
3.3535	AlMg 3	L-3390,38.339	3575	A-G3M	N5	5754
3.4365	AlZnMgCu 1,5	L-3710,38.371	3735	A-Z5GU	2L95	7075
2. Fundición de aluminio aleada • Alloyed aluminium casting • Coulée d'aluminium alliée						
3.1841	G-AlCu 4 Ti					
3.3241	G-AlMg 3 Si					
3.3292	GD-AlMg 9					

Dureza / Hardness / Dureté : < 180 HB 30 Resistencia a la tracción / Tensile strength / Resistance à la traction : < 600 N/mm² Viruta media / Chip middle / Copeau moyen						
DIN	UNE	UNI	AFNOR	BS	AISI	
3.2134	G-AISI 5 Cu 1 Mg	L - 2571	3600	A-S4GU	LM 16	355.1
3.2152	GD-AISI 6 Cu 4					
3.2162	GD-AISI 8 Cu 3					
3.2373	G-AISI 9 Mg		A7-S10G			

L2

M1 • ALUMINIUM ALLOYS WITH SI > 10% • ALLIAGES D'ALUMINIUM AYANT SI> 10% • ALEACIONES DE ALUMINIO CON SI> 10%

Dureza / Hardness / Dureté : < 180 HB 30 Resistencia a la tracción / Tensile strength / Resistance à la traction : < 600 N/mm² Viruta corta / Short chip / Copeau court						
DIN		UNE	UNI	AFNOR	BS	AISI
1. Fundición de aluminio aleada • Alloyed aluminium casting • Coulée d'aluminium alliée						
3.2381	G-AISI 10 Mg	L-2560,61		A-S10G	LM9	A360
3.2383	G-AISI 10 Mg (Cu)			A-S9GU		
3.2581	G-AISI 12	L-2520,21	4514	A-S13	LMS	A413
3.2583	G-AISI 12 (Cu)	L-2530	3048	A-S12U	LM20	413.1
3.2982	GD-AISI 12 (Cu)					
2. Fundición de aluminio aleada Al Mg • Alloyed aluminium casting Al Mg • Coulée d'aluminium alliée Al Mg						
3.5106	G-MgAg 3 SE 2 Zr 1					
3.5662	G-MgAl 6					
3.5812	G-MgAl 8 Zn 1	AZ81hp	AZ81hp	G-A9,AZ81	AZ81,MAG1	AZ81
3.5912	G-MgAl 9 Zn 1	AZ91hp	AZ91hp	G-A9Z1,AZ91	MAG7,MAG3	SAE501,504

M1

N1 • COPPER • CUIVRE • COBRE

Dureza / Hardness / Dureté : < 100 HB 30 Resistencia a la tracción / Tensile strength / Resistance à la traction : < 350 N/mm² Viruta muy larga / Very long chip / Copeau tres long						
DIN	UNE	UNI	AFNOR	BS	AISI	
2.0060	E - Cu 57		Cu-ATP-2/C103	Cu-ATP-2/C103		
2.0070	SE - Cu				C10300/OFXLP	
2.0090	SF - Cu		CU-bi	Cu--DHP/C108	C12200/DHP	
2.1356	CuMn 3					
2.1522	CuSi 2 Mn					
2.1293	CuCrZr			C C 104	C 18400	

N1

N2 • SHORT CHIP COPPER ALLOYS • ALLIAGES DE CUIVRE COPEAU COURT • ALEACIONES DE COBRE VIRUTA CORTA

Dureza / Hardness / Dureté : < 200 HB 30						
Resistencia a la tracción / Tensile strength / Resistance à la traction : < 700 N/mm²						
Viruta corta / Short chip / Copeau court						
DIN		UNE	UNI	AFNOR	BS	AISI
1. Latones • Brasses • Laitons						
2.0360	CuZn 40 (MS 60)			CuZn40	CZ 109	C 28000
2.0380	CuZn 39 Pb 2 (MS 58)			CuZn40	CZ 109	C 28000
2.0402	CuZn 40 Pb 2 (MS 58)			CuZn39Pb2	CZ 122	C 38000
2.0410	CuZn 44 Pb 2 (MS 58)				CZ 130	
2.0561	CuZn 40 Al 1					
2.0580	CuZn 40 Mn 1 Pb				CZ 115	
2.0771	CuNi7 Zn 39 Mn 5 Pb 3					
2. Bronces • Bronzes • Bronzes						
2.1086	G-CuSn 10 Zn				CT1	C 90250
2.1093	G-CuSn 6 ZnNi				LG4	C 92410
2.1096	G-CuSn 5 ZnPb			CuPb5Sn5Zn5	LG2	C 83600

N2

N3 • ALEACIONES DE COBRE VIRUTA LARGA • LONG CHIP COPPER ALLOYS • ALLIAGES DE CUIVRE COPEAU LONG

Dureza / Hardness / Dureté : < 200 HB 30 Resistencia a la tracción / Tensile strength / Resistance à la traction : < 700 N/mm² Viruta larga / Long chip / Copeau long						
DIN		UNE	UNI	AFNOR	BS	AISI
1. Latones • Brasses • Laitons						
2.0250	CuZn 20 (MS 80)			CuZn20	CZ 103	C 24000
2.0265	CuZn 30 (MS 70)			CuZn30	CZ 106	C 26000
2.0321	CuZn 37			CuZn37	CZ 108	C 27400
2.0335	CuZn 36 (MS 63)			CuZn36		C 27000
2. Bronce • Bronzes • Bronzes						
2.1020	CuSn 6					
2.1030	CuSn 8	C 7150				
2.1080	CuSn 6 Zn 6					
3. Aleaciones de cobre forjadas • Wrought copper alloys • Alliages de cuivre forgés						
2.1245	CuBe 1,7			Cu Be 1.7	CB 101	C 17000
2.1247	CuBe 2			Cu Be 1.9		C 17200
2.1293	CuCrZr				CC 102	C 18100

N3

Q1 • NIQUEL • NICKEL • NICKEL R ≤ 500 N/MM²R

Dureza / Hardness / Dureté : < 150 HB 30 Resistencia a la tracción / Tensile strength / Resistance à la traction : < 500 N/mm² Viruta muy larga / Very long chip / Copeau tres long						
DIN		UNE	UNI	AFNOR	BS	AISI
2.1504 LN	Ni Al Bz					
2.4042	Ni 99 Csi					
2.4060	Ni 99,6					
2.4062	Ni 99,4 Fe					

Q1

Q2 • NICKEL ALLOYS • ALLIAGES DE NICKEL • ALEACIONES DE NIQUEL

Dureza / Hardness / Dureté : < 270 HB 30 Resistencia a la tracción / Tensile strength / Resistance à la traction : < 900 N/mm² Viruta muy larga / Very long chip / Copeau tres long						
DIN		UNE	UNI	AFNOR	BS	AISI
2.4360 LN	Monel 400					
2.4374 LN	Monel 500					
2.4617	Hastelloy B 2					
2.4665	Hastelloy X					
2.4812	Hastelloy C					
2.4816	Inconel 600					
2.4876	Incoloy 800			Z10NC33.21		
2.4983	Udimet 500					

Q2

Q3 • HIGH-TEMPERATURE RESISTANT NICKEL ALLOYS • ALLIAGES NICKEL POUR HAUTES TEMPÉRATURES • ALEACIONES DE NIQUEL PARA ALTAS TEMPERATURAS

Dureza / Hardness / Dureté : < 400 HB 30 Resistencia a la tracción / Tensile strength / Resistance à la traction : < 1250 N/mm² Viruta corta / Short chip / Copeau court						
DIN		UNE	UNI	AFNOR	BS	AISI
2.4631	Nimonic 80 A					
2.4632	Nimonic 90					
2.4634	Nimonic 105					
2.4662	Nimonic 901					
2.4668	Inconel 718					
2.4669	Inconel X-750					
2.4670 LN	Nimocast 713					
2.4674 LN	Nimocast PK 24					
2.4856	Inconel 625					

Q3

T1 • TITANIUM / TITANE / TITANIO

Dureza / Hardness / Dureté : < 200 HB 30 Resistencia a la tracción / Tensile strength / Resistance à la traction : < 700 N/mm² Viruta muy larga / Very long chip / Copeau tres long						
DIN		UNE	UNI	AFNOR	BS	AISI
3.7024.1LN	Ti 99,5-Grade 1			T 35		
3.7034.1LN	Ti 99,7-Grade 2			T 40		
3.7035	Ti 2					
3.7055	Ti 99,4-Grade 3			T 50		
3.7064.1LN	Ti 99,2					
3.7065	Ti 4			T 60		
3.7255	Ti 3 Pd					

T1

T2 • ANNEALED TITANIUM ALLOYS • ALLIAGES DE TITANE RECUITS • ALEACIONES DE TITANIO RECOCIDAS

Dureza / Hardness / Dureté : < 200 HB 30 Resistencia a la tracción / Tensile strength / Resistance à la traction : < 700 N/mm² Viruta media / Chip middle / Copeau moyen						
DIN		UNE	UNI	AFNOR	BS	AISI
	TiAl 4 Mn 4					
3.7114	TiAl 5 Sn 2					
3.7124	TiCu 2,5			T-U2		
3.7164	TiAl 6 v 4-Grade 5			T-AGV	2TA10	
3.7174	TiAl 6 v 6 Sn 2					

T2

T3 • TITANIUM ALLOYS • ALLIAGES DE TITANE • ALEACIONES DE TITANIO

Dureza / Hardness / Dureté : < 300 HB 30 Resistencia a la tracción / Tensile strength / Resistance à la traction : < 1300 N/mm² Viruta corta / Short chip / Copeau court						
DIN		UNE	UNI	AFNOR	BS	AISI
3.7124	TiCu 2					
3.7144	TiAl 6 Sn 2 Zr 4 Mo 2					
3.7154	TiAl 6 Zr 6					
3.7164	TiAl 6 v 4					
3.7174	TiAl 6 V6 Sn 2					
3.7184	TiAl 4 Mo 4 Sn 2					

T3



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CATALOG

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