

VU SERIES

Z-PRO Ultimate Machining Taps.
The evolution of high performance tapping.

Z-PRO

Ultimate Machining Taps

JIS / DIN / ANSI



VUSP

VUPO

Product Features

Z-PRO
Ultimate Machining Taps

Coated Spiral Fluted Taps

VUSP

HSS-P

Coating



- Improved tool life from using a high grade of powder high speed steel with a special coating!
 - Improved chip evacuation and cutting resistance from a unique flute shape to produce excellent internal threads!
 - Utilizing a longer overall length to avoid the chips interfering with the holder!
- The Z-PRO VUSP is designed for use with water-soluble tapping fluid where there is a good coolant supply.

Compatible with a wide range of workpiece material

VUSP Recommended Tapping Conditions

Workpiece Material	Tapping Speed (m/min)	Workpiece Material	Tapping Speed (m/min)
General Structural Steel	10~20	Alloy Steel	10~20
Carbon Steel	10~25	Stainless Steel	5~10

VUSP is suitable for use with water-soluble cutting fluid

Ideal for machining in the medium speed range using water-soluble cutting fluid.

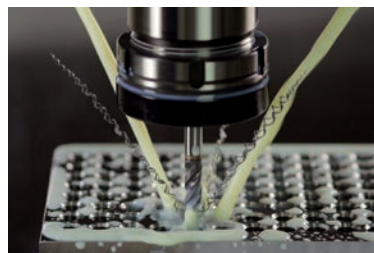
Fluid	Hole shape	Hand tapping	Drilling machine	Low speed (NC lathe, MC)	Middle speed (NC lathe, MC)
Water soluble cutting fluid					VUSP Vc ≤ 25m/min
					VUPO
Oil		HT	ISP	SP	+SP
		IHT	IPO	PO	+PO
					AU+SP
					AU+SL

Tapping Data

Tapping conditions VUSP M8X1.25

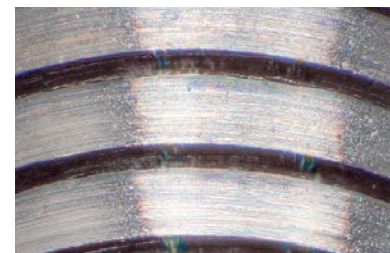
Workpiece Material	SUS304
Tapping Speed	10m/min
Machine	Vertical Machining center
Tapping Fluid	Water soluble tapping fluid

Excellent chip evacuation



The unique cutting edge shape and the long overall-length tap prevent chips from interfering with the holder. They also ensure a excellent supply of water-soluble tapping fluid.

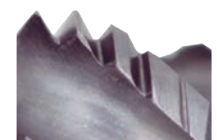
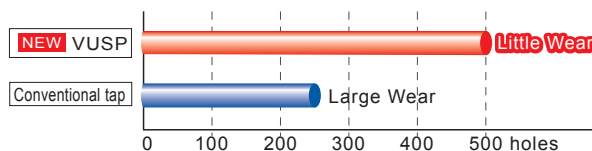
Excellent internal thread



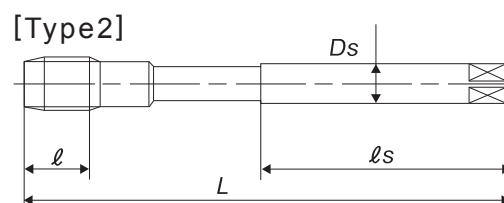
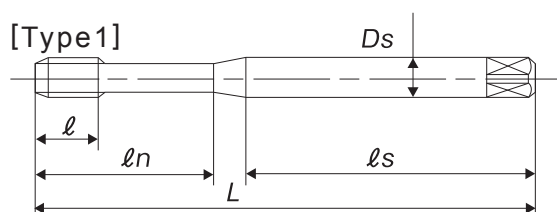
In tapping of SUS304, excellent internal thread surface is obtained even in tapping environments that use water-soluble tapping fluid.

Tapping conditions VUSP M3X0.5

Workpiece Material	S50C
Tapping Length	4.5mm
Tapping Speed	20m/min
Machine	Vertical Machining center
Tapping Fluid	Water soluble tapping fluid



After 250 holes tapped. Little wear, No chipping

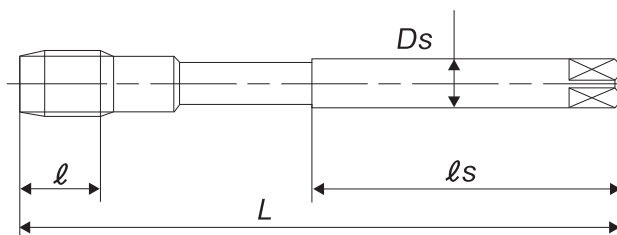


For Metric Threads

Size	Class	Product Code	Chamfer	L (mm)	l (mm)	ln (mm)	ls (mm)	Ds (mm)	No. of flutes	Type
M3 X 0.5	P2	1101101035	2.5P	56	5	18	32	4	3	1
M3 X 0.5	P3	1101201035	2.5P	56	5	18	32	4	3	1
M3 X 0.5	P4	1101301035	2.5P	56	5	18	32	4	3	1
M3 X 0.35	P2	1101101036	2.5P	56	5	18	32	4	3	1
M3 X 0.35	P3	1101201036	2.5P	56	5	18	32	4	3	1
M3 X 0.35	P4	1101301036	2.5P	56	5	18	32	4	3	1
M4 X 0.7	P2	1101101042	2.5P	63	7	21	36	5	3	1
M4 X 0.7	P3	1101201042	2.5P	63	7	21	36	5	3	1
M4 X 0.7	P4	1101301042	2.5P	63	7	21	36	5	3	1
M4 X 0.5	P2	1101101043	2.5P	63	5	21	36	5	3	1
M4 X 0.5	P3	1101201043	2.5P	63	5	21	36	5	3	1
M4 X 0.5	P4	1101301043	2.5P	63	5	21	36	5	3	1
M5 X 0.8	P2	1101101049	2.5P	70	9	25	40	5.5	3	1
M5 X 0.8	P3	1101201049	2.5P	70	9	25	40	5.5	3	1
M5 X 0.8	P4	1101301049	2.5P	70	9	25	40	5.5	3	1
M5 X 0.5	P2	1101101051	2.5P	70	6	25	40	5.5	3	1
M5 X 0.5	P3	1101201051	2.5P	70	6	25	40	5.5	3	1
M5 X 0.5	P4	1101301051	2.5P	70	6	25	40	5.5	3	1
M6 X 1	P2	1101101055	2.5P	80	11	30	45	6	3	1
M6 X 1	P3	1101201055	2.5P	80	11	30	45	6	3	1
M6 X 1	P4	1101301055	2.5P	80	11	30	45	6	3	1
M6 X 0.75	P2	1101101056	2.5P	80	8	30	45	6	3	1
M6 X 0.75	P3	1101201056	2.5P	80	8	30	45	6	3	1
M6 X 0.75	P4	1101301056	2.5P	80	8	30	45	6	3	1
M6 X 0.5	P2	1101101057	2.5P	80	8	30	45	6	3	1
M6 X 0.5	P3	1101201057	2.5P	80	8	30	45	6	3	1
M6 X 0.5	P4	1101301057	2.5P	80	8	30	45	6	3	1
M8 X 1.25	P3	1101101064	2.5P	90	12	—	46	6.2	3	2
M8 X 1.25	P4	1101201064	2.5P	90	12	—	46	6.2	3	2
M8 X 1.25	P5	1101301064	2.5P	90	12	—	46	6.2	3	2
M8 X 1	P3	1101101065	2.5P	90	12	—	46	6.2	3	2
M8 X 1	P4	1101201065	2.5P	90	12	—	46	6.2	3	2
M8 X 1	P5	1101301065	2.5P	90	12	—	46	6.2	3	2

Oversize

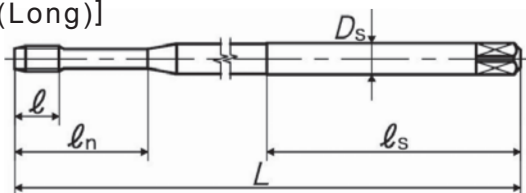
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**For Metric Threads**

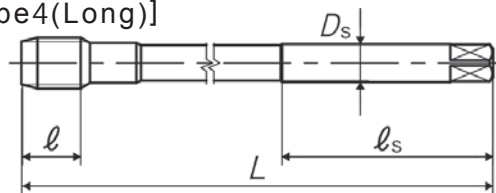
Size	Class	Product Code	Chamfer	L (mm)	l (mm)	l_n (mm)	l_s (mm)	D_s (mm)	No. of flutes	Type
M10 X 1.5	P3	1101101078	2.5P	100	13	—	51	7	3	2
M10 X 1.5	P4	1101201078	2.5P	100	13	—	51	7	3	2
M10 X 1.5	P5	1101301078	2.5P	100	13	—	51	7	3	2
M10 X 1.25	P3	1101101079	2.5P	100	13	—	51	7	3	2
M10 X 1.25	P4	1101201079	2.5P	100	13	—	51	7	3	2
M10 X 1.25	P5	1101301079	2.5P	100	13	—	51	7	3	2
M10 X 1	P3	1101101080	2.5P	100	13	—	51	7	3	2
M10 X 1	P4	1101201080	2.5P	100	13	—	51	7	3	2
M10 X 1	P5	1101301080	2.5P	100	13	—	51	7	3	2
M12 X 1.75	P4	1101101088	2.5P	110	15	—	56	8.5	3	2
M12 X 1.75	P5	1101201088	2.5P	110	15	—	56	8.5	3	2
M12 X 1.75	P6	1101301088	2.5P	110	15	—	56	8.5	3	2
M12 X 1.5	P3	1101101089	2.5P	110	15	—	56	8.5	3	2
M12 X 1.5	P4	1101201089	2.5P	110	15	—	56	8.5	3	2
M12 X 1.5	P5	1101301089	2.5P	110	15	—	56	8.5	3	2
M12 X 1.25	P3	1101101090	2.5P	110	15	—	56	8.5	3	2
M12 X 1.25	P4	1101201090	2.5P	110	15	—	56	8.5	3	2
M12 X 1.25	P5	1101301090	2.5P	110	15	—	56	8.5	3	2
M14 X 2	P4	1101101100	2.5P	110	18	—	56	10.5	3	2
M14 X 2	P5	1101201100	2.5P	110	18	—	56	10.5	3	2
M14 X 2	P6	1101301100	2.5P	110	18	—	56	10.5	3	2
M14 X 1.5	P3	1101101102	2.5P	110	14	—	56	10.5	3	2
M14 X 1.5	P4	1101201102	2.5P	110	14	—	56	10.5	3	2
M14 X 1.5	P5	1101301102	2.5P	110	14	—	56	10.5	3	2
M16 X 2	P4	1101101114	2.5P	110	18	—	56	12.5	3	2
M16 X 2	P5	1101201114	2.5P	110	18	—	56	12.5	3	2
M16 X 2	P6	1101301114	2.5P	110	18	—	56	12.5	3	2
M16 X 1.5	P3	1101101116	2.5P	110	14	—	56	12.5	3	2
M16 X 1.5	P4	1101201116	2.5P	110	14	—	56	12.5	3	2
M16 X 1.5	P5	1101301116	2.5P	110	14	—	56	12.5	3	2
M18 X 2.5	P5	1101101128	2.5P	125	20	—	64	14	4	2
M18 X 1.5	P4	1101101130	2.5P	125	20	—	64	14	3	2
M20 X 2.5	P5	1101101141	2.5P	140	20	—	71	15	4	2
M20 X 1.5	P4	1101101144	2.5P	140	20	—	71	15	3	2
M22 X 2.5	P5	1101101156	2.5P	140	20	—	71	17	4	2
M22 X 1.5	P4	1101101158	2.5P	140	20	—	71	17	3	2
M24 X 3	P5	1101101167	2.5P	160	25	—	82	19	4	2
M24 X 1.5	P4	1101101170	2.5P	160	18	—	82	19	3	2

Oversize

[Type3(Long)]



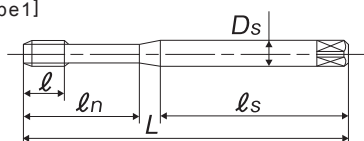
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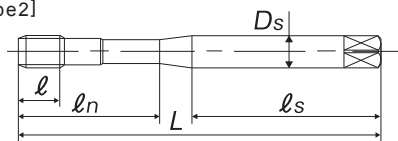
For Metric Threads

Size	Class	Product Code	Chamfer	L (mm)	l (mm)	l _n (mm)	l _s (mm)	D _s (mm)	No. of flutes	Type
M 3 X 0.5	P2	2101101035	2.5P	100	5	18	40	4	3	3
M 3 X 0.35	P2	2101101036	2.5P	100	5	18	40	4	3	3
M 4 X 0.7	P2	2101101042	2.5P	100	7	21	40	5	3	3
M 4 X 0.5	P2	2101101043	2.5P	100	5	21	40	5	3	3
M 5 X 0.8	P2	2101101049	2.5P	100	9	25	40	5.5	3	3
M 5 X 0.5	P2	2101101051	2.5P	100	6	25	40	5.5	3	3
M 6 X 1	P2	2101101055	2.5P	100	11	30	40	6	3	3
M 6 X 0.75	P2	2101101056	2.5P	100	8	30	40	6	3	3
M 6 X 0.5	P2	2101101057	2.5P	100	8	30	40	6	3	3
M 8 X 1.25	P3	2101101064	2.5P	150	12	—	50	6.2	3	4
M 8 X 1	P3	2101101065	2.5P	150	12	—	50	6.2	3	4
M10 X 1.5	P3	2101101078	2.5P	150	13	—	50	7	3	4
M10 X 1.25	P3	2101101079	2.5P	150	13	—	50	7	3	4
M10 X 1	P3	2101101080	2.5P	150	13	—	50	7	3	4
M12 X 1.75	P4	2101101088	2.5P	150	15	—	50	8.5	3	4
M12 X 1.5	P3	2101101089	2.5P	150	15	—	50	8.5	3	4
M12 X 1.25	P3	2101101090	2.5P	150	15	—	50	8.5	3	4
M14 X 2	P4	2101101100	2.5P	150	18	—	60	10.5	3	4
M14 X 1.5	P3	2101101102	2.5P	150	14	—	60	10.5	3	4
M16 X 2	P4	2101101114	2.5P	150	18	—	60	12.5	3	4
M16 X 1.5	P3	2101101116	2.5P	150	14	—	60	12.5	3	4

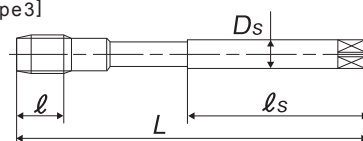
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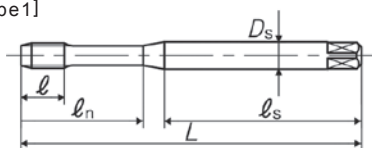
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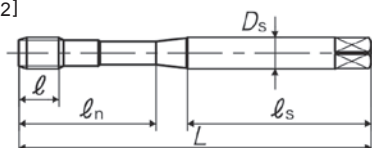
For Metric Threads

Size	Class	Product Code	Chamfer	L (mm)	ℓ (mm)	ℓ _n (mm)	ℓ _s (mm)	D _s (mm)	No. of flutes	Type
M 2 X 0.4	ISO2X	3101101021	2.5P	45	4	10	32	2.8	3	1
M 2.2 X 0.45	ISO2X	3101101024	2.5P	45	4	11	32	2.8	3	1
M 2.3 X 0.4	ISO2X	3101101026	2.5P	45	4	11	32	2.8	3	1
M 2.5 X 0.45	ISO2X	3101101029	2.5P	50	4	15	33	2.8	3	1
M 2.6 X 0.45	ISO2X	3101101032	2.5P	50	4	15	33	2.8	3	1
M 3 X 0.5	ISO2X	3101101035	2.5P	56	5	18	34	3.5	3	1
M 3 X 0.35	ISO2X	3101101036	2.5P	56	5	18	34	3.5	3	1
M 4 X 0.7	ISO2X	3101101042	2.5P	63	7	21	38	4.5	3	1
M 4 X 0.5	ISO2X	3101101043	2.5P	63	5	21	38	4.5	3	1
M 5 X 0.8	ISO2X	3101101049	2.5P	70	9	25	39	6	3	1
M 5 X 0.5	ISO2X	3101101051	2.5P	70	6	25	39	6	3	1
M 6 X 1	ISO2X	3101101055	2.5P	80	11	30	45	6	3	1
M 6 X 0.75	ISO2X	3101101056	2.5P	80	8	30	45	6	3	1
M 6 X 0.5	ISO2X	3101101057	2.5P	80	8	30	45	6	3	1
M 8 X 1.25	ISO2X	3101101064	2.5P	90	12	35	47	8	3	2
M 8 X 1	ISO2X	3101101065	2.5P	90	12	—	46	6	3	3
M10 X 1.5	ISO2X	3101101078	2.5P	100	13	39	52	10	3	2
M10 X 1.25	ISO2X	3101101079	2.5P	100	13	—	51	7	3	3
M10 X 1	ISO2X	3101101080	2.5P	90	13	—	46	7	3	3
M12 X 1.75	ISO2X	3101101088	2.5P	110	15	—	56	9	3	3
M12 X 1.5	ISO2X	3101101089	2.5P	100	15	—	51	9	3	3
M12 X 1.25	ISO2X	3101101090	2.5P	100	15	—	51	9	3	3
M14 X 2	ISO2X	3101101100	2.5P	110	18	—	56	11	3	3
M14 X 1.5	ISO2X	3101101102	2.5P	100	14	—	51	11	3	3
M16 X 2	ISO2X	3101101114	2.5P	110	18	—	56	12	3	3
M16 X 1.5	ISO2X	3101101116	2.5P	100	14	—	51	12	3	3
M18 X 2.5	ISO2X	3101101128	2.5P	125	20	—	64	14	4	3
M18 X 1.5	ISO2X	3101101130	2.5P	110	14	—	56	14	3	3
M20 X 2.5	ISO2X	3101101141	2.5P	140	20	—	71	16	4	3
M20 X 1.5	ISO2X	3101101144	2.5P	125	14	—	64	16	3	3
M22 X 2.5	ISO2X	3101101156	2.5P	140	20	—	71	18	4	3
M22 X 1.5	ISO2X	3101101158	2.5P	125	14	—	64	18	3	3
M24 X 3	ISO2X	3101101167	2.5P	160	25	—	82	18	4	3
M24 X 1.5	ISO2X	3101101170	2.5P	140	18	—	71	18	3	3

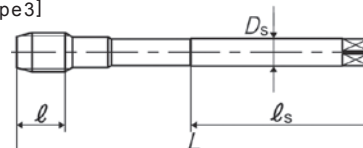
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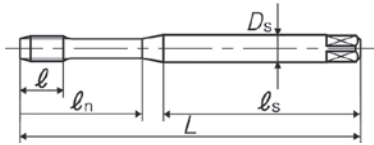
For Unified Threads

Size	Class	Product Code	Chamfer	L (mm)	ℓ (mm)	ℓ _n (mm)	ℓ _s (mm)	D _s (mm)	No. of flutes	Type
5-40UNC	2BX	3101103021	2.5P	56	5	18	34.5	3.5	2	1
5-44UNF	2BX	3101103022	2.5P	56	5	18	34.5	3.5	2	1
6-32UNC	2BX	3101103023	2.5P	56	7	19	32.5	4	2	1
6-40UNF	2BX	3101103024	2.5P	56	7	19	32.5	4	2	1
8-32UNC	2BX	3101103029	2.5P	63	7	21	38	4.5	2	1
8-36UNF	2BX	3101103030	2.5P	63	7	21	38	4.5	2	1
10-24UNC	2BX	3101103039	2.5P	70	9	24	39	6	2	1
10-32UNF	2BX	3101103041	2.5P	70	9	24	39	6	2	1
12-24UNC	2BX	3101103047	2.5P	80	9	28	45.5	6	2	1
12-28UNF	2BX	3101103048	2.5P	80	9	28	45.5	6	2	1
1/4-20UNC	2BX	3101103058	2.5P	80	11	30	42	7	2	1
1/4-28UNF	2BX	3101103062	2.5P	80	11	30	42	7	2	1
5/16-18UNC	2BX	3101103071	2.5P	90	12	35	47	8	3	2
3/8-16UNC	2BX	3101103082	2.5P	100	13	39	54	9	3	3
7/16-14UNC	2BX	3101103098	2.5P	100	13	—	51	8	3	3
1/2-13UNC	2BX	3101103111	2.5P	110	15	—	56	9	3	3
9/16-12UNC	2BX	3101103126	2.5P	110	18	—	56	11	3	3
5/8-11UNC	2BX	3101103138	2.5P	110	18	—	56	12	3	3

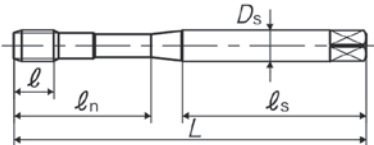
Coated Spiral Fluted Taps VUSP



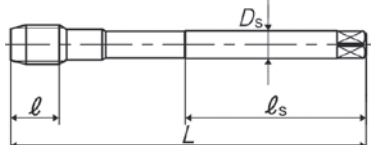
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[Type2]



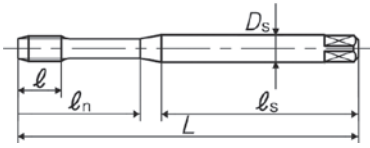
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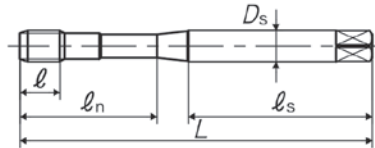
For Metric Threads

Size	Class	Product Code	Chamfer	L (inch)	l (inch)	l _n (inch)	l _s (inch)	D _s (inch)	No.of flutes	Type
M 3 X 0.5	D4	5101101035	2.5P	2.205	0.197	0.736	1.339	0.141	3	1
M 3 X 0.35	D4	5101101036	2.5P	2.205	0.197	0.736	1.339	0.141	3	1
M 4 X 0.7	D5	5101101042	2.5P	2.48	0.276	0.815	1.535	0.168	3	1
M 4 X 0.5	D4	5101101043	2.5P	2.48	0.197	0.815	1.535	0.168	3	1
M 5 X 0.8	D5	5101101049	2.5P	2.756	0.354	0.984	1.654	0.194	3	1
M 5 X 0.5	D4	5101101051	2.5P	2.756	0.236	0.984	1.654	0.194	3	1
M 6 X 1	D6	5101101055	2.5P	3.15	0.433	1.181	1.713	0.255	3	1
M 6 X 0.75	D6	5101101056	2.5P	3.15	0.315	1.181	1.713	0.255	3	1
M 6 X 0.5	D4	5101101057	2.5P	3.15	0.315	1.181	1.713	0.255	3	1
M 8 X 1.25	D7	5101101064	2.5P	3.543	0.472	1.378	1.831	0.318	3	2
M 8 X 1	D6	5101101065	2.5P	3.543	0.472	1.378	1.831	0.318	3	2
M10 X 1.5	D8	5101101078	2.5P	3.937	0.512	1.535	2.126	0.381	3	2
M10 X 1.25	D6	5101101079	2.5P	3.937	0.512	1.535	2.126	0.381	3	2
M10 X 1	D6	5101101080	2.5P	3.937	0.512	1.535	2.126	0.381	3	2
M12 X 1.75	D8	5101101088	2.5P	4.331	0.591	—	2.205	0.367	3	3
M12 X 1.5	D7	5101101089	2.5P	4.331	0.591	—	2.205	0.367	3	3
M12 X 1.25	D7	5101101090	2.5P	4.331	0.591	—	2.205	0.367	3	3
M14 X 2	D9	5101101100	2.5P	4.331	0.709	—	2.205	0.429	3	3
M14 X 1.5	D8	5101101102	2.5P	4.331	0.551	—	2.205	0.429	3	3
M16 X 2	D9	5101101114	2.5P	4.331	0.709	—	2.205	0.48	3	3
M16 X 1.5	D8	5101101116	2.5P	4.331	0.551	—	2.205	0.48	3	3
M18 X 2.5	D9	5101101128	2.5P	4.921	0.787	—	2.52	0.542	4	3
M18 X 1.5	D8	5101101130	2.5P	4.921	0.551	—	2.52	0.542	3	3
M20 X 2.5	D9	5101101141	2.5P	5.512	0.787	—	2.795	0.652	4	3
M20 X 1.5	D8	5101101144	2.5P	5.512	0.551	—	2.795	0.652	3	3
M22 X 2.5	D9	5101101156	2.5P	5.512	0.787	—	2.795	0.652	4	3
M22 X 1.5	D8	5101101158	2.5P	5.512	0.551	—	2.795	0.652	3	3
M24 X 3	D10	5101101167	2.5P	6.299	0.984	—	3.228	0.76	4	3
M24 X 1.5	D8	5101101170	2.5P	6.299	0.984	—	3.228	0.76	3	3

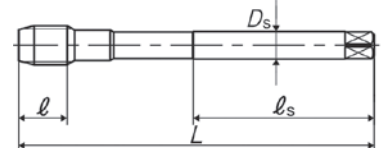
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[Type3]



For Unified Threads

Size	Class	Product Code	Chamfer	L (inch)	l (inch)	l _n (inch)	l _s (inch)	D _s (inch)	No. of flutes	Type
5-40UNC	GH2	5101103021	2.5P	2.205	0.197	0.736	1.339	0.141	2	1
5-44UNF	GH2	5101103022	2.5P	2.205	0.197	0.736	1.339	0.141	2	1
6-32UNC	GH2	5101103023	2.5P	2.205	0.276	0.748	1.339	0.141	2	1
6-40UNF	GH2	5101103024	2.5P	2.205	0.276	0.748	1.339	0.141	2	1
8-32UNC	GH3	5101103029	2.5P	2.48	0.276	0.827	1.535	0.168	2	1
8-36UNF	GH3	5101103030	2.5P	2.48	0.276	0.827	1.535	0.168	2	1
10-24UNC	GH3	5101103039	2.5P	2.756	0.354	0.945	1.654	0.194	2	1
10-32UNF	GH3	5101103041	2.5P	2.756	0.354	0.945	1.654	0.194	2	1
12-24UNC	GH3	5101103047	2.5P	3.15	0.354	0.984	1.953	0.22	2	1
12-28UNF	GH3	5101103048	2.5P	3.15	0.354	0.984	1.953	0.22	2	1
1/4-20UNC	GH3	5101103058	2.5P	3.15	0.433	1.181	1.713	0.255	2	1
1/4-20UNC	GH5	5101303058	2.5P	3.15	0.433	1.181	1.713	0.255	2	1
1/4-28UNF	GH3	5101103062	2.5P	3.15	0.433	1.181	1.713	0.255	2	2
1/4-28UNF	GH5	5101303062	2.5P	3.15	0.433	1.181	1.713	0.255	2	2
5/16-18UNC	GH5	5101103071	2.5P	3.543	0.472	1.378	1.831	0.318	3	2
3/8-16UNC	GH5	5101103082	2.5P	3.937	0.512	1.535	2.028	0.381	3	2
7/16-14UNC	GH5	5101103098	2.5P	3.937	0.512	—	2.008	0.323	3	3
1/2-13UNC	GH5	5101103111	2.5P	4.331	0.591	—	2.205	0.367	3	3
9/16-12UNC	GH5	5101103126	2.5P	4.331	0.709	—	2.205	0.429	3	3
5/8-11UNC	GH5	5101103138	2.5P	4.331	0.709	—	2.205	0.48	3	3

Product Features

Z-PRO
Ultimate Machining Taps

Coated Spiral Fluted Taps

VUSP 1.5P

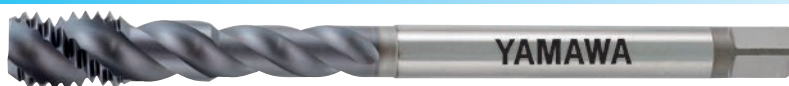
HSS-P

Coating



<2D

1.5



- The chamfer length is 1.5 pitches, making it ideal for machining blind holes where there is little room between the bored hole depth and the full thread length.
- Durability is improved by premium powder HSS and special coating.
- Chip ejection efficiency is improved and cutting resistance is reduced by the unique cutting edge shape, achieving a good internal thread and long tool life.
- Proper tool projection length is secured, preventing chips from interfering with the holder.
- This is most suitable for tapping with water-soluble cutting oil.

Compatible with a wide range of workpiece material

VUSP Recommended Tapping Conditions

Workpiece Material	Tapping Speed (m/min)
General Structural Steel	5~15
Carbon Steel	5~15

Workpiece Material	Tapping Speed (m/min)
Alloy Steel	5~15
Stainless Steel	3~5

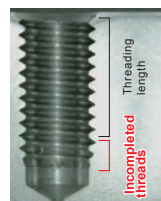
Tapping Data

Tapping conditions [M6]

Workpiece Material	S50C
Tapping Speed	15m/min
Machine	Machining center, Vertical type
Tapping Fluid	Water-soluble cutting oil
Tapping Length	13mm, blind hole



VUSP 1.5P
Internal thread surface



VUSP (chamfer 2.5P)
Internal thread surface

Coated Spiral Fluted Taps

VUSP 1.5P

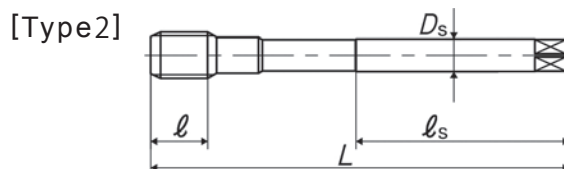
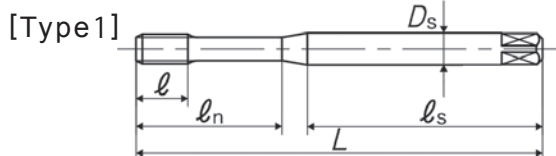
HSS-P

Coating



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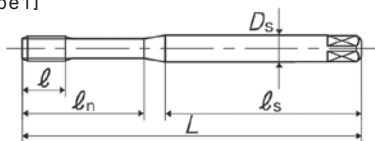
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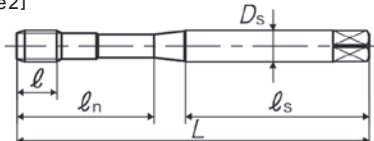
For Metric Threads

Size	Class	Product Code	Chamfer	L (mm)	l (mm)	l _n (mm)	l _s (mm)	D _s (mm)	No. of flutes	Type
M 3 X 0.5	P2	1103101035	1.5P	56	5	18	32	4	3	1
M 3 X 0.35	P2	1103101036	1.5P	56	5	18	32	4	3	1
M 4 X 0.7	P2	1103101042	1.5P	63	7	21	36	5	3	1
M 4 X 0.5	P2	1103101043	1.5P	63	5	21	36	5	3	1
M 5 X 0.8	P2	1103101049	1.5P	70	9	25	40	5.5	3	1
M 5 X 0.5	P2	1103101051	1.5P	70	6	25	40	5.5	3	1
M 6 X 1	P2	1103101055	1.5P	80	11	30	45	6	3	1
M 6 X 0.75	P2	1103101056	1.5P	80	8	30	45	6	3	1
M 6 X 0.5	P2	1103101057	1.5P	80	8	30	45	6	3	1
M 8 X 1.25	P3	1103101064	1.5P	90	12	—	46	6.2	3	2
M 8 X 1	P3	1103101065	1.5P	90	12	—	46	6.2	3	2
M10 X 1.5	P3	1103101078	1.5P	100	13	—	51	7	3	2
M10 X 1.25	P3	1103101079	1.5P	100	13	—	51	7	3	2
M10 X 1	P3	1103101080	1.5P	100	13	—	51	7	3	2
M12 X 1.75	P4	1103101088	1.5P	110	15	—	56	8.5	3	2
M12 X 1.5	P3	1103101089	1.5P	110	15	—	56	8.5	3	2
M12 X 1.25	P3	1103101090	1.5P	110	15	—	56	8.5	3	2
M14 X 2	P4	1103101100	1.5P	110	18	—	56	10.5	3	2
M14 X 1.5	P3	1103101102	1.5P	110	14	—	56	10.5	3	2
M16 X 2	P4	1103101114	1.5P	110	18	—	56	12.5	3	2
M16 X 1.5	P3	1103101116	1.5P	110	14	—	56	12.5	3	2

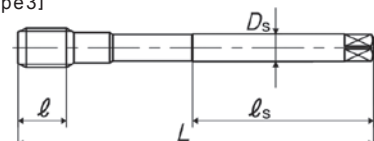
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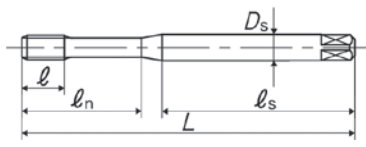
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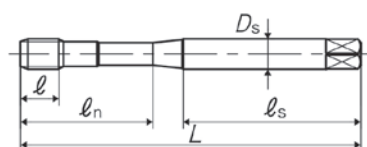
For Metric Threads

Size	Class	Product Code	Chamfer	L (mm)	l (mm)	l_n (mm)	l_s (mm)	D_s (mm)	No. of flutes	Type
M 3 X 0.5	ISO2X	3103101035	E(1.5P)	56	5	18	34	3.5	3	1
M 3 X 0.35	ISO2X	3103101036	E(1.5P)	56	5	18	34	3.5	3	1
M 4 X 0.7	ISO2X	3103101042	E(1.5P)	63	7	21	38	4.5	3	1
M 4 X 0.5	ISO2X	3103101043	E(1.5P)	63	5	21	38	4.5	3	1
M 5 X 0.8	ISO2X	3103101049	E(1.5P)	70	9	25	39	6	3	1
M 5 X 0.5	ISO2X	3103101051	E(1.5P)	70	6	25	39	6	3	1
M 6 X 1	ISO2X	3103101055	E(1.5P)	80	11	30	45	6	3	1
M 6 X 0.75	ISO2X	3103101056	E(1.5P)	80	8	30	45	6	3	1
M 6 X 0.5	ISO2X	3103101057	E(1.5P)	80	8	30	45	6	3	1
M 8 X 1.25	ISO2X	3103101064	E(1.5P)	90	12	35	47	8	3	2
M 8 X 1	ISO2X	3103101065	E(1.5P)	90	12	—	46	6	3	3
M10 X 1.5	ISO2X	3103101078	E(1.5P)	100	13	39	52	10	3	2
M10 X 1.25	ISO2X	3103101079	E(1.5P)	100	13	—	51	7	3	3
M10 X 1	ISO2X	3103101080	E(1.5P)	90	13	—	46	7	3	3
M12 X 1.75	ISO2X	3103101088	E(1.5P)	110	15	—	56	9	3	3
M12 X 1.5	ISO2X	3103101089	E(1.5P)	100	15	—	51	9	3	3
M12 X 1.25	ISO2X	3103101090	E(1.5P)	100	15	—	51	9	3	3
M14 X 2	ISO2X	3103101100	E(1.5P)	110	18	—	56	11	3	3
M14 X 1.5	ISO2X	3103101102	E(1.5P)	100	14	—	51	11	3	3
M16 X 2	ISO2X	3103101114	E(1.5P)	110	18	—	56	12	3	3
M16 X 1.5	ISO2X	3103101116	E(1.5P)	100	14	—	51	12	3	3

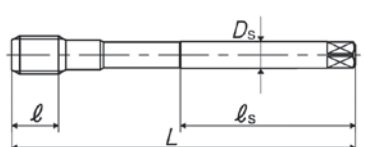
[Type1]



[Type2]



[Type3]



For Metric Threads

Size	Class	Product Code	Chamfer	L (inch)	l (inch)	l _n (inch)	l _s (inch)	D _s (inch)	No.of flutes	Type
M 3 X 0.5	D4	5103101035	1.5P	2.205	0.197	0.736	1.339	0.141	3	1
M 3 X 0.35	D4	5103101036	1.5P	2.205	0.197	0.736	1.339	0.141	3	1
M 4 X 0.7	D5	5103101042	1.5P	2.48	0.276	0.815	1.535	0.168	3	1
M 4 X 0.5	D4	5103101043	1.5P	2.48	0.197	0.815	1.535	0.168	3	1
M 5 X 0.8	D5	5103101049	1.5P	2.756	0.354	0.984	1.654	0.194	3	1
M 5 X 0.5	D4	5103101051	1.5P	2.756	0.236	0.984	1.654	0.194	3	1
M 6 X 1	D6	5103101055	1.5P	3.15	0.433	1.181	1.713	0.255	3	1
M 6 X 0.75	D6	5103101056	1.5P	3.15	0.315	1.181	1.713	0.255	3	1
M 6 X 0.5	D4	5103101057	1.5P	3.15	0.315	1.181	1.713	0.255	3	1
M 8 X 1.25	D7	5103101064	1.5P	3.543	0.472	1.378	1.831	0.318	3	2
M 8 X 1	D6	5103101065	1.5P	3.543	0.472	1.378	1.831	0.318	3	2
M10 X 1.5	D8	5103101078	1.5P	3.937	0.512	1.535	2.126	0.381	3	2
M10 X 1.25	D6	5103101079	1.5P	3.937	0.512	1.535	2.126	0.381	3	2
M10 X 1	D6	5103101080	1.5P	3.937	0.512	1.535	2.126	0.381	3	2
M12 X 1.75	D8	5103101088	1.5P	4.331	0.591	—	2.205	0.367	3	3
M12 X 1.5	D7	5103101089	1.5P	4.331	0.591	—	2.205	0.367	3	3
M12 X 1.25	D7	5103101090	1.5P	4.331	0.591	—	2.205	0.367	3	3
M14 X 2	D9	5103101100	1.5P	4.331	0.709	—	2.205	0.429	3	3
M14 X 1.5	D8	5103101102	1.5P	4.331	0.551	—	2.205	0.429	3	3
M16 X 2	D9	5103101114	1.5P	4.331	0.709	—	2.205	0.48	3	3
M16 X 1.5	D8	5103101116	1.5P	4.331	0.551	—	2.205	0.48	3	3

Product Features

Z-PRO
Ultimate Machining Taps

Coated Spiral Fluted Taps with Coolant Through Hole **VUSP CH**



- Improved durability with high-grade powdered HSS and special coating.
 - The unique shape of the cutting edge improves chip evacuation and reduces cutting resistance, resulting in good threading and tool life.
 - Proper tool protrusion is ensured and interference of chips with holder can be avoided.
 - Suitable for water-soluble cutting fluid processing.
 - The Coolant Hole diameter is optimized for internal lubrication system, and cutting fluid is sufficiently supplied to tap biting area to improve cooling, welding and wear resistance, and to obtain a good surface finish.
- In addition, chips are discharged smoothly, allowing for continuous machining.

Situation during tapping



At discharge pressure of 1.5 MPa



At discharge pressure 3MPa



Discharge pressure 6MP



Tapping Data

Tapping Condition M6X1

Workpiece Material	S50C
Tapping Length	12mm
Tapping Speed	20m/min
Machinery Type	CNC vertical machining center (Synchronous)
Tapping Fluid	Water-soluble cutting oil
Internal lubrication pressure	1.5MPa

Tapping Condition M10X1.5

Workpiece Materials	S50C
Tapping Length	20mm
Tapping Speed	20m/min
Machinery Type	CNC vertical machining center (Synchronous)
Tapping Fluid	Water-soluble cutting oil
Internal lubrication pressure	1.5MPa

After tapping 500 holes(Can continue)

good Surface Internal Threads	Less tap wear	Good chip quality

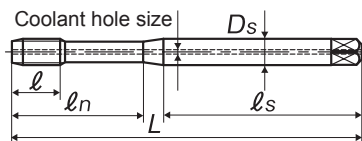
After tapping 420 holes(Can continue)

good Surface Internal Threads	Less tap wear	Good chip quality

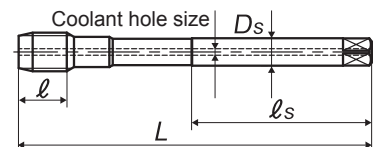
Coated Spiral Fluted Taps with Coolant Through Hole **VUSP CH**



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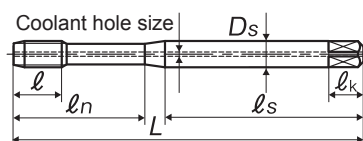
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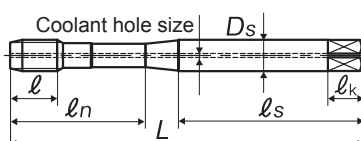
For Metric Threads

Size	Class	Product Code	Chamfer	L (mm)	l (mm)	ln (mm)	ls (mm)	Ds (mm)	No.of flutes	Coolant hole size (mm)	Type
M 6 X 1	P2	1201101055	2.5P	80	11	30	45	6	3	1	1
M 8 X 1.25	P3	1201101064	2.5P	90	12	—	46	6.2	3	1	2
M 8 X 1	P3	1201101065	2.5P	90	12	—	46	6.2	3	1	2
M10 X 1.5	P3	1201101078	2.5P	100	13	—	51	7	3	1.5	2
M10 X 1.25	P3	1201101079	2.5P	100	13	—	51	7	3	1.5	2
M10 X 1	P3	1201101080	2.5P	100	13	—	51	7	3	1.5	2
M12 X 1.75	P4	1201101088	2.5P	110	15	—	56	8.5	3	2	2
M12 X 1.5	P3	1201101089	2.5P	110	15	—	56	8.5	3	2	2
M12 X 1.25	P3	1201101090	2.5P	110	15	—	56	8.5	3	2	2
M14 X 2	P4	1201101100	2.5P	110	18	—	56	10.5	3	2	2
M14 X 1.5	P3	1201101102	2.5P	110	14	—	56	10.5	3	2	2
M16 X 2	P4	1201101114	2.5P	110	18	—	56	12.5	3	2	2
M16 X 1.5	P3	1201101116	2.5P	110	14	—	56	12.5	3	2	2

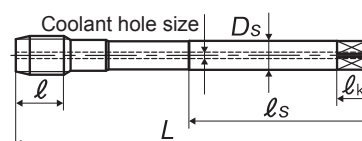
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[Type2]



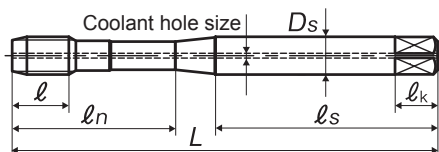
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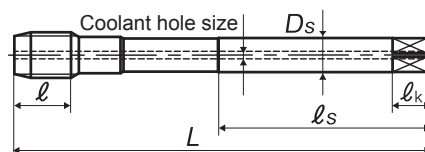
For Metric Threads

Size	Class	Product Code	Chamfer	L (mm)	l (mm)	l_n (mm)	l_s (mm)	D_s (mm)	No. of flutes	Coolant hole size (mm)	Type
M 6 X 1	ISO2X	3201101055	C(2.5P)	80	11	30	45	6	3	1	1
M 8 X 1.25	ISO2X	3201101064	C(2.5P)	90	12	35	47	8	3	1	2
M 8 X 1	ISO2X	3201101065	C(2.5P)	90	12	—	46	6	3	1	3
M10 X 1.5	ISO2X	3201101078	C(2.5P)	100	13	39	52	10	3	1.5	2
M10 X 1.25	ISO2X	3201101079	C(2.5P)	100	13	—	51	7	3	1.5	3
M10 X 1	ISO2X	3201101080	C(2.5P)	90	13	—	46	7	3	1.5	3
M12 X 1.75	ISO2X	3201101088	C(2.5P)	110	15	—	56	9	3	2	3
M12 X 1.5	ISO2X	3201101089	C(2.5P)	100	15	—	51	9	3	2	3
M12 X 1.25	ISO2X	3201101090	C(2.5P)	100	15	—	51	9	3	2	3
M14 X 2	ISO2X	3201101100	C(2.5P)	110	18	—	56	11	3	2	3
M14 X 1.5	ISO2X	3201101102	C(2.5P)	100	14	—	51	11	3	2	3
M16 X 2	ISO2X	3201101114	C(2.5P)	110	18	—	56	12	3	2	3
M16 X 1.5	ISO2X	3201101116	C(2.5P)	100	14	—	51	12	3	2	3

[Type1]



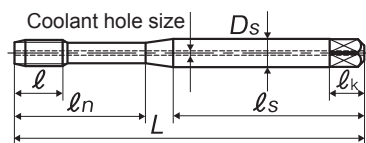
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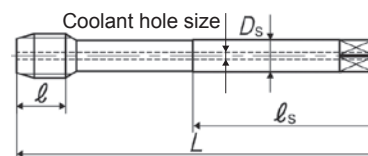
For Unified Threads

Size	Class	Product Code	Chamfer	L (mm)	l (mm)	l_n (mm)	l_s (mm)	D_s (mm)	No. of flutes	Coolant hole size (mm)	Type
5/16-18UNC	2BX	3201103071	2.5P	90	12	35	47	8	3	1	1
3/8-16UNC	2BX	3201103082	2.5P	100	13	39	54	9	3	1.5	1
1/2-13UNC	2BX	3201103111	2.5P	110	15	—	56	9	3	2	2

[Type1]



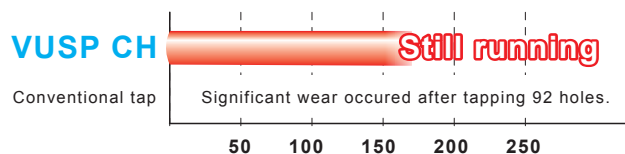
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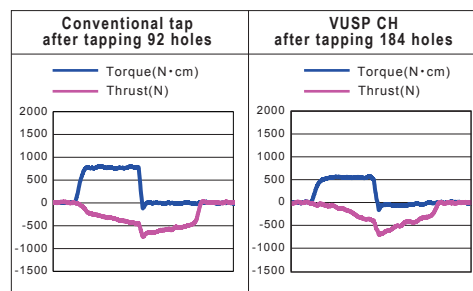
For Unified Threads

Size	Class	Product Code	Chamfer	L (inch)	l (inch)	l _n (inch)	l _s (inch)	D _s (inch)	No. of flutes	Coolant hole size (inch)	Type
5/16-18UNC	GH5	5201103071	2.5P	3.543	0.472	1.378	1.831	0.318	3	0.039	1
3/8-16UNC	GH5	5201103082	2.5P	3.937	0.512	1.535	2.028	0.381	3	0.059	1
1/2-13UNC	GH5	5201103111	2.5P	4.331	0.591	—	2.205	0.367	3	0.079	2

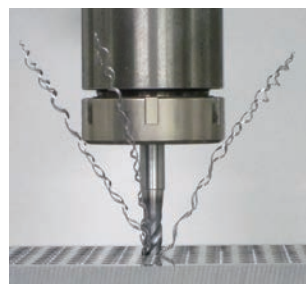
Comparison between Conventional tap and VUSP CH in size 5/16-18UNC
VUSP CH, the coolant through tap offers excellent performance with internal lubrication.



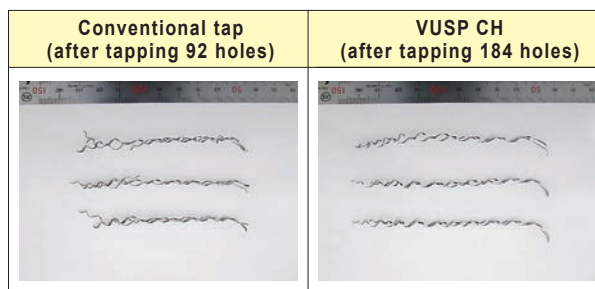
Size	5/16-18UNC
Workpiece Material	4140
Tapping Speed	50sfm
Feed	Synchronous
Bored Hole Size	Φ0.260inch
Tapping Length	0.8inch(2D, blind hole)
Tapping Machine	Vertical Machining Center BT30
Tapping Fluid	Water Soluble Oil FX-30 5%



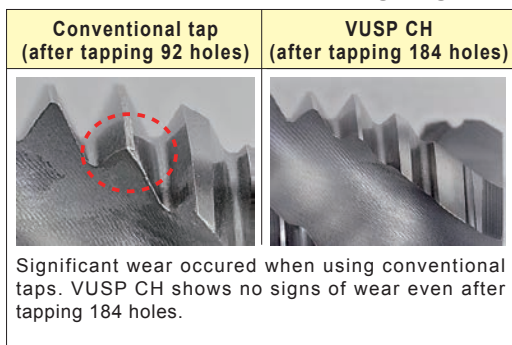
Excellent chip ejection



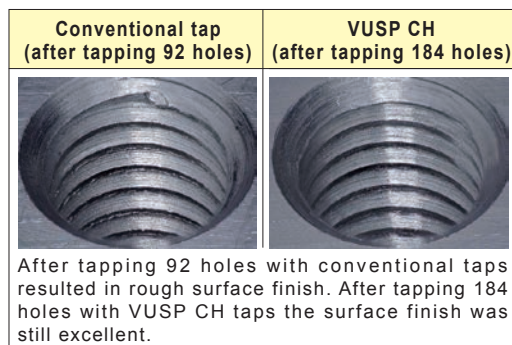
Ejected chips



Comparison of the cutting edges



Comparison of the internal thread surface finish



Product Features

Z-PRO
Ultimate Machining Taps

Coated Spiral Pointed Taps

VUPO

HSS-P

Coating



- Improved tool life from using a high grade of powder high speed steel with a special coating!
- Improved chip evacuation and cutting resistance from a unique flute shape to produce excellent internal threads!
- Longer overall Length...Allows a longer projected length out of the holder for better application of cutting fluids. The Z-PRO VUPO is designed for use with water-soluble cutting fluid where there is a good coolant supply.

Compatible with a wide range of workpiece material

VUPO Recommended Processing Conditions

Workpiece Material	Tapping Speed (m/min)	Workpiece Material	Tapping Speed (m/min)
General Structural Steel	10~30	Alloy Steel	10~30
Carbon Steel	10~30	Stainless Steel	5~15

VUPO is suitable for use with water-soluble cutting fluid

Ideal for machining in the medium speed range using water-soluble cutting fluid.

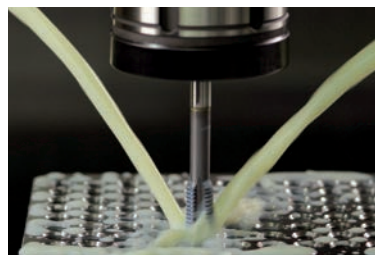
Fluid	Hole shape	Hand tapping	Drilling machine	Low speed (NC lathe, MC)	Middle speed (NC lathe, MC)
Water soluble cutting fluid					VUSP
					VUPO Vc ≤ 30m/min
Oil		HT	ISP	SP	+SP
		IHT	IPO	PO	+PO
					AU+SP
					AU+SL

Tapping Data

Tapping conditions VUPO M10X1.5

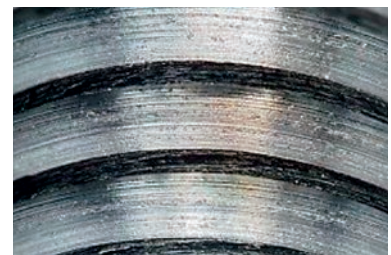
Workpiece Material	SUS304
Tapping Speed	10m/min
Machine	Vertical Machining center
Tapping Fluid	Water soluble tapping fluid

Excellent supply of cutting fluid



The unique cutting edge shape and the longer projection achieve a excellent supply of water-soluble cutting fluid.

Excellent internal thread



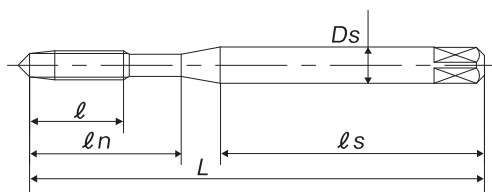
In tapping of SUS304, excellent internal thread surface is obtained even in tapping environments that use water-soluble cutting fluid.

Tapping conditions VUPO M10X1.5

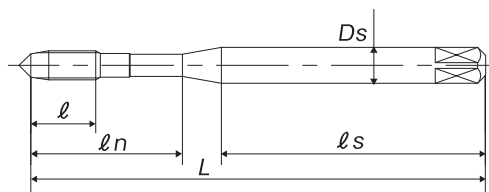
Workpiece Material	S50C
Tapping Length	20mm(2D)
Tapping Speed	20m/min
Machine	Vertical Machining center
Tapping Fluid	Water soluble tapping fluid

	NEW VUPO	Conventional tap
Wear after 560 holes tapped		

[Type1]



[Type2]

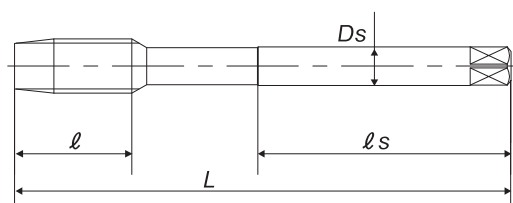


For Metric Threads

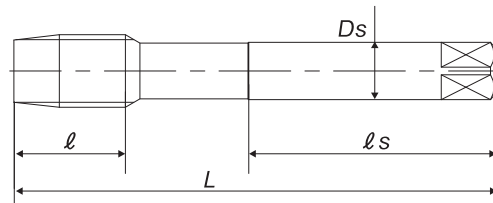
Size	Class	Product Code	Chamfer	L (mm)	l (mm)	ln (mm)	ls (mm)	Ds (mm)	No. of flutes	Type
M2 X 0.4	P2	1102101021	5P	45	8	15	27	3	2	1
M2.2 X 0.45	P2	1102101024	5P	45	8	15	27	3	2	1
M2.3 X 0.4	P2	1102101026	5P	45	8	15	27	3	2	1
M2.5 X 0.45	P2	1102101029	5P	50	8	15	32	3	2	1
M2.6 X 0.45	P2	1102101032	5P	50	8	15	32	3	2	1
M3 X 0.5	P2	1102101035	5P	56	9	18	32	4	3	1
M3 X 0.5	P3	1102201035	5P	56	9	18	32	4	3	1
M3 X 0.5	P4	1102301035	5P	56	9	18	32	4	3	1
M3 X 0.35	P2	1102101036	5P	56	6.5	18	32	4	3	2
M3 X 0.35	P3	1102201036	5P	56	6.5	18	32	4	3	2
M3 X 0.35	P4	1102301036	5P	56	6.5	18	32	4	3	2
M4 X 0.7	P3	1102101042	5P	63	13	21	36	5	3	1
M4 X 0.7	P4	1102201042	5P	63	13	21	36	5	3	1
M4 X 0.7	P5	1102301042	5P	63	13	21	36	5	3	1
M4 X 0.5	P2	1102101043	5P	63	9	21	36	5	3	2
M4 X 0.5	P3	1102201043	5P	63	9	21	36	5	3	2
M4 X 0.5	P4	1102301043	5P	63	9	21	36	5	3	2
M5 X 0.8	P3	1102101049	5P	70	14	25	40	5.5	3	1
M5 X 0.8	P4	1102201049	5P	70	14	25	40	5.5	3	1
M5 X 0.8	P5	1102301049	5P	70	14	25	40	5.5	3	1
M5 X 0.5	P2	1102101051	5P	70	9	25	40	5.5	3	2
M5 X 0.5	P3	1102201051	5P	70	9	25	40	5.5	3	2
M5 X 0.5	P4	1102301051	5P	70	9	25	40	5.5	3	2
M6 X 1	P3	1102101055	5P	80	15	30	45	6	3	1
M6 X 1	P4	1102201055	5P	80	15	30	45	6	3	1
M6 X 1	P5	1102301055	5P	80	15	30	45	6	3	1
M6 X 0.75	P2	1102101056	5P	80	15	30	45	6	3	1
M6 X 0.75	P3	1102201056	5P	80	15	30	45	6	3	1
M6 X 0.75	P4	1102301056	5P	80	15	30	45	6	3	1
M6 X 0.5	P2	1102101057	5P	80	9	30	45	6	3	2
M6 X 0.5	P3	1102201057	5P	80	9	30	45	6	3	2
M6 X 0.5	P4	1102301057	5P	80	9	30	45	6	3	2

Oversize

[Type3]



[Type4]



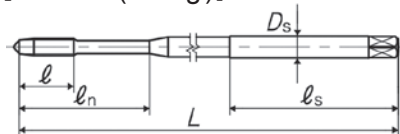
For Metric Threads

Size	Class	Product Code	Chamfer	L (mm)	l (mm)	l _n (mm)	l _s (mm)	D _s (mm)	No. of flutes	Type
M 8 X 1.25	P3	1102101064	5P	90	19	—	46	6.2	3	3
M 8 X 1.25	P4	1102201064	5P	90	19	—	46	6.2	3	3
M 8 X 1.25	P5	1102301064	5P	90	19	—	46	6.2	3	3
M 8 X 1	P3	1102101065	5P	90	19	—	46	6.2	3	3
M 8 X 1	P4	1102201065	5P	90	19	—	46	6.2	3	3
M 8 X 1	P5	1102301065	5P	90	19	—	46	6.2	3	3
M10 X 1.5	P3	1102101078	5P	100	23	—	51	7	3	3
M10 X 1.5	P4	1102201078	5P	100	23	—	51	7	3	3
M10 X 1.5	P5	1102301078	5P	100	23	—	51	7	3	3
M10 X 1.25	P3	1102101079	5P	100	23	—	51	7	3	3
M10 X 1.25	P4	1102201079	5P	100	23	—	51	7	3	3
M10 X 1.25	P5	1102301079	5P	100	23	—	51	7	3	3
M10 X 1	P3	1102101080	5P	100	23	—	51	7	3	3
M10 X 1	P4	1102201080	5P	100	23	—	51	7	3	3
M10 X 1	P5	1102301080	5P	100	23	—	51	7	3	3
M12 X 1.75	P4	1102101088	5P	110	26	—	56	8.5	3	3
M12 X 1.75	P5	1102201088	5P	110	26	—	56	8.5	3	3
M12 X 1.75	P6	1102301088	5P	110	26	—	56	8.5	3	3
M12 X 1.5	P3	1102101089	5P	110	26	—	56	8.5	3	3
M12 X 1.5	P4	1102201089	5P	110	26	—	56	8.5	3	3
M12 X 1.5	P5	1102301089	5P	110	26	—	56	8.5	3	3
M12 X 1.25	P4	1102101090	5P	110	26	—	56	8.5	3	3
M12 X 1.25	P5	1102201090	5P	110	26	—	56	8.5	3	3
M12 X 1.25	P6	1102301090	5P	110	26	—	56	8.5	3	3
M14 X 2	P4	1102101100	5P	110	26	—	56	10.5	3	3
M14 X 2	P5	1102201100	5P	110	26	—	56	10.5	3	3
M14 X 2	P6	1102301100	5P	110	26	—	56	10.5	3	3
M14 X 1.5	P3	1102101102	5P	110	26	—	56	10.5	3	3
M14 X 1.5	P4	1102201102	5P	110	26	—	56	10.5	3	3
M14 X 1.5	P5	1102301102	5P	110	26	—	56	10.5	3	3
M16 X 2	P4	1102101114	5P	110	26	—	56	12.5	3	3
M16 X 2	P5	1102201114	5P	110	26	—	56	12.5	3	3
M16 X 2	P6	1102301114	5P	110	26	—	56	12.5	3	3
M16 X 1.5	P3	1102101116	5P	110	26	—	56	12.5	3	3
M16 X 1.5	P4	1102201116	5P	110	26	—	56	12.5	3	3
M16 X 1.5	P5	1102301116	5P	110	26	—	56	12.5	3	3
M18 X 2.5	P5	1102101128	5P	125	33	—	64	14	3	3
M18 X 1.5	P4	1102101130	5P	125	33	—	64	14	3	3
M20 X 2.5	P5	1102101141	5P	140	33	—	71	15	3	4
M20 X 1.5	P4	1102101144	5P	140	33	—	71	15	3	4
M22 X 2.5	P5	1102101156	5P	140	33	—	71	17	3	4
M22 X 1.5	P4	1102101158	5P	140	33	—	71	17	3	4
M24 X 3	P5	1102101167	5P	160	37	—	82	19	3	4
M24 X 1.5	P4	1102101170	5P	160	37	—	82	19	3	4

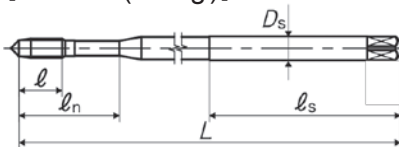
Oversize

Coated Spiral Pointed Taps **VUPO Long Shank**

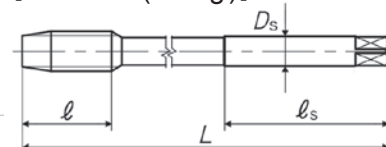
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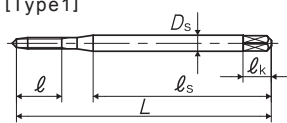


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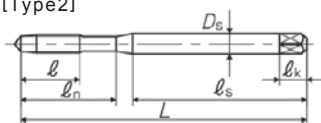
**For Metric Threads**

Size	Class	Product Code	Chamfer	L (mm)	l (mm)	l _n (mm)	l _s (mm)	D _s (mm)	No. of flutes	Type
M 3 X 0.5	P2	2102101035	5P	100	9	18	40	4	3	5
M 3 X 0.35	P2	2102101036	5P	100	6.5	18	40	4	3	6
M 4 X 0.7	P3	2102101042	5P	100	11	21	40	5	3	5
M 4 X 0.5	P2	2102101043	5P	100	9	21	40	5	3	6
M 5 X 0.8	P3	2102101049	5P	100	13	25	40	5.5	3	5
M 5 X 0.5	P2	2102101051	5P	100	9	25	40	5.5	3	6
M 6 X 1	P3	2102101055	5P	100	15	30	40	6	3	5
M 6 X 0.75	P2	2102101056	5P	100	15	30	40	6	3	5
M 6 X 0.5	P2	2102101057	5P	100	9	30	40	6	3	6
M 8 X 1.25	P3	2102101064	5P	150	19	—	50	6.2	3	7
M 8 X 1	P3	2102101065	5P	150	19	—	50	6.2	3	7
M10 X 1.5	P3	2102101078	5P	150	23	—	50	7	3	7
M10 X 1.25	P3	2102101079	5P	150	23	—	50	7	3	7
M10 X 1	P3	2102101080	5P	150	23	—	50	7	3	7
M12 X 1.75	P4	2102101088	5P	150	26	—	50	8.5	3	7
M12 X 1.5	P3	2102101089	5P	150	26	—	50	8.5	3	7
M12 X 1.25	P4	2102101090	5P	150	26	—	50	8.5	3	7
M14 X 2	P4	2102101100	5P	150	26	—	60	10.5	3	7
M14 X 1.5	P3	2102101102	5P	150	26	—	60	10.5	3	7
M16 X 2	P4	2102101114	5P	150	26	—	60	12.5	3	7
M16 X 1.5	P3	2102101116	5P	150	26	—	60	12.5	3	7

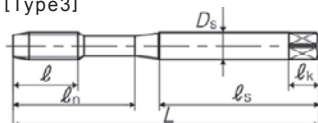
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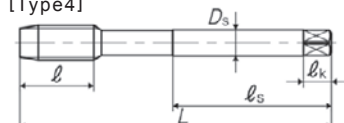
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[Type3]



[Type4]

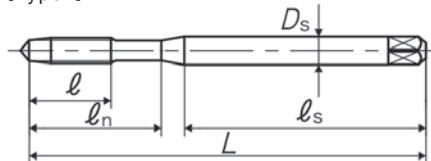


For Metric Threads

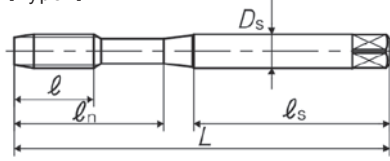
Size	Class	Product Code	Chamfer	L (mm)	l (mm)	l _n (mm)	l _s (mm)	D _s (mm)	No. of flutes	Type
M 2 X 0.4	ISO2X	3102101021	5P	45	8	—	32	2.8	2	1
M 2.2 X 0.45	ISO2X	3102101024	5P	45	9	—	32	2.8	2	1
M 2.3 X 0.4	ISO2X	3102101026	5P	45	9	—	32	2.8	2	1
M 2.5 X 0.45	ISO2X	3102101029	5P	50	8	15	33	2.8	3	2
M 2.6 X 0.45	ISO2X	3102101032	5P	50	8	15	33	2.8	3	2
M 3 X 0.5	ISO2X	3102101035	5P	56	9	18	34	3.5	3	2
M 3 X 0.35	ISO2X	3102101036	5P	56	6.5	18	34	3.5	3	2
M 4 X 0.7	ISO2X	3102101042	5P	63	13	21	38	4.5	3	2
M 4 X 0.5	ISO2X	3102101043	5P	63	9	21	38	4.5	3	2
M 5 X 0.8	ISO2X	3102101049	5P	70	14	25	39	6	3	2
M 5 X 0.5	ISO2X	3102101051	5P	70	9	25	39	6	3	2
M 6 X 1	ISO2X	3102101055	5P	80	15	30	45	6	3	2
M 6 X 0.75	ISO2X	3102101056	5P	80	15	30	45	6	3	2
M 6 X 0.5	ISO2X	3102101057	5P	80	9	30	45	6	3	2
M 8 X 1.25	ISO2X	3102101064	5P	90	19	35	47	8	3	3
M 8 X 1	ISO2X	3102101065	5P	90	19	—	46	6	3	4
M10 X 1.5	ISO2X	3102101078	5P	100	23	39	52	10	3	3
M10 X 1.25	ISO2X	3102101079	5P	100	23	—	51	7	3	4
M10 X 1	ISO2X	3102101080	5P	90	19	—	46	7	3	4
M12 X 1.75	ISO2X	3102101088	5P	110	26	—	56	9	3	4
M12 X 1.5	ISO2X	3102101089	5P	100	21	—	51	9	3	4
M12 X 1.25	ISO2X	3102101090	5P	100	21	—	51	9	3	4
M14 X 2	ISO2X	3102101100	5P	110	26	—	56	11	3	4
M14 X 1.5	ISO2X	3102101102	5P	100	21	—	51	11	3	4
M16 X 2	ISO2X	3102101114	5P	110	26	—	56	11	3	4
M16 X 1.5	ISO2X	3102101116	5P	100	21	—	51	12	3	4
M18 X 2.5	ISO2X	3102101128	5P	125	33	—	64	14	3	4
M18 X 1.5	ISO2X	3102101130	5P	110	24	—	56	14	3	4
M20 X 2.5	ISO2X	3102101141	5P	140	33	—	71	16	3	4
M20 X 1.5	ISO2X	3102101144	5P	125	24	—	64	16	3	4
M22 X 2.5	ISO2X	3102101156	5P	140	33	—	71	18	3	4
M22 X 1.5	ISO2X	3102101158	5P	125	24	—	64	18	3	4
M24 X 3	ISO2X	3102101167	5P	160	37	—	82	18	3	4
M24 X 1.5	ISO2X	3102101170	5P	140	27	—	71	18	3	4

Coated Spiral Pointed Taps **VUPO**

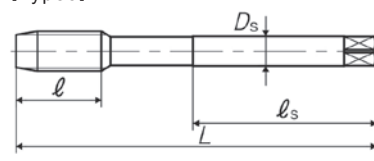
[Type1]



[Type2]



[Type3]

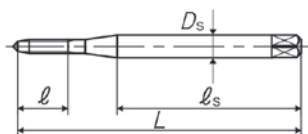
**For Unified Threads**

Size	Class	Product Code	Chamfer	L (mm)	l (mm)	l _n (mm)	l _s (mm)	D _s (mm)	No. of flutes	Type
5-40UNC	2BX	3102103021	5P	56	11	18	34	3.5	2	1
5-44UNF	2BX	3102103022	5P	56	11	18	34	3.5	2	1
6-32UNC	2BX	3102103023	5P	56	11	19	32	4	2	1
6-40UNF	2BX	3102103024	5P	56	11	19	32	4	2	1
8-32UNC	2BX	3102103029	5P	63	13	21	38	4.5	2	1
8-36UNF	2BX	3102103030	5P	63	13	21	38	4.5	2	1
10-24UNC	2BX	3102103039	5P	70	14	24	39	6	2	1
10-32UNF	2BX	3102103041	5P	70	14	24	39	6	2	1
12-24UNC	2BX	3102103047	5P	80	15	28	45	6	2	1
12-28UNF	2BX	3102103048	5P	80	15	28	45	6	2	1
1/4-20UNC	2BX	3102103058	5P	80	15	30	42	7	3	1
1/4-28UNF	2BX	3102103062	5P	80	15	30	42	7	3	1
5/16-18UNC	2BX	3102103071	5P	90	19	35	47	8	3	2
5/16-24UNF	2BX	3102103074	5P	90	19	—	46	6	3	3
3/8-16UNC	2BX	3102103082	5P	100	23	39	54	9	3	2
3/8-24UNF	2BX	3102103085	5P	100	23	—	51	7	3	3
7/16-14UNC	2BX	3102103098	5P	100	23	—	51	8	3	3
7/16-20UNF	2BX	3102103101	5P	100	23	—	51	8	3	3
1/2-13UNC	2BX	3102103111	5P	110	26	—	56	9	3	3
1/2-20UNF	2BX	3102103115	5P	100	21	—	51	9	3	3
9/16-12UNC	2BX	3102103126	5P	110	26	—	56	11	3	3
9/16-18UNF	2BX	3102103129	5P	100	21	—	51	11	3	3
5/8-11UNC	2BX	3102103138	5P	110	26	—	56	12	3	3
5/8-18UNF	2BX	3102103142	5P	100	21	—	51	12	3	3
3/4-10UNC	2BX	3102103161	5P	125	33	—	64	14	3	3
3/4-16UNF	2BX	3102103164	5P	110	24	—	56	14	3	3
7/8-9UNC	2BX	3102103181	5P	140	33	—	71	18	3	3
7/8-14UNF	2BX	3102103184	5P	125	24	—	64	18	3	3

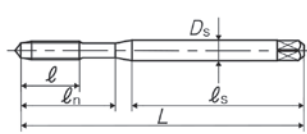
Coated Spiral Pointed Taps VUPO



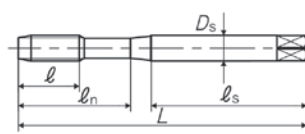
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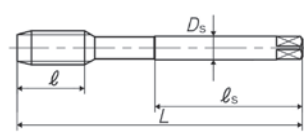
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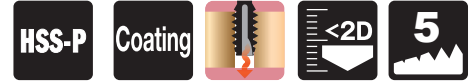
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For Metric Threads

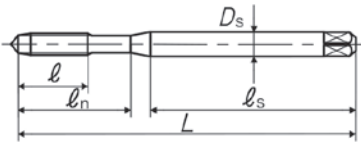
Size	Class	Product Code	Chamfer	L (inch)	l (inch)	l _n (inch)	l _s (inch)	D _s (inch)	No. of flutes	Type
M 2 X 0.4	D4	5102101021	5P	1.772	0.314	—	1.161	0.141	2	1
M 2.2 X 0.45	D4	5102101024	5P	1.772	0.314	—	1.161	0.141	2	1
M 2.3 X 0.4	D4	5102101026	5P	1.772	0.314	—	1.161	0.141	2	1
M 2.5 X 0.45	D4	5102101029	5P	2.205	0.354	0.693	1.28	0.141	2	2
M 2.6 X 0.45	D4	5102101032	5P	2.205	0.354	0.709	1.28	0.141	2	2
M 3 X 0.5	D4	5102101035	5P	2.205	0.433	0.736	1.339	0.141	3	2
M 3 X 0.35	D4	5102101036	5P	2.205	0.256	0.736	1.339	0.141	3	2
M 4 X 0.7	D5	5102101042	5P	2.48	0.512	0.815	1.535	0.168	3	2
M 4 X 0.5	D4	5102101043	5P	2.48	0.354	0.815	1.535	0.168	3	2
M 5 X 0.8	D5	5102101049	5P	2.756	0.551	0.984	1.654	0.194	3	2
M 5 X 0.5	D4	5102101051	5P	2.756	0.354	0.984	1.654	0.194	3	2
M 6 X 1	D6	5102101055	5P	3.15	0.591	1.181	1.713	0.255	3	2
M 6 X 0.75	D6	5102101056	5P	3.15	0.591	1.181	1.713	0.255	3	2
M 6 X 0.5	D4	5102101057	5P	3.15	0.354	1.181	1.713	0.255	3	2
M 8 X 1.25	D7	5102101064	5P	3.543	0.748	1.378	1.831	0.318	3	3
M 8 X 1	D6	5102101065	5P	3.543	0.748	1.378	1.831	0.318	3	3
M10 X 1.5	D8	5102101078	5P	3.937	0.906	1.535	2.126	0.381	3	3
M10 X 1.25	D7	5102101079	5P	3.937	0.906	1.535	2.126	0.381	3	3
M10 X 1	D6	5102101080	5P	3.937	0.906	1.535	2.126	0.381	3	3
M12 X 1.75	D8	5102101088	5P	4.331	1.024	—	2.205	0.367	3	4
M12 X 1.5	D8	5102101089	5P	4.331	1.024	—	2.205	0.367	3	4
M12 X 1.25	D7	5102101090	5P	4.331	1.024	—	2.205	0.367	3	4
M14 X 2	D9	5102101100	5P	4.331	1.024	—	2.205	0.429	3	4
M14 X 1.5	D8	5102101102	5P	4.331	1.024	—	2.205	0.429	3	4
M16 X 2	D9	5102101114	5P	4.331	1.024	—	2.205	0.48	3	4
M16 X 1.5	D8	5102101116	5P	4.331	1.024	—	2.205	0.48	3	4
M18 X 2.5	D9	5102101128	5P	4.921	1.299	—	2.52	0.542	3	4
M18 X 1.5	D8	5102101130	5P	4.921	0.945	—	2.52	0.542	3	4
M20 X 2.5	D9	5102101141	5P	5.512	1.299	—	2.795	0.652	3	4
M20 X 1.5	D8	5102101144	5P	5.512	0.945	—	2.795	0.652	3	4
M22 X 2.5	D9	5102101156	5P	5.512	1.299	—	2.795	0.697	3	4
M22 X 1.5	D8	5102101158	5P	5.512	0.945	—	2.795	0.697	3	4
M24 X 3	D10	5102101167	5P	6.299	1.457	—	3.228	0.76	3	4
M24 X 1.5	D8	5102101170	5P	6.299	1.063	—	3.228	0.76	3	4

Coated Spiral Pointed Taps VUPO

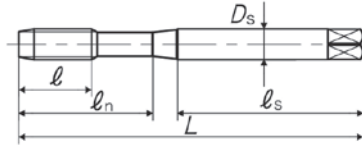


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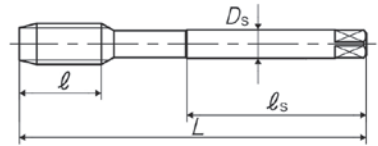
[Type1]



[Type2]



[Type3]



For Unified Threads

Size	Class	Product Code	Chamfer	L (inch)	l (inch)	l _n (inch)	l _s (inch)	D _s (inch)	No. of flutes	Type
5-40UNC	GH2	5102103021	5P	2.205	0.433	0.736	1.339	0.141	2	1
5-44UNF	GH2	5102103022	5P	2.205	0.433	0.736	1.339	0.141	2	1
6-32UNC	GH3	5102103023	5P	2.205	0.433	0.748	1.339	0.141	2	1
6-40UNF	GH2	5102103024	5P	2.205	0.433	0.748	1.339	0.141	2	1
8-32UNC	GH3	5102103029	5P	2.48	0.512	0.827	1.535	0.168	2	1
8-36UNF	GH2	5102103030	5P	2.48	0.512	0.827	1.535	0.168	2	1
10-24UNC	GH3	5102103039	5P	2.756	0.551	0.945	1.654	0.194	2	1
10-32UNF	GH3	5102103041	5P	2.756	0.551	0.945	1.654	0.194	2	1
12-24UNC	GH3	5102103047	5P	3.15	0.591	0.984	1.953	0.22	2	1
12-28UNF	GH3	5102103048	5P	3.15	0.591	0.984	1.953	0.22	2	1
1/4-20UNC	GH5	5102103058	5P	3.15	0.591	1.181	1.713	0.255	3	1
1/4-28UNF	GH4	5102103062	5P	3.15	0.591	1.181	1.713	0.255	3	1
5/16-18UNC	GH5	5102103071	5P	3.543	0.748	1.378	1.831	0.318	3	2
5/16-24UNF	GH4	5102103074	5P	3.543	0.748	1.378	1.831	0.318	3	2
3/8-16UNC	GH5	5102103082	5P	3.937	0.906	1.535	2.028	0.381	3	2
3/8-24UNF	GH4	5102103085	5P	3.937	0.906	1.535	2.028	0.381	3	2
7/16-14UNC	GH5	5102103098	5P	3.937	0.906	—	2.008	0.323	3	3
7/16-20UNF	GH5	5102103101	5P	3.937	0.906	—	2.008	0.323	3	3
1/2-13UNC	GH5	5102103111	5P	4.331	1.024	—	2.205	0.367	3	3
1/2-20UNF	GH5	5102103115	5P	4.331	1.024	—	2.205	0.367	3	3
9/16-12UNC	GH5	5102103126	5P	4.331	1.024	—	2.205	0.429	3	3
9/16-18UNF	GH5	5102103129	5P	4.331	1.024	—	2.205	0.429	3	3
5/8-11UNC	GH5	5102103138	5P	4.331	1.024	—	2.205	0.48	3	3
5/8-18UNF	GH5	5102103142	5P	4.331	1.024	—	2.205	0.48	3	3
3/4-10UNC	GH5	5102103161	5P	4.921	1.299	—	2.52	0.59	3	3
3/4-16UNF	GH5	5102103164	5P	4.921	1.299	—	2.52	0.59	3	3
7/8-9UNC	GH6	5102103181	5P	5.512	1.299	—	2.795	0.697	3	3
7/8-14UNF	GH6	5102103184	5P	5.512	1.299	—	2.795	0.697	3	3

Tapping record for VU series taps

VUSP For blind hole

Size	Workpiece material	Tapping condition/Tapping result							(Remarks) Conventional product status/Workpiece name
	Material symbol (Hardness)	Hole Size (mm)	Tapping Length (mm)(*)	Machine	Tapping speed (m/min)	Feed	Tapping Fluid	Tool Life (Holes)	
M 4 X 0.7	SKD11 (25HRC)	3.3	8 (2D)	M/C	10	Fully synchronous	Water soluble	500	Replaced due to chipping at 400 holes.
M 5 X 0.8	SCM435	4.2	15 (3D)	N/C	4	Gear	Water soluble	1,400	Broken at 100 holes due to entanglement of chips.
M 8 X 1.25	FCD750	6.8	20 (2.5D)	M/C	20	Fully synchronous	Water soluble	1,500	Replaced due to chipping at 1,000 holes.
M 8 X 1.25	SUS304	6.75	16 (2D)	M/C	15	Fully synchronous	Water soluble	1,390	Chipping occurs at 600 holes.
M 8 X 1.25	SS400	6.8	16 (2D)	M/C	30	Fully synchronous	Water soluble	1,500	Tool Life is 800 holes. • Workpiece name: Cylinder head
M 8 X 1.25	S50C	6.8	16 (2D)	M/C	15	Fully synchronous	Water soluble	900	Tool Life is 700 holes.
M10 X 1.5	SS400	8.5	15 (1.5D)	M/C	10	Fully synchronous	Water soluble	1,500	Tool Life is unstable.
M12 X 1.75	SS400	10.4	24 (2D)	M/C	12	Fully synchronous	Water soluble	2,800	Chipping randomly and breakage at 2,000 holes.
M12 X 1.75	PVC (Thermoplastic resin)	10.3	18 (1.5D)	M/C	19	Fully synchronous	Water soluble	5,000	Screw plug gauge OUT at 3,000 holes.
M12 X 1.75	SCM415	10.3	24 (2D)	N/C	7	Fully synchronous	Water soluble	800	Screw plug gauge OUT at 500 holes. • Workpiece name: Machine parts(Spindle)
M12 X 1.25	S45C	10.8	24 (2D)	Drilling machine	5.6	Non-synchronous	Oil (Spray)	1,100	Tool Life is 1,000 holes.
M14 X 2	SCM435 (35HRC)	12.1	21 (1.5D)	M/C	10	Fully synchronous	Oil	150	Broken at 10 holes due to entanglement of chips. • Workpiece name: Shaft
M16 X 1.5	S45C	14.5	32 (2D)	M/C	20	Fully synchronous	Water soluble	1,900	Screw plug gauge OUT at 1,500 holes. • Workpiece name: Rocker arm

*(D) shows the tapping length as a ratio of tap diameter.

VUPO For through hole

Size	Workpiece material	Tapping condition/Tapping result							(Remarks) Conventional product status/Workpiece name
	Material symbol (Hardness)	Hole Size (mm)	Tapping Length (mm)(*)	Machine	Tapping speed (m/min)	Feed	Tapping Fluid	Tool Life (Holes)	
M 3 X 0.5	SCM440 (39HRC)	2.5	6 (2D)	N/C	5.6	Fully synchronous	Water soluble	1,260	Tool Life is unstable and poor surface finish. • Workpiece name: Flange
M 3 X 0.5	S45C (25HRC)	2.5	9 (3D)	M/C	10	Fully synchronous	Water soluble	500	Tool Life is 400 holes.
M 4 X 0.7	SUS304	3.3	10 (2.5D)	M/C	10	Fully synchronous	Water soluble	830	The chamfer part is worn and replaced at about 300 holes.
M 4 X 0.7	A5052	3.4	12 (3D)	M/C	12	Fully synchronous	Water soluble	1,500	Tool Life is 1,000 holes. • Workpiece name: Medical parts
M 6 X 1	S33C	5.1	9 (1.5D)	M/C	20	Fully synchronous	Water soluble	4,500	Tool Life is 3,400 holes. • Workpiece name: Hub bearing
M 8 X 1.25	SUS303	6.8	12 (1.5D)	M/C	11	Fully synchronous	Water soluble	33,000	Replaced due to wear or chipping at 10,000 holes. • Workpiece name: Nut
M10 X 1.5	S45C	8.5	25 (2.5D)	M/C	7.5	Fully synchronous	Water soluble	3,600	Breaks randomly at 1,000 holes. • Workpiece name: Crank plate
M12 X 1.75	SCM415	10.3	24 (2D)	M/C	15	Fully synchronous	Water soluble	1,000	Replaced due to chipping at 700 holes.
M12 X 1.75	SCM440 (30HRC)	10.4	30 (2.5D)	N/C	11	Fully synchronous	Water soluble	650	Replaced due to chipping at 420 holes.
M12 X 1.25	S45C	10.8	36 (3D)	M/C	30	Non-synchronous	Water soluble	1,100	Tool Life is unstable.
M12 X 1.25	S43C	10.8	24 (2D)	M/C	15	Fully synchronous	Water soluble	1,500	Replaced due to chipping at 500 holes. • Workpiece name: Wheel shaft

*(D) shows the tapping length as a ratio of tap diameter.

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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YAMAWA group for Overseas

YAMAWA International Co., Ltd.



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