

SELECTION GUIDE



HSS-E & HSS
PIPE TAP

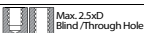
- For Tapping National Pipe Threads



Please visit
global.yg1.com/mat
for material search

◎ : Excellent ○ : Good

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

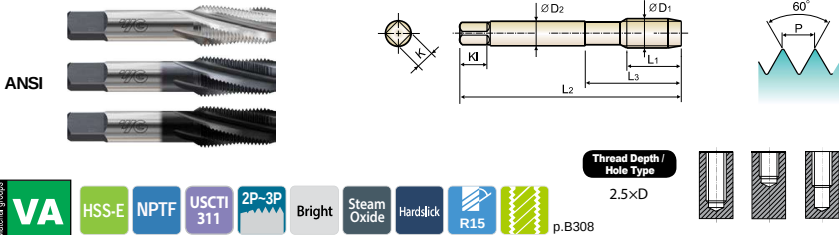


HSS-E 2P-3P Spiral Flute R15			HSS-E 2P-3P Straight Flute -			

PIPE TAP

Q1/Q0/Q6 SERIES

Taper Pipe Tap : Spiral Flute Standard Projection for Steels & Stainless Steels



Unit : Inch											
Size	T.P.I	EDP No.			Overall Length	Thread Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Flute
D1		Bright	Steam Oxide	Hardslick	L2	L1	L3	D2	K	KI	
NPTF1/16	- 27	Q1020	Q0020	Q6020	2.130	.689	-	.312	.234	.380	4
NPTF1/8	- 27	Q1200	Q0200	Q6200	2.130	.736	.906	.437	.328	.380	4
NPTF1/8	- 27	Q1210	Q0210	Q6210	2.130	.748	-	.312	.234	.380	4
NPTF1/4	- 18	Q1400	Q0400	Q6400	2.440	1.063	1.220	.562	.421	.440	4
NPTF3/8	- 18	Q1480	Q0480	Q6480	2.560	1.063	1.220	.700	.531	.500	4
NPTF1/2	- 14	Q1560	Q0560	Q6560	3.130	1.378	-	.687	.515	.630	4
NPTF3/4	- 14	Q1700	Q0700	Q6700	3.250	1.378	-	.906	.679	.690	4
NPTF1	- 11-1/2	Q1780	Q0780	Q6780	3.750	1.752	-	1.125	.843	.810	4
NPTF1-1/4	- 11-1/2	Q1860	Q0860	Q6860	4.000	1.752	-	1.312	.984	.940	5
NPTF1-1/2	- 11-1/2	Q1960	Q0960	Q6960	4.250	1.752	-	1.500	1.125	1.000	7
NPTF2	- 11-1/2	Q1D20	Q0D20	Q6D20	4.508	1.752	-	1.875	1.406	1.130	7

► These Taps meet both NPT and NPTF Standards.
► Steam Oxide is not recommended for Aluminum and Aluminum alloys.

◎ : Excellent ○ : Good											
ISO	P										
	Non-alloy steel					Low alloy steel			High alloy steel and tool steel		
Material Description	1	2	3	4	5	6	7	8	9	10	11
VDI 3323	1	2	3	4	5	6	7	8	9	10	11
HRC	125	13	25	28	32	10	29	32	38	15	35
HB	125	190	250	270	300	180	275	300	350	200	325
Recommended	○	○	◎	○	○	◎	◎	◎	○	◎	◎
ISO	M										
	Stainless steel					Grey cast iron			Nodular cast iron		
Material Description	12	13	14	15	16	17	18	19	20	21	22
VDI 3323	12	13	14	15	16	17	18	19	20	21	22
HRC	125	13	25	28	32	10	29	32	38	15	35
HB	125	190	250	270	300	180	275	300	350	200	325
Recommended	○	○	◎	○	○	◎	◎	◎	○	◎	◎
ISO	K										
	Stainless steel					Grey cast iron			Nodular cast iron		
Material Description	23	24	25	26	27	28	29	30	31	32	33
VDI 3323	23	24	25	26	27	28	29	30	31	32	33
HRC	125	13	25	28	32	10	29	32	38	15	35
HB	125	190	250	270	300	180	275	300	350	200	325
Recommended	○	○	◎	○	○	◎	◎	◎	○	◎	◎
ISO	S										
	Aluminum-wrought alloy					Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		
Material Description	34	35	36	37	38	39	40	41	42	43	44
VDI 3323	34	35	36	37	38	39	40	41	42	43	44
HRC	125	13	25	28	32	10	29	32	38	15	35
HB	125	190	250	270	300	180	275	300	350	200	325
Recommended	○	○	◎	○	○	◎	◎	◎	○	◎	◎
ISO	H										
	Aluminum-wrought alloy					Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		
Material Description	45	46	47	48	49	50	51	52	53	54	55
VDI 3323	45	46	47	48	49	50	51	52	53	54	55
HRC	125	13	25	28	32	10	29	32	38	15	35
HB	125	190	250	270	300	180	275	300	350	200	325
Recommended	○	○	◎	○	○	◎	◎	◎	○	◎	◎

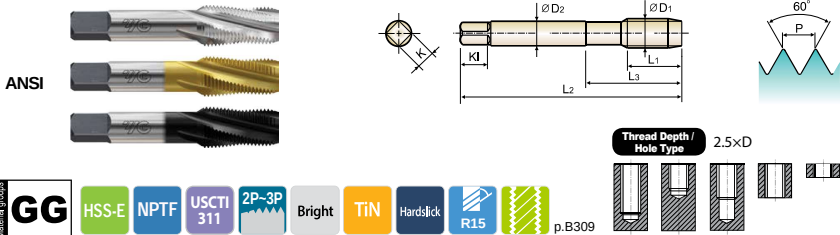
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PIPE TAP

Q9/R0/R1 SERIES

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



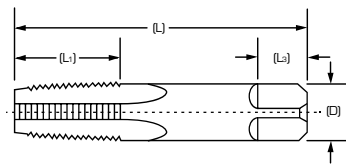
Unit : Inch											
Size	T.P.I	EDP No.			Overall Length	Thread Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Flute
D1		Bright	TIN	Hardslick	L2	L1	L3	D2	K	KI	
NPTF1/16	- 27	Q9020	R0020	R1020	2.130	.689	-	.312	.234	.380	4
NPTF1/8	- 27	Q9200	R0200	R1200	2.130	.736	.906	.437	.328	.380	4
NPTF1/8	- 27	Q9210	R0210	R1210	2.130	.748	-	.312	.234	.380	4
NPTF1/4	- 18	Q9400	R0400	R1400	2.440	1.063	1.220	.562	.421	.440	4
NPTF3/8	- 18	Q9480	R0480	R1480	2.560	1.063	1.220	.700	.531	.500	4
NPTF1/2	- 14	Q9560	R0560	R1560	3.130	1.378	-	.687	.515	.630	4
NPTF3/4	- 14	Q9700	R0700	R1700	3.250	1.378	-	.906	.679	.690	4
NPTF1	- 11-1/2	Q9780	R0780	R1780	3.750	1.752	-	1.125	.843	.810	4
NPTF1-1/4	- 11-1/2	Q9860	R0860	R1860	4.000	1.752	-	1.312	.984	.940	5
NPTF1-1/2	- 11-1/2	Q9960	R0960	R1960	4.250	1.752	-	1.500	1.125	1.000	7
NPTF2	- 11-1/2	Q9D20	R0D20	R1D20	4.508	1.752	-	1.875	1.406	1.130	7

► These Taps meet both NPT and NPTF Standards.

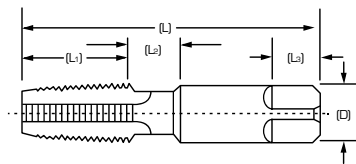
◎ : Excellent ○ : Good																					
ISO	P											M				K					
Material Description	Non-alloy steel					Low alloy steel				High alloy steel and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	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	26	3	25	21	23		
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									
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
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24 <td>25<td>26</td><td>27</td><td>28<td>29</td><td>30</td><td>31</td><td>32</td><td>33</td><td>34</td><td>35</td><td>36</td><td>37<td>38</td><td>39</td><td>40</td><td>41</td></td></td></td>	25 <td>26</td> <td>27</td> <td>28<td>29</td><td>30</td><td>31</td><td>32</td><td>33</td><td>34</td><td>35</td><td>36</td><td>37<td>38</td><td>39</td><td>40</td><td>41</td></td></td>	26	27	28 <td>29</td> <td>30</td> <td>31</td> <td>32</td> <td>33</td> <td>34</td> <td>35</td> <td>36</td> <td>37<td>38</td><td>39</td><td>40</td><td>41</td></td>	29	30	31	32	33	34	35	36	37 <td>38</td> <td>39</td> <td>40</td> <td>41</td>	38	39	40	41
HRC											15	30	25	38	34			55	60	42	55
HB											200	280	250	350	320			550	630	400	550
Recommended	60	100	75	90	130	110			90	100							400Rm	1050Rm			

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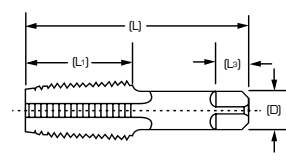
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STANDARD PIPE TAP DIMENSION (STRAIGHT AND TAPER, GROUND THREAD)


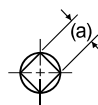
Blank Design (1)



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 ₂]	[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	...


Pipe Tap (Limit)

Tap Thread Limits						Reference Dimensions	
Nominal Size Inches	Threads per Inch	Projection* Inches	Projection Tolerance + or -	Taper per Foot Limits		Length [L ₁]	Tap Drill Size** NPT, ANPT, NPTF
				Min.	Max.		
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.

