La Bagna Cauda

The "Bagna Cauda"

La bagna cauda è una ricetta tipica piemontese e per gli abitanti della regione è sacra! Una vera eccellenza.
Si tratta di uno di quei classici piatti conviviali che sono perfetti per riunire attorno a un tavolo amici e famigliari.
Il significato di bagna cauda è "salsa calda". E va appunto mangiata assolutamente calda. Composta da tre soli ingredienti, acciughe, aglio e olio, viene preparata in grandi quantità e poi servita in dei fujot, dei piccoli recipienti monoporzione in terracotta con sotto una piccola fiammella che mantiene sempre caldo l'intingolo.
Essendo molto ricca e sostanziosa, oltrechè gustosa, è nata come piatto unico per la cena. Un tempo, nelle tavole più povere, si intingevano le verdure stagionali che l'orto forniva, cotte o crude. Solitamente il cavolo, la verza, i cardi, i topinambur, le patate e le rape bollite. I benestanti aggiungevano altri ingredienti come le barbabietole, la carne cruda, i peperoni, il pane abbrustolito, il mais, i rapanelli e le cipolle al forno.

Acciughe e olio non sono però degli ingredienti prettamente piemontesi.
Il motivo della loro presenza è da ricercare nella storia; durante il commercio dei beni, tra il mare e le pianure a nord al di là dei monti e viceversa, attraverso le" Vie del sale"; antichi percorsi, continui saliscendi, che un tempo remoto erano i passaggi di comunicazione e di trasporto fondamentali.
Il nome è al plurale perché sono molte; dall'estremo ponente ligure sino alla Toscana. Fanno riferimento al sale perché il sale fu per lungo tempo, sin da epoca romana, uno dei principali sistemi di conservazione del cibo. La parola "salario" deriva appunto dalla paga dei soldati romani che era sotto forma di quantità di sale e costituiva quindi una merce fondamentale e richiestissima.
Si istituzionalizzano dopo l'800 quando il Sacro Romano Impero, con uno sforzo unitario e amministrativo importante, riuscì a rendere sicuro il proprio territorio affidandolo alla cura dei feudatari.
È un momento epocale per l'Europa che rivede una prospettiva di crescita dopo secoli di paura, attraversata da tribù barbare nella maggior parte dei casi interessata a depredare.

Per diversi secoli manterrà intatto il suo significato simbolico fatto allo stesso tempo di ricchezza, avventura, mistero e paura. La leggenda narra che fossero i discendenti dei temutissimi saraceni a iniziare a portare quel prodotto, povero ma squisito, verso l'interno. Sotto diversi strati di acciughe salate si nascondeva il sale che pagava una gabella obbligatoria. Fu in questi viaggi faticosi e tribolati, con il freddo e minacciati da mille insidie che questi uomini produssero uno dei piatti più squisiti della cucina piemontese.

Bagna Cauda is a traditional Piedmont recipe, and for the inhabitants of the region, it's sacred! True excellence.
It's a classic convivial dish, perfect for a gathering of family and friends around the table.
The term bagna cauda means "hot sauce". And it should be eaten nice and hot. The sauce has just three ingredients: anchovies, garlic and olive oil; it is prepared in large quantities and served in fujot, small single-portion sized terracotta pots with a tea light underneath to keep the sauce warm.
As this is an extremely rich and substantial dish, as well as delicious, it is served as a single course for dinner. Originally, in the poorest households, seasonal vegetables from the garden were dipped into the sauce, either raw or cooked. These were usually white and savoy cabbage, cardoons, Jerusalem artichokes, potatoes and turnips. Better-off homes added other ingredients such as beetroot, raw meat, sweet peppers, toasted bread, sweetcorn, radishes and roasted onions.

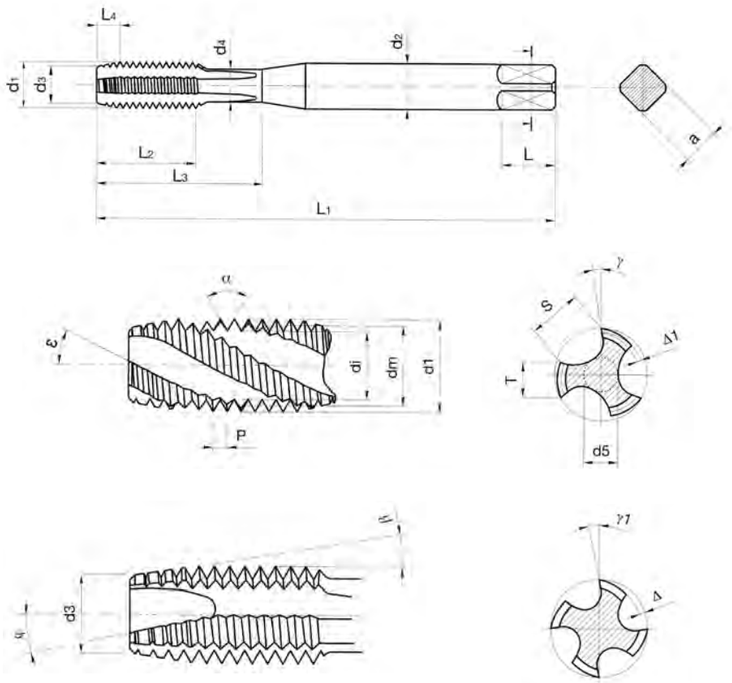
However, anchovies and olive oil are not exactly Piedmontese ingredients.
The reason for their inclusion lies in the region's history: in the age of goods trade between the sea and the northern plains beyond the mountains, the "salt roads", ancient and often precipitous routes, were essential for communication and transport.
There were many such routes, from the far west of Liguria all the way to Tuscany. The reference to salt is because for a long time, since the Roman era, salt was one of the main methods of preserving food. The word "salary" actually derives from the wages of Roman soldiers, which were paid in salt, an essential and much sought-after commodity.
The routes were formalised after the 9th century, when the Holy Roman Empire used its administrative might to secure its territories by entrusting them to feudal rulers.
This was a momentous time for a Europe glimpsing the chance of growth after centuries of fear, marauded by barbarian tribes intent on plunder.

For several centuries salt retained its symbolic significance and its connotations of wealth, adventure, mystery and fear. The story goes that it was the descendants of the feared Saracens who began transporting salt - so humble yet so valuable - to the interior. Under several layers of salted anchovies they hid the salt, which was subject to an obligatory tax. It was during these exhausting and difficult journeys, suffering from the cold and threatened by multiple enemies, that one of the most exquisite dishes of Piedmont cuisine was invented.

Il Fujot della Bagna Càuda
Service terrine for Bagna Càuda

Info

TERMINOLOGIA DEI MASCHI
TAPS TERMINOLOGY - TERMINOLOGIE DES TARAUDS

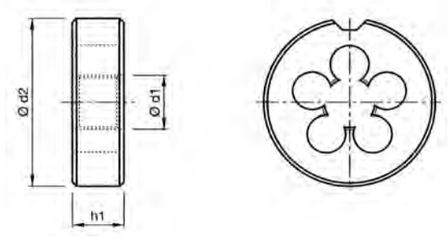


LEGENDA
LEGEND - LÉGENDE

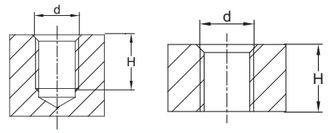
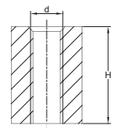
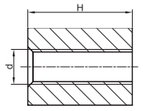
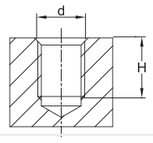
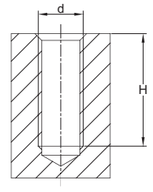
L1: Lunghezza totale - Total lenght - Longueur totale
L2: Lunghezza filetto - Thread lenght - Longueur du filet
L4: Lunghezza imbocco - Chamfer length - Longueur de l'entrée
L3: Lunghezza utile - Useful lenght - Longueur utile
L: Lunghezza quadro - Lenght of square - Longueur du cadre
P: Passo - Pitch - Pas
S: Larghezza scanalatura - Flute width - Largeur de la goujure
d1: Diametro est. nominale - Major diameter
Diamètre extérieur nominal
d2: Diametro del gambo - Shank diameter - Diamètre de queue
d4: Diametro del collarino - Neck diameter - Diamètre du cou
d3: Diametro di imbocco - Chamfer diameter - Diamètre de l'entrée
dm: Diametro medio - Pitch diameter - Diamètre moyen
di: Diametro interno - Minor diameter - Diamètre intérieur
d5: Diametro nucleo - Core diameter - Diamètre du noyau
T: Larghezza del dente - Width of land - Largeur de la dent
α: Angolo del profilo - Included angle of thread - Angle du profil
γ1: Angolo di taglio frontale - Rake angle - Angle de coupe avant
γ: Angolo di taglio sull'imbocco corretto - Rake angle of spiral point
Angle de coupe sur l'entrée
β: Angolo di imbocco - Chamfer angle - Angle de l'entrée
ε: Inclinazione dell'elica - Spiral flute angle - Angle d'hélice
Δ: Spoglia sull'imbocco - Chamfer relief - Dépouille de l'entrée
Δ1: Spoglia sul filetto - Pitch diameter relief - Dépouille sur le filet
a: Quadro - Square - Carré
ϕ: Angolo inclinzazione imbocco corretto - Spiral point angle
Angle d'inclinaison de l'entrée GUN

TERMINOLOGIA FILIERE
DIES TERMINOLOGY - TERMINOLOGIE FILIERE

d1: Diametro nominale - Nominal diameter - Diamètre nominal
d2: Diametro esterno - External diameter - Diamètre extérieur
h1: Spessore - Thickness - Épaisseur

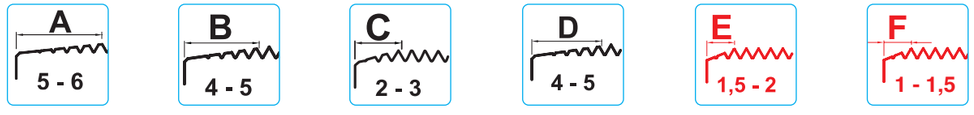


TIPI DI FORO E RELATIVI MASCHI CONSIGLIATI
HOLE TYPES AND RECOMMENDED TAPS - TYPES DE TROU ET TARAUDS RECOMMANDÉS

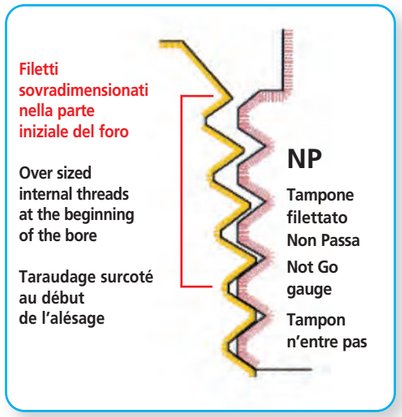
Tipo di foro Hole type Type de trou	Profondità x d Depth x d Profondeur x d	Nr. di serie cat. Cat. serial number Nr. série cat.	Tipi di scanalature Flute geometries Type de goujure
Fori ciechi e passanti - Blind and through holes - Trous borgnes et débouchant			
	H <1,5 d	**20-21**	
Fori passanti - Through holes - Trous débouchant			
	H < 3 d	**24-25**	
	H < 3 d	**50-51** **52-53**	
Fori ciechi - Blind holes - Trous borgnes			
	H <1,5 d	**40-41** **42-43**	
	H < 2,5 d	**60-61**	
	H 2,5÷3 d	**80-81** **82-83** **92-93** **94-95**	 BT= Back Tapered Rastremazione posteriore del filetto - Détalonnage arrière
	H > 3 d	**V82-V83**	

TIPI DI IMBOCCO
CHAMFER TYPE - TYPES D'ENTRÉES

Lunghezza
Length
Longueur
n° x P



A richiesta
On request
Sur demande



Problemi di oversize?
Oversize problems?
Problèmes de surcote?

Nessun problema di oversize?
No oversize problems?
Pas des problèmes de surcote?

MASCHIATURA CONVENZIONALE
STANDARD TAPPING
TARAUDAGE NORMAL

Si consiglia l'uso dei prodotti contrassegnati CO.
We recommend the use of CO products.
Nous recommandons l'utilisation de produits CO.

MASCHIATURA RIGIDA
RIGID TAPPING
TARAUDAGE RIGIDE

Si consiglia l'uso dei prodotti contrassegnati SR per l'ottimizzazione della resa utensile.
We reccomend the use of SR products for yield optimization.
Nous recommandons l'utilisation de produits SR pour l'optimisation du rendement.

MASCHIATURA CONVENZIONALE
STANDARD TAPPING - TARAUDAGE NORMAL

A differenza della maschiatura rigida, il maschio viene montato su porta utensili che lasciano un certo grado di libertà (comunemente detta compensazione). In questa condizione, con l'utilizzo dei maschi elicoidali a forte tersione, possono insorgere dei problemi in merito alla filettatura ottenuta. È probabile, specie negli acciai a medio-bassa resistenza, ottenere un filettatura sovradimensionata "oversize". In questo caso il controllo del tampone filettato Non Passa risulta non conforme: oltre 2 giri o, nella peggiore delle ipotesi, anche l'avvitamento completo.
Grazie alla continua ricerca e sviluppo, recentemente, la UFS ha sviluppato dei prodotti specifici per la risoluzione di questa problematica contraddistinguendoli nel catalogo con un logo specifico CO. La seguente tabella è un aiuto alla individuazione dei prodotti.

Unlike the rigid tapping, the tap is mounted on tool holders that leave a certain degree of freedom (compensation).
In this condition, high grade spiral flutes, may arise problems regarding threading obtained. Especially in low to medium strength steels, you can get a thread oversized. In this case the test with the control gauges NO GO might be non-compliant: more than 2 laps or even more.
Thanks to the continuous research and development, recently UFS has developed specific products for the resolution of this issue: in the Catalog with a specific logo CO. The following table is an aid to identification of the products.

Contrairement au taraudage rigide, le taraud est monté sur porte-outils qui laissent une certaine liberté (compensation).
Dans cette condition, hélices très fortes, peuvent poser problèmes concernant le filetage obtenu. Surtout avec aciers de bas et moyenne résistance, vous pouvez obtenir un filetage surcoté. Dans ce cas le test avec le tampon NP peux être non conforme: plus de 2 tours ou même plus.
Grâce à la recherche continue et le développement, UFS a récemment développé des produits spécifiques pour la résolution de ce problème: dans le catalogue avec un logo spécifique CO. Le tableau suivant est une aide à l'identification des produits.

MASCHIATURA RIGIDA
RIGID TAPPING - TARAUDAGE RIGIDE

Nella maschiatura rigida la velocità d'avanzamento ed il passo del maschio sono sincronizzati direttamente dalla macchina.
In questo caso si usano, generalmente, portautensili rigidi o con micro compensazione.

In rigid tapping the speed and the feed of the taps are synchronized directly from the machine.
In this case we use generally rigid tool holders or with micro compensation.

Dans taraudage rigide, la vitesse et l'avance des tarauds sont synchronisésdirectement à partir de la machine.
Dans ce cas, nous utilisons généralement rigideporte-outils ou avec micro-compensation.

RPM		Vc m/min																		
		2	4	6	8	10	12	14	16	18	20	25	30	35	40	45	50	55	60
Ød$_1$ mm	1	637	1273	1910	2546	3183	3820	4456	5093	5730	6366	7958	9549	11141	12732	14324	15915	17507	19099
	2	318	637	955	1273	1592	1910	2228	2546	2865	3183	3979	4775	5570	6366	7162	7958	8754	9549
	3	212	424	637	849	1061	1273	1485	1698	1910	2122	2653	3183	3714	4244	4775	5305	5836	6366
	4	159	318	477	637	796	955	1114	1273	1432	1592	1989	2387	2785	3183	3581	3979	4377	4775
	5	127	255	382	509	637	764	891	1019	1146	1273	1592	1910	2228	2546	2865	3183	3501	3820
	6	106	212	318	424	531	637	743	849	955	1061	1326	1592	1857	2122	2387	2653	2918	3183
	7	91	182	273	364	455	546	637	728	819	909	1137	1364	1592	1819	2046	2274	2501	2728
	8	80	159	239	318	398	477	557	637	716	796	995	1194	1393	1592	1790	1989	2188	2387
	9	71	141	212	283	354	424	495	566	637	707	884	1061	1238	1415	1592	1768	1945	2122
	10	64	127	191	255	318	382	446	509	573	637	796	955	1114	1273	1432	1592	1751	1910
	11	53	106	159	212	265	318	371	424	477	531	663	796	928	1061	1194	1326	1459	1592
	12	45	91	136	182	227	273	318	364	409	455	568	682	796	909	1023	1137	1251	1364
	16	40	80	119	159	199	239	279	318	358	398	497	597	696	796	895	995	1094	1194
	18	35	71	106	141	177	212	248	283	318	354	442	531	619	707	796	884	973	1061
	20	32	64	95	127	159	191	223	255	286	318	398	477	557	637	716	796	875	955
	22	29	58	87	116	145	174	203	231	260	289	362	434	506	579	651	723	796	868
	24	27	53	80	106	133	159	186	212	239	265	332	398	464	531	597	663	729	796
	27	24	47	71	94	118	141	165	189	212	236	295	354	413	472	531	589	648	707
	30	21	42	64	85	106	127	149	170	191	212	265	318	371	424	477	531	584	637
	33	19	39	58	77	96	116	135	154	174	193	241	289	338	386	434	482	531	579
	36	18	35	53	71	88	106	124	141	159	177	221	265	309	354	398	442	486	531
	39	16	33	49	65	82	98	114	131	147	163	204	245	286	326	367	408	449	490
	42	15	30	45	61	76	91	106	121	136	152	189	227	265	303	341	379	417	455
	45	14	28	42	57	71	85	99	113	127	141	177	212	248	283	318	354	389	424
	48	13	27	40	53	66	80	93	106	119	133	166	199	232	265	298	332	365	398
	52	12	24	37	49	61	73	86	98	110	122	153	184	214	245	275	306	337	367
	54	12	24	35	47	59	71	83	94	106	118	147	177	206	236	265	295	324	354
	56	11	23	34	45	57	68	80	91	102	114	142	171	199	227	256	284	313	341
	60	11	21	32	42	53	64	74	85	95	106	133	159	186	212	239	265	292	318
	64	10	20	30	40	50	60	70	80	90	99	124	149	174	199	224	249	274	298

Numero di giri
Number of Revolutions (RPM)
Vitesse de rotation

$$n = \frac{Vc \times 1000}{\pi \times d_1}$$

Velocità di taglio
Cutting speed
Vitesse de coupe

$$Vc = \frac{n \times \pi \times d1}{1000}$$

TABELLA COMPARATIVA POLLICI / MM
COMPARISON TABLE INCHES / MM - TABLEAU DE COMPARAISON POUCES / MM

Dn Inch/Nr.	D mm	UNC	UNF	UNEF	UN								BSW	BSF	G, RP	
					4	6	8	12	16	20	28	32			TPI	D mm
Nr. 0	1,52		80													
1/16	1,59														28	7,72
Nr. 1	1,85	64	72													
Nr. 2	2,18	56	64													
3/32	2,38															
Nr. 3	2,51	48	56													
Nr. 4	2,84	40	48													
Nr. 5	3,17	40	44													
1/8	3,17												40		28	9,72
Nr. 6	3,50	32	40													
5/32	3,96															
Nr. 8	4,16	32	36													
3/16	4,76												24	32		
Nr. 10	4,82	24	32													
Nr. 12	5,48	24	28	32												
7/32	5,55													28		
1/4	6,35	20	28	32									20	26	19	13,15
9/32	7,14													26		
5/16	7,93	18	24	32						20	28		18	22		
3/8	9,52	16	24	32						20	28		16	20	19	16,66
7/16	11,11	14	20	28					16			32	14	18		
1/2	12,70	13	20	28					16			32	12	16	14	20,95
9/16	14,28	12	18	24					16	20	28	32	12	16		
5/8	15,87	11	18	24				12	16	20	28	32	11	14	14	22,91
11/16	17,46			24				12	16	22	28	32	11	14		
3/4	19,05	10	16	20				12			28	32	10	12	14	26,44
13/16	20,64			20				12	16		28	32				
7/8	22,22	9	14	20				12	16		28	32	9	11	14	30,20
15/16	23,81			20				12	16		28	32				
1	25,40	8	12	20					16		28	32	8	10	11	33,24
1 1/16	26,99			18			8	12	16	20	28					
1 1/8	28,57	7	12	18			8		16	20	28		7	9	11	37,89
1 3/16	30,16			18			8	12	16	20	28					
1 1/4	31,75			18			8		16	20	28		7	9	11	41,91
1 5/16	33,34			18			8	12	16	20	28					
1 3/8	34,92	6		18			8		16	20	28			8	11	44,32
1 7/16	36,51			18		6	8	12	16	20	28					
1 1/2	38,10	6		18			8		16	20	28		6	8	11	47,80
1 9/16	39,69			18		6	8	12	16	20						
1 5/8	41,28			18		6	8	12	16	20				8		
1 11/16	42,86			18		6	8	12	16	20						
1 3/4	44,45	5				6	8	12	16	20			5	7	11	53,74
1 13/16	46,04					6	8	12	16	20						
1 7/8	47,63					6	8	12	16	20						
1 15/16	49,21					6	8	12	16	20						
2	50,80	4 1/2				6	8	12	16	20			4 1/2	7	11	59,61
2 1/8	53,97					6	8	12	16	20						
2 1/4	57,15	4 1/2				6	8	12	16	20			4	6	11	65,71
2 3/8	60,32					6	8	12	16	20						
2 1/2	63,50	4				6	8	12	16	20			4	6	11	75,18
2 5/8	66,67				4	6	8	12	16	20						
2 3/4	69,85	4				6	8	12	16	20			3 1/2	6	11	81,53
2 7/8	73,02				4	6	8	12	16	20						
3	76,20	4				6	8	12	16	20			3 1/2	5	11	87,88
3 1/8	79,37				4	6	8	12	16							
3 1/4	82,55	4				6	8	12	16				3 1/4	5	11	93,98
3 3/8	85,72				4	6	8	12	16							
3 1/2	88,90	4				6	8	12	16				3 1/4	4 1/2	11	100,33
3 5/8	92,07				4	6	8	12	16							
3 3/4	95,25	4				6	8	12	16				3	4 1/2	11	106,68
3 7/8	98,42				4	6	8	12	16							
4	101,60	4				6	8	12	16				3	4 1/2	11	113,03

PREFORI DI MASCHIATURA PER MASCHI AD ASPORTAZIONE
TAPPING DRILL SIZES FOR CUTTING TAPS - PERÇAGE POUR TARAUDAGE NORMAL

Filettatura metrica ISO DIN 13
ISO Metric coarse thread DIN 13 - Filetage métrique ISO DIN13

M	P mm		Ø di foratura 6H - drill sizes - perçage min	max
*M 1	0,25	**0,75**	0,729	0,785
*M 1,1	0,25	**0,85**	0,829	0,885
*M 1,2	0,25	**0,95**	0,929	0,985
*M 1,4	0,30	**1,10**	1,075	1,142
M 1,6	0,35	**1,25**	1,221	1,321
M 1,70	0,35	**1,35**	1,321	1,421
M 1,8	0,35	**1,45**	1,421	1,521
M 2	0,40	**1,60**	1,567	1,679
M 2,2	0,45	**1,75**	1,713	1,838
M 2,3	0,4	**1,90**	1,813	1,938
M 2,5	0,45	**2,05**	2,013	2,138
M 2,6	0,45	**2,15**	2,113	2,238
M 3	0,50	**2,50**	2,459	2,599
M 3,5	0,60	**2,90**	2,850	3,010
M 4	0,70	**3,30**	3,242	3,422
M 4,5	0,75	**3,70**	3,688	3,878
M 5	0,80	**4,20**	4,134	4,334
M 6	1,00	**5,00**	4,917	5,153
M 7	1,00	**6,00**	5,917	6,153
M 8	1,25	**6,80**	6,647	6,912
M 9	1,25	**7,80**	7,647	7,912
M 10	1,50	**8,50**	8,376	8,676
M 11	1,50	**9,50**	9,376	9,676
M 12	1,75	**10,30**	10,106	10,441
M 14	2,00	**12,00**	11,835	12,210
M 16	2,00	**14,00**	13,835	14,210
M 18	2,50	**15,50**	15,294	15,744
M 20	2,50	**17,50**	17,294	17,744
M 22	2,50	**19,50**	19,294	19,744
M 24	3,00	**21,00**	20,752	21,252
M 27	3,00	**24,00**	23,752	24,252
M 30	3,50	**26,50**	26,211	26,771
M 33	3,50	**29,50**	29,211	29,771
M 36	4,00	**32,00**	31,670	32,270
M 39	4,00	**35,00**	34,670	35,270
M 42	4,50	**37,50**	37,129	37,799
M 45	4,50	**40,50**	40,129	40,799
M 48	5,00	**43,00**	42,587	43,297
M 52	5,00	**47,00**	46,587	47,297
M 56	5,50	**50,50**	50,046	50,796
M 60	5,50	**54,50**	54,046	54,796
M 64	6,00	**58,00**	57,505	58,308
M 68	6,00	**62,00**	61,505	62,305

* Tolleranza - Tolerance - Tolérance: 5H

Filettatura MJ, MJ thread
DIN ISO 5855 - Filetage MJ

MJ	P mm		Ø di foratura 5H - drill sizes - perçage min	max
*MJ 3	0,50	**2,60**	2,513	2,653
*MJ 4	0,70	**3,40**	3,318	3,498
*MJ 5	0,80	**4,30**	4,221	4,421
MJ 6	1	**5,10**	5,026	5,216
MJ 8	1	**7,10**	7,026	7,216
MJ 8	1,25	**6,90**	6,782	6,994
MJ 10	1	**9,10**	9,026	9,216
MJ 10	1,25	**8,90**	8,782	8,994
MJ 10	1,5	**8,60**	8,539	8,775
MJ 12	1,25	**10,90**	10,782	10,994
MJ 12	1,5	**10,60**	10,539	10,775
MJ 12	1,75	**10,40**	10,295	10,560
MJ 14	1,5	**12,60**	12,539	12,775
MJ 14	2	**12,20**	12,051	12,351
MJ 16	1,5	**14,60**	14,539	14,775
MJ 16	2	**14,20**	14,051	14,351

* Tolleranza - Tolerance - Tolérance: 6H

Filettatura metrica ISO passo fine DIN 13
ISO metric fine thread DIN 13 - Filetage métrique ISO pas fin DIN13

MF	P mm		Ø di foratura 6H - drill sizes - perçage min	max
M 4	0,5	**3,50**	3,459	3,599
M 4,5	0,5	**4,00**	3,959	4,099
M 5	0,5	**4,50**	4,459	4,599
M 6	0,5	**5,50**	5,459	5,599
M 6	0,75	**5,25**	5,188	5,378
M 7	0,75	**6,25**	6,188	6,378
M 8	0,5	**7,50**	7,459	7,599
M 8	0,75	**7,25**	7,188	7,378
M 8	1	**7,00**	6,917	7,153
M 9	0,75	**8,25**	8,188	8,378
M 9	1	**8,00**	7,917	8,153
M 10	0,5	**9,50**	9,459	9,599
M 10	0,75	**9,25**	9,188	9,378
M 10	1	**9**	8,917	9,153
M 10	1,25	**8,75**	8,647	8,912
M 11	1	**10**	9,917	10,153
M 12	0,5	**11,5**	11,459	11,599
M 12	0,75	**11,25**	11,188	11,378
M 12	1	**11**	10,917	11,153
M 12	1,25	**10,75**	10,647	10,912
M 12	1,5	**10,5**	10,376	10,676
M 13	1	**12**	11,917	12,153
M 14	1	**13**	12,917	13,153
M 14	1,25	**12,75**	12,647	12,912
M 14	1,5	**12,5**	12,376	12,676
M 15	1	**14**	13,917	14,153
M 15	1,5	**13,5**	13,376	13,676
M 16	1	**15**	14,917	15,153
M 16	1,25	**14,8**	14,647	14,912
M 16	1,5	**14,5**	14,376	14,676
M 17	1	**16**	15,917	16,153
M 17	1,5	**15,5**	15,376	15,676
M 18	1	**17**	16,917	17,153
M 18	1,5	**16,5**	16,376	16,676
M 18	2	**16**	15,835	16,210
M 20	1	**19**	18,917	19,153
M 20	1,5	**18,5**	18,376	18,676
M 20	2	**18**	17,835	18,210
M 22	1	**21**	20,917	21,153
M 22	1,5	**20,5**	20,376	20,676
M 22	2	**20**	19,835	20,210
M 24	1	**23**	22,917	23,153
M 24	1,5	**22,5**	22,376	22,676
M 24	2	**22**	21,835	22,210
M 25	1	**24**	23,917	24,153
M 25	1,5	**23,5**	23,376	23,676
M 25	2	**23**	22,835	23,210
M 26	1,5	**24,5**	24,376	24,676
M 27	1	**26**	25,917	26,153
M 27	1,5	**25,5**	25,376	25,676
M 27	2	**25**	24,835	25,210

Filettatura metrica ISO passo fine DIN 13
ISO metric fine thread DIN 13 - Filetage métrique ISO pas fin DIN13

MF	P mm		Ø di foratura 6H - drill sizes - perçage min	max
M 28	1	**27**	26,917	27,153
M 28	1,5	**26,5**	26,376	26,676
M 28	2	**26**	25,835	26,210
M 30	1	**29**	28,917	29,153
M 30	1,5	**28,5**	28,376	28,676
M 30	2	**28**	27,835	28,210
M 30	3	**27**	26,752	27,252
M 32	1,5	**30,5**	30,376	30,676
M 32	2	**30**	29,835	30,210
M 33	1,5	**31,5**	31,376	31,676
M 33	2	**31**	30,835	31,210
M 33	3	**30**	29,752	30,252
M 34	1,5	**32,5**	32,376	32,676
M 35	1,5	**33,5**	33,376	33,676
M 36	1,5	**34,5**	34,376	34,676
M 36	2	**34**	33,835	34,210
M 36	3	**33**	32,752	33,252
M 38	1,5	**36,5**	36,376	36,676
M 39	1,5	**37,5**	37,376	37,676
M 39	2	**37**	36,835	37,210
M 39	3	**36**	35,752	36,252
M 40	1,5	**38,5**	38,376	38,676
M 40	2	**38**	37,835	38,210
M 40	3	**37**	36,752	37,252
M 42	1,5	**40,5**	40,376	40,676
M 42	2	**40**	39,835	40,210
M 42	3	**39**	38,752	39,252
M 42	4	**38**	37,670	38,270
M 45	1,5	**43,5**	43,376	43,676
M 45	2	**43**	42,835	43,210
M 45	3	**42**	41,752	42,252
M 45	4	**41**	40,670	41,270
M 48	1,5	**46,5**	46,376	46,676
M 48	2	**46**	45,835	46,210
M 48	3	**45**	44,752	45,252
M 48	4	**44**	43,670	44,270
M 50	1,5	**48,5**	48,376	48,676
M 50	2	**48**	47,835	48,210
M 50	3	**47**	46,752	47,252
M 52	1,5	**50,5**	50,376	50,676
M 52	2	**50**	49,835	50,210
M 52	3	**47**	46,587	47,087
M 52	4	**48**	47,670	48,270
M 55	1,5	**53,5**	53,376	53,676
M 55	2	**53**	52,835	53,210
M 55	3	**52**	51,752	52,252
M 55	4	**51**	50,670	51,270
M 56	1,5	**54,5**	54,376	54,676
M 56	2	**54**	53,835	54,210
M 56	3	**53**	52,752	53,252
M 56	4	**52**	51,670	52,270

PREFORI DI MASCHIATURA PER MASCHI AD ASPORTAZIONE
TAPPING DRILL SIZES FOR CUTTING TAPS - PERÇAGE POUR TARAUDAGE NORMAL

Filettatura metrica ISO passo fine DIN 13
ISO metric fine thread DIN 13 - Filetage métrique ISO pas fin DIN13

MF	P mm		Ø di foratura 6H - drill sizes - perçage min	max
M 58	1,5	**56,5**	56,376	56,676
M 58	2	**56**	55,835	56,210
M 58	3	**55**	54,752	55,252
M 58	4	**54**	53,670	54,270
M 60	1,5	**58,5**	58,376	58,676
M 60	2	**58**	57,835	58,210
M 60	3	**57**	56,752	57,252
M 60	4	**56**	55,670	56,270
M 62	1,5	**60,5**	60,376	60,676
M 62	2	**60**	59,835	60,210
M 62	3	**59**	58,752	59,252
M 62	4	**58**	57,670	58,270
M 64	1,5	**62,5**	62,376	62,676
M 64	2	**62**	61,835	62,210
M 64	3	**61**	60,752	61,252
M 64	4	**60**	59,670	60,270
M 65	1,5	**63,5**	63,376	63,676
M 65	2	**63**	62,835	63,210
M 65	3	**62**	61,752	62,252
M 65	4	**61**	60,670	61,270
M 68	1,5	**66,5**	66,376	66,676
M 68	2	**66**	65,835	66,210
M 68	3	**65**	64,752	65,252
M 68	4	**64**	63,670	64,270
M 70	1,5	**68,5**	68,376	68,676
M 70	2	**68**	67,835	68,210
M 70	3	**67**	66,752	67,252
M 70	4	**66**	65,670	66,270
M 70	6	**64**	63,505	64,305
M 72	1,5	**70,5**	70,376	70,676
M 72	2	**70**	69,835	70,210
M 72	3	**69**	68,752	69,252
M 72	4	**68**	67,670	68,270
M 72	6	**66**	65,505	66,305
M 75	1,5	**73,5**	73,376	73,676
M 75	2	**73**	72,835	73,210
M 75	3	**72**	71,752	72,252
M 75	4	**71**	70,670	71,270
M 76	1,5	**74,5**	74,376	74,676
M 76	2	**74**	73,835	74,210
M 76	3	**73**	72,752	73,252
M 76	4	**72**	71,670	72,270
M 76	6	**70**	69,505	70,305
M 80	1,5	**78,5**	78,376	78,676
M 80	2	**78**	77,835	78,210
M 80	3	**77**	76,752	77,252
M 80	4	**76**	75,670	76,270
M 80	6	**74**	73,505	74,305
M 85	2	**83**	82,835	83,210
M 85	3	**82**	81,752	82,252
M 85	4	**81**	80,670	81,270
M 85	6	**79**	78,505	79,305

Filettatura americana UNC ASME B1.1
UNC coarse thread ASME B1.1 - Filetage américain UNC ASME B1.1

UNC	P TPI		Ø di foratura 2B - drill sizes - perçage min	max
Nr. 6	32	**2,85**	2,642	2,896
Nr. 8	32	**3,50**	3,302	3,531
Nr. 10	24	**3,90**	3,683	3,937
Nr. 12	24	**4,50**	4,343	4,597
1/4	20	**5,10**	4,978	5,258
5/16	18	**6,60**	6,401	6,731
3/8	16	**8,00**	7,798	8,153
7/16	14	**9,40**	9,144	9,550
1/2	13	**10,80**	10,592	11,024
9/16	12	**12,20**	11,989	12,446
5/8	11	**13,50**	13,386	13,868
3/4	10	**16,50**	16,307	16,840
7/8	9	**19,50**	19,177	19,761
1''	8	**22,25**	21,971	22,606
1''-1/8	7	**25,00**	24,638	25,349
1''-1/4	7	**28,00**	27,813	28,524
1''-3/8	6	**30,75**	30,353	31,155
1''-1/2	6	**34,00**	33,528	34,290
1''-3/4	5	**39,50**	38,938	39,802
2''	4,5	**45,00**	44,679	45,593

Filettatura UNJC ASME B1.15,
UNJC thread ASME B1.15 - Filetage UNJC ASME B1.15

UNJC	P TPI		Ø di foratura 3B - *drill sizes* -perçage min	max
Nr. 6	32	**2,80**	2,733	2,939
Nr. 8	32	**3,50**	3,393	3,599
Nr. 10	24	**3,90**	3,795	4,064
Nr. 12	24	**4,60**	4,455	4,704
1/4	20	**5,20**	5,113	5,387
5/16	18	**6,70**	6,563	6,833
3/8	16	**8,10**	7,978	8,255
7/16	14	**9,50**	9,347	9,639
1/2	13	**10,90**	10,798	11,095
9/16	12	**12,35**	12,228	12,482
5/8	11	**13,80**	13,627	13,904
3/4	10	**16,70**	16,576	16,881

Filettatura americana UNF ASME B1.1
UNF fine thread ASME B1.1 - Filetage américain UNF ASME B1.1

UNF	P TPI		Ø di foratura 2B - drill sizes - perçage min	max
Nr. 6	40	**2,95**	2,819	3,023
Nr. 8	36	**3,50**	3,404	3,607
Nr. 10	32	**4,10**	3,962	4,166
Nr. 12	28	**4,60**	4,469	4,724
1/4	28	**5,50**	5,359	5,588
5/16	24	**6,90**	6,782	7,036
3/8	24	**8,50**	8,382	8,636
7/16	20	**9,90**	9,728	10,033
1/2	20	**11,50**	11,328	11,608
9/16	18	**12,90**	12,751	13,081
5/8	18	**14,50**	14,351	14,681
3/4	16	**17,50**	17,323	17,678
7/8	14	**20,40**	20,269	20,676
1''	12	**23,25**	23,114	23,571
1''-1/8	12	**26,50**	26,289	26,746
1''-1/4	12	**29,50**	29,464	29,921
1''-3/8	12	**32,75**	32,639	33,096
1 -1/2	12	**36,00**	35,814	36,271

Filettatura americana UNEF ASME B1.1
UNEF extra fine thread ASME B1.1 - Filetage américain UNEF ASME B1.1

UNEF	P TPI		Ø di foratura 2B - *drill sizes - perçage* min	max
1/4	32	**5,55**	5,487	5,690
5/16	32	**7,15**	7,087	7,264
3/8	32	**8,7**	8,662	8,865
7/16	28	**10,2**	10,135	10,338
1/2	28	**11,8**	11,710	11,938
9/16	24	**13,2**	13,132	13,386
5/8	24	**14,8**	14,732	14,986
11/16	24	**16,4**	16,307	16,561
3/4	20	**17,8**	17,679	17,958
13/16	20	**19,4**	19,254	19,558
7/8	20	**20,95**	20,854	21,133
15/16	20	**22,50**	22,429	22,733
1"	20	**24,15**	24,029	24,308
1"-1/16	18	**25,6**	25,451	25,781
1"-1/8	18	**27,15**	27,051	27,381
1"-3/16	18	**28,75**	28,626	28,956
1"-1/4	18	**30,3**	30,226	30,556
1"-3/8	18	**33,5**	33,401	33,731
1"-7/16	18	**35,1**	34,976	35,306
1"-1/2	18	**36,7**	36,576	36,881

Filettatura UNJF ASME B1.15,
UNJF thread ASME B1.15 - Filetage UNJF ASME B1.15

UNJF	P TPI		Ø di foratura 3B - drill sizes - perçage min	max
Nr. 6	40	**2,95**	2,888	3,053
Nr. 8	36	**3,6**	3,480	3,663
Nr. 10	32	**4,15**	4,054	4,255
Nr. 12	28	**4,7**	4,602	4,816
1/4	28	**5,6**	5,466	5,662
5/16	24	**7**	6,906	7,109
3/8	24	**8,6**	8,494	8,679
7/16	20	**10**	9,876	10,084
1/2	20	**11,55**	11,463	11,661
9/16	18	**13**	12,913	13,122
5/8	18	**14,6**	14,501	14,702
3/4	16	**17,6**	17,506	17,722

Filettatura americana 8-UN ASME B1.1
8-UN thread ASME B1.1 - Filetage américain 8-UN ASME B1.1

8-UN	P TPI		Ø di foratura 2B - drill sizes - perçage min	max
1"-1/8	8	**25,4**	25,146	25,781
1"-1/4	8	**28,6**	28,321	28,956
1"-3/8	8	**31,75**	31,496	32,131
1"-1/2	8	**34,9**	34,671	35,306
1"-5/8	8	**38,1**	37,846	38,481
1"-3/4	8	**41,3**	41,021	41,656
1"-7/8	8	**44,45**	44,196	44,831
2"	8	**47,6**	47,371	48,006
2''-1/4	8	**54**	53,721	54,356
2''-1/2	8	**60,30**	60,071	60,706

Filettatura GAS Whitworth DIN EN ISO 228
Whitworth pipe thread DIN EN ISO 228
Filetage Gaz cylindrique Whitworth DIN EN ISO 228

GAS	P TPI		Ø di foratura - drill sizes min	max
1/8	28	**8,8**	8,566	8,848
1/4	19	**11,8**	11,445	11,890
3/8	19	**15,25**	14,950	15,395
1/2	14	**19**	18,631	19,172
5/8	14	**21**	20,587	21,128
3/4	14	**24,5**	24,117	24,658
7/8	14	**28,25**	27,877	28,418
1"	11	**30,75**	30,291	30,931
1"1/8	11	**35,5**	34,939	35,579
1"1/4	11	**39,5**	38,952	39,592
1"1/2	11	**45,25**	44,845	45,485
1"3/4	11	**51,10**	50,788	51,428
2"	11	**57**	56,656	57,296
2"1/4	11	**63,10**	62,752	63,392
2"1/2	11	**72,6**	72,226	72,866
2"3/4	11	**79**	78,576	79,216
3"	11	**85,3**	84,926	85,566

Filettatura gas cilindrica americana sec. ANSI B1.20.1
American Standard straight pipe thread acc. ANSI B1.20.1
Filetage Gaz cylindrique américain ANSI B 1.20.1

NPSM (NPSC)	P TPI		Ø di foratura - drill sizes NPSM	NPSC
1/8	27		9,10	8,8
1/4	18		12	11,40
3/8	18		15,5	14,8
1/2	14		19	18,5
3/4	14		24,5	23,8
1"	11,5		30,5	29,9

Filettatura gas cilindrica americana sec. ANSI B1.20.3
American Standard straight pipe thread acc. ANSI B1.20.3
Filetage Gaz cylindrique américain ANSI B 1.20.3

NPSF	P TPI		Ø di foratura - drill sizes min	
1/8	27	**8,7**	8,651	
1/4	18	**11,30**	11,232	
3/8	18	**14,7**	14,671	
1/2	14	**18,2**	18,118	
3/4	14	**23,50**	23,465	
1"	11,5	**29,50**	29,464	

Filettatura interna GAS cilindrica Whitworth ISO 7-1
Cylindrical Whitworth internal pipe thread ISO 7-1
Filetage Gaz interne cylindrique Whitworth ISO 7 -1

Rp	P TPI		Ø di foratura - drill sizes min	max
1/8	28	**8,6**	8,495	8,637
1/4	19	**11,5**	11,341	11,549
3/8	19	**15**	14,846	15,054
1/2	14	**18,5**	18,489	18,773
3/4	14	**24**	23,975	24,259
1"	11	**30,25**	30,111	30,471
1"1/4	11	**39**	38,772	39,132
1"1/2	11	**45**	44,665	45,025
2"	11	**56,5**	56,476	56,836

Filettatura Whitworth a passo grosso BS 84
Whitworth coarse thread BS 84
Filetage Whitworth à pas gros BS 84

BSW	P TPI		Ø di foratura - drill sizes min	max
1/8	40	**2,5**	2,362	2,591
3/16	24	**3,6**	3,407	3,745
1/4	20	**5**	4,724	5,156
5/16	18	**6,5**	6,130	6,590
3/8	16	**7,9**	7,492	7,987
7/16	14	**9,2**	8,789	9,330
1/2	12	**10,5**	9,989	10,591
9/16	12	**12**	11,577	12,179
5/8	11	**13,4**	12,918	13,558
3/4	10	**16,4**	15,797	16,483
7/8	9	**19,25**	18,611	19,353
1"	8	**22**	21,334	22,147
1"1/8	7	**24,75**	23,928	24,832
1"1/4	7	**27,5**	27,103	28,007
1"1/2	6	**33,5**	32,679	33,703

Filettatura per tubi corazzati DIN 40430
Steel conduit thread DIN 40430
Filetage pour tube blindés DIN 40430

PG	P TPI		Ø di foratura - drill sizes min	max
PG 7	20	**11,4**	11,28	11,43
PG 9	18	**14**	13,86	14,01
PG 11	18	**17,25**	17,26	17,41
PG 13,5	18	**19**	19,06	19,21
PG 16	18	**21,25**	21,16	21,31
PG 21	16	**27**	26,78	27,03
PG 29	16	**35,5**	35,48	35,73
PG 36	16	**45,5**	45,48	45,73
PG 42	16	**52,5**	52,48	52,73
PG 48	16	**58**	57,78	58,03

Filettatura tonda DIN 405
Round thread DIN 405
Filetage rond DIN 405

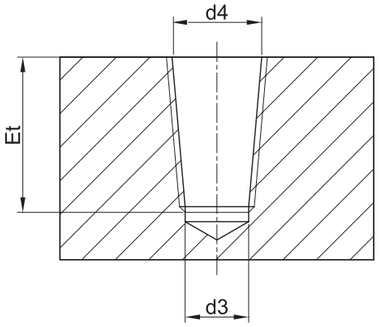
Rd	P TPI		Ø di foratura - drill sizes min	max
8	10	**6**	5,714	6,274
9	10	**7**	6,714	7,274
10	10	**8**	7,714	8,274
11	10	**9**	8,714	9,274
12	10	**10**	9,714	10,274
14	8	**11,5**	11,142	11,812
16	8	**13,5**	13,142	13,812
18	8	**15,5**	15,142	15,812
20	8	**17,5**	17,142	17,812
22	8	**19,5**	19,142	19,812
24	8	**21,5**	21,142	21,812
26	8	**23,5**	23,142	23,812
28	8	**25,5**	25,142	25,812
30	8	**27,5**	27,142	27,812

Filettatura ISO metrica trapezoidale DIN 103
ISO Metric trapezoidal thread DIN 103
Filetage ISO métrique trapézoïdal DIN 103

Tr	P mm		Ø di foratura - drill sizes min	max
10	2	**8,2**	8,000	8,236
10	3	**7,5**	-	-
12	2	**10,2**	10,000	10,236
12	3	**9,25**	9,000	9,315
14	3	**11,25**	11,000	11,315
14	4	**10,5**	-	-
16	4	**12,25**	12,000	12,375
18	4	**14,25**	14,000	14,375
20	4	**16,25**	16,000	16,375
22	5	**17,25**	17,000	17,450
24	5	**19,25**	19,000	19,450
26	5	**21,25**	21,000	21,450
28	5	**23,25**	23,000	23,450
30	6	**24,25**	24,000	24,500
32	6	**26,25**	26,000	26,500
36	6	**30,25**	30,000	30,500

Filettatura ISO metrica DIN 8140-2 per filetti riportati
ISO Metric coarse thread DIN 8140-2 for wire thread inserts (STI)
Filetage métrique ISO DIN8140-2 pour HELICOIL (filet-rapporté)

EGM	P mm		Ø di foratura - drill sizes min	max
2	0,4	**2,10**	2,087	2,177
2,5	0,45	**2,65**	2,597	2,697
3	0,5	**3,15**	3,108	3,22
3,5	0,6	**3,70**	3,630	3,755
4	0,7	**4,20**	4,152	4,292
5	0,8	**5,25**	5,174	5,344
6	1	**6,30**	6,217	6,407
7	1	**7,30**	7,217	7,407
8	1,25	**8,40**	8,217	8,483
9	1,25	**9,40**	9,217	9,483
10	1,5	**10,50**	10,324	10,560
11	1,5	**11,50**	11,324	11,560
12	1,75	**12,50**	12,379	12,644
14	2	**14,50**	14,433	14,733
16	2	**16,50**	16,433	16,733
18	2,5	**18,75**	18,541	18,986
20	2,5	**20,75**	20,541	20,896



Filettatura gas conica americana, conicità 1:16 sec. ANSI/ASME B1.20.1
American tapered pipe thread, taper 1:16 acc. ANSI/ASME B1.20.1 - Filetage gaz conique américain, à cône 01:16 ANSI/ASME B 1.20.1

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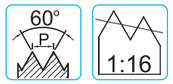
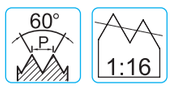


Ød1	P TPI	d3 cil./cyl. mm	d4 con./taper mm	Et = X
1/16	27	6,20	6,39	9,30
1/8	27	8,50	8,74	9,30
1/4	18	11	11,36	13,50
3/8	18	14,50	14,80	13,90
1/2	14	17,9	18,32	18,10
3/4	14	23,2	23,67	18,60
1''	11,5	29,00	29,69	22,30
1''1/4	11,5	37,8	38,45	22,80
1''1/2	11,5	44	44,52	22,80
2''	11,5	56	56,56	23,20

Filettatura gas conica americana, conicità 1:16 sec. ANSI/ASME B1.20.3
American tapered pipe thread, taper 1:16 acc. ANSI/ASME B1.20.3 - Filetage gaz conique American, à cône 01:16 ANSI/ASME B 1.20.3

NPTF



Ød1	P TPI	d3 cil./cyl. mm	d4 con./taper mm	Et = X
1/16	27	6,10	6,41	9,30
1/8	27	8,45	8,76	9,30
1/4	18	10,9	11,4	13,50
3/8	18	14,3	14,84	13,90
1/2	14	17,6	18,33	18,10
3/4	14	23,0	23,68	18,60
1''	11,5	28,75	29,72	22,30
1''1/4	11,5	37,5	38,48	22,80
1''1/2	11,5	43,75	44,55	22,80
2''	11,5	55,75	56,59	23,20

Filettatura gas conica Whitworth, conicità 1:16, ISO 7-1
Tapered Whitworth pipe thread, taper 1:16, ISO 7-1 - Filetage gaz conique Whitworth, à cône 01:16 ISO 7-1

Rc

Ød1	P TPI	d3 cil./cyl. mm	d4 con./taper mm	Et = X
1/8	28	8,20	8,57	10,1
1/4	19	11	11,45	15,0
3/8	19	14,5	14,95	15,4
1/2	14	18	18,63	20,4
3/4	14	23,5	24,12	21,7
1''	11	29,5	30,29	26
1''1/4	11	38	38,95	28,3
1''1/2	11	44	44,85	28,3
2''	11	55,5	56,66	32,6

Filettatura metrica ISO DIN 13
ISO metric coarse thread DIN 13 - Filetage métrique ISO DIN13

M	P mm		Toll.
2	0,4	**1,82**	± 0,02
2,2	0,45	**2,00**	± 0,02
2,3	0,4	**2,1**	± 0,02
2,5	0,45	**2,30**	± 0,02
2,6	0,45	**2,40**	± 0,02
3	0,5	**2,8**	± 0,03
3,5	0,6	**3,25**	± 0,03
4	0,7	**3,70**	± 0,03
5	0,8	**4,65**	± 0,03
6	1	**5,55**	± 0,05
8	1,25	**7,40**	± 0,05
10	1,5	**9,30**	± 0,05
12	1,75	**11,20**	± 0,05
14	2	**13,10**	± 0,05
16	2	**15,10**	± 0,05
18	2,5	**16,90**	± 0,05
20	2,5	**18,90**	± 0,05
22	2,5	**20,90**	± 0,05
24	3	**22,70**	± 0,05

Filettatura metrica ISO passo fine DIN 13
ISO metric fine thread DIN 13 - Filetage métrique ISO pas fin DIN13

MF	P mm		Toll.
4	0,5	**3,80**	±0,03
5	0,5	**4,80**	±0,03
6	0,5	**5,80**	±0,03
6	0,75	**5,65**	±0,03
8	1	**7,55**	±0,05
10	1	**9,55**	±0,05
10	1,25	**9,40**	±0,05
12	1	**11,55**	±0,05
12	1,25	**11,40**	±0,05
12	1,5	**11,30**	±0,05
14	1	**13,55**	±0,05
14	1,25	**13,40**	±0,05
14	1,5	**13,30**	±0,05
16	1	**15,55**	±0,05
16	1,25	**15,40**	±0,05
16	1,5	**15,30**	±0,05
18	1	**17,55**	±0,05
18	1,25	**17,40**	±0,05
18	1,5	**17,30**	±0,05
20	1	**19,55**	±0,05
20	1,25	**19,40**	±0,05
20	1,5	**19,30**	±0,05
20	2	**19,10**	±0,05
22	1	**21,55**	±0,05
22	1,25	**21,40**	±0,05
22	1,5	**21,30**	±0,05
22	2	**21,10**	±0,05
24	1	**23,55**	±0,05
24	1,25	**23,40**	±0,05
24	1,5	**23,30**	±0,05
24	2	**23,10**	±0,05
26	1,5	**25,30**	±0,05
26	2	**25,10**	±0,05
27	1,5	**26,30**	±0,05
27	2	**26,10**	±0,05
28	1,5	**27,30**	±0,05
28	2	**27,10**	±0,05
30	1,5	**29,30**	±0,05
30	2	**29,10**	±0,05

PREFORI DI MASCHIATURA PER MASCHI A RULLARE
TAPPING DRILL SIZES FOR ROLLING TAPS - PERÇAGE POUR LES TARAUDS À REFOULER

Filettatura americana UNC ASME B1.1
UNC coarse thread ASME B1.1 - Filetage américain UNC ASME B1.1

UNC	P TPI		Toll.
6	32	**3,15**	±0,03
8	32	**3,80**	±0,03
10	24	**4,30**	±0,05
12	24	**5,00**	±0,05
1/4	20	**5,75**	±0,05
5/16	18	**7,25**	±0,05
3/8	16	**8,75**	±0,05
7/16	14	**10,30**	±0,05
1/2	13	**11,80**	±0,05
9/16	12	**13,30**	±0,05
5/8	11	**14,80**	±0,05
3/4	10	**17,9**	±0,05
7/8	9	**21**	±0,05
1’	8	**24**	±0,05

Filettatura americana UNF ASME B1.1
UNF fine thread ASME B1.1 - Filetage américain UNF ASME B1.1

UNF	P TPI		Toll.
6	40	**3,20**	±0,03
8	36	**3,85**	±0,03
10	32	**4,45**	±0,03
12	28	**5,05**	±0,05
1/4	28	**5,90**	±0,05
5/16	24	**7,45**	±0,05
3/8	24	**9,00**	±0,05
7/16	20	**10,50**	±0,05
1/2	20	**12,10**	±0,05
9/16	18	**13,70**	±0,05
5/8	18	**15,25**	±0,05
3/4	16	**18,40**	±0,05
7/8	14	**21,40**	±0,05
1’	12	**24,45**	±0,05
1’-1/8	12	**27,60**	±0,05
1’-1/4	12	**30,80**	±0,05
1’-3/8	12	**34,00**	±0,05
1’-1/2	12	**37,15**	±0,05

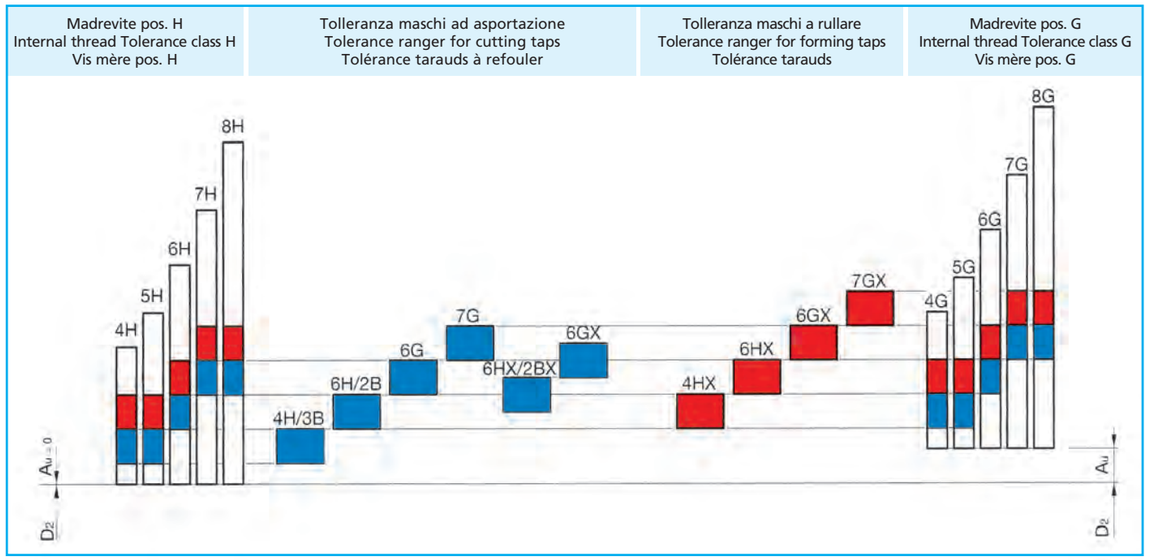
Filettatura GAS Whitworth DIN EN ISO 228
Whitworth pipe thread DIN EN ISO 228
Filetage Gaz cylindrique Whitworth DIN EN ISO 228

GAS	P TPI		Toll.
1/16	28	**7,25**	±0,05
1/8	28	**9,25**	±0,05
1/4	19	**12,5**	±0,05
3/8	19	**16**	±0,05
1/2	14	**20**	±0,05
5/8	14	**22**	±0,05
3/4	14	**25,5**	±0,05
7/8	14	**29,25**	±0,05
1’	11	**32**	±0,05
1’-1/8	11	**36,70**	±0,05
1’-1/4	11	**40,70**	±0,05

CLASSI DI TOLLERANZA DEI MASCHI - EN22857
TOLERANCE CLASSES OF TAPS - EN 22857 - CLASSES DE TOLÉRANCE DES TARAUDS - EN 22857

Maschio - Tap -Taraud ISO	DIN	ANSI/ASME	Madrevite Internal thread, nut - Vis-Mère					Accoppiamento Fit - Accouplement
ISO 1	4H	3B	4H	5H				Senza gioco Fit without allowance - Sans jeu
ISO 2	6H	2B	4G	5G	6H			Con gioco standard Standard fit - Avec jeu standard
ISO 3	6G	1B			6G	7H	8H	Con gioco speciali Special fit with allowance - Avec jeu spécial
	7G					7G	8G	Largo per successivi rivestimenti Loose fit, for subsequent coating Large pour les revêtements subséquents

Posizione della tolleranza
Tolerance classes - Emplacement de la tolérance



L'accoppiamento più comunemente utilizzato è quello relativo alle classe ISO 2, 6H o 2B. Per accoppiamenti più precisi, senza gioco tra i fianchi del filetto, deve essere utilizzato un accoppiamento "più stretto" di classe ISO 1, 4H o 3B. Le tolleranze ISO 3, 6G o 1B sono utilizzate per accoppiamenti grossolani, applicate nel caso di ricoprimenti superficiali successivi al processo di filettatura.
Vengono inoltre realizzate tolleranze intermedie 6HX e 6GX applicate su tipologie di maschi che lavorano materiali abrasivi, come la ghisa, per aumentare la durata. Un'altra applicazione delle tolleranze intermedie X è quella relativa ai maschi a rullare, che realizzano la filettatura mediante processo di deformazione plastica; in questo caso, ad esempio, per ottenere una filettatura 6H il maschio viene realizzato in tolleranza 6HX per compensare il ritorno elastico del materiale lavorato.
Nelle pagine successive sono riportati gli scostamenti standard (6H e 2B) per le filettature M, MF,UNC, UNF e GAS.

Standard fit for a thread is according tolerance ISO 2, 6H or 2B and so, for more precise fit, without any allowance on thread flanks, You have to choose ISO 1, 4H and 3B, for American threading. For following coatings to be applied after threading You have to use ISO 3, 6G, 1B.
Taps'manufacturers produce taps with tolerance 6HX and 6GX and not only 6H and 6G. These taps are used for cast iron, to increase tools'life or for forming taps. In those cases You have to use 6HX tap to compensate the elastic return of the material.
In the following pages shows the standard fit (6H and 2B) for threads M, MF, UNC, UNF and GAS.

Le couplage plus couramment utilisé est lié à la classe ISO 2, 6H ou 2B. Pour les assemblages plus précis sans jeu entre les côtés du filet, doit être utilisé un « resserrement » ISO classe 1, 4H ou 3B. Tolérances ISO 3, 6G ou 1B sont utilisés pour les pas grossiers, appliqués dans le cas des revêtements de surface suite au processus de taraudage.
Il a également les 6GX 6HX tolérances intermédiaire appliquées et sur les types de tarauds travaillant les matériaux abrasifs, comme la fonte, pour une durabilité accrue. Une autre application de tolérances intermédiaire X sont les tarauds à refouler, effectuant le filetage à travers les processus de déformation plastique; dans ce cas, par exemple, pour obtenir un 6H le taraud est en tolérance 6HX pour compenser le retour élastique du matériau travaillé.
Dans les pages qui suivent sont les écarts-types (6H et 2B) pour les filetages M, MF, UNC, UNF et GAZ.

TABELLA TOLLERANZE MASCHI
TAPS TOLERANCE TABLE - TABLEAU DE TOLERANCE DES TARAUDS

Scostamenti sul diametro medio – Limits on pitch diameter – Tolérances sur flancs pour tarauds

Diametro nominale Nominal diameter Diamètre nominal		P mm	Classi – Classes						7G	
			ISO1/4H		ISO2/6H		ISO3/6G			
> mm	< mm		min	max	min	max	min	max	min	max
0,99	1,4	**0,2**	+0,005	+0,015	-	-	-	-	-	-
		0,25	+0,006	+0,017	-	-	-	-	-	-
		0,3	+0,006	+0,018	+0,018	+0,03	-	-	-	-
1,4	2,8	**0,2**	+0,005	+0,016	-	-	-	-	-	-
		0,25	+0,006	+0,018	-	-	-	-	-	-
		0,35	+0,007	+0,02	+0,02	+0,034	-	-	-	-
		0,4	+0,007	+0,021	+0,021	+0,036	-	-	-	-
		0,45	+0,008	+0,023	+0,023	+0,038	-	-	-	-
2,8	5,6	**0,35**	+0,007	+0,021	+0,021	+0,036	-	-	-	-
		0,5	+0,008	+0,024	+0,024	+0,04	+0,04	+0,056	+0,056	+0,072
		0,6	+0,009	+0,027	+0,027	+0,045	+0,045	+0,063	+0,063	+0,081
		0,7	+0,01	+0,029	+0,029	+0,048	+0,048	+0,067	+0,067	+0,086
		0,75	+0,01	+0,029	+0,029	+0,048	+0,048	+0,067	+0,067	+0,086
		0,8	+0,01	+0,03	+0,03	+0,05	+0,05	+0,07	+0,07	+0,09
5,6	11,2	**0,75**	+0,011	+0,032	+0,032	+0,053	+0,053	+0,074	+0,074	+0,095
		1	+0,012	+0,035	+0,035	+0,059	+0,059	+0,083	+0,083	+0,107
		1,25	+0,013	+0,038	+0,038	+0,063	+0,063	+0,088	+0,088	+0,113
		1,5	+0,014	+0,042	+0,042	+0,07	+0,07	+0,098	+0,098	+0,126
11,2	22,4	**1**	+0,013	+0,038	+0,038	+0,063	+0,063	+0,088	+0,088	+0,113
		1,25	+0,014	+0,042	+0,042	+0,07	+0,07	+0,098	+0,098	+0,126
		1,5	+0,015	+0,045	+0,045	+0,075	+0,075	+0,105	+0,105	+0,135
		1,75	+0,016	+0,048	+0,048	+0,08	+0,08	+0,112	+0,112	+0,144
		2	+0,017	+0,051	+0,051	0,085	+0,085	+0,119	+0,119	+0,153
		2,5	+0,018	+0,054	+0,054	+0,09	+0,09	+0,126	+0,126	+0,162
22,4	45	**1**	+0,013	+0,040	+0,04	+0,066	+0,066	+0,092	+0,092	+0,118
		1,5	+0,016	+0,048	+0,048	+0,08	+0,08	+0,112	+0,112	+0,144
		2	+0,018	+0,054	+0,054	+0,09	+0,09	0,126	+0,126	+0,162
		3	+0,021	+0,064	+0,064	+0,106	+0,106	+0,148	+0,148	+0,19
		3,5	+0,022	+0,067	+0,067	+0,112	+0,112	+0,157	+0,157	+0,202
		4	+0,024	+0,071	+0,071	+0,118	+0,118	+0,165	+0,165	+0,212
		4,5	+0,025	+0,075	+0,075	+0,125	+0,125	+0,175	+0,175	+0,225
45	90	**1,5**	+0,017	+0,051	+0,051	+0,085	+0,085	+0,119	+0,119	+0,153
		2	+0,019	+0,057	+0,057	+0,095	+0,095	+0,133	+0,133	+0,171
		3	+0,022	+0,067	+0,067	+0,112	+0,112	+0,157	+0,157	+0,202
		4	+0,025	+0,075	+0,075	+0,125	+0,125	+0,175	+0,175	+0,225
		5	+0,027	+0,08	+0,08	+0,133	+0,133	+0,186	+0,186	+0,239
		5,5	+0,028	+0,084	+0,084	+0,140	+0,140	+0,196	+0,196	+0,252
		6	+0,03	+0,09	+0,09	+0,15	+0,150	+0,210	+0,21	+0,27

M - ISO Passo GROSSO - ISO Metric Coarse Thread - M-ISO pas gros

Ød1	P mm	Diametri medi 6H Pitch diameter 6H - Diamètres moyens 6H Min	Max
2	0,4	1,761	1,776
2,5	0,45	2,231	2,246
3	0,5	2,699	2,715
3,5	0,6	3,137	3,155
4	0,7	3,574	3,593
4,5	0,75	4,042	4,061
5	0,8	4,510	4,530
6	1	5,385	5,409
7	1	6,385	6,409
8	1,25	7,226	7,251
9	1,25	8,226	8,251
10	1,5	9,068	9,096
11	1,5	10,068	10,096
12	1,75	10,911	10,943
14	2	12,752	12,786
16	2	14,752	14,786
18	2,5	16,430	16,466
20	2,5	18,430	18,466
22	2,5	20,430	20,466
24	3	22,115	22,157
27	3	25,115	25,157
30	3,5	27,794	27,839
33	3,5	30,794	30,839
36	4	33,473	33,520
39	4	36,473	36,520
42	4,5	39,152	39,202
45	4,5	42,152	42,202
48	5	44,832	44,885
52	5	48,832	48,885
56	5,5	52,512	52,568
60	5,5	56,512	56,568
64	6	60,193	60,253
68	6	64,193	64,253

M, MF, UNC, UNF

Dimensioni in mm
Dimensions in mm

$H = 0{,}866\,03\ P$

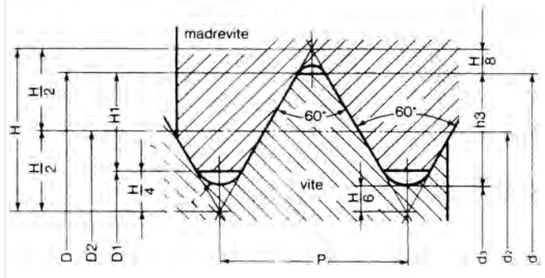
$H_1 = \frac{5}{8} H = 0{,}541\,27\ P$

$h_3 = \frac{17}{24} H = 0{,}613\,43\ P$

$d_2 = D_2 = d - \frac{3}{4} H = d - 0{,}649\,52\ P$

$d_3 = d - 2\,h_3 = d - 1{,}223\,87\ P$

$r = \frac{H}{6} = 0{,}144\,34\ P$



MF - ISO Passo FINE - ISO Metric Fine Thread - MF- ISO pas fin

Ød1	P mm	Diametri medi 6H Pitch diameter 6H - Diamètres moyens 6H Min	Max
2,5	0,35	2,293	2,307
3	0,35	2,794	2,809
3,5	0,35	3,294	3,309
4	0,5	3,699	3,715
4,5	0,5	4,199	4,215
5	0,5	4,699	4,715
5,5	0,5	5,199	5,215
6	0,75	5,545	5,566
7	0,75	6,545	6,566
8	1	7,385	7,409
9	1	8,385	8,409
10	1	9,385	9,409
10	1,25	9,226	9,251
12	1,25	11,230	11,258
12	1,5	11,071	11,101
14	1,25	13,230	13,258
14	1,5	13,071	13,101
15	1,5	14,071	14,101
16	1,5	15,071	15,101
17	1,5	16,071	16,101
18	1,5	17,071	17,101
18	2	16,752	16,786
20	1,5	19,071	19,101
20	2	18,752	18,786
22	1,5	21,071	21,101
22	2	20,752	20,786
24	1,5	23,074	23,106
24	2	22,755	22,791
25	1,5	24,074	24,106
25	2	23,755	23,791
27	1,5	26,074	26,106
27	2	25,755	25,791
28	1,5	27,074	27,106
28	2	26,755	26,791
30	1,5	29,074	29,106
30	2	28,755	28,791
30	3	28,115	28,157
32	1,5	31,074	31,106
32	2	30,755	30,791
33	1,5	32,074	32,106

Ød1	P mm	Diametri medi 6H Pitch diameter 6H - Diamètres moyens 6H Min	Max
33	2	31,755	31,791
33	3	31,115	31,157
35	1,5	34,074	34,106
36	1,5	35,074	35,106
36	2	34,755	34,791
36	3	34,115	34,157
39	1,5	38,074	38,106
39	2	37,755	37,791
39	3	37,115	37,157
40	1,5	39,074	39,106
40	2	38,755	38,791
40	3	38,115	38,157
42	1,5	41,074	41,106
42	2	40,755	40,791
42	3	40,115	40,157
42	4	39,473	39,520
45	1,5	44,074	44,106
45	2	43,755	43,791
45	3	43,115	43,157
45	4	42,473	42,520
48	1,5	47,077	47,111
48	2	46,758	46,796
48	3	46,118	46,163
48	4	45,477	45,527
50	1,5	49,077	49,111
50	2	48,758	48,796
50	3	48,118	48,163
52	1,5	51,077	51,111
52	2	50,758	50,796
52	3	50,188	50,163
52	4	49,477	49,527
55	1,5	54,077	54,111
55	2	53,758	53,796
55	3	53,118	53,163
55	4	52,477	52,527
56	1,5	55,077	55,111
56	2	54,758	54,796
56	3	54,118	54,163
56	4	53,477	53,527

Filettatura UNC (ASME B1.1)
UNC Coarse Thread - Filetage UNC

Ød1	P TPI	Diametri medi 2B Pitch diameter 2B - Diamètres moyens 2B Min	Max
Nr. 1	64	1,611	1,626
Nr. 2	56	1,904	1,919
Nr. 3	48	2,186	2,201
Nr. 4	40	2,448	2,463
Nr. 5	40	2,778	2,793
Nr.	32	3,014	3,029
Nr. 8	32	3,675	3,690
Nr. 10	24	4,164	4,179
Nr. 12	24	4,824	4,839
1/4	20	5,565	5,585
5/16	18	7,061	7,081
3/8	16	8,534	8,554
7/16	14	9,975	9,995
1/2	13	11,481	11,501
9/16	12	12,963	12,983
5/8	11	14,425	14,445
3/4	10	17,465	17,485
7/8	9	20,457	20,477
1	8	23,403	23,423
1-1/8	7	26,293	26,318
1-1/4	7	29,468	29,493
1-3/8	6	32,250	32,275
1-1/2	6	35,425	35,450
1-3/4	5	41,240	41,260
2	4,5	47,224	47,244
2-1/4	4,5	53,584	53,614
2-1/2	4	59,476	59,506
2-3/4	4	65,836	65,866
3	4	72,186	72,216

Filettatura UNF (ASME B1.1)
UNF Fine Thread - Filetage UNF

Ød1	P TPI	Diametri medi 2B Pitch diameter 2B - Diamètres moyens 2B Min	Max
Nr. 0	80	1,333	1,348
Nr. 1	72	1,640	1,655
Nr. 2	64	1,941	1,956
Nr. 3	56	2,235	2,250
Nr. 4	48	2,516	2,531
Nr. 5	44	2,815	2,830
Nr. 6	40	3,107	3,122
Nr. 8	36	3,727	3,747
Nr. 10	32	4,330	4,350
Nr. 12	28	4,916	4,936
1/4	28	5,800	5,820
5/16	24	7,290	7,310
3/8	24	8,877	8,897
7/16	20	10,333	10,353
1/2	20	11,920	11,940
9/16	18	13,416	13,436
5/8	18	15,004	15,024
3/4	16	18,064	18,084
7/8	14	21,097	21,127
1	12	24,075	24,105
1-1/8	12	27,250	27,280
1-1/4	12	30,425	30,455
1-3/8	12	33,600	33,630
1-1/2	12	36,775	36,805

GAS

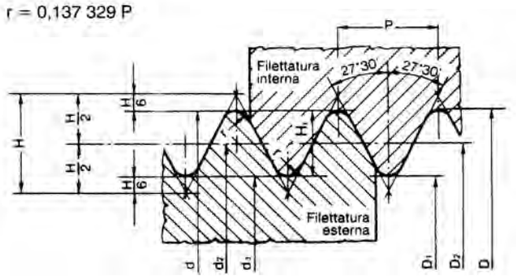
Dimensioni in mm
Dimensions in mm

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

$H = 0{,}960\,491\ P$

$H_1 = 0{,}640\,327\ P$

$r = 0{,}137\,329\ P$



Filettatura GAS Cilindrica
Whitworth pipe Thread - Filetage GAZ cylindrique

Ød1	P TPI	Diametri medi UNI ISO 5969 Pitch diameter - Diamètres moyens Min	Max
1/16	28	7,164	7,185
1/8	28	9,169	9,190
1/4	19	12,326	12,351
3/8	19	15,831	15,856
1/2	14	19,822	19,850
5/8	14	21,777	21,806
3/4	14	25,308	25,336
7/8	14	29,067	29,096
1	11	31,806	31,842
1-1/8	11	36,454	36,490
1-1/4	11	40,467	40,503
1-1/2	11	46,360	46,396
1-3/4	11	52,303	52,339
2	11	58,171	58,207
2-1/4	11	64,274	64,318
2-1/2	11	73,749	73,792
2-3/4	11	80,098	80,142
3	11	86,449	86,492
3-1/2	11	98,894	98,938
4	11	111,595	111,638
4-1/2	11	124,294	124,338
5	11	136,995	137,038
5-1/2	11	149,694	149,738
6	11	162,395	162,438

TIN

Rivestimento superficiale per impiego generale, acciai non legati e basso legati.
Grazie alla minore rugosità della superficie ed elevata durezza, 2300 HV, migliora lo scorrimento ed aumenta la resistenza all'usura.
Questo trattamento permette di aumentare la velocità di taglio nonché la durata del maschio.

Surface coating for general use, for unalloyed and low-alloy steels.
Due to the reduced surface roughness and the extreme hardness, 2300 HV, very good "slip" properties and a high wear resistance are achieved.
This treatment allows to increase the cutting speed as well as the duration of the tap.

Revêtement de surface pour usage général, aciers non alliés et faiblement alliés.
La rugosité de l'état de surface est diminuée et la dureté améliorée: on obtient de très bonnes qualités de glissement et une résistance à l'usure importante.
Permet d'augmenter les vitesses de coupe ainsi que la durée de vie du taraud.

TiCN

Rivestimento superficiale per materiali abrasivi come la ghisa, fusioni d'alluminio, bronzo, leghe di titanio e leghe di nichel.
L' elevata durezza, 3000 HV, abbinata alle buone caratteristiche di tenacità lo rendono adatto per questo tipo di materiali.

Surface coating for abrasive materials such as cast iron, cast aluminium, bronze, titanium alloys and nickel alloys. The high hardness, 3000 HV, combined with the good toughness characteristics make it suitable for this type of material.

Revêtement de surface pour matériaux abrasifs tels que fonte, fonte d'aluminium, bronze, alliages de titane et alliages de nickel.
La dureté élevée, 3000 HV, associée aux bonnes caractéristiques de ténacité, le rend adapté à ce type de matériau.

TiAlN

Rivestimento superficiale con una durezza molto elevata, 3300 HV, e resistenza alle alte temperature. Adatto lavorazioni di materiali abrasivi come la ghisa, anche a secco. Elevata resistenza all'usura.

Surface coating with a very high hardness, 3300 HV, and resistance to high temperatures.
Suitable for dry processing in cast iron, high resistance against abrasive wear.

Revêtement de surface à très haute dureté, 3300 HV, et résistance aux hautes températures.
Adapté pour usinage à sec des fontes, bonne résistance à l'abrasion.

VS

Rivestimento a basso coefficiente di attrito, evoluzione della classica vaporizzazione.
Migliora lo scorrimento del maschio ed evita l'incollaggio.
Adatto alla maschiatura di materiali come leghe leggere di alluminio, acciai < 700 N/mm², materiali dolci con basso contenuto di carbonio, ed acciai INOX a basse velocità di taglio.

Low friction coating, evolution of the classic vaporization.
Reduced cutting friction; reduced welding tendency; increased finishing.
Suitable for tapping materials such as light aluminium alloys, steels < 700 N/mm², soft materials with low carbon content, and stainless steels at low cutting speeds.

Revêtement à faible frottement, évolution de la vaporisation classique.
Améliore le glissement du mâle et évite le coincement.
Convient pour le taraudage de matériaux tels que les alliages légers d'aluminium, les aciers < 700 N/mm², les matériaux tendres à faible teneur en carbone et les aciers inoxydables à faible vitesse de coupe.

XP

Rivestimento duro di base abbinato ad uno strato autolubrificante; questa combinazione porta ad un miglioramento della durata dell'utensile e dell'evacuazione del truciolo.
Di colore nero, riduce l'attrito, evita l'incollaggio, migliore finitura del filetto ottenuto.
Consigliato per la maschiatura compensata (CO)

Hard base coating combined with a self-lubricating layer; this combination leads to an improvement in tool life and chip evacuation.
Black in colour, reduces friction, prevents sticking, improves the finish of the thread obtained.
Recommended for compensated tapping (CO)

Revêtement de base dur combiné à une couche autolubrifiante ; cette combinaison conduit à une amélioration de la durée de vie de l'outil et de l'évacuation des copeaux.
De couleur noire, réduit les frottements, évite le collage, améliore la finition du fil obtenu.
Recommandé pour le taraudage compensé (CO)

TXC

Combinazione di un rivestimento duro, 3300 HV, ed uno strato autolubrificante.
Miglioramento dell'evacuazione truciolo. Consigliato per maschiatura di fori ciechi profondi.
Applicazione su INOX ed Alluminio con alto contenuto di Si.

Combination of a hard coating, 3300 HV, and a self-lubricating layer.
Improved chip evacuation. Recommended for tapping deep blind holes. Application on stainless steel and aluminium with high Si content.

Combinaison d'un revêtement dur, 3300 HV, et d'une couche autolubrifiante.
Meilleure évacuation des copeaux. Recommandé pour le taraudage de trous borgnes profonds.
Application sur acier inoxydable et aluminium à haute teneur en Si.

TiN-G

Nuovo rivestimento TiN-G multilayer testato e sviluppato in abbinamento a processi di finitura di ultima generazione.
Rivestimento con ottime caratteristiche di scorrimento molto resistente all'usura.
Particolarmente indicato per la maschiatura a rullare ad alte performance, serie **K-ROLL**, ed anche la nuova serie ad asportazione **s-plus**.

New TiN-G multilayer coating tested and developed in combination with the latest generation finishing processes.
Coating with very good sliding characteristics very resistant to wear.
Particularly suitable for high performance forming taps, **K-ROLL** series, and also the new **s-plus** series.

Nouveau revêtement multicouche TiN-G testé et développé en combinaison avec des procédés de finition de dernière génération.
Revêtement avec de très bonnes caractéristiques de glissement très résistant à l'usure.
Particulièrement adapté au taraudage de formage haute performance, série **K-ROLL**, ainsi qu'à la nouvelle série **s-plus**.

AHI

NEW

Nuovo rivestimento realizzato con tecnologia HIPMS.
Superficie del rivestimento molto liscia, elevata densità e durezza del rivestimento.
Resistenza all'usura ed ossidazione; per acciai ad alta resistenza e materiali abrasivi.

New surface coating made with HIPMS technology.
Very smooth coating surface, high coating density and hardness.
Resistance to wear and oxidation. For high strength steels and abrasive materials.

Nouveau revêtement de surface réalisé avec la technologie HIPMS.
Surface de revêtement très lisse, densité et dureté de revêtement élevées.
Résistance à l'usure et à l'oxydation; pour les aciers à haute résistance et les matériaux abrasifs.

V

Il trattamento superficiale di vaporizzazione migliora lo scorrimento del maschio. Lo strato di ossido di ferro conferisce all'olio da taglio una maggiore aderenza; previene la formazione di saldature fredde. Indicato per acciai Rm < 700 N/mm², materiali dolci e tenaci con basso contenuto di carbonio.

The vaporized surface treatment improves the sliding of the tap. The iron oxide layer gives the cutting oil better adhesion; prevents the formation of cold welds.
Suitable for steel Rm < 700 N/mm², soft and tough materials with low carbon content.

Le traitement de surface vaporisé améliore le coulissement du taraud.
La couche d'oxyde de fer donne à l'huile de coupe une meilleure adhérence ; empêche la formation de soudures à froid.
Convient aux aciers Rm < 700 N/mm², matériaux tendres et durs à faible teneur en carbone.

NQ

Il trattamento di nitrurazione e vaporizzazione (NIT+VAP) porta ad un aumento della durezza superficiale ed anche un miglioramento delle proprietà di scorrimento. Consigliati per materiale abrasivi come ghisa grigia, alluminio fuso ad alto contenuto di Si.

The nitriding and vaporization treatment (NIT+VAP) leads to an increase in the surface hardness and also an improvement in the sliding properties. Recommended for abrasive materials such as grey cast iron, cast aluminium with high Si content.

Le traitement de nitruration et vaporisation (NIT+VAP) conduit à une augmentation de la dureté de surface ainsi qu'à une amélioration des propriétés de glissement.
Recommandé pour les matériaux abrasifs tels que la fonte grise, la fonte d'aluminium à haute teneur en Si.

COMPARAZIONE DUREZZE
HARDNESS COMPARISON TABLE - COMPARAISON DE DURETÉ

HV Vickers Durezza Hardness - Dureté	HRC Rockwell Durezza Hardness - Dureté	HB Brinell Durezza Hardness - Dureté	Resistenza Tensile Strength - Résistance N/mm²	 Tons/sq. in.
940	68			
900	67			
864	66			
829	65			
800	64			
773	63			
745	62			
720	61			
698	60			
675	59			
655	58		2200	142
650		618	2180	141
640		608	2145	139
639	57	607	2140	138
630		599	2105	136
620		589	2070	134
615	56	584	2050	133
610		580	2030	131
600		570	1995	129
596	55	567	1980	128
590		561	1955	126
580		551	1920	124
578	54	549	1910	124
570		542	1880	122
560	53	532	1845	119
550		523	1810	117
544	52	517	1790	116
540		513	1775	115
530		504	1740	113
527	51	501	1730	112
520		494	1700	110
514	50	488	1680	109
510		485	1665	108
500		475	1630	105
497	49	472	1620	105
490		466	1595	103
484	48	460	1570	102
480		456	1555	101
473	47	449	1530	99
470		447	1520	98
460		437	1485	96
458	46	435	1480	96
450		428	1455	94
446	45	424	1440	93
440		418	1420	92

HV Vickers Durezza Hardness - Dureté	HRC Rockwell Durezza Hardness - Dureté	HB Brinell Durezza Hardness - Dureté	Resistenza Tensile Strength - Résistance N/mm²	 Tons/sq. in.
434	44	416	1400	91
423	43	402	1360	88
413	42	393	1330	86
403	41	383	1300	84
392	40	372	1260	82
382	39	363	1230	80
373	38	354	1200	78
364	37	346	1170	76
355	36	337	1140	74
350		333	1125	73
345	35	328	1110	72
340		323	1095	71
336	34	319	1080	70
330		314	1060	69
327	33	311	1050	68
320		304	1030	67
317	32	301	1020	66
310	31	295	995	64
302	30	287	970	63
300		285	965	62
295		280	950	61
293	29	278	940	61
290		276	930	60
287	28	273	920	60
285		271	915	59
280	27	266	900	58
275		261	880	57
272	26	258	870	56
270		257	865	56
268	25	255	860	56
265		252	850	55
260	24	247	835	54
255	23	242	820	53
250	22	238	800	52
245		233	785	51
243	21	231	780	50
240		228	770	50
235		223	755	49
230		219	740	48
225		214	720	47
220		209	705	46
215		204	690	45
210		199	675	44
205		195	660	43
200		190	640	41

Secondo norma ISO 18265:2003 per gli acciai (ad esclusione degli acciai rapidi)
According to ISO 18265:2003 for steels (except high speed steels) - Selon la norme ISO 18265:2003 pour les aciers (sauf les aciers rapides)

GRUPPI DI MATERIALE
MATERIAL GROUPS - GROUPES DE MATIERES

P	Acciaio Steel - Aciers	282 ÷ 284 >
H	Acciaio temprato Hardened steel - Acier trempé	283 ÷ 284 >
M	Acciaio INOX Stainless steel - Acier inoxydable	285 >
K	Ghisa Cast iron - Fonte	286 >
N	Alluminio, leghe di alluminio Aluminium and aluminium alloys - Aluminium et alliages d'aluminium	287 >
N	Leghe di magnesio Magnesium alloys - Alliages de magnésium	288 >
N	Rame, leghe di rame, ottone e bronzo Copper, copper alloys, brass and bronze - Cuivre, alliages de cuivre, laiton et bronze	288 ÷ 289 >
S	Titanio Titanium - Titane	289 >
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P	Acciaio – Steel - Acier		
1.1	**Acciaio dolce magnetico Rm < 400 N/mm²** **Magnetic soft steel - Acier doux magnétique**		
	W-Nr.	DIN - Germany	UNI - Italy
	1.1013	RFe100	-
	1.1014	RFe80	-
	1.1015	RFe60	-
1.2	**Acciaio da costruzione, da cementazione Rm < 700 N/mm²** **Construction steel, case hardening steel - Acier de construction et de cémentation**		
	W-Nr.	DIN - Germany	UNI - Italy
Acciaio da costruzione Construction steel Acier de construction	1.0037	St37-2	Fe360B
	1.0044	St44-2	Fe430B
	1.0050	St50-2	Fe490
	1.0060	St60-2	Fe590
	1.0070	St70-2	Fe690
	1.0570	St52-3	Fe510D
Acciaio da cementazione Case hardening steel Acier de cémentation	1.0301	C10	C10
	1.0401	C15	C15
	1.7131	16MnCr5	16MnCr5
	1.7243	18CrMo4	18CrMo4
	1.7147	20MnCr5	20MnCr5
	1.5919	15CrNi6	16CrNi4
	1.6523	21NiCrMo2	20NiCrMo2
	1.6587	17CrNiMo6	18CrNiMo7
Acciaio automatico (AVP) Free cutting steel Aciers de décolletage	1.0711	9S20	CF 9 S 22
	1.0715	9SMn28	CF 9 SMn 28
	1.0718	9SMnPb28	CF 9 SMnPb 28
	1.0726	35S20	-
	1.0736	9SMn36	CF 9 SMn 36
	1.0737	9SMnPb36	CF 9 SMnPb 36
1.3	**Acciaio al carbonio Rm < 850 N/mm²** **Carbon steel - Acier au carbone**		
	W-Nr.	DIN - Germany	UNI - Italy
Da bonifica Heat treatable steel Trempe et revenu	1.0402	C22	C20, C21
	1.0406	C25	C25
	1.0528	C30	C30
	1.0501	C35	C35
	1.0511	C40	C40
	1.0503	C45	C45
	1.0540	C50	-
	1.0535	C55	C55
	1.0601	C60	C60
	1.1178	Ck30	-
	1.1181	Ck35	C35
	1.1191	Ck45	C45

Continua Acciaio al carbonio / Continue carbon steel / Acier au carbone continuer >

		W-Nr.	DIN - Germany	UNI - Italy
Per molle Spring Pour les ressorts		1.1231	Ck67	C70
		1.1248	Ck75	C75
		1.1269	Ck85	C85
		1.1274	Ck101	C100
Da tempra superficiale Surface hardening Du durcissement superficiel		1.1183	Cf35	C36
		1.1193	Cf45	C43
		1.1213	Cf53	C53
P	1.4	**Acciaio legato - bonificato Rm < 850 N/mm²** **Alloyed steel - Heat treatable steel / Acier allié - trempé et revenu**		
	1.5	**Acciaio legato - bonificato Rm 850 ÷ 1200 N/mm²** **Alloyed steel - Heat treatable steel / Acier allié - trempé et revenu**		
	1.6	**Acciaio alta resistenza Rm 1200 ÷ 1400 N/mm², 38 - 45 HRC** **High strength steel - Acier haute résistance**		
H	1.7	**Acciaio temprato Rm 1400 ÷ 1800 N/mm², 45 - 52 HRC** **Hardened steel - Acier trempé**		
	1.8	**Temprato < 63 HRC** **Hardened steel - Acier trempé**		
		W-Nr.	DIN - Germany	UNI - Italy
Da bonifica Heat treatable steels Trempe et revenu		1.7035	41Cr4	41Cr4
		1.8159	50CrV4	51CrV4
		1.7218	25CrMo4	25CrMo4
		1.7220	34CrMo4	35CrMo4
		1.7225	42CrMo4	42CrMo4
		1.7228	50CrMo4	-
		1.7242	16CrMo4	-
		1.7243	18CrMo4	18CrMo4
		1.6580	30CrNiMo8	30NiCrMo8
		1.6582	34CrNiMo6	-
		1.6511	36CrNiMo4	39NiCrMo3
		1.6773	36NiCrMo16	-
		1.6565	40NiCrMo6	-
Da nitrurazione Nitriding steels Aciers de nitruration		1.8515	31CrMo12	31CrMo12
		1.8519	31CrMoV9	-
		1.8507	34CrAlMo5	34CrAlMo7
		1.8509	41CrAlMo7	41CrAlMo7
Da cuscinetti Ball bearing steel Roulements		1.3505	100Cr6	100Cr6
		1.3537	100CrMo7	-
Per molle Spring steels Aciers à roulement		1.5025	51Si7	50Si7
		1.5026	55Si7	55Si7
		1.5027	60Si7	-
		1.7108	61SiCr7	60SiCr8
		1.8159	51CrV4	50CrV4
		1.7176	55Cr3	55Cr3
		1.7701	51CrMoV4	-
Fusioni d'acciaio - ghisa acciaiosa Cast irons and steels - Cast steels Fontes et aciers - Aciers moulés		1.0446	GS-45, GE240	-
		1.0552	GS-52, GE260	-
		1.7379	G17CrMo9-10	-

Continua Acciaio legato / Continue Alloyed steel / Acier allié à suivre >

P	1.4 – 1.5 – 1.6		
H	**1.7 – 1.8**		
	W-Nr.	**DIN - Germany**	**UNI - Italy**
Per tempra superficiale Surface hardening De durcissement de surface	1.7005	45Cr2	-
	1.7006	46Cr2	45Cr2
	1.7043	38Cr4	-
	1.7034	37Cr4	36CrMn4, 36CrMn5
	1.7223	42CrMo4	41CrMo4
Per lavorazioni a caldo Hot work steel Pour travail à chaud	1.2767	X45NiCrMo4	42NiCrMo157
	1.2713	55NiCrMoV6	-
	1.2714	55NiCrMoV7	-
	1.2311	40CrMnMo7	-
	1.2365	32CrMoV12-28	30CrMoV1227KU
	1.2343	X37CrMoV5-1	X37CrMoV5-1KU
	1.2344	X40CrMoV5-1	X40CrMoV511KU
	1.2567	X30WCrV5-3	X30WCrV53KU
	1.2581	X30WCrV9-3	X30WCrV93KU
Per lavorazioni a freddo Cold work steel Acier pour travail à froid	1.2080	X210Cr12	X205Cr12KU
	1.2083	X42Cr13	-
	1.2363	X100CrMoV5-1	X100CrMoV51KU
	1.2379	X155CrVMo12-1	X155CrVMo121KU
	1.2510	100MnCrW4	95MnWCr5KU
	1.2550	60WCrV7	55WCrV8KU
	1.2842	90MnCrV8	90MnVCr8KU
Acciaio rapido HSS, HSS-E High speed steel Acier rapide	1.3202	HS 12-1-4-5	AISI/SAE: T15
	1.3207	HS 10-4-3-10	HS 10-4-3-10
	1.3243	HS 6-5-2-5	HS 6-5-2-5 (AISI/SAE: M35)
	1.3247	HS 2-10-1-8	HS 2-9-1-8 (AISI/SAE: M42)
	1.3343	HS 6-5-2	HS 6-5-2 (AISI/SAE: M2)
	1.3344	HS 6-5-3	AISI/SAE: M3/2
	1.3348	HS 2-9-2	HS 2-9-2 (AISI/SAE: M7)
Acciaio rapido sinterizzato HSS-PM Sintered high speed steel Acier rapide fritté	1.3294	HS 6-5-3-8	ASP 2030
	1.3253	HS 10-2-5-8	ASP 2052
	1.3292	PMHS 7-7-7-11	ASP 2060
Acciaio speciale Rm<1600 N/mm² Special steel Acier spécial			HARDOX 400
			HARDOX 450
Acciaio speciale < 63 HRC Special steel Acier spécial			HARDOX 500
			HARDOX 600

M	Acciaio INOX - Stainless Steel – Acier inoxydable		
2.1	**Acciaio inox automatico Rm < 850 N/mm²** **Free machining stainless steel - Acier inoxydable de décolletage**		
	W-Nr.	**DIN - Germany**	**UNI - Italy**
	1.4104	X14CrMoS17	X10CrS17 (AISI 430F)
	1.4305	X8CrNiS18-9	X10CrNiS18-9 (AISI 303)
2.2	**Acciaio inox austenitico Rm < 850 N/mm²** **Austenitic stainless steel - Acier inoxydable austénitique**		
	W-Nr.	**DIN - Germany**	**UNI - Italy**
	1.4301	X5CrNi18-10	X5CrNi18-10 (AISI 304)
	1.4306	X2CrNi19-11	X2CrNi18-11 (AISI 304L)
	1.4401	X5CrNiMo18-10	X5CrNiMo17-12 (AISI 316)
	1.4404	X2CrNiMo17-12-2	X2CrNiMo17-12 (AISI 316L)
	1.4406	X2CrNiMoN17-11-2	X2CrNiMoN17-12 (AISI 316LN)
	1.4435	X2CrNiMo18-14-3	X2CrNiMo17-13 (AISI 316L)
	1.4438	X2CrNiMo18-15-4	X2CrNiMo18-15 (AISI 317L)
	1.4541	X6CrNiTi18-10	X6CrNiTi18-11 (AISI 321)
	1.4550	X6CrNiNb18-10	X8CrNiNb18-11 (AISI 347)
	1.4828	X15CrNiSi20-12	X16CrNi23-14 (AISI 309)
	1.4841	X15CrNiSi25-20	X16CrNiSi25-20 (AISI 314)
	1.4845	X12CrNi25-21	X6CrNi25-20 (AISI 310S)
2.3	**Ferritico, Ferritico + Austenitico, Martensitico Rm < 1100 N/mm²** **Ferritic, Ferritic + Austenitic and Martensitic – Ferritique, Ferritique + Austénitique, Martensitiques**		
	W-Nr.	**DIN - Germany**	**UNI - Italy**
Ferritico Ferritic Ferritique	1.4002	X6CrAl13	X6CrAl13 (AISI 405)
	1.4003	X2CrNi12	-
	1.4016	X6Cr17	X8Cr17 (AISI 430)
	1.4510	X3CrTi17	X6CrTi17 (AISI 430Ti)
	1.4509	X2CrTiNb18	X2CrTiNb18
	1.4512	X2CrTi12	X6CrTi12 (AISI 409)
Ferritico + Austenitico (Bifasico) Austenitic - Ferritic (Duplex) Biphasée austéno-ferritique (Duplex)	1.4462	X2CrNiMoN22-5-3	ASTM: A182 F51
	1.4501	X2CrNiMoCuWN25-7-4	ASTM : A182 F55
Martensitico Martensitic Martensitique	1.4006	X10Cr13	X12Cr13 (AISI 410)
	1.4005	X12CrS13	X12CrS13 (AISI 416)
	1.4021	X20Cr13	X20Cr13 (AISI 420)
	1.4028	X30Cr13	X30Cr13 (AISO 420)
	1.4057	X17CrNi16-2	X16CrNi16 (AISI 431)
	1.4125	X105CrMo17	(AISI 440C)
2.4	**Acciai termostabili, leghe Cr-Ni - Rm < 1400 N/mm²** **High temperatures resistant and Cr-Ni alloy - Aciers résistants aux hautes températures et Cr-Ni alliage**		
	W-Nr.	**DIN - Germany**	**UNI - Italy**
Indurente per precipitazione Precipitation hardening Durcissant par précipitation	1.4542	X5CrNiCuNb16-4	AISI 630, 17-4 PH
	1.4545	X5CrNiCu15-5	15-5 PH
	1.4568	X7CrNiAl17-7	17-7 PH
	1.4922	X20CrMoV11-1	X20CrMoV12-1
	1.4939	X12CrNiMoN12	AISI XM-32
	1.4944	X5NiCrTi26-15	AISI 660, A286
	1.4980	X6NiCrTiMoVB25-15-2	A286

K — Ghisa - Cast Iron - Fonte

3.1 Ghisa grigia lamellare < 180 HB
Lamellar grey cast iron – Fonte grise lamellaire

W-Nr.	DIN - Germany	UNI - Italy
0.6010	EN-GJL-100 (GG-10)	G10
0.6015	EN-GJL-150 (GG-15)	G15
0.6020	EN-GJL-200 (GG-20)	G20

3.2 Ghisa grigia lamellare < 250 HB
Lamellar grey cast iron – Fonte grise lamellaire

W-Nr.	DIN - Germany	UNI - Italy
0.6025	EN-GJL-250 (GG-25)	G25
0.6030	EN-GJL-300 (GG-30)	G30
0.6035	EN-GJL-350 (GG-35)	G35
0.6040	EN-GJL-400 (GG-40)	G40

3.3 Ghisa sferoidale < 350 HB
Nodular cast iron - Fonte à graphite sphéroïdale

W-Nr.	DIN - Germany	UNI - Italy
0.7033	EN-GJS-350-22-LT (GGG-35.3)	-
0.7040	EN-GJS-400-15 (GGG-40)	GS400-12
0.7050	EN-GJS-500-7 (GGG-50)	GS500-7
0.7060	EN-GJS-600-3 (GGG-60)	GS600-3
0.7070	EN-GJS-700-2 (GGG-70)	GS700-2
0.7080	EN-GJS-800-2 (GGG-80)	GS800-2
0.7670	EN-GJSA-XNi22 (GGG-Ni22)	-
0.7683	EN-GJSA-XNi35 (GGG-Ni35)	-
0.7660	EN-GJSA-XNiCr20-2 (GGG-NiCr20-2)	-
0.7677	GGG-NiCr30-1	-
0.7685	EN-GJSA-XNiCr35-3 (GGG-NiCr35-3)	-

3.4 Ghisa malleabile < 260 HB
Malleable cast iron - Fonte malléable

W-Nr.	DIN - Germany	UNI - Italy
0.8035	GTW-35-04, EN-GJMW-350-4	-
0.8045	GTW-45-07, EN-GJMW-450-7	-
0.8145	GTS-45-06, EN-GJMB-450-6	-
0.8165	GTS-65-02, EN-GJMB-650-2	-
0.8170	GTS-70-02, EN-GJMB700-2	-

3.5 Ghisa austemperata ADI - Rm < 1400 N/mm²
Austempered Ductile Iron - Fonte ductile trempée

W-Nr.	DIN - Germany	UNI - Italy
5.3400	EN-GJS-800-10	ADI 800
5.3402	EN-GJS-900-8	ADI 900
5.3403	EN-GJS-1050-6	ADI 1050
5.3404	EN-GJS-1200-2	ADI 1200
5.3405	EN-GJS-1400-1	ADI 1400

N — Alluminio – Aluminium

4.1 Alluminio non legato Rm < 250 N/mm²
Aluminium unalloyed - Aluminium non allié

W-Nr.	DIN - Germany	UNI - Italy
3.0205, EN AW-1200	Al99	3567, 9001/1
3.0255, EN AW-1050A	Al99.5	4507, 9001/2
3.0285, EN AW-1080A	Al99.8	4509 (9001/4)
3.0305, EN AW-1090	Al99.9	-
3.3208, EN AW-6401	Al99.9MgSi	-
3.3308, EN AW-5210	Al99.9Mg0.5	-
3.3318, EN AW-5505	Al99.9Mg1	-

4.2 Leghe di Al, Si < 0,5% - truciolo lungo Rm < 500 N/mm²
Al alloys Si < 0,5% long chipping - Alliage Al, Si < 0,5% copeaux longs

	W-Nr.	DIN - Germany	-
Si < 0,5% Leghe da deformazione plastica Al wrought alloys Alliages corroyés d'aluminium	3.0505, EN AW-3105	AlMn0.5Mg0.5	3105
	3.0915, EN AW-8011A	AlFeSi	8011A
	3.3315, EN AW-5005A	AlMg1	5005A, Peraluman100
	3.3525, EN AW-5251	AlMg2Mn0.3	5251
	3.3527, EN AW-5049	AlMg2Mn0.8	5049
	3.3545, EN AW-5086	AlMg4	5086
	3.3555, EN AW-5056A	AlMg5	5056A
	3.0615, EN AW-6012	AlMgSiPb	6012
	3.1255, EN AW-2014	AlCu4SiMg	2014, 9002/3
	3.1325, EN AW-2017A	AlCu4MgSi(A)	2017A, 9002/2, Avional 100
	3.1355, EN AW-2024	AlCu4Mg1	2024, 9002/4, Avional 150
	3.3547, EN AW-5083	AlMg4.5Mn	5083, 9005/5, Peraluman 460
	3.3206, EN AW-6060	AlMgSi0.5	6060, 9006/1, Anticorodal 050
	3.2315, EN AW-6082	AlMgSi1	6082, 9006/4, Anticorodal 110
	3.4365, EN AW-7075	AlZnMgCu1.5	7075, 9007/2, Ergal 55
Si < 0,5% Leghe da getti Aluminium casting alloys Fusion des alliages d'aluminium	3.1371, EN AC-21000	G-AlCu4TiMg	-
	3.3241	G-AlMg3Si	-
	3.3261, EN AC-51400	G-AlMg5Si	-
	3.3541, EN AC-51100	G-AlMg3	-

4.3 Leghe di Al, Si < 10% - Truciolo medio Rm < 500 N/mm²
Al alloys, Si < 10% medium chipping - Alliage Al, Si < 10% copeaux moyen

	W-Nr.	DIN - Germany	UNI - Italy
Si < 10% Leghe da getti Aluminium casting alloys Fusion des alliages d'aluminium	3.2134, EN AB 45300	G-AlSi5Cu1Mg	3600
	3.2161, EN AB 46000	G-AlSi8Cu3	5075
	3.2162	GD-AlSi8Cu3	-
	3.2371, EN AC-42100	G-AlSi7Mg	7257
	3.2373, EN AC-43300	G-AlSi9Mg	3051

4.4 Leghe Al, Si > 10% - Truciolo corto Rm < 600 N/mm²
Al alloys, Si > 10% short chipping - Alliage Al, Si > 10% copeaux courts

	W-Nr.	DIN - Germany	UNI - Italy
Si > 10% Leghe da getti Aluminium casting alloys Fusion des alliages d'aluminium	3.2381, EN AC-43000	G-AlSi10Mg	3051
	3.2383, EN AC-43200	G-AlSi10MgCu	-
	3.2581, EN AC-44200	G-AlSi12	4514
	3.2583, EN AC-47000	G-AlSi12(Cu)	5079

Continua leghe di Magnesio / Continue Magnesium alloys / Alliages de Magnésium à suivre >

N — Magnesio - Magnesium - Magnésium

4.5 — Leghe di magnesio Rm < 500 N/mm² / Magnesium alloys - Alliages de magnésium

W-Nr.	DIN - Germany	-
3.5200	MgMn2	ISO-WD43150
3.5312	MgAl3Zn	AZ31
3.5632	G-MgAl6Zn3	EN-MC21150, AZ63
3.5812	G-MgAl8Zn1	EN-MC21110, AZ81 hp
3.5912	GD-MgAl9Zn1	EN-MC21120, AZ91 hp
3.5161	MgZn6Zr F29	ZK40
3.5612	MgAl6Zn	AZ61

N — Rame - Copper - Cuivre

5.1 — Rame puro, rame elettrolitico - Truciolo lungo Rm < 350 N/mm² / Copper unalloyed - Long chipping – Cuivre pur / électrolytique - Copeaux longs

W-Nr.	DIN - Germany	-
2.0040	OF-Cu	CW008A
2.0060	E-Cu57	CW004A
2.0065	Cu-ETP	CW005A
2.0070	Cu-HPC	CW021A
2.0076	Cu-DLP	CW023A
2.0090	Cu-DHP	CW024A

5.2 — Leghe di rame, ottone - Truciolo lungo Rm < 700 N/mm² / Copper alloys, soft brass - Long chipping – Alliages de cuivre, laiton - Copeaux longs

	W-Nr.	DIN - Germany	UNI - Italy
Ottone / Brass / Laiton	2.0240	CuZn15, Ms85	CW502L
	2.0250	CuZn20, Ms80	CW503L
	2.0265	CuZn30, Ms70	CW505L
	2.0280	CuZn33, Ms67	CW506L
	2.0321	CuZn37, Ms63	CW508L
	2.0335	CuZn36, Ms64	CW507L
Bronzo / Bronze	2.1016	CuSn4	CW450K
	2.1020	CuSn6	CW452K
	2.1030	CuSn8	CW453K
	2.1080	CuSn6Zn6	-

5.3 — Leghe di rame, ottone, bronzo - Truciolo corto Rm < 700 N/mm² / Copper alloys, brass, bronze - Short chipping – Alliages de cuivre, laiton - Coupeaux courts

	W-Nr.	DIN - Germany	UNI - Italy
Ottone / Brass / Laiton	2.0360	CuZn40 (Ms60)	CW509L
	2.0401	CuZn39Pb2 (Ms58)	CW614N
	2.0410	CuZn43Pb2 (Ms56)	CW623N
	2.0510	CuZn38Mn1Al	CW716R
	2.0550	CuZn37Mn3Al2PbSi	CW713R
	2.0561	CuZn39Mn1AlPbSi	CW718R
	2.0580	CuZn40Mn1Pb1	CW720R
Leghe di zinco / Zinc Alloys	2.2140	G-ZnAl4, ZP3	ZAMAK 3
Bronzo / Bronze	2.1086	G-CuSn10	-
	2.1093	CuSn7Zn2Pb3-C	CC492K
	2.1096	CuSn5Zn5Pb5-C	CC491K

Continua Bronzo / Continue Bronze / Bronze à suivre >

5.4 — Bronzo ad alta resistenza Rm < 1500 N/mm² / High strength bronze - Bronze haute résistance

W-Nr.	DIN - Germany	-
2.0932	CuAl8Fe3	Ampco12, CW303G
2.0936	CuAl10Fe3Mn2	Ampco16, Ampco 15, CW306G
2.0940	CuAl10Fe	CB331G
2.0966	CuAl10Ni5Fe4	CW307G
2.0978	CuAl11Fe6Ni6	CW308G
-	CuAl11Fe4	UNI 5274
2.0882	CuNi30MnFe	CW354H

S — Titanio - Titanium - Titane

6.1 — Titanio puro non legato Rm < 700 N/mm² / Pure titanium unalloyed - Titane pur non allié

W-Nr.	DIN - Germany	-
3.7025	Ti 99.8	Ti-Grade 1
3.7035	Ti 99.7	Ti-Grade 2
3.7055	Ti 99.6	Ti-Grade 3
3.7065	Ti 99.5	Ti-Grade 4

6.2 — Leghe di titanio Rm < 900 N/mm² / Titanium alloys - Alliage de titane

6.3 — Leghe di titanio Rm < 1400 N/mm² / Titanium alloys - Alliage de titane

W-Nr.	DIN - Germany	-
3.7124	TiCu2	T-U2
3.7154	TiAl6Zr5	T-A6ZD
3.7164, 3.7165	TiAl6V4	Titan Grade 5
3.7174	TiAl6V6Sn2	-
3.7184	TiAl4Mo4Sn2	-

S — Nichel - Nickel

7.1 — Nichel non legato Rm < 500 N/mm² / Pure nickel - Nickel pure

W-Nr.	DIN - Germany	-
1.3911	Rni 24	
1.3912	Ni 36	Invar 36
1.3926	Rni 12	
1.3927	Rni 8	
2.4060	Ni 99,6	Nickel 200, N02200
2.4061	LC-Ni 99,6	Nickel 201, N02201
2.4066	Ni 99,6	Nickel 200, N02200
2.4068	LC-Ni99,6	Nickel 201, N02201

7.2 — Leghe di Nichel Rm < 900 N/mm² / Nickel alloys - Alliages de nickel

7.3 — Leghe di Nichel Rm < 1600 N/mm² / Nickel alloys - Alliages de nickel

W-Nr.	DIN - Germany	Denom. comm. / Trade name
2.4360	NiCu30Fe	Monel 400
2.4375	NiCu30Al	Monel K500

Continua leghe Nichel / Continue Nickel alloys / Alliages de Nickel à suivre >

S	7.2 – 7.3		
	W-Nr.	**DIN - Germany**	**Denom. comm. / Trade name**
	2.4602	NiCr21Mo14W	Hastelloy C-22, Alloy 22
	2.4630	NiCr20Ti	Nimonic 75, Alloy 75
	2.4631	NiCr20TiAl	Nimonic 80A, Alloy 80A
	2.4634	NiCo20Cr15MoAlTi	Nimonic 105
	2.4636	NiCo15Cr15MoAlTi	Udimet 700
	2.4654	NiCr20Co13Mo4Ti3AL	Waspaloy
	2.4662	NiCr13Mo6Ti3	Nimonic 901
	2.4665	NiCr22Fe18Mo	Hastelloy X, Inconel HX
	2.4668	NiCr19Nb5Mo3	Inconel 718, Alloy 718
	2.4670	G-NiCr13Al6MoNb	Nimocast 713
	2.4674	NiCo15Cr10MoAlTi	Nimocast PK24
	2.4816	NiCr15Fe8	Inconel 600, Alloy 600
	2.4856	NiCr22Mo9Nb	Inconel 625, alloy 625
N	**Materie plastiche - Synthetic materials - Matériaux synthétiques**		
8.1	**Materiali termoplastici - truciolo lungo Rm < 80 N/mm²** **Thermoplastics, long chipping - Thermoplastiques, copeaux longue**		
ABS	Acrylonitrile Butadiene Styrene	Lustran, Novodur, Polyman, Ronfalin, Terluran	
PE	Polyethylene	Lupolen	
PP	Polypropylene	Hostalen PP	
PVC	Polyvinyl chloride	Hostalit, Vestolit, Vinoflex	
PS	Polystyrene	PS (Polystyrol) - Hostyron, Trolitul, Vestyron	
PMMA	Polymethyle acryle	Plexiglas	
PTFE	Polytetrafluorethylene	Teflon, Hostaflon	
PA	Polyamide	Nylon, Ultramid, Capron, Technyl	
PC	Polycarbonate	Lexan, Makralon	
PI	Thermoplastic polyamide	Kinel, Kapton, Vespel	
POM	Polyoxymethylen, polyacetal	Tenac, Delrin, Hostaform	
8.2	**Materiali termoindurenti - truciolo corto Rm < 110 N/mm²** **Duroplastic, short chipping - Matières thermodurcissables, copeaux courts**		
PF	Phenol formaldehyde	Bakelit, Pertinax	
MF	Melamine formaldehyde	Albanit, Duropal, Formica	
UF	Urea formaldehyde	Kaurit, Pollopas, Resamin, Resopal, Urecoll	
8.3	**Materie plastiche con fibre di rinforzo Rm < 1500 N/mm²** **Reinforced plastic materials - Matiéres synthétiques renforcés par fibres**		
AFK	Aramid Kevlar Fiber		
BFK	Boron Fibre reinforced plastics		
CFK	Carbon-fiber reinforced plastics		
GFK	Glass fibre reinforced, fiberglass		

QUESTIONARIO TECNICO

Maschiatura ad asportazione e rullatura

Compilatore: Data:

Prot:

❑ Campionatura / Quantità:_ _ _ _ _ ❑ Ordine / Quantità:_ _ _ _ _ _ _ _ ❑ Reclamo

Cliente: Tel: Fax:

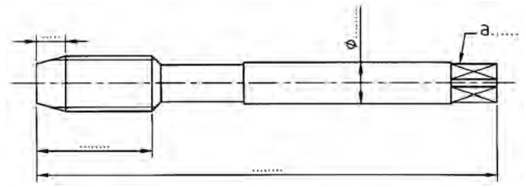
Persona di rif: e-mail:

1. Filettatura

Ø x Passo

Toll. Norma:

Descrizione



2. Particolare da lavorare:

Materiale: Sigla:

resistenza N/mm² Durezza: ❑ HB ❑ HRC

Caratteristiche particolari del materiale:

Truciolo: ❑ corto ❑ medio ❑ lungo

Ø preforo

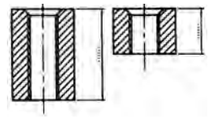
ottenuto per…

❑ Foratura ❑ Prefuso

❑ Prestampato ❑ Tornitura

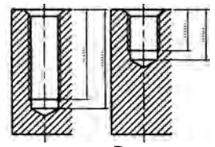
Alesatura: SI NO

Foro passante



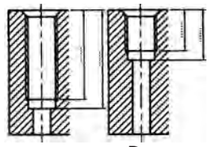
….x D

Foro cieco



….x D

Foro cieco/passante



….x D

3. Macchina marca e tipo:

❑ Verticale ❑ *Obliqua*

❑ Orizzontale ❑ *Altro*

Avanzamento ❑ Patrona ❑ Manuale ❑ Idraulico ❑ Meccanico

❑ CNC Andata Ritorno

%Prog. avanzamento assiale

Parametri di taglio Andata Ritorno

Vc (m/min)

N°giri (1/min)

3.1. Mandrino (marca): N° mandrini _ _ _ _ ❑ Adduzione interna

Maschiatura rigida:

❑ In pinza ❑ Calettamento

❑ Micro - compensazione ❑ Weldon

❑ Altro:

Maschiatura compensata:

❑ Compensazione assiale in rientro e sfilamento ❑ Solo sfilamento

❑ Altro:

4. Lubrificante:

❑ Emulsione % _ _ _ _ _ _ _ ❑ Olio intero ❑ Lubrificazione Minimale (MMS) ❑ Aria

5. Problematica:

6. Dati concorrenza:

Rivestimento: Resa:

UFS srl via Giotto 20, 10080 Sparone (TO) Italy • ufssrl@ufs.it - Tel 0039-0124-818001 - Fax 0039-0124-818003

TECHNICAL FORM

Thread cutting and thread forming

Writer: | Date:

N° Prot:

❑ Sampling / Quantity:_ _ _ _ _ ❑ Order / Quantity:_ _ _ _ _ _ _ _ ❑ Complaint

Customer: | Phone: | Fax:

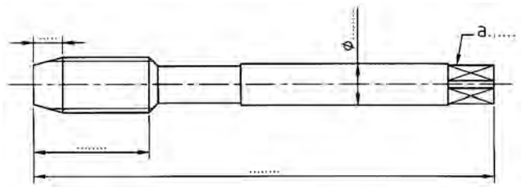
Reference person: | e-mail:

1. Thread size

Ø x Pitch

Tolerance | Norm:

Description tap



2. Work-Piece:

Material: | Code:

Tensile strength N/mm² | Hardness: ❑ HB ❑ HRC

Chip type: ❑ short ❑ medium ❑ lOng

Particular characteristic of material:

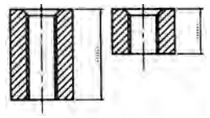
Ø Core hole

Obtained from…

❑ Drilling ❑ Prefuse
❑ Molding ❑ Turning

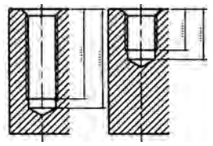
Boring: YES NOT

Through hole



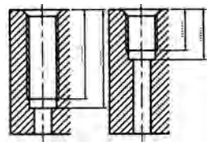
….x D

Blind hole



….x D

Blind/through hole



….x D

3. Machine brand and type:

❑ Vertical ❑ *Obliquely*
❑ Horizontal ❑ *Other*

Feed ❑ Leadscrew ❑ Manual ❑ Hydraulic ❑ Mechanic

❑ CNC Advance Reverse

%Prog. axial feed

Cutting speed

Vc (m/min) Advance Reverse

N°giri (1/min)

3.1. Tool holder (Manufacturer):

N° spindle _ _ _ _ ❑ Internal coolant supply

Rigid tapping:

❑ Collets ❑ Fitting
❑ Micro - compensation ❑ Weldon
❑ Other:

Tapping with compensation:

❑ With axial compensation in compression and extension
❑ Extension only
❑ Other:

4. Coolant (brand):

❑ Emulsion % _ _ _ _ _ _ _ ❑ Cutting oil ❑ Minimal lubrication (MMS) ❑ To dry

5. Problems:

6. Competitor's characteristics:

Surface treatment: Tool's life:

UFS srl via Giotto 20, 10080 Sparone (TO) Italy • ufssrl@ufs.it - Tel 0039-0124-818001 - Fax 0039-0124-818003

QUESTIONNAIRE TECHNIQUE

Taraudage normal ou par déformation

Compilateur : | Date:

Protocole:

❑ Échantillonnage/quantité:_ _ _ _ _ ❑ Commande/ Quantité: _ _ _ _ _ _ _ _ _ _ _ _ ❑ Reclamation

Client: | Tel: | Fax:

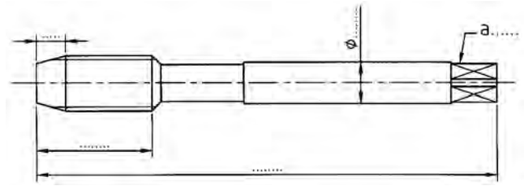
référence client: | e-mail:

1. Filetage

Ø x Pass

Tolérance | Norme:

Description



2. Pièce à usiner:

Matériau: | Norme:

Résistance N/mm² | Dureté: ❑ HB ❑ HRC

Copeau: ❑ court ❑ moyen ❑ long

Particularités de la matière:

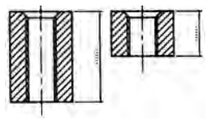
Ø preforo

obtenue par…

❑ Perçage ❑ Fusion
❑ Moulage ❑ Tournage

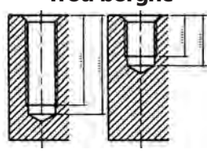
Alésage: OUI NON

Trou débouchant



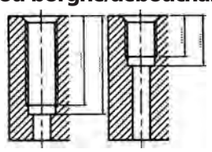
….x D

Trou borgne



….x D

Trou borgne/débouchant



….x D

3. Machine marque et type:

❑ Vertical ❑ *Oblique*
❑ Horizontal ❑ *Autres*

Avance ❑ Patronne ❑ Manuelle ❑ Hydraulique ❑ Mécanique

❑ CNC Aller Retour

% Prog. avance axiale

Paramètres de coupe

Vc (m/min) Aller Retour

N ° tours (1/min)

3.1. Broche (marque):

Type de Mandrin _ _ _ _ ❑ lubrification axiale

Taraudage rigide :

❑ Par pinces ❑ Bridage -Fixation
❑ Micro-compensation ❑ Weldon
❑ Autres:

Taraudage compensé :

❑ Compensation axiale en compression et en extension
❑ Seulement en extension
❑ Autres:

4. Lubrifiant:

❑ Émulsion % _ _ _ _ _ _ _ ❑ Huile Entiere ❑ Lubrification Minimale (MMS) ❑ Air

5. Problématique :

6. Données de la concurrence:

Revêtement : Resa:

UFS srl via Giotto 20, 10080 Sparone (TO) Italy • ufssrl@ufs.it - Tel 0039-0124-818001 - Fax 0039-0124-818003

Accettazione dell'ordine - Acceptance of the order - Prise en compte de la commande

Sono considerati ordini validi solo quelli scritti. In caso di ordine telefonico dovrà seguire pertanto la conferma scritta.

Only written orders are considered as valid. Telephone orders must be confirmed in writing.

Sont considérés comme ordres valides, les commandes suivies d'une confirmation écrite.
Idem pour les commandes Commande téléphoniques.

Consegna - Delivery - Livraison

Gli ordini verranno evasi dal nostro magazzino in Sparone (TO) in base alla disponibilità dello stesso.
I termini di consegna da noi indicati nelle offerte si intendono validi, salvo imprevisti.

The orders will be sent from our store in Sparone (TO) depending on the availability of the goods.
Our delivery terms shown in the offers are intended as valid, circumstances permitting.

Les commandes seront expédiées depuis notre entrepôt de Sparone (TO), sous réserve de disponibilité des produits. Les délais de livraison indiqués dans nos offres sont exacts, sauf « circonstances imprévues ».

Spedizione - Shipment - Expédition

La merce viaggia sempre a rischio e pericolo del committente, anche in caso di merce franco destino. Saranno utilizzati i corrieri celeri, giornalieri, ad esclusione del servizio postale, se non richiesto espressamente dal cliente. In tal caso il rischio di mancato recapito, o di mancata rintracciabilità della merce sarà di esclusiva competenza del cliente. I prodotti sono confezionati in contenitori in P.P. singoli o multipli, atti a preservare l'integrità degli utensili durante il trasporto.

The goods always travels at the buyer's risk, also in the case of goods free at destination. Fast couriers are used which deliver on the same day as ordered, not using the postal service, unless expressly requested by the customer. If the goods do not arrive, or if the goods cannot be traced, it will be the exclusive responsibility of the customer and the goods are shipped after payment. The products are packaged in single or multiple P.P containers, to preserve the integrity of the tools during transport.

Les marchandises voyagent toujours aux risques et périls du client, même en cas de marchandise franco de port. Nous utilisons les transports rapides, tous les jours, à l'exclusion de la poste, sauf demande du client. Dans ce cas, le risque de défaut de livraison ou non-traçabilité des marchandises sont sous la seule responsabilité du client. Les produits sont conditionnés dans un emballage en P.P. simples ou multiples, afin de préserver l'intégrité des outils pendant le transport.

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Le informazioni e le caratteristiche tecniche possono essere soggette a variazioni senza preavviso.
I dati tecnici ivi contenuti sono da considerarsi salvo errori e/o omissioni.
Immagini e testi possono quindi subire variazioni rispetto a quanto riportato sul presente catalogo.
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The technical data contained herein are to be considered, errors and omissions excepted. Images and texts can therefore be subject to variations compared to what is present on the catalogue.
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It is advisable to consult the website as main reference for the updating of data.

Les informations et les spécifications sont sujettes à modification sans préavis. Les données techniques qui y figurent sont sous réserve d'erreurs ou d'omissions.
Images et textes peuvent alors varier de celles indiquées sur le présent catalogue.
UFS srl rendra compte des changements via le site web www.ufs.it, qui est la principale référence de mise à jour des données.

M		
CODE	Pag. cat.	Series
E92M…	92	LINE
E92M…TG	92	*S-PLUS*
E92M…V	92	LINE
E92M…VS	98	LINE
E93M…	92	LINE
E93M…TG	92	*S-PLUS*
E93M…V	92	LINE
E93M…VS	98	LINE
E94EM…FOR-TXC	94	LINE
E94EM…TXC	94	LINE
E94M…FOR-TXC	93	LINE
E94M…TXC	93	LINE
E95EM…FOR-TXC	94	LINE
E95EM…TXC	94	LINE
E95M…FOR-TXC	93	LINE
E95M…TXC	93	LINE
K20M…TXC	59	TOP
K21M…TXC	59	TOP
K22M…FOR-TXC	58	TOP
K23M…FOR-TXC	58	TOP
K24M…FORY-XP	69	TOP
K24M…X-TXC	72	TOP
K24M…TXC	71	TOP
K24M…XP	69	TOP
K25M…FORY-XP	69	TOP
K25M…TXC	71	TOP
K25M…XP	69	TOP
K26EM…AHI	56	TOP
K26EM…FOR-AHI	56	TOP
K26EM…FORY-AHI	56	TOP
K26M…FOR-TX	55	TOP
K26M…FORY-TX	55	TOP
K26M…SP-TX	55	TOP
K26M…TX	55	TOP
K27EM…AHI	56	TOP
K27EM…FOR-AHI	56	TOP
K27EM…FORY-AHI	56	TOP
K27M…FOR-TX	55	TOP
K27M…FORY-TX	55	TOP
K27M…TX	55	TOP

M		
CODE	Pag. cat.	Series
K2CCEM…AHI	104	K-ROLL
K2CCEM…TG	104	K-ROLL
K2CCM…AHI	102	K-ROLL
K2CCM…FOR-AHI	103	K-ROLL
K2CCM…FOR-TG	103	K-ROLL
K2CCM…FORY-TG	103	K-ROLL
K2CCM…TG	102	K-ROLL
K3CCEM…FOR-TG	104	K-ROLL
K3CCM…TG	102	K-ROLL
K40M…FOR-TXC	81	TOP
K40M…FOR-XP	80	TOP
K40M…TXC	81	TOP
K40M…XP	80	TOP
K41M…FOR-TXC	81	TOP
K41M…FOR-XP	80	TOP
K41M…TXC	81	TOP
K41M…XP	80	TOP
K42M…CT	82	TOP
K42M…NI-CT	83	TOP
K42M…V	82	TOP
K42MJ…CT	82	TOP
K42MJ…NI-CT	83	TOP
K43M…CT	82	TOP
K43M…V	82	TOP
K44M…FOR-XP	80	TOP
K45M…FOR-XP	80	TOP
K52M…CT	74	TOP
K52M…NI-CT	75	TOP
K52MJ…CT	74	TOP
K52MJ…NI-CT	75	TOP
K53M…CT	74	TOP
K80M…FOR-TXC	97	TOP
K80M…TXC	97	TOP
K81M…FOR-TXC	97	TOP
K81M…TXC	97	TOP
K82M…FOR-XP	95	TOP
K82M…XP	95	TOP
K82M…X-TXC	98	TOP
K83M…FOR-XP	95	TOP
K83M…XP	95	TOP
K83M…X-TXC	98	TOP

M		
CODE	Pag. cat.	Series
L24M…	65	LINE
L24M…CT	65	LINE
L25M…	65	LINE
L25M…CT	65	LINE
L60M…	89	LINE
L60M…CT	89	LINE
L61M…	89	LINE
L61M…CT	89	LINE
LANCIAM…	49	LINE
P24M…	68	*PLUS*
P24M…TG	68	*S-PLUS*
P24M…V	68	*PLUS*
P25M…	68	*PLUS*
P25M…TG	68	*S-PLUS*
P25M…V	68	*PLUS*
P2CCM…AHI	101	P-ROLL
P2CCM…LH-T	101	P-ROLL
P2CCM…T	101	P-ROLL
P2SCM…T	100	P-ROLL
P3CCM…T	101	P-ROLL
P3SCM…T	100	P-ROLL
P60M…	91	*PLUS*
P60M…V	91	*PLUS*
P60M…XP	91	*PLUS*
P61M…	91	*PLUS*
P61M…V	91	*PLUS*
P61M…XP	91	*PLUS*
P-NPM…	105	GO/NO-GO
S20M…FOR-TXC	57	TOP
S20M…SP-TXC	57	TOP
S20M…TXC	57	TOP
S24M…TXC	70	TOP
S80M…FOR-TXC	96	TOP
S80M…TXC	96	TOP
V24M…TXC	72	TOP
V24M…VS	72	LINE
V25M…TXC	72	TOP
V25M…VS	72	LINE
V82M…FOR-TXC	98	TOP
V82M…TXC	98	TOP
V83M…FOR-TXC	98	TOP
V83M…TXC	98	TOP
XT20M…AHI	59	TOP

MF		
CODE	Pag. cat.	Series
00MF…	108	LINE
03MF…	108	LINE
E20MF…	109	LINE
E20MF…SP	109	LINE
E21MF…	110,111,112	LINE
E21MF…LH	113	LINE
E21MF…LH-SP	113	LINE
E21MF…SP	110	LINE
E24MF…	120	LINE
E24MF…T	120	LINE
E24MF…V	120	LINE
E24MF…XP	120	LINE
E25MF…	121,122	LINE
E25MF…+0,1	124	LINE
E25MF…4H	124	LINE
E25MF…-6G	124	LINE
E25MF…-7G	124	LINE
E25MF…AL	125	LINE
E25MF…LH	123	LINE
E25MF…LH-T	123	LINE
E25MF…T	121,122	LINE
E25MF…V	121,122	LINE
E25MF…XP	121,122	LINE
E27MF…CT	114	LINE
E27MF…FOR-CT	114	LINE
E27MF…NQ	114	LINE
E27MF…SP-CT	114	LINE
E27MF…SP-NQ	114	LINE
E41MF…	132,133	LINE
E41MF…FOR-T	132,133	LINE
E41MF…SP	132,133	LINE
E41MF…SP-T	132,133	LINE
E41MF…SP-V	132,133	LINE
E41MF…T	132,133	LINE
E41MF…V	132,133	LINE
E60MF…	138	LINE
E60MF…T	138	LINE
E60MF…V	138	LINE
E60MF…XP	138	LINE
E61MF…	139,140,141	LINE
E61MF…+0,1	143	LINE
E61MF…-6G	143	LINE
E61MF…LH	142	LINE
E61MF…LH-V	142	LINE
E61MF…LH-XP	142	LINE

MF		
CODE	Pag. cat.	Series
E61MF…T	139,140,141	LINE
E61MF…V	139,140,141	LINE
E61MF…XP	139,140,141	LINE
E61MF…XP+0,1	143	LINE
E61MF…XP-6G	143	LINE
E71MF…	144	LINE
E71MF…SP	144	LINE
E93MF…	145	LINE
E93MF…TG	145	*S-PLUS*
E93MF…V	145	LINE
E93MF…VS	149	LINE
K21MF…TXC	119	TOP
K22MF…FOR-TXC	118	TOP
K23MF…FOR-TXC	118	TOP
K25MF..X-TXC	129	TOP
K25MF..FORY-XP	126	TOP
K25MF…TXC	128	TOP
K25MF…XP	126	TOP
K27EMF…AHI	116	TOP
K27EMF…FOR-AHI	116	TOP
K27EMF…FORY-AHI	116	TOP
K27MF…FOR-TX	115	TOP
K27MF…FORY-TX	115	TOP
K27MF…TX	115	TOP
K2CCEMF…TG	153	K-ROLL
K2CCMF…AHI	151	K-ROLL
K2CCMF…FOR-AHI	152	K-ROLL
K2CCMF…FOR-TG	152	K-ROLL
K2CCMF…FORY-TG	152	K-ROLL
K2CCMF…TG	151	K-ROLL
K3CCEMF…FOR-TG	153	K-ROLL
K3CCMF…TG	151	K-ROLL
K41MF…FOR-XP	134	TOP
K41MF…XP	134	TOP
K42MF…CT	136	TOP
K42MF…NI-CT	137	TOP
K42MJF…CT	136	TOP
K42MJF…NI-CT	137	TOP
K43MF…CT	136	TOP
K45MF…FOR-XP	134	TOP
K52MF…CT	130	TOP
K52MF…NI-CT	131	TOP
K52MJF…CT	130	TOP
K52MJF…NI-CT	131	TOP
K53MF…CT	130	TOP

MF		
CODE	Pag. cat.	Series
K81MF…FOR-TXC	148	TOP
K81MF…TXC	148	TOP
K83MF…FOR-XP	146	TOP
K83MF…XP	146	TOP
P25MF…TG	126	*S-PLUS*
P2CCMF…LH-T	150	P-ROLL
P2CCMF…T	150	P-ROLL
P3CCMF…T	150	P-ROLL
P-NPMF…	154-155	GO/NO-GO
S20MF…FOR-TXC	117	TOP
S20MF…TXC	117	TOP
S24MF…TXC	127	TOP
S80MF…FOR-TXC	147	TOP
S80MF…TXC	147	TOP
V25MF…TXC	129	TOP
V25MF…VS	129	LINE
V83MF…FOR-TXC	149	TOP
V83MF…TXC	149	TOP

UNC

CODE	Pag. cat.	Series
00UNC...	160	LINE
03UNC...	160	LINE
E20UNC...	161	LINE
E21UNC...	161	LINE
E21UNC...SP	161	LINE
E24UNC...	163	LINE
E24UNC...T	163	LINE
E24UNC...V	163	LINE
E25UNC...	163	LINE
E25UNC...T	163	LINE
E25UNC...V	163	LINE
E26UNC...CT	162	LINE
E26UNC...FOR-CT	162	LINE
E26UNC...SP-CT	162	LINE
E27UNC...CT	162	LINE
E27UNC...FOR-CT	162	LINE
E27UNC...SP-CT	162	LINE
E40UNC...	167	LINE
E40UNC...T	167	LINE
E41UNC...	167	LINE
E41UNC...SP	167	LINE
E41UNC...SP-T	167	LINE
E41UNC...T	167	LINE
E60UNC...	169	LINE
E60UNC...T	169	LINE
E60UNC...V	169	LINE
E60UNC...XP	169	LINE
E61UNC...	169	LINE
E61UNC...T	169	LINE
E61UNC...V	169	LINE
E61UNC...XP	169	LINE
E92UNC...	170	LINE
E92UNC...TG	170	*S-PLUS*
E92UNC...V	170	LINE
E93UNC...	170	LINE
E93UNC...TG	170	*S-PLUS*
E93UNC...V	170	LINE
K24UNC...FORY-XP	164	TOP
K24UNC...XP	164	TOP
K25UNC...FORY-XP	164	TOP
K25UNC...XP	164	TOP
K2CCUNC...FORY-TG	173	K-ROLL
K2CCUNC...TG	173	K-ROLL
K42UNC...CT	168	TOP
K42UNJC...CT	168	TOP
K43UNC...CT	168	TOP

UNC

CODE	Pag. cat.	Series
K52UNC...CT	166	TOP
K52UNJC...CT	166	TOP
K53UNC...CT	166	TOP
K82UNC...FOR-XP	171	TOP
K82UNC...XP	171	TOP
K83UNC...FOR-XP	171	TOP
K83UNC...XP	171	TOP
P24UNC...TG	164	*S-PLUS*
P25UNC...TG	164	*S-PLUS*
P2CCUNC...T	173	P-ROLL
P-NPUNC...	174	GO/NO-GO
V24UNC...TXC	165	TOP
V25UNC...TXC	165	TOP
V82UNC...FOR-TXC	172	TOP
V82UNC...TXC	172	TOP
V83UNC...FOR-TXC	172	TOP
V83UNC...TXC	172	TOP

UNF

CODE	Pag. cat.	Series
00UNF...	178	LINE
03UNF...	178	LINE
E20UNF...	179	LINE
E21UNF...	179	LINE
E21UNF...SP	179	LINE
E24UNF...	181	LINE
E24UNF...T	181	LINE
E24UNF...V	181	LINE
E25UNF...	181	LINE
E25UNF...T	181	LINE
E25UNF...V	181	LINE
E26UNF...CT	180	LINE
E26UNF...FOR-CT	180	LINE
E27UNF...CT	180	LINE
E27UNF...FOR-CT	180	LINE
E27UNF...SP-CT	180	LINE
E40UNF...	185	LINE
E40UNF...T	185	LINE
E41UNF...	185	LINE
E41UNF...SP	185	LINE
E41UNF...SP-T	185	LINE
E41UNF...T	185	LINE
E60UNF...	187	LINE
E60UNF...T	187	LINE
E60UNF...V	187	LINE
E60UNF...XP	187	LINE

UNF

CODE	Pag. cat.	Series
E61UNF...	187	LINE
E61UNF...T	187	LINE
E61UNF...V	187	LINE
E61UNF...XP	187	LINE
E92UNF...	188	LINE
E92UNF...TG	188	*S-PLUS*
E92UNF...V	188	LINE
E93UNF...	188	LINE
E93UNF...TG	188	*S-PLUS*
E93UNF...V	188	LINE
K24UNF...FORY-XP	182	TOP
K24UNF...XP	182	TOP
K25UNF...FORY-XP	182	TOP
K25UNF...XP	182	TOP
K2CCUNF...FORY-TG	191	K-ROLL
K2CCUNF...TG	191	K-ROLL
K42UNF...CT	186	TOP
K42UNJF...CT	186	TOP
K43UNF...CT	186	TOP
K52UNF...CT	184	TOP
K52UNJF...CT	184	TOP
K53UNF...CT	184	TOP
K82UNF...FOR-XP	189	TOP
K82UNF...XP	189	TOP
K83UNF...FOR-XP	189	TOP
K83UNF...XP	189	TOP
P24UNF...TG	182	*S-PLUS*
P25UNF...TG	182	*S-PLUS*
P2CCUNF...T	191	P-ROLL
P-NPUNF...	192	GO/NO-GO
V24UNF...TXC	183	TOP
V25UNF...TXC	183	TOP
V82UNF...FOR-TXC	190	TOP
V82UNF...TXC	190	TOP
V83UNF...FOR-TXC	190	TOP
V83UNF...TXC	190	TOP

UNEF

CODE	Pag. cat.	Series
E21UNEF...	196	LINE
E21UNEF...SP	196	LINE
E25UNEF...	197	LINE
E61UNFE...	198	LINE
P-NPUNEF...	192	GO/NO-GO

UNS

CODE	Pag. cat.	Series
E20-24UNS...	200	LINE
E20-36UNS..	200	LINE
E20-40UNS...	200	LINE
E20-48UNS...	200	LINE
E21-14UNS...	200	LINE
E21-24UNS...	200	LINE
E21-40UNS...SP	200	LINE

8UN

CODE	Pag. cat.	Series
E21-8UN	201	LINE
E81-8UN	201	LINE
E81-8UN...XP	201	LINE

12UN

CODE	Pag. cat.	Series
E21-12UN	201	LINE
E81-12UN	201	LINE
E81-12UN...XP	201	LINE

GAS

CODE	Pag. cat.	Series
00G...	204	LINE
03G...	204	LINE
E21G...	205	LINE
E21G...T	205	LINE
E25G...	207	LINE
E25G...T	207	LINE
E25G...V	207	LINE
E27G...CT	206	LINE
E27G...NQ	206	LINE
E41G...	211	LINE
E41G...+0,05	211	LINE
E41G...T	211	LINE
E41G...V	211	LINE
E61G...	212	LINE
E61G...T	212	LINE
E61G...V	212	LINE
E61G...XP	212	LINE

GAS

CODE	Pag. cat.	Series
E93EG...XP	213	LINE
E93G...	213	LINE
E93G...TG	213	*S-PLUS*
E93G...V	213	LINE
K25G...XP	208	TOP
K27G...FOR-TX	206	TOP
K27G...TX	206	TOP
K2CCG...FOR-TG	217	K-ROLL
K2CCG...TG	217	K-ROLL
K83G...FOR-XP	214	TOP
K83G...XP	214	TOP
P25G...TG	208	*S-PLUS*
P2CCG...T	217	P-ROLL
P-NPG...	218	GO/NO-GO
S24G...TXC	209	TOP
S80G...FOR-TXC	215	TOP
S80G...TXC	215	TOP
V25G...TXC	210	TOP
V83G...FOR-TXC	216	TOP
V83G...TXC	216	TOP

RP

CODE	Pag. cat.	Series
E21RP...	219	LINE
E21RP...T	219	LINE
E61RP...T	219	LINE

NPSM

CODE	Pag. cat.	Series
E21NPSM...	220	LINE
E21NPSM...T	220	LINE
E61NPSM...	220	LINE
E61NPSM...T	220	LINE

NPSF

CODE	Pag. cat.	Series
E21NPSF...	221	LINE
E21NPSF...T	221	LINE
E61NPSF...	221	LINE
E61NPSF...T	221	LINE

RC

CODE	Pag. cat.	Series
E21CRC...	224	LINE
E21LRC...	224	LINE
E21LRC...TXC	224	LINE
E41CRC...V	224	LINE
P-NPRC...	225	GO/NO-GO

NPT

CODE	Pag. cat.	Series
E21CNPT...	226	LINE
E21CNPT...AZ	227	LINE
E21LNPT...	226	LINE
E21LNPT...AZ	227	LINE
E21LNPT...TXC	226	LINE
E41CNPT...V	226	LINE
P-NPNPT...	229	GO/NO-GO

NPTF

CODE	Pag. cat.	Series
E21CNPF...	228	LINE
E21LNPF...	228	LINE
E21LNPF...TXC	228	LINE
E41CNPF...V	228	LINE
P-NPNPTF...	229	GO/NO-GO

BSW

CODE	Pag. cat.	Series
00W...	232	LINE
03W...	232	LINE
E24W...	233	LINE
E24W...T	233	LINE
E25W...	233	LINE
E25W...T	233	LINE
E60W...	234	LINE
E60W...T	234	LINE
E61W...	234	LINE
E61W...T	234	LINE

PG

CODE	Pag. cat.	Series
E21PG...	235	LINE
E21PG...T	235	LINE

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NOTE

Tr

Rd

EG M

EG UNC

EG UNF

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DRILL TAPS - FORETS TARAUDERS

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