

# Blue Ring Series

Taps for stainless steels



Think threads with  
**YAMAWA**



## For stainless steels

In general, austenitic stainless steels have the following characteristics and are regarded as difficult to cut materials.

- It work hardens easily.
- Welding occurs frequently.
- Chip ejection is poor.
- It tends to shrink.
- Tool friction tends to occur.

	Steel grade	Element Content (%)	
		Ni	Cr
Austenitic stainless steels	1.4466 (AISI317)	11.00~15.00	18.00~20.00
	1.4401 (AISI316)	10.00~14.00	16.00~18.00
	1.4350 (AISI304)	8.00~10.50	18.00~20.00
	1.4305 (AISI303)	8.00~11.00	17.00~19.00

## Blue ring Taps for blind hole use

YAMAWA "Blue ring series" taps can be used especially for stainless steels.

SP+VA and SP-VA is recommended for tapping stainless steels such as 1.4350(AISI304) and 1.4305(AISI303).

SP+VA and SP-VA can also be used for chrome steels, chrome molybdenum steels and other ductile materials with great tendency to work harden.

	Steel grade	Element Content (%)	
		Ni	Cr
Austenitic stainless steels	1.4350 (AISI304)	8.00~10.50	18.00~20.00
	1.4305 (AISI303)	8.00~11.00	17.00~19.00



## The difference between SP+VA and SP-VA

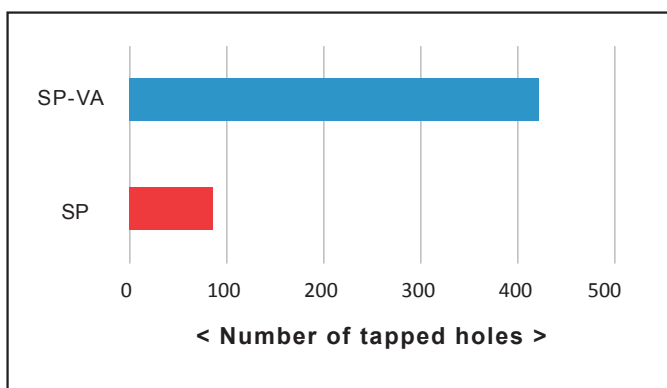
"+" means version up taps

SP+VA: Medium speed machining /Synchronous feed tapping is recommended on Machining Centers. **Effective for use with synchronous feed(rigid) tapping on CNC machining centers.**

SP-VA is for low speed machining on drilling machines and machining centers. Effective tapping on drilling machines.

Steel grade	Recommend tapping speed	
	5m/min	10m/min
1.4350 (AISI304)		SP+VA
1.4305 (AISI303)	SP-VA	

## Tapping data



Product	SP-VA M12
	SP M12
Work piece material	1.4350(AISI304)
Cutting speed	8m/min
Hole diameter	φ10.3
Threading length	25mm, Blind hole
Machine	CNC
Lubrication	Non-water soluble oil

## SU2-SP is the taps for tough stainless steels, blind hole use.

Austenitic stainless steel with the Nickel (Ni) content of 1.4401 (AISI316) and 1.4466 (AISI317) is regarded as "difficult-to-cut stainless steels".

SU2-SP is the best recommendation for tapping such tough stainless steels.

	Steel grade	Element Content (%)	
		Ni	Cr
Austenitic stainless steels	1.4466 (AISI317)	11.00~15.00	18.00~20.00
	1.4401 (AISI316)	10.00~14.00	16.00~18.00

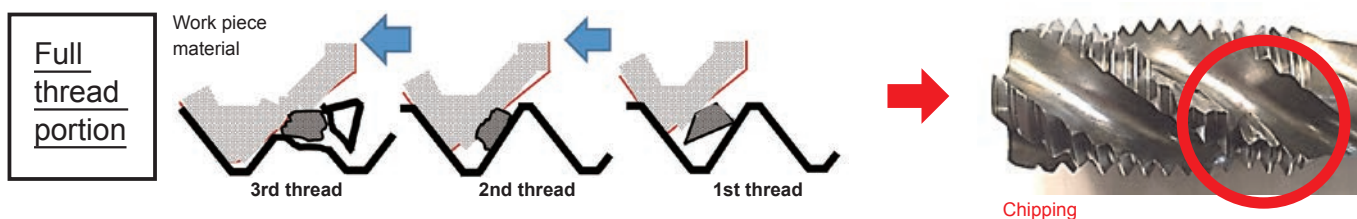


## Features

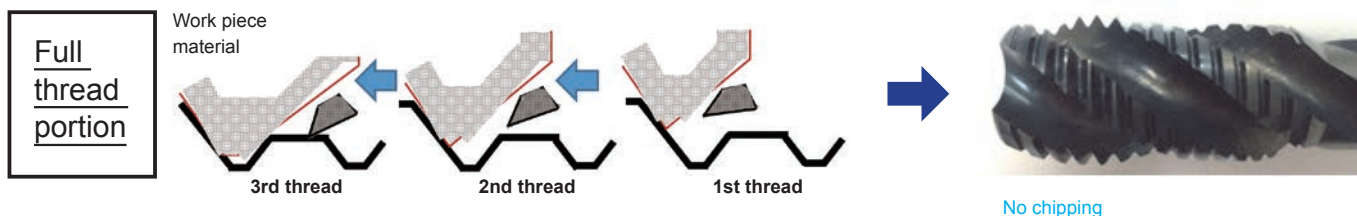
On full thread portion, SU2-SP is specially designed to have the first 3 threads at full height and the balance of the threads at about the pitch diameter in height. By adopting this unique thread design (BLF shape), SU2-SP realizes smooth chip ejection.

<Tapping with general purpose SP>

=> Chipping happens on full thread portion.



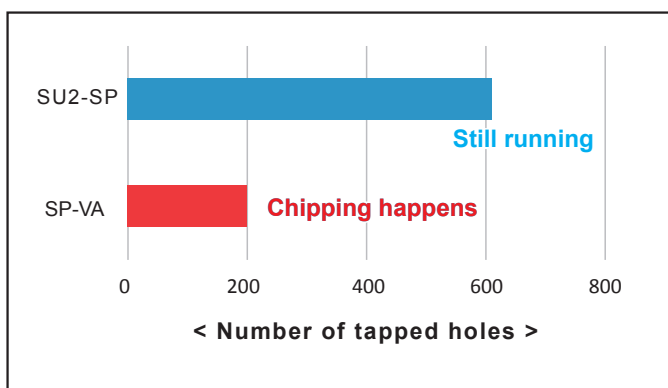
<Tapping with SU2-SP> No chipping.



### Attention of the usage of SU2-SP

1. Use with fully synchronized feed machine.
2. Use with complete fix holder.
3. Use with non-water soluble oil.
4. Recommended tapping speed is 5 to 15 m/min.

## Tapping data



Product	SU2-SP M12
	SP-VA M12
Workpiece material	1.4401(AISI316)
Cutting speed	8m/min
Hole diameter	φ10.3
Threading length	25mm, Blind hole
Machine	CNC
Lubrication	Non-water soluble oil


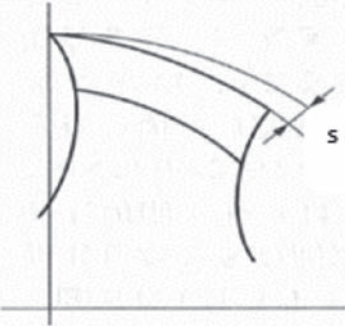

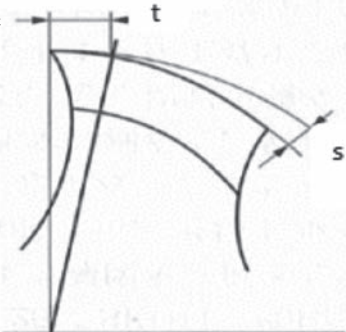

## Thread relief depending on the Taps

- Eccentric thread relief ... Cutting performance is quite enough.

Tap type should be used with a machine that has a full synchronous feed and a full fixed tap holder.

- Con-eccentric thread relief ... Cutting performance is high.

Tap of this type can be used with machines having full synchronous feed mechanism and other types of machines.

Taps	Type of thread relief (s : thread relief, t=width of margin)	Specification	Applicable Machine
 <p>SU2-SP</p>	<p>Eccentric thread relief</p> 	<p>Relief (s) begins from the edge of the flute at the cutting edge.</p> <p>&lt;Advantage&gt;</p> <ul style="list-style-type: none"> <li>· Minimizing of cutting torque and friction resistance.</li> <li>· Minimizing of welding.</li> </ul>	<p>Specially of Full synchronous feed</p>
 <p>SP+VA</p>	<p>Con-eccentric thread relief</p> 	<p>Relief (s) begins after the fully cylindrical portion of the tap diameter (t).</p> <p>&lt;Advantage&gt;</p> <p>Self-guidance characteristic enables stable cutting.</p>	<p>High spindle speed tapping. =&gt; Full synchronous feed</p>
 <p>SP-VA</p>			<p>Low spindle speed tapping. =&gt; Asynchronous feed</p>
			<p>Both for Full synchronized feed and Asynchronous feed</p>

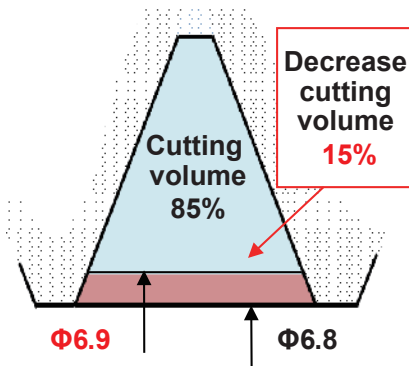
## Trouble shooting of tapping for stainless steels

When tapping troubles occur, the 1st solution is to make larger bored hole size before tapping.

For example, tapping M8x1.25 thread,

by adjusting the bored hole diameter from 6.8mm to 6.9mm, the cutting volume decrease 15%. The tapping load decreases as well.

Larger bored hole diameter can help to solve tap breakage and welding problems.



Size	Minor diameter of 6H internal threads		Recommended bored hole size
	Max.	Min.	
M 4X0.7	3.422	3.242	3.38
M 5X0.8	4.334	4.134	4.28
M 6X1	5.153	4.917	5.09
M 8X1.25	6.912	6.647	6.85
M10X1.5	8.676	8.376	8.6
M12X1.75	10.441	10.106	10.4

- ◆For other sizes, please refer to the technical page of Yamawa product catalog.

Please make the hole before tapping as close as Max value of minor diameter of 6H internal threads.

## Blue ring taps for through hole use

Yamawa offers 2 type of taps PO and SL for through hole use.

PO-VA and SL+VA can also be used not only stainless steels, also chrome steels, chrome molybdenum steels and other ductile materials such with great tendency to work harden.



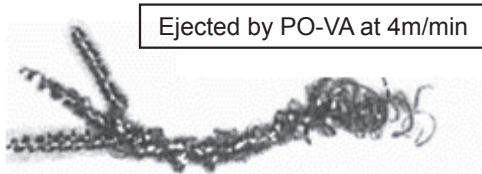
<How to distinguish PO-VA and SL+VA>

PO-VA: Recommended tapping speed is approximately 5m/min.

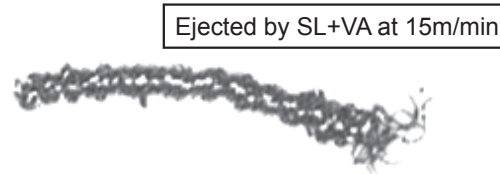
SL+VA: Recommended tapping speed is 6 to 18 m/min. **Tapping with a fully synchronous feed is recommended for tapping speeds of more than 8 m/min.**

Steel grade	Recommend tapping speed			
	5m/min	8m/min	10m/min	15m/min
1.4350 (AISI304)	PO-VA	SL+VA		
1.4305 (AISI303)		SL+VA		

### Chip shape

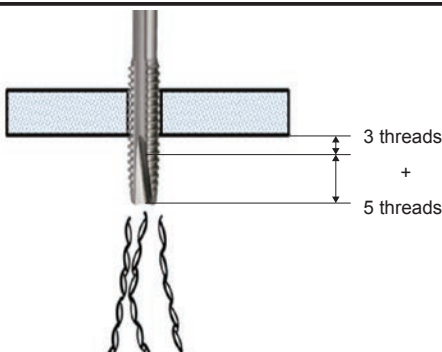


Ejected by PO-VA at 4m/min



Ejected by SL+VA at 15m/min

## Trouble shooting of through hole tapping



If the chips are not completely separated from the work material, the chips get caught in the tap on the reverse motion and chipping may occur. Please try to lengthen the feed stroke by 3 additional threads to ensure the cutting chamfer is completely clear of the bored hole.



No enough space for chip ejection on through hole tapping

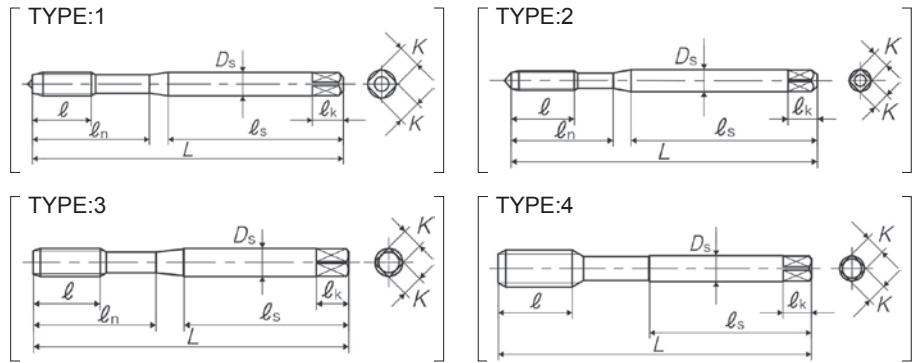
- In the case of thin plate tapping, or if there is no enough space between the workpiece material and jig for chip ejection, we recommend PO type.

- In some cases, ejected chips stocked in the fixture and new chips can not exhaust smoothly. => Eject chips regularly.

- For tapping that has long threading length, we recommend SL tap for smooth chip discharge.

# SP+VA

Class: ISO2, Chamfer: 2.5P

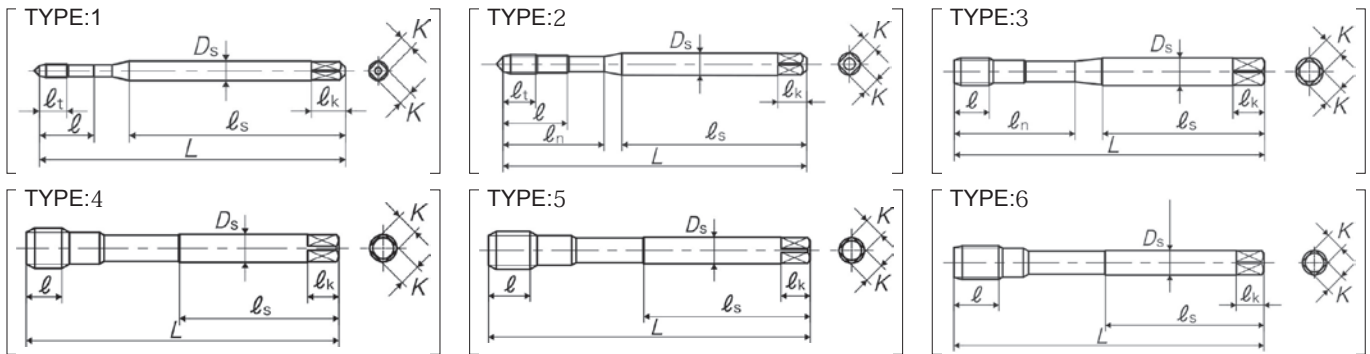


Size	Code	L (mm)	φ (mm)	φ <sub>n</sub> (mm)	φ <sub>s</sub> (mm)	D <sub>s</sub> (mm)	K (mm)	φ <sub>k</sub> (mm)	No. of flutes	Type	Bored hole diameter (ref.)
<b>M</b>											
M3X0.5	SE3.0GAGEX	56	9	18	34	3.5	2.7	6	3	1	2.56
M4X0.7	SE4.0GAGEX	63	13	21	38	4.5	3.4	6	3	1	3.38
M5X0.8	SE5.0GAGEX	70	14	25	39	6	4.9	8	3	1	4.28
M6X1	SE6.0GAGEX	80	15	30	45	6	4.9	8	3	1	5.09
M6X1	SZ3.0GAGEX	80	15	30	45	6	4.9	8	3	4	5.09
M8X1.25	SE8.0GAGEX	90	19	35	47	8	6.2	9	3	2	6.85
M8X1.25	SZ8.0GAGEX	90	19	35	48	8	6.2	9	3	4	6.85
M10X1.5	SE100AGEX	100	23	39	52.5	10	8	11	4	2	8.60
M10X1.5	SZ100AGEX	100	23	39	53	10	8	11	4	4	8.60
M12X1.75	SZ12PAGEX	110	26	45	56	12	9	12	4	4	10.4
M12X1.75	SH012PAGEX	110	26	-	56	9	7	10	4	3	10.4

# SP-VA

class : M, MF: ISO2 (※ISO3)  
UNC, UNF and UN: 2B

chamfer : 2.5P



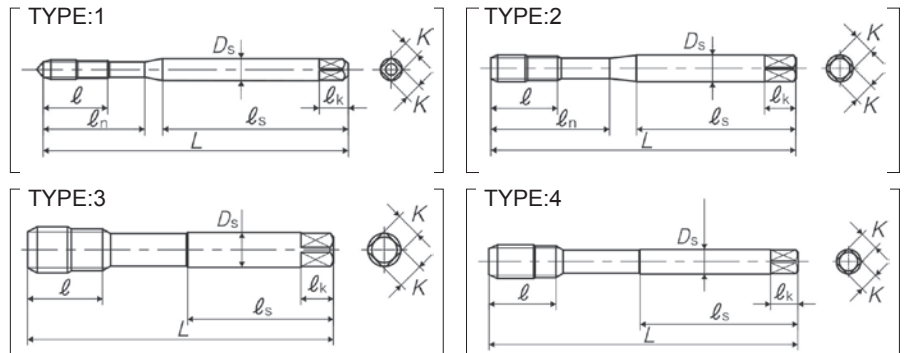
Size	Code	L (mm)	φ <sub>t</sub> (mm)	φ (mm)	φ <sub>n</sub> (mm)	φ <sub>s</sub> (mm)	D <sub>s</sub> (mm)	K (mm)	φ <sub>k</sub> (mm)	No. of flutes	Type	Bored hole diameter (ref.)
<b>M</b>												
M2X0.4	SD2.0EAGEX	45	4	8	-	32	2.8	2.1	5	2	1	1.65
M2.5X0.45	SD2.5FAGEX	50	4	8	15	33	2.8	2.1	5	2	2	2.11
M3X0.5	SD3.0GAGEX	56	5	9	18	34	3.5	2.7	6	2	2	2.56
M3X0.5	SD3.0GMGEX ※	56	5	9	18	34	3.5	2.7	6	2	2	2.56
M4X0.7	SD4.0IAGEX	63	7	13	21	38	4.5	3.4	6	3	2	3.38
M4X0.7	SD4.0IMGEX ※	63	7	13	21	38	4.5	3.4	6	3	2	3.38
M5X0.8	SD5.0KAGEX	70	9	14	25	39	6	4.9	8	3	2	4.28
M5X0.8	SD5.0KMGEX ※	70	9	14	25	39	6	4.9	8	3	2	4.28
M6X1	SD6.0MAGEX	80	11	15	30	45	6	4.9	8	3	2	5.09
M6X1	SD6.0MMGEX ※	80	11	15	30	45	6	4.9	8	3	2	5.09
M8X1.25	SG8.0NAGEX	90	-	12	-	46	6	4.9	8	3	4	6.85
M8X1.25	SD8.0NAGEX	90	-	12	35	47	8	6.2	9	3	3	6.85
M8X1.25	SD8.0NMGEX ※	90	-	12	35	47	8	6.2	9	3	3	6.85
M10X1.5	SG100AGEX	100	-	13	-	51	7	5.5	8	3	4	8.60
M10X1.5	SD100AGEX	100	-	13	39	52.5	10	8	11	3	3	8.60
M10X1.5	SD100MGEX ※	100	-	13	39	52.5	10	8	11	3	3	8.60
M12X1.75	SG12PAGEX	110	-	15	-	56	9	7	10	3	5	10.4
M12X1.75	SG12PMGEX ※	110	-	15	-	56	9	7	10	3	5	10.4

Size	Code	L (mm)	ℓt (mm)	ℓ (mm)	ℓn (mm)	ℓs (mm)	Ds (mm)	K (mm)	ℓk (mm)	No. of flutes	Type	Bored hole diameter (ref.)
M14X2	SG014QAGEX	110	-	18	-	56	11	9	12	3	5	12.1
M16X2	SG016QAGEX	110	-	18	-	56	12	9	12	3	5	14.1
M18X2.5	SG018RAGEX	125	-	20	-	64	14	11	14	4	5	15.6
M20X2.5	SG020RAGEX	140	-	20	-	71	16	12	15	4	5	17.6
M22X2.5	SG022RAGEX	140	-	20	-	71	18	14.5	17	4	5	19.6
M24X3	SG024SAGEX	160	-	25	-	82	18	14.5	17	4	5	21.1
M27X3	SG027SAGEX	160	-	25	-	82	20	16	19	4	5	24.1
M30X3.5	SG030TAGEX	180	-	30	-	92	22	18	21	4	5	26.6
M36X4	SG036UAGEX	200	-	40	-	102	28	22	25	4	5	32.1
<b>MF</b>												
M6X0.75	SM6.0JAGEX	80	8	13	-	-	4.5	3.4	6	3	3	5.33
M8X1	SM8.0MAGEX	90	-	12	-	46	6	4.9	8	3	4	7.09
M8X0.75	SM8.0JAGEX	80	-	12	-	41	6	4.9	8	3	5	7.33
M10X1.25	SM010NAGEX	100	-	13	-	51	7	5.5	8	3	4	8.85
M10X1	SM010MAGEX	90	-	13	-	46	7	5.5	8	3	4	9.09
M12X1.5	SM012OAGEX	100	-	15	-	51	9	7	10	3	4	10.60
M12X1.25	SM012NAGEX	100	-	15	-	51	9	7	10	3	4	10.85
M12X1	SM012MAGEX	100	-	15	-	51	9	7	10	3	4	11.09
M14X1.5	SM014OAGEX	100	-	14	-	51	11	9	12	3	4	12.60
M14X1	SM014MAGEX	100	-	14	-	51	11	9	12	3	4	13.09
M16X1.5	SM016OAGEX	100	-	14	-	51	12	9	12	3	4	14.60
M16X1	SM016MAGEX	100	-	14	-	51	12	9	12	3	5	15.09
M18X1.5	SM018OAGEX	110	-	14	-	56	14	11	14	4	4	16.60
M20X1.5	SM020OAGEX	125	-	14	-	64	16	12	15	4	4	18.60
M22X1.5	SM022OAGEX	125	-	14	-	64	18	14.5	17	4	4	20.60
M24X1.5	SM024OAGEX	140	-	18	-	71	18	14.5	17	4	4	22.60
M27X2	SM027QAGEX	140	-	20	-	71	20	16	19	4	5	25.1
M30X2	SM030QAGEX	150	-	20	-	77	22	18	21	4	5	28.1
M30X1.5	SM030OAGEX	150	-	20	-	77	22	18	21	4	5	28.60
<b>UNC</b>												
NO.4-40	SDUN4HXGEX	56	11	5	18	34	3.5	2.7	6	2	2	2.33
NO.6-32	SDUN6JXGEX	56	7	11	19	32	4	3	6	3	2	2.83
NO.8-32	SDUN8JXGEX	63	7	13	21	38	4.5	3.4	6	3	2	3.47
NO.10-24	SDUNAMXGEX	70	9	14	24	39	6	4.9	8	3	2	3.89
1/4-20	SDU04NXGEX	80	11	15	30	42	7	5.5	8	3	2	5.19
5/16-18	SDU05OXGEX	90	-	12	35	47	8	6.2	9	3	3	6.65
3/8-16	SDU06PXGEX	100	-	13	39	54.5	9	7	10	3	3	8.06
7/16-14	SGU07QXGEX	100	-	13	-	51	8	6.2	9	3	5	9.4
1/2-13	SGU08RXGEX	110	-	15	-	56	9	7	10	3	5	10.9
9/16-12	SGU09SXGEX	110	-	18	-	56	11	9	12	3	5	12.3
5/8-11	SGU10UXGEX	110	-	18	-	56	12	9	12	3	5	13.7
3/4-10	SGU12VXGEX	125	-	20	-	64	14	11	14	4	5	16.7
7/8-9	SGU14WXGEX	140	-	20	-	71	18	14.5	17	4	5	19.6
1-8	SGU16XXGEX	160	-	25	-	82	18	14.5	17	4	5	22.4
1 1/8-7	SGU18YXGEX	180	-	30	-	92	22	18	21	4	5	25.2
1 1/4-7	SGU20YXGEX	180	-	30	-	92	22	18	21	4	5	28.3
1 3/8-6	SGU22ZXGEX	200	-	40	-	102	28	22	25	4	5	30.9
1 1/2-6	SGU24ZXGEX	200	-	40	-	102	32	24	27	4	5	34.1
<b>UNF</b>												
NO.10-32	SDUNAJXGEX	70	9	14	24	39	6	4.9	8	3	2	4.11
1/4-28	SDU04KXGEX	80	11	15	30	42	7	5.5	8	3	2	5.53
5/16-24	SMU05MXGEX	90	-	12	-	46	6	4.9	8	3	4	6.97
3/8-24	SMU06MXGEX	100	-	13	-	51	7	5.5	8	3	4	8.57
7/16-20	SMU07NXGEX	100	-	13	-	51	8	6.2	9	3	4	9.96
1/2-20	SMU08NXGEX	100	-	15	-	51	9	7	10	3	4	11.54
9/16-18	SMU09OXGEX	100	-	14	-	51	11	9	12	3	4	13.00
5/8-18	SMU10OXGEX	100	-	14	-	51	12	9	12	3	4	14.6
3/4-16	SMU12PXGEX	110	-	14	-	56	14	11	14	4	4	17.59
7/8-14	SMU14QXGEX	125	-	20	-	64	18	14.5	17	4	4	20.6
1-12	SMU16SXGEX	140	-	18	-	71	18	14.5	17	4	4	23.5
1 1/8-12	SMU18SXGEX	150	-	20	-	77	22	18	21	4	4	26.6
1 1/4-12	SMU20SXGEX	150	-	20	-	77	22	18	21	4	4	29.8
1 3/8-12	SMU22SXGEX	170	-	20	-	87	28	22	25	4	4	33.00
1 1/2-12	SMU24SXGEX	170	-	20	-	87	32	24	27	4	4	36.2
<b>UN</b>												
1 1/8-8	SMU18XXGEX	180	-	28	-	92	22	18	21	4	4	25.6
1 1/4-8	SMU20XXGEX	180	-	28	-	92	22	18	21	4	4	28.8
1 3/8-8	SMU22XXGEX	200	-	30	-	102	28	22	25	4	4	32.00
1 1/2-8	SMU24XXGEX	200	-	30	-	102	32	24	27	4	4	35.1
1 5/8-8	SMU26XXGEX	200	-	30	-	102	32	24	27	4	4	38.3
1 3/4-8	SMU28XXGEX	200	-	40	-	102	36	29	32	4	4	41.5
2-8	SMU32XXGEX	225	-	40	-	115	40	32	35	4	4	47.8
<b>G</b>												
G1/8-28	SVG0020GEX	90	-	12	-	46	7	5.5	8	3	6	8.78
G1/4-19	SVG0040GEX	100	-	14	-	51	11	9	12	3	6	11.78
G3/8-19	SVG0060GEX	100	-	14	-	51	12	9	12	3	6	15.28
G1/2-14	SVG0080GEX	125	-	18	-	64	16	12	15	4	6	19
G3/4-14	SVG0120GEX	140	-	20	-	71	20	16	19	4	6	24.5
G1-11	SVG0160GEX	160	-	20	-	82	25	20	23	4	4	30.8

# SU2-SP

M : class: ISO2, chamfer: 3P

G : class; -, chamfer: 3P



Size	Code	L (mm)	φ (mm)	φ <sub>n</sub> (mm)	φ <sub>s</sub> (mm)	D <sub>s</sub> (mm)	K (mm)	φ <sub>k</sub> (mm)	No. of flutes	Type	Bored hole diameter (ref.)
<b>M</b>											
M3X0.5	SD3.0GAGEXJ	56	9	18	34	3.5	2.7	6	3	1	2.56
M4X0.7	SD4.0IAGEXJ	63	13	21	38	4.5	3.4	6	3	1	3.38
M5X0.8	SD5.0KAGEXJ	70	14	25	39	6	4.9	8	3	1	4.28
M6X1	SD6.0MAGEXJ	80	15	30	45	6	4.9	8	3	1	5.09
M8X1.25	SD8.0NAGEXJ	90	19	35	47	8	6.2	9	3	2	6.85
M10X1.5	SD010DAGEXJ	100	23	39	52.5	10	8	11	3	2	8.60
M12X1.75	SD012PAGEXJ	110	26	-	56	9	7	10	4	3	10.4
M14X2	SG014OAGEXJ	110	26	-	56	11	9	12	4	3	12.1
M16X2	SG016OAGEXJ	110	26	-	56	12	9	12	4	3	14.1
M18X2.5	SG018RAGEXJ	125	33	-	64	14	11	14	4	3	15.6
M20X2.5	SG020RAGEXJ	140	33	-	71	16	12	15	4	3	17.6
M22X2.5	SG022RAGEXJ	140	33	-	71	18	14.5	17	4	3	19.6
M24X3	SG024SAGEXJ	160	37	-	82	18	14.5	17	4	3	21.1
<b>G</b>											
G1/8-28	SVGO020GEXJ	90	19	-	46	7	5.5	8	3	4	8.78
G1/4-19	SVGO040GEXJ	100	21	-	51	11	9	12	4	4	11.78
G3/8-19	SVGO060GEXJ	100	21	-	51	12	9	12	4	4	15.28
G1/2-14	SVGO080GEXJ	125	24	-	64	16	12	15	4	4	19.0
G3/4-14	SVGO120GEXJ	140	27	-	71	20	16	19	4	4	24.5

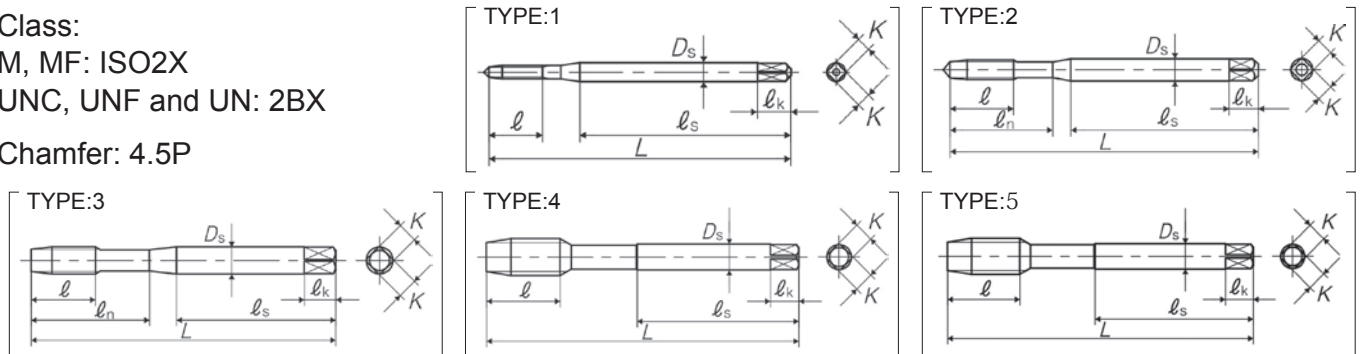
# PO-VA

Class:

M, MF: ISO2X

UNC, UNF and UN: 2BX

Chamfer: 4.5P



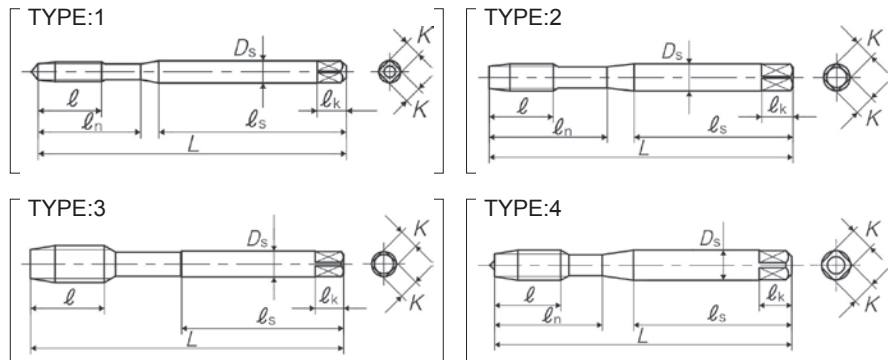
Size	Code	L (mm)	φ (mm)	φ <sub>n</sub> (mm)	φ <sub>s</sub> (mm)	D <sub>s</sub> (mm)	K (mm)	φ <sub>k</sub> (mm)	No. of flutes	Type	Bored hole diameter (ref.)
<b>M</b>											
M2X0.4	PD2.0EBGEX	45	8	-	32	2.8	2.1	5	2	1	1.65
M2.5X0.45	PD2.5FBGEX	50	8	15	33	2.8	2.1	5	2	2	2.11
M3X0.5	PD3.0GBGEX	56	9	18	34	3.5	2.7	6	3	2	2.56
M4X0.7	PD4.0IBGEX	63	13	21	38	4.5	3.4	6	3	2	3.38



Size	Code	L (mm)	ℓ (mm)	ℓ <sub>n</sub> (mm)	ℓ <sub>s</sub> (mm)	D <sub>s</sub> (mm)	K (mm)	ℓ <sub>k</sub> (mm)	No. of flutes	Type	Bored hole diameter (ref.)
M5X0.8	PD5.0KBGEX	70	14	25	39	6	4.9	8	3	2	4.28
M6X1	PD6.0MBGEX	80	15	30	45	6	4.9	8	3	2	5.09
M8X1.25	PD8.0NBGEX	90	19	35	47	8	6.2	9	3	3	6.85
M8X1.25	PG8.0NBGEX	90	19	-	46	6	4.9	8	3	4	6.85
M10X1.5	PD010OBGEX	100	23	39	52.5	10	8	11	3	3	8.60
M10X1.5	PG010OBGEX	100	23	-	51	7	5.5	8	3	3	8.60
M12X1.75	PG012PBGEX	110	26	-	56	9	7	10	3	4	10.4
M14X2	PG014QBGEX	110	26	-	56	11	9	12	3	4	12.1
M16X2	PG016QBGEX	110	26	-	56	12	9	12	3	4	14.1
M18X2.5	PG018RBGEX	125	33	-	64	14	11	14	3	4	15.6
M20X2.5	PG020RBGEX	140	33	-	71	16	12	15	3	4	17.6
M22X2.5	PG022RBGEX	140	33	-	71	18	14.5	17	3	4	19.6
M24X3	PG024SBGEX	160	37	-	82	18	14.5	17	3	4	21.1
M27X3	PG027SBGEX	160	37	-	82	20	16	19	4	4	24.1
M30X3.5	PG030TBGEX	180	44	-	92	22	18	21	4	4	26.6
M36X4	PG036UBGEX	200	52	-	102	28	22	25	4	4	32.1
<b>MF</b>											
M8X1	PM8.0MBGEX	90	19	-	46	6	4.9	8	3	4	7.09
M10X1.25	PM010NBGEX	100	23	-	51	7	5.5	8	3	4	8.85
M10X1	PM010MBGEX	90	19	-	46	7	5.5	8	3	4	9.09
M12X1.5	PM012OBGEX	100	21	-	51	9	7	10	3	4	10.60
M12X1.25	PM012NBGEX	100	21	-	51	9	7	10	3	4	10.85
M12X1	PM012MBGEX	100	21	-	51	9	7	10	3	4	11.09
M14X1.5	PM014OBGEX	100	21	-	51	11	9	12	3	4	12.60
M16X1.5	PM016OBGEX	100	21	-	51	12	9	12	3	4	14.60
M18X1.5	PM018OBGEX	110	24	-	56	14	11	14	3	4	16.60
M20X1.5	PM020OBGEX	125	24	-	64	16	12	15	3	4	18.60
M22X1.5	PM022OBGEX	125	24	-	64	18	14.5	17	3	4	20.60
M24X1.5	PM024OBGEX	140	27	-	71	18	14.5	17	3	4	22.60
<b>UNC</b>											
NO.4-40	PDUN4HYGEX	56	9	18	34	3.5	2.7	6	3	2	2.33
NO.6-32	PDUN6JYGEX	56	11	19	32	4	3	6	3	2	2.83
NO.8-32	PDUN8JYGEX	63	13	21	38	4.5	3.4	6	3	2	3.47
NO.10-24	PDUNAMYGEX	70	14	24	39	6	4.9	8	3	2	3.89
1/4-20	PDU04NYGEX	80	15	30	42	7	5.5	8	3	2	5.19
5/16-18	PDU05OYGEX	90	19	35	47	8	6.2	9	3	3	6.65
3/8-16	PDU06PYGEX	100	23	39	54.5	9	7	10	3	3	8.06
7/16-14	PGU07QYGEX	100	23	-	51	8	6.2	9	3	4	9.4
1/2-13	PGU08RYGEX	110	26	-	56	9	7	10	3	4	10.9
9/16-12	PGU09SYGEX	110	26	-	56	11	9	12	3	4	12.3
5/8-11	PGU10UYGEX	110	26	-	56	12	9	12	3	4	13.7
3/4-10	PGU12VYGEX	125	33	-	64	14	11	14	3	4	16.7
7/8-9	PGU14WYGEX	140	33	-	71	18	14.5	17	3	4	19.6
1-8	PGU16XYGEX	160	37	-	82	18	14.5	17	3	4	22.4
<b>UNF</b>											
NO. 10-32	PDUNAJYGEX	70	14	24	39	6	4.9	8	3	2	4.11
1/4-28	PDU04KYGEX	80	15	30	42	7	5.5	8	3	2	5.53
5/16-24	PMU05MYGEX	90	19	-	46	6	4.9	8	3	4	6.97
3/8-24	PMU06MYGEX	100	23	-	51	7	5.5	8	3	4	8.57
1/2-20	PMU08NYGEX	100	21	-	51	9	7	10	3	4	11.54
9/16-18	PMU09OYGEX	100	21	-	51	11	9	12	3	4	13.00
5/8-18	PMU10OYGEX	100	21	-	51	12	9	12	3	4	14.6
3/4-16	PMU12PYGEX	110	24	-	56	14	11	14	3	4	17.59
7/8-14	PMU14QYGEX	125	24	-	64	18	14.5	17	3	4	20.6
1-12	PMU16SYGEX	140	27	-	71	18	14.5	17	3	4	23.5

Size	Code	L (mm)	$\phi$ (mm)	$\phi_n$ (mm)	$\phi_s$ (mm)	Ds (mm)	K (mm)	$\phi_k$ (mm)	No. of flutes	Type	Bored hole diameter (ref.)
<b>G</b>											
G1/8-28	PVG0020GEX	90	19	-	46	7	5.5	8	3	5	8.78
G1/4-19	PVG0040GEX	100	21	-	51	11	9	12	3	5	11.78
G3/8-19	PVG0060GEX	100	21	-	51	12	9	12	3	5	15.28
G1/2-14	PVG0080GEX	125	24	-	64	16	12	15	3	5	19.0
G3/4-14	PVG0120GEX	140	27	-	71	20	16	19	4	5	24.5
G1-11	PVG0160GEX	160	29	-	82	25	20	23	4	5	30.8

## SL+VA Class: ISO2X, Chamfer: 5P



Size	Code	L (mm)	$\phi$ (mm)	$\phi_n$ (mm)	$\phi_s$ (mm)	Ds (mm)	K (mm)	$\phi_k$ (mm)	No. of flutes	Type	Bored hole diameter (ref.)
<b>M</b>											
M3X0.5	LE3.0BGEEX	56	9	18	34	3.5	2.7	6	3	1	2.56
M4X0.7	LE4.0IBGEEX	63	13	21	38	4.5	3.4	6	3	1	3.38
M5X0.8	LE5.0KBGEEX	70	14	25	39	6	4.9	8	3	1	4.28
M6X1	LZ6.0MBGEEX	80	15	30	45	6	4.9	8	3	4	5.09
M6X1	LE6.0MBGEEX	80	15	30	45	6	4.9	8	3	1	5.09
M8X1.25	LZ8.0NBGEEX	90	19	35	47	8	6.2	9	3	4	6.85
M8X1.25	LE8.0NBGEEX	90	19	35	47	8	6.2	9	3	2	6.85
M10X1.5	LZ010OBGEEX	100	23	39	52	10	8	11	3	4	8.60
M10X1.5	LE010OBGEEX	100	23	39	52.5	10	8	11	3	2	8.60
M12X1.75	LZ012PBGEEX	110	26	45	56	12	9	12	3	4	10.4
M12X1.75	LH012PBGEEX	110	26	-	56	9	7	10	3	3	10.4

### Warning

- ◆Tools may shatter. Wear cover or eye glasses 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 chattering and run-out.
- ◆Fasten the work pieces 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.

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