

Think threads with  
**YAMAWA**

# ZELX SS SERIES

Suitable for stainless steels, chrome steels, and chrome molybdenum steels for both through and blind hole tapping.

• ZELX SS Series •

## ZELX SS PO ZELX SS SP

Optimum taps for stainless steels offered in regular and long shank



Specifications may change without prior notice



# ZELX SS SERIES

## ◆ System Table for Through Hole

Workpiece Materials		Tapping speed	
		Slow	Fast
Stainless Steels	SUS304	ZELX SS PO 6"	ZELX SS PO 6"
	SUS303		
Alloy Steels	SCM, SCr	ZELX SS PO	ZELX SS PO 6"
High Carbon Steels	↑ S45C	ZELX SS PO	ZELX SS PO 6"
Medium Carbon Steels	↕ S45C ↕ S30C		
Low Carbon Steels	↕ S25C ↕ SS400		
		5m/min	10m/min

## ◆ System Table for Blind Hole

Workpiece Materials		Tapping speed	
		Slow	Fast
Stainless Steels	SUS304	ZELX SS SP 6"	ZELX SS SP 6"
	SUS303		
Alloy Steels	SCM, SCr	ZELX SS SP	ZELX SS SP 6"
High Carbon Steels	↑ S45C	ZELX SS SP	ZELX SS SP 6"
Medium Carbon Steels	↕ S45C ↕ S30C		
Low Carbon Steels	↕ S25C ↕ SS400		
		5m/min	10m/min

# ZELX SS SERIES

## Product Features

- Suitable for stainless steels tending to cause work harden and sticky, as well as chrome steels and chrome molybdenum steels
- For both through and blind hole use
- Custom blended vanadium high speed steel for high wear resistance
- Ideal cutting edge to prevent welding
- Suitable surface treatment to prevent welding

### ◆For Through Hole◆

ZELX SS Spiral Pointed Taps are designed for difficult jobs including the stainless steels, alloy steels, and high carbon steels.

Our unique design ZELX SS taps increase productivity through longer tool life.

The unique spiral point chamfer makes them ideally suited for the through hole of difficult to machine materials.

Spiral Pointed Tap for Stainless Steels

### ZELX SS PO



Size Ranges

Unified: No.2~2"

Metric: M3~M18

Workpiece Material	Recommended Tapping Speed
Low Carbon Steels	Up to 10m/min
Medium Carbon Steels	Up to 10m/min
High Carbon Steels	Up to 10m/min
Alloy Steels	Up to 10m/min
Stainless Steels	Up to 10m/min

# ZELX SS SERIES

## Product Features

- Suitable for stainless steels tending to cause work harden and sticky, as well as chrome steels and chrome molybdenum steels
- For both through and blind hole use
- Custom blended vanadium high speed steel for high wear resistance
- Ideal cutting edge to prevent welding
- Suitable surface treatment to prevent welding

### ◆For Blind Hole◆

ZELX SS Spiral Fluted Taps are designed for difficult jobs including the stainless steels, alloy steels, and high carbon steels.

Our unique design ZELX SS taps increase productivity through longer tool life.

The unique spiral fluted chamfer makes them ideally suited to blind hole tapping.

Spiral Fluted Tap for Stainless Steels

### ZELX SS SP



Size Ranges

Unified: No.2~2"

Metric: M3~M18

Workpiece Material	Recommended Tapping Speed
Low Carbon Steels	Up to 10m/min
Medium Carbon Steels	Up to 10m/min
High Carbon Steels	Up to 10m/min
Alloy Steels	Up to 10m/min
Stainless Steels	Up to 10m/min



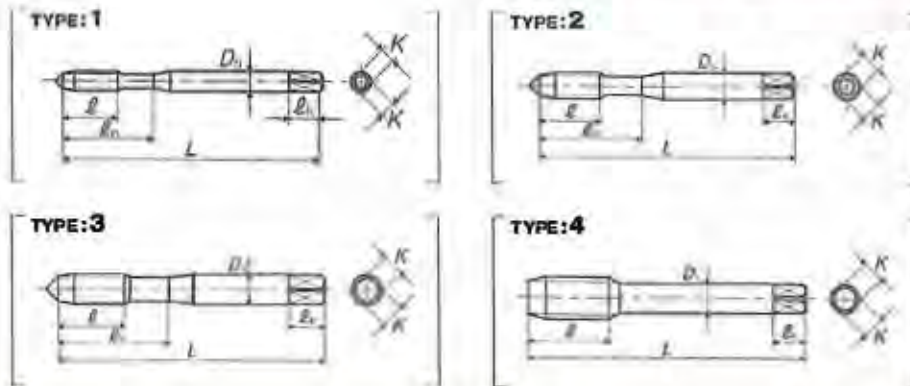
# ZELX SS PO Spiral Pointed Tap for Stainless Steels



**ANSI**



Overall length	Thread length	Thread + chamfer length	Chamfer dia.	Size of square	Length of square
$L$	$l$	$l_n$	$D_s$	$K$	$lk$



File	Class	Code	Grade	$L$	$l$	$l_n$	$D_s$	$K$	$lk$	
<b>For Unified Threads</b>										
No.2-56UNC	GH2	Y82623	4.5P	1.75	0.256	0.437	0.141	0.11	0.187	2
No.2-56UNC	GH3	Y82624	4.5P	1.75	0.256	0.437	0.141	0.11	0.187	2
No.3-48UNC	GH2	Y82600	4.5P	1.812	0.295	0.5	0.141	0.11	0.187	2
No.4-40UNC	GH2	Y82601	4.5P	1.875	0.335	0.562	0.141	0.11	0.187	2
No.4-40UNC	GH3	Y82602	4.5P	1.875	0.335	0.562	0.141	0.11	0.187	2
No.4-40UNC	GH4	Y82612	4.5P	1.875	0.335	0.562	0.141	0.11	0.187	2
No.4-40UNC	GH5	Y82634	4.5P	1.875	0.335	0.562	0.141	0.11	0.187	2
No.4-48UNF	GH2	Y82683	4.5P	1.875	0.335	0.562	0.141	0.11	0.187	2
No.5-40UNC	GH2	Y82603	4.5P	1.937	0.374	0.625	0.141	0.11	0.187	3
No.6-32UNC	GH2	Y82604	4.5P	2	0.413	0.687	0.141	0.11	0.187	3
No.6-32UNC	GH3	Y82605	4.5P	2	0.413	0.687	0.141	0.11	0.187	3
No.6-32UNC	GH4	Y82608	4.5P	2	0.413	0.687	0.141	0.11	0.187	3
No.6-32UNC	GH5	Y82635	4.5P	2	0.413	0.687	0.141	0.11	0.187	3
No.6-32UNC	GH6	Y82659	4.5P	2	0.413	0.687	0.141	0.11	0.187	3
No.6-32UNC	GH7	Y82665	4.5P	2	0.413	0.687	0.141	0.11	0.187	3
No.6-40UNF	GH2	Y82684	4.5P	2	0.413	0.687	0.141	0.11	0.187	3
No.6-40UNF	GH3	Y82642	4.5P	2	0.413	0.687	0.141	0.11	0.187	3
No.8-32UNC	GH2	Y82606	4.5P	2.125	0.453	0.75	0.168	0.131	0.25	3
No.8-32UNC	GH3	Y82607	4.5P	2.125	0.453	0.75	0.168	0.131	0.25	3
No.8-32UNC	GH4	Y82629	4.5P	2.125	0.453	0.75	0.168	0.131	0.25	3
No.8-32UNC	GH5	Y82637	4.5P	2.125	0.453	0.75	0.168	0.131	0.25	3
No.8-32UNC	GH6	Y82660	4.5P	2.125	0.453	0.75	0.168	0.131	0.25	3
No.8-32UNC	GH7	Y82667	4.5P	2.125	0.453	0.75	0.168	0.131	0.25	3
No.8-36UNF	GH2	Y82686	4.5P	2.125	0.453	0.75	0.168	0.131	0.25	3
No.10-24UNC	GH3	Y82609	4.5P	2.375	0.531	0.875	0.194	0.152	0.25	3
No.10-24UNC	GH5	Y82639	4.5P	2.375	0.531	0.875	0.194	0.152	0.25	3
No.10-24UNC	GH6	Y82690	4.5P	2.375	0.531	0.875	0.194	0.152	0.25	3
No.10-24UNC	GH7	Y82669	4.5P	2.375	0.531	0.875	0.194	0.152	0.25	3
No.10-32UNF	GH2	Y82611	4.5P	2.375	0.531	0.875	0.194	0.152	0.25	3
No.10-32UNF	GH3	Y82610	4.5P	2.375	0.531	0.875	0.194	0.152	0.25	3
No.10-32UNF	GH4	Y82630	4.5P	2.375	0.531	0.875	0.194	0.152	0.25	3
No.10-32UNF	GH5	Y82640	4.5P	2.375	0.531	0.875	0.194	0.152	0.25	3
No.10-32UNF	GH6	Y82661	4.5P	2.375	0.531	0.875	0.194	0.152	0.25	3
No.10-32UNF	GH7	Y82670	4.5P	2.375	0.531	0.875	0.194	0.152	0.25	3
No.12-24UNC	GH3	Y82688	4.5P	2.375	0.571	0.937	0.22	0.165	0.281	3
No.12-28UNF	GH3	Y82689	4.5P	2.375	0.571	0.937	0.22	0.165	0.281	3
1/4-20UNC	GH3	Y82613	4.5P	2.5	0.591	1	0.255	0.191	0.312	3
1/4-20UNC	GH5	Y82643	4.5P	2.5	0.591	1	0.255	0.191	0.312	3
1/4-20UNC	GH6	Y82590	4.5P	2.5	0.591	1	0.255	0.191	0.312	3
1/4-20UNC	GH7	Y82673	4.5P	2.5	0.591	1	0.255	0.191	0.312	3
1/4-28UNF	GH3	Y82614	4.5P	2.5	0.591	1	0.255	0.191	0.312	3
1/4-28UNF	GH4	Y82631	4.5P	2.5	0.591	1	0.255	0.191	0.312	3



# ZELX SS PO Spiral Pointed Tap for Stainless Steels

Size	Tap	Code	Forming	L (mm)	W (mm)	H (mm)	D <sub>1</sub> (mm)	D <sub>2</sub> (mm)	D <sub>3</sub> (mm)	D <sub>4</sub> (mm)	D <sub>5</sub> (mm)	D <sub>6</sub> (mm)
For Unified Threads												
1/4-28UNF	GH5	Y82644	4.5P	2.5	0.591	1	0.255	0.191	0.312	3	2	
1/4-28UNF	GH6	Y82662	4.5P	2.5	0.591	1	0.255	0.191	0.312	3	2	
1/4-28UNF	GH7	Y82674	4.5P	2.5	0.591	1	0.255	0.191	0.312	3	2	
5/16-18UNC	GH3	Y82615	4.5P	2.718	0.669	1.125	0.318	0.238	0.375	3	3	
5/16-18UNC	GH5	Y82645	4.5P	2.718	0.669	1.125	0.318	0.238	0.375	3	3	
5/16-18UNC	GH7	Y82675	4.5P	2.718	0.669	1.125	0.318	0.238	0.375	3	3	
5/16-24UNF	GH3	Y82616	4.5P	2.718	0.669	1.125	0.318	0.238	0.375	3	3	
5/16-24UNF	GH4	Y82632	4.5P	2.718	0.669	1.125	0.318	0.238	0.375	3	3	
5/16-24UNF	GH5	Y82646	4.5P	2.718	0.669	1.125	0.318	0.238	0.375	3	3	
5/16-24UNF	GH6	Y82663	4.5P	2.718	0.669	1.125	0.318	0.238	0.375	3	3	
5/16-24UNF	GH7	Y82676	4.5P	2.718	0.669	1.125	0.318	0.238	0.375	3	3	
3/8-16UNC	GH3	Y82617	4.5P	2.937	0.748	1.25	0.381	0.286	0.437	3	3	
3/8-16UNC	GH5	Y82647	4.5P	2.937	0.748	1.25	0.381	0.286	0.437	3	3	
3/8-16UNC	GH7	Y82668	4.5P	2.937	0.748	1.25	0.381	0.286	0.437	3	3	
3/8-24UNF	GH3	Y82618	4.5P	2.937	0.748	1.25	0.381	0.286	0.437	3	3	
3/8-24UNF	GH4	Y82633	4.5P	2.937	0.748	1.25	0.381	0.286	0.437	3	3	
3/8-24UNF	GH5	Y82648	4.5P	2.937	0.748	1.25	0.381	0.286	0.437	3	3	
3/8-24UNF	GH6	Y82664	4.5P	2.937	0.748	1.25	0.381	0.286	0.437	3	3	
3/8-24UNF	GH7	Y82678	4.5P	2.937	0.748	1.25	0.381	0.286	0.437	3	3	
7/16-14UNC	GH3	Y82619	4.5P	3.156	0.866	-	0.323	0.242	0.406	3	4	
7/16-14UNC	GH5	Y82649	4.5P	3.156	0.866	-	0.323	0.242	0.406	3	4	
7/16-20UNF	GH3	Y82620	4.5P	3.156	0.866	-	0.323	0.242	0.406	3	4	
7/16-20UNF	GH5	Y82650	4.5P	3.156	0.866	-	0.323	0.242	0.406	3	4	
7/16-20UNF	GH6	Y82691	4.5P	3.156	0.866	-	0.323	0.242	0.406	3	4	
7/16-20UNF	GH7	Y82680	4.5P	3.156	0.866	-	0.323	0.242	0.406	3	4	
1/2-13UNC	GH3	Y82621	4.5P	3.375	0.984	-	0.367	0.275	0.437	3	4	
1/2-13UNC	GH5	Y82651	4.5P	3.375	0.984	-	0.367	0.275	0.437	3	4	
1/2-13UNC	GH7	Y82681	4.5P	3.375	0.984	-	0.367	0.275	0.437	3	4	
1/2-20UNF	GH3	Y82622	4.5P	3.375	0.984	-	0.367	0.275	0.437	3	4	
1/2-20UNF	GH5	Y82652	4.5P	3.375	0.984	-	0.367	0.275	0.437	3	4	
1/2-20UNF	GH6	Y82692	4.5P	3.375	0.984	-	0.367	0.275	0.437	3	4	
1/2-20UNF	GH7	Y82682	4.5P	3.375	0.984	-	0.367	0.275	0.437	3	4	
1/2-20UNF	GH9	Y82685	4.5P	3.375	0.984	-	0.367	0.275	0.437	3	4	
9/16-12UNC	GH3	Y82653	4.5P	3.593	0.984	-	0.429	0.322	0.5	3	4	
9/16-18UNF	GH3	Y82654	4.5P	3.593	0.984	-	0.429	0.322	0.5	3	4	
9/16-18UNF	GH5	Y82666	4.5P	3.593	0.984	-	0.429	0.322	0.5	3	4	
5/8-11UNC	GH3	Y82625	4.5P	3.812	1.083	-	0.48	0.36	0.562	3	4	
5/8-11UNC	GH5	Y82655	4.5P	3.812	1.083	-	0.48	0.36	0.562	3	4	
5/8-18UNF	GH3	Y82626	4.5P	3.812	1.083	-	0.48	0.36	0.562	3	4	
5/8-18UNF	GH4	Y82636	4.5P	3.812	1.083	-	0.48	0.36	0.562	3	4	
5/8-18UNF	GH5	Y82656	4.5P	3.812	1.083	-	0.48	0.36	0.562	3	4	
5/8-18UNF	GH6	Y82694	4.5P	3.812	1.083	-	0.48	0.36	0.562	3	4	
5/8-18UNF	GH7	Y82591	4.5P	3.812	1.083	-	0.48	0.36	0.562	3	4	
3/4-10UNC	GH3	Y82627	4.5P	4.25	1.201	-	0.59	0.422	0.687	3	4	
3/4-10UNC	GH5	Y82657	4.5P	4.25	1.201	-	0.59	0.422	0.687	3	4	
3/4-16UNF	GH3	Y82628	4.5P	4.25	1.201	-	0.59	0.422	0.687	3	4	
3/4-16UNF	GH5	Y82658	4.5P	4.25	1.201	-	0.59	0.422	0.687	3	4	
3/4-16UNF	GH7	Y82592	4.5P	4.25	1.201	-	0.59	0.422	0.687	3	4	
7/8-9UNC	GH4	Y82695	4.5P	4.687	1.339	-	0.697	0.523	0.75	3	4	
7/8-14UNF	GH4	Y82696	4.5P	4.687	1.339	-	0.697	0.523	0.75	3	4	
7/8-14UNF	GH6	Y82699	4.5P	4.687	1.339	-	0.697	0.523	0.75	3	4	
1-8UNC	GH4	Y82697	4.5P	5.125	1.496	-	0.8	0.6	0.812	3	4	
1-12UNF	GH4	Y82679	4.5P	5.125	1.496	-	0.8	0.6	0.812	3	4	
1 1/8-7UNC	GH6	Y82700	4.5P	5.437	1.535	-	0.896	0.672	0.875	4	4	
1 1/8-12UNF	GH5	Y82701	4.5P	5.437	1.535	-	0.896	0.672	0.875	4	4	
1 1/4-7UNC	GH6	Y82702	4.5P	5.75	1.535	-	1.021	0.766	1	4	4	
1 1/4-12UNF	GH5	Y82703	4.5P	5.75	1.535	-	1.021	0.766	1	4	4	
1 3/8-8UNC	GH6	Y82705	4.5P	6.062	1.811	-	1.108	0.831	1.062	4	4	
1 3/8-12UNF	GH5	Y82706	4.5P	6.062	1.811	-	1.108	0.831	1.062	4	4	
1 1/2-6UNC	GH6	Y82707	4.5P	6.375	1.811	-	1.233	0.925	1.125	4	4	
1 1/2-12UNF	GH5	Y82708	4.5P	6.375	1.811	-	1.233	0.925	1.125	4	4	
1 3/4-5UNC	GH7	Y82709	4.5P	7	1.929	-	1.43	1.072	1.25	4	4	
2-4.5UNC	GH7	Y82710	4.5P	7.625	1.929	-	1.644	1.233	1.375	4	4	



# ZELX SS PO Spiral Pointed Tap for Stainless Steels

**ANSI**

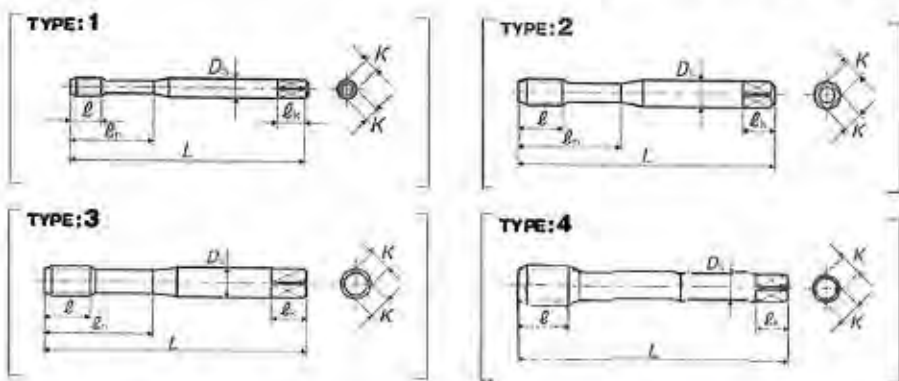
Size	Class	Code	Chariter	L (inch)	Ø (inch)	Ø <sub>r</sub> (inch)	D <sub>s</sub> (inch)	K (inch)	ØK (inch)	No. of Flutes	TYPE
<b>For Metric Threads</b>											
M3X0.5	D3	Y72615	4.5P	1.937	0.374	0.625	0.141	0.11	0.187	3	1
M3.5X0.6	D4	Y72616	4.5P	2	0.413	0.687	0.141	0.11	0.187	3	1
M4X0.7	D4	Y72617	4.5P	2.125	0.453	0.75	0.168	0.131	0.25	3	1
M5X0.8	D4	Y72619	4.5P	2.375	0.531	0.875	0.194	0.152	0.25	3	1
M6X1	D5	Y72620	4.5P	2.5	0.591	1	0.255	0.191	0.312	3	2
M7X1	D5	Y72621	4.5P	2.718	0.669	1.125	0.318	0.238	0.375	3	3
M8X1.25	D5	Y72623	4.5P	2.718	0.669	1.125	0.318	0.238	0.375	3	3
M8X1	D5	Y72622	4.5P	2.718	0.669	1.125	0.318	0.238	0.375	3	3
M10X1.5	D6	Y72625	4.5P	2.937	0.748	1.25	0.381	0.286	0.437	3	3
M10X1.25	D5	Y72624	4.5P	2.937	0.748	1.25	0.381	0.286	0.437	3	3
M12X1.75	D6	Y72627	4.5P	3.375	0.984	-	0.367	0.275	0.437	3	4
M12X1.25	D5	Y72626	4.5P	3.375	0.984	-	0.367	0.275	0.437	3	4
M14X2	D7	Y72629	4.5P	3.593	0.984	-	0.429	0.322	0.5	3	4
M14X1.5	D6	Y72628	4.5P	3.593	0.984	-	0.429	0.322	0.5	3	4
M16X2	D7	Y72631	4.5P	3.812	1.083	-	0.48	0.36	0.562	3	4
M16X1.5	D6	Y72630	4.5P	3.812	1.083	-	0.48	0.36	0.562	3	4
M18X2.5	D7	Y72633	4.5P	4.031	1.083	-	0.542	0.406	0.625	3	4
M18X1.5	D6	Y72632	4.5P	4.031	1.083	-	0.542	0.406	0.625	3	4

# ZELX SS SP Spiral Fluted Tap for Stainless Steels



## Dimensions and sizes

Jawed length	Thread length	Thread + Jaw length	Shank dia	Size of cone	Length of cone
$L$	$\ell$	$\ell_n$	$D_s$	$K$	$\ell_k$



Size	Class	Code	Chamber	$L$ (mm)	$\ell$ (mm)	$\ell_n$ (mm)	$D_s$ (mm)	$K$ (mm)	$\ell_k$ (mm)	No. of flutes	TYPE
<b>For Unified Threads</b>											
No.2-56UNC	GH2	Y84623	2.5P	1.75	0.157	0.437	0.141	0.11	0.187	2	1
No.3-48UNC	GH2	Y84600	2.5P	1.812	0.197	0.5	0.141	0.11	0.187	2	1
No.4-40UNC	GH2	Y84601	2.5P	1.875	0.236	0.562	0.141	0.11	0.187	2	1
No.4-40UNC	GH2	Y84001	1.5P	1.875	0.236	0.562	0.141	0.11	0.187	2	1
No.4-40UNC	GH3	Y84602	2.5P	1.875	0.236	0.562	0.141	0.11	0.187	2	1
No.4-40UNC	GH3	Y84002	1.5P	1.875	0.236	0.562	0.141	0.11	0.187	2	1
No.4-40UNC	GH4	Y84629	2.5P	1.875	0.236	0.562	0.141	0.11	0.187	2	1
No.4-40UNC	GH5	Y84634	2.5P	1.875	0.236	0.562	0.141	0.11	0.187	2	1
No.4-40UNC	GH5	Y84034	1.5P	1.875	0.236	0.562	0.141	0.11	0.187	2	1
No.4-48UNF	GH2	Y84683	2.5P	1.875	0.236	0.562	0.141	0.11	0.187	2	1
No.4-48UNF	GH2	Y84083	1.5P	1.875	0.236	0.562	0.141	0.11	0.187	2	1
No.5-40UNC	GH2	Y84603	2.5P	1.937	0.236	0.625	0.141	0.11	0.187	3	1
No.5-40UNC	GH2	Y84003	1.5P	1.937	0.236	0.625	0.141	0.11	0.187	3	1
No.6-32UNC	GH2	Y84604	2.5P	2	0.276	0.687	0.141	0.11	0.187	3	1
No.6-32UNC	GH2	Y84004	1.5P	2	0.276	0.687	0.141	0.11	0.187	3	1
No.6-32UNC	GH3	Y84605	2.5P	2	0.276	0.687	0.141	0.11	0.187	3	1
No.6-32UNC	GH3	Y84005	1.5P	2	0.276	0.687	0.141	0.11	0.187	3	1
No.6-32UNC	GH4	Y84636	2.5P	2	0.276	0.687	0.141	0.11	0.187	3	1
No.6-32UNC	GH5	Y84635	2.5P	2	0.276	0.687	0.141	0.11	0.187	3	1
No.6-32UNC	GH5	Y84035	2.5P	2	0.276	0.687	0.141	0.11	0.187	3	1
No.6-32UNC	GH6	Y84659	2.5P	2	0.276	0.687	0.141	0.11	0.187	3	1
No.6-32UNC	GH7	Y84665	2.5P	2	0.276	0.687	0.141	0.11	0.187	3	1
No.6-40UNF	GH2	Y84684	2.5P	2	0.276	0.687	0.141	0.11	0.187	3	1
No.6-40UNF	GH2	Y84084	1.5P	2	0.276	0.687	0.141	0.11	0.187	3	1
No.6-40UNF	GH3	Y84685	2.5P	2	0.276	0.687	0.141	0.11	0.187	3	1
No.6-40UNF	GH3	Y84085	1.5P	2	0.276	0.687	0.141	0.11	0.187	3	1
No.8-32UNC	GH2	Y84606	2.5P	2.125	0.276	0.75	0.168	0.131	0.25	3	1
No.8-32UNC	GH2	Y84006	1.5P	2.125	0.276	0.75	0.168	0.131	0.25	3	1
No.8-32UNC	GH3	Y84607	2.5P	2.125	0.276	0.75	0.168	0.131	0.25	3	1
No.8-32UNC	GH3	Y84007	1.5P	2.125	0.276	0.75	0.168	0.131	0.25	3	1
No.8-32UNC	GH4	Y84638	2.5P	2.125	0.276	0.75	0.168	0.131	0.25	3	1
No.8-32UNC	GH5	Y84637	2.5P	2.125	0.276	0.75	0.168	0.131	0.25	3	1
No.8-32UNC	GH5	Y84037	1.5P	2.125	0.276	0.75	0.168	0.131	0.25	3	1
No.8-32UNC	GH6	Y84660	2.5P	2.125	0.276	0.75	0.168	0.131	0.25	3	1
No.8-32UNC	GH7	Y84667	2.5P	2.125	0.276	0.75	0.168	0.131	0.25	3	1
No.8-36UNF	GH3	Y84687	2.5P	2.125	0.276	0.75	0.168	0.131	0.25	3	1
No.10-24UNC	GH2	Y84624	2.5P	2.375	0.354	0.875	0.194	0.152	0.25	3	1
No.10-24UNC	GH3	Y84609	2.5P	2.375	0.354	0.875	0.194	0.152	0.25	3	1



# ZELX SS SP

Spiral Fluted Tap for Stainless Steels

Size	Class	Code	Chamfer	L (inch)	$\phi$ (inch)	$\phi_r$ (inch)	Ds (inch)	K (inch)	$\phi_k$ (inch)	No. of Flutes	TYPE
For Unified Threads											
No.10-24UNC	GH3	Y84009	1.5P	2.375	0.354	0.875	0.194	0.152	0.25	3	1
No.10-24UNC	GH5	Y84639	2.5P	2.375	0.354	0.875	0.194	0.152	0.25	3	1
No.10-24UNC	GH5	Y84039	1.5P	2.375	0.354	0.875	0.194	0.152	0.25	3	1
No.10-24UNC	GH6	Y84690	2.5P	2.375	0.354	0.875	0.194	0.152	0.25	3	1
No.10-24UNC	GH7	Y84669	2.5P	2.375	0.354	0.875	0.194	0.152	0.25	3	1
No.10-32UNF	GH2	Y84611	2.5P	2.375	0.276	0.875	0.194	0.152	0.25	3	1
No.10-32UNF	GH3	Y84610	2.5P	2.375	0.276	0.875	0.194	0.152	0.25	3	1
No.10-32UNF	GH3	Y84010	1.5P	2.375	0.276	0.875	0.194	0.152	0.25	3	1
No.10-32UNF	GH4	Y84630	2.5P	2.375	0.276	0.875	0.194	0.152	0.25	3	1
No.10-32UNF	GH5	Y84640	2.5P	2.375	0.276	0.875	0.194	0.152	0.25	3	1
No.10-32UNF	GH5	Y84040	1.5P	2.375	0.276	0.875	0.194	0.152	0.25	3	1
No.10-32UNF	GH6	Y84662	2.5P	2.375	0.276	0.875	0.194	0.152	0.25	3	1
No.10-32UNF	GH7	Y84670	2.5P	2.375	0.276	0.875	0.194	0.152	0.25	3	1
No.12-24UNC	GH3	Y84688	2.5P	2.375	0.354	0.937	0.22	0.165	0.281	3	1
No.12-28UNC	GH3	Y84689	2.5P	2.375	0.276	0.937	0.22	0.165	0.281	3	1
1/4-20UNC	GH3	Y84613	2.5P	2.5	0.433	1	0.255	0.191	0.312	3	2
1/4-20UNC	GH3	Y84013	1.5P	2.5	0.433	1	0.255	0.191	0.312	3	2
1/4-20UNC	GH5	Y84643	2.5P	2.5	0.433	1	0.255	0.191	0.312	3	2
1/4-20UNC	GH5	Y84043	1.5P	2.5	0.433	1	0.255	0.191	0.312	3	2
1/4-20UNC	GH7	Y84673	2.5P	2.5	0.433	1	0.255	0.191	0.312	3	2
1/4-28UNF	GH3	Y84614	2.5P	2.5	0.354	1	0.255	0.191	0.312	3	2
1/4-28UNF	GH3	Y84014	1.5P	2.5	0.354	1	0.255	0.191	0.312	3	2
1/4-28UNF	GH4	Y84631	2.5P	2.5	0.354	1	0.255	0.191	0.312	3	2
1/4-28UNF	GH5	Y84644	2.5P	2.5	0.354	1	0.255	0.191	0.312	3	2
1/4-28UNF	GH5	Y84044	2.5P	2.5	0.354	1	0.255	0.191	0.312	3	2
1/4-28UNF	GH6	Y84664	2.5P	2.5	0.354	1	0.255	0.191	0.312	3	2
1/4-28UNF	GH7	Y84674	2.5P	2.5	0.354	1	0.255	0.191	0.312	3	2
5/16-18UNC	GH3	Y84615	2.5P	2.718	0.472	1.125	0.318	0.238	0.375	3	3
5/16-18UNC	GH3	Y84015	1.5P	2.718	0.472	1.125	0.318	0.238	0.375	3	3
5/16-18UNC	GH5	Y84645	2.5P	2.718	0.472	1.125	0.318	0.238	0.375	3	3
5/16-18UNC	GH5	Y84045	1.5P	2.718	0.472	1.125	0.318	0.238	0.375	3	3
5/16-18UNC	GH7	Y84675	2.5P	2.718	0.472	1.125	0.318	0.238	0.375	3	3
5/16-24UNF	GH3	Y84616	2.5P	2.718	0.394	1.125	0.318	0.238	0.375	3	3
5/16-24UNF	GH3	Y84016	1.5P	2.718	0.394	1.125	0.318	0.238	0.375	3	3
5/16-24UNF	GH4	Y84632	2.5P	2.718	0.394	1.125	0.318	0.238	0.375	3	3
5/16-24UNF	GH5	Y84646	2.5P	2.718	0.394	1.125	0.318	0.238	0.375	3	3
5/16-24UNF	GH5	Y84046	2.5P	2.718	0.394	1.125	0.318	0.238	0.375	3	3
5/16-24UNF	GH7	Y84676	2.5P	2.718	0.394	1.125	0.318	0.238	0.375	3	3
3/8-16UNC	GH3	Y84617	2.5P	2.937	0.551	1.25	0.381	0.286	0.437	3	3
3/8-16UNC	GH3	Y84017	1.5P	2.937	0.551	1.25	0.381	0.286	0.437	3	3
3/8-16UNC	GH5	Y84647	2.5P	2.937	0.551	1.25	0.381	0.286	0.437	3	3
3/8-16UNC	GH5	Y84047	1.5P	2.937	0.551	1.25	0.381	0.286	0.437	3	3
3/8-16UNC	GH7	Y84677	2.5P	2.937	0.551	1.25	0.381	0.286	0.437	3	3
3/8-16UNC	GH7	Y84077	1.5P	2.937	0.551	1.25	0.381	0.286	0.437	3	3
3/8-24UNF	GH3	Y84618	2.5P	2.937	0.394	1.25	0.381	0.286	0.437	3	3
3/8-24UNF	GH3	Y84018	1.5P	2.937	0.394	1.25	0.381	0.286	0.437	3	3
3/8-24UNF	GH4	Y84633	2.5P	2.937	0.394	1.25	0.381	0.286	0.437	3	3
3/8-24UNF	GH4	Y84033	1.5P	2.937	0.394	1.25	0.381	0.286	0.437	3	3
3/8-24UNF	GH5	Y84648	2.5P	2.937	0.394	1.25	0.381	0.286	0.437	3	3
3/8-24UNF	GH5	Y84048	1.5P	2.937	0.394	1.25	0.381	0.286	0.437	3	3
3/8-24UNF	GH7	Y84678	2.5P	2.937	0.394	1.25	0.381	0.286	0.437	3	3
7/16-14UNC	GH3	Y84619	2.5P	3.156	0.591	-	0.323	0.242	0.406	3	4
7/16-14UNC	GH3	Y84019	1.5P	3.156	0.591	-	0.323	0.242	0.406	3	4
7/16-14UNC	GH5	Y84649	2.5P	3.156	0.591	-	0.323	0.242	0.406	3	4
7/16-14UNC	GH5	Y84049	1.5P	3.156	0.591	-	0.323	0.242	0.406	3	4
7/16-14UNC	GH7	Y84679	2.5P	3.156	0.591	-	0.323	0.242	0.406	3	4
7/16-20UNF	GH3	Y84620	2.5P	3.156	0.472	-	0.323	0.242	0.406	3	4
7/16-20UNF	GH3	Y84020	1.5P	3.156	0.472	-	0.323	0.242	0.406	3	4
7/16-20UNF	GH5	Y84650	2.5P	3.156	0.472	-	0.323	0.242	0.406	3	4
7/16-20UNF	GH5	Y84050	1.5P	3.156	0.472	-	0.323	0.242	0.406	3	4
7/16-20UNF	GH6	Y84691	2.5P	3.156	0.472	-	0.323	0.242	0.406	3	4
7/16-20UNF	GH7	Y84680	2.5P	3.156	0.472	-	0.323	0.242	0.406	3	4
1/2-13UNC	GH3	Y84621	2.5P	3.375	0.63	-	0.367	0.275	0.437	3	4
1/2-13UNC	GH3	Y84021	1.5P	3.375	0.63	-	0.367	0.275	0.437	3	4
1/2-13UNC	GH5	Y84651	2.5P	3.375	0.63	-	0.367	0.275	0.437	3	4
1/2-13UNC	GH5	Y84051	1.5P	3.375	0.63	-	0.367	0.275	0.437	3	4



# ZELX SS SP Spiral Fluted Tap for Stainless Steels

**ANSI**

Size	Class	Code	Chamber	L (mm)	ℓ (mm)	ℓ <sub>n</sub> (mm)	D <sub>s</sub> (mm)	K (mm)	ℓ <sub>k</sub> (mm)	No. of Flutes	TYPE
<b>For Unified Threads</b>											
1/2-13UNC	GH7	Y84681	2.5P	3.375	0.83	-	0.367	0.275	0.437	3	4
1/2-20UNF	GH3	Y84622	2.5P	3.375	0.472	-	0.367	0.275	0.437	3	4
1/2-20UNF	GH3	Y84022	1.5P	3.375	0.472	-	0.367	0.275	0.437	3	4
1/2-20UNF	GH5	Y84652	2.5P	3.375	0.472	-	0.367	0.275	0.437	3	4
1/2-20UNF	GH5	Y84052	1.5P	3.375	0.472	-	0.367	0.275	0.437	3	4
1/2-20UNF	GH6	Y84692	2.5P	3.375	0.472	-	0.367	0.275	0.437	3	4
1/2-20UNF	GH7	Y84682	2.5P	3.375	0.472	-	0.367	0.275	0.437	3	4
9/16-12UNC	GH3	Y84653	2.5P	3.593	0.709	-	0.429	0.322	0.5	3	4
9/16-12UNC	GH3	Y84053	1.5P	3.593	0.709	-	0.429	0.322	0.5	3	4
9/16-18UNF	GH3	Y84654	2.5P	3.593	0.512	-	0.429	0.322	0.5	3	4
9/16-18UNF	GH3	Y84054	1.5P	3.593	0.512	-	0.429	0.322	0.5	3	4
9/16-18UNF	GH5	Y84698	2.5P	3.593	0.512	-	0.429	0.322	0.5	3	4
5/8-11UNC	GH3	Y84625	2.5P	3.812	0.748	-	0.48	0.36	0.562	3	4
5/8-11UNC	GH3	Y84025	1.5P	3.812	0.748	-	0.48	0.36	0.562	3	4
5/8-11UNC	GH5	Y84655	2.5P	3.812	0.748	-	0.48	0.36	0.562	3	4
5/8-11UNC	GH5	Y84055	1.5P	3.812	0.748	-	0.48	0.36	0.562	3	4
5/8-18UNF	GH3	Y84626	2.5P	3.812	0.512	-	0.48	0.36	0.562	3	4
5/8-18UNF	GH3	Y84026	1.5P	3.812	0.512	-	0.48	0.36	0.562	3	4
5/8-18UNF	GH5	Y84656	2.5P	3.812	0.512	-	0.48	0.36	0.562	3	4
5/8-18UNF	GH5	Y84056	1.5P	3.812	0.512	-	0.48	0.36	0.562	3	4
5/8-18UNF	GH7	Y84672	2.5P	3.812	0.512	-	0.48	0.36	0.562	3	4
3/4-10UNC	GH3	Y84627	2.5P	4.25	0.827	-	0.59	0.442	0.687	4	4
3/4-10UNC	GH3	Y84027	1.5P	4.25	0.827	-	0.59	0.442	0.687	4	4
3/4-10UNC	GH5	Y84657	2.5P	4.25	0.827	-	0.59	0.442	0.687	4	4
3/4-16UNF	GH3	Y84628	2.5P	4.25	0.591	-	0.59	0.442	0.687	4	4
3/4-16UNF	GH3	Y84028	1.5P	4.25	0.591	-	0.59	0.442	0.687	4	4
3/4-16UNF	GH5	Y84658	2.5P	4.25	0.591	-	0.59	0.442	0.687	4	4
3/4-16UNF	GH7	Y84686	2.5P	4.25	0.591	-	0.59	0.442	0.687	4	4
7/8-9UNC	GH4	Y84695	2.5P	4.687	0.827	-	0.697	0.523	0.75	4	4
7/8-14UNF	GH4	Y84696	2.5P	4.687	0.709	-	0.697	0.523	0.75	4	4
1-8UNC	GH4	Y84697	2.5P	5.125	0.984	-	0.8	0.6	0.812	4	4
1-12UNF	GH4	Y84668	2.5P	5.125	0.709	-	0.8	0.6	0.812	4	4
1 1/8-7UNC	GH6	Y84701	2.5P	5.437	1.181	-	0.896	0.672	0.875	4	4
1 1/8-12UNF	GH5	Y84702	2.5P	5.437	0.787	-	0.896	0.672	0.875	4	4
1 1/4-7UNC	GH6	Y84703	2.5P	5.75	1.181	-	1.021	0.766	1	4	4
1 1/4-12UNF	GH5	Y84705	2.5P	5.75	0.787	-	1.021	0.766	1	4	4
1 3/8-8UNC	GH6	Y84706	2.5P	6.062	1.575	-	1.108	0.831	1.062	4	4
1 3/8-12UNF	GH5	Y84707	2.5P	6.062	0.787	-	1.108	0.831	1.062	4	4
1 1/2-8UNC	GH6	Y84709	2.5P	6.375	1.575	-	1.233	0.925	1.125	4	4
1 1/2-12UNF	GH5	Y84711	2.5P	6.375	0.787	-	1.233	0.925	1.125	4	4
1 3/4-5UNC	GH7	Y84714	2.5P	7	1.772	-	1.43	1.072	1.25	4	4
2-4.5UNC	GH7	Y84715	2.5P	7.625	1.969	-	1.644	1.233	1.375	4	4



# ZELX SS SP

Spiral Fluted Tap for Stainless Steels

Size	Class	Code	Chamfer	L (mm)	Ø (mm)	Ø <sub>n</sub> (mm)	Ds (pitch)	K (mm)	ØK (mm)	No. of Flutes	TYPE
<b>For Metric Threads</b>											
M3X0.5	D3	Y74615	2.5P	1.937	0.197	0.625	0.141	0.11	0.187	3	1
M3X0.5	D3	Y74015	1.5P	1.937	0.197	0.625	0.141	0.11	0.187	3	1
M3.5X0.6	D4	Y74616	2.5P	2	0.276	0.687	0.141	0.11	0.187	3	1
M4X0.7	D4	Y74617	2.5P	2.125	0.276	0.75	0.168	0.131	0.25	3	1
M4X0.7	D4	Y74017	1.5P	2.125	0.276	0.75	0.168	0.131	0.25	3	1
M5X0.8	D4	Y74619	2.5P	2.375	0.354	0.875	0.194	0.152	0.25	3	1
M5X0.8	D4	Y74019	1.5P	2.375	0.354	0.875	0.194	0.152	0.25	3	1
M6X1	D5	Y74620	2.5P	2.5	0.433	1	0.255	0.191	0.312	3	2
M6X1	D5	Y74020	1.5P	2.5	0.433	1	0.255	0.191	0.312	3	2
M7X1	D5	Y74621	2.5P	2.718	0.433	1.125	0.318	0.238	0.375	3	3
M8X1.25	D5	Y74623	2.5P	2.718	0.472	1.125	0.318	0.238	0.375	3	3
M8X1.25	D5	Y74023	1.5P	2.718	0.472	1.125	0.318	0.238	0.375	3	3
M8X1	D5	Y74622	2.5P	2.718	0.472	1.125	0.318	0.238	0.375	3	3
M8X1	D5	Y74022	1.5P	2.718	0.472	1.125	0.318	0.238	0.375	3	3
M10X1.5	D6	Y74625	2.5P	2.937	0.512	1.25	0.381	0.286	0.437	3	3
M10X1.5	D6	Y74025	1.5P	2.937	0.512	1.25	0.381	0.286	0.437	3	3
M10X1.25	D5	Y74624	2.5P	2.937	0.472	1.25	0.381	0.286	0.437	3	3
M10X1.25	D5	Y74024	1.5P	2.937	0.472	1.25	0.381	0.286	0.437	3	3
M12X1.75	D6	Y74627	2.5P	3.375	0.591	-	0.367	0.275	0.437	3	4
M12X1.75	D6	Y74027	1.5P	3.375	0.591	-	0.367	0.275	0.437	3	4
M12X1.25	D5	Y74626	2.5P	3.375	0.551	-	0.367	0.275	0.437	3	4
M12X1.25	D5	Y74026	1.5P	3.375	0.551	-	0.367	0.275	0.437	3	4
M14X2	D7	Y74629	2.5P	3.593	0.709	-	0.429	0.322	0.5	3	4
M14X2	D7	Y74029	1.5P	3.593	0.709	-	0.429	0.322	0.5	3	4
M14X1.5	D6	Y74628	2.5P	3.593	0.551	-	0.429	0.322	0.5	3	4
M14X1.5	D6	Y74028	1.5P	3.593	0.551	-	0.429	0.322	0.5	3	4
M16X2	D7	Y74631	2.5P	3.812	0.709	-	0.48	0.36	0.562	3	4
M16X2	D7	Y74031	1.5P	3.812	0.709	-	0.48	0.36	0.562	3	4
M16X1.5	D6	Y74630	2.5P	3.812	0.551	-	0.48	0.36	0.562	3	4
M16X1.5	D6	Y74030	1.5P	3.812	0.551	-	0.48	0.36	0.562	3	4
M18X2.5	D7	Y74633	2.5P	4.031	0.787	-	0.542	0.406	0.625	4	4
M18X1.5	D6	Y74632	2.5P	4.031	0.551	-	0.542	0.406	0.625	4	4
M20X2.5	D7	Y74635	2.5P	4.468	0.787	-	0.652	0.489	0.687	4	4
M24X3	D8	Y74639	2.5P	4.906	0.984	-	0.76	0.57	0.75	4	4

# Tap Drill Size Selection

Recommended Percentage of Full Thread in Tapped Holes

## For Unified Threads

To reduce tapping problems and improve tool life use the largest drill possible for the minor diameter. Select the percentage of thread height from the chart below to find the appropriate drill size for each size thread.

A minor diameter that provides a 55% to 65% thread is sufficient for good strength in most applications. In some cases it may be necessary to produce a thread with a higher percentage of thread height to meet minor diameter limits of the thread class specified or for added strength.

Material		>2D to L Tapping	Average Commercial Work	Thin Sheet Stock or Stamping
Free Machining	Aluminum, Brass, Bronze, Cast Iron, Copper, Mild Steel, Tool Steel	80% - 70%	65% - 70%	75% - 85%
Harder materials or tougher machining	Cast Steel, Drop Forging, Monel Metal, Nickel Steel, Stainless Steel	55% - 65%	60% - 70%	

Tap Size	Threads Per Inch		Minor Diameter		80% Th read	Tap Drill Diameter		65% Thread	60% Thread
	UNC	UNF	Min. 2B	Max. 2B		75% Th read	70% Thread		
0	-	80	0.0485	0.0514	0.047	0.0478	0.0486	0.0494	0.0503
1	64	72	0.0561	0.0623	0.0568	0.0578	0.0588	0.0598	0.0608
2	56	64	0.058	0.0635	0.0588	0.0595	0.0604	0.0613	0.0622
3	48	56	0.0687	0.0737	0.0674	0.0686	0.0698	0.0709	0.0721
4	40	48	0.0691	0.0752	0.0698	0.0708	0.0718	0.0728	0.0738
5	40	44	0.0764	0.0845	0.0774	0.0787	0.0801	0.0814	0.0828
6	32	40	0.0797	0.0865	0.0804	0.0816	0.0828	0.0839	0.0851
8	32	36	0.0849	0.0939	0.086	0.0876	0.0893	0.0909	0.0925
10	24	32	0.0894	0.0968	0.0904	0.0917	0.0931	0.0944	0.0958
12	24	28	0.0979	0.1082	0.099	0.1006	0.1023	0.1039	0.1055
1/4	20	24	0.1004	0.1079	0.1014	0.1029	0.1043	0.1058	0.1073
5/16	18	24	0.104	0.114	0.1055	0.1076	0.1096	0.1116	0.1136
3/8	16	24	0.111	0.119	0.112	0.1136	0.1153	0.1169	0.1185
7/16	14	20	0.13	0.139	0.1315	0.1338	0.1356	0.1376	0.1396
1/2	13	20	0.134	0.142	0.1351	0.1369	0.1387	0.1405	0.1424
9/16	12	18	0.145	0.156	0.1467	0.1494	0.1521	0.1548	0.1575
5/8	11	18	0.156	0.164	0.1575	0.1596	0.1616	0.1636	0.1656
3/4	10	16	0.171	0.181	0.1727	0.1754	0.1781	0.1808	0.1835
7/8	9	14	0.177	0.186	0.1789	0.1812	0.1835	0.1858	0.1882
1	8	12	0.196	0.207	0.198	0.2013	0.2045	0.2078	0.211
1-1/8	7	12	0.211	0.22	0.2129	0.2152	0.2175	0.2198	0.2222
1-1/4	7	12	0.252	0.265	0.2548	0.2584	0.262	0.2656	0.2692
1-3/8	6	12	0.267	0.277	0.2692	0.2719	0.2746	0.2773	0.28
1-1/2	6	12	0.307	0.321	0.3101	0.3141	0.3182	0.3222	0.3263
1-3/4	5	12	0.33	0.34	0.3317	0.3344	0.3371	0.3398	0.3425
2	4-1/2	12	0.36	0.376	0.3633	0.3679	0.3728	0.3772	0.3818
		12	0.383	0.395	0.3855	0.3888	0.392	0.3953	0.3985
		12	0.417	0.434	0.4201	0.4251	0.4301	0.4351	0.44
		12	0.446	0.457	0.448	0.4513	0.4545	0.4578	0.461
		12	0.472	0.49	0.4759	0.4813	0.4867	0.4921	0.4976
		12	0.502	0.515	0.5048	0.5084	0.512	0.5156	0.5192
		12	0.527	0.546	0.5305	0.5364	0.5423	0.5482	0.5541
		12	0.565	0.578	0.5673	0.5709	0.5746	0.5781	0.5817
		12	0.642	0.663	0.6461	0.6526	0.6591	0.6656	0.6721
		12	0.682	0.696	0.6851	0.6891	0.6932	0.6972	0.7013
		12	0.755	0.778	0.7595	0.7668	0.774	0.7812	0.7884
		12	0.798	0.814	0.8008	0.8054	0.8101	0.8147	0.8193
		12	0.865	0.89	0.8701	0.8782	0.8863	0.8945	0.9026
		12	0.91	0.928	0.9134	0.9188	0.9242	0.9296	0.9351
		12	0.97	0.998	0.9765	0.9858	0.9951	1.0044	1.0137
		12	1.035	1.053	1.0384	1.0438	1.0492	1.0546	1.0601
		12	1.095	1.123	1.1015	1.1108	1.1201	1.1294	1.1387
		12	1.16	1.178	1.1634	1.1688	1.1742	1.1796	1.1851
		12	1.195	1.225	1.2018	1.2126	1.2235	1.2343	1.2451
		12	1.265	1.303	1.2684	1.2938	1.2992	1.3046	1.3101
		12	1.32	1.35	1.3268	1.3376	1.3485	1.3593	1.3701
		12	1.41	1.428	1.4134	1.4188	1.4242	1.4296	1.4351
		12	1.533	1.567	1.5422	1.5551	1.5681	1.5811	1.5941
		12	1.759	1.795	1.7691	1.7835	1.7979	1.8124	1.8268

### TAP DRILL SIZE FORMULA

$$\text{Drill Size} = \text{Tap Major Dia} - \frac{0.01299 \times \% \text{ of Full Thread}}{\# \text{ of Threads Per Inch}}$$

Example: To determine Drill Size for 3/4" - 10 Tap, 70% Full Thread  
 Basic Major Diameter of Tap = 0.750"  
 $0.01299 \times 70 = 0.9093$   
 $0.9093 \div 10 = 0.09093$   
 Drill size =  $0.750 - 0.09093 = 0.6591$ "

### PERCENTAGE OF FULL THREAD FORMULA

$$\% \text{ OF Full Thread} = \text{Threads Per Inch} \times \frac{\text{Major Dia} - \text{Drill}}{0.01299}$$

Example: To determine the % of Full Thread for 3/4" - 10 Tap, using 0.6656" Drill.  
 $0.750 - 0.6656 = 0.0844$ "  
 $0.0844 \times 10 = 0.844$   
 Percentage of Full Threads =  $10 \times 0.844 = 8.44\%$



# Tap Drill Size Selection

Recommended Percentage of Full Thread in Tapped Holes

## For Metric Threads

To reduce tapping problems and improve tool life use the largest drill possible for the minor diameter. Select the percentage of thread height from the chart below to find the appropriate drill size for each size thread.

A minor diameter that provides a 55% to 65% thread is sufficient for good strength in most applications. In some cases it may be necessary to produce a thread with a higher percentage of thread height to meet minor diameter limits of the thread class specified or for added strength.

Material		>2D to L Tapping	Average Commercial Work	Thin Sheet Stack or Stamping
Free Machining	Aluminum, Brass, Bronze, Cast Iron, Copper, Mild Steel, Tool Steel	60% - 70%	65% - 70%	75% - 85%
Harder materials or tougher machining	Cast Steel, Drop Forging, Monel Metal, Nickel Steel, Stainless Steel	55% - 65%	60% - 70%	

Tap Size	Pitch		Minor Diameter(mm)		80% Thread		75% Thread		70% Thread		65% Thread		60% Thread	
	M	MF	Min. 6H	Max. 6H	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)
M1.6	0.35	-	1.221	1.321	1.24	0.0488	1.26	0.0496	1.28	0.0504	1.30	0.0512	1.33	0.0524
M1.7	0.35	-	1.321	1.421	1.33	0.0524	1.36	0.0535	1.38	0.0543	1.40	0.0551	1.42	0.0559
M1.8	0.35	-	1.422	1.519	1.44	0.0567	1.46	0.0575	1.48	0.0583	1.50	0.0591	1.53	0.0602
M2	0.4	-	1.567	1.679	1.58	0.0622	1.61	0.0634	1.64	0.0646	1.66	0.0654	1.69	0.0665
M2.2	0.45	-	1.715	1.836	1.73	0.0681	1.76	0.0693	1.79	0.0705	1.82	0.0717	1.85	0.0728
M2.5	0.45	-	2.013	2.138	2.03	0.0799	2.06	0.0811	2.09	0.0823	2.12	0.0835	2.15	0.0846
M2.6	0.45	-	2.113	2.238	2.13	0.0839	2.16	0.085	2.19	0.0862	2.22	0.0874	2.25	0.0886
M3	0.5	-	2.459	2.599	2.48	0.0976	2.51	0.0988	2.55	0.1004	2.58	0.1016	2.61	0.1028
		0.35	2.621	2.721	2.63	0.1035	2.66	0.1047	2.68	0.1055	2.70	0.1063	2.72	0.1071
M3.5	0.6	-	2.850	3.010	2.88	0.1134	2.92	0.115	2.95	0.1161	2.99	0.1177	3.03	0.1193
M4	0.7	-	3.242	3.422	3.27	0.1287	3.32	0.1307	3.36	0.1323	3.41	0.1343	3.45	0.1359
		0.5	3.459	3.599	3.48	0.137	3.51	0.1382	3.54	0.1394	3.58	0.1409	3.61	0.1421
M4.5	0.75	-	3.688	3.876	3.72	0.1465	3.77	0.1484	3.82	0.1504	3.87	0.1524	3.92	0.1543
		0.8	4.134	4.334	4.17	0.1642	4.22	0.1661	4.27	0.1681	4.32	0.1701	4.38	0.1724
M5		-0.5	4.458	4.600	4.48	0.1764	4.51	0.1776	4.54	0.1787	4.58	0.1803	4.61	0.1815
M6	1	-	4.917	5.153	4.96	0.1953	5.03	0.198	5.09	0.2004	5.16	0.2031	5.22	0.2055
		0.75	5.187	5.377	5.22	0.2055	5.27	0.2075	5.32	0.2094	5.37	0.2114	5.41	0.213
M7	1	-	5.918	6.152	5.96	0.2346	6.03	0.2374	6.09	0.2398	6.16	0.2425	6.22	0.2449
		1.25	6.647	6.912	6.70	0.2638	6.78	0.2669	6.86	0.2701	6.94	0.2732	7.03	0.2768
M8		1-	6.917	7.153	6.96	0.274	7.03	0.2768	7.09	0.2791	7.16	0.2819	7.22	0.2843
		0.75	7.187	7.377	7.22	0.2843	7.27	0.2862	7.32	0.2882	7.37	0.2902	7.41	0.2917
		1.5	8.376	8.676	8.44	0.3323	8.54	0.3362	8.64	0.3402	8.73	0.3437	8.83	0.3476
M10		1.25	8.647	8.912	8.70	0.3425	8.78	0.3457	8.86	0.3488	8.94	0.352	9.03	0.3555
		1	8.917	9.153	8.96	0.3528	9.03	0.3555	9.09	0.3579	9.16	0.3606	9.22	0.363
		0.75	9.188	9.378	9.22	0.363	9.27	0.365	9.32	0.3669	9.37	0.3689	9.41	0.3705
		1.75	10.106	10.441	10.18	0.4008	10.30	0.4055	10.41	0.4098	10.52	0.4142	10.64	0.4189
M12		1.5	10.376	10.676	10.44	0.411	10.54	0.415	10.64	0.4189	10.73	0.4224	10.83	0.4264
		1.25	10.647	10.912	10.70	0.4213	10.78	0.4244	10.86	0.4276	10.94	0.4307	11.03	0.4343
		1	10.917	11.153	10.96	0.4315	11.03	0.4343	11.09	0.4368	11.16	0.4394	11.22	0.4417
M14	2	-	11.835	12.210	11.92	0.4693	12.05	0.4744	12.18	0.4795	12.31	0.4846	12.44	0.4898
		1.5	12.376	12.676	12.44	0.4898	12.54	0.4937	12.64	0.4976	12.73	0.5012	12.83	0.5051
M16	2	-	13.835	14.210	13.92	0.548	14.05	0.5531	14.18	0.5583	14.31	0.5634	14.44	0.5685
		1.5	14.376	14.676	14.44	0.5685	14.54	0.5724	14.64	0.5764	14.73	0.5799	14.83	0.5839
M18	2.5	-	15.296	15.743	15.40	0.6063	15.56	0.6126	15.73	0.6193	15.89	0.6256	16.05	0.6319
		1.5	16.376	16.676	16.44	0.6472	16.54	0.6512	16.64	0.6551	16.73	0.6587	16.83	0.6626
		2.5	17.294	17.744	17.40	0.685	17.56	0.6913	17.73	0.698	17.89	0.7043	18.05	0.7106
M20		1.5	18.376	18.676	18.44	0.726	18.54	0.7299	18.64	0.7339	18.73	0.7374	18.83	0.7413
		1	18.917	19.153	18.96	0.7465	19.03	0.7492	19.09	0.7516	19.16	0.7543	19.22	0.7567
		2.5	19.294	19.744	19.40	0.7638	19.66	0.7701	19.73	0.7768	19.89	0.7831	20.05	0.7894
M22		2	19.835	20.210	19.92	0.7843	20.05	0.7894	20.18	0.7945	20.31	0.7996	20.44	0.8047
		1.5	20.376	20.676	20.44	0.8047	20.54	0.8087	20.64	0.8126	20.73	0.8161	20.83	0.8201
		3	20.752	21.252	20.88	0.822	21.08	0.8299	21.27	0.8374	21.47	0.8453	21.66	0.8528
M24		2	21.835	22.210	21.92	0.863	22.05	0.8681	22.18	0.8732	22.31	0.8783	22.44	0.8835
		1.5	22.376	22.676	22.44	0.8835	22.54	0.8874	22.64	0.8913	22.73	0.8949	22.83	0.8988
		3	23.752	24.252	23.88	0.9402	24.08	0.948	24.27	0.9555	24.47	0.9634	24.66	0.9709
M27		2	24.835	25.210	24.92	0.9811	25.05	0.9862	25.18	0.9913	25.31	0.9965	25.44	1.0016
		1.5	25.376	25.676	25.44	1.0016	25.54	1.0055	25.64	1.0094	25.73	1.013	25.83	1.0169
		3-5	26.211	26.771	26.38	1.0378	26.59	1.0469	26.82	1.0559	27.04	1.0646	27.27	1.0736
M30		2	27.835	28.210	27.92	1.0992	28.05	1.1043	28.18	1.1094	28.31	1.1146	28.44	1.1197
		1.5	28.376	28.676	28.44	1.1197	28.54	1.1236	28.64	1.1276	28.73	1.1311	28.83	1.135
M33		3.55	29.211	29.771	29.36	1.1559	29.59	1.165	29.82	1.174	30.04	1.1827	30.27	1.1917
		4	30.835	31.210	30.92	1.2173	31.05	1.2224	31.18	1.2276	31.31	1.2327	31.44	1.2378
		3	31.670	32.270	31.84	1.2535	32.10	1.2636	32.36	1.274	32.62	1.2843	32.88	1.2945
M36		3	32.752	33.252	32.88	1.2945	33.08	1.3024	33.27	1.3098	33.47	1.3177	33.66	1.3252
		2	33.835	34.210	33.92	1.3354	34.05	1.3406	34.18	1.3457	34.31	1.3508	34.44	1.3559
M39		4	34.670	35.270	34.84	1.3717	35.10	1.3819	35.36	1.3921	35.62	1.4024	35.88	1.4126
		2-	36.835	37.210	36.92	1.4535	37.05	1.4587	37.18	1.4638	37.31	1.4689	37.44	1.474
		3	37.129	37.799	37.32	1.4693	37.62	1.4811	37.91	1.4925	38.20	1.5039	38.49	1.5154
M42		3	38.752	39.252	38.88	1.5307	39.08	1.5386	39.27	1.5461	39.47	1.5539	39.66	1.5614
		2	39.835	40.210	39.92	1.5717	40.05	1.5768	40.18	1.5819	40.31	1.587	40.44	1.5921

### TAP DRILL SIZE FORMULA

$$\text{Drill Size} = \text{Tap Major Dia} - \frac{\text{Pitch} \times \% \text{ of Full Thread}}{76.980}$$

Example: Determine Drill Size for M12 x 1.75 Tap, 70% Full Thread.  
 Tap Major Diameter = 12  
 $1.75 \times 70 = 122.5$ ,  $122.5 + 76.980 = 1.59$   
 Drill Size =  $12 - 1.59 = 10.41\text{mm}$

### PERCENTAGE OF FULL THREAD FORMULA FOR METRIC THREADS

$$\% \text{ of Full Thread} = (\text{Tap Major Dia} - \text{Drill Dia.}) \times \frac{76.980}{\text{Pitch}}$$

Example: Determine the % of Full Thread for M12 x 1.75 Tap, using 10.41 mm Drill.  
 Pitch = 1.75  
 $12 - 10.41 = 1.59$   
 $76.980 \div 1.75 = 44$   
 Percentage of Full Thread =  $1.59 \times 44 = 70\%$



# ZELX SS SERIES



## Warning

- ◆Tools may shatter during use. Wear safety eye cover or eye glasses to avoid injury during tapping.
- ◆Use tools under the proper tapping condition.
- ◆Never wear gloves during turning operations as the gloves may get caught in the tools.
- ◆Wear safety shoes to avoid foot injury by the falling tools.
- ◆When attaching tools to the machine, fasten firmly to avoid chatter and run-out.
- ◆Fasten the workpiece firmly so it never moves during the tapping operation. Never use worn tools or damaged tools.
- ◆Take a special care to prevent fire during machining. High temperature during tapping can cause a fire.

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