TIVOLY

THREADING
CATALOG

TARAUDAGE
CATALOGUE

ROSCADO
CATÁLOGO

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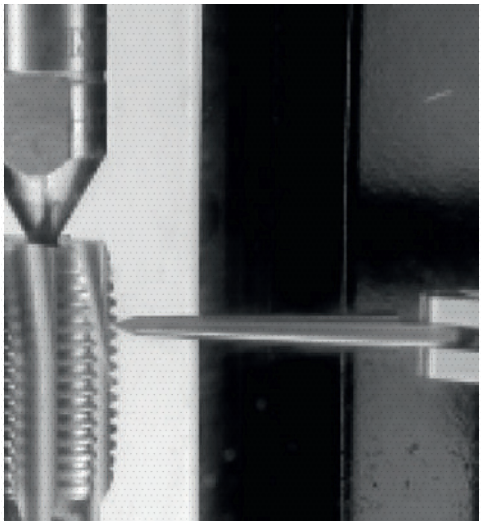
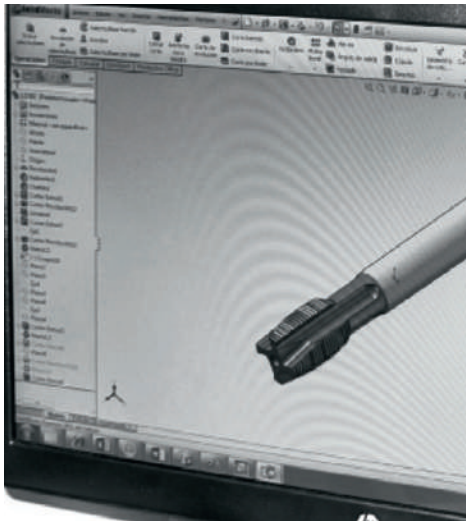
Cutting tools
Outils coupants
Herramientas de corte



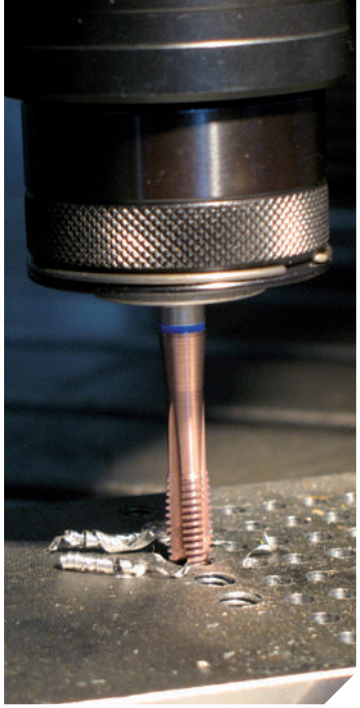


APPLICATIONS
APPLICATIONS
APLICACIÓNES

▸ P.264

A	A1	Aceros debilmente aleados / Aciers non alliés et faiblement alliés / Unalloyed & low alloyed steels
	B1	Aceros de construcción / Aciers de construction / Structural steels
B	B2	Aceros bonifacados / Aciers au Carbone non alliés et améliorés / Plain Carbon steels
	B3	Aceros aleados / Aciers alliés / Steels
C	C1	Aceros para tratamiento térmico R< 1000 N/mm² / Aciers pour traitement thermique R< 1000 N/mm² / Heat Treatable Steels R < 1000 N/mm²
D	D1	Aceros para tratamiento térmico R< 1200 N/mm² / Aciers pour traitement thermique > 1200 N/mm² / Heat Treatable Steels >1200 N/mm²
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/mm² / Aciers inoxydables Austenitiques R < 850 N/mm² / Austenitic stainless steel R < 850 N/mm² Steels, Martensitic
	H2	Aleaciones de Ni-Cr R < 1200 N/mm² / Alliages de nickel et chrome R < 1200 N/mm² / Chromium and nickel alloys R < 1200 N/mm²
I	I1	Fundición gris con grafito laminar / Fontes grises à graphite lamellaire / Cast Iron with graphite lamellar
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 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/mm²
	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 magnesium750 N / mm ² / Malleable cast iron (GGG) R ≤ 750 N/mm²
	K2	Aleaciones de magnesio / Magnesium alliages / Magnesium alloys
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/mm²
	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/mm²
M	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/mm²
N	N1	Cobre R ≤ 350 N / mm ² / Cuivre R ≤ 350 N / mm ² / Copper R ≤ 350 N/mm²
	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/mm² / 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	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/mm² (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/mm² (INCONEL 625/780)
Ti	T1	Titanio R ≤ 700 N / mm ² / Titane R ≤ 700 N / mm ² / Titanium R ≤ 700 N/mm²R ≤ 500 N/mm² / Nickel R ≤ 500 N/mm² / Nickel R ≤ 500 N/mm²
	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/mm²
	T3	Aleaciones de titanio 900 <R ≤ 1200 N/mm² / Alliages de titane 900 <R ≤ 1200 N/mm² / Titanium alloys 900< R ≤ 1200 N/mm²
P	P1	Plásticos / Thermoplastique / Thermoplastic

TIVOLY®



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**	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
		B. FLASH CUT	M - MF cutting taps
			NC-NF cutting taps
			BSP cutting taps
		C. MULTI-APPLICATION	M - MF
			M - MF cutting taps
			M - MF Right flute cuttlng 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
		D. STANDARD RANGE	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, pluging and bottoming.
			M - MF right hand sets, taper, pluging 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**	
THREADING	**#04 ROLL & FLAT DIES**		
	#05 TECHNICAL INFO		

TAPPING
TARAUDAGE
ROSCADO

#01-05

# #
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	o	o
	B1	Structural steels / Aciers de construction / Aceros de construcción	o	o
B	B2	Structural steels / Aciers de construction / Aceros de construcción	o	o
	B3	Structural steels / Aceros de construcción / Aciers de construction	o	o
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	o	o
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	o	o
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 austeníticos R < 850 N/mm²	o	o
	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	o	o
J	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	o	o
	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	o	o
	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	o	o
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		
L	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		
	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		
M	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 Niquel R ≤ 500 N/mm²		
	Q2	Nickel alloys R < 900 N/mm² (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/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	o	o

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				
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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

FLASH-CUT

MULTI -APPLICATIONS

			Reference / Référence / Referencia	CT1	BT1	AT2	MT2	ST2	HT2
				FLASH CUT					
			M-MF (DIN=60;ISO=05)	36	40	37	38	32	33
			UNC-UNF (62)	47	48	45		41	
			BSP (63)	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						●	
B	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						●	●
	D1	Heat Treatable Steels >1200 N/mm² / Aciers pour traitement thermique > 1200 N/mm² / Aceros para tratamiento térmico R< 1200 N/mm²							●
G	F1	Stainless Steels, Ferritic / Aciers inoxydables, ferritiques / Aceros inoxidables ferríticos							
	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 austeníticos 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	●						
J	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				●			
L	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				●			
	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				●	●		
M	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 Niquel R ≤ 500 N/mm²				●	●		
	Q2	Nickel alloys R < 900 N/mm² (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/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				●			

IT2	TT2	AT5	MT5	ST5	IT5 FLASH CUT	TT5 FLASH CUT	HT3	AT9	ST9	IT9	TT9	007 MULTI APPLICATION	202 MULTI APPLICATION	302 MULTI APPLICATION	012 MULTI APPLICATION	205 MULTI APPLICATION	305 MULTI APPLICATION
34	39	37	39	32	35	40	34	50	50	51	52	54	55	56	55	57	58
43		46		42	44												107
																	111
																	115
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● Suggested / Suggéré / Recomendado ○ Good / Bon / Bueno ○ General purpose / Usage général / Aplicación general

MATERIALS AND APPLICATIONS OF TAPPING

MATERIAUX ET APPLICATIONS DE TARAUDAGE

MATERIALES Y APLICACIONES DE ROSCADO CON MACHOS

Reference / Référence / Referencia	310	201	301 HSSE	241	291
M-MF (DIN=60;ISO=05=70)		60	61	62	62
UNC-UNF (62)		98	99		
BSW-BSF (61)		109			
BSP (63)			112		
NPT-NPTF (64)	117		116		
PG (65)			117		
BSPT (66)	116		115		

A	A1	Unalloyed & low alloyed steels / Aciers non alliés et faiblement alliés / Aceros debilmente aleados	○	○	○		
	B1	Structural steels / Aciers de construction / Aceros de construcción	○	○	○		●
B	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 austeníticos 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					○
J	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					
L	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					
	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					
M	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 Niquel R ≤ 500 N/mm²					
	Q2	Nickel alloys R < 900 N/mm² (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/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					

391 HSS E	541 641 HSS EE		071 091 HSS ES		460	461 HSS 009		202	302	252 HSS E	282	382	502	602	584	684 HSS EE	582	682	508	608
63	64	65	66	66	97	97	75			67	71	72	68	69	70	70	73	73	76	77
100								101	102				103	103						
								110	110											
112									113											
					○	○		○	○					○	○	○	○			
●					○	○		○	○	○	○			○	○					
●					○	○		○	○	○	○			○	○					
●					○	○		○	○	○	○			○	○					
○					○	○		○	○	○	○			○	○					
			●	●																
								○	○			○	○					○	○	
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	○	○										○	○					○	○	
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								○											○	○
								○											○	○

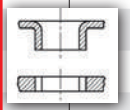
● Suggested / Suggéré / Recomendado ○ Good / Bon / Bueno ○ General purpose / Usage général / Aplicación general

MATERIALS AND APPLICATIONS OF TAPPING

MATERIAUX ET APPLICATIONS DE TARAUDAGE

MATERIALES Y APLICACIONES DE ROSCADO CON MACHOS

Referencia / Référence / Reference	588	688	062 HSSEE	082	504	604 HSS
M-MF (DIN=60;ISO=05)	78	79	74	75	80	80
UNC-UNF (62)						
BSW-BSF (61)						
BSP (63)						
NPT-NPTF (64)						
PG (65)						
BSPT (66)						



A	A1	Unalloyed & low alloyed steels / Aciers non alliés et faiblement alliés / Aceros debilmente aleados					○	○
B	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 austeníticos 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						
J	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					○	○
L	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					○	○
	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						
M	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 Niquel R ≤ 500 N/mm²						
	Q2	Nickel alloys R < 900 N/mm² (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/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						

205	305	255	355	285	385	505	605	506	606	585	685	589	689	587	687	203	303	293	393	063	083
		HSS E									HSS EE			HSS E						HSS EE	
		86	87	91	91	88	88	94	94	92	93	89	90	95	96	81	82	83	84	85	86
107	107					108	109									104	103	105	106		
111	111																				
																	113		114		
○	○	○	○			○	○					○	○								
○	○	○	○			○	○														
○	○	○	○			○	○														
○	○					○	○														
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○	○			○	○					○	○										
										○	○										
				○	○											○	○	○	○		
				○	○											○	○	○	○		
														●							
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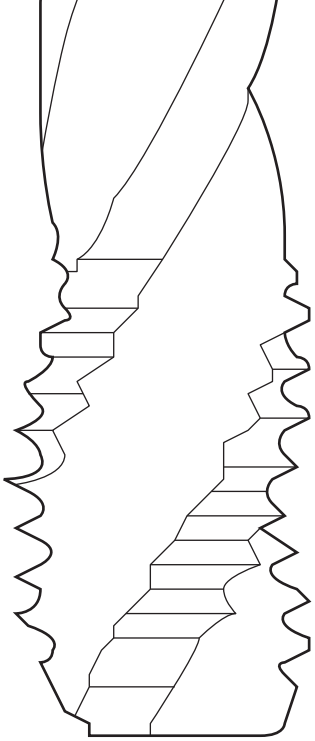
																				○	○
																				○	○

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

TAPPING
TARAUDAGE
ROSCADO

#01-05

# #
DIN ISO NORM
NORME DIN ISO
NORMA DIN ISO



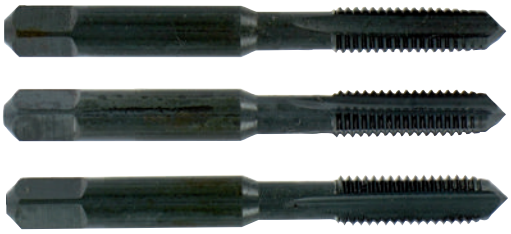
A.
HAND TAPS
TARAUDS A MAIN
ROSCADO
MANUAL

M MF
Metric thread
Filet metrique
Rosca métrica

ISO 2 Norm
Norme ISO 2
Norma ISO 2

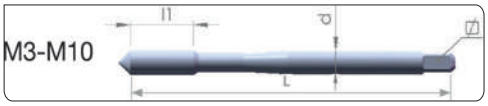
MULTIPURPOSE HAND TAPS
JEU TARAUDS MULTIAPPLICATION
JUEGO MACHOS MULTIAPLICACION

6H | ISO 529 | HSS | STEAM TREATED

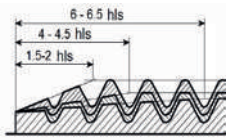


2,5xd

A | B | C | F | H1 | I | J | P



1050031	Ø	P	L	l1	d	ISO	□	●Ø
1050031020040	M 2	0,4	42	8,5	2,5	529	2	1,4
1050031025045	M 2,5	0,45	44,5	10	2,8	529	2,1	2
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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1050031080100	MF8	1	69	19	8	529	6,3	7,00
1050031090100	MF9	1	69	19	9	529	7,1	8,00
1050031100100	MF10	1	76	20	10	529	8	9,00
1050031100125	MF10	1,25	76	20	10	529	8	8,75
1050031120100	MF12	1	84	24	9	529	7,1	11,00
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

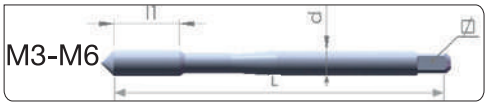
ISO 2 Norm / Norme ISO 2 / Norma ISO 2

MULTIPURPOSE HAND TAPS
JEU TARAUDS MULTIAPPLICATION
JUEGO MACHOS MULTIAPLICACION

6H | DIN 352 | HSS | STEAM TREATED

2,5xd

A | B | C | F | H1 | I | J | P



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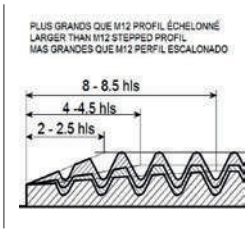
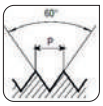
950101100250045	M 2,5	0,45	40	12	2,8	352	2,1	2,00
950101100300050	M 3	0,5	40	11	3,5	352	2,7	2,50
950101100350060	M 3,5	0,6	45	12	4	352	3	2,90
950101100400070	M 4	0,7	45	12,5	4,5	352	3,4	3,30
950101100500080	M 5	0,8	50	14,5	6	352	4,9	4,20
950101100600100	M 6	1	50	15,5	6	352	4,9	5,00
950101100700100	M 7	1	50	19	6	352	4,9	5,00
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
950101101000150	M 10	1,5	70	24	7	352	5,5	8,50
950101101100150	M 11	1,5	70	24	8	352	6,2	9,50
950101101200175	M 12	1,75	75	29	9	352	7	10,25
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



MF

Metric fine thread
Filet metrique fine
Rosca métrica fina



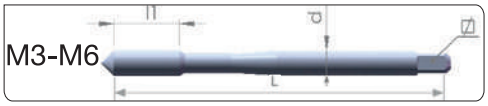
ISO 2 Norm
Norme ISO 2
Norma ISO 2

MULTIPURPOSE HAND TAPS
JEU TARAUDS MULTIAPPLICATION
JUEGO MACHOS MULTIAPLICACION

6H | DIN 2181 | HSS | STEAM TREATED

2,5xd

A | B | C | F | H1 | L1 | J | P



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950102100600075	MF6	0,75	50	15,5	6	2181	4,9	5,25
950102100800075	MF8	0,75	50	22	6	2181	4,9	7,25
950102100800100	MF8	1	56	22	6	2181	4,9	7,00
950102101000100	MF10	1	63	18	7	2181	5,5	9,00
950102101000125	MF10	1,25	70	24	7	2181	5,5	8,75
950102101100100	MF11	1	63	20	8	2181	6,2	10,00
950102101100125	MF11	1,25	63	20	8	2181	6,2	9,75
950102101200100	MF12	1	70	20	9	2181	7	11,00
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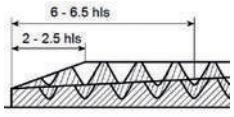
950102101200150	MF12	1,5	70	20	9	2181	7	10,50
950102101400100	MF14	1	70	20	11	2181	9	13,00
950102101400125	MF14	1,25	70	20	11	2181	9	12,75
950102101400150	MF14	1,5	70	22	11	2181	9	12,50
950102101600100	MF16	1	70	22	12	2181	9	15,00
950102101600125	MF16	1,25	70	22	12	2181	9	14,75
950102101600150	MF16	1,5	70	22	12	2181	9	14,50
950102101800100	MF18	1	80	22	14	2181	11	17,00
950102101800125	MF18	1,25	80	22	14	2181	11	16,75
950102101800150	MF18	1,5	80	22	14	2181	11	16,50
950102101800200	MF18	2	80	22	14	2181	11	16,00
950102102000100	MF20	1	80	22	16	2181	11	19,00
950102102000150	MF20	1,5	80	22	16	2181	11	18,50
950102102000200	MF20	2	80	22	16	2181	11	18,00
950102102200150	MF22	1,5	80	22	18	2181	14,5	20,50
950102102200200	MF22	2	80	22	18	2181	14,5	20,00
950102102400150	MF24	1,5	90	22	18	2181	14,5	22,50
950102102400200	MF24	2	90	22	18	2181	14,5	22,00
950102102600150	MF26	1,5	90	22	20	2181	14,5	24,50
950102102700200	MF27	2	90	22	18	2181	16	25,00
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



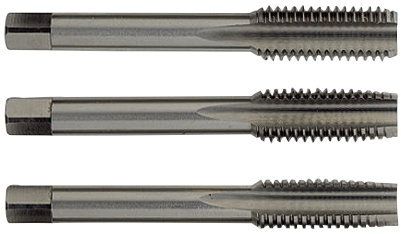
M — Metric thread / Filet metrique / Rosca métrica

ISO 2 Norm / Norme ISO 2 / Norma ISO 2

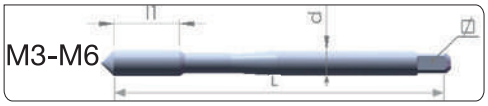
SET OF 3 HAND TAPS
JEU DE 3 TARAUDS MAIN
JUEGO DE 3 MACHOS DE MANO

6H | DIN 352 | HSS | BRIGHT UNCOATED

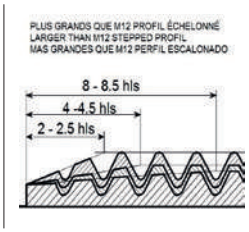
2,5xd



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



M — Metric thread / Filet metrique / Rosca métrica

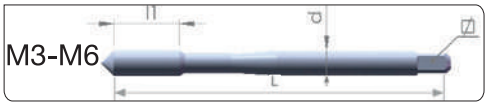
ISO 2 Norm / Norme ISO 2 / Norma ISO 2

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

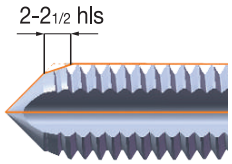
6H | DIN 352 | HSS | BRIGHT UNCOATED

2,5xd

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

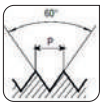


9501311	Ø	P	L	l1	d	DIN	□	●Ø
950131100200040	M 2	0,4	36	9	2,8	352	2,1	1,60
950131100250045	M 2,5	0,45	40	10	2,8	352	2,1	2,00
950131100300050	M 3	0,5	40	11	3,5	352	2,7	2,50
950131100350060	M 3,5	0,6	45	13	4	352	3	2,90
950131100400070	M 4	0,7	45	13	4,5	352	3,4	3,30
950131100500080	M 5	0,8	50	15	6	352	4,9	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



MF

Metric fine thread
Filet metrique fine
Rosca métrica fina



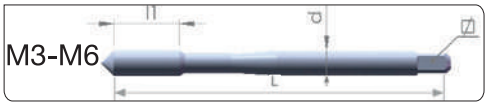
ISO 2 Norm
Norme ISO 2
Norma ISO 2

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

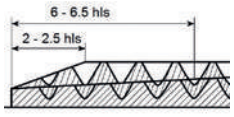
6H | DIN 2181 | HSS | BRIGHT UNCOATED

2,5xd

A | B | C | K | L | N



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



MF

Metric fine thread
Filet metrique fine
Rosca métrica fina

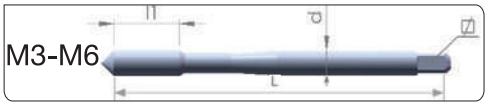
ISO 2 Norm
Norme ISO 2
Norma ISO 2

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

6H | DIN 2181 | HSS | BRIGHT UNCOATED

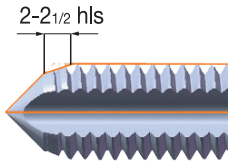
2,5xd

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



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

2-2 1/2 hls



M

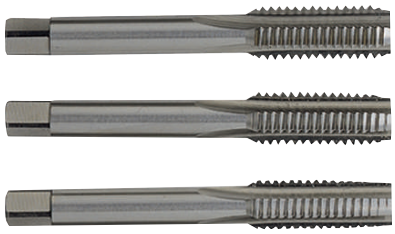
Metric thread
Filet metrique
Rosca métrica

ISO 2 Norm
Norme ISO 2
Norma ISO 2

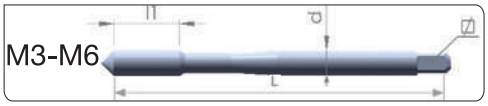
SET OF 3 LEFT HAND TAPS
JEU TARAUDS MAIN Á GAUCHE
JUEGO MACHOS DE MANO A IZDA.

6H | DIN 352 | HSS | BRIGHT UNCOATED

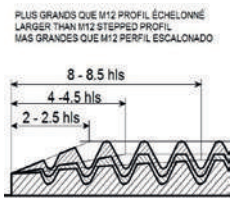
2,5xd



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



M

Metric thread
Filet metrique
Rosca métrica

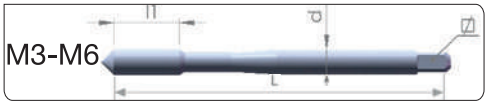
ISO 2 Norm
Norme ISO 2
Norma ISO 2

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

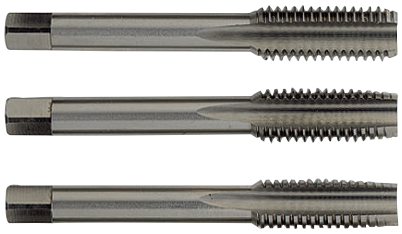
Normal series American Unified Thread
Filet Unifié Américaine série normal
Rosca Unificada Americana serie normal

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

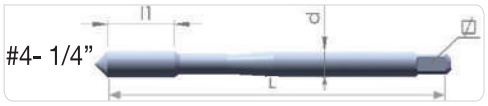
SET OF 3 HAND TAPS
JEU DE 3 TARAUDS MAIN
JUEGO DE 3 MACHOS DE MANO

2B | DIN 352 | HSS | BRIGHT UNCOATED

2,5xd



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



9521011	Ø	P	L	l1	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

UNC

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

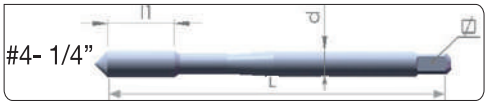
ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

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

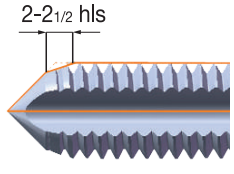
2B | DIN 352 | HSS | BRIGHT UNCOATED

2,5xd

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



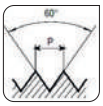
9521311	Ø	P	L	l1	d	DIN	□	●Ø
952131100003480	NC#3	48	40	11	3,5	352	2,7	2,1
952131100004400	NC#4	40	40	11	3,5	352	2,7	2,3
952131100005400	NC#5	40	40	11	3,5	352	2,7	2,6
952131100006320	NC#6	32	45	13	4	352	3	2,85
952131100008320	NC#8	32	45	13	4	352	3,4	3,5
952131100010240	NC#10	24	50	16	6	352	4,9	3,9
952131100012240	NC#12	24	50	18	6	352	4,9	4,5
952131100140200	NC1/4	20	56	22	6	352	4,9	5,1



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

UNF

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



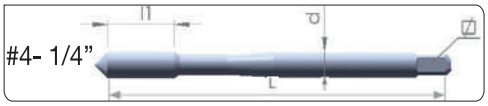
ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

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

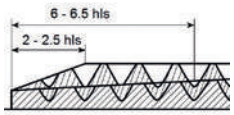
2B | DIN 2181 | HSS | BRIGHT UNCOATED

2,5xd

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

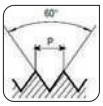


9521021	Ø	P	L	l1	d	DIN	□	●Ø
952102100003560	NF#3	56	40	11	3,5	2181	2,7	2,1
952102100004480	NF#4	48	40	11	3,5	2181	2,7	2,4
952102100005440	NF#5	44	40	11	3,5	2181	2,7	2,7
952102100006400	NF#6	40	45	13	4	2181	3	3
952102100008360	NF#8	36	45	13	4	2181	3,4	3,5
952102100010320	NF#10	32	50	16	6	2181	4,9	4,1
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



UNF

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



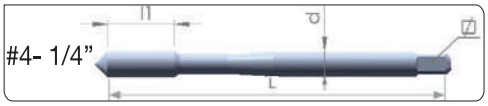
ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

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

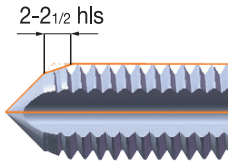
2B | DIN 2181 | HSS | BRIGHT UNCOATED

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

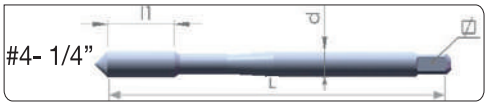
DIN 11 Norm
Norme DIN 11
Norma DIN 11

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

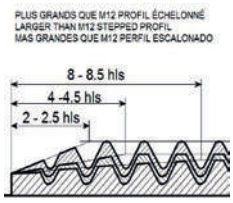
NORMAL CLASS | DIN 352 | HSS | BRIGHT UNCOATED

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



BSF

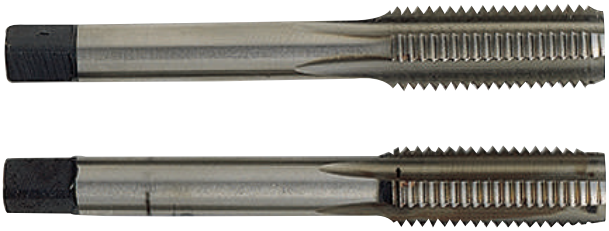
Thread WHITWORTH fine
Filet WHITWORTH fine
Rosca WHITWORTH fina

DIN 11 Norm
Norme DIN 11
Norma DIN 11

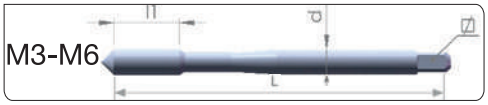
SET OF 2 HAND TAPS
JEU DE 2 TARAUDS MAIN
JUEGO DE 2 MACHOS DE MANO

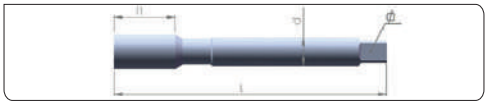
NORMAL CLASS | DIN 2181 | HSS | BRIGHT UNCOATED

2,5xd

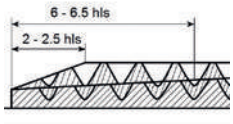


A | B | C | F1 | H1 | K | L | N



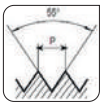


9511021	Ø	P	L	l1	d	DIN	□	●Ø
951102100140260	W 1/4"	26	56	22	6	2181	4,9	5,3
951102100380200	W 3/8"	20	70	28	7	2181	5,5	8,3
951102100716180	W7/16"	18	75	30	8	2181	6,2	9,7
951102100120160	W 1/2"	16	80	32	9	2181	7	11,1
951102100916160	W9/16"	16	80	32	11	2182	9	12,7
951102100780110	W 7/8"	19,5	45	18	14,5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



BSP G

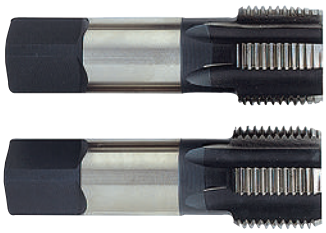
Thread Gaz Whitworth
Filet Whitwortth Gaz
Rosca Whitworth Gas



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

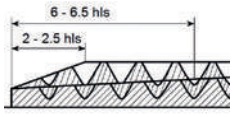
DIN ISO 228 | DIN 5157 | HSS | BRIGHT UNCOATED

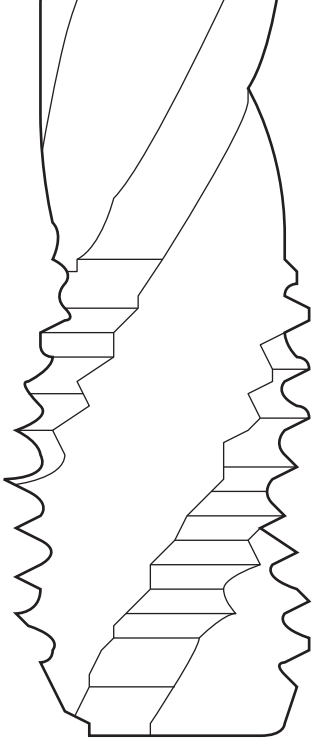


2,5xd

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

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	G1/2"	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

M MF
Metric
Metrique
Métrica

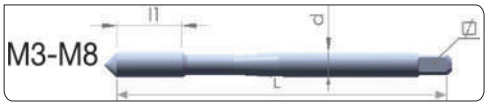
ISO 2 Norm
Norme ISO 2
Norma ISO 2

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

6H | DIN 371/374 376 | HSS E | TiN COATED

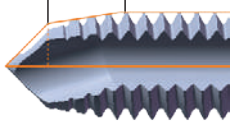
2,5xd

A | B | C



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

4 - 4 1/2 hls



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

M MF
Metric
Metrique
Métrica

ISO 2 Norm
Norme ISO 2
Norma ISO 2

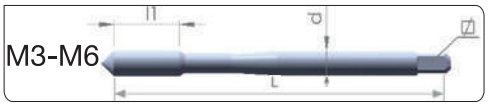
FLASHCUT MACHINE CUTTING TAP
TARAUD Á COUPE FLASHCUT
MACHO DE MÁQUINA FLASHCUT

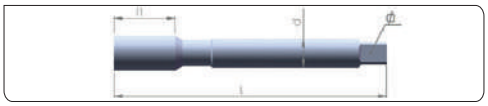
6H | DIN 371/374 376 | HSS E | TiN COATED

2,5xd

38°

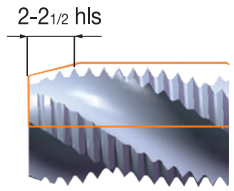
A | B | C





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

2-2 1/2 hls

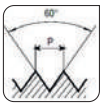


960ST51	Ø	P	L	l1	d	DIN	□	●Ø
960ST5101000150	M 10	1,5	100	14	10	371	8	8,5
960ST5101200175	M 12	1,75	110	16	9	376	7	10,25
960ST5101400200	M 14	2	110	18	11	376	9	12
960ST5101600200	M 16	2	110	18	12	376	9	14

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

M

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

TIVOLY NORM

HSS ES

GOGOR COATED

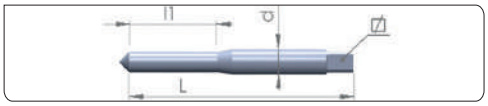
2,5xd

C

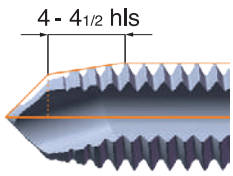
D

Q3

T3



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

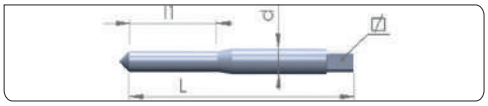
ISO 2 Norm
Norme ISO 2
Norma ISO 2

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

6H | TIVOLY NORM | HSS ES | GOGOR COATED

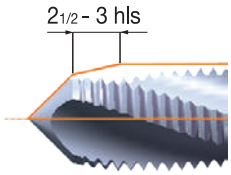
2,5xd | 15°

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

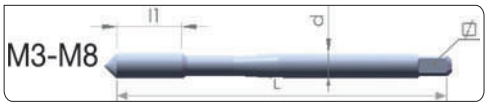
ISO 2 Norm
Norme ISO 2
Norma ISO 2

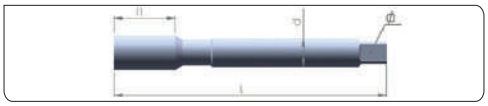
FLASHCUT MACHINE CUTTING TAP
TARAUD Á COUPE FLASHCUT
MACHO DE MÁQUINA FLASHCUT

6H | DIN 371/374 376 | HSS EE | TiCN MP COATED

2,5xd

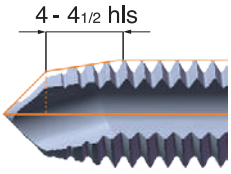
F | G | H





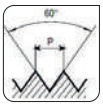
960IT21

	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

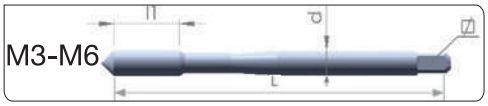

ISO 2 Norm
Norme ISO 2
Norma ISO 2

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

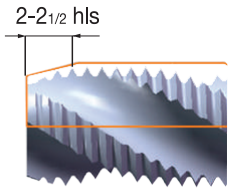
6H | DIN 371/374 376 | HSS EE | TiCN MP COATED


2,5xd


F | G | H



960IT51	Ø	P	L	l1	d	DIN	□	●Ø
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
960IT5101400150	MF14	1,5	100	18	11	374	9	12,50

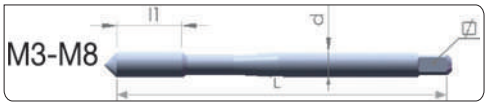
M MF

Metric
Metrique
Métrica

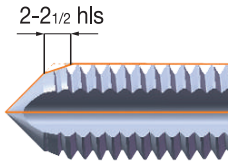
ISO 2 Norm
Norme ISO 2
Norma ISO 2

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

6H | DIN 371/374 376 | HSS EE | TiCN COATED | 2,5xd | I | J



960CT11	Ø	P	L	l1	d	DIN	□	●Ø
960CT1100300050	M 3	0,5	56	10	3,5	371	2,7	2,50
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 MF
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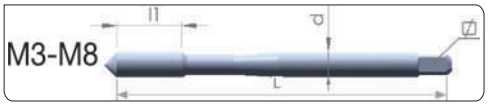
ISO 2 Norm
Norme ISO 2
Norma ISO 2

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

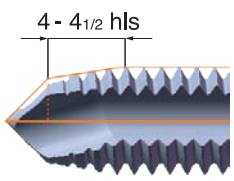
6H | DIN 371/374 376 | HSS EE | TiN COATED

2,5xd

K | L | Q1 | Q2 | P



960AT21	Ø	P	L	l1	d	DIN	□	●Ø
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 MF
Metric
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Métrica

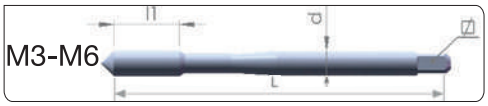
ISO 2 Norm
Norme ISO 2
Norma ISO 2

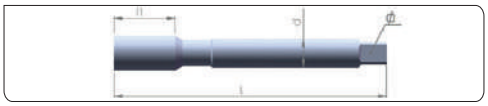
FLASHCUT MACHINE CUTTING TAP
TARAUD Á COUPE FLASHCUT
MACHO DE MÁQUINA FLASHCUT

6H | DIN 371/374 376 | HSS EE | TiN COATED

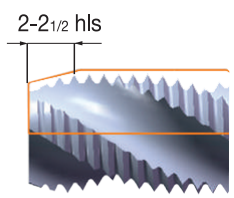
2,5xd

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

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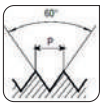
Metrique
Métrica



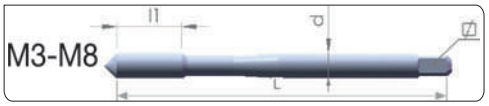
ISO 2 Norm
Norme ISO 2
Norma ISO 2

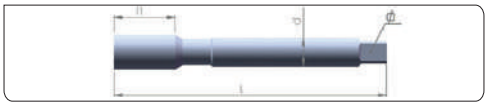
FLASHCUT MACHINE CUTTING TAP
TARAUD Á COUPE FLASHCUT
MACHO DE MÁQUINA FLASHCUT

6H | **DIN 371/376** | **HSS EE** | **OSTADAR COATED**

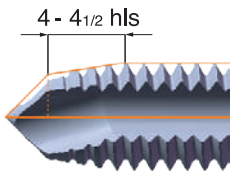
2,5xd

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



M

Metric
Metrique
Métrica

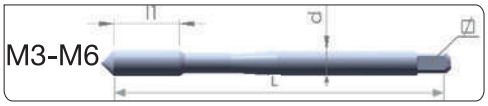
ISO 2 Norm
Norme ISO 2
Norma ISO 2

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

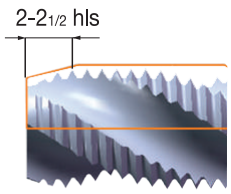
6H | DIN 371/376 | HSS EE | OSTADAR COATED

2,5xd

K | L | Q1 | Q2



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



M

Metric
Metrique
Métrica

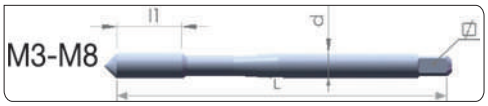
ISO 2 Norm
Norme ISO 2
Norma ISO 2

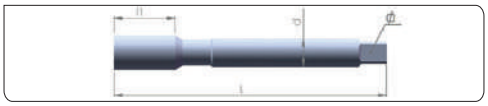
FLASHCUT MACHINE CUTTING TAP
TARAUD Á COUPE FLASHCUT
MACHO DE MÁQUINA FLASHCUT

6H | DIN 371/376 | HSS EE | NEBAR COATED

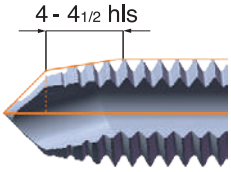
2,5xd

T1 | T2





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
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Métrica

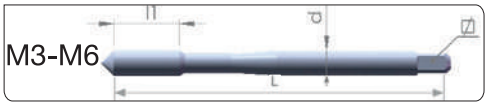
ISO 2 Norm
Norme ISO 2
Norma ISO 2

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

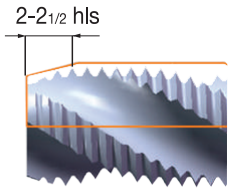
6H | DIN 371/376 | HSS EE | NEBAR COATED

2,5xd | 38°

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
MF
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Métrica

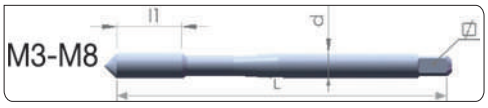
ISO 2 Norm
Norme ISO 2
Norma ISO 2

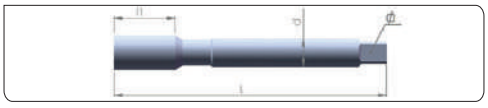
FLASHCUT MACHINE CUTTING TAP
TARAUD Á COUPE FLASHCUT
MACHO DE MÁQUINA FLASHCUT

6H | DIN 371/374 376 | HSS E | BRIGHT UNCOATED

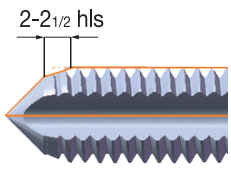
2,5xd

N2





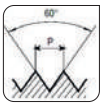
960BT11	Ø	P	L	l1	d	DIN	□	●Ø
960BT1100300050	M 3	0,5	56	10	3,5	371	2,7	2,50
960BT1100400070	M 4	0,7	63	12	4,5	371	3,4	3,30
960BT1100500080	M 5	0,8	70	14	6	371	4,9	4,20
960BT1100600100	M 6	1	80	16	6	371	4,9	5,00
960BT1100800125	M 8	1,25	90	18	8	371	6,2	6,75
960BT1101000150	M 10	1,5	100	20	10	371	8	8,50
960BT1101200175	M 12	1,75	110	22	9	376	7	10,25
960BT1101400200	M 14	2	110	25	111	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

UNC UNF

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



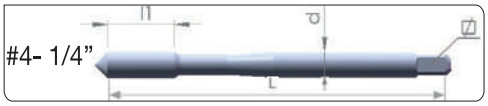
ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

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

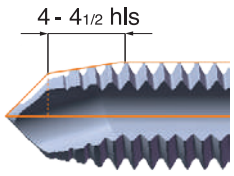
2B | DIN 371/374 376 | HSS E | TiN COATED

2,5xd

A | B | C



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

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

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

2B

DIN 371/374 376

HSS E

TiN COATED

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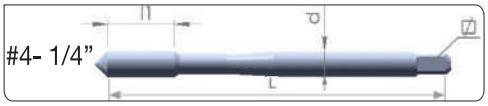
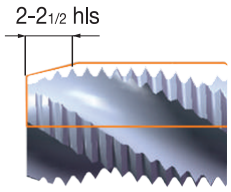


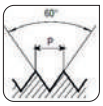
962ST51	Ø	P	L	l1	d	DIN	□	●Ø
962ST5100140200	NC 1/4	20	80	12	7	371	5,5	5,1
962ST5100380160	NC 3/8	16	90	14	9	371	7	7,9
962ST5100120130	NC 1/2	13	110	16	9	376	6,2	10,5
962ST5100340100	NC 3/4	10	125	25	14	376	11	16,5
962ST5110000080	NC 1"	8	160	30	20	376	16	22



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

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

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

2B

DIN 371/374 376

HSS EE

TiCN COATED

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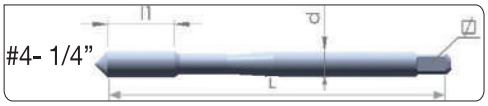
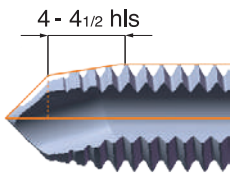


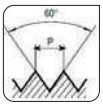
962IT21	Ø	P	L	l1	d	DIN	□	●Ø
962IT2100140200	NC 1/4	20	80	16	7	371	5,5	5,1
962IT2100380160	NC 3/8	16	90	18	9	371	7	7,9
962IT2100120130	NC 1/2	13	110	25	9	376	6,2	10,5
962IT2100340100	NC 3/4	10	125	32	14	376	11	16,5
962IT2110000080	NC 1"	8	160	36	20	376	16	22



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

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

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

2B

DIN 371/374 376

HSS EE

TiCN MP COATED

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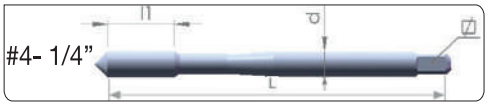
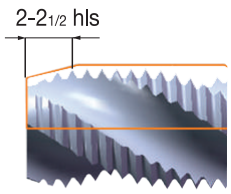
F G H



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

UNC
UNF

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

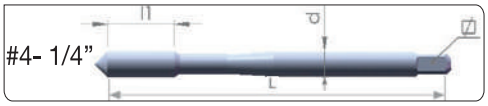
ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

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

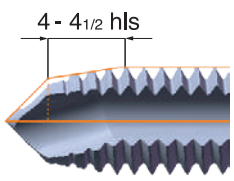
2B | DIN 371/374 376 | HSS EE | TiN COATED

2,5xd

K | L | Q1 | Q2 | P



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

UNC
UNF

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

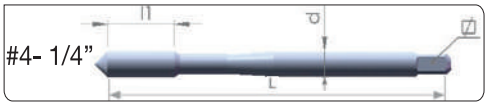
ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

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

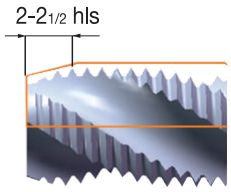
2B | DIN 371/374 376 | HSS EE | TiN COATED

2,5xd

K | L | Q1 | Q2 | P



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

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

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

2B

DIN 371/374 376

HSS EE

TiCN COATED

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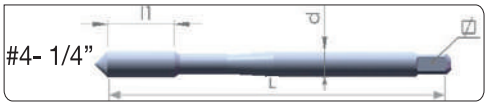
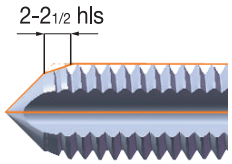


962CT11	Ø	P	L	l1	d	DIN	□	●Ø
962CT1100140200	NC 1/4	20	80	16	7	371	5,5	5,1
962CT1100380160	NC 3/8	16	90	18	9	371	7	7,9
962CT1100120130	NC 1/2	13	110	25	9	376	6,2	10,5
962CT1100340100	NC 3/4	10	125	32	14	376	11	16,5
962CT1110000080	NC 1"	8	160	36	20	376	16	22



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

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

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

2B

DIN 371/374 376

HSS E

BRIGHT UNCOATED

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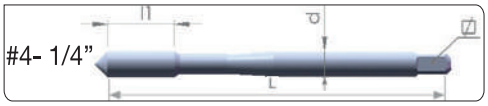
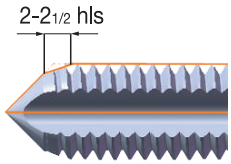
N2



962BT11	Ø	P	L	l1	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	l1	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 Whitwortth Gaz
Rosca Whitworth Gas

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

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

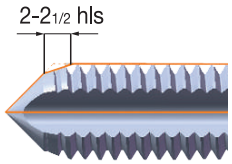
DIN ISO 228 | DIN 5156 | HSS EE | TiCN COATED

2,5xd

I | J

963CT11	Ø	P	L	l1	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

2-2 1/2 hls



BSP G

Thread Gaz Whitworth
Filetage Whitwortth Gaz
Rosca Whitworth Gas

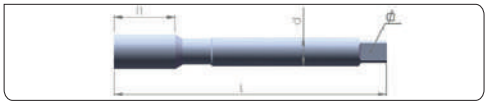
DIN ISO 228 Norm
Norme DIN ISO 228
Norma DIN ISO 228

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

DIN ISO 228 | DIN 5156 | HSS E | BRIGHT UNCOATED

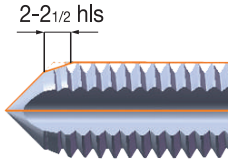
2,5xd

N2



963BT11	Ø	P	L	l1	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

2-2 1/2 hls



Metric
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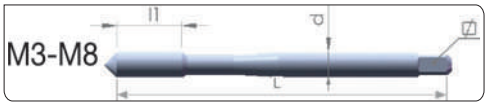
ISO 2 Norm
Norme ISO 2
Norma ISO 2

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

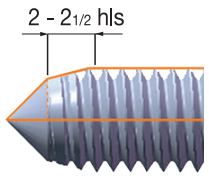
6HX | DIN 371/374 376 | HSS EE | TiN COATED

2,5xd

K | L | N3 | A | B



960AT91	Ø	P	L	l1	d	DIN	□	●Ø
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
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ISO 2 Norm
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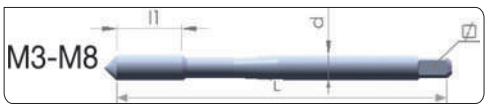
Norma ISO 2

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

6HX | DIN 371/374 376 | HSS EE | TiN COATED

2,5xd

A | B | N1 | Q1 | Q2 | K1 | L1



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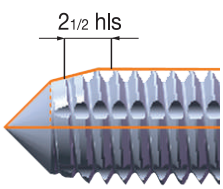
960ST9100300050	M 3	0,5	56	10	3,5	371	2,7	2,79
960ST9100400070	M 4	0,7	63	12	4,5	371	3,4	3,7
960ST9100500080	M 5	0,8	70	14	6	371	4,9	4,66
960ST9100600100	M 6	1	80	16	6	371	4,9	5,57



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

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Norma ISO 2

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

6HX

DIN 371/374 376

HSS EE

TiCN MP COATED

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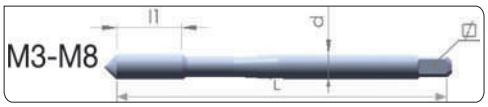

960IT91	Ø	P	L	l1	d	DIN	□	●Ø
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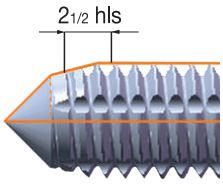
960IT9100400070	M 4	0,7	63	12	4,5	371	3,4	3,7
960IT9100500080	M 5	0,8	70	14	6	371	4,9	4,66
960IT9100600100	M 6	1	80	16	6	371	4,9	5,57
960IT9100800125	M 8	1,25	90	18	8	371	6,2	7,47
960IT9101000150	M 10	1,5	100	20	10	371	8	9,36
960IT9101200175	M 12	1,75	110	22	9	376	7	11,26
960IT9101400200	M 14	2	110	25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

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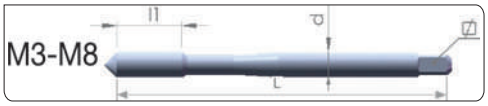
Norma ISO 2

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

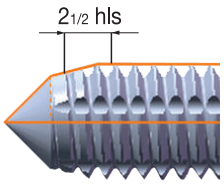
6H | DIN 371/376 | HSS EE | NEBAR COATED

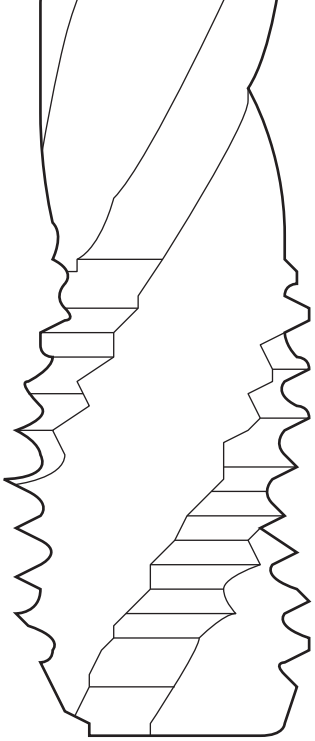
2,5xd

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

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MULTI PURPOSE MACHINE TAP
TARAUD MULTIAPPLICATION
MACHO MULTIAPLICACION

6H | ISO 529 | HSS | STEAM TREATED

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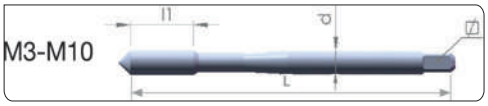
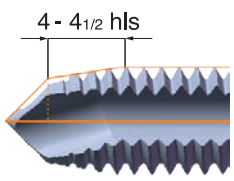
A | B | C | F | H1 | I | J | P



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

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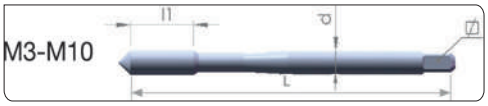
MULTI PURPOSE MACHINE TAP
TARAUD MULTIAPPLICATION
MACHO MULTIAPLICACION

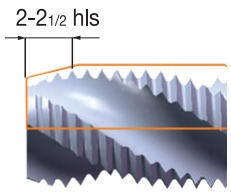
6H | ISO 529 | HSS | STEAM TREATED

2,5xd | 38°

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



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MULTI PURPOSE MACHINE TAP
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MACHO MULTIAPLICACION

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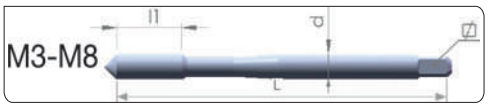
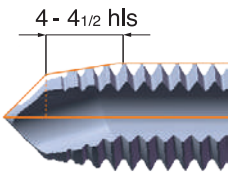
A | B | C | F | H1 | I | J | P



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

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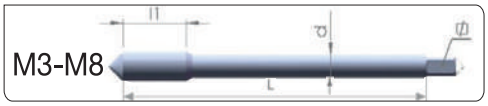
MULTI PURPOSE MACHINE TAP
TARAUD MULTIAPPLICATION
MACHO MULTIAPLICACION

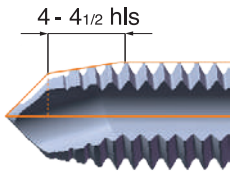
6H | DIN 374/376 | HSS E | STEAM TREATED

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
960302102600150	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

M MF

Metric
Metrique
Métrica

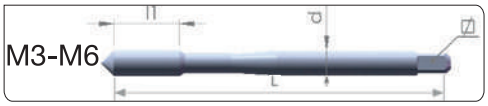
ISO 2 Norm
Norme ISO 2
Norma ISO 2

MULTI PURPOSE MACHINE TAP
TARAUD MULTIAPPLICATION
MACHO MULTIAPLICACION

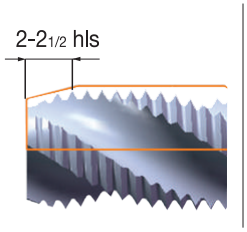
6H | DIN 371 | HSS E | STEAM TREATED

2,5xd | 38°

A | B | C | F | H1 | I | J | P



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

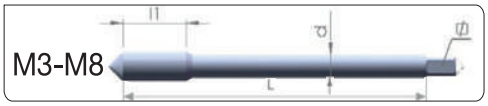
ISO 2 Norm
Norme ISO 2
Norma ISO 2

MULTI PURPOSE MACHINE TAP
TARAUD MULTIAPPLICATION
MACHO MULTIAPLICACION

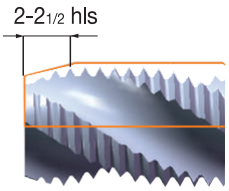
6H | DIN 374/376 | HSS E | STEAM TREATED

2,5xd | 38°

A | B | C | F | H1 | I | J | P

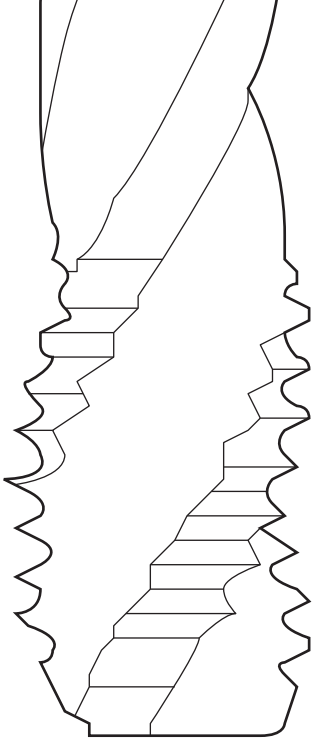


9603051	Ø	P	L	l1	d	DIN	□	●Ø
960305100400070	M 4	0,7	63	7	2,8	376	3,4	3,30
960305100500080	M 5	0,8	70	8,5	3,5	376	4,9	4,20
960305100600100	M 6	1	80	9,5	3,5	376	4,9	5,00
960305100800125	M 8	1,25	90	12	6	376	6,2	6,75
960305101000150	M 10	1,5	100	14	7	376	5,5	8,50
960305101200175	M 12	1,75	110	16	9	376	7	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

M MF — Metric / Metrique / Métrica

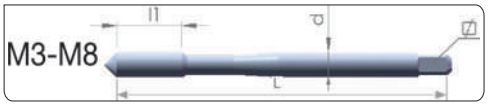
ISO 2 Norm / Norme ISO 2 / Norma ISO 2

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

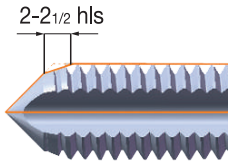
6H | DIN 371 | HSS E | BRIGHT UNCOATED

1,5xd

A | B | C | K | L1



9602011	Ø	P	L	l1	d	DIN	□	●Ø
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 MF Metric / Metrique / Métrica

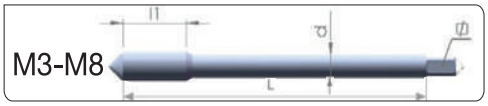
ISO 2 Norm / Norme ISO 2 / Norma ISO 2

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

6H | DIN 374/376 | HSS E | BRIGHT UNCOATED

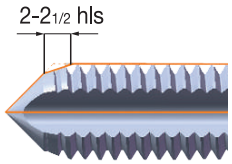
1,5xd

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

2-2 1/2 hls



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
96030110220200	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 MF
Metric
Metrique
Métrica

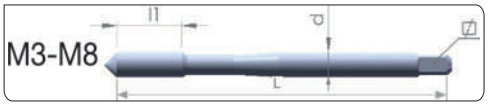
ISO 2 Norm
Norme ISO 2
Norma ISO 2

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

6H | DIN 371 | HSS E | STEAM TREATED

1,5xd

J1



9602411	Ø	P	L	l1	d	DIN	□	●Ø
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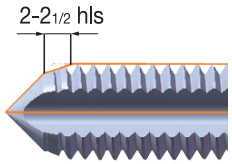
960241100400070	M 4	0,7	63	12	4,5	371	3,4	3,30
960241100500080	M 5	0,8	70	14	6	371	4,9	4,20
960241100600100	M 6	1	80	16	6	371	4,9	5,00
960241100800125	M 8	1,25	90	18	8	371	6,2	6,75
960241101000150	M 10	1,5	100	20	10	371	8	8,50

2-2 1/2 hls



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 MF
Metric
Metrique
Métrica

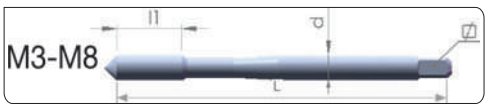
ISO 2 Norm
Norme ISO 2
Norma ISO 2

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

6H | DIN 371 | HSS E | TiN COATED

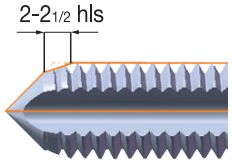
1,5xd

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
960291100450075	M 4,5	0,75	70	14	6,0	371	4,9	3,30

2-2 1/2 hls



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 / MF

Metric
Metrique
Métrica

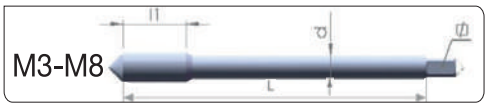
ISO 2 Norm
Norme ISO 2
Norma ISO 2

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
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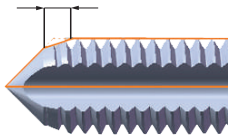
960391100800125	M 8	1,25	90	18	6,0	376	4,9	6,75
960391101000150	M 10	1,50	100	20	7,0	376	5,5	8,50
960391101200175	M 12	1,75	110	22	9,0	376	7	10,25
960391101400200	M 14	2,00	110	25	11,0	376	9	12,00
960391101600200	M 16	2,00	110	28	12,0	376	9	14,00
960391101800250	M 18	2,50	125	32	14,0	376	11	15,50
960391102000250	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

2-2 1/2 hls



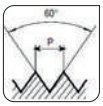
9603911	Ø	P	L	l1	d	DIN	□	●Ø
960391100800100	MF 8	1	90	18	6,0	374	4,9	7,00
960391101000100	MF 10	1	90	18	7,0	374	5,5	9,00
960391101000125	MF 10	1,25	100	20	7,0	374	5,5	8,75
960391101200125	MF 12	1,25	100	22	9,0	374	7	10,75
960391101200150	MF 12	1,5	100	22	9,0	374	7	11,50
960391101400100	MF 14	1	100	22	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
960391102000200	MF 20	2	140	25	16,0	374	12	18,00
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 / MF

Metric
Metrique
Métrica



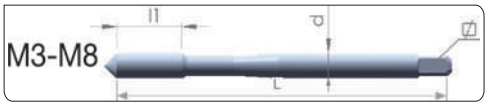
ISO 2 Norm
Norme ISO 2
Norma ISO 2

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

6H | DIN 371 | HSS EE | STEAM TREATED

1,5xd

I | J



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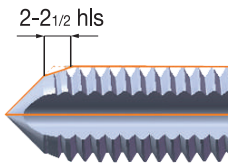
960541100250045	M 2,5	0,45	50	9	2,8	371	2,1	2,05
960541100300050	M 3	0,5	56	10	3,5	371	2,7	2,50
960541100350060	M 3,5	0,6	56	11	4	371	3	2,90
960541100400070	M 4	0,7	63	12	4,5	371	3,4	3,30
960541100500080	M 5	0,8	70	14	6	371	4,9	4,20
960541100600100	M 6	1	80	16	6	371	4,9	5,00
960541100700100	M 7	1,00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

M MF — Metric / Metrique / Métrica

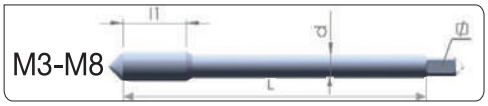
ISO 2 Norm / Norme ISO 2 / Norma ISO 2

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

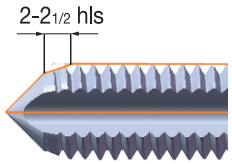
6H — DIN 374/376 — HSS EE — STEAM TREATED

1,5xd

I — J



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 / Metrique / Métrica

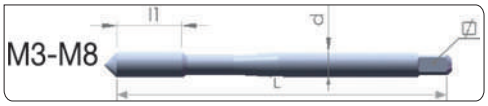
ISO 2 Norm / Norme ISO 2 / Norma ISO 2

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

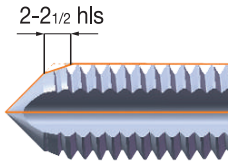
6H — DIN 371 — HSS ES — GOGOR COATED

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 / Metrique / Métrica

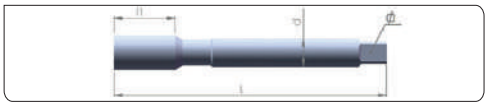
ISO 2 Norm / Norme ISO 2 / Norma ISO 2

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

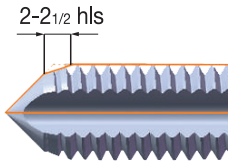
6H — DIN 376 — HSS ES — GOGOR COATED

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



M MF
Metric
Metrique
Métrica

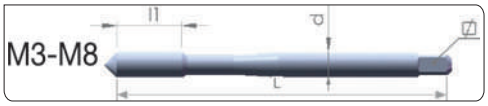
ISO 2 Norm
Norme ISO 2
Norma ISO 2

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

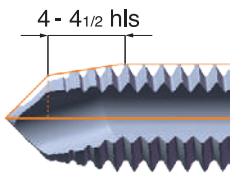
6H | DIN 371 | HSS E | BRIGHT UNCOATED

2,5xd

A | B | C



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

M MF
Metric
Metrique
Métrica

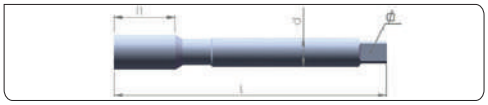
ISO 2 Norm
Norme ISO 2
Norma ISO 2

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

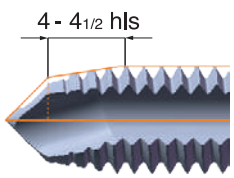
6H | DIN 374/376 | HSS E | BRIGHT UNCOATED

2,5xd

A | B | C



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

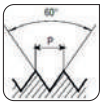


1603521	Ø	P	L	l1	d	DIN	□	●Ø
160352102000250	M 20	2,5	140	32	16	376	12	17,50
160352102400300	M 24	3	160	32	18	376	14,5	21,00
160352102700300	M 27	3	160	36	20	376	16	24,00
160352103000350	M 30	3,5	180	40	22	376	18	26,50
160352103300350	M 33	3,5	180	40	25	376	20	26,50

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

M
MF

Metric
Metrique
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

A

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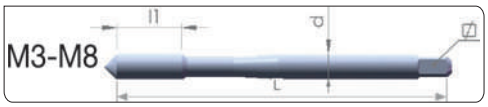
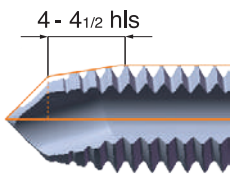


9605021	Ø	P	L	l1	d	DIN	□	●Ø
960502100200040	M 2	0,4	45	8	2,8	371	2,1	1,60
960502100250045	M 2,5	0,45	50	9	2,8	371	2,1	2,00
960502100300050	M 3	0,5	56	10	3,5	371	2,7	2,50
960502100350060	M 3,5	0,6	56	11	4	371	3	2,90
960502100400070	M 4	0,7	63	12	4,5	371	3,4	3,30
960502100500080	M 5	0,8	70	14	6	371	4,9	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

M MF Metric
Metrique
Métrica

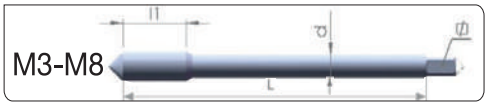
ISO 2 Norm
Norme ISO 2
Norma ISO 2

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

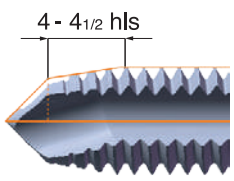
6H | DIN 374/376 | HSS EE | BRIGHT UNCOATED

2,5xd

A | B | C



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

M
MF

Metric
Metrique
Métrica

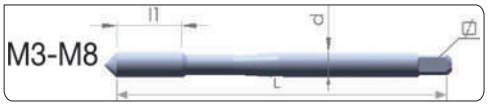
ISO 2 Norm
Norme ISO 2
Norma ISO 2

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

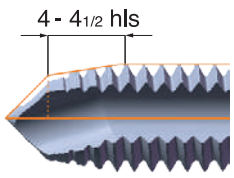
6H | DIN 371 | HSS EE | BRIGHT UNCOATED

2,5xd

A | F1



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	MF8	1	90	18	8	371	6,2	7
960584101000100	MF10	1	90	18	10	371	8	9
960584101000125	MF 10	1,25	100	20	10,0	371	8	8,75

M
MF

Metric
Metrique
Métrica

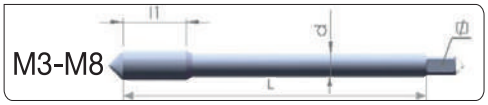
ISO 2 Norm
Norme ISO 2
Norma ISO 2

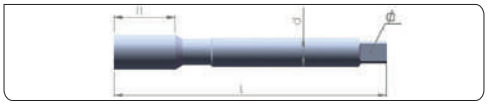
MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

6H | DIN 374/376 | HSS EE | BRIGHT UNCOATED

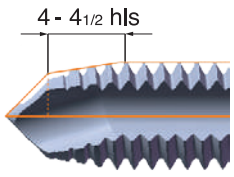
2,5xd

A | F1





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 / Métrica

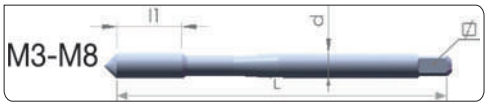
ISO 2 Norm / Norme ISO 2 / Norma ISO 2

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

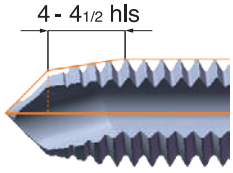
6H — DIN 371 — HSS E — STEAM TREATED

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



M

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Métrica

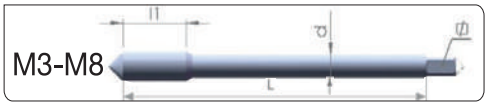
ISO 2 Norm
Norme ISO 2
Norma ISO 2

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

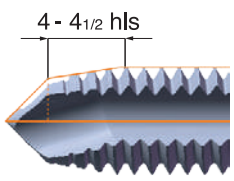
6H | DIN 376 | HSS E | STEAM TREATED

2,5xd

F1 | H | A



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



M / MF — Metric / Metrique / Métrica

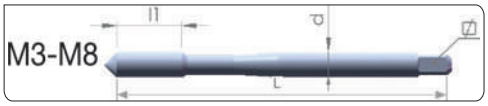
ISO 2 Norm / Norme ISO 2 / Norma ISO 2

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

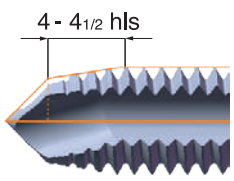
6H — DIN 371 — HSS EE — STEAM TREATED

2,5xd

F — G — H



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	MF8	1	90	18	8	371	6,2	7
960582101000100	MF10	1	90	18	10	371	8	9

M / MF — Metric / Metrique / Métrica

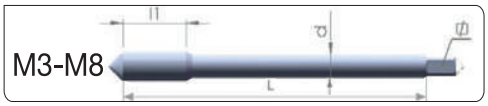
ISO 2 Norm / Norme ISO 2 / Norma ISO 2

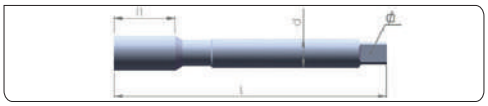
MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

6H — DIN 374/376 — HSS EE — STEAM TREATED

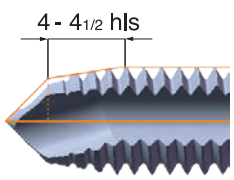
2,5xd

F — G — H





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

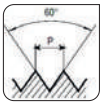


9606821	Ø	P	L	l1	d	DIN	□	●Ø
960682101600200	M 16	2,00	110	28	12,0	376	9	14,00
960682101800250	M 18	2,50	125	32	14,0	376	11	15,50
960682102000250	M 20	2,50	140	32	16,0	376	12	17,50
960682102200250	M 22	2,50	140	32	18,0	376	14,5	19,50
960682102400300	M 24	3,00	160	32	18,0	376	14,5	21,00
960682102700300	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
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

6H

DIN 371

HSS EE

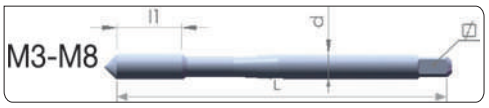
TiCN COATED

2,5xd

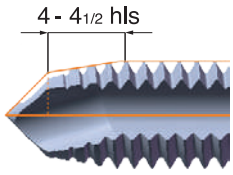
D

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

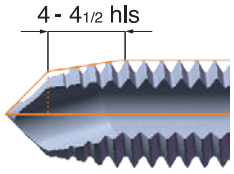
MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

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

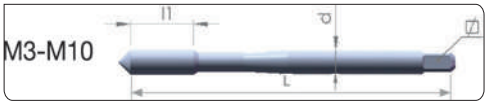
ISO 2 Norm / Norme ISO 2 / Norma ISO 2

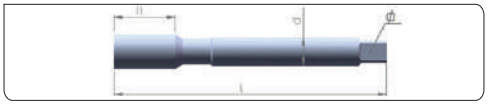
MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

6H | ISO 529 | HSS | BRIGHT UNCOATED

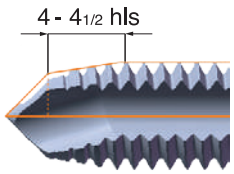
2,5xd

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 / MF

Metric
Metrique
Métrica

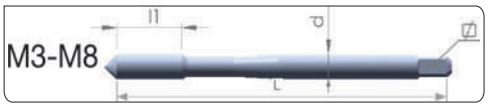
ISO 2 Norm
Norme ISO 2
Norma ISO 2

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

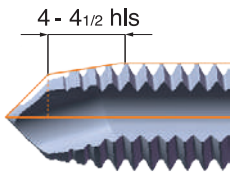
6H | DIN 371 | HSS EE | BRIGHT UNCOATED

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

M MF — Metric / Metrique / Métrica

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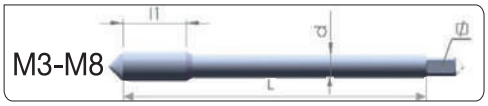
MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

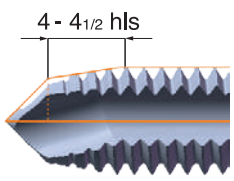
6H | DIN 374/376 | HSS EE | BRIGHT UNCOATED

2,5xd

K1 | K2 | Q1 | Q2 | P



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

M MF Metric
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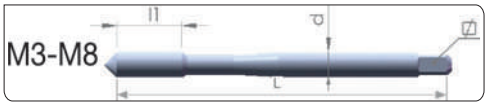
MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

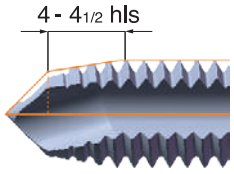
6H | DIN 371 | HSS EE | SIDAR COATED

2,5xd

N1 | N3



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

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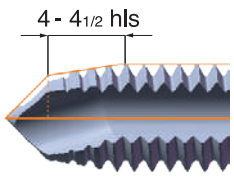
2,5xd

N1 | N3

9606881	Ø	P	L	l1	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	l1	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

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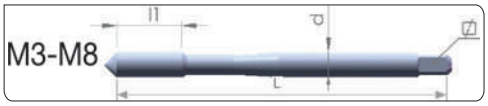
MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

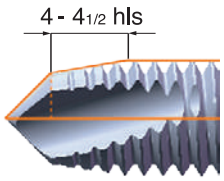
6H | DIN 371 | HSS EE | BRIGHT UNCOATED

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 / Metrique / Métrica

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

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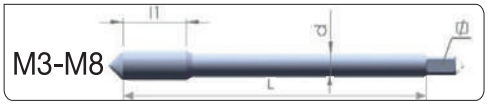
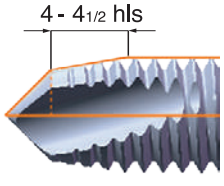
1xd

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



M MF Metric
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MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
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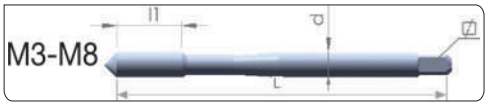
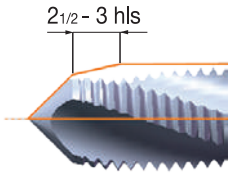
6H | DIN 371 | HSS E | BRIGHT UNCOATED

2,5xd | 15°

A | B | C



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

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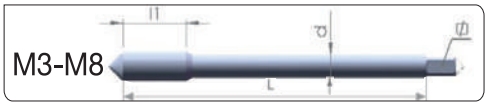
MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

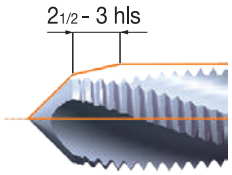
6H | DIN 374/376 | HSS E | BRIGHT UNCOATED

2,5xd | 15°

A | B | C



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	MF 16	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	MF 30	2	150	28	22,0	374	18	28,00

M MF — Metric / Metrique / Métrica

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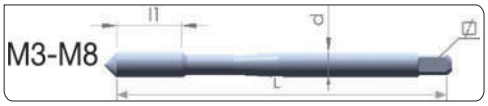
MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

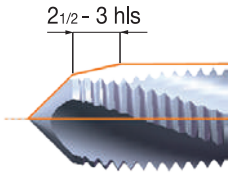
6H | DIN 371 | HSS E | TiN COATED

2,5xd | 15°

I | J1 | J2



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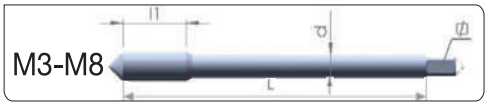
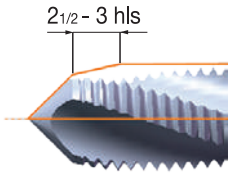
MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

6H | DIN 374/376 | HSS E | TiN COATED

2,5xd | 15°

I | J1 | J2





9603931	Ø	P	L	l1	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	l1	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

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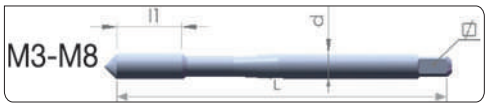
MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

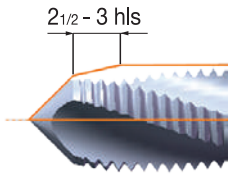
6H | DIN 371 | HSS EE | TiCN COATED

2,5xd | 15°

D | Q3 | T3



9600631	Ø	P	L	l1	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
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MACHINE CUTTING TAP
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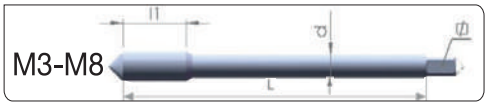
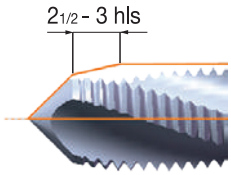
6H | DIN 376 | HSS EE | TiCN COATED

2,5xd | 15° | 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



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MACHINE CUTTING TAP
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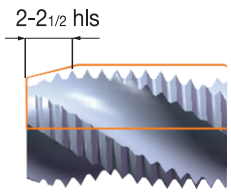
6H | DIN 371 | HSS E | BRIGHT UNCOATED

2,5xd | 38° | 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
160255100800100	MF8	1	90	10	8	371	6,2	7,00
160255101000100	MF10	1	100	14	10	371	8	9,00

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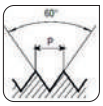

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MACHINE CUTTING TAP
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6H

DIN 374/376

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BRIGHT UNCOATED

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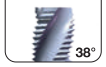
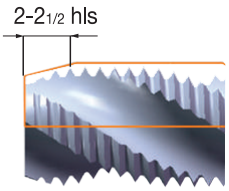


A B C

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

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6H | DIN 371 | HSS EE | BRIGHT UNCOATED

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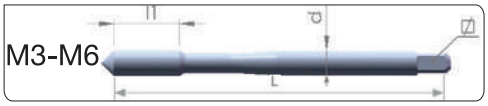
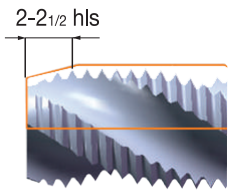
A | B | C



9605051	Ø	P	L	l1	d	DIN	□	●Ø
960505100200040	M 2	0,4	45	8	2,8	371	2,1	1,60
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

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6H | DIN 374/376 | HSS EE | BRIGHT UNCOATED

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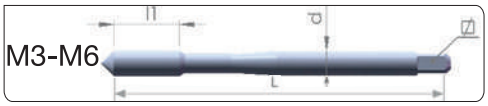
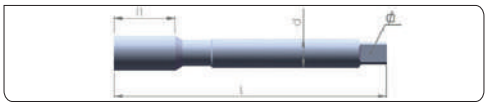
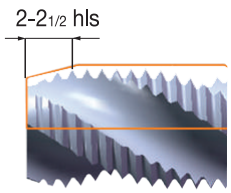
A | B | C





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

M / MF

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MACHINE CUTTING TAP
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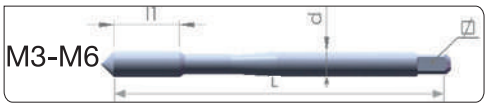
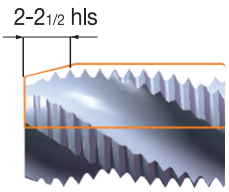


9605891	Ø	P	L	l1	d	DIN	□	●Ø
960589100200040	M 2	0,4	45	8	2,8	371	2,1	1,60
960589100250045	M 2,5	0,45	50	5	2,8	371	2,1	2,05
960589100300050	M 3	0,5	56	5	3,5	371	2,7	2,50
960589100350060	M 3,5	0,6	56	6	4,0	371	3	2,90
960589100400070	M 4	0,7	63	7	4,5	371	3,4	3,30
960589100500080	M 5	0,8	70	9	6,0	371	4,9	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

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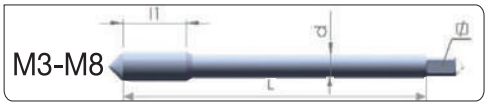
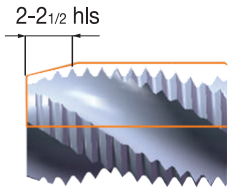


9606891	Ø	P	L	l1	d	DIN	□	●Ø
960689100600100	M 6	1	80	10	4,5	376	3,4	5,00
960689100800125	M 8	1,25	90	12	6,0	376	4,9	6,75
960689101000150	M 10	1,5	100	14	7,0	376	5,5	8,50
960689101200175	M 12	1,75	110	16	9,0	376	7	10,25
960689101400200	M 14	2	110	18	11,0	376	9	12,00
960689101600200	M 16	2	110	18	12,0	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

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MACHINE CUTTING TAP
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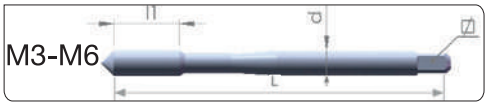

9602851	Ø	P	L	l1	d	DIN	□	●Ø
960285100200040	M 2	0,40	45	8	2,8	371	2,1	1,60
960285100250045	M 2,5	0,45	50	5	2,8	371	2,1	2,05
960285100260045	M 2,6	0,45	50	5	2,8	371	2,1	2,15
960285100300050	M 3	0,50	56	5	3,5	371	2,7	2,50
960285100350060	M 3,5	0,60	56	6	4,0	371	3	2,90
960285100400070	M 4	0,70	63	7	4,5	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

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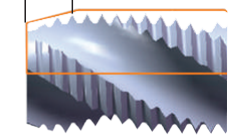

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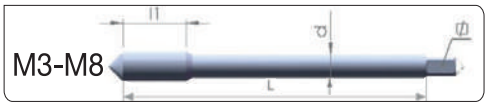
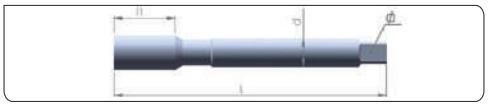
2,5xd | 38°

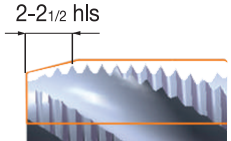
F1 | H | A





9603851	Ø	P	L	l1	d	DIN	□	●Ø
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

2-2 1/2 hls



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 / MF
Metric
Metrique
Métrica

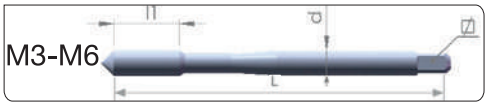
ISO 2 Norm
Norme ISO 2
Norma ISO 2

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

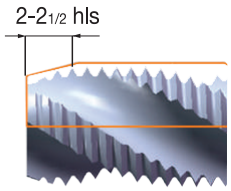
6H | DIN 371 | HSS EE | STEAM TREATED

2,5xd | 38°

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

M MF Metric
Metrique
Métrica

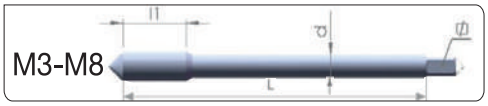
ISO 2 Norm
Norme ISO 2
Norma ISO 2

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

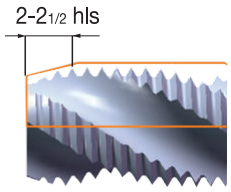
6H | DIN 374/376 | HSS EE | STEAM TREATED

2,5xd | 38°

F | G | H



9606851	Ø	P	L	l1	d	DIN	□	●Ø
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

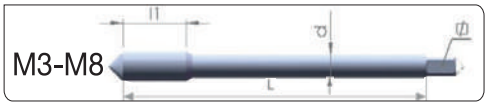
Metric
Metrique
Métrica

ISO 2 Norm
Norme ISO 2
Norma ISO 2

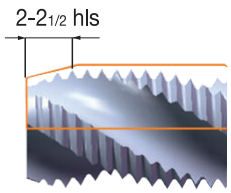
MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

6H | DIN 371 | HSS EE | BRIGHT UNCOATED | 2,5xd

K1 | K2 | Q1 | Q2 | P



9605061	Ø	P	L	l1	d	DIN	□	●Ø
960506100200040	M 2	0,40	45	9	2,8	371	2,1	1,90
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

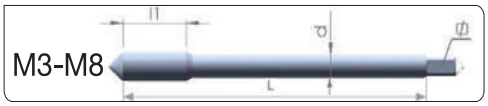
Metric
Metrique
Métrica

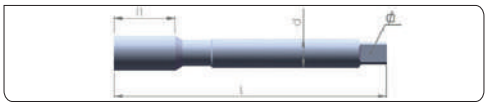
ISO 2 Norm
Norme ISO 2
Norma ISO 2

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

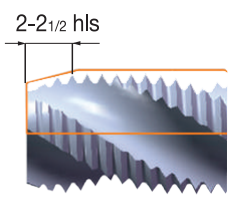
6H | DIN 374/376 | HSS EE | BRIGHT UNCOATED | 2,5xd

K1 | K2 | Q1 | Q2 | P





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

M MF
Metric
Metrique
Métrica

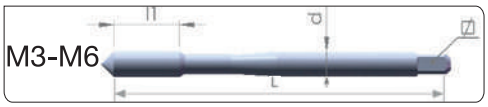
ISO 2 Norm
Norme ISO 2
Norma ISO 2

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

6H | DIN 371 | HSS EE | SIDAR COATED

2,5xd | 38°

N1 | N3



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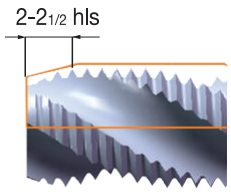
960587100400070	M 4	0,7	63	7	4,5	371	3,4	3,30
960587100500080	M 5	0,8	70	9	6,0	371	4,9	4,20
960587100600100	M 6	1	80	10	6,0	371	4,9	5,00
960587100800125	M 8	1,25	90	12	8,0	371	6,2	6,75
960587101000150	M 10	1,5	100	14	10,0	371	8	8,50



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

M
MF

Metric
Metrique
Métrica

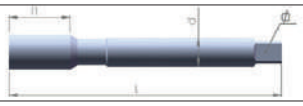
ISO 2 Norm
Norme ISO 2
Norma ISO 2

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

6H | DIN 374/376 | HSS EE | SIDAR COATED

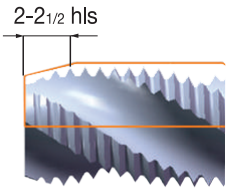
2,5xd | 38°

N1 | N3



9606871	Ø	P	L	l1	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

2-2 1/2 hls



9606871	Ø	P	L	l1	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 / Metrique / Métrica

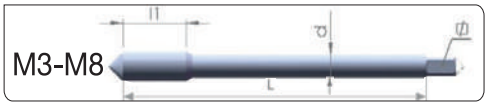
ISO 2 Norm / Norme ISO 2 / Norma ISO 2

MACHINE TAP LONG
TARAUD 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 / Metrique / Métrica

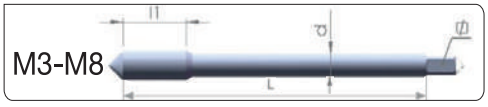
ISO 2 Norm / Norme ISO 2 / Norma ISO 2

MACHINE TAP LONG
TARAUD MACHINE LONG
MACHO DE MÁQUINA LARGO

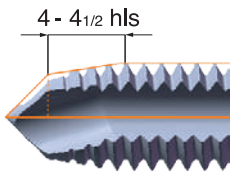
6H — NFE 66112 — HSS E — BRIGHT UNCOATED

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



UNC
UNF

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

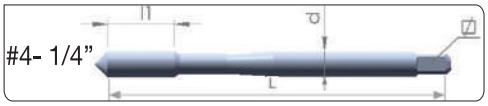
ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

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

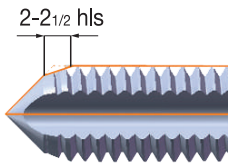
2B | DIN 371 | HSS E | BRIGHT UNCOATED

2,5xd

A | B



9622011	Ø	P	L	l1	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	l1	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

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

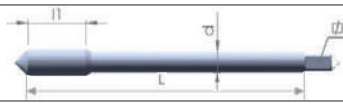
MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

2B | DIN 374/376 | HSS E | BRIGHT UNCOATED

2,5xd

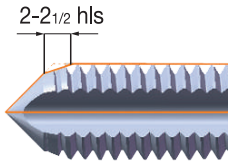
A | B

#4- 1/4”



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

2-2 1/2 hls



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

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

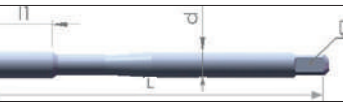
MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

2B | DIN 371 | HSS E | TiN COATED

2,5xd

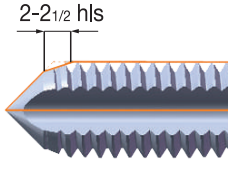
B | C | N3

#4- 1/4”



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

2-2 1/2 hls

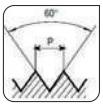


9622911	Ø	P	L	l1	d	DIN	□	●Ø
962291100012240	NC#12	24	80	14	6	371	4,9	4,5
962291100140200	NC 1/4	20	80	16	7	371	5,5	5,1
962291100516180	NC5/16	18	90	18	8	371	6,2	6,5
962291100380160	NC 3/8	16	90	18	9	371	7	7,9

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

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

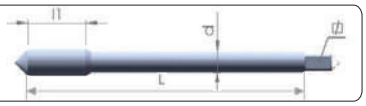
MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

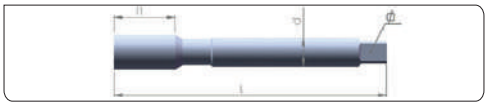
2B | DIN 374/376 | HSS E | TiN COATED

2,5xd

B | C | N3

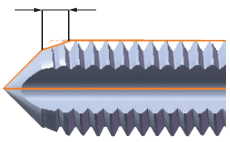
#4- 1/4”





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
962391110000080	NC 1"	8	160	36	20	376	16	22

2-2 1/2 hls



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

UNC
UNF

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

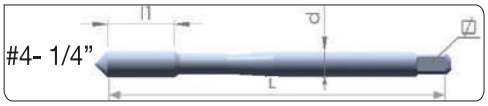
ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

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

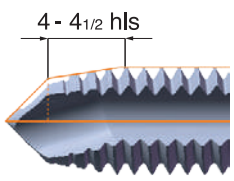
2B | DIN 371 | HSS E | BRIGHT UNCOATED

2,5xd

A | B | F1 | H1 | N2 | N3



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

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

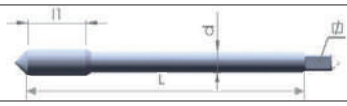
MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

2B | DIN 374/376 | HSS E | BRIGHT UNCOATED

2,5xd

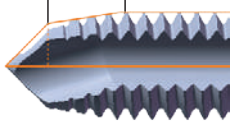
A | B | C

#4- 1/4”



9623021	Ø	P	L	l1	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

4 - 4 1/2 hls



9623021	Ø	P	L	l1	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

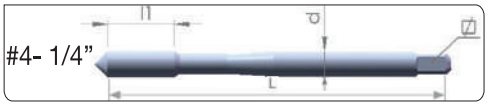
ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

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

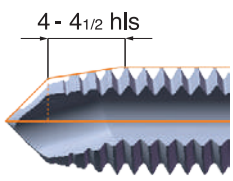
2B | DIN 371 | HSS EE | BRIGHT UNCOATED

2,5xd

A | B | C



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

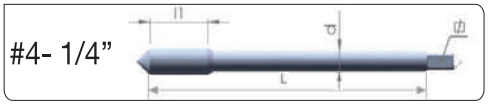
ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

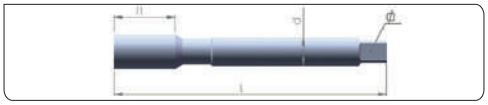
MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

2B | DIN 374/376 | HSS EE | BRIGHT UNCOATED

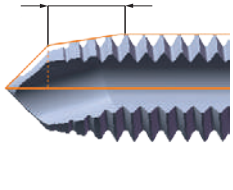
2,5xd

A | B | C





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

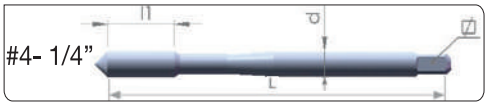
ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

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

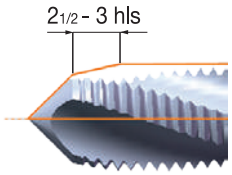
2B | DIN 371 | HSS E | BRIGHT UNCOATED

2,5xd | 15°

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

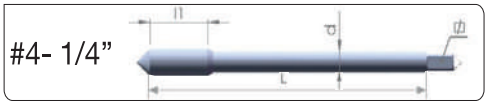
ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

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

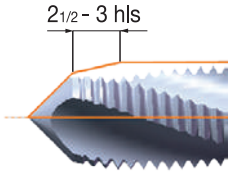
2B | DIN 374/376 | HSS E | BRIGHT UNCOATED

2,5xd | 15°

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

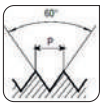


9623031	Ø	P	L	l1	d	DIN	□	●Ø
962303100580110	NC 5/8	11	110	28	12	376	9	13,5
962303100340100	NC 3/4	10	125	32	14	376	11	16,5
962303100780090	NC 7/8	9	140	32	18	376	14,5	19,25
962303110000080	NC 1"	8	160	36	20	376	16	22

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

UNC
UNF

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



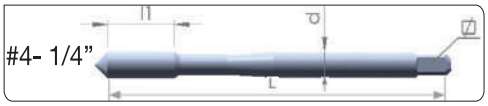
ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

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

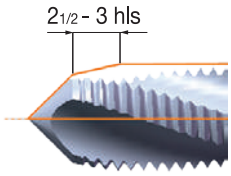
2B | DIN 371 | HSS E | TiN COATED

2,5xd | 15°

J1 | J2



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

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

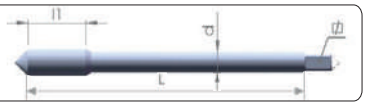
MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

2B | DIN 374/376 | HSS E | TiN COATED

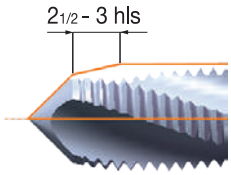
2,5xd | 15°

J1 | J2

#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

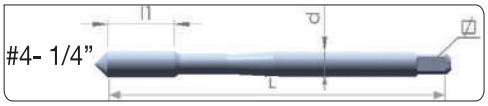
ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

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

2B | DIN 371 | HSS E | BRIGHT UNCOATED

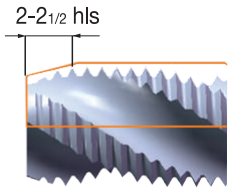
2,5xd | 38°

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

2-2 1/2 hls



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

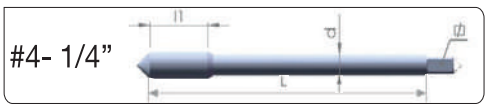
ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

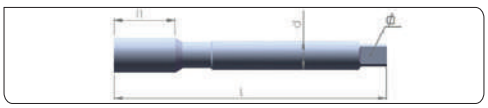
MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

2B | DIN 374/376 | HSS E | BRIGHT UNCOATED

2,5xd | 38°

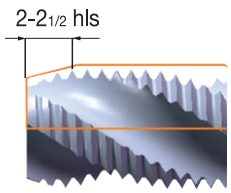
A | B | C





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

2-2 1/2 hls

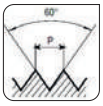


9623051	Ø	P	L	l1	d	DIN	□	●Ø
962305100780090	NC 7/8	9	140	28	18	376	14,5	19,25
962305110000080	NC 1"	8	160	30	20	376	16	22

9623051	Ø	P	L	l1	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

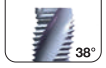


ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

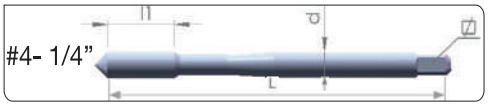
MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

2B | DIN 371 | HSS EE | BRIGHT UNCOATED

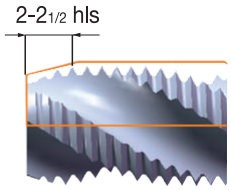
2,5xd



A | B | C



9625051	Ø	P	L	l1	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

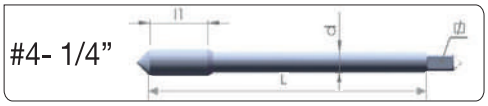
ANSI B 94.9 Norm
Norme ANSI B 94.9
Norma ANSI B 94.9

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

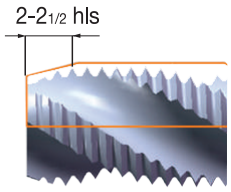
2B | DIN 374/376 | HSS EE | BRIGHT UNCOATED

2,5xd | 38°

A | B | C



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

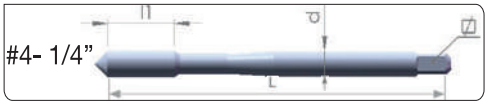
DIN 11 Norm
Norme DIN 11
Norma DIN 11

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

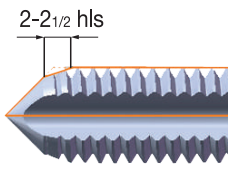
NORMAL CLASS | DIN 371 | HSS E | BRIGHT UNCOATED

2,5xd

A | B



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

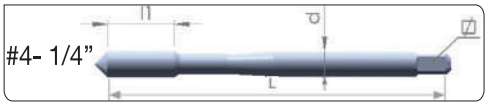
DIN 11 Norm
Norme DIN 11
Norma DIN 11

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

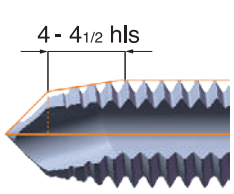
NORMAL CLASS | DIN 371 | HSS E | BRIGHT UNCOATED

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

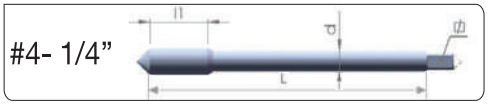
DIN 11 Norm
Norme DIN 11
Norma DIN 11

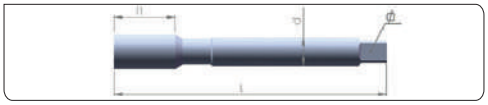
MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

NORMAL CLASS | DIN 376 | HSS E | BRIGHT UNCOATED

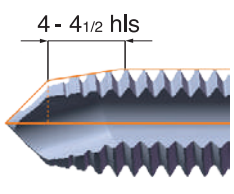
2,5xd

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

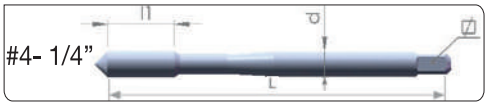
DIN 11 Norm
Norme DIN 11
Norma DIN 11

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

NORMAL CLASS | DIN 371 | HSS E | BRIGHT UNCOATED

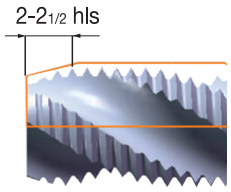
2,5xd | 38°

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

2-2 1/2 hls



BSW

Thread WHITWORTH
Filetage WHITWORTH
Rosca WHITWORTH

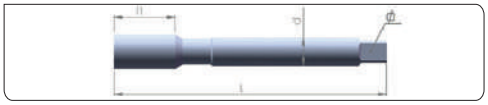
DIN 11 Norm
Norme DIN 11
Norma DIN 11

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

NORMAL CLASS | DIN 376 | HSS E | BRIGHT UNCOATED

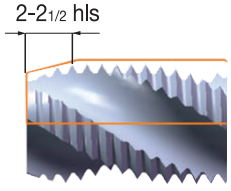
2,5xd | 38°

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

2-2 1/2 hls



BSP G

Thread Gaz Whitworth
Filetage Whitwortth Gaz
Rosca Whitworth Gas

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

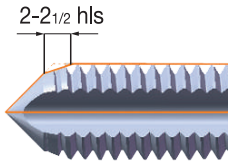
MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

DIN ISO 228 | DIN 5156 | HSS E | BRIGHT UNCOATED

2,5xd

A | B | L1 | N2

9633011	Ø	P	L	l1	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	G11/4	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 Whitwortth Gaz
Rosca Whitworth Gas

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

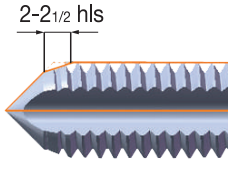
MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

DIN ISO 228 | DIN 5156 | HSS E | TiN COATED

2,5xd

A | B | L1 | I | N2 | N3

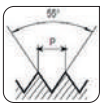
9633911	Ø	P	L	l1	d	DIN	□	●Ø
963391100180280	G 1/8"	28	90	18	6,0	5156	5,5	8,8
963391100140190	G 1/4"	19	90	18	7,0	5156	9,0	11,8
963391100380190	G 3/8"	19	100	22	11,0	5156	9,0	15,3
963391100120140	G 1/2"	14	100	25	12,0	5156	12,0	19,0
963391100580140	G 5/8"	14	125	25	16,0	5156	14,5	21,0
963391100340140	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 11/4	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 Whitwortth Gaz
Rosca Whitworth Gas



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

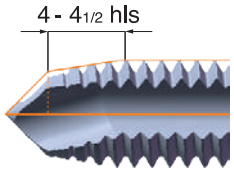
MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

DIN ISO 228 | DIN 5156 | HSS E | BRIGHT UNCOATED

2,5xd

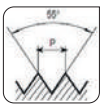
A | B | F1 | H1 | N2 | N3

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
963302111200110	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 Whitwortth Gaz
Rosca Whitworth Gas



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

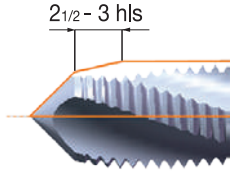
MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

DIN ISO 228 | DIN 5156 | HSS E | BRIGHT UNCOATED

2,5xd

A | B | L1 | N2

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



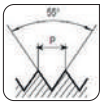
9633031	Ø	P	L	l1	d	DIN	□	●Ø
963303100120140	G 1/2"	14	125	25	16	5156	12	19
963303100580140	G 5/8"	14	125	25	16	5156	14,5	21,0
963303100340140	G 3/4"	14	140	28	20	5156	16	24,5
963303100780140	G 7/8	14	125	25	18	5156	18,0	28,3
963303110000110	G 1"	11	160	36	25	5156	20	30,8
963303111400110	G1 1/4	11	170	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

BSP G

Thread Gaz Whitworth

Filetage Whitwortth Gaz

Rosca Whitworth Gas



DIN ISO 228 Norm

Norme DIN ISO 228

Norma DIN ISO 228

MACHINE CUTTING TAP

TARAUD MACHINE Á COUPE

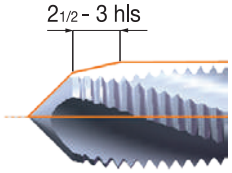
MACHO DE CORTE A MÁQUINA

DIN ISO 228 | DIN 5156 | HSS E | TiN COATED

2,5xd

A | B | L1 | L2 | N2 | N3

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 Whitwortth Gaz
Rosca Whitworth Gas

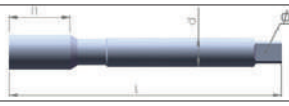
DIN ISO 228 Norm
Norme DIN ISO 228
Norma DIN ISO 228

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

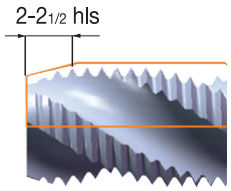
DIN ISO 228 | DIN 5156 | HSS E | BRIGHT UNCOATED

2,5xd | 38°

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 cónicos

BS 21 Norm
Norme BS 21
Norma BS 21

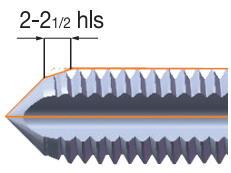
MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

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 cónicos

BS 21 Norm
Norme BS 21
Norma BS 21

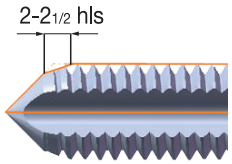
MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

simDiN 5156 | HSS | BRIGHT UNCOATED

2,5xd

A | B | C | K | L

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 tubo

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

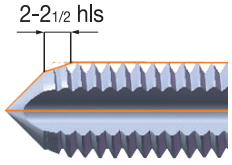
MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

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



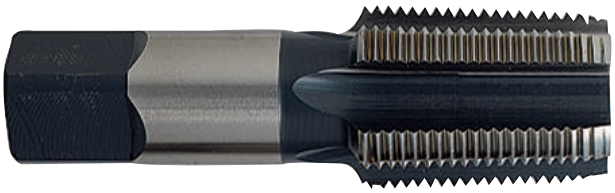
NPT

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
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

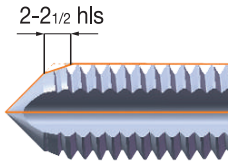
TIVOLY NORM | HSS | BRIGHT UNCOATED



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

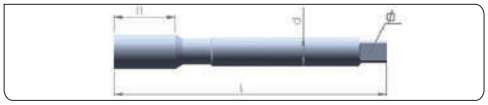
Thread DIN 40430
Filet DIN 40430
Rosca DIN 40430

FOR ELECTRICAL CONDUCTIONS
FOR CONDUCTIONS ELECTRIQUES
PARA CONDUCTOS ELECTRICOS

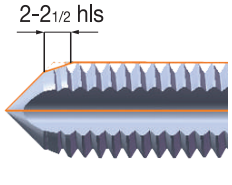
DIN 40433 | HSS E | BRIGHT UNCOATED

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
TARAUDAGE
ROSCADO

#02-05

#

ANSI NORM

NORME ANSI (USA)

NORMA ANSI (USA)

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

HAND TAP
TARAUD A MAIN
MACHO DE MANO

2B
3B

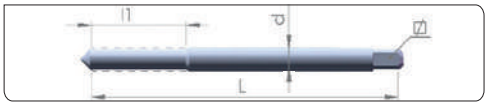
ANSI

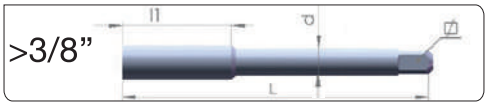
HSS

BRIGHT
UNCOATED

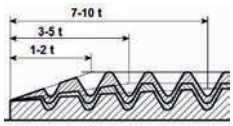
2,5xd

SETS

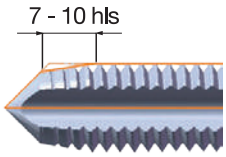




1523000	Ø	P	L	l1	d	Limit	□	●Ø
15230001010999	#0	80	1.63	.31	.1410	H1	.110	3/64
15230001011001	#1	72	1.69	.38	.1410	H1	.110	#53
15230001011000	#1	64	1.69	.38	.1410	H1	.110	#53
15230001011073	#2	64	1.75	.44	.1410	H2	.110	#50
15230001011003	#2	56	1.75	.44	.1410	H2	.110	#50
15230001011074	#3	56	1.81	.50	.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

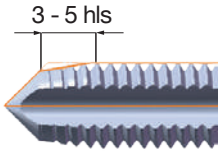


1523000	Ø	P	L	l1	d	Limit	□	●Ø
15230001010593	#0	80	1.63	.31	.1410	H1	.110	3/64
15230001010603	#1	72	1.69	.38	.1410	H1	.110	#53
15230001010598	#1	64	1.69	.38	.1410	H1	.110	#53
15230001010618	#2	64	1.75	.44	.1410	H2	.110	#50
15230001010609	#2	56	1.75	.44	.1410	H2	.110	#50



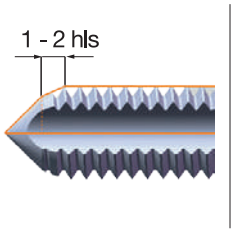
1523000	Ø	P	L	l1	d	Limit	□	●Ø
15230001010634	#3	56	1.81	.50	.1410	H2	.110	#46
15230001010625	#3	48	1.81	.50	.1410	H2	.110	#47
15230001010653	#4	48	1.88	.56	.1410	H2	.110	42
15230001010644	#4	40	1.88	.56	.1410	H2	.110	43
15230001010669	#5	44	1.94	.63	.1410	H2	.110	#38
15230001010660	#5	40	1.94	.63	.1410	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	l1	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	l1	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	l1	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



M
MF

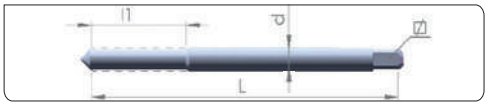
Metric
Metrique
Métrica

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

HAND TAP
TARAUD MAIN
MACHO DE MANO

6H | ANSI | HSS | BRIGHT UNCOATED

2,5xd | SETS



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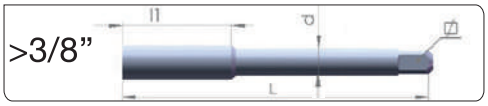
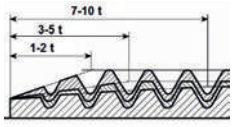
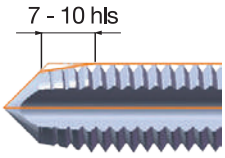


1503000	Ø	P	L	l1	d	Limit	□	●Ø
15030001012569	M1.6	0,35	1.63	.31	.1410	D3	.110	0,05
15030001012577	M8	1	2.72	1.13	.3180	D5	.238	0,28
15030001012558	M2	0,4	1.75	.44	.1410	D3	.110	0,06
15030001012578	M10	1,25	2.94	1.25	.3810	D5	.286	0,34
15030001012560	M2.5	0,45	1.81	.50	.1410	D3	.110	0,08
15030001012579	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

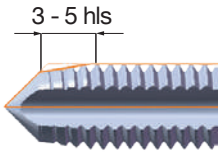


1503000	Ø	P	L	l1	d	Limit	□	●Ø
15030001012408	M1.6	0,35	1.63	.31	.1410	D3	.110	0,05
15030001012414	M2	0,4	1.75	.44	.1410	D3	.110	0,06
15030001012423	M2.5	0,45	1.81	.50	.1410	D3	.110	0,08
15030001012432	M3	0,5	1.94	.63	.1410	D3	.110	0,10
15030001012435	M3.5	0,6	2.00	.69	.1410	D4	.110	0,21
15030001012441	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

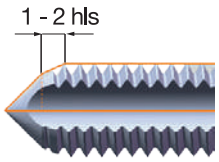


1503000	Ø	P	L	l1	d	Limit	□	●Ø
15030001012468	M8	1	2.72	1.13	.3180	D5	.238	0,28
15030001012480	M10	1,25	2.94	1.25	.3810	D5	.286	0,34
15030001012498	M12	1,25	3.38	1.66	.3670	D6	.275	0,42
15030001012501	M14	1,5	3.59	1.66	.429	D6	.322	1/2
15030001012513	M16	1,5	3.81	1.81	.4800	D6	.360	0,57
15030001012522	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
15030001012470	M8	1	2.72	1.13	.3180	D5	.238	0,28
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	0,06
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



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
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

2B
3B

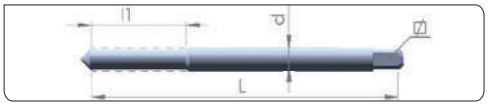
ANSI

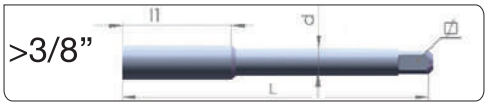
HSS

BRIGHT
UNCOATED

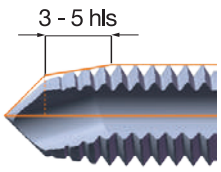
2,5xd

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

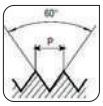


1623570	Ø	P	L	l1	d	Limit	□	●Ø
16235701010783	#1	72	1.69	.38	.1410	H1	.110	#53
16235701010792	#2	64	1.75	.44	.1410	H2	.110	#50
16235701010800	#3	56	1.81	.50	.1410	H2	.110	#46
16235701010809	#4	48	1.88	.56	.1410	H2	.110	42
16235701012358	#5	44	1.94	.63	.1410	H2	.110	#38
16235701012366	#6	40	2.00	.69	.1410	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

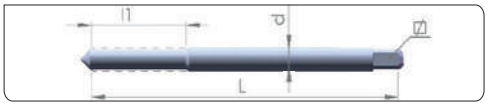


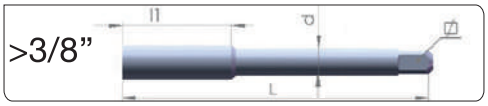
ASME B1.13M Norm
Norme ASME B 1.13M
Norma ASME B1.13M

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

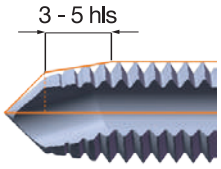
6H | **ANSI** | **HSS** | **BRIGHT UNCOATED**

2,5xd |  | **PLUG**



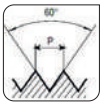


1603570	Ø	P	L	l1	d	Limit	□	●Ø
16035701012659	M2	0,4	1.75	.44	.1410	D3	.110	0,06
16035701012662	M2.5	0,45	1.81	.50	.1410	D3	.110	0,08
16035701012664	M3	0,5	1.94	.63	.1410	D3	.110	0,10
16035701012666	M3.5	0,6	2.00	.69	.1410	D4	.110	0,21
16035701012668	M4	0,7	2.13	.75	.1680	D4	.131	0,13
16035701012672	M5	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
UNF

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

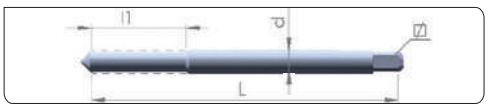


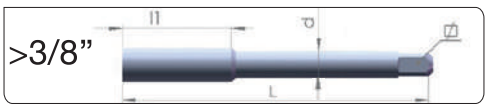
ASME B 1.1 Norm
Norme ASME B 1.1
Norma ASME B 1.1

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

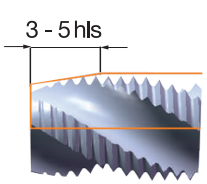
2B **3B** | **ANSI** | **HSS** | **BRIGHT UNCOATED**

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

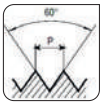


1623176	Ø	P	L	l1	d	Limit	□	●Ø
16231761010398	1/4"	20	2.50	1.00	.2550	H3	.191	#7
16231761010402	5/16	18	2.72	1.13	.3180	H3	.238	F
16231761010406	3/8"	16	2.94	1.25	.3810	H3	.286	5/16
16231761010410	7/16	14	3.16	1.44	.3230	H3	.242	U
16231761010414	1/2"	13	3.38	1.66	.3670	H3	.275	27/64

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

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
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

2B
3B

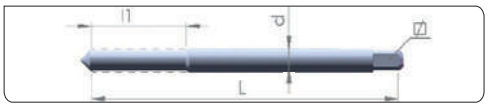
ANSI

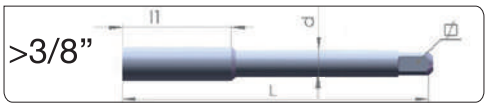
HSS

BRIGHT
UNCOATED

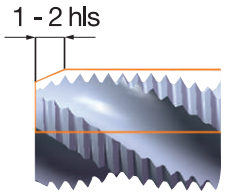
2,5xd

BOTTOM





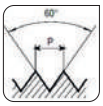
1623176	Ø	P	L	l1	d	Limit	□	●Ø
16231761010886	#3	48	1.81	.50	.1410	H2	.110	#47
16231761010888	#4	40	1.88	.56	.1410	H2	.110	43
16231761010890	#5	40	1.94	.63	.1410	H2	.110	#37
16231761010892	#6	32	2.00	.69	.1410	H3	.110	36
16231761010896	#8	32	2.13	.75	.1680	H3	.131	#29
16231761010898	#10	24	2.38	.88	.1940	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

M

Metric
Metrique
Métrica

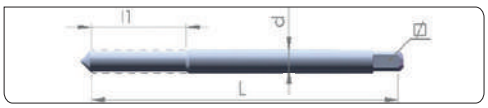


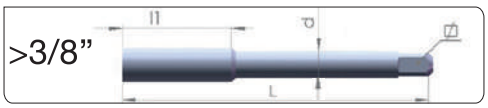
ASME B1.13M Norm
Norme ASME B 1.13M
Norma ASME B1.13M

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

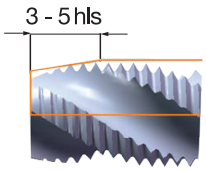
6H | **ANSI** | **HSS** | **BRIGHT UNCOATED**

1,5xd | **PLUG**





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

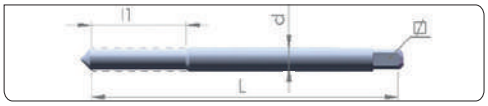
Metric
Metrique
Métrica

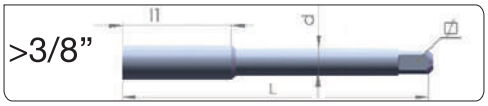
ASME B1.13M Norm
Norme ASME B 1.13M
Norma ASME B1.13M

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

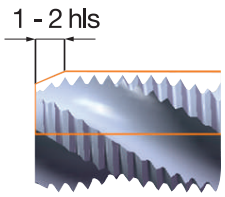
6H | **ANSI** | **HSS** | **BRIGHT UNCOATED**

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
UNF

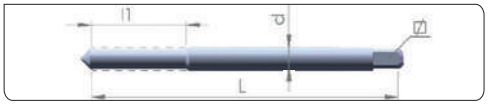
Normal series American Unified Thread
Filet Unifié Américaine série normal
Rosca Unificada Americana serie normal

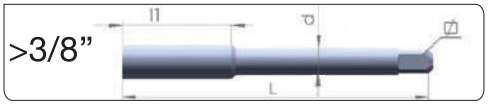
ASME B 1.1 Norm
Norme ASME B 1.1
Norma ASME B 1.1

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

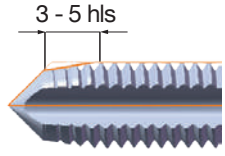
2B 3B | **ANSI** | **HSS** | **BRIGHT UNCOATED**

1,5xd | **PLUG**





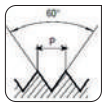
1623144	Ø	P	L	l1	d	Limit	□	●Ø
16231441010419	#4	40	2.00	.69	.1410	H2	.110	43
16231441010427	#6	32	2.38	.88	.1940	H3	.152	36
16231441010435	#8	32	2.38	.94	.2200	H3	.165	#29
16231441010438	#10	24	2.50	1.00	.2550	H2	.191	25
16231441010451	1/4"	20	2.72	1.13	.3180	H3	.238	#7
16231441010458	5/16	18	2.94	1.25	.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

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
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

2B
3B

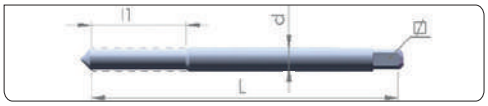
ANSI

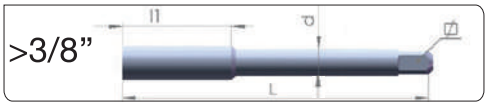
HSS

BRIGHT
UNCOATED

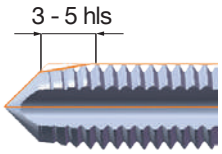
1,5xd

BOTTOM





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

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

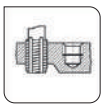
ROLL FORM TAP
TARAUD Á REFOULER
MACHO DE LAMINACIÓN

2B
3B

ANSI

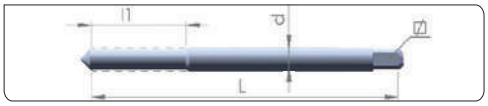
HSS

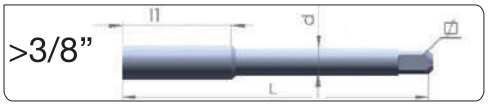
BRIGHT
UNCOATED



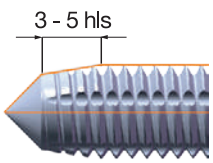
2,5xd

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

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

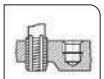
ROLL FORM TAP
TARAUD Á REFOULER
MACHO DE LAMINACIÓN

2B
3B

ANSI

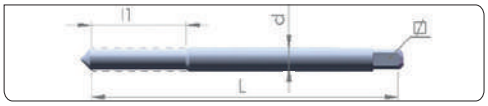
HSS

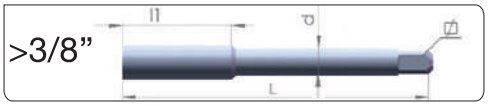
BRIGHT
UNCOATED



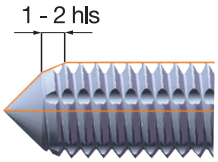
2,5xd

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

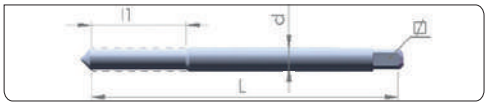
Metric
Metrique
Métrica

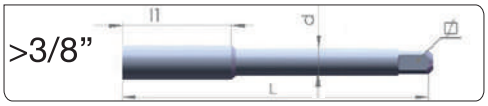
ASME B1.13M Norm
Norme ASME B 1.13M
Norma ASME B1.13M

ROLL FORM TAP
TARAUD Á REFOULER
MACHO DE LAMINACIÓN

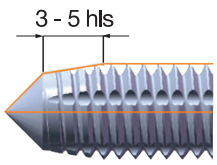
6H | ANSI | HSS | BRIGHT UNCOATED

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

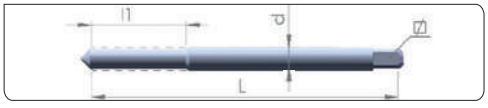
Metric
Metrique
Métrica

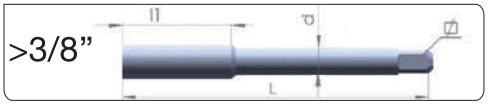
ASME B1.13M Norm
Norme ASME B 1.13M
Norma ASME B1.13M

ROLL FORM TAP
TARAUD Á REFOULER
MACHO DE LAMINACIÓN

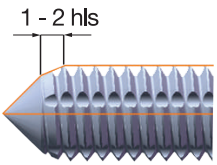
6H | ANSI | HSS | BRIGHT UNCOATED

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



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
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

2B
3B

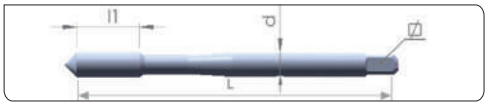
ANSI
DIN

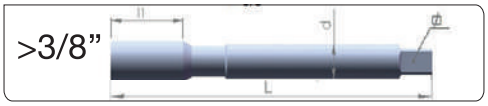
HSS
E

TiAlN
COATED

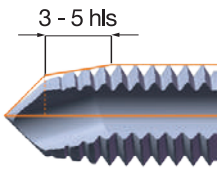
2,5xd

PLUG





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

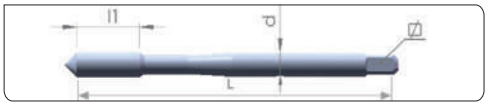
Metric
Metrique
Métrica

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

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

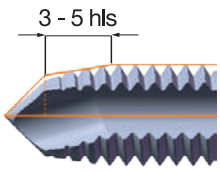
6H | ANSI DIN | HSS E | TiAlN COATED

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

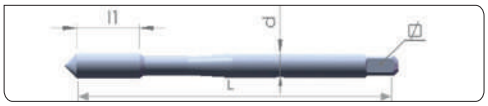
Normal series American Unified Thread
Filet Unifié Américaine série normal
Rosca Unificada Americana serie normal

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

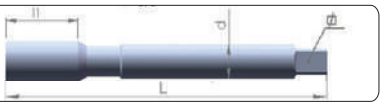
MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

2B 3B | ANSI DIN | HSS E | TiAlN COATED

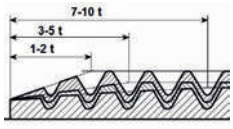
2,5xd | SEMI BOTTOM



>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

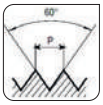


1623352	Ø	P	L	l1	d	Limit	□	●Ø
16233521757008	#10	32	2.76	.35	.1940	2B	.152	#21
16233521757012	1/4"	28	3.15	.43	.2550	2B	.191	#3
16233521757016	5/16	24	3.55	.47	.3180	2B	.238	I

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
Metrique
Métrica

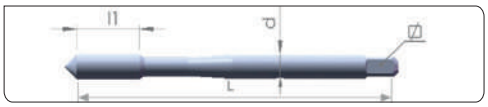


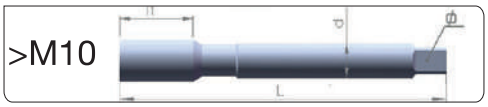
ASME B1.13M Norm
Norme ASME B 1.13M
Norma ASME B1.13M

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

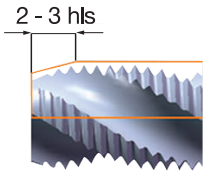
6H | **ANSI DIN** | **HSS E** | **TiAlN COATED**

2,5xd | **SEMI BOTTOM**



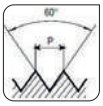


1603352	Ø	P	L	l1	d	Limit	□	●Ø
16033523474400	M4	0,7	2.48	.24	.1680	6H	.131	0,13
16033523474404	M5	0,8	2.76	.35	.1940	6H	.152	0,17
16033523474408	M6	1	3.15	.43	.2550	6H	.191	0,20
16033523474412	M8	1,25	3.55	.47	.3180	6H	.238	0,27
16033523474420	M10	1,5	3.94	.55	.3810	6H	.286	0,33
16033523474444	M12	1,75	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

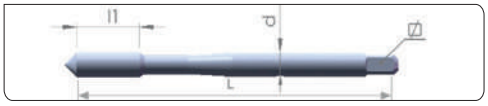


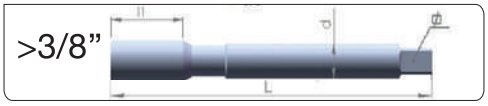
ASME B 1.1 Norm
Norme ASME B 1.1
Norma ASME B 1.1

ROLL FORM TAP
TARAUD Á REFOULER
MACHO DE LAMINACIÓN

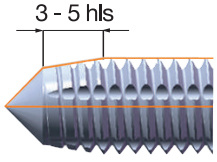
2B 3B | **ANSI DIN** | **HSS E** | **TiN COATED**

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

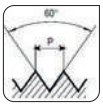


1623362	Ø	P	L	l1	d	Limit	□	●Ø
16233621765094	1/2"	13	4.33	.98	.3670	2B	.275	0,46
16233621765098	5/8"	11	4.33	1.06	.4800	2B	.360	0,58
16233621765102	3/4"	10	4.92	1.18	.5900	2B	.442	45/64
16233621765106	1"	8	6.30	1.42	.8000	2B	.600	15/16

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



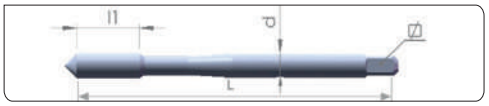
ASME B1.13M Norm
Norme ASME B 1.13M
Norma ASME B1.13M

ROLL FORM TAP
TARAUD Á REFOULER
MACHO DE LAMINACIÓN

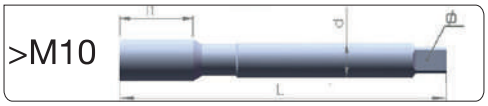
6H | **ANSI DIN** | **HSS E** | **TiN COATED**

2,5xd

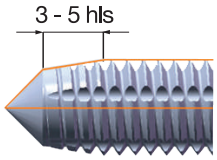
SEMI BOTTOM



>M10



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

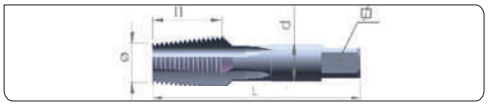
ASME B 1.20.1 Norm
Norme ASME B 1.20.1
Norma ASME B 1.20.1

MACHINE CUTTING TAP
TARAUD 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

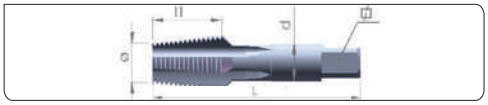
ASME B 1.20.3 Norm
Norme ASME B 1.20.3
Norma ASME B 1.20.3

MACHINE CUTTING TAP
TARAUD 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

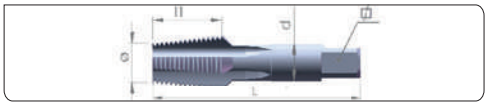
ASME B 1.20.1 Norm
Norme ASME B 1.20.1
Norma ASME B 1.20.1

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

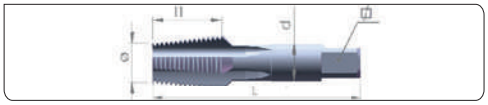
ASME B 1.20.1 Norm
Norme ASME B 1.20.1
Norma ASME B 1.20.1

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

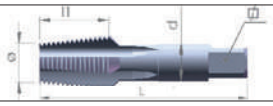
ASME B 1.20.3 Norm
Norme ASME B 1.20.3
Norma ASME B 1.20.3

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

HSS

BRIGHT UNCOATED

2,5xd



1643136	Ø	P	L	l1	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

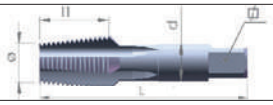
MACHINE CUTTING TAP
TARAUD MACHINE Á COUPE
MACHO DE CORTE A MÁQUINA

HSS

BRIGHT UNCOATED

2,5xd

J



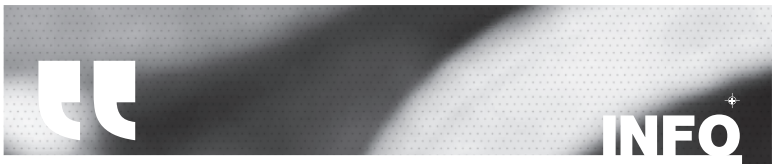
1643088	Ø	P	L	l1	d	□	●Ø
16430881011760	1/16	27	2.13	.69	.3125	.234	D
16430881011761	1/8	27	2.13	.75	.4375	.328	R
16430881011762	1/4	18	2.44	1.06	.5625	.421	7/16
16430881011763	3/8	18	2.56	1.06	.7000	.531	37/64
16430881011764	1/2	14	3.13	1.38	.6875	.515	23/62
16430881011765	3/4	14	3.25	1.38	.9063	.679	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
TARAUDAGE
ROSCADO

#03-05

APPLICATION TAPS

TARAUDS SPECIAUX
MACHOS ESPECIALES

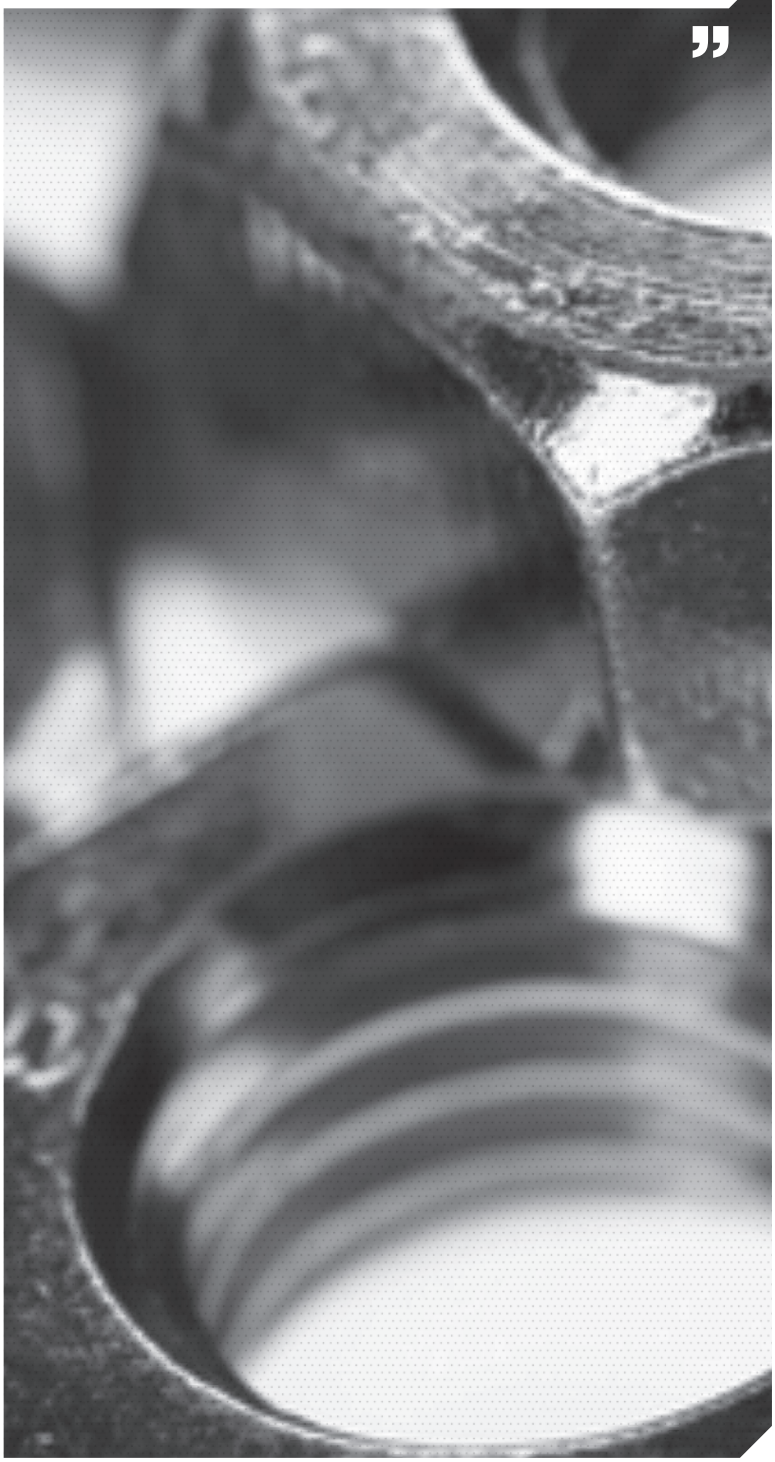


INFO

Taps with a special design for nuts manufacturing on automatic machines : long thread lenght, 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 diseno especial para la fabricacion de tuercas con maquinas automaticas : gran longitud roscada, entrada conica larga y mango largo recto o curvado



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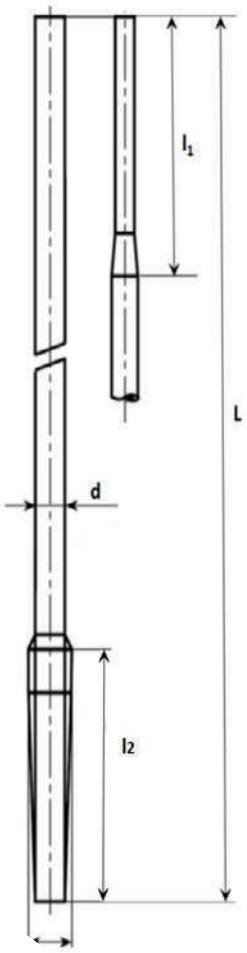
NUT TAPS
TARAUD POUR ÉCROUS.
MACHO TUERQUERO.

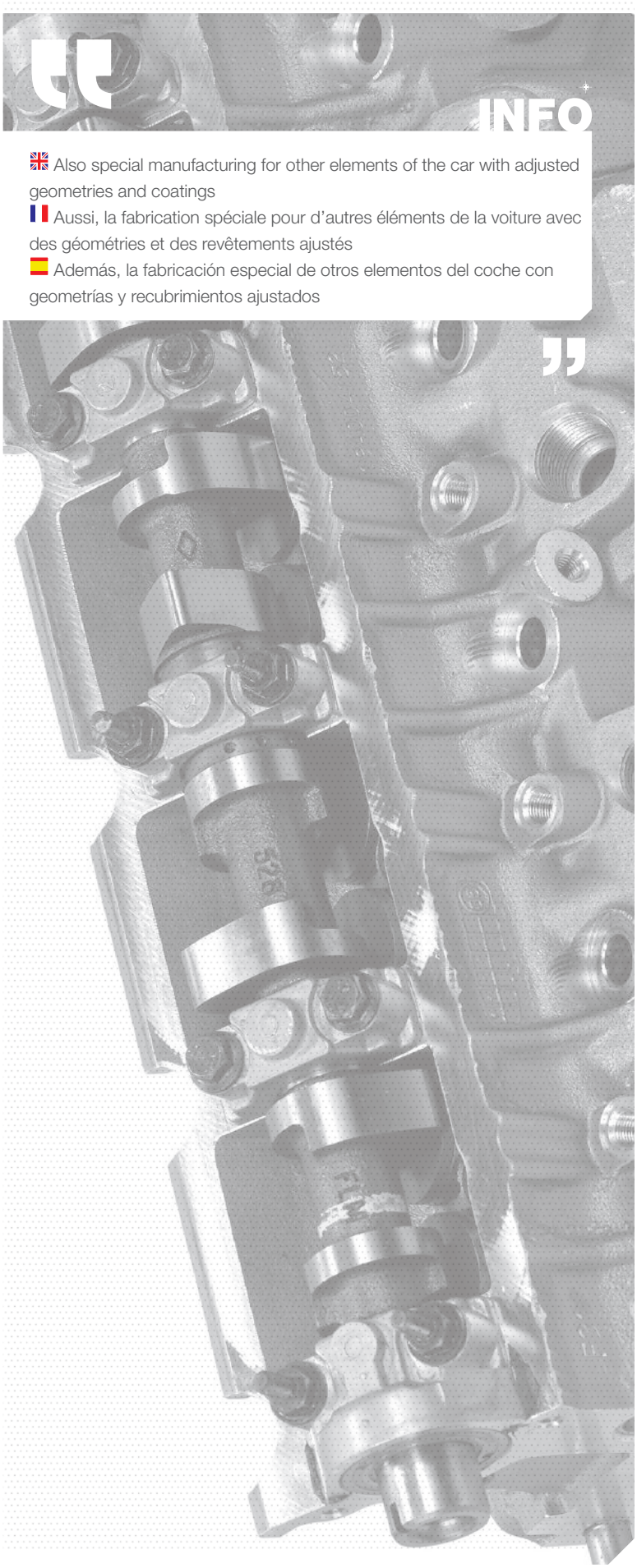
M
MF



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



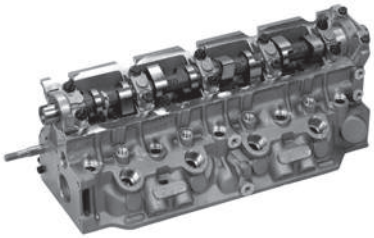
INFO

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

TIVOLY



www.**tivoly.com**

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. Goujoures helicoidaux, tolerance 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 .

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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

TIVOLY

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 rêvetement pour le filetage de tous les types de raccords filetés pour tuyaux de transport de fluides et fabriqués en fer malléable.

Diseño especifico 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

www.tivoly.com

FT

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

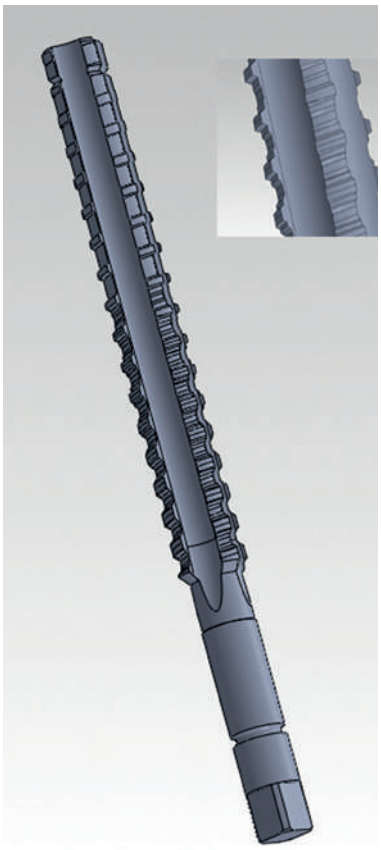
Taps with left-hand thread with special profile for threading nuts holding ground anchors

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.

TIVOLY

BUILDING INDUSTRY.
INDUSTRIE DE
LA CONSTRUCTION.
CONSTRUCCIÓN.



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

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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

TIVOLY

TECHNICAL FORM FOR TAPS

Date:

No.:

1. - TAPPING, PREVIOUS DRILLING

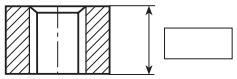
1.1- Thread dimensions: ____ Tolerance: ____

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

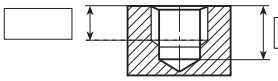
1.3- Thread buffer: ☐ No ☐ Yes Go: ____ No go: ____

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: _____

industriel@tivoly.com

TIVOLY

FORMULAIRE TECHNIQUE POUR DES TARAUDS

Date:

N°:

1. - TARAUDAGE, ALÉSAGE PRÉALABLE

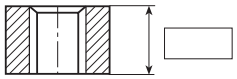
1.1- Dimension du filet: | Tolérance:

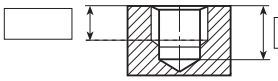
1.2- Filet ☐ Droite ☐ Gauche | Diamètre préalable :

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-taraud :

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 - Taraud: | 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 :

industriel@tivoly.com

TIVOLY

FORMULARIO TECNICO PARA MACHOS

Fecha:

Nº:

1. - ROSCADO, TALADRO PREVIO

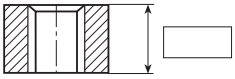
1.1- Dimensión de la rosca: | Tolerancia:

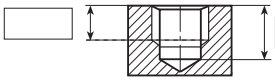
1.2- Rosca: ☐ Derecha ☐ Izquierda | Diámetro previo:

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: _____

industriel@tivoly.com

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.

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TIVOLY

FLAT & ROLL DIES
PEIGNES ET MO-
LETTES.
PEINES Y RODILLOS.

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 DIES TO POLISH OR TO BURNISH
MOLETTES POUR POLISSAGE OU BRUNISSAGE
RODILLOS PARA LAPEAR Y BRUÑIR

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

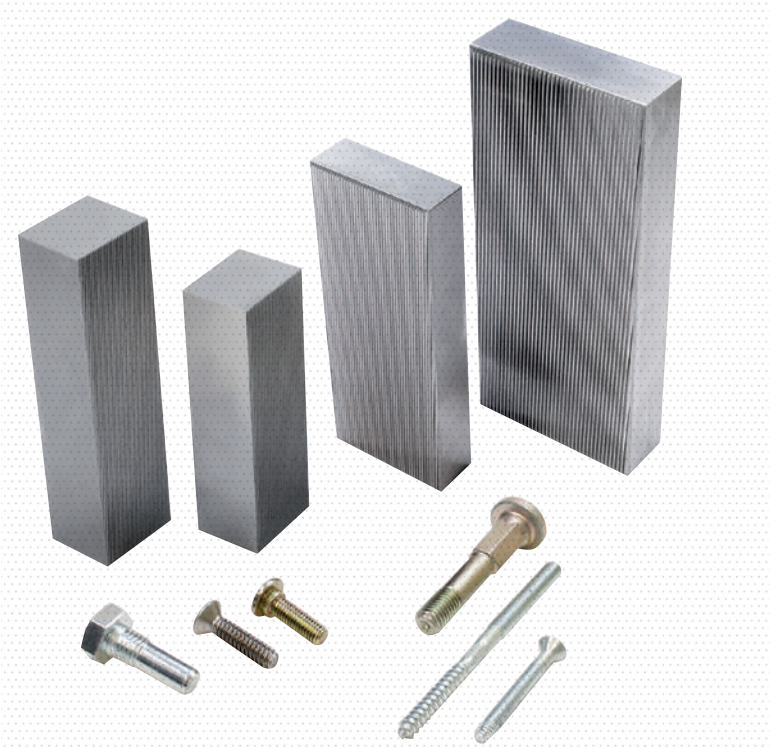
Molettes pour finir toutes sortes de profils ou avec géométries spéciales pour éliminer les tensions de surface.

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

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 filetée simple ou double et pour un ou deux utilisations. Et avec l'entrée ordinaire, filetée sur un côté pour deux utilisations ou filetée 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

Fabrication spéciale dans différentes dimensions

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CYLINDRICAL DIES FOR THREADING HEADS AND FLAT DIES TANGENT TYPE

MOLETTES POUR TÊTES DE FILETAGE ET PEIGNES TANGENTIELS.

RODILLOS PARA CABEZAL Y PEINES TANGENCIALES.

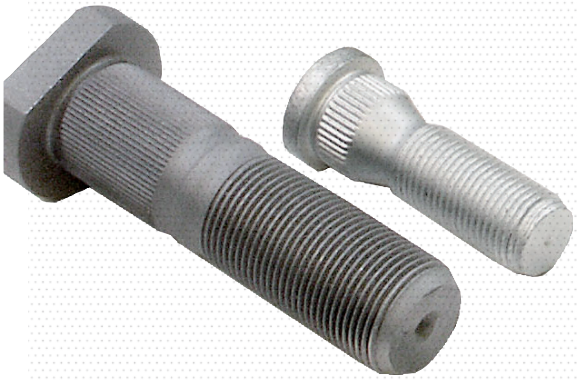
Sets of three or four cylindrical rolling dies for threading heads and sets of four flat rolling dies tangent type.

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

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TIVOLY

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

		l			L		A	G
Maquina Machine	Modelo Model Modèle	Fijo y largo Fixet long Fixed & long	Móvil y corto Mobile et court Moving & short	Angulo Angle	Fijo y largo Fixet long Fixed & long	Móvil y corto Mobile et court Moving & short	Alturas más comunes Hauteurs communes Most common heights	Espesor Épaisseur Thickness
HIGELAND	TR0	66	58	0 º			32 - 40	20
	TR1	95	85	0 º			25,4 - 31,8 - 38 - 42 - 48 - 52	25
	TR2	130	115	0 º			25,4 - 31,75 - 44,5 - 52 - 62	30
	TR3	150	130	0 º			31,75 - 51 - 58 - 65 - 83	35
	TR4	170	150	0 º			31,8 - 51 - 68 - 83 - 105	40
	TR5	210	190	0 º			83 - 105	50
	TR6	255	230	0 º			83 - 105 - 115	55
INGRAMATIC	RP0	66	58	0 º			32 - 40	20
	RP1	95	85	0 º			25,4 - 31,8 - 38 - 42 - 48 - 52	25
	RP2	130	115	0 º			25,4 - 31,8 - 44,5 - 52 - 62 - 83	30
	RP3	150	130	0 º			31,8 - 50,8 - 58 - 65 - 83 - 105	35
	RP3L	170	150	0 º			50,8 - 58 - 65 - 83 - 105	35
	RP4	170	150	0 º			58 - 65 - 83 - 105	30
	RP5	210	190	0 º			83 - 100 - 105	35
	RP6	255	230	0 º			83 - 105 - 117,5	50
KAYSER	PHCV	70	60	0 º			35	25
	N1	89,5	69,8	0 º			38,1	20,5
	PICU	120	100	0 º			48	40
	N3	130	115	0 º			48	30
	PKCU	150	150	0 º			65	50
	PLCU	190	190	0 º			85	50
	PMCU	220	220	0 º			85	50
MANVILLE	OC-130C	82,6	69,9	5 º	86,2	73,5	31,8 - 41,3	20,6
	2B - 2C	127	108	5 º	131,2	112,2	41,3 - 50,8 - 54 - 66,7	23,8
	250C	146	127	5 º	150,2	131,2	54	23,8
	3B - 3C - 375C	171,5	152,4	5 º	176,8	157,7	41,3 - 54 - 50,8 - 63,5 - 66,5 - 76,2	30,2
	4B - 500C	215,9	190,5	5 º	222,3	196,9	54 - 69,9 - 76,2 - 104,8	36,5
	5B - 625C	254	228,6	5 º	261,5	236,1	66,7 - 82,6 - 104,8 - 117,5	42,9
	6B - 750C	304,8	279,4	5 º	313,4	288,0	66,7 - 88,9 - 104,8 - 117,5 - 130,2	49,2
	7B	406,4	381	5 º	416,1	390,7	57,2 - 82,6 - 114,3 - 130,2	55,6
MALMEDIE	AG3,5	66	58	0 º			32 - 40	20
	AG5	95	85	0 º			38 - 42 - 54	25
	AG6,5	130	115	0 º			48	30
	AG8	150	130	0 º			58 - 65 - 80 - 105	35
	AG10	170	150	0 º			68	40
	AG13	210	190	0 º			83 - 105	50
	AG20	315	290	0 º			125	60
NEDSCHROEF	BV2-HTP2	146	127	5 º	148,8	129,8	25,4 - 31,7 - 38,1 - 44,4	15,9
	BV3-HTP3	171,5	152,4	0 º	174,3	155,2	31,7 - 38,1 - 44,5 - 50,8 - 66,7	15,9
	BV4-HTP4	215,9	190,5	0 º	219,5	194,1	38,1 - 50,8 - 63,5 - 76,2 - 82,6	20,6
	BV5-HTP5	254	228,5	0 º	258,2	232,7	50,8 - 63,5 - 76,2 - 104,8	23,8
	BV6-HTP6	305	279	0 º	309,4	283,4	50,8 - 63,5 - 76,2	25,4
	HTP6	304,8	279,4	0 º	313,7	288,3	50,8 - 57,2 - 63,5 - 76,2 - 82,6	51
	BV6	351,1	321,1	0 º	360,0	330,0	65 - 100 - 130	51
OMEGA	RF5	90	80	0 º			40	25
	RF6	95	85	0 º			38 - 42 - 54	25
	RA2	130	115	0 º			54 - 62 - 82 - 105	30
PELTZER	FWK6	127	108	5 º	129,8	110,8	25,4 - 31,7 - 38	15,9
EHLERS	FWK8	146	127	0 º	148,8	129,8	31,7 - 38,1 - 38	15,9
	FWK10	171,5	152,4	0 º	174,3	155,2	38,1 - 50,8 - 63,5	15,9
	FWK12	215,9	190,5	0 º	219,5	194,1	38,1 - 50,8 - 63,5	20,6
	FWK16	254	228,6	0 º	257,9	232,5	44,4 - 50,8 - 63,5	22,2
	FWK20	304,8	279,4	0 º	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	l Fijo y largo Fixet long Fixed & long	l Móvil y corto Mobile et court Moving & short	Angulo Angle	L Fijo y largo Fixet long Fixed & long	L Móvil y corto Mobile et court Moving & short	A Alturas más comunes Hauteurs communes Most common heights	G Espesor Épaisseur Thickness
RAT	1	130	115	0 º			48 - 51	30
	2	170	150	0 º			65 - 71	40
	3	260	130	0 º			40 - 60 - 65 - 70 - 75 - 105	45
	4	305	280	0 º			50 - 82 - 95 - 120	50
SACMA	KSO 1/R	82,6	69,9	5 º	86,2	73,5	31,8 - 41,3	20,6
	RU1 S, RU1 CL	101,6	88,9	5 º	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 º	108,6	91,1	31,8 - 41,3	12,7
	SP 27	127	108	5 º	129,8	110,8	31,8 - 44,5 - 54	15,9
	RU 2, KRU 2	127	108	5 º	131,2	112,2	25,4 - 28,6 - 31,8 - 41,3 - 50,8 - 67	23,8
	SP 28	146	127	5 º	148,8	129,8	25,5 - 31,8 - 44,5 - 54	15,9
	SP 37	171,5	152,4	5 º	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 º	219,5	194,1	38,1 - 50,8 - 63,5 - 76,2 - 82,6	20,7
	SP 48	254	228,6	5 º	257,9	232,5	38,1 - 44,5 - 50,8 - 63,5 - 76,2 - 88,9	22,2
SALVI	500	100	90	0 º			50	40
	500RG	213,5	205	0 º			100	49
SASPI	GV00	45	38	0 º			28,5	12
	GV0	66	58	0 º			32	20
	GV01	95	85	0 º			38 - 42 - 54	25
	GV1 - OLS	101,6	88,9	5 º	105,2	92,5	41,3	20,6
	GV2	130	115	0 º			54 - 62 - 82 - 105	30
	GV2 - 10	127	108	5 º	131,2	112,2	41,3 - 50,8 - 54 - 66,7	23,8
	GV2 - 20	170	150	0 º			80	30
	GV3	150	130	0 º			58 - 65 - 80 - 105	35
	GV3 - 20	171,4	152,4	5 º	176,7	157,7	41,3 - 54 - 50,8 - 63,5 - 66,7 - 76,2	30,2
	GV4	170	150	0 º			40 - 63 - 68 - 105	40
	GV4 - 30	215,9	190,5	5 º	222,3	196,9	54 - 69,9 - 76,2 - 104,8	36,5
	GV5 - 40	254	228,6	5 º	261,5	236,1	66,7 - 82,6 - 104,8 - 117,5	42,9
	GV6 - 50	304,8	279,4	5 º	313,4	288,0	66,7 - 88,9 - 104,8 - 117,5 - 130,2	49,2
	GV6 - 60	406,4	381	5 º	416,1	390,7	57,2 - 82,6 - 114,3 - 130,2	55,6
SIMA	R6	82,6	69,9	5 º	86,2	73,5	25,4 - 31,8 - 41,3 -66,7	20,6
	R6-L-R8	101,6	88,9	5 º	105,2	92,5	25,4 - 31,8 - 41,3 - 50,8 - 55,6 - 66,7	20,6
	R10	127	108	5 º	131,2	112,2	25,4 - 31,8 - 41,3 - 50,8 - 55,6 - 66,7	23,8
TLM	RP4	66	58	0 º			32	20
	RP6	95	85	0 º			38 - 42 - 54	25
	RP8	130	115	0 º			54 - 62 - 82 - 105	30
	RP10	150	130	0 º			58 - 65 - 80 - 105	35
	RP10 L	170	150	0 º			68 - 105	40
TRIVULCIO	P	75	70	0 º			30	30
	H	95	90	0 º			50	30
	G	130	125	0 º			50	40
URBIS	K-2HS	95	85	0 º			42	25
	K-20(n)	150	130	0 º			58	35
	K-20(r)	170	150	0 º			65	40
	K-20(e)	171,5	152,4	5 º	176,8	157,7	79,4	30,2
	K-30(n)	210	190	0 º			83	50
	K-30(e)	215,9	190,5	5 º	222,3	196,9	104,8	36,5
WATERBURY	WF000	45,2	38,1	5 º	47,3	40,2	28,5	12
FARREL	WF00	50,8	44,5	5 º	53,9	47,6	15,9 - 28,6	17,5
	WF0 / GW 32-0	82,6	69,9	5 º	86,2	73,5	19 - 25,4 - 31,8 - 42	20,6
	WF10-15	101,6	88,9	5 º	105,2	92,5	19 - 25,4 - 31,8 - 42	20,6
	WF10	127	107,9	5 º	131,2	112,1	25,4 - 28,6 - 31,8 - 41,3 - 50,8 - 66,7	23,8
	WF20	171,5	152,4	5 º	176,8	157,7	31,8 - 41,3 - 50,8 - 66,7 - 79,4	30,2
	WF30	215,9	190,5	5 º	222,3	196,9	50,8 - 69,9 - 82,6 - 104,8	36,5
	WF40	254	228,6	5 º	261,5	236,1	66,8 - 82,6 - 104,8 - 117,5	42,9
	WF50	304,8	279,4	5 º	313,4	288,0	66,7 - 82,6 - 104,8 - 117,5 - 130,2	49,2
	WF60	406,4	381	5 º	416,1	390,7	92,1 - 104,8 - 117,5 - 130,2 - 142,9	55,6
	WF70	508	482,6	5 º	518,8	493,4	92,1 - 104,8 - 117,5 - 130,2 - 142,9	61,9

TIVOLY

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

M
MF

Ø	Paso Pas Pitch			Diam. Prev.		No. Entr.	Para diámetro exterior teórico / Pour diamètre exterieur theorique 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							

TIVOLY

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

UNC
UNF

Ø	Paso Pas Pitch	Ø mm	P mm	Diam. Prev. mm		No. Entr.	Para diámetro exterior teórico / Pour diamètre exterieur theorique For theoretical outer diameter								
							+1 Ent.	+2 Ent.	+3 Ent.	+4 Ent.	+5 Ent.	+6 Ent.	+7 Ent.	+8 Ent.	+9 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								

TIVOLY

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

UNC
UNF

Ø	Paso Pas Pitch	Ø mm	P mm	Diam. Prev. mm		No. Entr.	Para diámetro exterior teórico / Pour diamètre exterieur theorique For theoretical outer diameter								
							+1 Ent.	+2 Ent.	+3 Ent.	+4 Ent.	+5 Ent.	+6 Ent.	+7 Ent.	+8 Ent.	+9 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								

TIVOLY

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

BSW
BSF

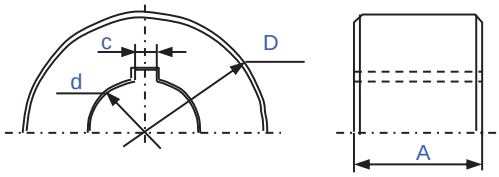
Ø	Paso Pas Pitch	Ø mm	P mm	Diam. Prev. mm		No. Entr.	Para diámetro exterior teórico / Pour diamètre exterieur theorique For theoretical outer diameter								
							+1 Ent.	+2 Ent.	+3 Ent.	+4 Ent.	+5 Ent.	+6 Ent.	+7 Ent.	+8 Ent.	+9 Ent.
1/8	40	3,18	0,64	2,74	115	42	118	121	124	126	129	132	135	137	140
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								

TIVOLY

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

BSW
BSF

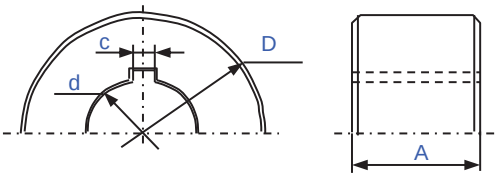
Ø	Paso Pas Pitch	Ø mm	P mm	Diam. Prev. mm		No. Entr.	Para diámetro exterior teórico / Pour diamètre exterieur theorique For theoretical outer diameter								
							+1 Ent.	+2 Ent.	+3 Ent.	+4 Ent.	+5 Ent.	+6 Ent.	+7 Ent.	+8 Ent.	+9 Ent.
1/8	40	3,18	0,64	2,74	115	42	118	121	124	126	129	132	135	137	140
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								



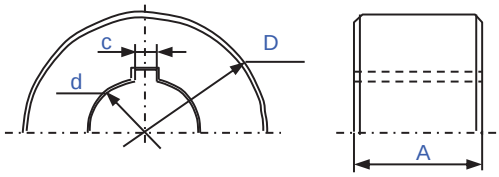
DIMENSIONS SET OF THREADING ROLLERS
DIMENSIONS DES JEUX DE ROULEAUX.
DIMENSIONES DE JUEGOS DE RODILLOS.

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.

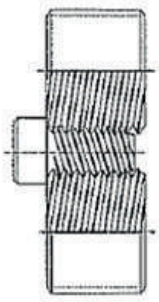
Para poder responder a sus necesidades y expectativas, rogamos nos facilite el máximo de información sobre la herramienta que precisa y el trabajo a realizar con ella. Para ello, rellene el formulario técnico y adjunte un plano de la pieza a fabricar.

TIVOLY

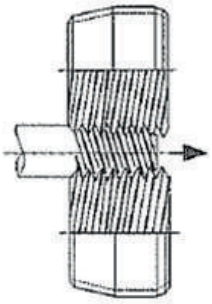
FORMULARIO TECNICO PARA RODILLOS
TECHNICAL FORM FOR CYLINDRICAL DIES
FORMULAIRE TECHNIQUE POUR MOLETTES

Fecha:

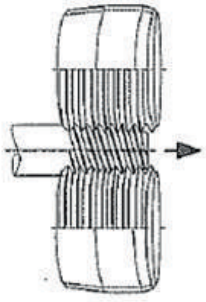
1.- DIMENSIONES Y MAQUINA / DIMENSIONS AND MACHINE



PLONGEE
IN-FEED ☐

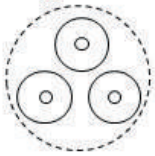


ENFILADA / THROUGH FEED /ENFILADE
HELICOIDAL ☐



CIRCULAR ☐

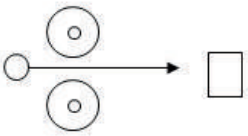
Juegos de 3 / Set of 3 /Jeux à 3



☐ Type AXIAL

☐ Type RADIAL

Juegos de 2 / Set of 2 /Jeux à 2



Máquina/Machine

Potencia/Powder/Puissance

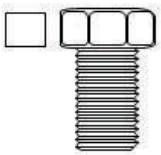
Tn

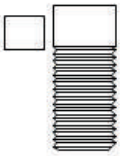
Cabezal / Tête / Head

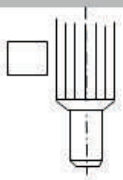
2.- TORNILLO / SCREW / VIS

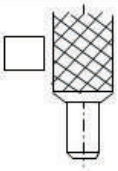
☐ 

Trapecial /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 / Matièr

Resistencia/Tensile/Resistence 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: Tlfno/Nº tél.: Fax Nº:

ASUNTO/MATTER/SUJET:

Contacto/Contact/ À contacter:

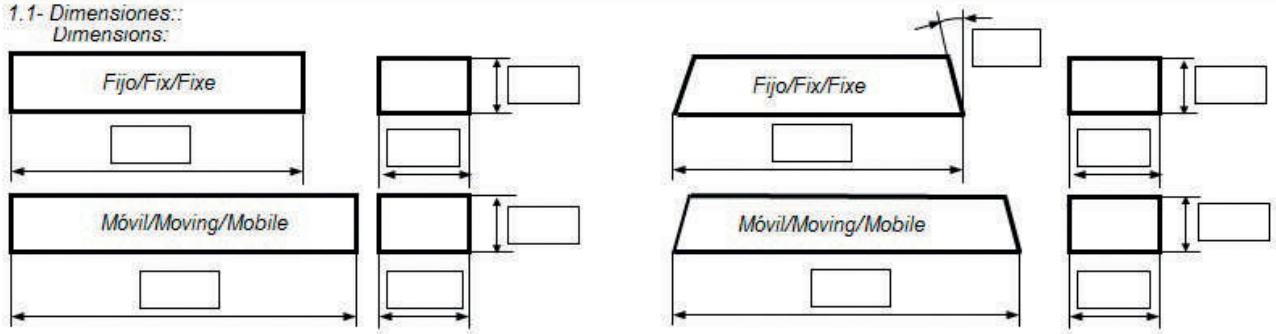
TIVOLY

FORMULARIO TECNICO PARA PEINES
TECHNICAL FORM FOR FLAT DIES
FORMULAIRE TECHNIQUE POUR PEIGNES

Fecha:

1.- DIMENSIONES Y MAQUINA / DIMENSIONS AND MACHINE

1.1- Dimensiones::
Dimensions:



☐ Según croquis adjunto/Attached drawing/Dessin ci-joint

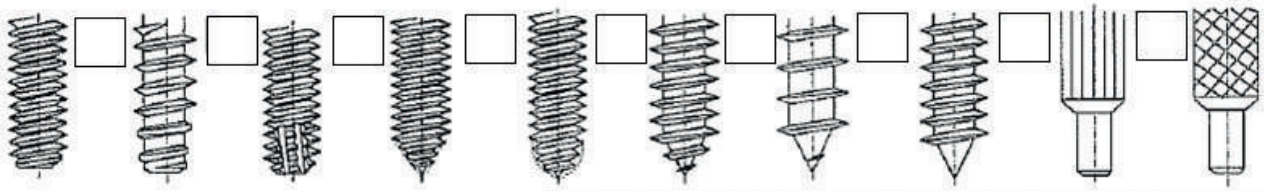
1.2.- Rosca/Thread/Filet ☐ 1 cara/side/face ☐ 2 caras/sides/faces Nº usos/uses/utilisations ☐

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: ☐ M-MF-UNC-UNF BSW-BSF- … ☐ Rosca chapa / Sheet metal screw Vis a tôle ☐ Rosca madera / Wood screw thread Vis a bois
Type de filet:
Type of thread:
☐ Según croquis adjunto / Attached drawing / Dessin ci-joint

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

2.4- Material / Material / Matièr ☐ Resistencia/Tensile/Resistence 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 surfaçe ☐

3.2- Picadura de arrastre : Piqûre de entraînement: ☐ Si Oui ☐ No Non Chorreado / Blasting Blesagè: ☐ Si /yes Oui ☐ No Non

OBSERVACIONES/ REMARKS / NOTES

Empresa/Company/Entreprise: Tlfno/Nº tél.: Fax Nº.:

ASUNTO/MATTER/SUJET:

Fecha/Date: Contacto/Contact/ À contacter:

TAPPING
CATALOGUE

TECHNICAL INFORMATION
INFORMATIONS TECHNIQUES
INFORMACIÓN TÉCNICA

#05-05

# #
TECHNICAL INFORMATION
INFORMATIONS TECHNIQUES
INFORMACIÓN TÉCNICA

01 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

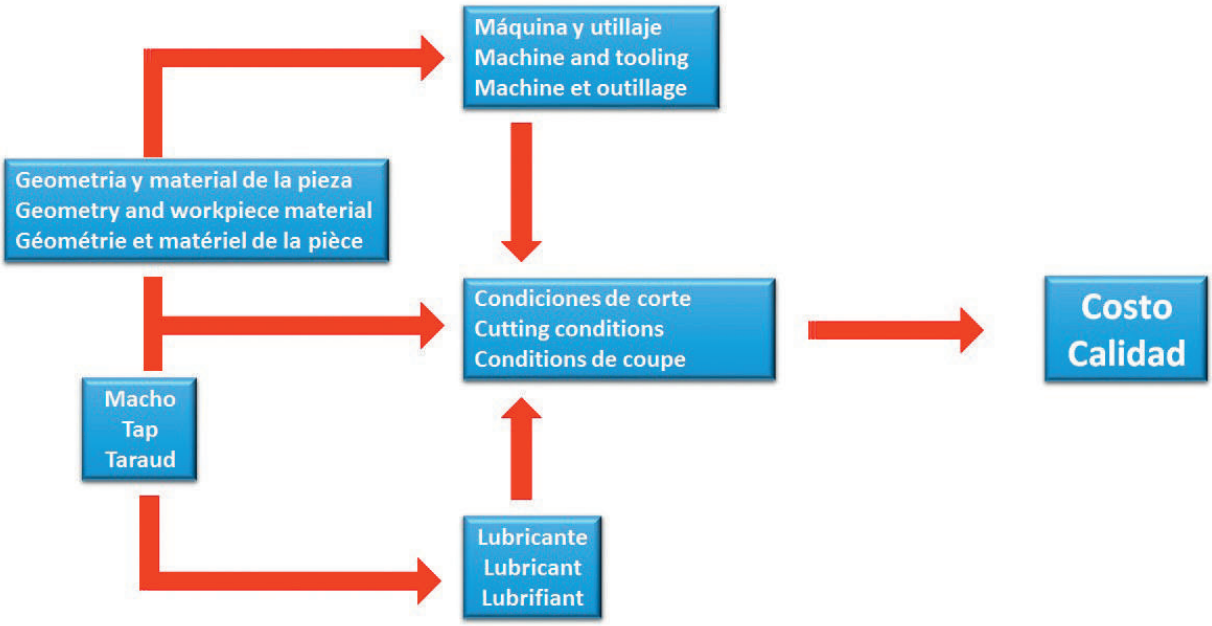
Ils sont généralement construits avec des dimensions standardisées, équipés de rainures droites, et présentés en :

- 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 ■

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 a refouler avec ou sans rainures ■

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

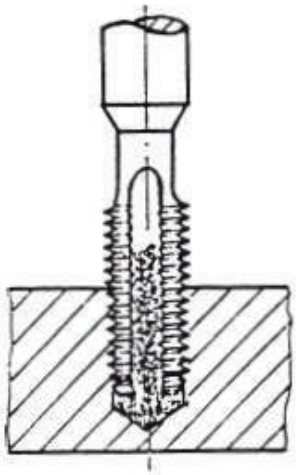
Todo tipo de machos fabricados bajo plano o para una aplicación especial ■

MACHOS DE MAQUINA

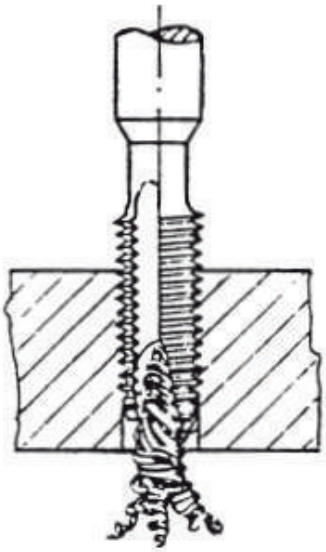
Se construyen en dimensiones estandarizadas y se presentan como machos únicos. Atendiendo a su geometría se podrían agrupar en dos grupos básicos :

- 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 ■

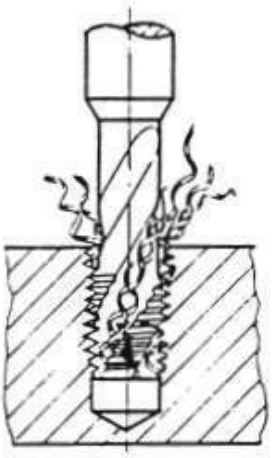
STRAIGHT FLUTE
GOUJURE DROITE
CANAL RECTO



SPIRAL POINT
ENTRÉE GUN
ENTRADA GUN



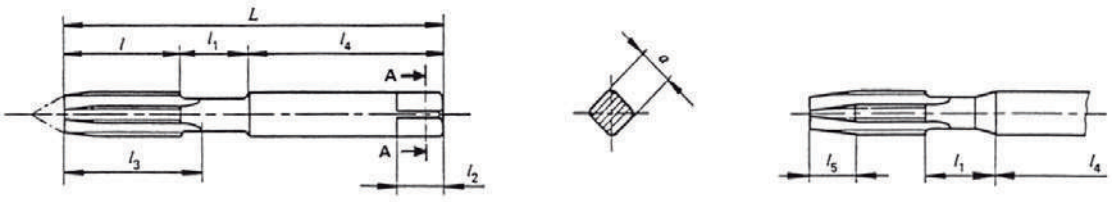
SPIRAL FLUTE
GOUJURE HELICOIDALE
CANNELURE HÉLICOÏDALE



02

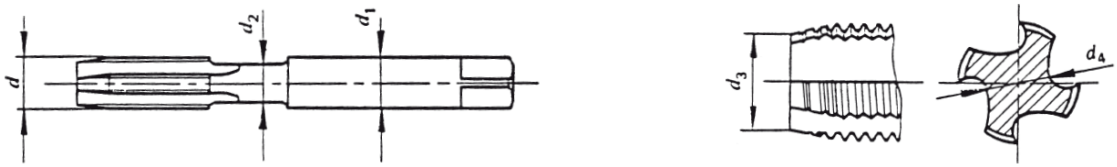
TERMINOLOGY / TERMINOLOGIE TERMINOLOGIA

LENGHTS / LONGUEURS / LONGITUDES



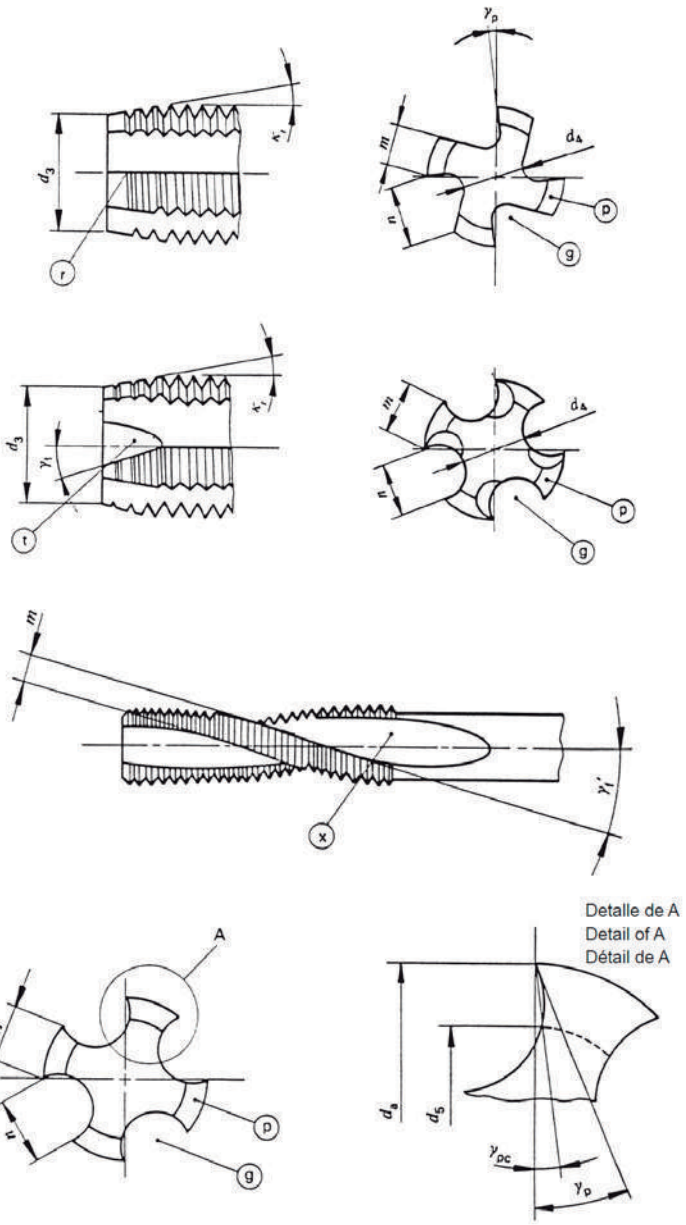
L	Overall length	Longueur totale	Longitud total
l	Thread length	Longueur filetée	Longitud de rosca
l1	Neck length	Longueur de gorge	Longitud del cuello
l2	Length of driving square	Longueur du carré	Longitud del cuadrado
l3	Flute length	Longueur de goujure	Longitud del canal
l4	Shank length	Longueur de 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



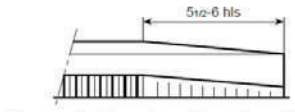
d*	Overall nominal diameter	Diamètre exterieur nominal	Diámetro exterior nominal
d1	Shank diameter	Diamètre de queue	Diámetro de mango
d2	Neck diameter	Diamètre de gorge	Diámetro del rebaje
d3	Chamfer point diameter	Diamètre d'entrée	Diámetro punta de la entrada
d4	Web core diameter	Diamétre de l'âme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

FLUTES / GOUJURES / CANALES

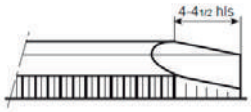


r	Straight flute	Goulure droite	Canal recto
t	Spiral point	Entrée GUN	Entrada corregida (GUN)
x	Spiral flute	Goujure hélicoïdale	Canal helicoidal
g	Flute	Goujure	Canal
p	Land	Lèvre	Labio
m	Width of land	Largeur de lèvre	Ancho de labio
n	Width of flute	Largeur de goujure	Ancho de ranura
N	Number of flutes	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.

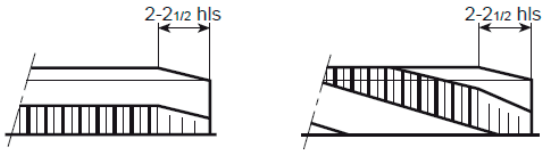
CHAMFER / ENTRÉE CONIQUE / CONO DE ENTRADA



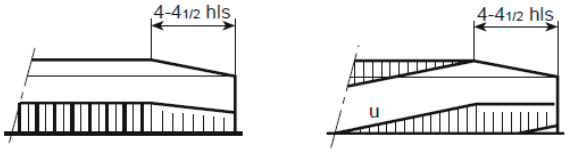
Forma «A» (Larga) • « A » shape (Long)
Forme « A » (Longue)



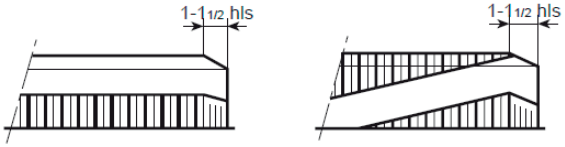
Forma «B» (Corregida) • « B » shape (Raked)
Forme « B » (Corrigée)



Forma «C» (Corta) • « C » shape (Short)
Forme « C » (Courte)



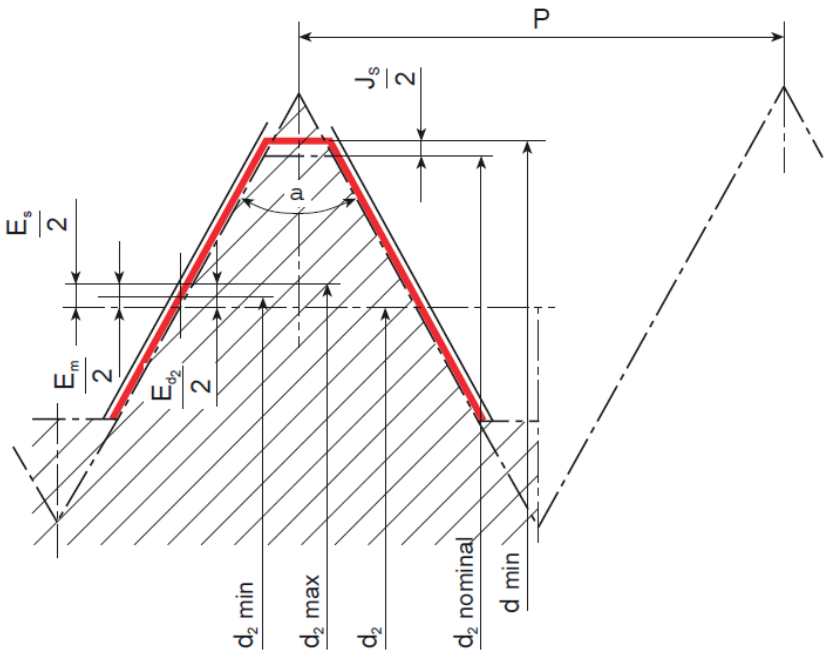
Forma «D» (Media) • « D » shape (Medium)
Forme « D » (Moyenne)



* Forma «E» (Extra-corta) • « E » shape (Extra short)
Forme « E » (Extra-courte)

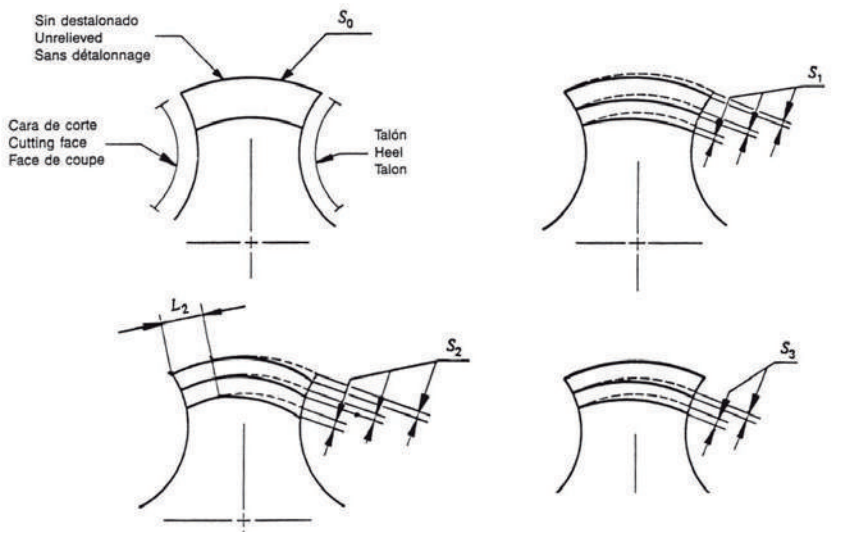
* Not recommended. To be avoided in as many cases as possible.
* Pas recommandable. On doit l'éviter dans tous les cas possibles.
* No recomendable. Se debe evitar en todos los casos posibles.

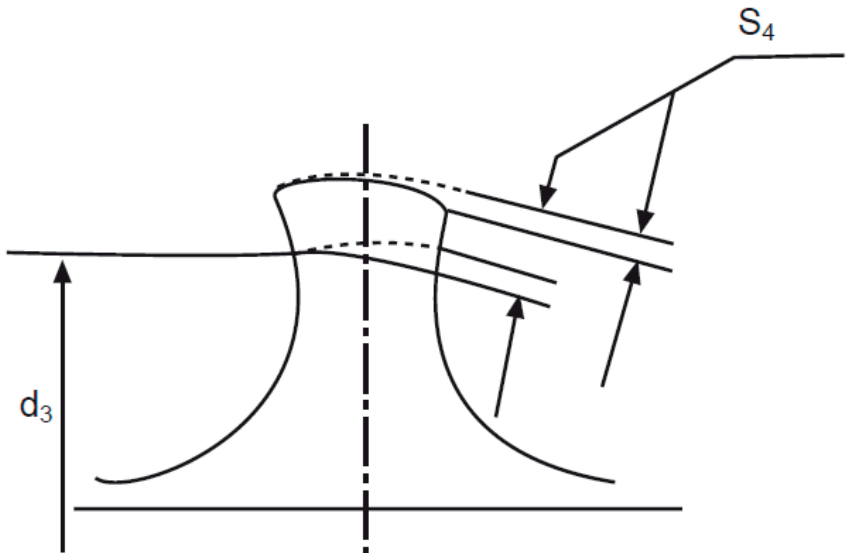
THREAD PROFILE / PROFIL DU FILET / PERFIL DE ROSCA



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	Destalonado parcial en rosca
S3	Eccentric thread relief	incomplet 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	Demasía 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 diametre 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





03 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 martersitique. 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 martensíta 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 ■

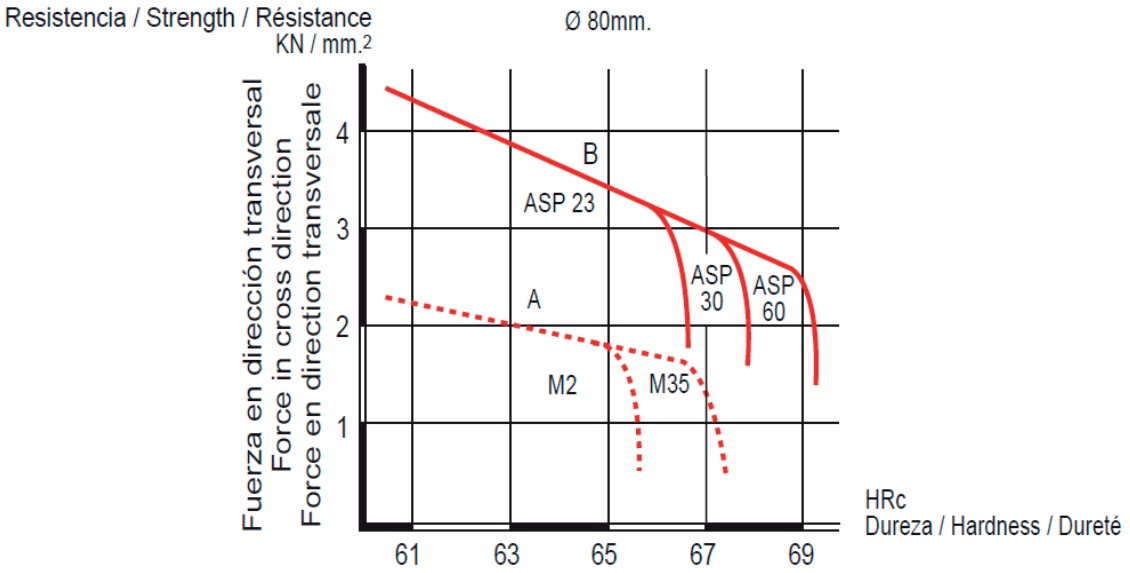
ACEROS RAPIDOS PULVIMETALURGIA (P.M.)

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. ■



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 dures 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. (ºC)	Color Color Coleur
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 util 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 proporcianr 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 especifico para el roscado de materiales de alta dureza, de dificil 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 lubricité plus élevé 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 ferricas como cobre, latones y bronces 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.

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 x Ø. It should be taken into consideration that lengths longer than 1.5 x Ø 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 ■

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.

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 x Ø. Il faut considérer que les longueurs supérieures à 1,5 x Ø 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 ■

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.

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 x Ø. A considerar que longitudes superiores a 1,5 x Ø 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 nonferrous 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 groupé dans les familles suivantes :

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

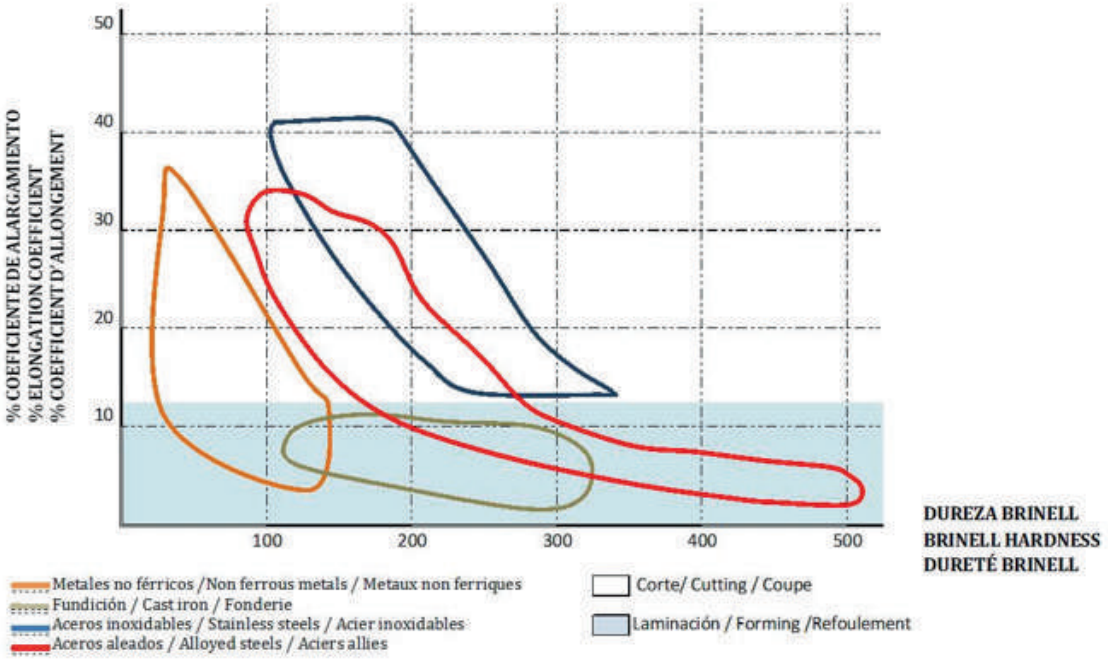
Chaque genre de matériel présente des caractéristiques spécifiques en ce qui concerne la résistance à la traction, le coefficient d'allongement et la structure cristalline, dépendant de cet ensemble, les forces de coupe, ainsi comme le type de copeau résultant, fragmenté ou continu. Les caractéristiques 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 :

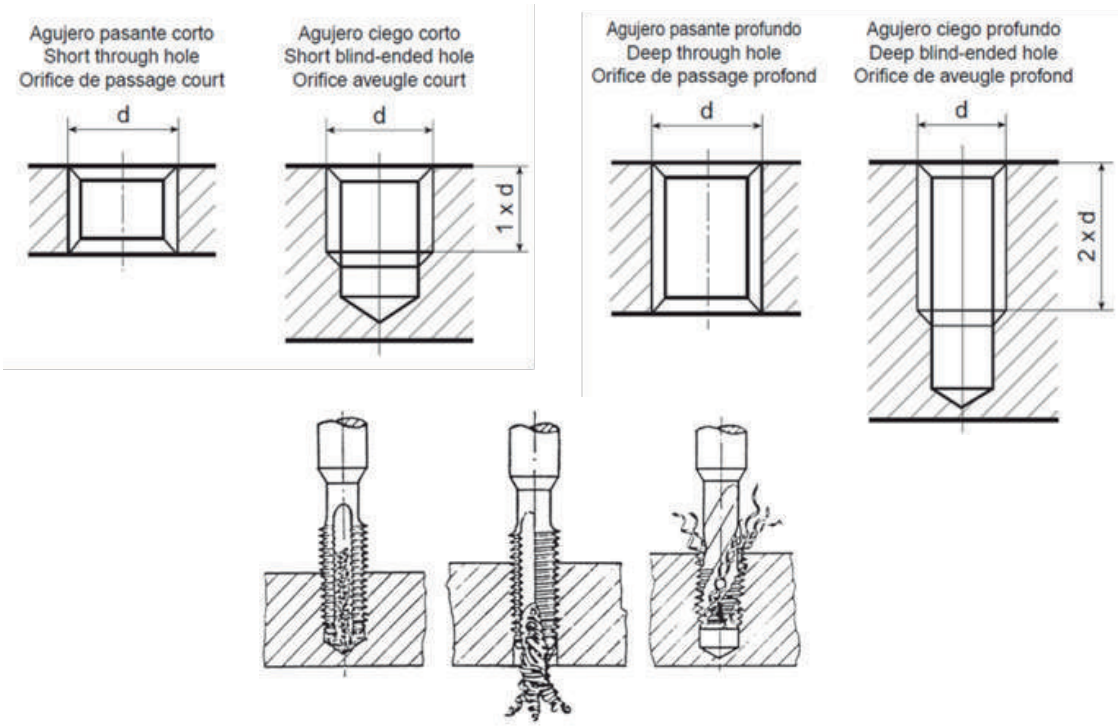
Dada la gran variedad utilizada en la Industria, hemos seleccionado 31 variantes que cubren desde los aceros dulces hasta las aleaciones especiales así otros materiales no férricos. Se han agrupado en las siguientes familias:

- 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

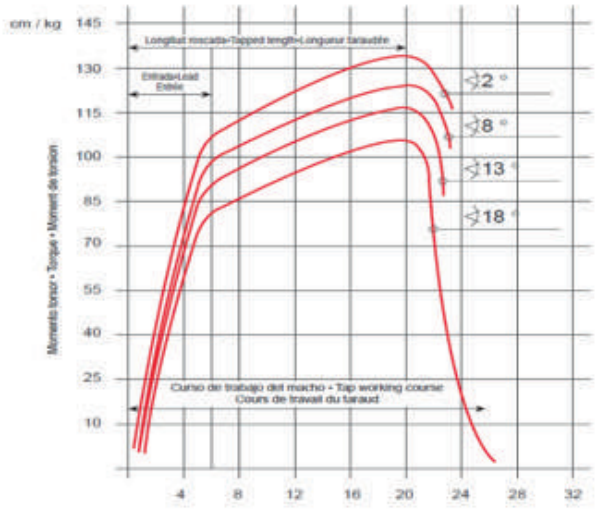
Due to the fact that their effect is so decisive, even though it has been observed in a theoretical study, we present a chart in which the results obtained when tapping a through hole of 20 mm. thickness in a 800 N/mm2 strength steel by of a 3-flutes M10 tap, with a chamfer of 4 profiles, but varying 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 debouchante 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:

FEED = 1 PITCH X 1 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/ot 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. It´s 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:

AVANCE = 1 PAS X 1 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 absortion 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 sytème de fixation o 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 una fixation sure 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:

AVANCE = 1 PASO X 1 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.

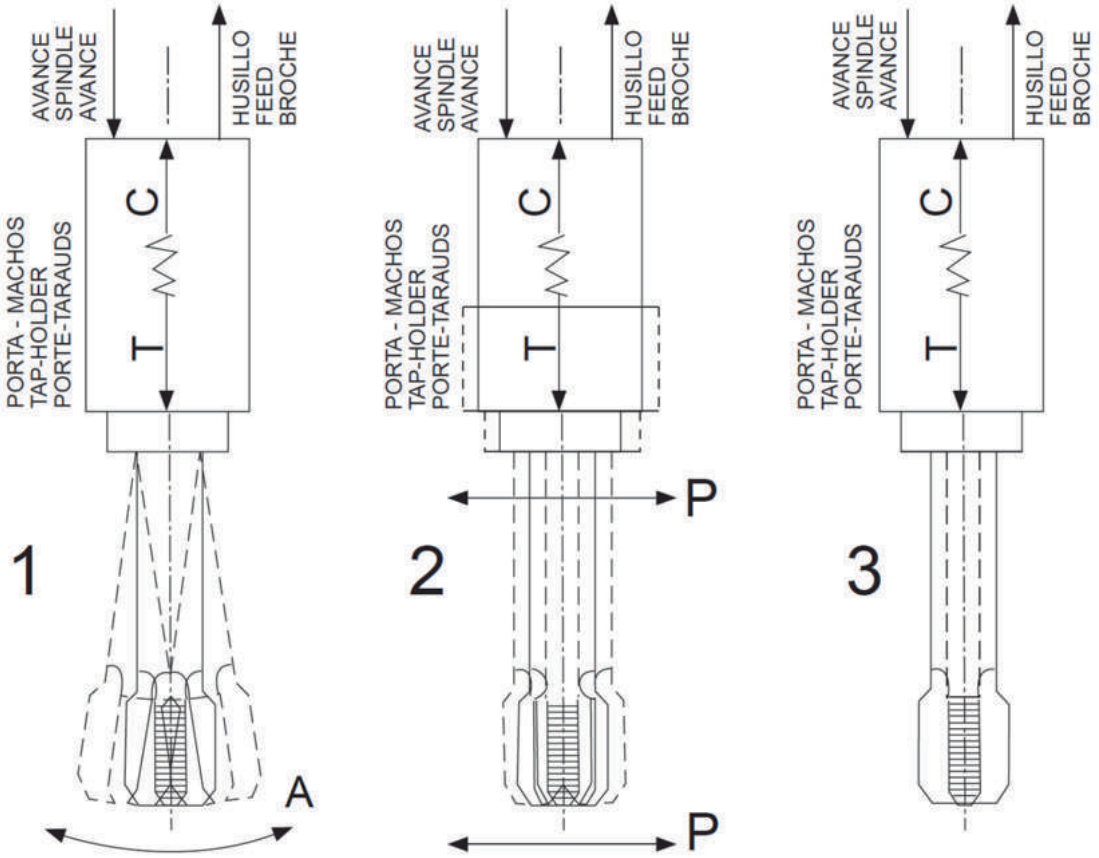
F SISTEMA DE FIJACION

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 Standard spindle Vis-mére	CNC mecánico Mechanical NC CN mechanique	Sin guiado Without guide Sans guide
1	●		●	●	●	●	●
	●		●		●	●	●
	●				●	●	●
2		●	●	●	●	●	●
		●	●		●	●	●
		●			●	●	●
3			●	●	●	●	●
			●		●	●	●
					●	●	●

CUTTING STRESSES

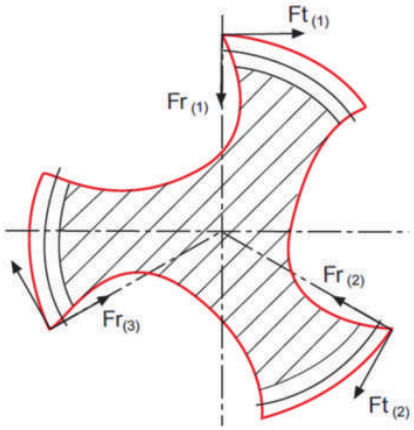
The cutting forces operating in the course of tapping are three: the tangential Ft, radial Fr and axial Fx.
The torque is determined by the value of tangential component. However, the nature and variations of Fr and Fx components have a great influence on the precision of tapped profile and they can be the cause a disfunction. The axial force Fx 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 Fr 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 ■

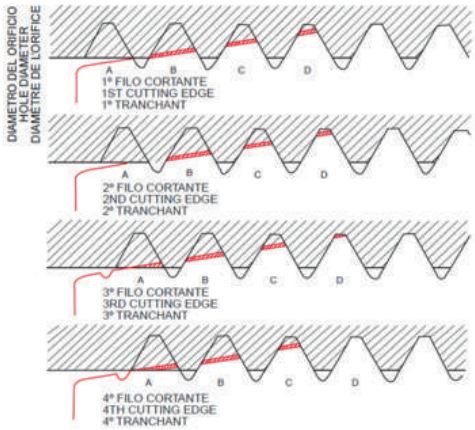
EFFORTS DE COUPE

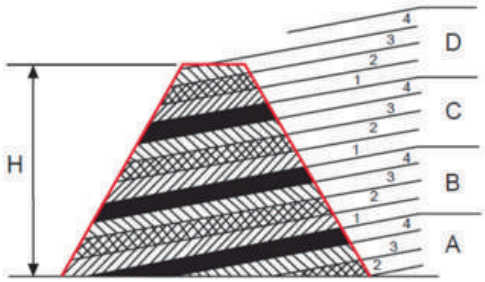
Les forces de coupe qui agissent pendant le taraudage sont trois : celle tangentielle Ft, la radiale Fr et l'axiale Fx. La valeur du composant tangentiel Ft détermine le moment de torsion. Par contre, la nature et les variations des composants Fr et Fx ont une grande influence sur la précision du taraudage et peuvent être la cause du disfonctionnement.
La force axiale Fx 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 coupes 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 Fr qui existent dans chaque arête doit être nul, 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 veut 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 Ft, la radial Fr, y la axial Fx.
El valor de la componente tangencial Ft determina el momento torsor. En cambio, la naturaleza y las variaciones de los componentes Fr y Fx tienen una gran influencia sobre la precisión del perfil roscado y pueden ser causa de disfuncionamientos.
La fuerza axial Fx 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 resultas 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 Fr 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 rígidamente 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 ■



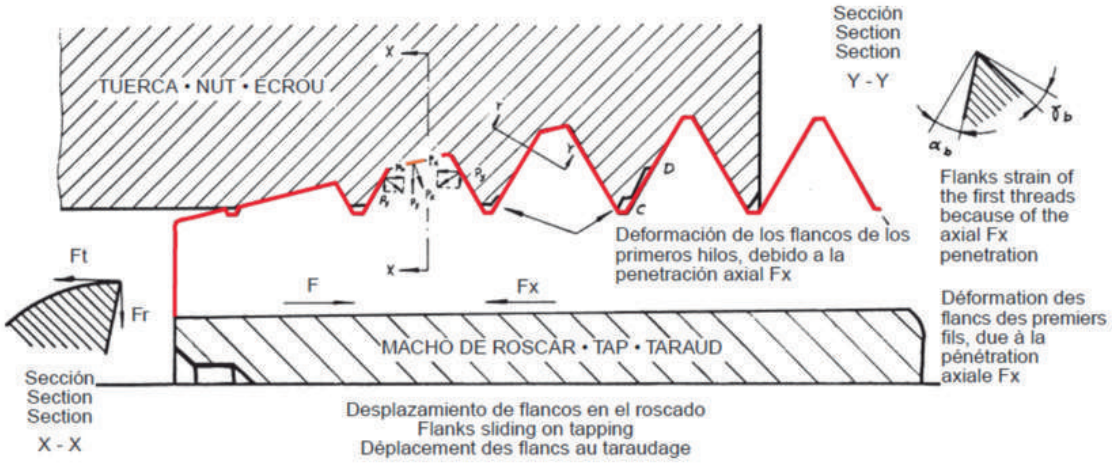




Distribución sobre perfil del espesor de viruta por diente

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 (ɣ).- This coefficient is applied depending on the condition of the machine, and will be between 0.5 and 0.9.
- Dulling coeficient (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 NECÉSSAIRE

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 (ɣ).- 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 (ɣ).- 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 desafila es preciso tener en cuenta un aumento del esfuerzo de corte, que puede ser un 200% del inicial ■

.

$$P(w) = \frac{M_t * 2 * \pi * n}{60 * \eta} * K$$

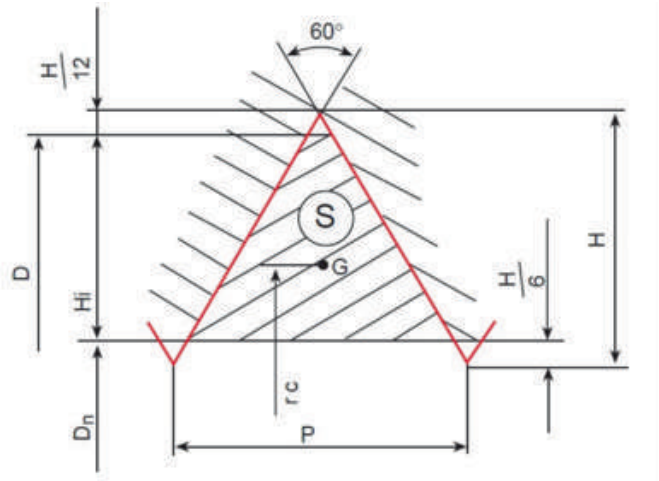
M_t = momento torsor / torque (N m)
n = velocidad de giro / speed / vitesse (rpm)
η = rendimiento /efficiency / performance
K = coeficiente de desafilado / dulling coefficient /coefficient d'émoussé

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 roscado 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.

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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 = nº canales / # of flutes / nº of goujoures

H = número hilos cono / # chanfer threads / n de filet á l' entré

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 especiífica 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 materiaux 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 calculatión fórmula 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 :

$$M_t(N.m) = \frac{K_s * p^2 * Ø}{8000}$$

K_s = Fuerza especifica de corte / Specific cutting stress / Force de coupe especifique (N/mm^2)

Ø = 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

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 travaille, 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 conséquence, 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

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

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.

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 a sa realité.

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 ameillorès Plain carbon steels	20 - 25
	B3	Aceros aleados Aciers alliés Alloyed steels	10 -15
C	C1	Aceros para tratamiento térmico R< 1000 N/mm² Aciers pour traitement thermique R< 1000 N/mm² Heat Treatable Steels R < 1000 N/mm²	5 -10
D	D1	Aceros para tratamiento térmico R< 1200 N/mm² Aciers pour traitement thermique > 1200 N/mm² Heat Treatable Steels >1200 N/mm²	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/mm² Aciers inoxydables Austenitiques R < 850 N/mm² Austenitic stainless steel R < 850 N/mm²	3 - 7
	H2	Aleaciones de Ni-Cr R < 1200 N/mm² Alliages de nickel et chrome R < 1200 N/mm² Chromium and nickel alloys R < 1200 N/mm²	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 / mm² Fonte à graphite lamellaire (GG) 500 < R ≤ 1000 N / mm² Cast iron with lamellar graphite (GG) 500 < R ≤ 1000 N / mm²	4 - 8
	J2	Fundición maleable (GGG) R ≤ 750 N / mm² Fonte malléable (GGG) R ≤ 750 N / mm² Malleable cast iron (GGG) R ≤ 750 N/mm²	5 - 10
	J3	Fundición de grafito esferoidal (GGG 70-80) 750 <R ≤ 1000 N / mm² Fonte à graphite spheroidal (GGG 70-80) 750 <R ≤ 1000 N / mm² Spheroidal graphite cast iron (GGG 70-80) 750 < R ≤ 1000 N/mm²	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 / mm² Alliages d'aluminium ayant Si <0,5% R <500 N / mm² Aluminum alloys with Si < 0,5% R < 500 N/mm²	10 - 15
	L2	Aleaciones de Aluminio con 0,5% <Si <10% R <600 N / mm² Alliages d'aluminium ayant 0,5% <Si <10% R <600 N / mm² Aluminum alloys with 0,5% < Si < 10% R < 600 N/mm²	10 - 15
M	M1	Aleaciones de Aluminio con Si> 10% R <600 N / mm² Alliages d'aluminium ayant Si> 10% R <600 N / mm² Aluminium alloys with Si > 10% R < 600 N/mm²	6 - 12
N	N1	Cobre R ≤ 350 N / mm² Cuivre R ≤ 350 N / mm² Copper R ≤ 350 N/mm²	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/mm² Nickel R ≤ 500 N/mm² Nickel R ≤ 500 N/mm²	5 - 10
	Q2	Aleaciones de niquel R <900 N / mm² (INCONEL 600) Alliages de nickel R <900 N / mm² (INCONEL 600) Nickel alloys R < 900 N/mm² (INCONEL 600)	3 - 6
	Q3	Aleaciones de niquel 900 <R <1200 N / mm² (INCONEL 625/780) Alliages de nickel 900 <R <1200 N / mm² (INCONEL 625/780) Nickel alloys 900 < R < 1200 N/mm² (INCONEL 625/780)	2 - 5
T	T1	Titanio R ≤ 700 N / mm² Titane R ≤ 700 N / mm² Titanium R ≤ 700 N/mm²	7 - 12
	T2	Aleaciones de titanio recocidas R ≤ 900 N / mm² Alliages de titane recuits R ≤ 900 N / mm² Annealed titanium alloys R ≤ 900 N/mm²	5 - 12
	T3	Aleaciones de titanio 900 <R ≤ 1200 N/mm² Alliages de titane 900 <R ≤ 1200 N/mm² Titanium alloys 900< R ≤ 1200 N/mm²	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 pourtarauds helicoidaux on doit utiliser 65% de la valeur de reference ■

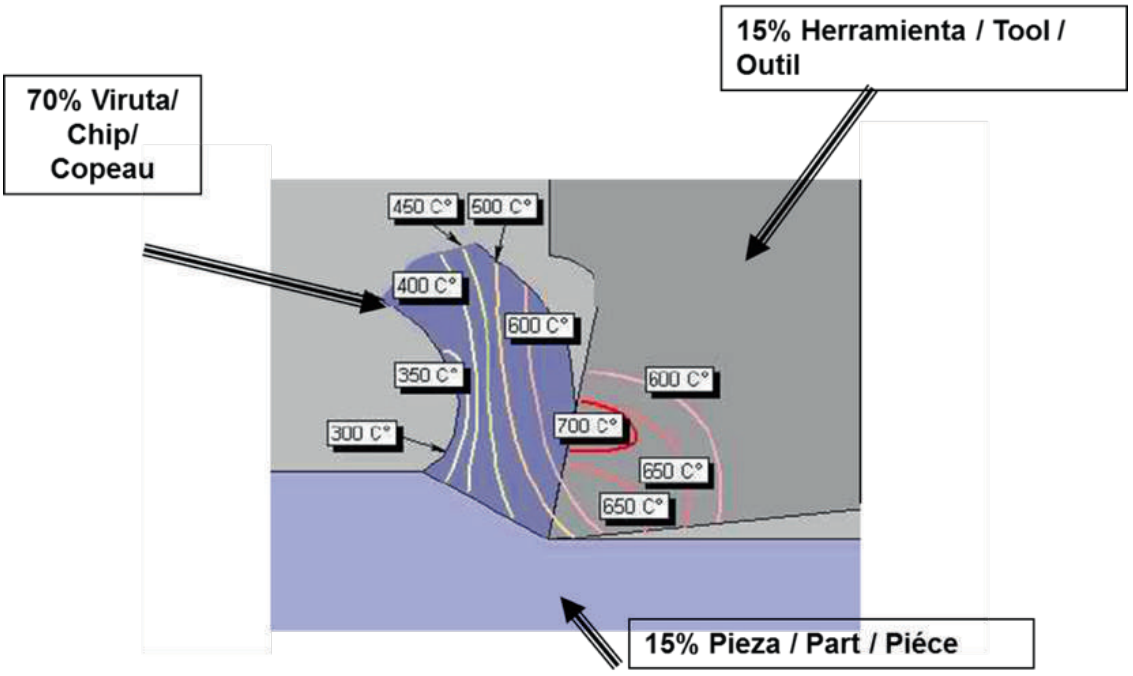
Como criterio orientativo podemos tomar como base que nuestros machos con recubrimiento pueden trabajaar al doble de la velocidad de un macho sin él y los machos helicoidales deberán hacerlo a un 65% del valor de referencia ■

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 refroidisser pour dissiper la chaleur générée dans l'outil, les copeaux et la pièce à usiner.

El principal rol exigible a un REFRIGERANTE, 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.



Ccuracy 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 appropriées de bons resultats en tolerance 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.

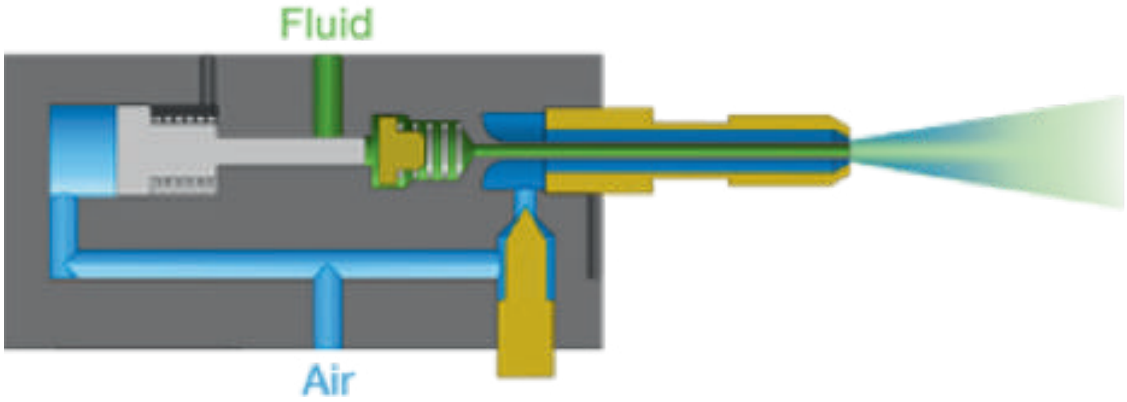
Schématiquement, on peut dire que d'analyser l'influence du refroidissement des pièces minimum nous devons vérifier:

- 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 inoxidables, 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 refrigetation 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 refouler 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

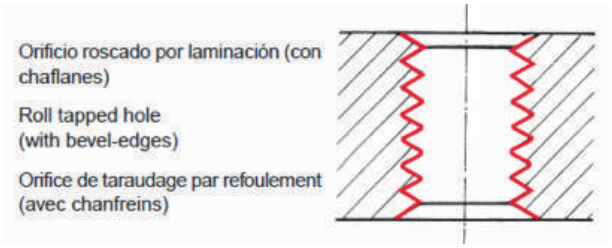
The previous hole is a significant factor with regard to the result to be achieved and, therefore, a thorough control is necessary for the size and surface quality. In addition, it is advisable to make bevel edges at the ends of these holes in order to prevent built-up material from being produced. The following formulas will be applied for the calculation of the diameter to be drilled and profiles of 60° and 55°:

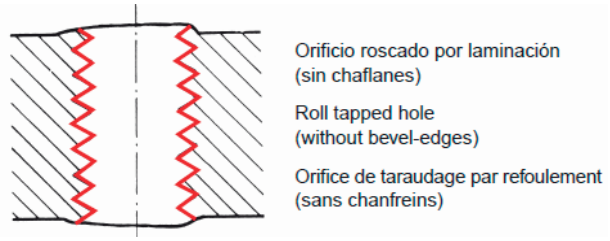
■ ORIFICE PRÉALABLE

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 a 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 :



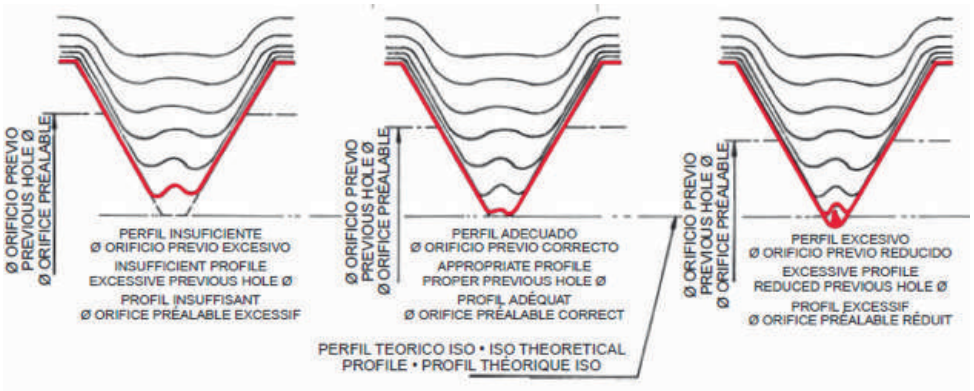


Tolerancia Tolerance : 6H

$$Máx = Ø_{nominal} - 0.48 * p$$
$$mín = Ø_{nominal} - 0.43 * p$$

Tolerancia Tolerance : 6G

$$Máx = Ø_{nominal} - 0.46 * p$$
$$mín = Ø_{nominal} - 0.41 * p$$



Influencia del Ø del orificio previo en el perfil de la rosca en el roscado por laminación
Effect of the previous hole Ø on thread profile in roll tapping
Influence du Ø de l'orifice préalable sur le profil du filet au taraudage par refoulement

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 ■

VITESSE DE REFOULEMENT

La vitesse optimale de refoulement 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 élévées, pour cela, il est très nécessaire l'application de revêtements qui compensent les effets mentionnés. Comme orientation générale les vitesses de rewfoulement sont un 50% supérieures à celles d'un taraudage conventionnel par coupe ■

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 ■

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 ■

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 ■

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 ■

COOLING

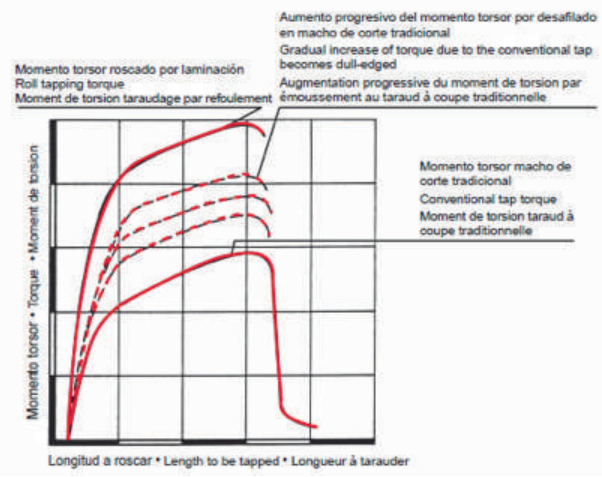
Lubrication is of great significance and the system is to be provided with the suitable conditions to avoid the previously mentioned effects. In general, oils with suitable high pressure characteristics and formulas are recommended ■

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 ■

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 significan 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 refouler 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:

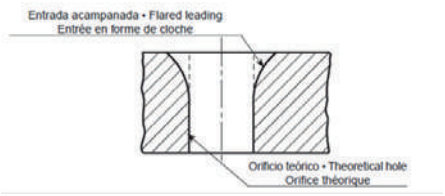
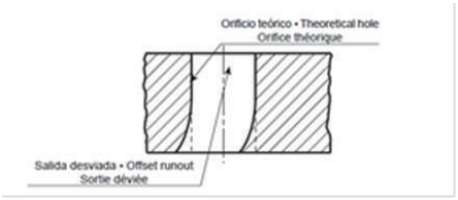
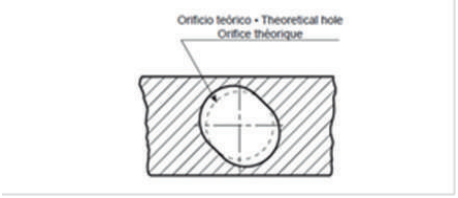
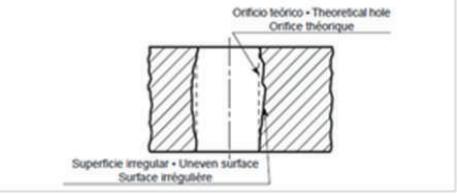
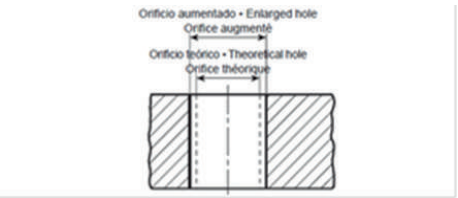
- Ausencia de virutas
- Superior precisión de medida.
- Mayor calidad de acabado
- Mejora de las propiedades mecánicas de la rosca.
- Mayor productividad: vida del macho, velocidad de corte ■

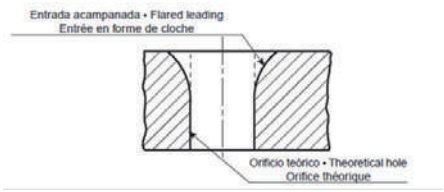
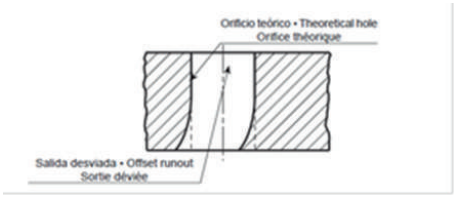
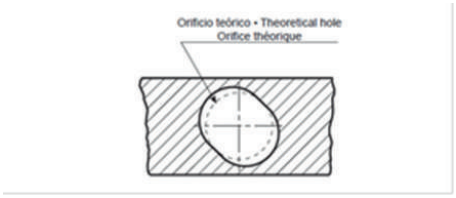
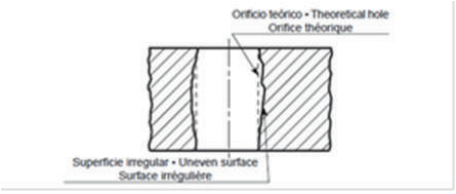
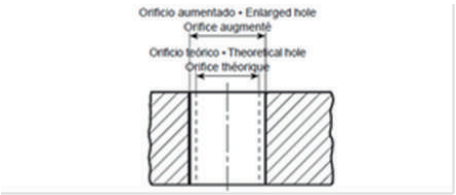
ERRORS AND DIFFICULTIES IN TAPPING / ERREURS ET DIFFICULTÉS EN TARAUDAGE / ERRORES Y DIFFICULTADES EN EL ROSCADO

	Posibles causas / Possible causes / Causses possibles	Soluciones / Solutions
Desgaste prematuro Prematurely worn tap Usure prématurée du taraud	Velocidad de corte excesiva Excessive cutting speed Vitesse de coupe escessive	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 controler 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.
	Angulo 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 / Causses possibles	Soluciones / Solutions
Sobremedida en el roscado Oversize in tapping Démesure 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 helcoidaux 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 sincronizacion 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 delorificio 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	

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	

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

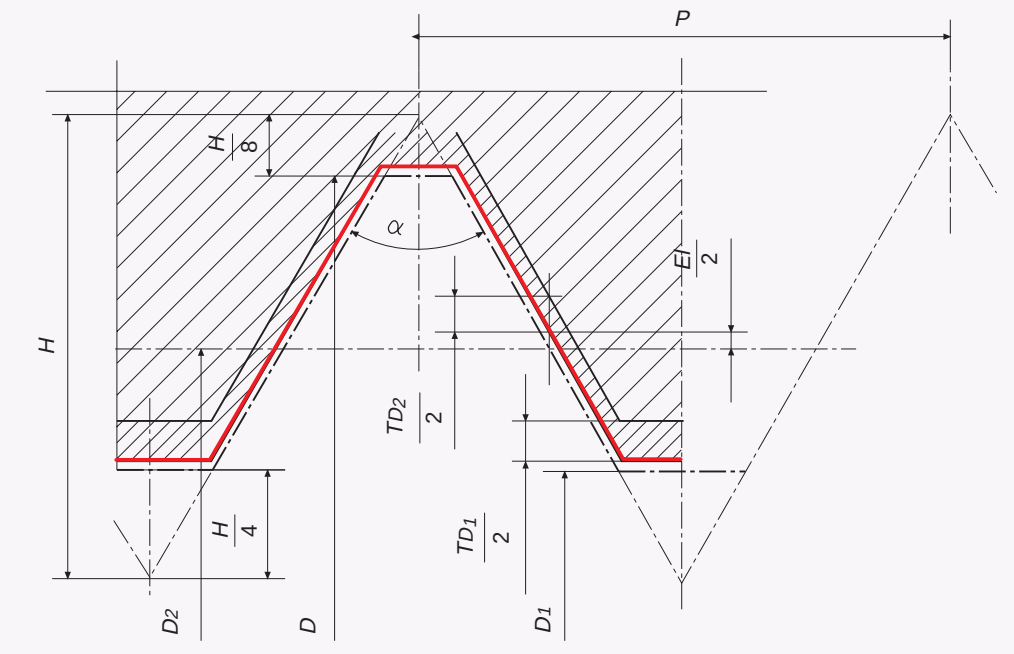


FIGURA / FIGURE / FIGURE 1

1.1. Nut thread

D	Nominal outside diameter.
D1	Nominal core diameter.
D2	Diameter at nominal flank.
P	Thread pitch.
	Flank angle.
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.
	Angle de flancs.
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.
	Angulo de flancos.
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

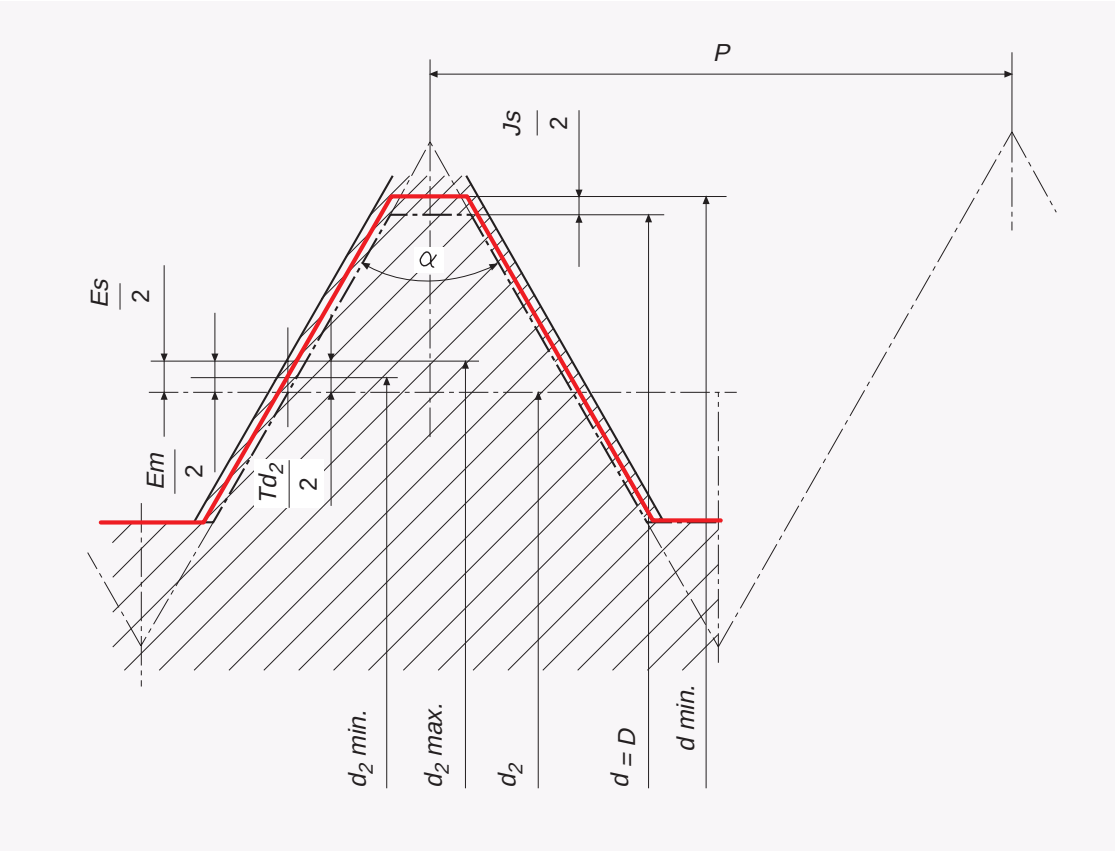


FIGURA / FIGURE / FIGURE 2

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

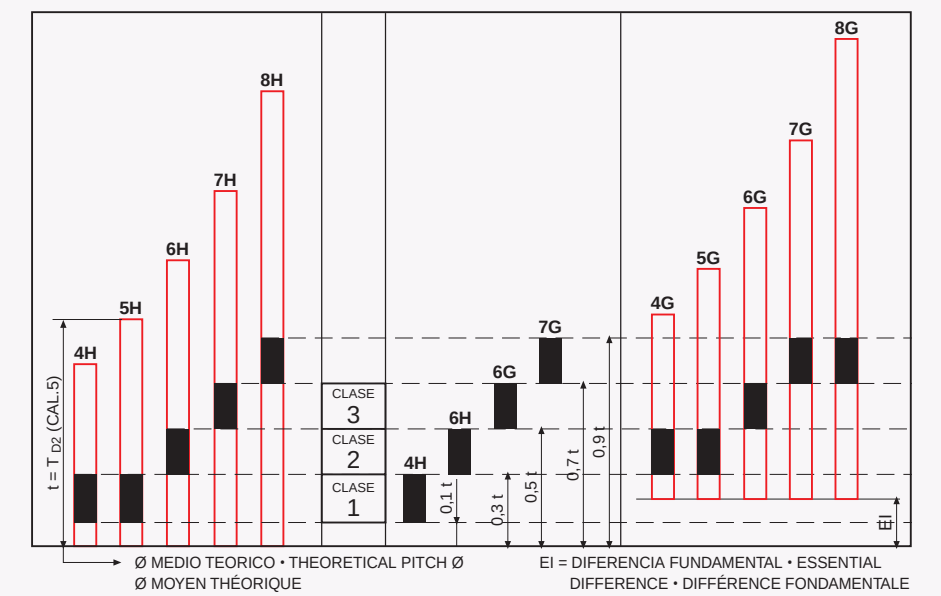
COMPARAISON ENTRE MARGES DE TOLÉRANCE DES FILETS FEMELLES ET LES MARGES DE TOLÉRANCE DES TARAUDS CORRESPONDANTS

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 TÓLERANCE 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 dmín. 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 dmáx. 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 figura 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 dmín. du nouveau taraud, une surépaisseur qui est 40% de la tolérance du diamètre aux flancs nominale D2 pour qualité 5 du filet à écrou selon DIN 13, page 32. La mesure maximum admissible dmáx. 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 dmín. 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 dmáx. queda libre. ■

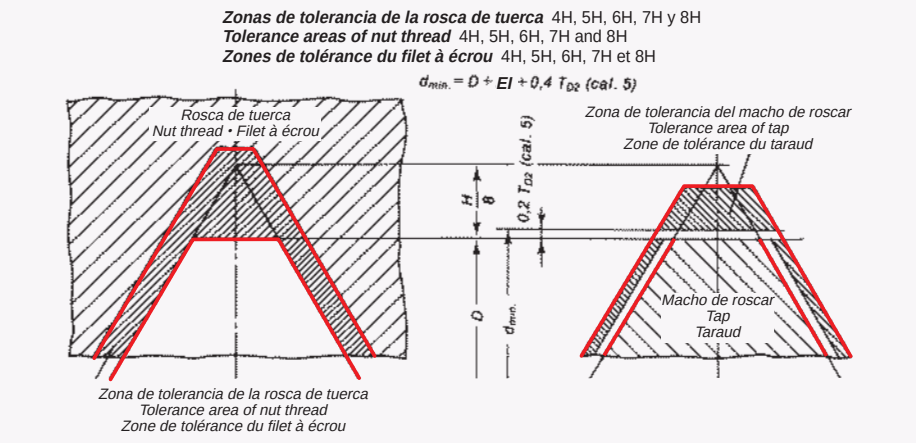


FIGURA 3 • FIGURE 3 • FIGURE 3
Mínimo diámetro exterior admisible $d_{min.}$ para machos de roscar para rosca de tuerca con zona de tolerancia 4H, 5H, 6H,7H y 8H.
Minimum admissible outside diameter $d_{min.}$ for nut thread taps with tolerance area 4H, 5H, 6H, 7H and 8H.
Diamètre minimum admissible $d_{min.}$ pour tarauds, pour filets à écrou a zone de tolérance 4H, 5H, 6H,7H et 8H.

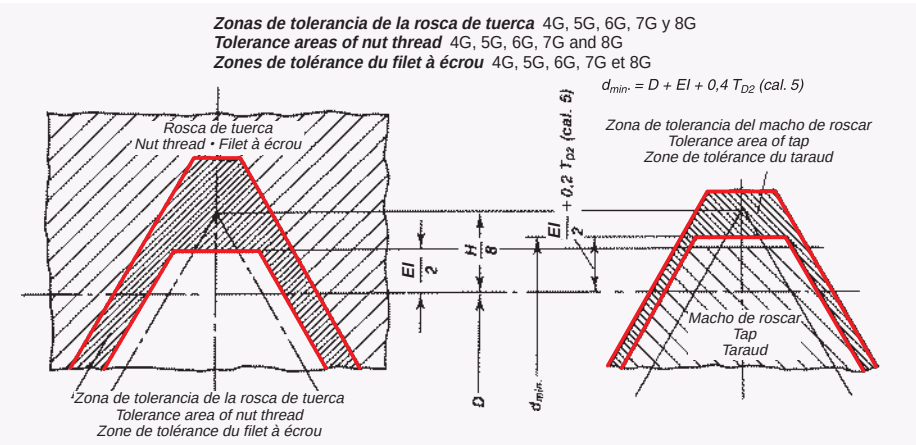
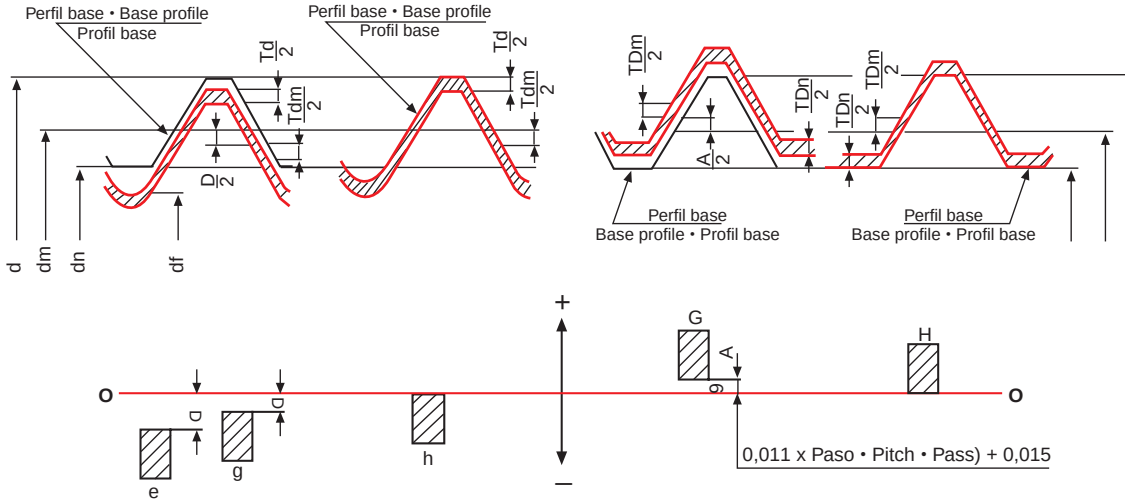


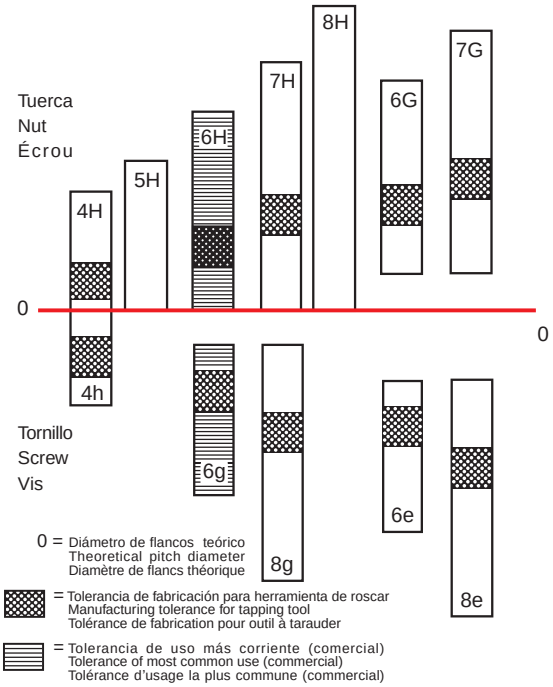
FIGURA 4 • FIGURE 4 • FIGURE 4
Mínimo diámetro exterior admisible $d_{min.}$ para machos de roscar para rosca de tuerca con zona de tolerancia 4G, 5G, 6G,7G y 8G.
Minimum admissible outside diameter $d_{min.}$ for nut thread taps with tolerance area 4G, 5G, 6G, 7G and 8G.
Diamètre minimum admissible $d_{min.}$ pour tarauds, pour filets à écrou a zone de tolérance 4G, 5G, 6G,7G et 8G.

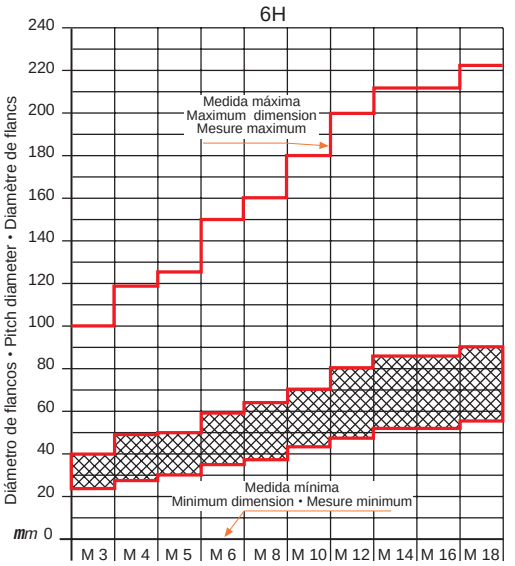
SETS OF NUTS AND SCREWS
JEUX D'ÉCROUS ET DE VIS
JUEGO DE TUERCAS Y TORNILLOS



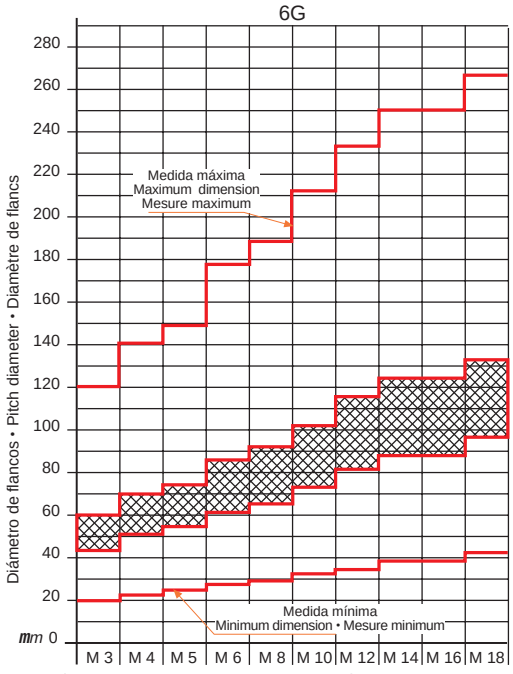
Paso Pitch Pass P mm	Desviaciones fundamentales Essential deviations • Déviations fondamentales				
	Para d, dm y dn del tornillo For d, dm and dn of the screw Pour d, dm et dn de la vis a en µ			Para D, Dm y Dn de la tuerca For D, Dm and Dn of the nut Pour D, Dm et Dn de l'écrou A en µ	
	Posiciones • 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

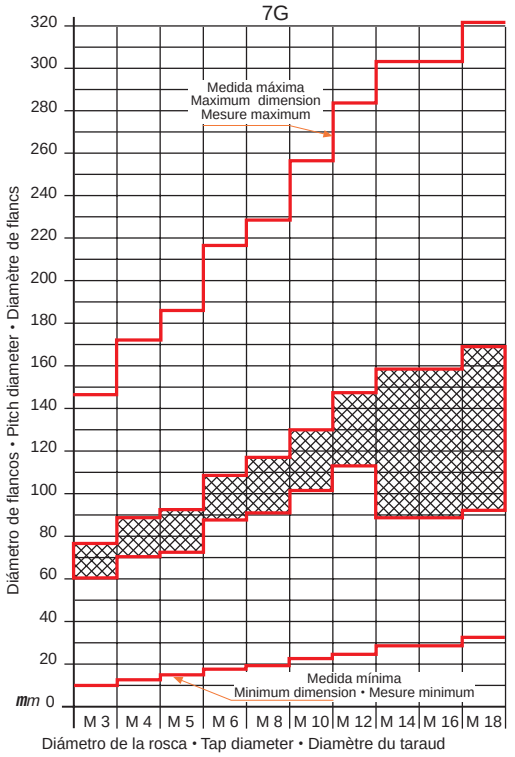




Situación de la tolerancia de fabricación del macho dentro de la tolerancia 6H de fabricación de la tuerca.
Situation of the tap manufacturing tolerance within the tolerance area 6H of the nut.
Situation de la tolérance de fabrication du taraud dans la zone de tolérance 6H de fabrication de l'écrou.



Situación de la tolerancia de fabricación del macho dentro de la zona de tolerancia 6G de la tuerca.
Situation of the tap manufacturing tolerance within the nut manufacturing tolerance 6G.
Situation de la tolérance de fabrication du taraud dans la zone de tolérance 6G de l'écrou.



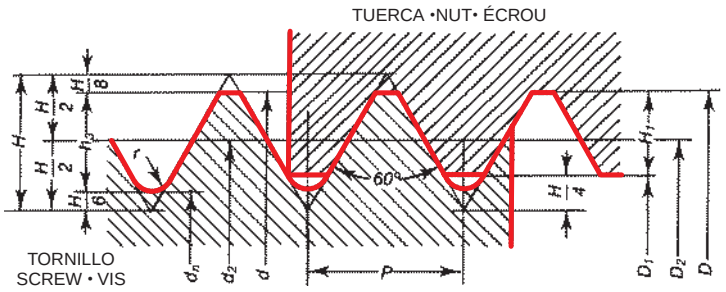
Situación de la tolerancia de fabricación del macho dentro de la zona de tolerancia 7G de la tuerca.
Situation of the tap manufacturing tolerance within the tolerance area 7G of the nut.
Situation de la tolérance de fabrication du taraud dans la zone de tolérance 7G de l'écrou.

THEORETICAL PROFILE
PROFIL THÉORIQUE
PERFIL TEORICO

DIN 13

M

ISO-METRIC THREAD
FILETAGE MÉTRIQUE ISO
ROSCA ISO-METRICA



$D_1 = d - 2H_1$
$d_2 = D_2 = d - 0{,}64953\ P$
$d_3 = d - 1{,}22687\ P$
$H = 0{,}86603\ P$
$H_1 = 0{,}54127\ P$
$h_3 = 0{,}61343\ P$
$r = \frac{H}{6} = 0{,}14434\ P$

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.
			0,25	0,838	0,693	0,729
M 1*			0,25	0,938	0,793	0,829
	M 1,1*		0,25	1,038	0,893	0,929
M 1,2*			0,3	1,2105	1,032	1,075
	M 1,4					
M 1,6			0,35	1,373	1,170	1,221
			0,35	1,573	1,370	1,421
	M 1,8		0,4	1,740	1,509	1,567
M 2			0,45	1,908	1,648	1,713
	M 2,2					
M 2,5			0,45	2,208	1,948	2,013
M 3			0,5	2,675	2,387	2,459
			0,6	3,110	2.764	2.850
	M 3,5		0,7	3,545	3,141	3,242
M 4						
	M 4,5		0,75	4,013	3,580	3,688
M 5			0,8	4,480	4,019	4,134
M 6			1	5,350	4,773	4,917
		M 7	1	6,350	5,773	5,917
M 8			1,25	7,188	6,466	6,647
		M 9	1,25	8,188	7,466	7,647
M 10			1,5	9,026	8,160	8,376
		M 11	1,5	10,026	9,160	9,376
M 12			1,75	10,863	9,853	10,106
	M 14		2	12,701	11,546	11,835
M 16			2	14,701	13,546	13,835
	M 18		2,5	16,376	14,933	15,294
M 20			2,5	18,376	16,933	17,294
	M 22		2,5	20,376	18,933	19,294
M 24			3	22,051	20,319	20,752
	M 27		3	25,051	23,319	23,752
M 30			3,5	27,727	25,706	26,211
	M 33		3,5	30,727	28,706	29,211
M 36			4	33,402	31,093	31,670
	M 39		4	36,402	34,093	34,670
M 42			4,5	39,077	36,479	37,129
	M 45		4,5	42,077	39,479	40,129
M 48			5	44,752	41,866	42,587
	M 52		5	48,752	45,866	46,587
M 56			5,5	52,428	49,252	50,046
	M 60		5,5	56,428	53,252	54,046
M 64			6	60,103	56,639	57,505
	M 68		6	64,103	60,639	61,505

NUT
ÉCROU
TUERCA

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	
				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 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 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 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 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 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 2	0,4	5H 6H	2 2	1,740 1,740	1,811 1,830	1,567 1,567	1,657 1,679
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 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 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 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 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 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 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 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 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 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 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 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 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
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 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 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 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 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 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 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 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 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 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 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 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 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 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 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 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 60	5,5	6H 6H 7H	60 60 60	56,428 56,428 56,428	56,70B 56,783 56,878	54,046 54,046 54,046	54,646 54,796 54,996
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 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

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	
			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 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 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 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 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 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 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 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 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 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 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 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 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 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 3,367	3,580 3,558 3,524	3,495 3,439 3,405
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 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 7	1	4h 6g 8g 6e	7 6,974 6,974 6,940	6,888 6,794 8 694 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 8	1,25	4h 6g 8g 6e 8e	8 7,972 7,972 7,937 7,937	7,868 7,760 7,637 7,725 7,602	7,188 7,160 7,160 7,125 7,125	7,113 7,042 6,970 7,007 6,935	6,466 6,438 6,438 6,403 6,403	6,343 6,272 6,200 6,237 6,166
M 9	1,25	4h 6g 8g 6e 8e	9 8,972 8,972 8,937 8,937	8,868 8,760 8,637 8,725 8,602	8,188 8,160 8,160 8,125 8,125	8,113 8,042 7,970 8,007 7,935	7,466 7,438 7,438 7,403 7,403	7,843 7,272 7,200 7,237 7,165
M 10	1,5	4h 6g 8g 6e 8e	10 9,968 9,968 9,933 9,933	9,850 9,732 9,593 9,697 9,558	9,026 8,994 8,994 8,959 8,959	8,941 8,862 8,782 8,827 8,747	8,160 8,128 8,128 8,093 8,093	8,017 7,938 7,858 7,903 7,823
M 11	1,5	4h 6g 8g 6e 8e	11 10,968 10,968 10,933 10,933	10,850 10,732 10,593 10,697 10,558	10,026 9,994 9,994 9,959 9,959	9,941 9,862 9,782 9,827 9,747	9,160 9,128 9,128 9,093 9,093	9,017 8,938 8,858 8,903 8,823
M 12	1,75	4h 6g 8g 6e 8e	12 11,966 11,966 11,929 11,929	11,830 11,701 11,541 11,684 11,504	10,863 10,829 10,829 10,792 10,792	10,768 10,679 10,593 10,642 10,556	9,853 9,819 9,819 9,782 9,782	9,691 9,602 9,516 9,565 9,479
M 14	2	4h 6g 8g 6e 8e	14 13,962 13,962 13,929 13,929	13,820 12,682 13,512 13,649 13,479	12,701 12,663 12,663 12,630 12,630	12 601 12,503 12,513 12,470 12,380	11,546 11,508 11,508 11,475 11,475	11,369 11,271 11,181 11,238 11,148
M 16	2	4h 6g 8g 6e 8e	16 15,962 15,962 15,929 15,929	15,820 15,682 15,512 15,649 15,479	14,701 14,663 14,663 14,630 14,630	14,601 14,503 14,413 14,470 14,380	13,546 12 508 13 508 13,475 13,475	13,369 13,271 13,181 13,238 13,148

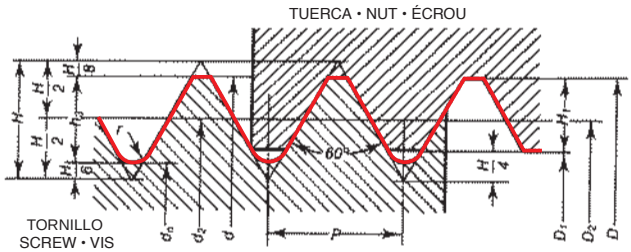
Rosca Thread Filet	Paso Pitch Pass	Tolerancia Tolerance Tolérance	Ø Exterior Outside Ø Ø Extérieur		Ø Medio Pitch Ø Ø Moyen		Ø Núcleo Core Ø Ø Noyau	
			D_2 máx.	D_2 mín.	D_2 máx.	D_2 mín.	D_1 máx.	D_1 mín.
M 18	2,5	4h 6g 8g 6e 8e	18 17,958 17,958 17,920 17,920	17,788 17 623 17,428 17,585 17,390	16,376 16,334 16,334 16,296 16,296	16,270 16,164 16,069 16,126 16,031	14,933 14,891 14,891 14,853 14,853	14,731 14,625 14,530 14,587 14,492
M 20	2,5	4h 6g 8g 6e 8e	20 19,958 19,958 19,920 19,920	19,788 19,623 19,428 19,585 19,390	18,376 18,334 18,334 18,296 18,296	18,270 18,164 18,069 18,126 18,031	16,933 16,891 16,891 16,853 16,853	16,731 16,625 16,530 16,587 16,492
M 22	2,5	4h 6g 8g 6e 8e	22 21,958 21,958 21,920 21,920	21,788 21,623 21,428 21,585 21,390	20,376 20,334 20,334 20,296 20,296	20,270 20,164 20,069 20,126 20,031	18,933 18,891 18,891 18,853 18,853	18,731 18,625 18,530 18,587 18,492
M 24	3	4h 6g 8g 6e 8e	24 23,952 23,952 23,915 23,915	23,764 23,577 23,352 23,540 23,315	22,051 22,003 22,003 21,966 21,966	21,926 21,803 21,688 21,766 21,651	20,319 20,271 20,271 20,234 20,234	19,078 19,955 19,840 19,918 19,803
M 27	3	4h 6g 8g 6e 8e	27 26,952 26,952 26,915 26,915	26,764 26,577 26,352 26,540 26,315	25,051 25,003 25,003 24,966 24,966	24,926 24,803 24,688 24,766 24,651	23,319 23,271 23,271 23,234 23,234	22,078 22,955 22,840 22,918 22,803
M 30	3,5	4h 6g 8g 6e 8e	30 29,947 29,947 29,910 29,910	29,735 29,522 29,277 29,485 29,240	27,727 27,674 27,674 27,637 27,637	27,595 27,462 25,339 27,425 27,302	25,706 25,653 25,653 26,616 25,616	25,439 25,306 25,183 25,269 25,146
M 33	3,5	4h 6g 8g 6e 8e	33 32,947 32,947 32,910 32,910	32,735 32,522 32,277 32,485 32,240	30,727 30,674 30,674 30,637 30,637	30,595 30,462 30,339 30,425 30,302	28,706 28,653 28,653 28,616 28,616	28,439 28,306 28,183 28,269 28,146
M 36	4	4h 6g 8g 6e 8e	36 35,940 35,940 35,905 35,905	35,700 35,465 35,190 35,430 35,155	33,402 33,342 33,342 33,307 33,307	33,262 33,118 32,987 33,083 32,952	31,093 31,033 31,033 30 998 30,998	30,799 30,655 30,524 30,620 30,489
M 39	4	4h 6g 8g 6e 8e	39 38,940 38,940 38,905 38,905	38,700 38,465 38,190 38,430 38,155	36,402 36,342 36,342 36,307 36,307	36,262 38,118 35,987 36,083 35,952	34,093 34,033 34,033 33,998 33,998	33,799 33,655 33,524 33,620 33,489
M 42	4,5	4h 6g 8g 6e 8e	42 41,937 41,937 41,900 41,900	41,685 41,137 41,377 41,400 41,100	39,077 39,014 39,014 38,977 38,977	38,927 38,778 38,639 38,741 38,602	36,479 36,416 36,416 36,379 36,379	36,156 35,007 35,868 35,970 35,831
M 45	4,5	4h 6g 8g 6e 8e	45 44,937 44,937 44,900 44,900	44,685 44,437 44,137 44,400 44,100	42,077 42,014 42,014 41,977 41,977	41,927 41,778 41,639 41,741 41,602	39,479 39,416 39,416 39,379 39,379	39,156 38,007 38,868 38,970 38,831
M 48	5	4h 6g 8g 6e 8e	48 47,929 47,929 47,894 47,894	47,665 47,399 47,079 47,364 47,044	44,752 44,681 44,681 44,646 44,646	44,592 44,431 44,281 44,396 44,246	41,866 41,795 41,795 41,760 41,760	41,513 41,352 41,202 41,317 41,167
M 52	5	4h 6g 8g 6e 8e	52 51,929 51,929 51,894 51,894	51,665 51,399 51,079 51,364 51,044	48,752 48,681 48,681 48,646 48,646	48,592 48,431 48,281 48,396 48,246	45,866 45,795 45,795 45,760 45,760	45,613 45,352 45,202 45,317 45,167
M 56	5,5	4h 6g 8g 6e 8e	56 55,925 55,925 55,888 55,888	55,645 55,365 55,025 55,328 54,988	52,428 52,353 52,353 52,316 52,316	52,258 52,088 51,928 52,151 51,891	49,252 49,177 49,177 49,140 49,140	48,870 49,700 48,540 48,663 48,503
M 60	5,5	4h 6g 8g 6e 8e	60 59,925 59,925 59,888 59,888	59,645 59,385 59,025 59,328 58,988	56,428 56,353 56,353 56,316 56,316	56,258 56,088 55,928 56,151 55,891	53,252 53,177 53,177 53,140 53,140	52,870 52,700 52,540 52,663 52,503
M 64	6	4h 6g 8g 6e 8e	64 63,920 63,920 63,882 63,882	63,625 63,320 62,970 63,282 62,932	60,103 60,023 60,023 59,985 59,985	59,923 59,743 59,573 59,705 59,535	56,639 56,659 56,559 56,521 56,521	56,228 55,048 55,878 55,010 55,840
M 68	6	4h 6g 8g 6e 8e	68 67,920 67,920 67,882 67,882	67,625 67,320 66,970 67,282 66,932	64,103 64,023 64,023 63,985 63,985	63,923 63,743 63,573 63,705 63,535	60,639 60,559 60,559 60,521 60,521	60,228 59,048 59,878 59,010 59,840

PROFIL THÉORIQUE
THEORICAL PROFILE
PERFIL TEORICO

DIN 13

MF

ISO-METRIC THREAD
FILETAGE MÉTRIQUE ISO
ROSCA ISO-METRICA



$D_1 = d - 2H_1$
$d_2 = D_2 = d - 0{,}64953\ P$
$d_3 = d - 1{,}22687\ P$
$H = 0{,}86603\ P$
$H_1 = 0{,}54127\ P$
$h_3 = 0{,}61343\ P$
$r = \frac{H}{6} = 0{,}14434\ P$

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*			0,2	0,870	0,755	0,783
	M 1,1*		0,2	0,970	0,855	0,883
M 1,2*			0,2	1,070	0,955	0,983
	M 1,4*		0,2	1,270	1,155	1,183
M 1,6*			0,2	1,470	1,355	1,383
	M 1,8*		0,2	1,670	1,555	1,583
M 2*			0,25	1,838	1,693	1,729
	M 2,2*		0,25	2,038	1,893	1,929
M 2,5			0,35	2,273	2,071	2,121
M 3			0,35	2,773	2,571	2,621
	M 3,5		0,35	3,273	3,071	3,121
M 4			0,50	3,675	3,387	3,459
	M 4,5		0,50	4,175	3,887	3,959
M 5			0,50	4,675	4,387	4,459
		M 5,5	0,50	5,175	4,887	4,959
M 6			0,50	5,675	5 387	5,459
M 6			0,75	5,513	5,080	5,188
		M 7	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			1	7,350	6,773	6,917
		M 9	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			1,25	9,188	8,466	8,647
		M 11	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			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 15	1	14,350	13,773	13,917
		M 15	1,5	14,026	13,160	13,376
M 16			1	15,350	14,773	14,917
M 16			1,5	15,026	14,160	14,376
		M 17	1	16,350	15,773	15,917
		M 17	1,5	16,026	15,160	15,376
	M 18		1	17,350	16,773	16,917
	M 18		1,5	17,026	16,160	16,376
	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

TIVOLY

THEORICAL PROFILE
PROFIL THÉORIQUE
PERFIL TEORICO

MF

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	
Serie 1	Serie 2	Serie 3		$d_2 = D_2$	D_n	D_1
M 24			1,5	23,026	22,160	22,376
M 24			2	22,701	21,546	21,835
		M 25	1	24,350	23,773	23,917
		M 25	1,5	24,026	23,160	23,376
		M 25	2	23,701	22,546	22,835
	M 27		1	26,350	25,773	25,917
	M 27		1,5	26,026	25,160	25,376
	M 27		2	25,701	24,546	24,835
		M 28	1	27,350	26,773	26,917
		M 28	1,5	27,026	26,160	26,376
		M 28	2	26,701	25,546	25,835
M 30			1	29,350	28,773	28,917
M 30			1,5	29,026	28,160	28,376
M 30			2	28,701	27,546	27,835
M 30			3	28,051	26,319	26,752
		M 32	1,5	31,026	30,160	30,376
		M 32	2	30,701	29,546	29,835
	M 33		1,5	32,026	31,160	31,376
	M 33		2	31,701	30,546	30,835
	M 33		3	31,051	29,319	29,752
		M 35	1,5	34,026	33,160	33,376
M 36			1,5	35,026	34,160	34,376
M 36			2	34,701	33,546	33,835
M 36			3	34,051	32,319	32,752
		M 38	1,5	37,026	36,160	36,376
	M 39		1,5	38,026	37,160	37,376
	M 39		2	37,701	36,546	36,835
	M 39		3	37,051	35,319	35,752
		M 40	1,5	39,026	38,160	38,376
		M 40	2	38,701	37,546	37,835
		M 40	3	38,051	36,319	36,752
M 42			1,5	41,026	40,160	40,376
M 42			2	40,701	39,546	39,835
M 42			3	40,051	38,319	38,752
M 42			4	39,402	37,039	37,670
	M 45		1,5	44,026	43,160	43,376
	M 45		2	43,701	42,546	42,835
	M 45		3	43,051	41,319	41,752
	M 45		4	42,402	40,093	40,670
M 48			1,5	47,026	46,160	46,376
M 48			2	46,701	45,546	45,835
M 48			3	46,051	44,319	44,752
M 48			4	45,402	43,093	43,670
		M 50	1,5	49,026	48,160	48,376
		M 50	2	48,701	47,546	47,835
		M 50	3	48,051	46,319	46,752
	M 52		1,5	51,026	50,160	50,376
	M 52		2	50,701	49,546	49,835
	M 52		3	50,051	48,319	48,752
	M 52		4	49,402	47,093	47,670
		M 55	1,5	54,026	53,160	53,376
		M 55	2	53,701	52,546	52,835
		M 55	3	53,051	51,319	51,752
		M 55	4	52,402	50,093	50,670
M 56			1,5	55,026	54,160	54,376
M 56			2	54,701	53,546	53,835
M 56			3	54,051	52,319	52,752
M 56			4	53,402	51,093	51,670
		M 58	1,5	57,026	56,160	56,376
		M 58	2	56,701	55,546	55,835
		M 58	3	56,051	54,319	54,752
		M 58	4	55,402	53,093	53,670
		M 60	1,5	59,026	58,160	58,376
		M 60	2	58,701	57,546	57,835
	M 60		3	58,051	56,319	56,752
	M 60		4	57,402	55,093	55,670
		M 62	1,5	61,026	60,160	60,376
		M 62	2	60,701	59,546	59,835
		M 62	3	60,051	58,319	58,752
		M 62	4	59,402	57,093	57,670
M 64			1,5	63,026	62,160	62,376
M 64			2	62,701	61,546	61,835
M 64			3	62,051	60,319	60,752
M 64			4	61,402	59,093	59,670
		M 65	1,5	64,026	63,160	63,376
		M 65	2	63,701	62,546	62,835
		M 65	3	63,051	61,319	61,752
		M 65	4	62,402	60,093	60,670
	M 68		1,5	67,026	66,160	66,376
	M 68		2	66,701	65,546	65,835
	M 68		3	66,051	64,319	64,752
	M 68		4	65,402	63,093	63,670
		M 70	1,5	69,026	68,160	68,376
		M 70	2	68,701	67,546	67,835
		M 70	3	68,051	66,319	66,752
		M 70	4	67,402	65,093	65,670
		M 70	6	66,103	62,639	63,505
M 72			1,5	71,026	70,160	70,376
M 72			2	70,701	69,546	69,835
M 72			3	70,051	68,319	68,752
M 72			4	69,402	67,093	67,670
M 72			6	68,103	64,639	65,505
		M 75	1,5	74,026	73,160	73,376
		M 75	2	73,701	72,546	72,835
		M 75	3	73,051	71,319	71,752
		M 75	4	72,402	70,093	70,670
	M 76		1,5	75,026	74,160	74,376
	M 76		2	74,701	73,546	73,835
	M 76		3	74,051	72,319	72,752
	M 76		4	73,402	71,093	71,670
	M 76		6	72,103	68,639	69,505
M 80			1,5	79,026	78,160	78,376
M 80			2	78,701	77,546	77,835
M 80			3	78,051	76,319	76,752
M 80			4	77,402	75,093	75,670
M 80			6	76,103	72,639	73,505
		M 85	2	83,701	82,546	82,835
		M 85	3	83,051	81,319	81,752
	M 85		4	82,402	80,093	80,670
	M 85		6	81,103	77,639	78,505
M 90			2	88,701	87,546	87,835
M 90			3	88,051	86,319	86,752
M 90			4	87,402	85,093	85,670
M 90			6	86,103	82,639	83,505
		M 95	2	93,701	92,546	92,835
		M 95	3	93,051	91,319	91,752
	M 95		4	92,402	90,093	90,670
	M 95		6	91,103	87,639	88,505
M100			2	98,701	97,546	97,835
M100			3	98,051	96,319	96,752
M100			4	97,402	95,093	95,670
M100			6	96,103	92,639	93,505

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DIN 13

ISO-METRIC FINE THREAD
FILETAGE MÉTRIQUE ISO FINE
ROSCA ISO-METRICA FINA

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.
M 1 x 0,2	4H	1,000	0,870	0,910	0,783	0,821
M 1,1 x 0,2	4H	1,100	0,970	1,010	0,883	0,921
M 1,2 x 0,2	4H	1,200	1,070	1,110	0,983	1,021
M 1,4 x 0,2	4H	1,400	1,270	1,310	1,183	1,221
M 1,6 x 0,2	4H	1,600	1,470	1,512	1,383	1,421
M 1,8 x 0,2	4H	1,800	1,670	1,712	1,583	1,621
M 2 x 0,25	4H	2,000	1,838	1,886	1,729	1,774
M 2,2 x 0,25	4H	2,200	2,038	2,086	1,929	1,974
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 3 x 0,35	4H	3,000	2,773	2,829	2,621	2,684
M 3,5 x 0,35	4H	3,500	3,273	3,329	3,121	3,184
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 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 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 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 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 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 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 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 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 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 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 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 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 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 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 12 x 1	5H 6H 7H	12,000 12,000 12,000	11,350 11,350 11,550	11,475 11,510 11,650	10,917 10,917 10,917	11,107 11,153 11,217

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.
M 12 x 1,25	5H 6H 7H	12,000 12,000 12,000	11,188 11,188 11,188	11,328 11,368 11,412	10,647 10,647 10,647	10,859 10,912 10,982
M 12 x l,5	5H 6H 7H	12,000 12,000 12,000	11,026 11,026 11,026	11,176 11,216 11,262	10,376 10,376 10,376	10,612 10,676 10,751
M 14 x 1	5H 6H 7H	14,000 14,000 14,000	13,350 13,350 13,350	13,475 13,510 13,550	12,917 12,917 12,917	13,107 13,153 13,217
M 14 x 1,25	5H 6H 7H	14,000 14,000 14,000	13,188 13,188 13,188	13,300 13,368 13,412	12,647 12,647 12,647	12,859 12,912 12,982
M 14 x 1,5	5H 6H 7H	14,000 14,000 14,000	13,026 13,026 13,026	13,176 13,216 13,262	12,376 12,376 12,376	12,612 12,676 12,751
M 15 x 1	5H 6H 7H	15,000 15,000 15,000	14,350 14,350 14,350	14,475 14,510 14,550	13,917 13,917 13,917	14,107 14,153 14,217
M 15 x 1,5	5H 6H 7H	15,000 15,000 15,000	14,026 14,026 14,026	14,176 14,216 14,262	13,376 13,376 13,376	13,612 13,676 13,751
M 16 x 1	5H 6H 7H	16,000 16,000 16,000	15,350 15,350 15,350	15,475 15,510 15,550	14,917 14,917 14,917	15,107 15,153 15,217
M 16 x 1,5	5H 6H 7H	16,000 16,000 16,000	15,026 15,026 15,026	15,176 15,216 15,262	14,376 14,376 14,376	14,612 14,676 14,751
M 17 x 1	5H 6H 7H	17,000 17,000 17,000	16,350 16,350 16,350	16,475 16,510 16,550	15,917 15,917 15,917	16,107 16,153 16,217
M 17 x 1,5	5H 6H 7H	17,000 17,000 17,000	16,026 16,026 16,026	16,176 16,216 16,262	15,376 15,376 15,376	15,612 15,676 15,751
M 18 x 1	5H 6H 7H	18,000 18,000 18,000	17,350 17,350 17,350	17,475 17,510 17,550	16,917 16,917 16,917	17,107 17,153 17,217
M 18 x 1,5	5H 6H 7H	18,000 18,000 18,000	17,026 17,026 17,026	17,176 17,216 17,262	16,376 16,376 16,376	16,612 16,676 16,751
M 18 x 2	5H 6H 7H	18,000 18,000 18,000	16,701 16,701 16,701	16,871 16,913 16,966	15,835 15,835 15,835	16,135 16,210 16,310
M 20 x 1	5H 6H 7H	20,000 20,000 20,000	19,350 19,350 19,350	19,475 19,510 19,550	18,917 18,917 18,917	19,107 19,153 19,217
M 20X1,5	5H 6H 7H	20,000 20,000 20,000	19,026 19,026 19,026	19,176 19,216 19,262	18,376 18,376 18,376	18,612 18,676 18,751
M 20 x2	5H 6H 7H	20,000 20,000 20,000	18,701 18,701 18,701	18,871 18,913 18,966	17,835 17,835 17,835	18,135 18,210 18,310
M 22 x 1	5H 6H 7H	22,000 22,000 22,000	21,350 21,350 21,350	21,475 21,510 21,550	20,917 20,917 20,917	21,107 21,153 21,217
M 22 x 1,5	5H 6H 7H	22,000 22,000 22,000	21,026 21,026 21,026	21,176 21,216 21,262	20,376 20,376 20,376	20,612 20,676 20,751
M 22 x 2	5H 6H 7H	22,000 22,000 22,000	20,701 20,701 20,701	20,871 20,913 20,966	19,835 19,835 19,835	20,135 20,210 20,310
M 24 x 1	5H 6H 7H	24,000 24,000 24,000	23,350 23,350 23,350	23,482 23,520 23,562	22,917 22,917 22,917	23,107 23,153 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	
			D_2 min.	D_2 máx.	D_1 min.	D_1 máx.
M 24 x 1,5	5H 6H 7H	24,000 24,000 24,000	23,026 23,026 23,026	23,186 23,226 23,276	22,376 22,376 22,376	22,612 22,676 22,751
M 24 x 2	5H 6H 7H	24,000 24,000 24,000	22,701 22,701 22,701	22,881 22,925 22,981	21,835 21,835 21,835	22,135 22,210 22,310
M 25 x 1	5H 6H 7H	25,000 25,000 25,000	24,350 24,350 24,350	24,482 24,520 24,562	23,917 23,917 23,917	24,107 24,153 24,217
M 25 x 1,5	5H 6H 7H	25,000 25,000 25,000	24,026 24,026 24,026	24,186 24,226 24,276	23,376 23,376 23,376	23,612 23,676 23,751
M 25 x 2	5H 6H 7H	25,000 25,000 25,000	23,701 23,701 23,701	23,881 23,925 23,981	22,835 22,835 22,835	23,135 23,210 23,310
M 27 x 1	5H 6H 7H	27,000 27,000 27,000	26,350 26,350 26,350	26,482 26,520 26,562	25,917 25,917 25,917	26,107 26,153 26,217
M 27 x 1,5	5H 6H 7H	27,000 27,000 27,000	26,026 26,026 26,026	26,186 26,226 26,276	25,376 25,376 25,376	25,612 25,676 25,751
M 27 x 2	5H 6H 7H	27,000 27,000 27,000	25,701 25,701 25,701	25,881 25,925 25,981	24,835 24,835 24,835	25,135 25,210 25,310
M 28 x 1	5H 6H 7H	28,000 28,000 28,000	27,350 27,350 27,350	27,482 27,520 27,562	26,917 26,917 26,917	27,107 27,153 27,217
M 28 x 1,5	5H 6H 7H	28,000 28,000 28,000	27,026 27,026 27,026	27,186 27,226 27,276	26,376 26,376 26,376	26,612 26,676 26,751
M 28 x 2	5H 6H 7H	28,000 28,000 28,000	26,701 26,701 26,701	26,881 26,925 26,981	25,835 25,835 25,835	26,135 26,210 26,310
M 30 x 1	5H 6H 7H	30,000 30,000 30,000	29,350 29,350 29,350	29,482 29,520 29,562	28,917 28,917 28,917	29,107 29,153 29,217
M 30 x 1,5	5H 6H 7H 7H	30,000 30,000 30,000 30,000	29,026 29,026 29,026 29,026	29,186 29,226 29,276 29,276	28,376 28,376 28,376 28,376	28,612 28,676 28,751 28,751
M 30 x 2	5H 6H 7H	30,000 30,000 30,000	28,701 28,701 28,701	28,881 28,925 28,981	27,835 27,835 27,835	28,135 28,210 28,310
M 30 x 3	5H 6H 7H	30,000 30,000 30,000	28,051 28,051 28,051	28,263 28,316 28,386	26,752 26,752 26,752	27,152 27,252 27,382
M 32 x 1,5	5H 6H 7H	32,000 32,000 32,000	31,026 31,026 31,026	31,186 31,226 31,276	30,376 30,376 30,376	30,612 30,676 30,751
M 32 x 2	5H 6H 7H	32,000 32,000 32,000	30,701 30,701 30,701	30,881 30,925 30,981	29,835 29,835 29,835	30,135 30,210 30,310
M 33 x 1,5	5H 6H 7H	33,000 33,000 33,000	32,026 32,026 32,026	32,186 32,226 32,276	31,376 31,376 31,376	31,612 31,676 31,751
M 33 x 2	5H 6H 7H	33,000 33,000 33,000	31,701 31,701 31,701	31,881 31,925 31,981	30,835 30,835 30,835	31,135 31,210 31,310
M 33 x 3	5H 6H 7H	33,000 33,000 33,000	31,051 31,051 31,051	31,263 31,316 31,386	29,752 29,752 29,752	30,152 30,252 30,382
M 35 x 1,5	5H 6H 7H	35,000 35,000 35,000	34,026 34,026 34,026	34,186 34,226 34,276	33,376 33,376 33,376	33,612 33,676 33,751

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.
M 36 x 1,5	5H 6H 7H	36,000 36,000 36,000	35,026 35,026 35,026	35,186 35,226 35,276	34,376 34,376 34,376	34,612 34,676 34,751
M 36 x 2	5H 6H 7H	36,000 36,000 36,000	34,701 34,701 34,701	34,881 34,925 34,981	33,835 33,835 33,835	34,135 34,210 34,310
M 36 x 3	5H 6H 7H	36,000 36,000 36,000	34,051 34,051 34,051	34,263 34,316 34,386	32,752 32,752 32,752	33,152 33,252 33,382
M 38 x 1,5	5H 6H 7H	38,000 38,000 38,000	37,026 37,026 37,026	37,186 37,226 37,276	36,376 36,376 36,376	36,612 36,676 36,751
M 39 x 1,5	5H 6H 7H	39,000 39,000 39,000	38,026 38,026 38,	38,186 38,226 38,276	37,376 37,376 37,376	37,612 37,676 37,751
M 39 x 2	5H 6H 7H	39,000 39,000 39,000	37,701 37,701 37,701	37,881 37,925 37,981	36,835 36,835 36,835	37,135 37,210 37,310
M 39 x 3	5H 6H 7H	39,000 39,000 39,000	37,051 37,051 37,051	37,263 37,316 37,386	35,752 35,752 35,752	36,152 36,252 36,382
M 40 x 1,5	5H 6H 7H	40,000 40,000 40,000	39,026 39,026 39,026	39,186 39,226 39,276	38,376 38,376 38,376	38,612 38,676 38,751
M 40 x 2	5H 6H 7H	40,000 40,000 40,000	38,701 38,701 38,701	38,881 38,925 38,981	37,835 37,835 37,835	38,135 38,210 38,310
M 40 x 3	5H 6H 7H	40,000 40,000 40,000	38,051 38,051 38,051	38,263 38,316 38,386	36,752 36,752 36,752	37,152 37,252 37,382
M 42 x 1,5	5H 6H 7H	42,000 42,000 42,000	41,026 41,026 41,026	41,186 41,226 41,276	40,376 40,376 40,376	40,612 40,676 40,751
M 42 x 2	5H 6H 7H	42,000 42,000 42,000	40,701 40,701 40,701	40,881 40,925 40,981	39,835 39,835 39,835	40,135 40,210 40,310
M 42 x 3	5H 6H 7H	42,000 42,000 42,000	40,051 40,051 40,051	40,263 40,316 40,386	38,752 38,752 38,752	39,152 39,252 39,382
M 42 x 4	5H 6H 7H	42,000 42,000 42,000	39,402 39,402 39,402	39,638 39,702 39,777	37,670 37,670 37,670	38,145 38,270 38,420
M 45 x1,5	5H 6H 7H	45,000 45,000 45,000	44,026 44,026 44,026	44,186 44,226 44,276	43,376 43,376 43,376	43,612 43,676 43,751
M 45 x 2	5H 6H 7H	45,000 45,000 45,000	43,701 43,701 43,701	43,881 43,925 43,981	42,835 42,835 42,835	43,135 43,210 43,310
M 45 x 3	5H 6H 7H	45,000 45,000 45,000	43,051 43,051 43,051	43,263 43,316 43,386	41,752 41,752 41,752	42,152 42,252 42,382
M 45 x 4	5H 6H 7H	45,000 45,000 45,000	42,402 42,402 42,402	42,638 42,702 42,777	40,670 40,670 40,670	41,145 41,270 41,420
M 48 x 1,5	5H 6H 7H	48,000 48,000 48,000	47,026 47,026 47,026	47,196 47,238 47,291	46,376 46,376 46,376	46,612 46,676 46,751
M 48 x 2	5H 6H 7H	48,000 48,000 48,000	46,701 46,701 46,701	46,891 46,937 47,001	45,835 45,835 45,835	46,135 46,210 46,310
M 48 x 3	5H 6H 7H	48,000 48,000 48,000	46,051 46,051 46,051	46,275 46,331 46,406	44,752 44,752 44,752	45,152 45,252 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 6H 7H	48,000 48,000 48,000	45,402 45,402 45,402	45,652 45,717 45,802	43,670 43,670 43,670	44,145 44,270 44,420	**M 60 x 1,5**	5H 6H 7H	60,000 60,000 60,000	59,026 59,026 59,026	59,196 59,238 59,291	58,376 58,376 58,376	58,612 58,676 58,751
M 50 x 15	5H 6H 7H	50,000 50,000 50,000	49,026 49,026 49,026	49,196 49,238 49,291	48,376 48,376 48,376	48,612 48,676 48,751	**M 60 x 2**	5H 6H 7H	60,000 60,000 60,000	58,701 58,701 58,701	58,891 58,937 59,001	57,835 57,835 57,835	58,135 58,210 58,310
M 50 x 2	5H 6H 7H	50,000 50,000 50,000	48,701 48,701 48,701	48,891 48,937 49,001	47,835 47,835 47,835	48,135 48,210 48,310	**M 60 x 3**	5H 6H 7H	60,000 60,000 60,000	58,051 58,051 58,051	58,275 58,331 58,406	56,752 56,752 56,752	57,152 57,252 57,382
M 50 x 3	5H 6H 7H	50,000 50,000 50,000	48,051 48,051 48,051	48,275 48,331 48,406	46,752 46,752 46,752	47,152 47,252 47,382	**M 60 x 4**	5H 6H 7H	60,000 60,000 60,000	57,402 57,402 57,402	57,652 57,717 57,802	55,670 55,670 55,670	56,145 56,270 56,420
M 52 x 1,5	5H 6H 7H	52,000 52,000 52,000	51,026 51,026 51,026	51,196 51,238 51,291	50,376 50,376 50,376	50,612 50,676 50,751	**M 62 x 1,5**	5H 6H 7H	62,000 62,000 62,000	61,026 61,026 61,026	61,196 61,238 61,291	60,376 60,376 60,376	60,612 60,676 60,751
M 52 x 2	5H 6H 7H	52,000 52,000 52,000	50,701 50,701 50,701	50,891 50,937 51,001	49,835 49,835 49,835	50,135 50,210 50,310	**M 62 x 2**	5H 6H 7H	62,000 62,000 62,000	60,701 60,701 60,701	60,891 60,937 61,001	59,835 59,835 59,835	60,135 60,210 60,310
M 52 x 3	5H 6H 7H	52,000 52,000 52,000	50,051 50,051 50,051	50,275 50,331 50,406	48,752 48,752 48,752	49,152 49,252 49,382	**M 62 x 3**	5H 6H 7H	62,000 62,000 62,000	60,051 60,051 60,051	60,275 60,331 60,406	58,752 58,752 58,752	59,152 59,252 59,382
M 52 x 4	5H 6H 7H	52,000 52,000 52,000	49,402 49,402 49,402	49,652 49,717 49,802	47,670 47,670 47,670	48,145 48,270 48,420	**M 62 x 4**	5H 6H 7H	62,000 62,000 62,000	59,402 59,402 59,402	59,652 59,717 59,802	57.670 57,670 57,670	58,145 58,270 58,420
M 55 x 1,5	5H 6H 7H	55,000 55,000 55,000	54,026 54,026 54,026	54,196 54,238 54,291	53,376 53,376 53,376	53,612 53,676 53,751	**M 64 x 1,5**	5H 6H 7H	64,000 64,000 64,000	63,026 63,026 63,026	63,196 63,238 63,291	62,376 62,376 62,376	62,612 62,676 62,751
M 55 x 2	5H 6H 7H	55,000 55,000 55,000	53,701 53,701 53,701	53,891 53,937 54,001	52,835 52,835 52,835	53,135 53,210 53,310	**M 64 x 2**	5H 6H 7H	64,000 64,000 64,000	62,701 62,701 62,701	62,891 62,937 63,001	61,835 61,835 61,835	62,135 62,210 62,310
M 55 x 3	5H 6H 7H	55,000 55,000 55,000	53,051 53,051 53,051	53,275 53,331 53,406	51,752 51,752 51,752	52,152 52,252 52,382	**M 64 x 3**	5H 6H 7H	64,000 64,000 64,000	62,051 62,051 62,051	62,275 62,331 62,406	60,752 60,752 60,752	61,152 61,252 61,382
M 55 x 4	5H 6H 7H	55,000 55,000 55,000	52,402 52,402 52,402	52,652 52,717 52,802	50,670 50,670 50,670	51,145 51,270 51,420	**M 64 x 4**	5H 6H 7H	64,000 64,000 64,000	61,402 61,402 61,402	61,652 61,717 61,802	59,670 59,670 59,670	60,145 60,270 60,420
M 56 x 1,5	5H 6H 7H	56,000 56,000 56,000	55,026 55,026 55,026	54,196 55,238 55,291	54,376 54,376 54,376	54,612 54,676 54,751	**M 65 x 1,5**	5H 6H 7H	65,000 65,000 65,000	64,026 64,026 64,026	64,196 64,238 64,291	63,376 63,376 63,376	64,612 63,676 63,751
M 56 x 2	5H 6H 7H	56,000 56,000 56,000	54,701 54,701 54,701	54,891 54,937 55,001	53,835 53,835 53,835	54,135 54,210 54,310	**M 65 x 2**	5H 6H 7H	65,000 65,000 65,000	63,701 63,701 63,701	63,891 63,937 64,001	62,835 62,835 62,835	63,135 63,210 63,310
M 56 x 3	5H 6H 7H	56,000 56,000 56,000	54,051 54,051 54,051	54,275 54,331 54,406	52,752 52,752 52,752	53,152 53,252 53,382	**M 65 x 3**	5H 6H 7H	65,000 65,000 65,000	63,051 63,051 63,051	63,275 63,331 63,406	61,752 61,752 61,752	62,152 62,252 62,382
M 56 x4	5H 6H 7H	56,000 56,000 56,000	53,402 53,402 53,402	53,652 53,717 53,802	51,670 51,670 51,670	52,145 52,270 52,420	**M 65 x 4**	5H 6H 7H	65,000 65,000 65,000	62,402 62,402 62,402	62,652 62,717 62,802	60,670 60,670 60,670	61,145 61,270 61,420
M 58 x 1,5	5H 6H 7H	58,000 58,000 58,000	57,026 57,026 57,026	57,196 57,238 57,291	56,376 56,376 56,376	56,612 56,676 56,751	**M 68 x 1,5**	5H 6H 7H	68,000 68,000 68,000	67.026 67,026 67,026	67,196 67,238 67,291	66,376 66,376 66,376	66,612 66,676 66,751
M 58 x 2	5H 6H 7H	58,000 58,000 58,000	56,701 56,701 56,701	56,891 56,937 57,001	55,835 55,835 55,835	56,135 56,210 56,310	**M 68 x 2**	5H 6H 7H	68,000 68,000 68,000	66,701 66,701 66,701	66,891 66,937 67,001	65,835 65,835 65,835	66,135 66,210 66,310
M 58 x3	5H 6H 7H	58,000 58,000 58,000	56,051 56,051 56,051	56,275 56,331 56,406	54,752 54,752 54,752	55,152 55,252 55,382	**M 68 x 3**	5H 6H 7H	68,000 68,000 68,000	66,051 66,051 66,051	66,275 66,331 66,406	64,752 64,752 64,752	65,152 65,252 65,382
M 58 x 4	5H 6H 7H	58,000 58,000 58,000	55,402 55,402 55,402	55,652 55,717 55,802	53,670 53,670 53,670	54,145 54,270 54,420	**M 68 x 4**	5H 6H 7H	68,000 68,000 68,000	65,402 65,402 65,402	65,652 65,717 65,802	63,670 63,670 63,670	64,145 64,270 64,420

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MF

DIN 13

ISO-METRIC FINE THREAD
FILETAGE MÉTRIQUE ISO FINE
ROSCA ISO-METRICA FINA

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 6H 7H	70,000 70,000 70,000	69,026 69,026 69,026	69,196 69,238 69,291	68,376 68,376 68,376	68,612 68,676 68,751	**M 80 x 2**	5H 6H 7H	80,000 80,000 80,000	78,701 78,701 78,701	78,891 78,937 79,001	77,835 77,835 77,835	78,135 78,210 78,310
M 70 x 2	5H 6H 7H	70,000 70,000 70,000	68,701 68,701 68,701	68,891 68,937 69,001	67,835 67,835 67,835	68,135 68,210 68,310	**M 80 x 3**	5H 6H 7H	80,000 80,000 80,000	78,051 78,051 78,051	78,275 78,331 78,406	76,752 76,752 76,752	77,152 77,252 77,382
M 70 x 3	5H 6H 7H	70,000 70,000 70,000	68,051 68,051 68,051	68,275 68,331 68,406	66,752 66,752 66,752	67,152 67,252 67,382	**M 80 x 4**	5H 6H 7H	80,000 80,000 80,000	77,402 77,402 77,402	77,652 77,717 77,802	75,670 75,670 75,670	76,145 76,270 76,420
M 70 x 4	5H 6H 7H	70,000 70,000 70,000	67,402 67,402 67,402	67,652 67,717 67,802	65,670 65,670 65,670	66,145 66,270 66,420	**M 80 x 6**	5H 6H 7H	80,000 80,000 80,000	76,103 76,103 76,103	76,403 76,478 76,578	73,505 73,505 73,505	74,135 74,305 74,505
M 70 x 6	5H 6H 7H	70,000 70,000 70,000	66,103 66,103 66,103	66,403 66,478 66,578	63,505 63,505 63,505	64,135 64,305 64,505	**M 85 x 2**	5H 6H 7H	85,000 85,000 85,000	83,701 83,701 83,701	83,891 83,937 84,001	82,835 82,835 82,835	83,135 83,210 83,310
M 72 x1,5	5H 6H 7H	72,000 72,000 72,000	71,026 71,026 71,026	71,196 71,238 71,291	70,376 70,376 70,376	70,612 70,676 70,751	**M 85 x 3**	5H 6H 7H	85,000 85,000 85,000	83,051 83,051 83,051	83,275 83,331 83,406	81,752 81,752 81,752	82,152 82,252 82,382
M 72 x 2	5H 6H 7H	72,000 72,000 72,000	70,701 70,701 70,701	70,891 70,937 71,001	69,835 69,835 69,835	70,135 70,210 70,310	**M 85 x 4**	5H 6H 7H	85,000 85,000 85,000	82,402 82,402 82,402	82,652 82,717 82,802	80,670 80,670 80,670	81,145 81,270 81,420
M 72 x 3	5H 6H 7H	72,000 72,000 72,000	70,051 70,051 70,051	70,275 70,331 70,406	68,752 68,752 68,752	69,152 69,252 69,382	**M 85 x 6**	5H 6H 7H	85,000 85,000 85,000	81,103 81,103 81,103	81,403 81,478 81,578	78,505 78,505 78,505	79,135 79,305 79,505
M 72 x 4	5H 6H 7H	72,000 72,000 72,000	69,402 69,402 69,402	69,652 69,717 69,802	67,670 67,670 67,670	68,145 68,270 68,420	**M 90 x 2**	5H 6H 7H	90,000 90,000 90,000	88,701 88,701 88,701	88,891 88,937 89,001	87,835 87,835 87,835	88,135 88,210 88,310
M 72 x 6	5H 6H 7H	72,000 72,000 72,000	68,103 68,103 68,103	68,403 68,478 68,578	65,505 65,505 65,505	66,135 66,305 66,505	**M 90 x 3**	5H 6H 7H	90,000 90,000 90,000	88,051 88,051 88,051	88,275 88,331 88,406	86,752 86,752 86,752	87,152 87,252 87,382
M 75 x 1,5	5H 6H 7H	75,000 75,000 75,000	74,026 74,026 74,026	74,196 74,238 74,291	73,376 73,376 73,376	73,612 73,676 73,751	**M 90 x 4**	5H 6H 7H	90,000 90,000 90,000	87,402 87,402 87,402	87,652 87,717 85,802	85,670 85,670 85,670	86,145 86,270 86,420
M 75 x 2	5H 6H 7H	75,000 75,000 75,000	73,701 73,701 73,701	73,891 73,937 74,001	72,835 72,835 72,835	73,135 73,210 73,310	**M 90 x 6**	5H 6H 7H	90,000 90,000 90,000	86,103 86,103 86,103	86,403 86,478 86,578	83,505 83,505 83,505	84,135 84,305 84,505
M 75 x 3	5H 6H 7H	75,000 75,000 75,000	73,051 73,051 73,051	73,275 73,331 73,406	71,752 71,752 71,752	72,152 72,252 72,382	**M 95 x 2**	5H 6H 7H	95,000 95,000 95,000	93,701 93,701 93,701	93,901 93,951 94,016	92,835 92,835 92,835	93,135 93,210 93,310
M 75 x 4	5H 6H 7H	75,000 75,000 75,000	72,402 72,402 72,402	72,652 72,717 72,802	70,670 70,670 70,670	71,145 71,270 71,420	**M 95 x 3**	5H 6H 7H	95,000 95,000 95,000	93,051 93,051 93,051	93,287 93,351 93,426	91,752 91,752 91,752	92,152 92,252 92,382
M 76 x 1,5	5H 6H 7H	76,000 76,000 76,000	75,026 75,026 75,026	75,196 75,238 75,291	74,376 74,376 74,376	74,612 74,676 74,751	**M 95 x 4**	5H 6H 7H	95,000 95,000 95,000	92,402 92,402 92,402	92,667 92,737 92,827	90,670 90,670 90,670	91,145 91,270 91,420
M 76 x 2	5H 6H 7H	76,000 76,000 76,000	74,701 74,701 74,701	74,891 74,937 75,001	73,835 73,835 73,835	74,135 74,210 74,310	**M 95 x 6**	5H 6H 7H	95,000 95,000 95,000	91,103 91,103 91,103	91,418 91,503 91,603	88,505 88,505 88,505	89,135 89,305 89,505
M 76 x 3	5H 6H 7H	76,000 76,000 76,000	74,051 74,051 74,051	74,275 74,331 74,406	72,752 72,752 72,752	73,152 73,252 73,382	**M 100 x 2**	5H 6H 7H	100,000 100,000 100,000	98,701 98,701 98,701	98,901 98,951 99,016	97,835 97,835 97,835	98,135 98,210 98,310
M 76 x 4	5H 6H 7H	76,000 76,000 76,000	73,402 73,402 73,402	73,652 73,717 73,802	71,670 71,670 71,670	72,145 72,270 72,420	**M 100 x 3**	5H 6H 7H	100,000 100,000 100,000	98,051 98,051 98,051	98,287 98,351 98,426	96,752 96,752 96,752	97,152 97,252 97,382
M 76 x 6	5H 6H 7H	76,000 76,000 76,000	72,103 72,103 72,103	72,403 72,478 72,576	69,505 69,505 69,505	70,135 70,305 70,505	**M 100 x 4**	5H 6H 7H	100,000 100,000 100,000	97,402 97,402 97,402	97,667 97,737 97,824	95,670 95,670 95,670	96,145 96,270 96,420
M 80 x 1,5	5H 6H 7H	80,000 80,000 80,000	79,026 79,026 79,026	79,196 79,238 79,291	78,376 78,376 78,376	78,612 78,676 78,751	**M 100 x 6**	5H 6H 7H	100,000 100,000 100,000	96,103 96,103 96,103	96,418 96,503 96,603	93,505 93,505 93,505	94,135 94,305 94,505

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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	
		d máx.	d min.	d_2 máx.	d_2 min.	d_n máx.	d_n min.
M 1 x 0,2	4h	1,000	0,964	0,870	0,840	0,755	0,718
	6h	1,000	0,944	0,870	0,822	0,755	0,700
M 1,1 x 0,2	4h	1,100	1,064	0,970	0,940	0,855	0,818
	6h	1,100	1,044	0,970	0,922	0,855	0,800
M 1,2 x 0,2	4h	1,200	1,164	1,070	1,040	0,955	0,918
	6h	1,200	1,144	1,070	1,022	0,955	0,900
M 1,4 x 0,2	4h	1,400	1,364	1,270	1,240	1,155	1,118
	6h	1,400	1,344	1,270	1,222	1,155	1,100
M 1,6 x 0,2	4h	1,600	1,564	1,470	1,438	1,355	1,316
	6g	1,583	1,527	1,453	1,403	1,338	1,281
M 1,8 x 0,2	4h	1,800	1,764	1,670	1,638	1,555	1,516
	6g	1,783	1,727	1,653	1,603	1,538	1,481
M 2 x 0,25	4h	2,000	1,958	1,838	1,802	1,693	1,647
	6g	1,982	1,915	1,820	1,764	1,675	1,609
M 2,2 x 0,25	4h	2,200	2,158	2,038	2,002	1,893	1,847
	6g	2,182	2,115	2,020	1,964	1,875	1,809
M 2,5 x 0,35	4h	2,400	2,447	2,273	2,233	2,071	2,018
	6g	2,481	2,396	2,254	2,191	2,052	1,976
M 3 x 0,35	4h	3,000	2,947	2,773	2,731	2,571	2,516
	6g	2,981	2,896	2,754	2,687	2,552	2,472
M 3,5 X 0,35	4h	3,500	3,447	3,273	3,231	3,071	3,016
	6g	3,481	3,396	3,254	3,187	3,052	2,972
M 4 x 0,5	4h	4,000	3,933	3,675	3,627	3,387	3,320
	6g	3,980	3,874	3,655	3,580	3,367	3,273
M 4,5 x 0,5	4h	4,500	4,433	4,175	4,127	3,867	3,820
	6g	4,480	4,374	4,155	4,080	3,867	3,773
M 5 x 0,5	4h	5,000	4,933	4,675	4,627	4,387	4,320
	6g	4,980	4,874	4,655	4,580	4,367	4,273
M 5,5 x 0,5	4h	5,500	5,433	5,175	5,127	4,887	4,820
	6g	5,480	5,374	5,155	5,080	4,867	4,773
M 6 x 0,5	4h	6,000	5,933	5,675	5,622	5,387	5,315
	6g	5,980	5,874	5,655	5,570	5,367	5,263
M 6 x 0,75	4h	6,000	5,910	5,513	5,450	5,080	4,988
	6g	5,978	5,838	5,491	5,391	5,058	4,929
M 7 x 0,75	4h	7,000	6,910	6,513	6,450	6,080	5,988
	6g	6,978	6,838	6,491	6,391	6,058	5,929
M 8 x 0,5	4h	8,000	7,933	7,675	7,622	7,387	7,315
	6g	7,980	7,874	7,655	7,570	7,367	7,263
M 8 x 0,75	4h	8,000	7,910	7,513	7,450	7,080	6,988
	6g	7,978	7,838	7,491	7,391	7,058	6,929
M 8 x 1	4h	8,000	7,888	7,350	7,279	6,773	6,663
	6g	7,974	7,794	7,324	7,212	6,747	6,596
	8g	7,974	7,694	7,324	7,144	6,747	6,528
M 9 x 1	4h	9,000	8,888	8,350	8,279	7,773	7,663
	6h	8,974	8,794	8,324	8,212	7,747	7,596
	8g	8,974	8,694	8,324	8,144	7,747	7,528
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
	8g	9,974	9,694	9,324	9,144	8,747	8,628
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
	8g	9,972	9,637	9,160	8,970	8,438	8,200
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

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 min.	d_2 máx.	d_2 min.	d_n máx.	d_n min.
M 12 x 1	4h	12,000	11,888	11,350	11,275	10,773	10,659
	6g	11,974	11,794	11,324	11,206	10,747	10,590
	8g	11,974	11,694	11,324	11,134	10,747	10,518
M 12 x 1,25	4h	12,000	11,868	11,188	11,103	10,466	10,333
	6g	11,972	11,760	11,160	11,028	10,438	10,258
	8g	11,972	11 637	11 160	10,948	10,438	10,178
M 12 x 1,5	4h	12,000	11,850	11,026	10,936	10,160	10,012
	6g	11,968	11,732	10,994	10,854	10,128	9,930
	8g	11,968	11,593	10,994	10,770	10,128	9,846
M 14 x 1	4h	14,000	13,888	13,350	13,275	12,773	12,659
	6g	13,974	13,794	13,324	13,206	12,747	12,590
	8g	13,974	13,694	13,324	13,134	12,747	12,518
M 14 x 1,25	4h	14,000	13,868	13,188	13,103	12,466	12,333
	6g	13,972	13,760	13,160	13,028	12,438	12,258
M 14 x 1,5	4h	14,000	13,850	13,026	12,936	12,160	12,012
	6g	13,968	13,732	12,994	12,854	12,128	11,930
	8g	13,968	13,593	12,994	12,770	12,128	11,846
M 15 x 1	4h	15,000	14,888	14,350	14,275	13,773	13,659
	6g	14,974	14,794	14,324	14,206	13,747	13,590
	8g	14,974	14,964	14,324	13,134	13,747	13,518
M 15 x 1,5	4h	15,000	14,850	14,026	13,936	13,160	13,012
	6g	14,968	14,732	13,994	13,854	13,128	12,930
	8g	14,968	14,593	13,994	13,770	13,128	12,846
M 16 x 1	4h	16,000	15,888	15,350	15,275	14,773	14,659
	6g	15,974	15,794	15,324	15,206	14,747	14,590
	8g	15,974	15,694	15,324	15,134	14,747	14,518
M 16 x 1,5	4h	16,000	15,850	15,026	14,936	14,160	14,012
	6g	15,968	15,732	14,994	14,854	14,128	13,930
	8g	15,968	15,593	14,994	14,770	14,128	13,846
M 17 x 1	4h	17,000	16,888	16,350	16,275	15,773	15,659
	6g	16,974	16,794	16,324	16,206	15,747	15,590
	8g	16,974	16,694	16,324	16,134	15,747	15,518
M 17 x 1,5	4h	17,000	16,850	16,026	15,936	15,160	15,012
	6g	16,968	16,732	15,994	15,854	15,128	14,930
	8g	16,968	16,593	15,994	15,770	15,128	14,846
M 18 x 1	4h	18,000	17,888	17,350	17,275	16,773	16,659
	6g	17,974	17,794	17,324	17,206	16,747	16,590
	8g	17,974	17,694	17,324	17,134	16,747	16,518
M 18 x 1,5	4h	18,000	17,850	17,026	16,936	16,160	15,012
	6g	17,968	17,732	16,994	16,854	16,128	15,930
	8g	17,968	17,593	16,994	16,770	16,128	15,846
M 18 x 2	4h	18,000	17,820	16,701	16,601	15,546	15,369
	6g	17,962	17,682	16,663	16,503	15,508	15,271
	8g	17,962	17,512	16,663	16,413	15,508	15,181
M 20 x 1	4h	20,000	19,888	19,350	19,275	18,773	18,659
	6g	19,974	19,794	19,324	19,206	18,747	18,590
	8g	19,974	19,694	19,324	19,134	18,747	18,518
M 20 x 1,5	4h	20,000	19,850	19,026	18,936	18,160	18,012
	6g	19,968	19,732	18,994	18,854	18,128	17,930
	8g	19,968	19,593	18,994	18,770	18,128	17,846
M 20 x 2	4h	20,000	19,820	18,701	18,601	17,546	17,369
	6g	19,962	19,682	18,663	18,503	17,508	17,271
	8g	19,962	19,512	18,663	18,413	17,508	17,181
M 22 x 1	4h	22,000	21,888	21,350	21,275	20,773	20,659
	6g	21,974	21,794	21,324	21,206	20,747	20,590
	8g	21,974	21,694	21,324	21,134	20,747	20,518
M 22 x 1,5	4h	22,000	21,850	21,026	20,936	20,160	20,012
	6g	21,968	21,732	20,994	20,854	20,128	19,930
	8g	21,968	21,593	20,994	20,770	20,128	19,846
M 22 x 2	4h	22,000	21,820	20,701	20,601	19,546	19,369
	6g	21,962	21,682	20,663	20,503	19,508	19,271
	8g	21,962	21,512	20,663	20,413	19,508	19,181

SCREW
VIS
TORNILLO

MF

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 min.	d_2 máx.	d_2 min.	d_n máx.	d_n min.			d máx.	d min.	d_2 máx.	d_2 min.	d_n máx.	d_n min.
M 24 x 1	4h	24,000	23,888	23,350	23,270	22,773	22,654	**M 35 x 1,5**	4h	35,000	34,850	34,026	33,931	33,160	33,007
	6g	23,974	23,794	23,324	23,199	22,747	22,593		6g	34,968	34,732	33,994	33,844	33,128	32,920
	8g	23,974	23,694	23,324	23,124	22,747	22,508		8g	34,968	34,593	33,994	33,758	33,128	32,834
M 24 x 1,5	4h	24,000	23,850	23,026	22,931	22,160	22,007	**M 36 x 1,5**	4h	36,000	35,850	35,026	34,931	34,160	34,007
	6g	23,968	23,732	22,994	22,844	22,128	21,920		6g	35,968	35,732	34,994	34,844	34,128	33,920
	8g	23,968	23,593	22,994	22,758	22,128	21,834		8g	35,968	35,593	34,994	34,758	34,128	33,834
M 24 x 2	4h	24,000	23,820	22,701	22,595	21,546	21,363	**M 36 x 2**	4h	36,000	35,820	34,701	34,595	33,546	33,363
	6g	23,962	23,682	22,663	22,493	21,508	21,261		6g	35,962	35,682	34,663	34,493	33,508	33,261
	8g	23,962	23,512	22,663	22,398	21,508	21,166		8g	35,962	35,512	34,663	34,398	33,508	33,166
M 25 x 1	4h	25,000	24,888	24,350	24,270	23,773	23,654	**M 36 x 3**	4h	36,000	35,764	34,051	33,926	32,319	32,078
	6g	24,974	24,794	24,324	24,199	23,747	23,583		6g	35,952	35,577	34,003	33,803	32,271	31,955
	8g	24,974	24,694	24,324	24,124	23,747	23,508		8g	35,952	35,352	34,003	33,688	32,271	31,840
M 25 x 1,5	4h	25,000	24,850	24,026	23,931	23,160	23,007	**M 38 x 1,5**	4h	38,000	37,850	37,026	36,931	36,160	36,007
	6g	24,968	24,732	23,994	23,844	23,128	22,920		6g	37,968	37,732	36,994	36,844	36,128	35,920
	8g	24,968	24,593	23,994	23,758	23,128	22,834		8g	37,968	37,593	36,994	36,758	36,128	35,834
M 25 x 2	4h	25,000	24,820	23,701	23,595	22,546	22,363	**M 39 x 1,5**	4h	39,000	38,850	38,026	37,931	37,160	37,007
	6g	24,962	24,682	23,663	23,493	22,508	22,261		6g	38,968	38,732	37,994	37,844	37,128	36,920
	8g	24,962	24,512	23,663	23,398	22,508	22,166		8g	38,968	38,593	37,994	37,758	37,128	36,834
M 27 x 1	4h	27,000	26,888	26,350	26,270	25,773	25,654	**M 39 x 2**	4h	39,000	38,820	37,701	37,595	36,546	36,363
	6g	26,974	26,794	26,324	26,199	25,747	25,583		6g	38,962	38,682	37,663	37,493	36,508	36,261
	8g	26,974	26,694	26,324	26,124	25,747	25,508		8g	38,962	38,512	37,663	37,398	36,508	36,166
M 27 x 1,5	4h	27,000	26,850	26,026	25,931	25,160	25,007	**M 39 x 3**	4h	39,000	38,764	37,051	36,926	35,319	35,078
	6g	26,968	26,732	25,994	25,844	25,128	24,920		6g	38,952	38,577	37,003	36,803	35,271	34,955
	8g	26,968	26,593	25,994	25,758	25,128	24,834		8g	38,952	38,352	37,003	36,688	35,271	34,840
M 27 x 2	4h	27,000	26,820	25,701	25,595	24,546	24,363	**M 40 x 1,5**	4h	40,000	39,850	39,026	38,931	38,160	38,007
	6g	26,962	26,682	25,663	25,493	24,508	24,261		6g	39,968	39,732	38,994	38,844	38,128	37,920
	8g	26,962	26,512	25,663	25,398	24,508	24,166		8g	39,968	39,593	38,994	38,758	38,128	37,834
M 28 x 1	4h	28,000	27,888	27,350	27,270	26,773	26,654	**M 40 x 2**	4h	40,000	39,820	38,701	38,595	37,546	37,363
	6g	27,974	27,794	27,324	27,199	26,747	26,583		6g	39,962	39,682	38,663	38,493	37,508	37,261
	8g	27,974	27,694	27,324	27,124	26,747	26,508		8g	39,962	39,512	38,663	38,398	37,508	37,166
M 28 x 1,5	4h	28,000	27,850	27,026	26,931	26,160	26,007	**M 40 x 3**	4h	40,000	39,764	38,051	37,926	36,319	36,078
	6g	27,968	27,732	26,994	26,844	26,128	25,920		6g	39,952	39,577	38,003	37,803	36,271	35,955
	8g	27,968	27,593	26,994	26,758	26,128	25,834		8g	39,952	39,352	38,003	37,688	36,271	35,840
M 28 x 2	4h	28,000	27,820	26,701	26,595	25,546	25,363	**M 42 x 1,5**	4h	42,000	41,850	41,026	40,931	40,160	40,007
	6g	27,962	27,682	26,663	26,493	25,508	25,261		6g	41,968	41,732	40,994	40,844	40,128	39,920
	8g	27,962	27,512	26,663	26,398	25,508	25,166		8g	41,968	41,593	40,994	40,758	40,128	39,834
M 30 x 1	4h	30,000	29,888	29,350	29,270	28,773	28,654	**M 42 x 2**	4h	42,000	41,820	40,701	40,595	39,546	39,363
	6g	29,974	29,794	29,324	29,199	28,747	28,583		6g	41,962	41,682	40,663	40,493	39,508	39,261
	8g	29,974	29,694	29,324	29,124	28,747	28,508		8g	41,962	41,512	40,663	40,398	39,508	39,166
M 30 x 1,5	4h	30,000	29,850	29,026	28,931	28,160	28,007	**M 42 x 3**	4h	42,000	41,764	40,051	39,926	38,319	38,078
	6g	29,968	29,732	28,994	28,844	28,128	27,920		6g	41,952	41,577	40,003	39,803	38,271	37,955
	8g	29,968	29,593	28,994	28,758	28,128	27,834		8g	41,952	41,352	40,003	39,688	38,271	37,840
M 30 x 2	4h	30,000	29,820	28,701	28,595	27,546	27,363	**M 42 x 4**	4h	42,000	41,720	39,402	39,262	37,093	36,799
	6g	29,962	29,682	28,663	28,493	27,508	27,261		6g	41,940	41,490	39,342	39,118	37,033	36,655
	8g	29,962	29,512	28,663	28,398	27,508	27,166		8g	41,940	41,220	39,342	38,987	37,033	36,524
M 30 x 3	4h	30,000	29,764	28,051	27,926	26,319	26,078	**M 45 x 1,5**	4h	45,000	44,850	44,026	43,931	43,160	43,007
	6g	29,952	29,577	28,003	27,803	26,271	25,955		6g	44,968	44,732	43,994	43,844	43,128	42,920
	8g	29,952	29,352	28,002	27,688	26,271	25,840		8g	44,968	44,593	43,994	43,758	43,128	42,834
M 32 x 1,5	4h	32,000	31,850	31,026	30,931	30,160	30,007	**M 45 x 2**	4h	45,000	44,820	43,701	43,595	42,546	42,363
	6g	31,968	31,732	30,994	30,844	30,128	29,920		6g	44,962	44,682	43,663	43,493	42,508	42,261
	8g	31,968	31,593	30,994	30,758	30,128	29,834		8g	44,962	44,512	43,663	43,398	42,508	42,166
M 32 x 2	4h	32,000	31,820	30,701	30,595	29,546	29,363	**M 45 x 3**	4h	45,000	44.764	43,051	42,926	41,319	41,078
	6g	31,962	31,682	30,663	30,493	29,508	29,261		6g	44,952	44,577	43,003	42,803	41,271	40,955
	8g	31,962	31,512	30,663	30,398	29,508	29,166		8g	44,952	44,352	43,003	42,688	41,271	40,840
M 33 x 1,5	4h	33,000	32,850	32,026	31,931	31,160	31,007	**M 45 x 4**	4h	45,000	44,720	42,402	42,262	40,093	39,799
	69	32,968	32,732	31,994	31,844	31,128	30,920		6g	44,940	44,490	42,342	42,118	40,033	39,655
	89	32,968	32,593	31,994	31,758	31,128	30,834		8g	44,940	44,220	42,342	41,987	40,033	39,524
M 33 x 2	4h	33,000	32,820	31,701	31,595	30,546	30,363	**M 48 x 1,5**	4h	48,000	47,850	47,026	46,926	46,160	46,002
	6g	32,962	32,682	31,663	31,493	30,508	30,261		6g	47,968	47,732	46,994	46,834	46,128	45,910
	8g	32,962	32,512	31,663	31,398	30,508	30,166		8g	47,968	47,593	46,994	46,744	46,128	45,820
M 33 x 3	4h	33,000	32,764	31,051	30,926	29,919	29,078	**M 48 x 2**	4h	48,000	47,820	46,701	46,589	45,546	45,357
	6g	32,952	32,577	31,003	30,803	29,271	28,955		6g	47,962	47,682	46,663	46,483	45,508	45,251
	8g	32,952	32,352	31,003	30,688	29,271	28,840		8g	47,962	47,512	46,663	46,383	45,508	45,151

SCREW
VIS
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MF

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 min.	d_2 máx.	d_2 min.	d_n máx.	d_n min.			d máx.	d min.	d_2 máx.	d_2 min.	d_n máx.	d_n min.
M 48 x 3	4h	48,000	47,764	46,051	45,919	44,319	44,071	**M 60 x 1,5**	4h	60,000	59,850	59,026	58,926	58,160	58,002
	6g	47,952	47,577	46,003	45,791	44,271	43,943		6g	59,968	59,732	58,934	58,834	58,128	57,910
	8g	47,952	47,352	46,003	45,668	44,271	43,820		8g	59,968	59,593	58,994	58,744	58,128	57,820
M 48 x 4	4h	48,000	47,720	45,402	45,252	43,093	42,789	**M 60 x 2**	4h	60,000	59,820	58,701	58,589	57,546	57,357
	6g	47,940	47,490	45,342	45,106	43,033	42,643		6g	59,962	59,682	58,663	58,483	57,508	57,251
	8g	47,940	47,220	45,342	44,967	43,033	42,504		8g	59,962	59,512	58,663	58,383	57,508	57,151
M 50 x 1,5	4h	50,000	49,850	49,026	48,926	48,160	48,002	**M 60 x 3**	4h	60,000	59,764	58,051	57,919	56,319	56,071
	6g	49,968	49,732	48,994	48,834	48,128	47,910		6g	59,952	59,577	58,003	57,791	56,271	55,943
	8g	49,968	49,593	48,994	48,744	48,128	47,820		8g	59,952	59,352	58,003	57,668	56,271	55,820
M 50 x 2	4h	50,000	49,820	48,701	48,589	47,546	47,357	**M 60 x 4**	4h	60,000	59,700	57,402	57,252	55,093	54,789
	6g	49,962	49,682	48,663	48,483	47,508	47,251		6g	59,940	59,465	57,342	57,106	55,033	54,643
	8g	49,962	49,512	48,663	48,383	47,508	47,151		8g	59,940	59,190	57,342	56,967	55,033	54,504
M 50 x 3	4h	50,000	49,764	48,051	47,919	46,319	46,071	**M 62 x 1,5**	4h	62,000	61,850	61,026	60,926	60,160	60,002
	6g	49,952	49,577	48,003	47,791	46,271	45,943		6g	61,968	61,732	60,994	60,834	60,128	59,910
	8g	49,952	49,352	48,003	47,668	46,271	45,820		8g	61,968	61,593	60,994	60,744	60,128	59,820
M 52 x 1,5	4h	52,000	51,850	51,026	50,926	50,160	50,002	**M 62 x 2**	4h	62,000	61,820	60,701	60,589	59,546	59,957
	6g	51,968	51,732	50,994	50,834	50,128	49,910		6g	61,962	61,682	60,663	60,483	59,508	59,251
	8g	51,968	51,593	50,994	50,744	50,128	49,820		8g	61,962	61,512	60,663	60,383	59,508	59,151
M 52 x 2	4h	52,000	51,820	50,701	50,589	49,546	49,357	**M 62 x 3**	4h	62,000	61,764	60,051	59,919	58,319	58,071
	6g	51,962	51,682	50,663	50,483	49,508	49,251		6g	61,952	61,577	60,003	59,791	58,271	57,943
	8g	51,962	51.512	50,663	50,383	49,508	49,151		8g	61,952	61,352	60,003	59,668	58,271	57,820
M 52 x 3	4h	52,000	51,764	50,051	49,919	48,319	48,071	**M 62 x 4**	4h	62,000	61,700	59,402	59,252	57,093	56,789
	6g	51,952	51,577	50,003	49,791	48,271	47,943		6g	61,940	61,465	59,342	59,106	57,033	56,643
	8g	51,952	51,352	50,003	49,668	48,271	47,820		8g	61,940	61,190	59,342	58,967	57,033	56,504
M 52 x 4	4h	52,000	51,720	49,402	49,252	47,093	46,789	**M 64 x 1,5**	4h	64,000	63,850	63,026	62,926	62,160	62,002
	6g	51,940	51,490	49,342	49,106	47,033	46,643		6g	63,968	63,732	62,994	62,834	62,128	61,910
	8g	51,940	51,220	49,342	48,967	47,033	46,504		8g	63,968	63,593	62,994	62,744	62,128	61,820
M 55 x 1,5	4h	55,000	54,850	54,026	53,926	53,160	53,002	**M 64 x 2**	4h	64,000	63,820	62,701	62,589	61,546	61,357
	6g	54,968	54,732	53,994	53,834	53,128	52,910		6g	63,962	63,682	62,663	62,483	61,508	61,251
	8g	54,968	54,593	53,994	53,744	53,128	52,820		8g	63,962	63,512	62,663	62,383	61,508	61,151
M 55 x 2	4h	55,000	54,820	53,701	53,589	52,546	52,357	**M 64 x 3**	4h	64,000	63,764	62,051	61,919	60,319	60,071
	6g	54,962	54,682	53,663	53,483	52,508	52,251		6g	63,952	63,577	62,003	61,791	60,271	59,943
	8g	54,962	54,512	53,663	53,383	52,508	52,151		8g	63,952	63,352	62,003	61,668	60,271	59,820
M 55 x 3	4h	55,000	54,764	53,051	52,919	51,319	51,071	**M 64 x 4**	4h	64,000	63,700	61,402	61,252	59,093	58,789
	6g	54,952	54,577	53,003	52,791	51,271	50,943		6g	63,940	63,465	61,342	61,106	59,033	58,643
	8g	54,952	54,352	53,003	52,668	51,271	50,820		8g	63,940	63,190	61,342	60,967	59,033	58,504
M 55 x 4	4h	55,000	54,700	52,402	52,252	50,093	49,789	**M 65 x 1,5**	4h	65,000	64,850	64,026	63,926	63,160	63,002
	6g	54,940	54,465	52,342	52,106	50,033	49,643		6g	64,968	64,732	63,994	63,834	63,128	62,910
	8g	54,940	54,190	52,342	51,967	50,033	49,504		8g	64,968	64,593	63,994	63,744	63,128	62,820
M 56 x 1,5	4h	56,000	55,850	55,026	54,926	54,160	54,002	**M 65 x 2**	4h	65,000	64,820	63,701	63,589	62,546	62,357
	6g	55,968	55,732	54,994	54,834	54,128	53,910		6g	64,962	64,682	63,663	63,483	62,508	62,251
	8g	55,968	55,593	54,994	54,744	54,128	53,820		8g	64,962	64,512	63,663	63,383	62,508	62,151
M 56 x 2	4h	56,000	55,820	54,701	54,589	53,546	53,357	**M 65 x 3**	4h	65,000	64,764	63,051	62,919	61,319	61,071
	6g	55,962	55,682	54,663	54,483	53,508	53,251		6g	64,952	64,577	63,003	62,791	61,271	60,943
	8g	55,962	55,512	54,663	54,383	53,508	53,151		8g	64,952	64,352	63,003	62,668	61,271	60,820
M 56 x 3	4h	56,000	55,764	54,051	53,919	52,319	52,071	**M 65 x 4**	4h	65,000	64,700	62,402	62,252	60,093	59,789
	6g	55,952	55,577	54,003	53,791	52,271	51,943		6g	64,940	64,465	62,342	62,106	60,033	59,643
	8g	55,952	55,352	54,003	53,688	52,271	51,820		8g	64,940	64,190	62,342	61,967	60,033	59,504
M 56 x 4	4h	56,000	55,700	53,402	53,252	51,093	50,789	**M 68 x 1,5**	4h	68,000	67,850	67,026	66,926	66,160	66,002
	6g	55,940	55,465	53,342	53,106	51,033	50,643		6g	67,968	67,732	66,994	66,834	66,128	65,910
	8g	55,940	55,190	53,342	52,967	51,033	50,504		8g	67,968	67,593	66,994	66,744	66,128	65,820
M 58 x 1,5	4h	58,000	57,850	57,026	56,926	56,160	56,002	**M 68 x 2**	4h	68,000	67,820	66,701	66,589	65,546	65,357
	6g	57,968	57,732	56,994	56,834	56,128	55,910		6g	67,962	67,682	66,663	66,483	65,508	65,251
	8g	57,968	57,593	56,994	56,744	56,128	55,820		8g	67,962	67,512	66,663	66,383	65,508	65,151
M 58 x 2	4h	58,000	57,820	56,701	56,589	55,546	55,357	**M 68 x 3**	4h	68,000	67,764	66,051	65,919	64,319	64,071
	6g	57,962	57,682	56,663	56,483	55,508	55,251		6g	67,952	67,577	66,003	65,791	64,271	63,943
	8g	57,962	57,512	56,663	56,383	55,508	55,151		8g	67,952	67,352	66,003	65,668	64,271	63,820
M 58 x 3	4h	58,000	57,764	56,051	55,919	54,319	54,071	**M 68 x 4**	4h	68,000	67,700	65,402	65,252	63,093	62,789
	6g	57,952	57,577	56,003	55,791	54,271	53,943		6g	67,940	67,465	65,342	65,106	63,033	62,643
	8g	57,952	57,352	56,003	55,668	54,271	53,820		8g	67,940	67,190	65,342	64,967	63,033	62,504
M 58 x 4	4h	58,000	57,700	55,402	55,252	53,093	52,789	**M 70 x 1,5**	4h	70,000	69,850	69,025	68,926	68,160	68,002
	6g	57,940	57,465	55,342	55,106	53,033	52,643		6g	69,968	69,732	68,994	68,834	68,128	67,910
	8g	57,940	57,190	55,342	54,967	53,033	52,504		8g	69,968	69,593	68,994	68,744	68,128	67,820

SCREW
VIS
TORNILLO

MF

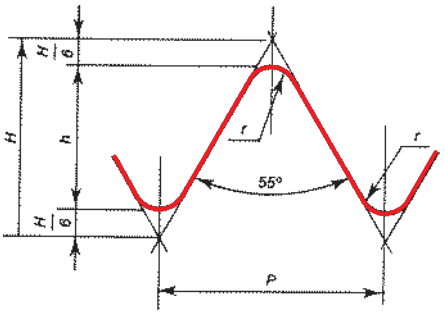
ISO-METRIC FINE THREAD
FILETAGE MÉTRIQUE ISO FINE
ROSCA ISO-METRICA FINA

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	
		d máx.	d min.	d_2 máx.	d_2 min.	d_n máx.	d_n min.
M 70 x 2	4h	70,000	69,820	68,701	68,589	67,546	67,357
	6g	69,962	69,682	68,663	68,483	67,508	67,251
	8g	69,962	69,512	68,663	68,383	67,508	67,151
M 70 x 3	4h	70,000	69,764	68,051	67,919	66,319	66,071
	6g	69,952	69,577	68,003	67,791	66,271	65,943
	8g	69,952	69,352	68,003	67,668	66,271	65,820
M 70 x 4	4h	70,000	69,700	67,402	67,252	65,093	64,789
	6g	69,940	69,465	67,342	67,106	65,033	64,643
	8g	69,940	69,190	67,342	66,967	65,033	64,504
M 70 x 6	4h	70,000	69,625	66,103	65,923	62,639	62,228
	6g	69,920	69,320	66,023	65,743	62,559	62,048
	8g	69,920	68,970	66,023	65,573	62,559	61,878
M 72 x 1,5	4h	72,000	71,850	71,026	70,926	70,160	70,002
	6g	71,968	71,732	70,994	70,834	70,128	69,910
	8g	71,968	71,593	70,994	70,744	70,128	69,820
M 72 x 2	4h	72,000	71,820	70,701	70,589	69,546	69,357
	6g	71,962	71,682	70,663	70,483	69,508	69,251
	8g	71,962	71,512	70,663	70,383	69,508	69,151
M 72 x 3	4h	72,000	71,764	70,051	69,919	68,319	68,071
	6g	71,952	71,577	70,003	69,791	68,271	67,943
	8g	71,952	71,352	70,003	69,668	68,271	67,820
M 72 x 4	4h	72,000	71,700	69,402	69,252	67,093	66,789
	6g	71,940	71,465	69,342	69,106	67,033	66,643
	8g	71,940	71,190	69,342	68,967	67,033	66,504
M 72 x 6	4h	72,000	71,625	68,103	67,923	64,639	64,228
	6g	71,920	71,320	68,023	67,743	64,559	64,048
	8g	71,920	70,970	68,023	67,573	64,559	63,878
M 75 x 1,5	4h	75,000	74,850	74,026	73,926	73,160	73,002
	6g	74,968	74,732	73,994	73,834	73,128	72,910
	8g	74,968	74,593	73,994	73,744	73,128	72,820
M 75 x 2	4h	75,000	74,820	73,701	73,589	72,546	72,357
	6g	74,962	74,682	73,663	73,483	72,508	72,251
	8g	74,962	74,512	73,663	73,383	72,508	72,151
M 75 x 3	4h	75,000	74,764	73,051	72,919	71,319	71,071
	6g	74,952	74,577	73,003	72,791	71,271	70,943
	8g	74,952	74,352	73,003	72,668	71,271	70,820
M 75 x 4	4h	75,000	74,700	72,402	72,252	70,093	69,789
	6g	74,940	74,465	72,342	72,106	70,033	69,643
	8g	74,940	74,190	72,342	71,967	70,033	69,504
M 76 x 1,5	4h	76,000	75,850	75,026	74,926	74,160	74,002
	6g	75,968	75,732	74,994	74,834	74,128	73,910
	8g	75,968	75,593	74,994	74,444	74,128	73,820
M 76 x 2	4h	76,000	75,820	74,701	74,589	73,546	73,357
	6g	75,962	75,682	74,663	74,483	73,508	73,251
	8g	75,962	75,512	74,663	74,383	73,508	73,151
M 76 x 3	4h	76,000	75,764	74,051	73,919	72,319	72,071
	6g	75,952	75,577	74,003	73,791	12,271	71,943
	8g	75,952	75,352	74,003	73,668	72,271	71,820
M 76 x 4	4h	76,000	75,700	73,402	73,252	71,093	70,789
	6g	75,940	75,465	73,342	73,106	71,033	70,643
	8g	75,940	75,190	73,342	72,967	71,033	70,504
M 76 x 6	4h	76,000	76,625	72,103	71,923	68,639	68,228
	6g	75,920	75,320	72,023	71,743	68,559	68,048
	8g	75,920	74,970	72,023	71,573	68,559	67,878
M 80 x 1,5	4h	80,000	79,850	79,026	78,926	78,160	78,002
	6g	79,968	79,732	78,994	78,834	78,128	77,910
	8g	79,968	79,593	78,994	78,744	78,128	77,820
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
M 80 x 3	4h	80,000	79,764	78,051	77.919	76,319	76,071
	6g	79,952	79,577	78,003	77,791	76,271	75,943
	8g	79,952	79,352	78,003	77,668	76,271	75,820
M 80 x 4	4h	80,000	79,700	77,402	77,252	75,093	74,789
	6g	79,940	79,465	77,342	77,106	75,033	74,643
	8g	79,940	79,190	77,342	76,967	75,033	74,504
M 80 x 6	4h	80,000	79,625	76,103	75,923	72,639	72,228
	6g	79,920	79,320	76,023	75,743	72,559	72,048
	8g	79,920	78,970	76,023	75,573	72,559	71,878
M 85 x 2	4h	85,000	84,820	83,701	83,589	82,546	82,357
	6g	84,962	84,682	83,663	83,483	82,508	82,251
	8g	84,962	84,512	83,663	83,383	82,508	82,151
M 85 x 3	4h	85,000	84,764	83,051	82,919	81,319	81,071
	6g	84,952	84,577	83,003	82,791	81,271	80,943
	8g	84,952	84,352	83,003	82,668	81,271	80,820
M 85 x 4	4h	85,000	84,700	82,402	82,252	80,093	79,789
	6g	84,940	84,465	82,342	82,106	80,033	79,643
	8g	84,940	84,190	82,342	81,967	80,033	79,504
M 85 x 6	4h	85,000	84,625	81,103	80,923	77,639	77,228
	6g	84,920	84,320	81,023	80,743	77,559	77,048
	8g	84,920	83,970	81,023	80,573	77,559	76,878
M 90 x 2	4h	90,000	89,820	88,701	88,589	87,546	87,357
	6g	89,962	89,682	88,663	88,483	87,508	87,251
	8g	89,962	89,512	88,663	88,383	87,508	87,151
M 90 x 3	4h	90,000	89,764	88,051	87,919	86,319	86,071
	6g	89,952	89,577	88,003	87,791	86,271	85,943
	8g	89,952	89,352	88,003	87,668	86,271	85,820
M 90 x 4	4h	90,000	89,700	87,402	87,252	85,093	84,789
	6g	89,940	89,465	87,342	87,106	85.033	84,643
	8g	89,940	89,190	87,342	86,967	85,033	84,504
M 90 x 6	4h	90.000	89,625	86,103	85,923	82,639	82,228
	6g	89,920	89,320	86,023	85,743	82,559	82,048
	8g	89,920	88,970	86,023	85,573	82,559	81,878
M 95 x 2	4h	95,000	94,820	93,701	93,583	92,546	92,351
	6g	94,962	94,682	93,663	93,473	92,508	92,241
	8g	94,962	94,512	93,663	93,363	92,508	92,131
M 95 x 3	4h	95,000	94,764	93,051	92,911	91,319	91,063
	6g	94,952	94,577	93,003	92,779	91,271	90,931
	8g	94,952	94,352	93,003	92,648	91,271	90,800
M 95 x 4	4h	95,000	94,700	92,402	92,242	90,093	89,779
	6g	94,940	94,465	92,342	92,092	90,033	89,629
	8g	94,940	94,190	92,342	91,942	90,033	89,479
M 95 x 6	4h	95,000	94,625	91,103	90,913	87,639	87,218
	6g	94,920	94,320	91,023	90,723	87,559	87,028
	8g	94,920	93,970	91,023	90,548	87,559	86,853
M 100 x 2	4h	100,000	99,820	98,701	98,583	97,546	97,351
	6g	99,962	99,682	98,663	98,472	97,508	97,241
	8g	99,962	99,512	98,663	98,363	97,508	97,131
M 100 x 3	4h	100,000	99,764	98,051	97,911	96,319	96,063
	6g	99,952	99,577	98,003	97,779	96,271	95,931
	8g	99,952	99,352	98,003	97,648	96,271	95,800
M 100 x 4	4h	100,000	99,700	97,402	97,242	95,093	94,799
	6g	99,940	99,465	97,342	97,092	95,033	94,629
	8g	99,940	99,190	97,342	96,942	95,033	94,479
M 100 x 6	4h	100,000	99,625	96,103	95,913	92,639	92,218
	6g	99,920	99,320	96,023	95,723	92,559	92,028
	8g	99,920	98,970	96,023	95,548	92,559	91,853

ISO-METRIC FINE THREAD
ROSCA whitworth
FILETAGE MÉTRIQUE ISO FINE

(B.S 84 - 1956)

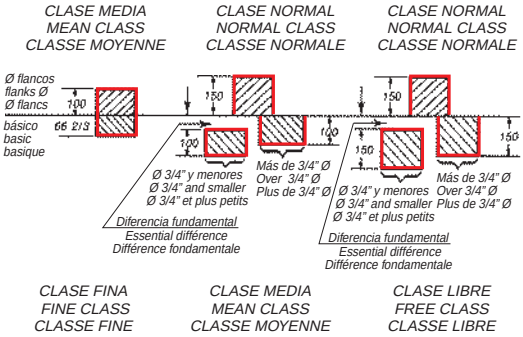


$H = 0.960491\ P$ $\qquad \frac{H}{6} = 0.160082\ P$

$h = \frac{2}{3} H = 0.610327\ P$ $\qquad r = 0.137329\ P$

FORMA BASICA DE LA ROSCA WHITWORTH
BASIC SHAPE OF WHITWORTH THREAD
FORME BASIQUE DU FILET WHITWORTH

TUERCA / NUT / ÉCROU



TORNILLO

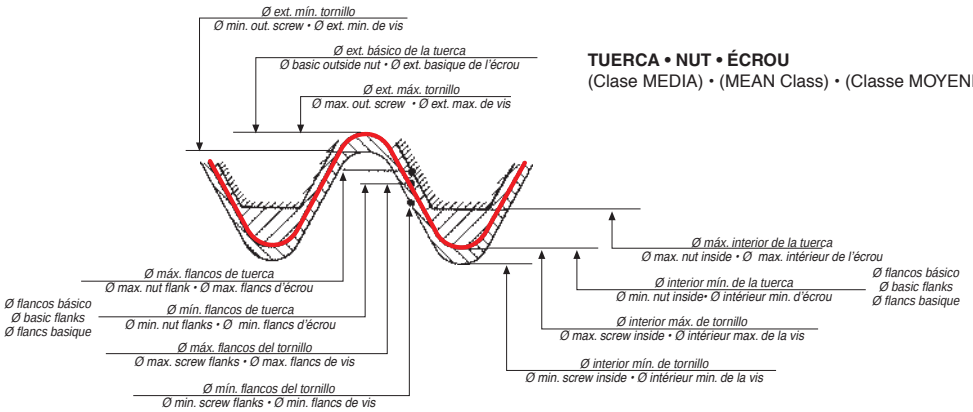
Zonas de tolerancia de diámetro de flancos de combinaciones recomendadas de clases de tornillos y tuercas de rosca Whitworth.
NOTA: La tolerancia de diámetro de flancos de tornillo clase media se muestra en el dibujo como 100 unid. y los otros valores están expresados % de esta tolerancia.

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)

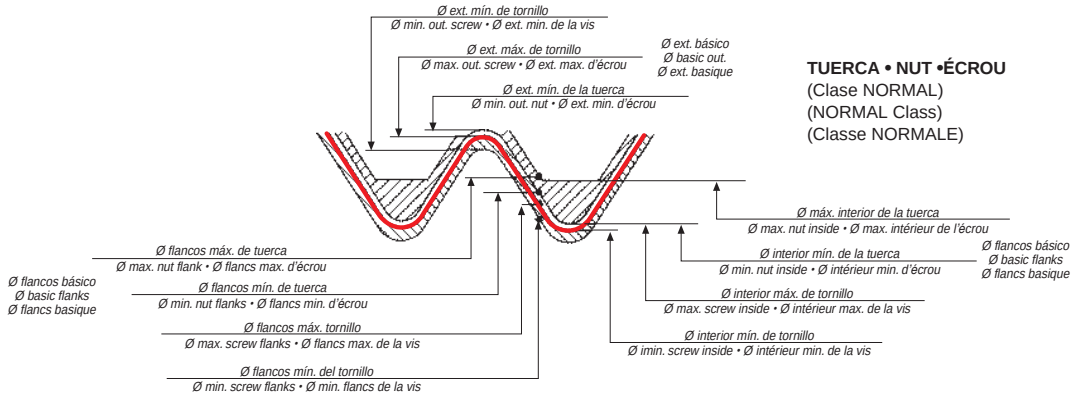
TORNILLO • SCREW • VIS
(Clase FINA) • (FINE Class) • (Classe FINE)

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.

WHITWORTH THREAD
FILET WHITWORTH
ROSCA WHITWORTH

(B.S 84 - 1956)

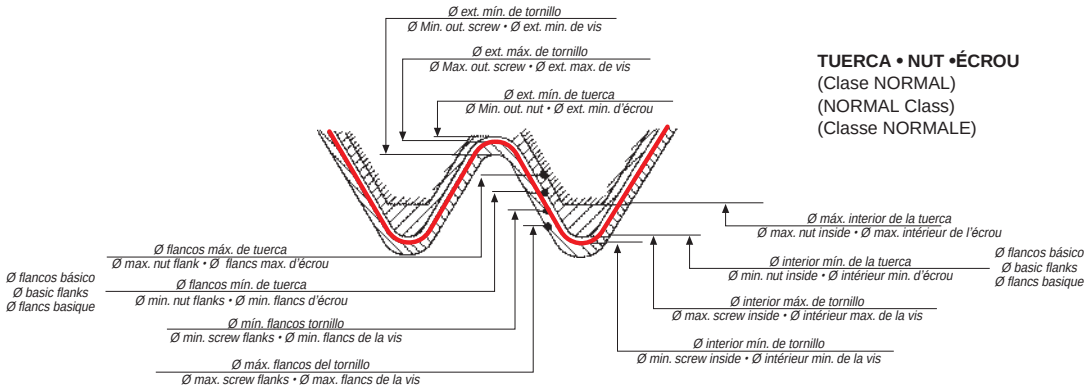
BSW



TUERCA • NUT •ÉCROU
(Clase NORMAL)
(NORMAL Class)
(Classe NORMALE)

TORNILLO • SCREW • VIS
(Clase MEDIA)
(MEAN Class)
(Classe MOYENNE)

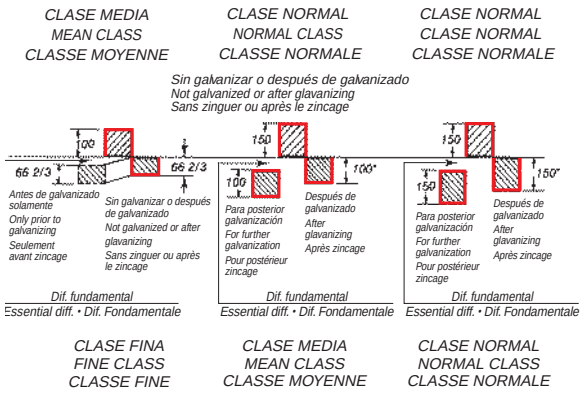
Zona de tolerancia para tornillo clase MEDIA y tuerca clase NORMAL
Tolerance area for MEAN class screw and NORMAL class
Zone de tolérance pour vis classe MOYENNE et pour écrou classe NORMALE



TUERCA • NUT •ÉCROU
(Clase NORMAL)
(NORMAL Class)
(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 galvanizado y después de galvanizado 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

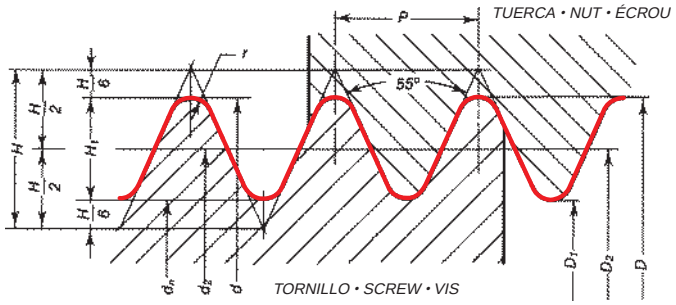
Zones de tolérance de diamètres flancs pour écrous et vis Whitworth, sans zinguer ou avant le zincage et après le zincage de mesures à Ø nominal de 3/4" et plus petits.

THEORICAL PROFILE
PROFIL THÉORIQUE
PERFIL TEORICO

DIN 11 (BS - 84)

BSW

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
$d_2 = d - H_1$
$d_1 = d - 2H_1$

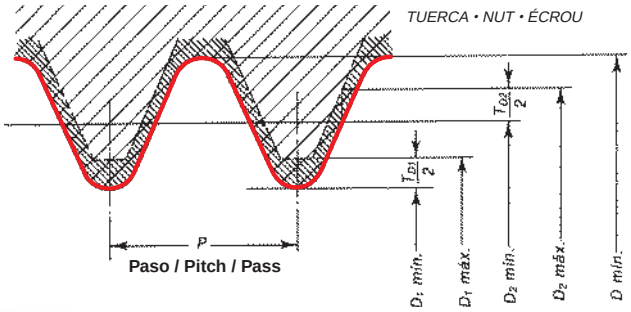
PERFIL TEORICO • PROFIL THÉORIQUE • THEORICAL PROFILE

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

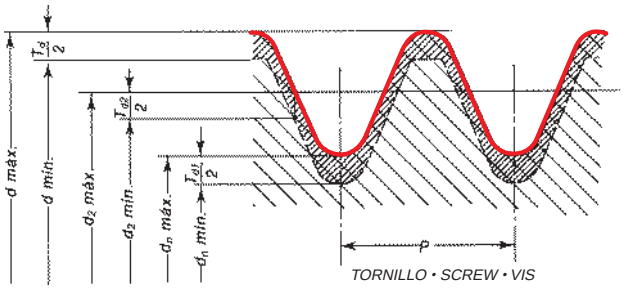
Rosca Thread Filet	Paso Pitch Pass H/1"	Ø Exterior Outside Ø Ø Extérieur D mín.	Ø Medio / Pitch Ø / Ø Moyen				Ø Núcleo / Core Ø / Ø Noyau			
			D_2 mín. f.m.g.	f	D_2 máx. m	g	D_1 mm f	D_1 mm m.g.	D_1 máx. f	D_1 máx. m.g.
1/8	40	3,175	2,769		2,842			2,362		2,591
3/16	24	4,763	4,084		4,173			3,406		3,744
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

DIN 11(B.S 84 - 1956)

BSW

WHITWORTH THREAD
FILET WHITWORTH
ROSCA WHITWORTH

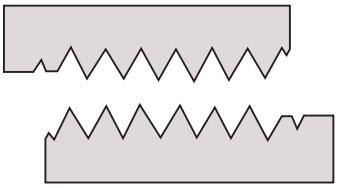


f = fina • fine • fin
m = media • mean • moyen
g = basta • rough • grossier

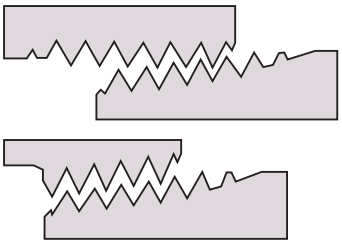
Ø Rosca Ø Thread Ø Filet	Paso Pitch Pass H/1"	Ø Exterior / Outside Ø / Ø Extérieur			Ø Medio / Pitch Ø / Ø Moyen				Ø Núcleo / Core Ø / Ø Noyau		
		d máx. f.m.g.	d min. f	d min. m.g.	d_2 máx. f.m.g.	f	d_2 min. m	g	d_n máx. f.m.g.	d_n min. f	d_n min. m.g.
1/8	40	3,175		3,061	2,769		2,695		2,362		2,207
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,O32	54,695
2 3/4	3 1/2	69,763	69,500	68,800	65,205	65,025	64,934	64,754	60,558	6O,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

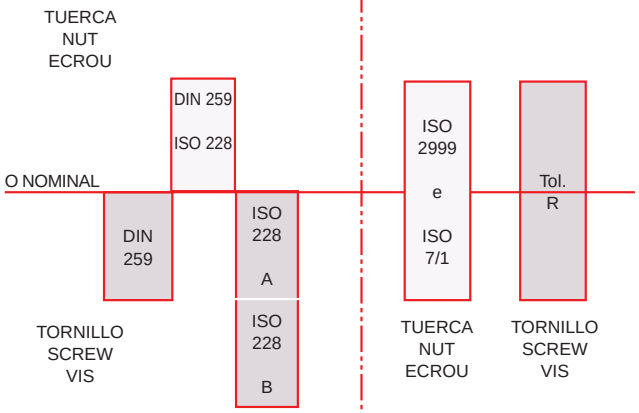
NORMA	ROSCA INTERIOR INTERNAL THREAD FILETAGE INTERNE		ROSCA EXTERIOR EXTERNAL THREAD FILETAGE EXTERNE		FIG.
	CILINDRICA PARALELL CILINDRIQUE	CONICA TAPER CONIQUE	CILINDRICA PARALELL CILINDRIQUE	CONICA TAPER CONIQUE	
DIN 259	**R**	**–**	**R**	**–**	
INGLESA-ENGLISH-ANGLAIS	BSP	–	BSP	–	
JAPONESA-JAPANESE-JAPONAIS	PF	–	PF	–	
ISO 228	**G**	**–**	**G**	**–**	
INGLESA-ENGLISH-ANGLAIS	BSP	–	BSP	–	
JAPONESA-JAPANESE-JAPONAIS	PF	–	PF	–	

ESTANCAS - DRYSEAL - AVEC ETAINCHEITE

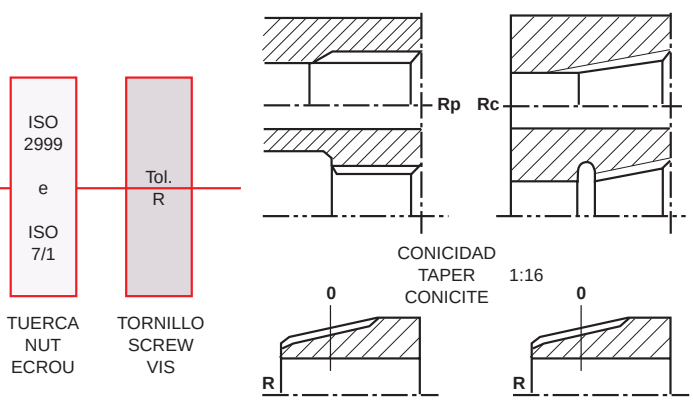
NORMA	ROSCA INTERIOR INTERNAL THREAD FILETAGE INTERNE		ROSCA EXTERIOR EXTERNAL THREAD FILETAGE EXTERNE		FIG.
	CILINDRICA PARALELL CILINDRIQUE	CONICA TAPER CONIQUE	CILINDRICA PARALELL CILINDRIQUE	CONICA TAPER CONIQUE	
DIN 2999	**Rp**	**–**	**–**	**R**	
INGLESA-ENGLISH-ANGLAIS	BSPP	–	–	BSPT	
JAPONESA-JAPANESE-JAPONAIS	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



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 femalethread. Class B. For negative differences of dimensions; values two times those of class A.

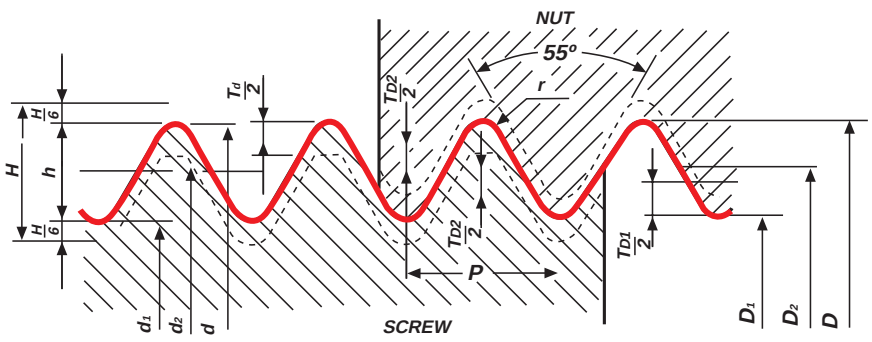
4 NUT SYMBOLS

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 a nd 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 momentlà 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 raccordements 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 raccordements mécaniques non étanches de pièces : Fittings, robinets, soupapes, etc. Pour des raccordements étanches au filet à tuyauterie, voir ISO 7/1.

2 SYMBOLES et leur signification

G Filets pour tubes sans raccordements étanches aux filets.

A Classe de tolérance étroite de filets pour tubes sans raccordements étanches aux filets.

B Classe de tolérance vaste de filets pour tubes sans raccordements 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 ou 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

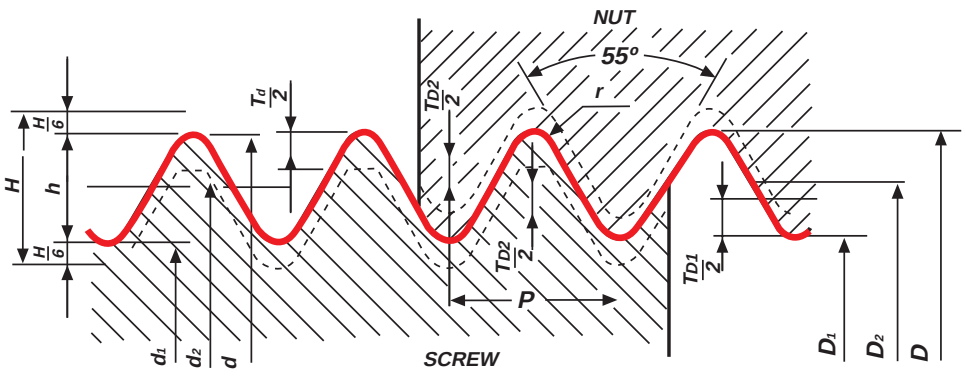
Les filets pour tubes qui correspondent à cette norme seront nommés de la façon suivante :

- 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

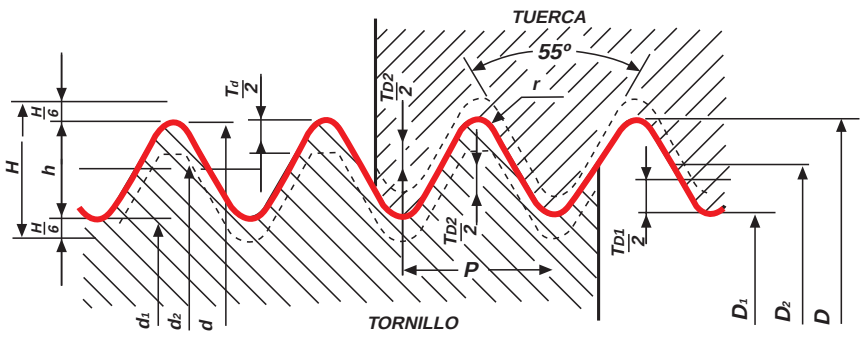
Las roscas para tuberías que correspondan a esta norma se denominarán como sigue:

- 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 ■

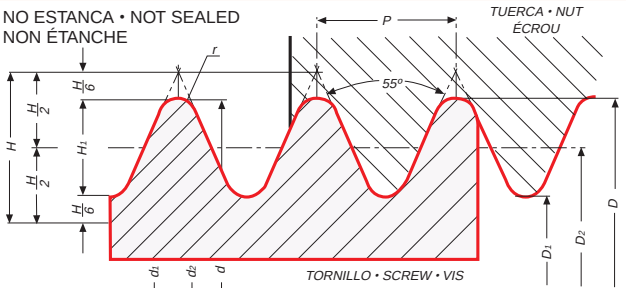


MESURES NOMINALES
MESURES NOMINALES
MEDIDAS NOMINALES

DIN 180 228

BSP G

WHITWORTH PIPE THREAD
FILETAGE WHITWORTH GAZ
ROSCA WHITWORTH PARA TUBO



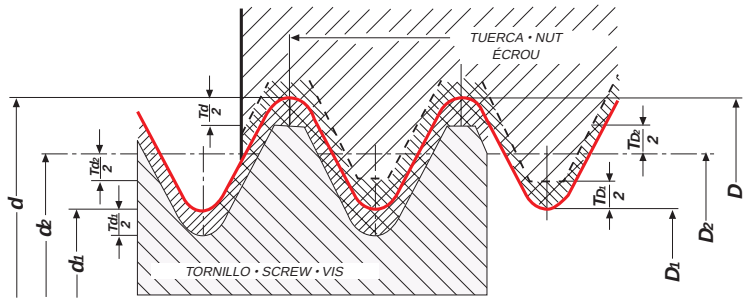
1.- CAMPO DE UTILIZACION: Sólo para conexiones de rosca no estanca entre tubos roscados y sus partes de conexión.
SCOPE OF USE: Only for not sealed thread connections between threaded pipes and their connecting parts.
DOMAINE D'UTILISATION: Seulement pour raccordements de filet non étanche entre tuyaux taraudés et leurs parties de branchement.

$$P = \frac{25,4}{N}$$

2.- MEDIDAS, DENOMINACIONES
MENSIONS, DESIGNATIONS
MESURES, DENOMINATIONS

$r = 0,137329\ P$
$H = 0,960491\ P$
$H_1 = 0,640327\ P$

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			Tolerancia Ø medio • Average Ø Tolerance • Tolérance Ø moyen		Tolerancia Ø nucleo • Core Ø tolerance • Tolérance Ø noyau	
		T			T_{d2} (A)	(B)	T_{D2}		T_{D1}	
	mm.	µm.	µm.	µm.	µm.	µm.	µm.	µm.	µm.	µm.
G 1/8	12,5	0	-214	0	-107	-214	0	+107	0	+282
G 1/4	16		-250		-125	-250		+125		+445
G 3/8	18		-250		-125	-250		+125		+445
G 1/2 a G 5/8	22	0	-284	0	-142	-284	0	+142	0	+541
G 3/4 a G 7/8	25									
G 1 a G 1 1/8	28	0	-360	0	-180	-360	0	+180	0	+640
G 1 1/4 a G 2	32									
G 2 1/4 a G 31/4	36	0	-434	0	-217	-434	0	+217	0	+640
G 3 1/2 a G 4	40									

NUT AND SCREW
ÉCROU ET VIS
TUERCA Y TORNILLO

BSP G

DIN 190 228

WHITWORTH PIPE THREAD
FILETAGE WHITWORTH GAZ
ROSCA WHITWORTH PARA TUBO

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 31/4)	93,980	93,546	92,501	92,284	92,067	91,022	90,751	90,480
G 31/2	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)	127,730	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

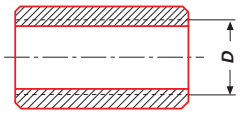
R-Rp

WHITWORTH PIPE THREAD
FILETAGE WHITWORTH GAZ
ROSCA WHITWORTH PARA TUBO

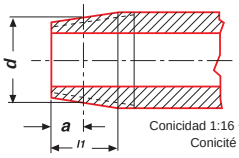
DIN 2999

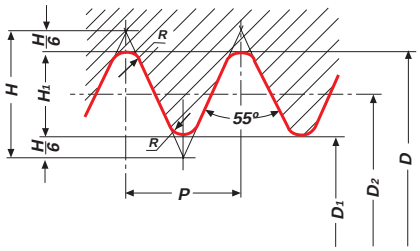
• R - Rp SEALED • R - Rp ÉTANCHE • R - Rp ESTANCA

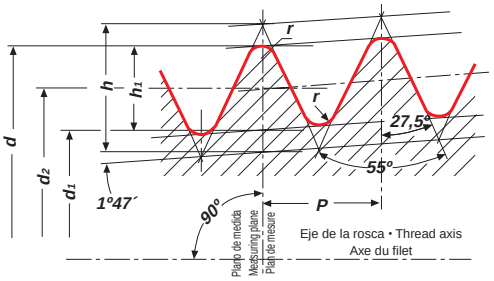
Rosca interior cilíndrica (Rp)
Female parallel thread (Rp)
Filet femelle cylindrique (Rp)



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. a	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.
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 MALETHREAD
FILET FEMELLE CYLINDRIQUE,
FILET MÂLE CONIQUE
ROSCA INT. CILÍNDRICA,
ROSCA EXT. CÓNICA

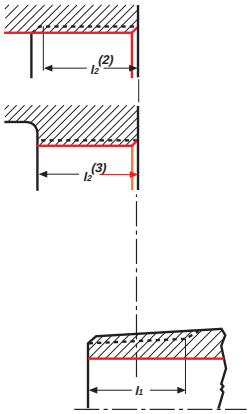
R-Rp

WHITWORTH PIPE THREAD
FILETAGE WHITWORTH GAZ
ROSCA WHITWORTH PARA TUBO

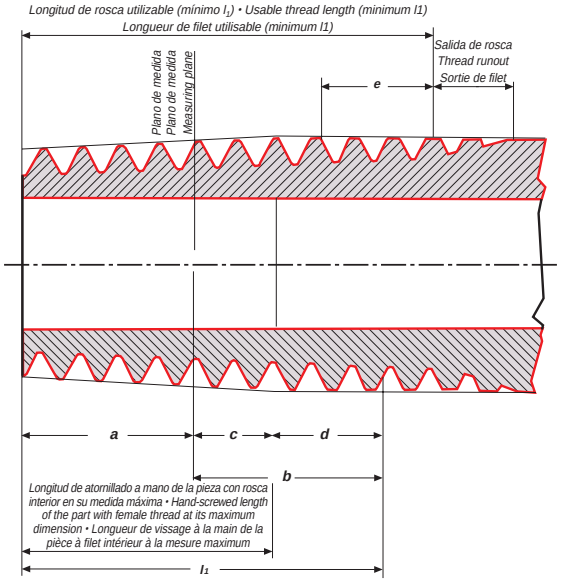
DIN 2999

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 • Permissibledifferences 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 11/4	±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.

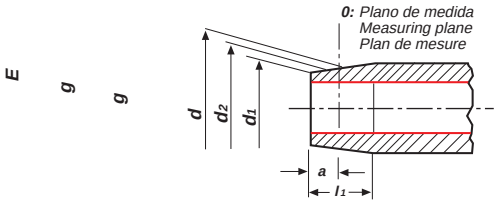
The taps used for the female taper thread are marked: Rc 1/2" according to BS 21.

Filet mâle conique (R) Filet femelle conique (Rc) ou cylindrique (Rp) Filet mâle conique (R)

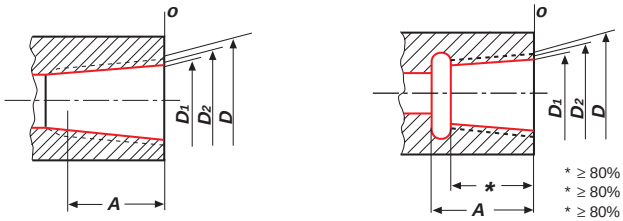
La norme anglaise BS 21:1973 prévoie des raccordement parmi les filets, lesquels avec des écrous deviennent hermétiques. Les filets mâles sont coniques 1:16, les filets mâles sont cylindriques ou coniques. La norme BS 21:1973 correspond pourtant, sauf le filet femelle conique, à la norme DIN 2999.

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)



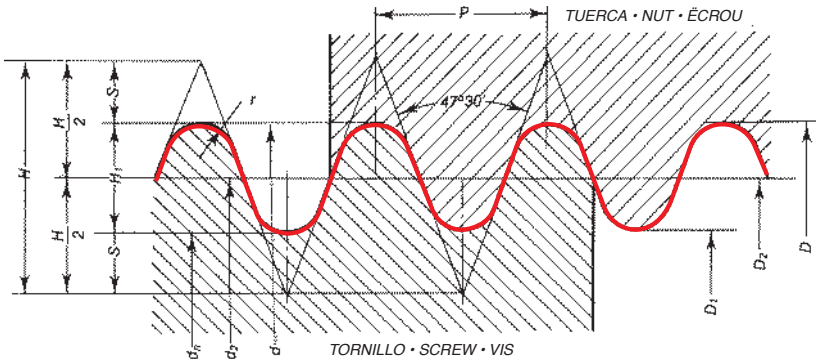
* ≥ 80% de L1 para a mín. (DIN 2999 parte 1)
* ≥ 80% of L1 for a min. (DIN 2999 section 1)
* ≥ 80% de L1 pour a min. (DIN 2999 partie 1)

Rosca Thread Filet	Paso Pitch Pass		Diámetro nóminal 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 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



H = 1,13634 P
H_1 = 0,6 P
R = 0,18083 P
S = 0,26817 P
$d_2 = d - H_1$
$d_1 = d - 2H_1$

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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	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_2 min.	D_2 máx.	D_1 máx.	D_1 min.	d máx.	d min.	d_2 máx.	d_2 min.	d_n máx.	d_n min.
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	1,815	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 AMÉRICAINE
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 (dmin.)
= 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 (dmin.)
= 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 mínino (dmin.)
= Ø exterior máximo (dmáx.) - B
Ø medio máximo (d2máx.)
= Ø medio mínino (d2mín.) + D
Ø medio mínino (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 No. 1	64	72	GH1 GH1	GH1 GH1	GH2 GH2	GH1 GH1
No. 2 No. 2	56	64	GH1 GH1	GH1 GH1	GH2 GH2	GH1 GH1
No. 3 No. 3	48	56	GH1 GH1	GH1 GH1	GH2 GH2	GH1 GH1
No. 4 No. 4	40	48	GH2 GH1	GH1 GH1	GH2 GH2	GH2 GH1
No. 5 No. 5	40	44	GH2 GH1	GH1 GH1	GH2 GH2	GH2 GH1
No. 6 No. 6	32	40	GH2 GH2	GH1 GH1	GH3 GH2	GH2 GH2
No. 8 No. 8	32	36	GH2 GH2	GH1 GH1	GH3 GH2	GH2 GH2
No. 10 No. 10	24	32	GH3 GH2	GH1 GH1	GH3 GH3	GH3 GH2
No. 12 No. 12	24	28	GH3 GH3	GH1 GH1	GH3 GH3	GH3 GH3
1 /4 1 /4	20	28	GH3 GH3	GH2 GH1	GH5 GH4	GH3 GH3
5 /16 5 /16	18	24	GH3 GH3	GH2 GH1	GH5 GH4	GH3 GH3
3 /8 3 /8	16	24	GH3 GH3	GH2 GH1	GH5 GH4	GH3 GH3
7 /16 7 /16	14	20	GH5 GH3	GH3 GH1	GH5 GH5	GH3 GH3
1 /2 1 /2	13	20	GH5 GH3	GH3 GH1	GH5 GH5	GH3 GH3
9 /16 9 /16	12	18	GH5 GH3	GH3 GH2	GH5 GH5	GH3 GH3
5 /8 5 /8	11	18	GH5 GH3	GH3 GH2	GH5 GH5	GH3 GH3
3 /4 3 /4	10	16	GH5 GH3	GH3 GH2	GH5 GH6	GH5 GH3
7 /8 7 /8	9	14	GH6 GH4	GH4 GH2	GH6 GH6	GH4 GH4
1 1	8	12	GH6 GH4	GH4 GH2	GH6 GH6	GH4 GH4
1	14	NS	GH4	GH4	GH6	GH4
1 1 /8 1 1 /8	7	12	GH8 GH4	GH4 GH4	GH6 GH8	GH4 GH4
1 1 /4 1 1 /4	7	12	GH8 GH4	GH4 GH4	GH8 GH6	GH4 GH4
1 3 /8 1 3 /8	6	12	GH8 GH4	GH4 GH4	GH8 GH6	GH4 GH4
1 1 /2 1 1 /2	6	12	GH8 GH4	GH4 GH4	GH8 GH6	GH4 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 ½" inclusive From 5/8 to 2 ½" inclusive À partir de 5/8 jusqu'à 2 ½" inclusive	A partir de 2 ½" From 2 ½" À partir de 2 ½"	Hasta 1" inclusive Up to 1"inclusive Jusqu'à 1" inclusive	A partir de 1" hasta 1 ½" inclusive From 1" to 1 ½" inclusive À partir de 1" jusqu'à 1½" inclusive	A partir de 1 ½" hasta 2 ½" inclusive From 1 ½" to 2 ½" inclusive À partir de 1 ½" jusqu'à 2 ½" inclusive	A partir de 2 ½" From 2 ½" À partir de 2 ½"
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	0.0254	0.0381	0.0508	0.0127	0.0254	0.0381	0.0508
10	0.2286	0.0381		0.0381	0.0508	0.0127	0.0254	0.0381	0.0508
9	0.2540	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

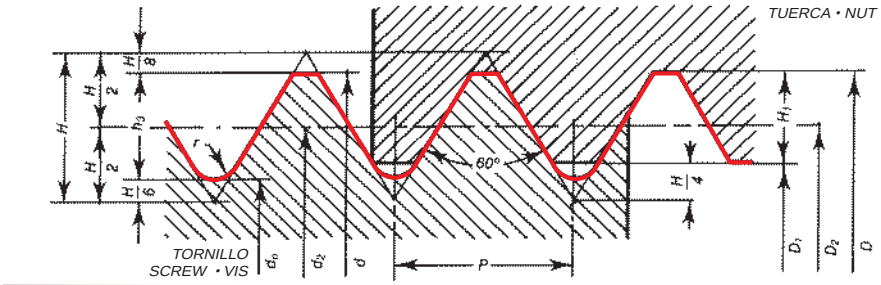
ASA B 1.1 (1960)

UNC

UNC - FILET UNIFIÉ AMÉRICAINE SÉRIE NORMALE

UNC - NORMAL SERIES AMERICAN UNIFIED THREAD

UNC - ROSCA UNIFICADA AMERICANA SERIE NORMAL



$D_1 = d - 2H_1$
$d_2 = D_2 = d - 0{,}64953\ P$
$d_3 = d - 1{,}22687\ P$
$H = 0{,}86603\ P$
$H_1 = 0{,}54127\ P$
$h_3 = 0{,}61343\ P$
$r = \frac{H}{6} = 0{,}14434P$

• PROFIL THÉORIQUE •
THEORICAL PROFILE • PERFIL TEORICO

• TAP • TARAUD • MACHO

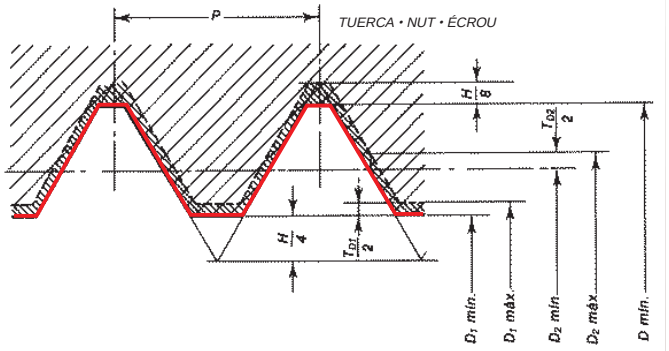
Rosca Thread Filet	Ø Exterior Outside Ø Ø Extérieur d = D	Ø Medio Pitch Ø Ø Moyen $d_2 = D_2$	Ø Núcleo Ø Core / Ø Noyau		Ø Exterior Outside Ø Ø Extérieur d min.	Tolerancia Tolerance Tolérance	Ø Medio Pitch Ø / Ø Moyen		Ø Núcleo Core Ø Ø Noyau d_2 máx.
			D_1	d_n			D_2 min.	d_2 máx	
No. 1-64	1,854	1,598	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

ASA B 1.1 (1960) 2B Y 3B

UNC - NORMAL SERIES AMERICAN UNIFIED THREAD
UNC - FILET UNIFIÉ AMÉRICAINE 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 mín. 2B/3B	Ø Medio / Pitch Ø / Ø Moyen			Ø Núcleo / Core Ø / Ø Noyau		
		D_2 mín. 2B / 3B	D_2 máx. 2B	D_2 máx. 3B	D_1 mín. 2B / 3B	D_1 máx. 2B	D_1 máx. 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 - 41/2	50,800	47,135	47,450	47,371	44,679	45,593	45,367
2 1/4- 41/2	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

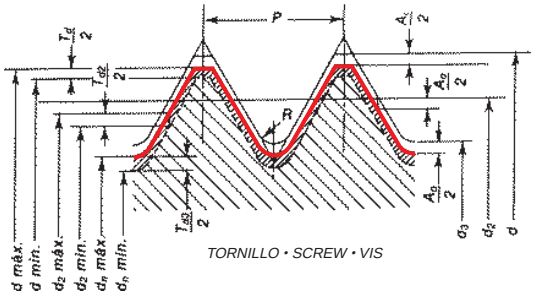
UNC - NORMAL SERIES AMERICAN UNIFIED THREAD

UNC - FILET UNIFIÉ AMÉRICAINE SÉRIE NORMALE

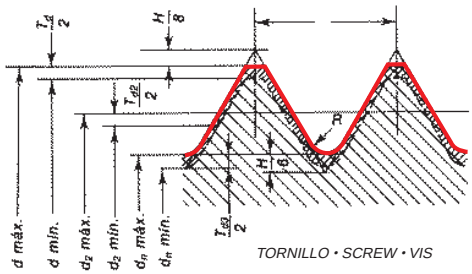
UNC - ROSCA UNIFICADA AMERICANA SERIE NORMAL

ASA B 1.1 (1960) 2B Y 3B

TOLERANCIA 2A • TOLERANCE 2A • TOLERANCE 2A



TOLERANCIA 3A • TOLERANCE 3A • TOLERANCE 3A



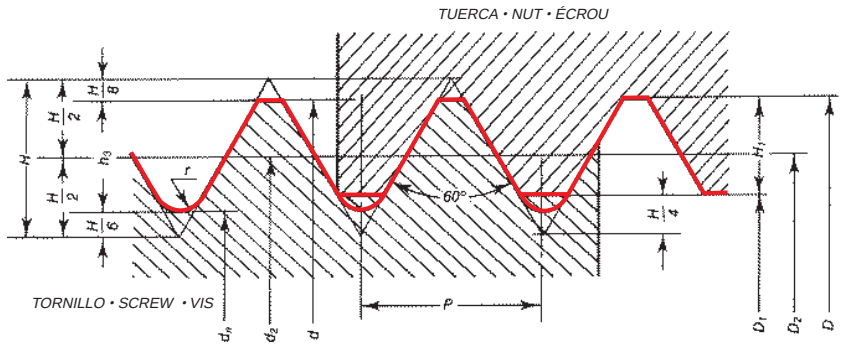
Rosca Thread Filet	Ø Exterior / Outside Ø / Ø Extérieur				Ø Medio / Pitch Ø / Ø Moyen				Ø Núcleo Core Ø / Ø Noyau	
	d. máx.		d. min.		d_2 máx.		d_2 min.		d_n min.	
	2A	3A	2A	3A	2A	3A	2A	3A	2A	3A
No. 1-84	1,839	1,854	1,742	1,758	1,582	1,598	1,532	1,560	1,351	1,367
No. 2-56	2,169	2,184	2,065	2,080	1,875	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

UNF

ASA B 1.1 (1960)

UNC - NORMAL SERIES
AMERICAN UNIFIED THREAD
UNC - FILET UNIFIÉ
AMÉRICAINE SÉRIE NORMALE
UNC - ROSCA UNIFICADA AMERI-
CANA SERIE NORMAL



$D_1 = d - 2H_1$
$d_2 = D_2 = d - 0{,}64953\ P$
$d_3 = d - 1{,}22687\ P$
$H = 0{,}86603\ P$
$H_1 = 0{,}54127\ P$
$h_3 = 0{,}61343\ P$
$r = \frac{H}{6} = 0{,}14434P$

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

UNC - NORMAL SERIES
AMERICAN UNIFIED THREAD
UNC - FILET UNIFIÉ
AMÉRICAINE SÉRIE NORMALE
UNC - ROSCA UNIFICADA AMERICA-
NA SERIE NORMAL

ASA B 1.1 (1960)
2BY 3B + 2AY 3A

UNF

• 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

• SCREW • VIS • TORNILLO

Rosca Thread Filet	Ø Exterior / Outside Ø / Ø Extérieur				Ø Medio / Pitch Ø / Ø Moyen				Ø Núcleo Core Ø / Ø Noyau	
	d máx.		d min.		d_2 máx.		d_2 min.		d_n min.	
	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

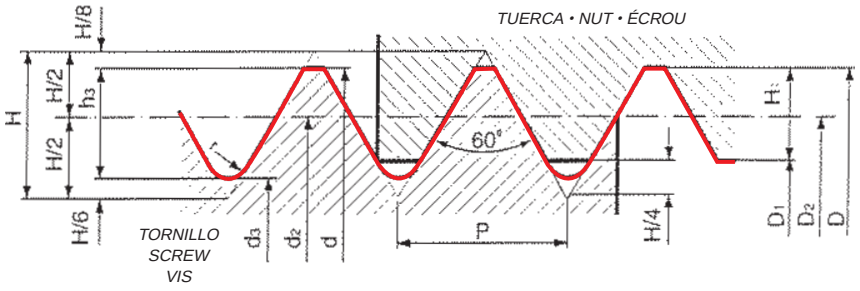
NOMINAL DIMENSIONS
MESURES NOMINALES
MEDIDAS NOMINALES

ASME B 1.1

UNEF

UNIFIED THREAD, EXTRAFINE PITCH
FILET UNIFIÉ, PAS EXRA FIN
ROSCA UNIFICADA
PASO EXTRA FINO

$D_1 = D - 2H_1$
$d_2 = D_2 = d - 0{,}64952\ P$
$d_3 = d - 1{,}22687\ P$
$H = 0{,}86603\ P$
$H_1 = 0{,}54127\ P$
$h_3 = 0{,}61343\ P$
$r = H/6 = 0{,}14434\ P$



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.	$d_{2\ min.}$ 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
15/16	- 20	23,812	22,987	22,225	22,438	23,914	23,025	23,012	22,279
1	- 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
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
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

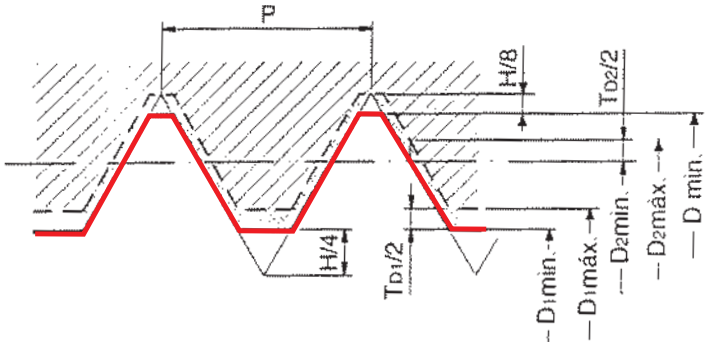
UNEF

ASME B 1.1

UNIFIED THREAD, EXTRAFINE PITCH
FILET UNIFIÉ, PAS EXRA 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.	$D_{2\ máx.}$ 3B mm.	$D_{1\ min.}$ 2B / 3B mm.	$D_{1\ máx.}$ 2B mm.	$D_{1\ máx.}$ 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
TORNILLO

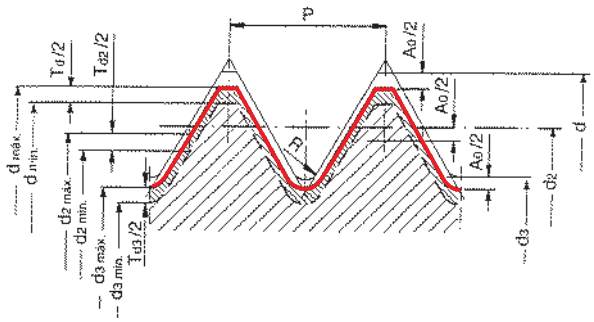
ASME B 1.1

UNEF

NIFIED THREAD; EXTRA-FINE PITCH
FILET UNIFIÉ, PAS EXRA FIN
ROSCA UNIFICADA PASO EXTRA FINO

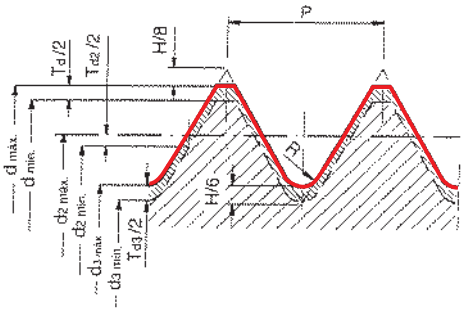
TORNILLO • SCREW • VIS

Tolerancia • Tolerance • Tolerance
2A



TORNILLO • SCREW • VIS

Tolerancia • Tolerance • Tolerance
3A



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	
		$d_{máx.}$		$d_{mín.}$		$d_{2\ máx.}$		$d_{2\ mín.}$		$d_{3\ máx.}$	
		2A mm.	3A mm.	2A mm.	3A mm.	2A mm.	3A mm.	2A mm.	3A mm.	2A mm.	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	1/16 - 18	26,952	26,988	26,731	26,767	26,035	26,071	25,916	25,979	25,220	25,255
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	3/16 - 18	30,124	30,162	29,903	29,942	29,207	29,246	29,083	29,154	28,392	28,430
1	1/4 - 18	31,712	31,750	31,491	31,529	30,795	30,833	30,670	30,742	29,980	30,018
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	3/8 - 18	34,887	34,925	34,666	34,704	33,970	34,008	33,846	33,917	33,155	33,193
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	1/2 - 18	38,062	38,100	37,841	37,879	37,145	37,183	37,018	37,089	36,330	36,368
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	5/8 - 18	41,237	41,275	41,016	41,054	40,320	40,358	40,193	40,264	39,505	39,543
1	11/16 - 18	42,824	42,862	42,603	42,642	41,907	41,946	41,778	41,849	41,092	41,130

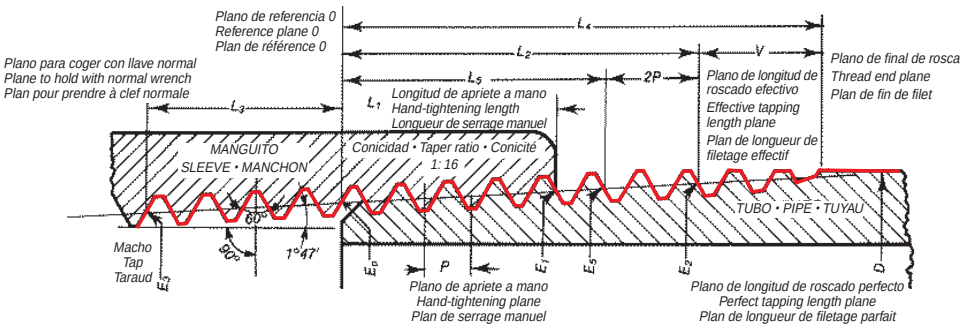
NPT - ASA B 1.1 (1960)
NPTF - ASA B 2.2 (1960)

NPT-NPTF

AMERICAN TAPER PIPE THREAD NPT-NPTF

FILET CONIQUE AMÉRICAINE GAZ NPT-NPTF

ROSCA CONICA AMERICANA PARA TUBO NPT-NPTF



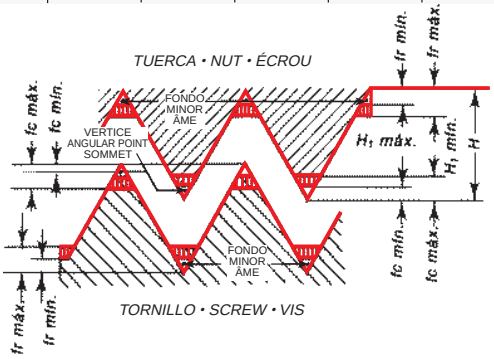
Rosca Thread Filet	Paso Pitch Pass h/1"	Ø Tubo Ø Pipe Ø Tuyau D	Ø Medio Pitch Ø Ø Moyen E_0	Apriete a mano Hand-tightening Serrage manuel		Rosca efectiva exterior Male effective thread Filet effectif mâle		Apriete a mano rosca interior Hand-tightening female thread Serrage manuel filet femelle		Rosca imperfecta Imperfect thread Filet imparfait	Rosca exterior Male thread Filet mâle	Rosca ext. mominalmente perfecta Nominally perfect male thread Filet mâle nominalement parfait	
				L_1	E_1	L_2	E_2	L_3	E_3	V	L_4	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

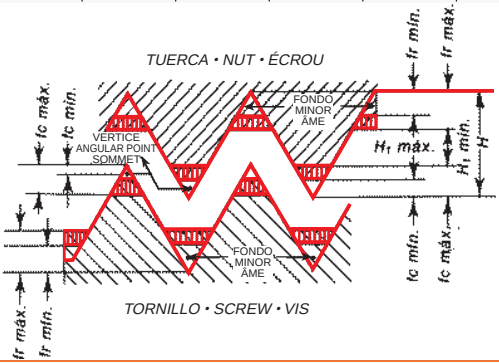
TRUNCATURA ROSCA NPT
NPT THREAD FLATT ON CREST • TRONCAGE FILET NPT

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

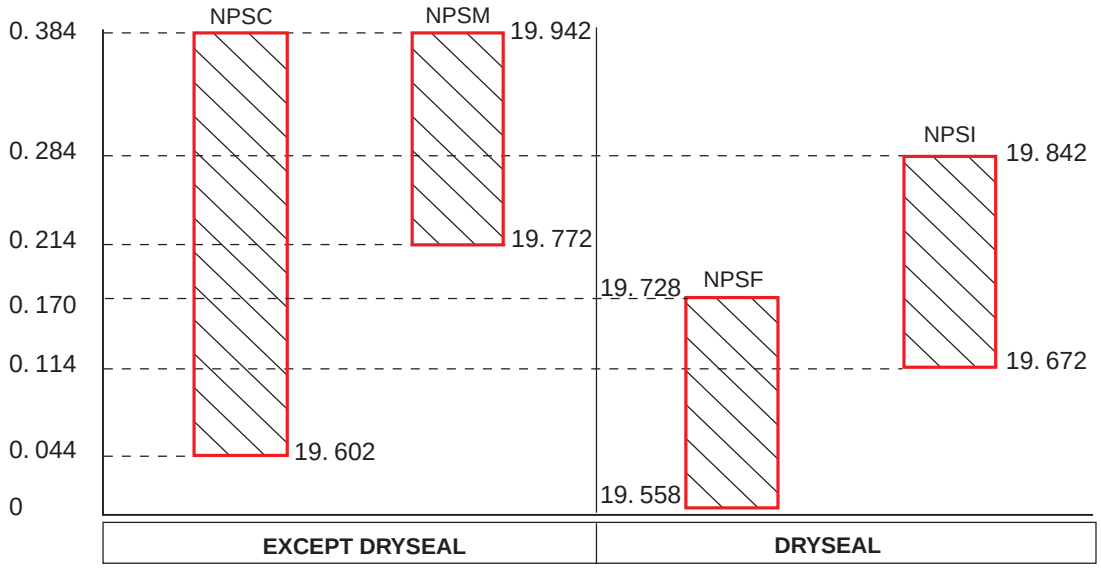




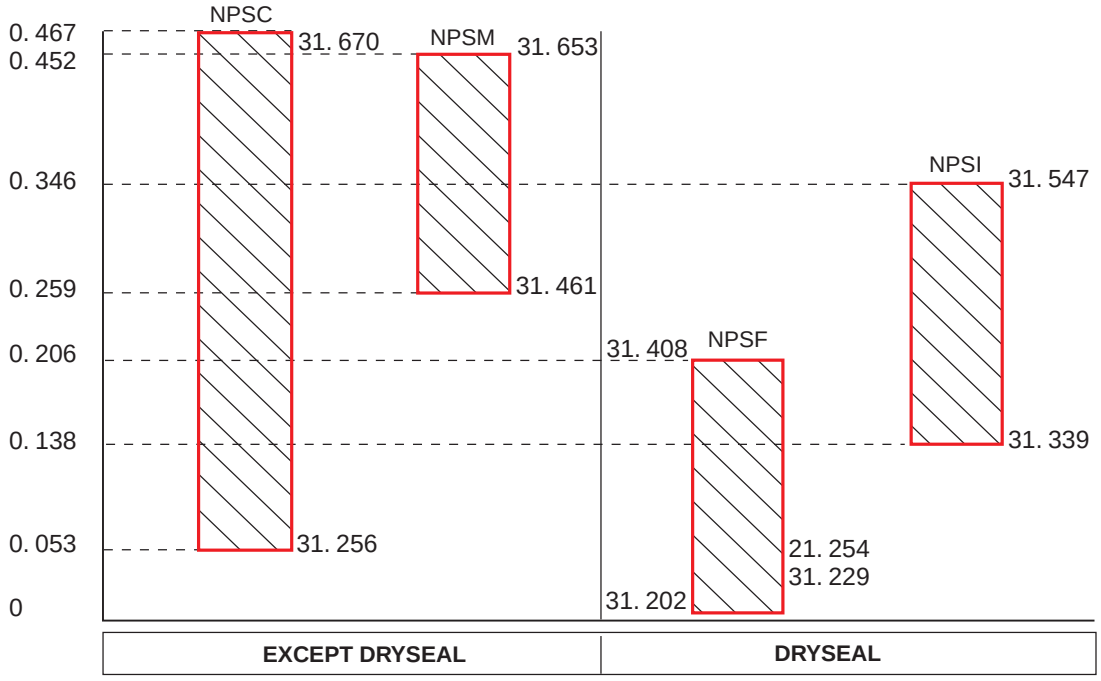
NORMAS “USA” STANDARD PIPE THREADS
ROSCAS NPSC - NPSM - NPSF - NPSI

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

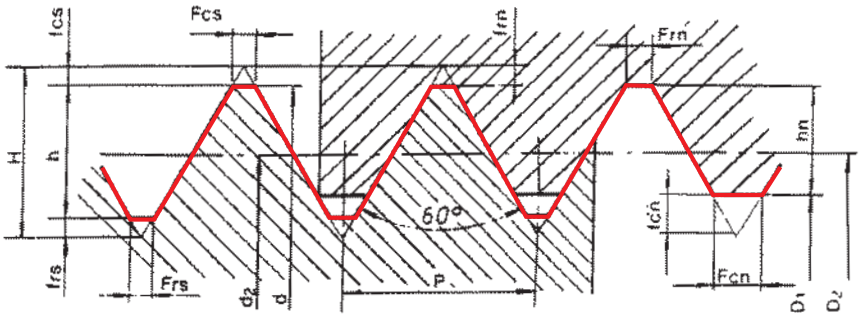
NOMINAL DIMENSIONS
MESURES NOMINALES
MEDIDAS NOMINALES

ANSI B 1.1. 20. 1

NPSM

AMERICAN PARALLEL PIPE THREAD
FILET AMÉRICAINE GAZ, CYLINDRIQUE
ROSCA AMERICANA PARA TUBO, CILINDRICA

TUERCA • NUT • ÉCROU



TORNILLO • SCREW • VIS

H = 0,866025 P
h = 0,64952 P
R = 0,18083 P
hn = 0,54126 P

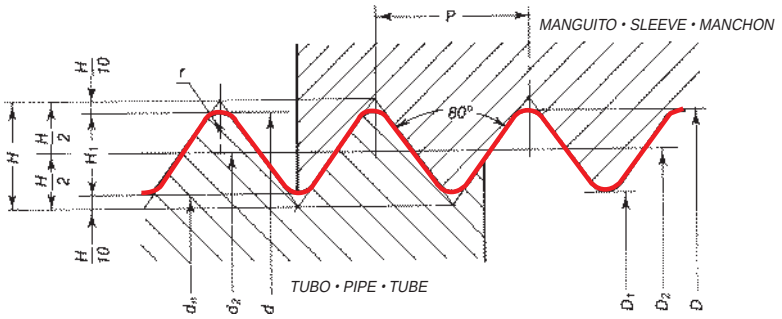
Rosca Thread Filet D	Paso Pitch Pass P h/1"	Tuerca - Tolerancia 2B Nut – Tolerance 2B • Écrou – tolérance 2B					Tuerca - Tolerancia 2B Screw – Tolerance 2B • Vis – Tolérance 2B			
		Ø ext. del tubo Outside pipe Ø Ø Ext. du tuyau mm.	Ø Medio / Average Ø Ø Moyen $D_{2\ mín.}$ mm.	$D_{2\ máx.}$ mm.	Ø Núcleo / Ø Core Ø Noyau $D_{1\ mín.}$ mm.	$D_{1\ máx.}$ mm.	Ø Exterior / Outside Ø Ø Extérieur $d_{1\ máx.}$ mm.	$d_{1\ mín}$ mm.	Ø Medio / Average Ø Ø Moyen $d_{2\ máx.}$ 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	7O,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 ÈLECTRIQUES
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							
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

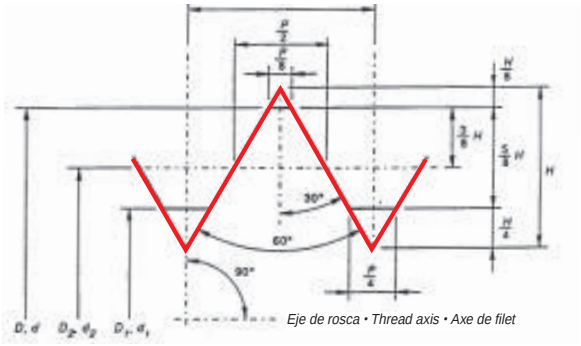
TUBO • TUBE • PIPE

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

3/8 H = 0,32476 P
5/8 H = 0,54127 P
H = 0,86603 P
H = P



• 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	
			$d_{mín.}$	$d_{máx.}$	$d_{2mín.}$	$d_{2máx.}$	$d_{1mín.}$	$d_{1máx.}$
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.

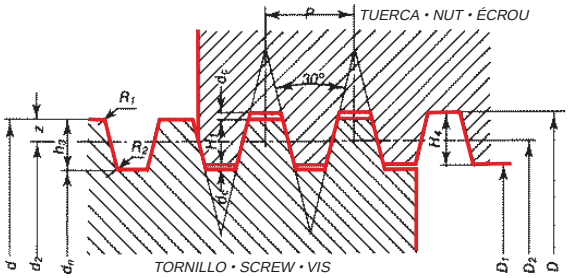
ROSCA INTERIOR - MANGUITO • FEMALE THREAD - SLEEVE • FILET FEMELLE - MANCHON

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	
			$d_{mín.}$	$d_{2mín.}$	$d_{2máx.}$	$d_{1mín.}$	$d_{1máx.}$
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

TRAPECIAL THREAD
METRAIC - ISO
FILET TRAPÉZOÏDAL
MÉTRIQUE - ISO
ROSCA TRAPEZOIDAL
METRICA - ISO



$D_1 \times d - 2\,H_1 = d - P$
$H_1 = 0{,}5\,P$
$H_4 = H_1 + a_c = 0{,}5\,P + a_c$
$h_3 = H_1 + a_c = 0{,}5\,P + a_c$
$z = 0{,}25\,P = \frac{H_1}{2}$

$D = d + 2\,a_c$
$d_n = d - 2\,h_3$
$d_2 = D_2 = d - 2z = d - 0{,}5\,P$
$R_1 = \text{máx. } 0{,}5\,a_c$
$R_1 = \text{máx. } a_c$

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	Ø Exterior Outside Ø Ø Extérieur	Ø Núcleo Core Ø Ø Noyau	
Serie 1	Serie 2	P	$d_2 = D_2$	D	d_n	D_1
Tr 8		1,5	7,250	8,300	6,200	6,500
	Tr 9	1,5	8,250	9,300	7,200	7,500
		2	8,000	9,500	6,500	7,000
Tr 10		1,5	9,250	10,300	8,200	8,500
		2	9,000	10,500	7,500	8,000
	Tr 11	2	10,000	11,500	8,500	9,000
		3	9,500	11,500	7,500	8,000
Tr 12		2	11,000	12,500	9,500	10,000
		3	10,500	12,500	8,500	9,000
	Tr 14	2	13,000	14,500	11,500	12,000
		3	12,500	14,500	10,500	11,000
Tr 16		2	15,000	16,500	13,500	14,000
		4	14,000	16,500	11,500	12,000
	Tr 18	2	17,000	18,500	15,500	16,000
		4	16,000	18,500	13,500	14,000
Tr 20		2	19,000	20,500	17,500	18,000
		4	18,000	20,500	15,500	16,000
	Tr 22	3	20,500	22,500	18,500	19,000
		5	19,500	22,500	16,500	17,000
		8	18,000	23,000	13,000	14,000
Tr 24		3	22,500	24,500	20,500	21,000
		5	21,500	24,500	18,500	19,000
		8	20,000	25,000	15,000	16,000
	Tr 26	3	24,500	26,500	22,500	23,000
		5	23,500	26,500	20,500	21,000
		8	22,000	27,000	17,000	18,000
Tr 28		3	26,500	28,500	24,500	25,000
		5	25,500	28,500	22,500	23,000
		8	24,000	29,000	19,000	20,000
	Tr 30	3	28,500	30,500	26,500	27,000
		6	27,000	31,000	23,000	24,000
		10	25,000	31,000	19,000	20,000
Tr 32		3	30,500	32,500	28,500	29,000
		6	29,000	33,000	25,000	26,000
		10	27,000	33,000	21,000	22,000
	Tr 34	3	32,500	34,500	30,500	31,000
		6	31,000	35,000	27,000	28,000
		10	29,000	35,000	23,000	24,000
Tr 36		3	34,500	36,500	32,500	33,000
		6	33,000	37,000	29,000	30,000
		10	31,000	37,000	25,000	26,000
	Tr 38	3	36,500	38,500	34,500	35,000
		7	34,500	39,000	30,000	31,000
		10	33,000	39,000	27,000	28,000
Tr 40		3	38,500	40,500	36,500	37,000
		7	36,500	41,000	32,000	33,000
		10	35,000	41,000	29,000	30,000

Ø Nominal Ø Nominal Ø Nominal		Paso Pitch Pass	Ø Medio Pitch Ø Ø Moyen	Ø Exterior Outside Ø Ø Extérieur	Ø Núcleo Core Ø Ø Noyau	
Serie 1	Serie 2	P	$d_2 = D_2$	D	d_n	D_1
	Tr 42	3	40,500	42,500	38,500	39,000
		7	38,500	43,000	34,000	35,000
		10	37,000	43,000	31,000	32,000
Tr 44		3	42,500	44,500	40,500	41,000
		7	40,500	45,000	36,000	37,000
		12	38,000	45,000	31,000	32,000
	Tr 46	3	44,500	46,500	42,500	43,000
		8	42,000	47,000	37,000	38,000
		12	40,000	47,000	33,000	34,000
Tr 48		3	46,500	48,500	44,500	45,000
		8	44,000	49,000	39,000	40,000
		12	42,000	49,000	35,000	36,000
	Tr 50	3	48,500	50,500	46,500	47,000
		8	46,000	51,000	41,000	42,000
		12	44,000	51,000	37,000	38,000
Tr 52		3	50,500	52,500	48,500	49,000
		8	48,000	53,000	43,000	44,000
		12	46,000	53,000	39,000	40,000
	Tr 55	3	53,500	55,500	51,500	52,000
		9	50,500	56,000	45,000	46,000
		14	48,000	57,000	39,000	41,000
Tr 60		3	58,500	60,500	56,500	57,000
		9	55,500	61,000	50,000	51,000
		14	53,000	62,000	44,000	46,000
	Tr 85	4	63,000	65,500	60,500	61,000
		10	60,000	66,000	54,000	55,000
		16	57,000	67,000	47,000	49,000
Tr 70		4	68,000	70,500	65,500	66,000
		10	65,000	71,000	59,000	60,000
		16	62,000	72,000	52,000	54,000
	Tr 75	4	73,000	75,500	70,500	71,000
		10	70,000	76,000	64,000	65,000
		16	67,000	77,000	57,000	59,000
Tr 80		4	78,000	80,500	75,500	76,000
		10	75,000	81,000	69,000	70,000
		16	72,000	82,000	62,000	64,000
	Tr 85	4	83,000	85,500	80,500	81,000
		12	79,000	86,000	72,000	73,000
		18	76,000	87,000	65,000	67,000
Tr 90		4	88,000	90,500	85,500	86,000
		12	84,000	91,000	77,000	78,000
		18	81,000	92,000	70,000	72,000
	Tr 95	4	93,000	95,500	90,500	91,000
		12	89,000	96,000	82,000	83,000
		18	86,000	97,000	75,000	77,000
Tr 100		4	98,000	100,500	95,500	96,000
		12	94,000	101,000	87,000	88,000
		20	90,000	102,000	78,000	80,000

NUT
ÉCROU
TUERCA

DIN 103

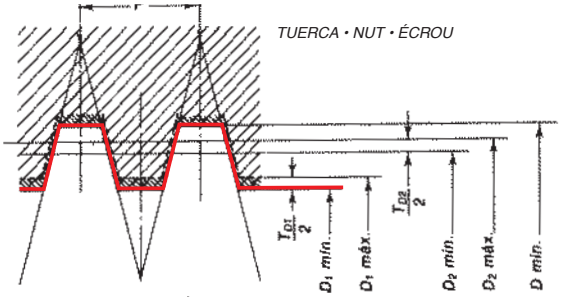
TIVOLY

ROSCA TRAPEZOIDAL METRICA - ISO
FILET TRAPÉZOÏDAL MÉTRIQUE - ISO
METRIC BASTARD THREAD - ISO

TOLERANCIA 7H EN EL Ø MEDIO Y 4H EN EL Ø NUCLEO

TOLERANCE 7H IN PITCH Ø AND 4H IN CORE

TOLÉRANCE 7H AU Ø MOYEN ET 4H AU NOYAU



Ø Nominal Ø Nominal Ø Nominal dxP	Ø Exterior Outside Ø Ø Extérieur D min.	Ø Medio Pitch Ø Ø Moyen D_2 mín.	Ø Medio Pitch Ø Ø Moyen D_2 máx.	Ø Núcleo Core Ø Ø Noyau D_1 mín.	Ø Núcleo Core Ø Ø Noyau D_1 máx.
Tr 8 x 1,5	8,300	7,250	7,474	6,500	6,690
Tr 9 x 1,5	9,300	8,250	8,474	7,500	7,690
Tr 9 x 2	9,500	8,000	8,250	7,000	7,236
Tr 10 x 1,5	10,300	9,250	9,474	8,500	8,690
Tr 10 x 2	10,500	9,000	9,250	8,000	8,236
Tr 11 x 2	11,500	10,000	10,250	9,000	9,236
Tr 11 x 3	11,500	9,500	9,780	8,000	8,315
Tr 12 x 2	12,500	11,000	11,265	10,000	10,236
Tr 12 x 3	12,500	10,500	10,800	9,000	9,315
Tr 14 x 2	14,500	13,030	13,265	12,000	12,326
Tr 14 x 3	14,500	12,500	12,800	11,000	11,315
Tr 16 x 2	16,500	15,000	15,265	14,000	14,236
Tr 16 x 4	16,500	14,000	14,355	12,000	12,375
Tr 18 x 2	18,500	17,000	17,265	16,000	16,236
Tr 18 x 4	18,500	16,000	16,355	14,000	14,375
Tr 20 x 2	20,500	19,000	19,265	18,000	18,236
Tr 20 x 4	20,500	18,000	18,355	16,000	16,375
Tr 22 x 3	22,500	20,500	20,800	19,000	19,315
Tr 22 x 5	22,500	19,500	19,875	17,000	17,450
Tr 22 x 8	23,000	18,000	18,475	14,000	14,630
Tr 24 x 3	24,500	22,500	22,835	21,000	21,315
Tr 24 x 5	24,500	21,500	21,900	19,000	19,450
Tr 24 x 8	25,000	20,000	20,500	16,000	16,630
Tr 26 x 3	26,500	24,500	24,835	23,000	23,315
Tr 26 x 5	26,500	23,500	23,900	21,000	21,450
Tr 26 x 8	27,000	22,000	22,500	18,000	18,630
Tr 28 x 3	28,500	26,500	26,835	25,000	25,315
Tr 28 x 5	28,500	25,500	25,900	23,000	23,450
Tr 28 x 8	29,000	24,000	24,500	20,000	20,630
Tr 30 x 3	30,500	28,500	28,835	27,000	27,315
Tr 30 x 6	31,000	27,000	27,450	24,000	24,500
Tr 30 x 10	31,000	25,000	25,530	20,000	20,710
Tr 32 x 3	32,500	30,500	30,835	29,000	29,315
Tr 32 x 6	33,000	29,000	29,450	26,000	26,500
Tr 32 x 10	33,000	27,000	27,530	22,000	22,710
Tr 34 x 3	34,500	32,500	32,835	31,000	31,315
Tr 34 x 6	35,000	31,000	31,450	28,000	28,500
Tr 34 x 10	35,000	29,000	29,530	24,000	24,710
Tr 36 x 3	36,500	34,500	34,835	33,000	33,315
Tr 36 x 6	37,000	33,000	33,450	30,000	30,500
Tr 36 x 10	37,000	31,000	31,530	26,000	26,710
Tr 38 x 3	38,500	36,500	36,835	35,000	35,315
Tr 38 x 7	39,000	34,500	34,975	31,000	31,560
Tr 38 x 10	39,000	33,000	33,530	28,000	28,710
Tr 40 x 3	40,500	38,500	38,835	37,000	37,315
Tr 40 x 7	41,000	36,500	36,975	33,000	33,560
Tr 40 x 10	41,000	35,000	35,530	30,000	30,710
Tr 42 x 3	42,500	40,500	40,835	39,000	39,315
Tr 42 x 7	43,000	38,500	38,975	35,000	35,560
Tr 42 x 10	43,000	37,000	37,530	32,000	32,710
Tr 44 x 3	44,500	42,500	42,835	41,000	41,315
Tr 44 x 7	45,000	40,500	40,975	37,000	37,560
Tr 44 x 12	45,000	38,000	38,560	32,000	32,800
Tr 46 x 3	46,500	44,500	44,855	43,000	43,315
Tr 46 x 8	47,000	42,000	42,530	38,000	38,630
Tr 46 x 12	47,000	40,000	40,630	34,000	34,800
Tr 48 x 3	48,500	46,500	46,855	45,000	45,315
Tr 48 x 8	49,000	44,000	44,530	40,000	40,630
Tr 48 x 12	49,000	42,000	42,630	36,000	36,800
Tr 50 x 3	50,500	48,500	48,855	47,000	47,315
Tr 50 x 8	51,000	46,000	46,530	42,000	42,630
Tr 50 x 12	51,000	44,000	44,630	38,000	38,800
Tr 52 x 3	52,500	50,500	50,855	49,000	49,315
Tr 52 x 8	53,000	48,000	48,530	44,000	44,630
Tr 52 x 12	53,000	46,000	46,630	40,000	40,800
Tr 55 x 3	55,500	53,500	53,855	52,000	52,315
Tr 55 x 9	56,000	50,500	51,060	46,000	46,670
Tr 55 x 14	57,000	48,000	48,670	41,000	41,900
Tr 60 x 3	60,500	58,500	58,855	57,000	57,315
Tr 60 x 9	61,000	55,500	56,060	51,000	51,670
Tr 60 x 14	62,000	53,000	53,670	46,000	46,900
Tr 65 x 4	65,500	63,000	63,400	61,000	61,375
Tr 65 x 10	66,000	60,000	60,560	55,000	55,710
Tr 65 x 16	67,000	57,000	57,710	49,000	50,000
Tr 70 x 4	70,500	68,000	68,400	66,000	66,375
Tr 70 x 10	71,000	65,000	65,560	60,000	60,710
Tr 70 x 16	72,000	62,000	62,710	54,000	55,000
Tr 75 x 4	75,500	73,000	73,400	71,000	71,375
Tr 75 x 10	76,000	70,000	70,560	65,000	65,710
Tr 75 x 16	77,000	67,000	67,710	59,000	60,000
Tr 80 x 4	80,500	78,000	78,400	76,000	76,375
Tr 80 x 10	81,O00	75,000	75,560	70,000	70,710
Tr 80 x 16	82,000	72,000	72,710	64,000	65,000
Tr 85 x 4	85,500	83,000	83,400	81,000	81,375
Tr 85 x 12	86,000	79,000	79,630	73,000	73,800
Tr 85 x 18	87,000	76,000	76,750	67,000	68,120
Tr 90 x 4	90,500	88,000	88,400	86,000	86,375
Tr 90 x 12	91,000	84,000	84,630	78,000	78,800
Tr 90 x 18	92,000	81,000	81,750	72,000	73,120
Tr 95 x 4	95,500	93,000	93,425	91,000	91,375
Tr 95 x 12	96,000	89,000	89,670	83,000	83,800
Tr 95 x 18	97,000	86,000	86,800	77,000	78,120
Tr 100 x 4	100,500	98,000	98,425	96,000	96,375
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

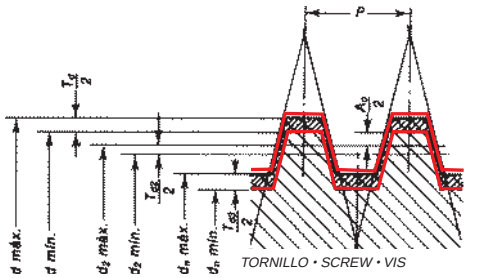
DIN 103

METRIC BASTARD
THREAD - ISO
FILET TRAPÉZOÏDAL
MÉTRIQUE - ISO
ROSCA TRAPEZOIDAL
METRICA - ISO

TOLERANCIA 7e EN EL Ø MEDIO
Y 4h EN EL Ø NUCLEO

TOLERANCE 7e IN PITCH Ø
AND 4h IN CORE

TOLÉRANCE 7e AU Ø MOYEN
ET 4h AU NOYAU



TORNILLO • SCREW • VIS

Ø Nominal Ø Nominal Ø Nominal dxP	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.
Tr 8 x 1,5	8,00	7,850	7,183	7,013	6,200	5,921
Tr 9 x 1,5	9,000	8,850	8,183	8,013	7,200	6,921
Tr 9 x 2	9,000	8,820	7,929	7,739	6,500	6,191
Tr 10 x 1,5	10,000	9,850	9,183	9,013	8,200	7,921
Tr 10 x 2	10,000	9,820	8,929	8,739	7,500	7,191
Tr 11 x 2	11,000	10,820	9,929	9,739	8,500	8,191
Tr 11 x 3	11,000	10,764	9,415	9,203	7,500	7,150
Tr 12 x 2	12,000	11,820	10,929	10,729	9,500	9,179
Tr 12 x 3	12,000	11,764	10,415	10,191	8,500	8,135
Tr 14 x 2	14,000	13,820	12,929	12,729	11,500	11,179
Tr 14 x 3	14,000	13,764	12,415	12,191	10,500	10,135
Tr 16 x 2	16,000	15,820	14,929	14,729	13,500	13,179
Tr 16 x 4	16,000	15,700	13,905	13,640	11,500	11,074
Tr 18 x 2	18,000	17,820	16,929	16,729	15,500	15,179
Tr 18 x 4	18,000	17,700	15,905	15,640	13,500	13,074
Tr 20 x 2	20,000	19,820	18,929	18,729	17,500	17,179
Tr 20 x 4	20,000	19,700	17,905	17,640	15,500	15,074
Tr 22 x 3	22,000	21,764	20,415	20,191	18,500	18,135
Tr 22 x 5	22,000	21,665	19,394	19,114	16,500	16,044
Tr 22 x 8	22,000	21,550	17,868	17,513	13,000	12,424
Tr 24 x 3	24,000	23,764	22,415	22,165	20,500	20,103
Tr 24 x 5	24,000	23,665	21,394	21,094	18,500	18,019
Tr 24 x 8	24,000	23,550	19,868	19,493	15,000	14,399
Tr 26 x 3	26,000	25,764	24,415	24,165	22,500	22,103
Tr 26 x 5	26,000	25,665	23,394	23,094	20,500	20,019
Tr 26 x 8	26,000	25,500	21,868	21,493	17,000	16,399
Tr 28 x 3	28,000	27,764	26,415	26,165	24,500	24,103
Tr 28 x 5	28,000	27,665	25,394	25,094	22,500	22,019
Tr 28 x 8	28,000	27,550	23,868	23,493	19,000	18,399
Tr 30 x 3	30,000	29,764	28,415	28,165	26,500	26,103
Tr 30 x 6	30,000	29,625	26,882	26,547	23,000	22,463
Tr 30 x 10	30,000	29,470	24,850	24,450	19,000	18,350
Tr 32 x 3	32,000	31,764	30,415	30,165	28,500	28,103
Tr 32 x 6	32,000	31,625	28,882	28,547	25,000	24,463
Tr 32 x 10	32,000	31,470	26,850	26,450	21,000	20,350
Tr 34 x 3	34,000	33,764	32,415	32,165	30,500	30,103
Tr 34 x 6	34,000	33,625	30,882	30,547	27,000	26,463
Tr 34 x 10	34,000	33,470	28,850	28,450	23,000	22,350
Tr 36 x 3	36,000	35,764	34,415	34,165	32,500	32,103
Tr 36 x 6	36,000	35,625	32,882	32,547	29,000	28,463
Tr 36 x 10	36,000	35,470	30,850	30,450	25,000	24,350
Tr 38 x 3	38,000	37,764	36,415	36,165	34,500	34,103
Tr 38 x 7	38,000	37,575	34,375	34,020	30,000	29,431
Tr 38 x 10	38,000	37,470	32,850	32,450	27,000	26,350
Tr 40 x 3	40,000	39,764	38,415	38,165	36,500	36,103
Tr 40 x 7	40,000	39,575	36,575	36,020	32,000	31,431
Tr 40 x 10	40,000	39,470	34,850	34,450	29,000	28,350

Ø Nominal Ø Nominal Ø Nominal dxP	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.
Tr 42 x 3	42,000	41,764	40,415	40,165	38,500	38,103
Tr 42 x 7	42,000	41,575	38,375	38,020	34,000	33,431
Tr 42 x 10	42,000	41,470	36,850	36,450	31,000	30,350
Tr 44 x 3	44,000	43,764	42,415	42,165	40,500	40,103
Tr 44 x 7	44,000	43,575	40,375	40,020	36,000	35,431
Tr 44 x 12	44,000	43,400	37,830	37,405	31,000	30,309
Tr 46 x 3	46,000	45,764	44,415	44,150	42,500	42,084
Tr 46 x 8	46,000	45,500	41,868	41,468	37,000	36,368
Tr 46 x 12	46,000	45,400	39,830	39,355	33,000	32,246
Tr 48 x 3	48,000	47,764	46,415	46,150	44,500	44,084
Tr 48 x 8	48,000	47,550	43,868	43,468	39,000	38,368
Tr 48 x 12	48,000	47,400	41,830	41,355	35,000	34,246
Tr 50 x 3	50,000	49,764	48,415	48,150	46,500	46,084
Tr 50 x 8	50,000	49,550	45,868	45,468	41,000	40,368
Tr 50 x 12	50,000	49,400	43,830	43,355	37,000	36,246
Tr 52 x 3	52,000	51,764	50,415	50,150	48,500	48,084
Tr 52 x 8	52,000	51,550	47,868	47,468	43,000	42,368
Tr 52 x 12	52,000	51,400	45,830	45,355	39,000	38,246
Tr 55 x 3	55,000	54,764	53,415	53,150	51,500	51,084
Tr 55 x 9	55,000	54,500	50,360	49,935	45,000	44,329
Tr 55 x 14	55,000	54,330	47,820	47,320	39,000	38,195
Tr 60 x 3	60,000	59,764	58,415	58,150	56,600	56,084
Tr 60 x 9	60,000	59,500	55,360	54,935	50,000	49,329
Tr 60 x 14	60,000	59,330	52,820	52,320	44,000	43,195
Tr 65 x 4	65,000	64,700	62,905	62,605	60,500	60,030
Tr 65 x 10	65,000	64,470	59,850	59,425	54,000	53,319
Tr 65 x 16	65,000	64,290	56,810	56,280	47,000	46,147
Tr 70 x 4	70,000	69,700	67,905	67,605	65,500	65,030
Tr 70 x 10	70,000	69,470	64,850	64,425	59,000	58,319
Tr 70 x 16	70,000	69,290	61,810	61,280	52,000	51,147
Tr 75 x 4	75,000	74,700	72,905	72,605	70,500	70,030
Tr 75 x 10	75,000	74,470	69,850	69,425	64,000	63,319
Tr 75 x 16	75,000	74,290	66,810	66,280	57,000	56,147
Tr 80 x 4	80,000	79,700	77,905	77,605	75,500	75,030
Tr 80 x 10	80,000	79,470	74,850	74,425	69,000	68,319
Tr 80 x 16	80,000	79,290	71,810	71,280	62,000	61,147
Tr 85 x 4	85,000	84,700	82,905	82,605	80,500	80,030
Tr 85 x 12	85,000	84,400	78,830	78,355	72,000	71,246
Tr 85 x 18	85,000	84,200	75,800	75,240	65,000	64,100
Tr 90 x 4	90,000	89,700	87,905	87,605	85,500	85,030
Tr 90 x 12	90,000	89,400	83,830	83,356	77,000	76,246
Tr 90 x 18	90,000	89,200	80,800	80,240	70,000	69,100
Tr 95 x 4	95,000	94,700	92,905	92,590	90,500	90,011
Tr 95 x 12	95,000	94,400	88,830	88,330	82,000	81,215
Tr 95 x 18	95,000	94,200	85,800	85,200	75,O00	74,050
Tr 100 x 4	100,000	99,700	97,905	97,590	95,500	95,011
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

A

Dureza / Hardness / Dureté : < 120 HB 30 Resistencia a la tracción / Tensile stength / Resistence 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					

B1 • STRUCTURAL STEELS • ACIERS DE CONSTRUCTION • ACEROS DE CONSTRUCCIÓN

B

Dureza / Hardness / Dureté : < 200 HB 30 Resistencia a la tracción / Tensile stength / Resistence 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					

B2 • PLAIN CARBON STEELS • ACIERS CARBONES NON ALLIÉS ET AMÉLIORÉS • ACEROS BONIFICADOS

B

Dureza / Hardness / Dureté : < 250 HB 30 Resistencia a la tracción / Tensile stength / Resistence 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 stength / Resistence à la traction : < 800 N/mm² Viruta larga / Long chip / Copeau long						
DIN		**UNE**	**UNI**	**AFNOR**	**BS**	**AISI**
1.Para herramientas de trabajo en frio • 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	Z110DKCWV.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 alliée						
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 améliorés						
1.0503	C 45	F.114	C 45	1 C 45	060 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	

CD

Dureza / Hardness / Dureté : < 350 HB 30 Resistencia a la tracción / Tensile stength / Resistence 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

F

Dureza / Hardness / Dureté : < 250 HB 30 Resistencia a la tracción / Tensile stength / Resistence 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

G

Dureza / Hardness / Dureté : < 320 HB 30 Resistencia a la tracción / Tensile stength / Resistence 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 AUSTENITICOS

H1

Dureza / Hardness / Dureté : < 250 HB 30 Resistencia a la tracción / Tensile stength / Resistence 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 1NCDU25.20		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		S34788
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

H2

Dureza / Hardness / Dureté : < 350 HB 30 Resistencia a la tracción / Tensile stength / Resistence 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

I

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 stength / Resistence 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 B
0.6015		FG-15	G 15	Ft 20 D	Grade 150	A 48-25 B
0.6020		FG-20	G 20	Ft 25 D	Grade 220	A 48-30 B
0.6025		FG-25	G 25	Ft 30 D	Grade 260	A 48-40 B
0.6030		FG-30	G 30	Ft 30 D	Grade 300	A 48-45 B
0.6035		FG-35	G 35	Ft 35 D	Grade 350	A 48-50 B
0.6040				Ft 40 D	Grade 400	A 48-60 B

J1 • **CAST IRON WITH LAMELLAR GRAPHITE (GG)LAMELLAR** • FONTE À GRAPHITE LAMELLAIRE (GG) • FUNDICIÓN CON GRAFITO LAMINAR (GG)

J

Dureza / Hardness / Dureté : < 300 HB 30 Resistencia a la tracción / Tensile stength / Resistence 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)

J

Dureza / Hardness / Dureté : < 200HB 30 Resistencia a la tracción / Tensile stength / Resistence 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)

J

Dureza / Hardness / Dureté : < 300 HB 30 Resistencia a la tracción / Tensile stength / Resistence 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

K1

Dureza / Hardness / Dureté : < 100 HB 30 Resistencia a la tracción / Tensile stength / Resistence 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

K2

Dureza / Hardness / Dureté : < 100 HB 30 Resistencia a la tracción / Tensile stength / Resistence 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%

L1

Dureza / Hardness / Dureté : < 180 HB 30 Resistencia a la tracción / Tensile stength / Resistence 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					

L2 • ALUMINUM ALLOYS WITH 0,5% < SI < 10% • ALLIAGES D'ALUMINIUM AYANT 0,5% <SI <10% • ALEACIONES DE ALUMINIO CON 0,5% <SI <10%

L2

Dureza / Hardness / Dureté : < 180 HB 30
Resistencia a la tracción / Tensile stength / Resistence à la traction : < 600 N/mm²
Viruta media / Chip middle / Copeau moyen

DIN		UNE	UNI	AFNOR	BS	AISI
3.2134	G-AlSi 5 Cu 1 Mg	L - 2571	3600	A-S4GU	LM 16	355.1
3.2152	GD-AlSi 6 Cu 4					
3.2162	GD-AlSi 8 Cu 3					
3.2373	G-AlSi 9 Mg			A7-S10G		

M1 • ALUMINIUM ALLOYS WITH SI > 10% • ALLIAGES D'ALUMINIUM AYANT SI> 10% • ALEACIONES DE ALUMINIO CON SI> 10%

M1

Dureza / Hardness / Dureté : < 180 HB 30
Resistencia a la tracción / Tensile stength / Resistence 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-AlSi 10 Mg	L-2560,61		A-S10G	LM9	A360
3.2383	G-AlSi 10 Mg (Cu)			A-S9GU		
3.2581	G-AlSi 12	L-2520,21	4514	A-S13	LMS	A413
3.2583	G-AlSi 12 (Cu)	L-2530	3048	A-S12U	LM20	413.1
3.2982	GD-AlSi 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

N1 • COPPER • CUIVRE • COBRE

N1

Dureza / Hardness / Dureté : < 100 HB 30
Resistencia a la tracción / Tensile stength / Resistence 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-bl	Cu--DHP/C108	C12200/DHP
2.1356	CuMn 3					
2.1522	CuSi 2 Mn					
2.1293	CuCrZr				C C 104	C 18400

N2 • SHORT CHIP COPPER ALLOYS • ALLIAGES DE CUIVRE COPEAU COURT • ALEACIONES DE COBRE VIRUTA CORTA

N2

Dureza / Hardness / Dureté : < 200 HB 30
Resistencia a la tracción / Tensile stength / Resistence 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

N3 • ALEACIONES DE COBRE VIRUTA LARGA • LONG CHIP COPPER ALLOYS • ALLIAGES DE CUIVRE COPEAU LONG

N3

Dureza / Hardness / Dureté : < 200 HB 30
Resistencia a la tracción / Tensile stength / Resistence 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

Q1 • **NIQUEL** • NICKEL • NICKEL R ≤ 500 N/MM²R

Q1

Dureza / Hardness / Dureté : < 150 HB 30 Resistencia a la tracción / Tensile stength / Resistence 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					

Q2 • **NICKEL ALLOYS** • ALLIAGES DE NICKEL • ALEACIONES DE NIQUEL

Q2

Dureza / Hardness / Dureté : < 270 HB 30 Resistencia a la tracción / Tensile stength / Resistence 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					

Q3 • **HIGH-TEMPERATURE RESISTANT NICKEL ALLOYS** • ALLIAGES NICKEL POUR HAUTES TEMPÉRATURES • ALEACIONES DE NIQUEL PARA ALTAS TEMPERATURAS

Q3

Dureza / Hardness / Dureté : < 400 HB 30 Resistencia a la tracción / Tensile stength / Resistence 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					

T1 • **TITANIUM** / TITANE / TITANIO

T1

Dureza / Hardness / Dureté : < 200 HB 30 Resistencia a la tracción / Tensile stength / Resistence 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					

T2 • **ANNEALED TITANIUM ALLOYS** • ALLIAGES DE TITANE RECUITS • ALEACIONES DE TITANIO RECOCIDAS

T2

Dureza / Hardness / Dureté : < 200 HB 30 Resistencia a la tracción / Tensile stength / Resistence 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					

T3 • **TITANIUM ALLOYS** • ALLIAGES DE TITANE • ALEACIONES DE TITANIO

T3

Dureza / Hardness / Dureté : < 300 HB 30 Resistencia a la tracción / Tensile stength / Resistence 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					

Notes

Notes

Notes

TIVOLY

TIVOLY

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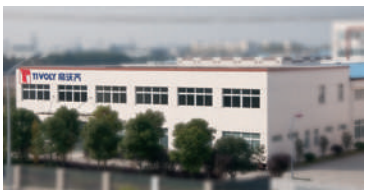

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