

# HVSP

Spiral fluted taps for large  
forged parts in the heavy  
metalworking industry

First choice taps for large diameter blind hole.

· HVSP ·

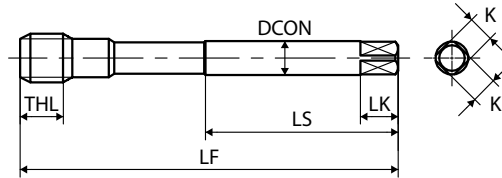
**Z-PRO**  
*Ultimate Machine Tap Series*





Spiral fluted taps for large parts in heavy industries

## Dimensions and sizes



Size	TCTR (Tol.)	Code	THCHT (chamfer)	LF (mm)	THL (mm)	LS (mm)	DCON (mm)	K (mm)	LK (mm)	NOF (No. of flutes)
<b>M</b>										
M12X1.75	ISO2X(6HX)	SG012PSEEXJ	2.5P	110	26	56	9	7	10	3
M14X2	ISO2X(6HX)	SG014QSEEXJ	2.5P	110	26	56	11	9	12	3
M16X2	ISO2X(6HX)	SG016QSEEXJ	2.5P	110	26	56	12	9	12	3
M18X2.5	ISO2X(6HX)	SG018RTEEXJ	2.5P	125	33	64	14	11	14	4
M20X2.5	ISO2X(6HX)	SG020RTEEXJ	2.5P	140	33	71	16	12	15	4
M22X2.5	ISO2X(6HX)	SG022RTEEXJ	2.5P	140	33	71	18	14.5	17	4
M24X3	ISO2X(6HX)	SG024STEEXJ	2.5P	160	37	82	18	14.5	17	4
M27X3	ISO2X(6HX)	SG027STEEXJ	2.5P	160	37	82	20	16	19	4
M30X3.5	ISO2X(6HX)	SG030TBEEEXJ	2.5P	180	44	92	22	18	21	4
M33X3.5	ISO2X(6HX)	SG033TBEEEXJ	2.5P	180	46	92	25	20	23	4
M36X4	ISO2X(6HX)	SG036UBEEEXJ	2.5P	200	52	102	28	22	25	4
M39X4	ISO2X(6HX)	SG039UBEEEXJ	2.5P	200	52	102	32	24	27	4
M42X4.5	ISO2X(6HX)	SG042VBEEXJ	2.5P	200	59	102	32	24	27	4
M48X5	ISO2X(6HX)	SG048WBEEXJ	2.5P	250	65	128	36	29	32	4
<b>MF</b>										
M30X3	ISO2X(6HX)	SM030SUEEXJ	2.5P	180	44	92	22	18	21	4
M33X3	ISO2X(6HX)	SM033SUEEXJ	2.5P	180	46	92	25	20	23	4
M36X3	ISO2X(6HX)	SM036SUEEXJ	2.5P	200	52	102	28	22	25	4
M39X3	ISO2X(6HX)	SM039SUEEXJ	2.5P	200	52	102	32	24	27	4
M42X3	ISO2X(6HX)	SM042SUEEXJ	2.5P	200	59	102	32	24	27	4
M48X3	ISO2X(6HX)	SM048SUEEXJ	2.5P	225	49	115	36	29	32	4
<b>UNC</b>										
1 -8UNC	2BX	SGU16XYEEXJ	2.5P	160	37	82	18	14.5	17	4
1 1/8-7UNC	2BX	SGU18YYEEXJ	2.5P	180	44	92	22	18	21	4
1 1/4-7UNC	2BX	SGU20YYEEXJ	2.5P	180	49	92	22	18	21	4
1 3/8-6UNC	2BX	SGU22ZYEEXJ	2.5P	200	55	102	28	22	25	4
1 1/2-6UNC	2BX	SGU24ZYEEXJ	2.5P	200	59	102	32	24	27	4
1 3/4-5UNC	2BX	SGU280YEEXJ	2.5P	220	65	112	36	29	32	4
2 -4.5UNC	2BX	SGU329YEEXJ	2.5P	250	73	128	40	32	35	4
<b>UNF</b>										
1 -12UNF	2BX	SMU16SYEEXJ	2.5P	140	27	71	18	14.5	17	4
1 1/8-12UNF	2BX	SMU18SYEEXJ	2.5P	150	27	77	22	18	21	4
1 1/4-12UNF	2BX	SMU20SYEEXJ	2.5P	150	27	77	22	18	21	4
1 3/8-12UNF	2BX	SMU22SYEEXJ	2.5P	170	29	87	28	22	25	4
1 1/2-12UNF	2BX	SMU24SYEEXJ	2.5P	170	29	87	32	24	27	4
<b>8UN</b>										
1 1/8-8UN	2BX	SMU18XYEEXJ	2.5P	180	44	92	22	18	21	4
1 1/4-8UN	2BX	SMU20XYEEXJ	2.5P	180	49	92	22	18	21	4
1 3/8-8UN	2BX	SMU22XYEEXJ	2.5P	200	55	102	28	22	25	4
1 1/2-8UN	2BX	SMU24XYEEXJ	2.5P	200	59	102	32	24	27	4
1 3/4-8UN	2BX	SMU28XYEEXJ	2.5P	200	49	102	36	29	32	4
2 -8UN	2BX	SMU32XYEEXJ	2.5P	225	49	115	40	32	35	4
<b>12UN</b>										
1 3/4-12UN	2BX	SMU28SYEEXJ	2.5P	180	31	92	36	29	32	4

## Parameters

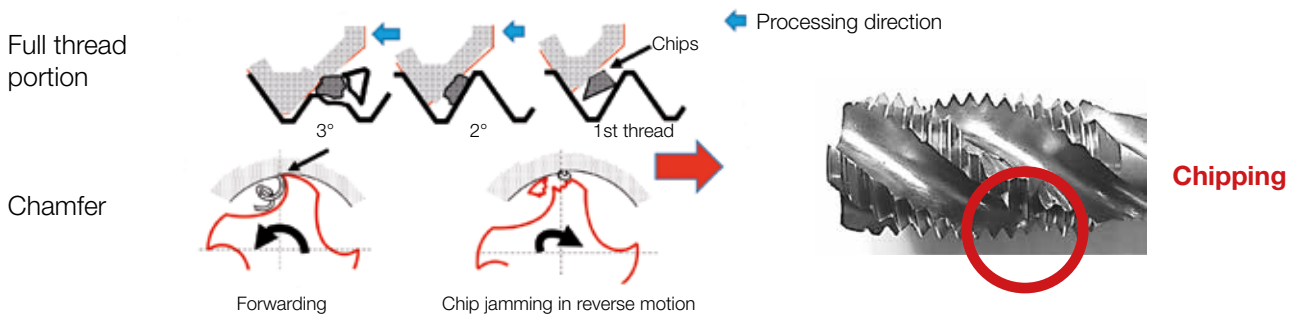
Recommended tapping conditions for the HVSP tap series.

Work-materials	Standard					Vc (m/min)
	JIS	ISO	Wk	AISI ASTM	DIN	
Stainless steel	SUS303 / SUS304	M1	1.4305 / 1.4301	303 / 304	-	3~8
Alloy steels	SUS316	M2	1.4401	316	-	3~8
	SCM	P3	1.7218 (SCM 425)	-	25 CrMo 4	3~8
High carbon steels	SCr	P2	1.7131 (SCR 415)	-	16 MnCr 5	3~8
Medium carbon steels	S45C~	P2	1.0503	-	C 45	3~8
Low carbon steels	S25C~S45C	P1 P2	1.1158~1.0503	-	Ck 25 ~ C 45	3~8
	~S20C / SS400	P1	1.0402, 1.0044	-	Ck22, St 44-2	3~8

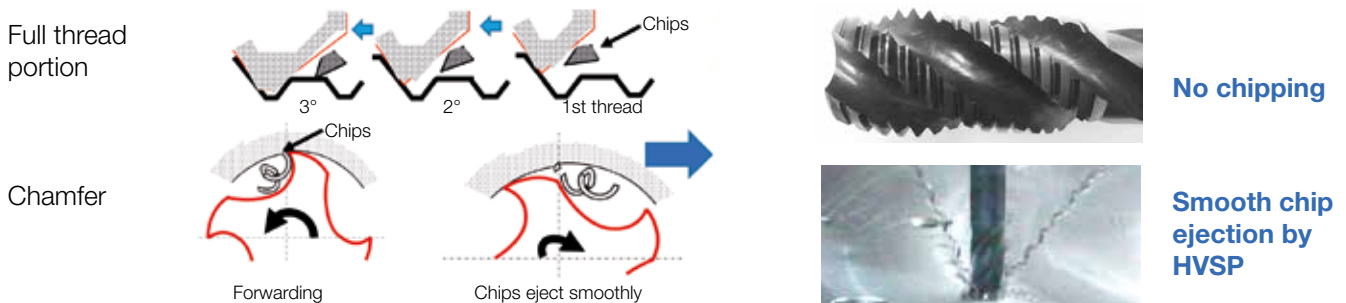
## Product features

HVSP are designed to avoid chipping problems and provide smooth chip ejection, by combining the unique Yamawa BLF thread geometry, a special geometry of the cutting edge and a unique flute design

### Tapping with standard SP - Chipping happens on thread portion



### Tapping with HVSP - No chipping



### Designed to avoid chipping problems



#### Advanced cutting edge

Specially designed geometry in cutting edge prevents chip incursion from the back side of chamfer thread portion during reverse motion



#### BLF shape on full thread portion

The BLF shape produces excellent cutting performances enabling the prevention of flute chipping problems



#### Unique flute design

Unique flute design for smooth chip ejection

Soft Structural steel such as St44-2 and low carbon steels are widely used in large size parts. Chips created by large size taps are thick and long becoming difficult to eject, resulting in high risk of chip tangling and cutting edge chipping.



Ejected chips by large size taps



Entangled chips



Chipping

## Combination with straight oil

Large diameter taps are more effective with an oxidation treatment enabling flutes to retain more oil during tapping helping to avoid welding problems on the thread portion of the tap and galling on tapped thread surface.

**Straight tapping oil** +



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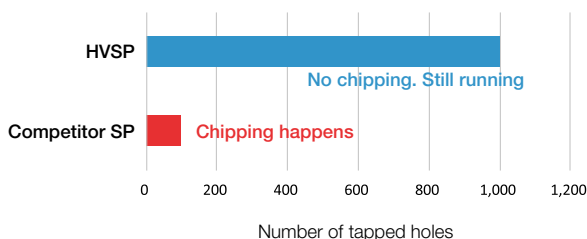


**Excellent internal thread surface!**

## Process data

### Case 1

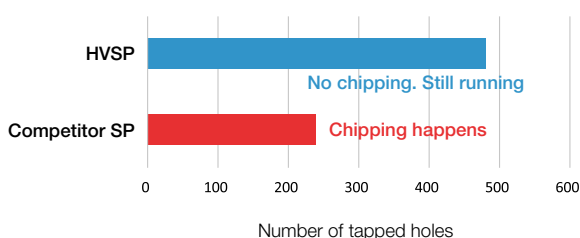
Comparison with other brand SP



Item	HVSP M16X2
	Other brand SP M16X2
Workpiece material	St44-2 / 1.0044 / Fe430B
Hole shape (depth)	Blind hole (42mm)
Direction	Horizontal
Bored hole dia. (mm)	14.20
Machine	Special machine (non rigid)
Cutting speed (m/min)	7.8
Lubrication	Straight oil

### Case 2

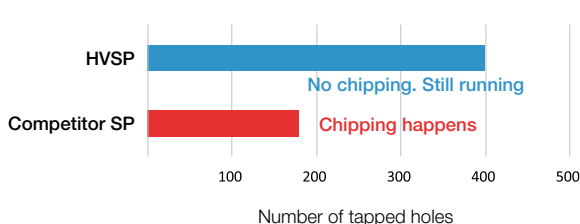
Comparison with standard SP



Item	HVSP M30
	Standard SP M30
Workpiece material	42CrMo4 / 1.7218
Hole shape (depth)	Blind hole (60mm)
Direction	Horizontal
Bored hole dia. (mm)	26.50
Machine	Machining center (non rigid)
Cutting speed (m/min)	4.7
Lubrication	Straight oil

### Case 3

Comparison with standard SP



Item	HVSP M36
	Other brand SP M36
Workpiece material	Ck55 / 1.1203 / C55
Hole shape (depth)	Blind hole (42mm)
Direction	Vertical
Bored hole dia. (mm)	32.50
Machine	Drilling machine (non rigid)
Cutting speed (m/min)	5.0
Lubrication	Straight oil

## WARNING

- Tools may shatter. Wear cover or eye glass to avoid injury during tapping.
- Tools may shatter. Use tools under the proper tapping condition.
- Never wear gloves during turning operations as the gloves may get caught with the tools.
- Wear safety shoes to avoid injuring yourself by the falling tools.
- On attaching tools to the machine, fasten firmly to avoid shattering and run-out.
- Fasten the workpieces firmly so that they never move during operation.
- Never use worn tools or damaged tools with chipping.
- Take a special care to fire trouble. High temperature during machining may cause fire.

Think threads with  
**YAMAWA**

