SELECTION GUIDE

YG THREADING TOOLS

HSS-E & HSS PIPE TAP

- For Tapping National Pipe Threads

Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

HOLE TYPE	Max. 2.5xD Blind Hole			Max. 2.5xD Blind / Through Hole			Max. 2.0xD Blind / Through Hole			
TOOL MATERIAL	HSS-E			HSS-E			HSS-E			
CHAMFER LEAD	2P-3P			2P-3P			2P-3P			
FLUTE TYPE	Spiral Flute			Spiral Flute			Straight Flute			
SPIRAL FLUTE ANGLE	R15			R15			-			
SERIES M										
SERIES M/MF										
SERIES UNC										
SERIES UNC/UNF										
SERIES UNC/UNF/UNS										
SERIES UNC/UN8										
SERIES NPT										
SERIES NPTF	Q1 (p.B312)	Q0 (p.B312)	Q6 (p.B312)	Q9 (p.B313)	R0 (p.B313)	R1 (p.B313)	R7 (p.B314)	R8 (p.B314)	R9 (p.B314)	S0 (p.B314)
SERIES NPS/NPSF										
SURFACE TREATMENT / COATING	Bright	Steam Oxide	Hardslick	Bright	TiN	Hardslick	Bright	TiN	Hardslick	Nitrided Steam Oxide
MODEL										





ISO	VDI 3323	Material Description	Composition / Structure	Heat Treatment	HB	HRc	Q1	Q0	Q6	Q9	R0	R1	R7	R8	R9	S0
P	1	Non-alloy steel	About 0.15% C	Annealed	125		○ 15-40	○ 15-40	○ 15-40	◎ 15-40	◎ 15-40	◎ 15-40	◎ 15-40	◎ 15-40	◎ 15-40	◎ 15-40
P	2	Non-alloy steel	About 0.45% C	Annealed	190	13	○ 15-40	○ 15-40	○ 15-40	◎ 15-40	◎ 15-40	◎ 15-40	◎ 15-40	◎ 15-40	◎ 15-40	◎ 15-40
P	3	Non-alloy steel	About 0.45% C	Quenched & Tempered	250	25	◎ 10-25	◎ 10-25	◎ 10-25	◎ 10-25	◎ 10-25	◎ 10-25	◎ 10-25	◎ 10-25	◎ 10-25	◎ 10-25
P	4	Non-alloy steel	About 0.75% C	Annealed	270	28	○ 10-20	○ 10-20	○ 10-20	○ 10-20	○ 10-20	○ 10-20	○ 10-20	○ 10-20	○ 10-20	○ 10-20
P	5	Non-alloy steel	About 0.75% C	Quenched & Tempered	300	32	○ 10-20	○ 10-20	○ 10-20	○ 10-20	○ 10-20	○ 10-20	○ 10-20	○ 10-20	○ 10-20	○ 10-20
P	6	Low alloy steel		Annealed	180	10	◎ 10-25	◎ 10-25	◎ 10-25	◎ 10-25	◎ 10-25	◎ 10-25	◎ 10-25	◎ 10-25	◎ 10-25	◎ 10-25
P	7	Low alloy steel		Quenched & Tempered	275	29	○ 10-25	○ 10-25	○ 10-25	○ 10-25	○ 10-25	○ 10-25	○ 10-25	○ 10-25	○ 10-25	○ 10-25
P	8	Low alloy steel		Quenched & Tempered	300	32	○ 10-25	○ 10-25	○ 10-25	○ 10-25	○ 10-25	○ 10-25	○ 10-25	○ 10-25	○ 10-25	○ 10-25
P	9	Low alloy steel		Quenched & Tempered	350	38										
P	10	High alloyed steel, and tool steel		Annealed	200	15										
P	11	High alloyed steel, and tool steel		Quenched & Tempered	325	35										
M	12	Stainless steel	Ferritic / Martensitic	Annealed	200	15	◎ 10-25	◎ 10-25	◎ 10-25							
M	13	Stainless steel	Martensitic	Quenched & Tempered	240	23	◎ 10-25	◎ 10-25	◎ 10-25							
M	14	Stainless steel	Austenitic		180	10	○ 10-25	○ 10-25	○ 10-25							
K	15	Grey cast iron	Pearlitic / ferritic		180	10				◎ 15-50	◎ 15-50	◎ 15-50	○ 15-50	○ 15-50	○ 15-50	○ 15-50
K	16	Grey cast iron	Pearlitic (Martensitic)		260	26				◎ 15-50	◎ 15-50	◎ 15-50	○ 15-50	○ 15-50	○ 15-50	○ 15-50
K	17	Nodular cast iron	Ferritic		160	3	○ 15-50	○ 15-50	○ 15-50	◎ 15-50	◎ 15-50	◎ 15-50	◎ 15-50	◎ 15-50	◎ 15-50	◎ 15-50
K	18	Nodular cast iron	Pearlitic		250	25	○ 15-50	○ 15-50	○ 15-50	◎ 15-50	◎ 15-50	◎ 15-50	◎ 15-50	◎ 15-50	◎ 15-50	◎ 15-50
K	19	Malleable cast iron	Ferritic		130											
K	20	Malleable cast iron	Pearlitic		230	21										
N	21	Aluminum-wrought alloy	Not Curable		60											
N	22	Aluminum-wrought alloy	Curable	Hardened	100											
N	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable		75		○ 20-35		○ 20-35							
N	24	Aluminum-cast, alloyed	≤ 12% Si, Curable	Hardened	90											
N	25	Aluminum-cast, alloyed	> 12% Si, Not Curable		130											
N	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%		110											
N	27	Copper and Copper Alloys (Bronze / Brass)	CuZn, CuSnZn (Brass)		90											
N	28	Copper and Copper Alloys (Bronze / Brass)	CuSn, lead-free copper and electrolytic copper		100											
N	29	Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic													
N	30	Non Metallic Materials	Rubber, Wood, etc.													
S	31	Heat Resistant Super Alloys	Fe Based	Annealed	200	15										
S	32	Heat Resistant Super Alloys	Fe Based	Cured	280	30										
S	33	Heat Resistant Super Alloys	Ni or Co Based	Annealed	250	25										
S	34	Heat Resistant Super Alloys	Ni or Co Based	Cured	350	38										
S	35	Heat Resistant Super Alloys	Ni or Co Based	Cast	320	34										
S	36	Titanium Alloys	Pure Titanium		400 Rm											
S	37	Titanium Alloys	Alpha + Beta Alloys	Hardened	1050 Rm											
H	38	Hardened steel		Hardened	550	55										
H	39	Hardened steel		Hardened	630	60										
H	40	Chilled Cast Iron		Cast	400	42										
H	41	Hardened Cast Iron		Hardened	550	55										

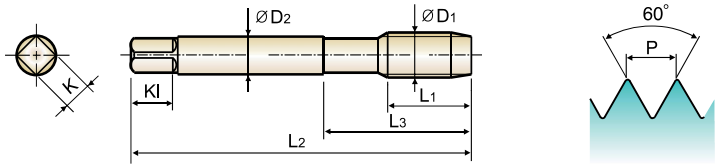
PIPE TAP

R7/R8/R9/S0 SERIES

Taper Pipe Tap : Straight Flute Standard Projection for Cast Iron & Steels

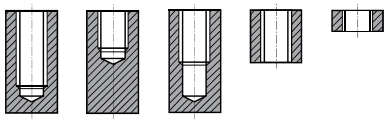
ANSI





Thread Depth / Hole Type

2.0XD



Material groups **GG**

HSS-E | NPTF | USCTI 311 | 2P~3P | Bright | TiN | Hardslick | Nitrided Steam Oxide

p.B309

Unit : Inch

Size D1	T.P.I	EDP No. Bright	TiN	Hardslick	Nitrided Steam Oxide	Overall Length L2	Thread Length L1	Neck Length L3	Shank Diameter D2	Square Size K	Square Length Kl	No. of Flute
NPTF1/16	- 27	R7020	R8020	R9020	S0020	2.130	.689	-	.312	.234	.380	4
NPTF1/8	- 27	R7200	R8200	R9200	S0200	2.130	.736	.906	.437	.328	.380	4
NPTF1/8	- 27	R7210	R8210	R9210	S0210	2.130	.748	-	.312	.234	.380	4
NPTF1/4	- 18	R7400	R8400	R9400	S0400	2.440	1.063	1.220	.562	.421	.440	4
NPTF3/8	- 18	R7480	R8480	R9480	S0480	2.560	1.063	1.220	.700	.531	.500	4
NPTF1/2	- 14	R7560	R8560	R9560	S0560	3.130	1.378	-	.687	.515	.630	4
NPTF3/4	- 14	R7700	R8700	R9700	S0700	3.250	1.378	-	.906	.679	.690	5
NPTF1	- 11-1/2	R7780	R8780	R9780	S0780	3.750	1.752	-	1.125	.843	.810	5
NPTF1-1/4	- 11-1/2	R7860	R8860	R9860	S0860	4.000	1.752	-	1.312	.984	.940	5
NPTF1-1/2	- 11-1/2	R7960	R8960	R9960	S0960	4.250	1.752	-	1.500	1.125	1.000	7
NPTF2	- 11-1/2	R7D20	R8D20	R9D20	S0D20	4.508	1.752	-	1.875	1.406	1.130	7

▶These Taps meet both NPT and NPTF Standards.

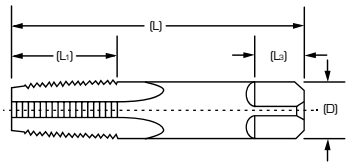
◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	○	○	◎	○	○							○	○	◎	◎		

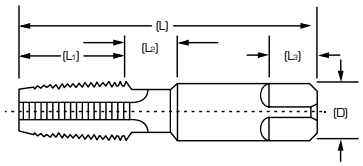
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550
Recommended																					

TECHNICAL DATA

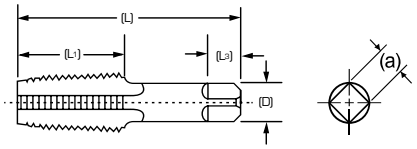
STANDARD PIPE TAP DIMENSION (STRAIGHT AND TAPER, GROUND THREAD)



Blank Design (1)



Blank Design (2)



Blank Design (3)

Nominal Size	Overall Length	Thread Length	Shank Diameter	Square Length	Square Size	Optional Neck Length
	(L)	(L_1)	(D)	(L_3)	(a)	(L_2)
1/16	2.13	.69	.3125	.38	.234	.375
1/8	2.13	.75	.3125	.38	.234	...
1/8	2.13	.75	.4375	.38	.328	.375
1/4	2.44	1.06	.5625	.44	.421	.375
3/8	2.56	1.06	.7000	.50	.531	.375
1/2	3.13	1.38	.6875	.63	.515	...
3/4	3.25	1.38	.9063	.69	.679	...
1	3.75	1.75	1.1250	.81	.843	...
1-1/4	4.00	1.75	1.3125	.94	.984	...
1-1/2	4.25	1.75	1.5000	1.00	1.125	...
2	4.25	1.75	1.8750	1.13	1.406	...
2-1/2	5.50	2.56	2.2500	1.25	1.687	...
3	6.00	2.63	2.6250	1.38	1.968	...
3-1/2	6.50	2.69	2.8125	1.50	2.108	...
4	6.75	2.75	3.0000	1.56	2.250	...

TECHNICAL DATA

Pipe Tap (Limit)

Tap Thread Limits						Reference Dimensions	
Nominal Size Inches	Threads per Inch	Projection* Inches	Projection Tolerance + or -	Taper per Foot Limits		Length	Tap Drill Size** NPT, ANPT, NPTF
				Min.	Max.	(L_1)	
1/16	27	.312	.063	.719	.781	.160	C
1/8	27	.312	.063	.719	.781	.1615	Q
1/8	18	.459	.063	.719	.781	.2278	7/16
3/8	18	.454	.063	.719	.781	.240	9/16
1/2	14	.579	.063	.719	.781	.320	45/64
3/4	14	.565	.063	.719	.781	.339	29/32
1	11-1/2	.678	.094	.719	.781	.400	1-9/64
1-1/4	11-1/2	.686	.094	.719	.781	.420	1-31/64
1-1/2	11-1/2	.699	.094	.719	.781	.420	1-23/32
2	11-1/2	.667	.094	.719	.781	.436	2-3/16
2-1/2	8	.925	.094	.734	.781	.682	2-39/64
3	8	.925	.094	.734	.781	.766	3-15/64
3-1/2	8	.938	.125	.734	.781	.821	...
4	8	.950	.125	.734	.781	.844	...

*** Distance small end of tap projects through L1 Taper Thread Ring Gage.**

**** Recommended size given permit direct tapping without reaming the hole, but only give a full thread for approx. the L1 length.**

