Think threads with YAMAWA

HV Series

Taps that achieve excellent chip evacuation!

▪ Hybrid Value Spiral Fluted Taps for Steels ▪

HVSP HVSP LH

HVSP ZP

▪ Hybrid Value Spiral Pointed Taps for Steels ▪

HVPO

HVPO ZP

Z-PRO

Ultimate Machining Taps

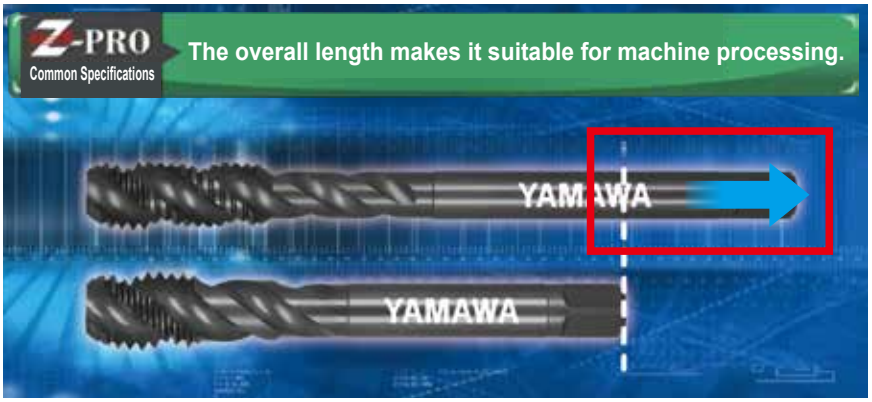
ANSI

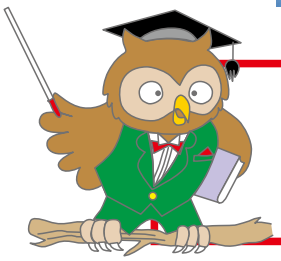
A new product line by YAMAWA

Z-PRO features

What are the most suitable tool specifications and shapes for machines?

Z-PRO is renowned for its "Tap Material" and "Surface Treatment", but its most significant feature is the "Semi-long Shape", which is suitable for machining.





Z-PRO improves chip evacuation for stable machining!
For trouble-free machining, the Z-PRO HV Series is recommended!

Conventional machining environment (Drilling machine, etc.)

ZELX SS SP

Achieves stable machining in various machining environments from drilling machine to M/C!

Z-PRO HVSP

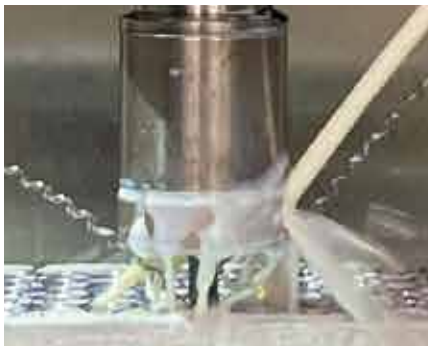
Advantages of using HVSP

By increasing the clearance between the holder and work-piece, chip interference is minimized. This prevents issues like chip jamming and breakage.

○Comparison photo of Z-PRO "HVSP" VS ANSI standard ZELX SS SP

Z-PRO HVSP

ZELX SS SP
(ANSI standard length)



M12×1.75

Tapping length : 1.5D (effective thread)
Holding length : 31mm

Think threads with YAMAWA

Hybrid Value Spiral Fluted Taps for Steels HVSP

HSS OX 2.5

ANSI

Introduction Movie

The uniquely designed flute shape+BLF(special relief on the full thread area) dramatically reduce chipping issues.

- Specially designed flute shape and relief on the full thread area improves chip ejection.
- Heel cut performance has been improved in order to accurately cut the chips deep inside the internal thread and eliminate the remaining chips.
- Due to improved chip ejection, chipping of the chamfer area is less likely to occur during the reversal of the tap.
- The threads on HVSP are specially designed with three full threads and subsequent threads ground down to the pitch diameter to prevent chipping.

Tapping conditions:HVSP M36×4

Workpiece Material	SS400
Tapping Speed	10SFM
Tapping Length	50mm
Machine Type	Radial drilling machine
Tapping Fluid	Non-water soluble cutting oil

○Full Thread Part

Conventional Product

Chipping

HVSP 250 Holes Ongoing Processing Without Chipping

Tapping conditions:HVSP M10×1.5

Workpiece Material	1045
Tapping Speed	39SFM
Tapping Length	17mm
Machine Type	Horizontal MC
Tapping Fluid	Water soluble cutting fluid

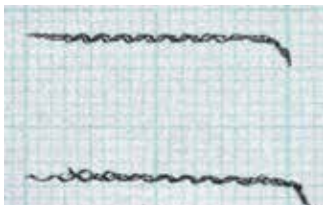
Smooth chip evacuation

1,184 Holes processed without chipping

Tapping conditions:HVSP M2×0.4

Workpiece Material	SS400
Tapping Speed	16SFM
Tapping Length	4mm
Machine Type	Vertical MC
Tapping Fluid	Water soluble cutting fluid

Smooth chip evacuation



100 Holes processed without chipping

Z-PRO Ultimate Machining Taps

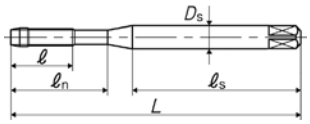
Hybrid Value Spiral Fluted Taps for Steels

HVSP

HSS OX 2.5

Dimensions and Sizes

TYPE:1



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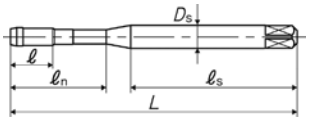

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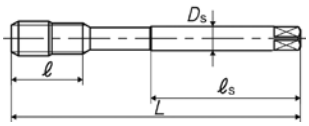

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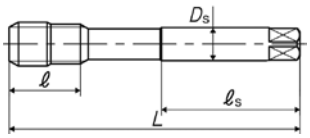
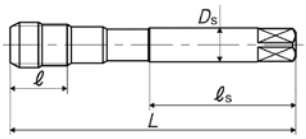


TYPE:5



Size	Class	Code	Chamfer	L (inch)	ℓ (inch)	ℓn (inch)	ℓs (inch)	Ds (inch)	No. of flutes	TYPE
For Metric Threads										
M2×0.4	D4	SS2.0E4EEXJ	2.5P	1.772	0.314	0.382	1.161	0.141	2	1
M2.2×0.45	D4	SS2.2F4EEXJ	2.5P	1.772	0.314	0.429	1.161	0.141	2	1
M2.3×0.4	D4	SS2.3E4EEXJ	2.5P	1.772	0.314	0.429	1.161	0.141	2	1
M2.5×0.45	D4	SS2.5F4EEXJ	2.5P	2.205	0.354	0.693	1.28	0.141	2	1
M2.6×0.45	D4	SS2.6F4EEXJ	2.5P	2.205	0.354	0.709	1.28	0.141	2	1
M3×0.5	D4	SS3.0G4EEXJ	2.5P	2.205	0.433	0.736	1.339	0.141	3	1
M3×0.35	D4	SS3.0D4EEXJ	2.5P	2.205	0.256	0.736	1.339	0.141	3	2
M4×0.7	D5	SS4.0I5EEXJ	2.5P	2.48	0.512	0.815	1.535	0.168	3	1
M4×0.5	D4	SS4.0G4EEXJ	2.5P	2.48	0.354	0.815	1.535	0.168	3	2
M5×0.8	D5	SS5.0K5EEXJ	2.5P	2.756	0.551	0.984	1.654	0.194	3	1
M5×0.5	D4	SS5.0G4EEXJ	2.5P	2.756	0.354	0.984	1.654	0.194	3	2
M6×1	D6	SS6.0M6EEXJ	2.5P	3.15	0.591	1.181	1.713	0.255	3	1
M6×0.75	D6	SS6.0J6EEXJ	2.5P	3.15	0.591	1.181	1.713	0.255	3	1
M6×0.5	D4	SS6.0G4EEXJ	2.5P	3.15	0.354	1.181	1.713	0.255	3	2
M7×1	D6	SS7.0M6EEXJ	2.5P	3.543	0.748	1.339	1.831	0.318	3	1
M7×0.75	D6	SS7.0J6EEXJ	2.5P	3.543	0.748	1.339	1.831	0.318	3	1
M7×0.5	D5	SS7.0G5EEXJ	2.5P	3.543	0.394	1.339	1.831	0.318	3	2
M8×1.25	D7	SS8.0N7EEXJ	2.5P	3.543	0.748	1.378	1.831	0.318	3	1
M8×1	D6	SS8.0M6EEXJ	2.5P	3.543	0.748	1.378	1.831	0.318	3	1
M8×0.75	D6	SS8.0J6EEXJ	2.5P	3.543	0.748	1.378	1.831	0.318	3	1
M8×0.5	D5	SS8.0G5EEXJ	2.5P	3.543	0.394	1.378	1.831	0.318	3	2
M10×1.5	D8	SS010O8EEXJ	2.5P	3.937	0.906	1.535	2.126	0.381	3	1
M10×1.25	D7	SS010N7EEXJ	2.5P	3.937	0.906	1.535	2.126	0.381	3	1
M10×1	D6	SS010M6EEXJ	2.5P	3.937	0.906	1.535	2.126	0.381	3	1
M11×1.25	D7	SS011N7EEXJ	2.5P	3.937	0.906	-	2.008	0.323	3	3
M11×1	D6	SS011M6EEXJ	2.5P	3.937	0.906	-	2.008	0.323	3	3
M12×1.75	D8	SS012P8EEXJ	2.5P	4.331	1.024	-	2.205	0.367	3	3
M12×1.25	D7	SS012N7EEXJ	2.5P	4.331	1.024	-	2.205	0.367	3	3
M12×1.5	D7	SS012O7EEXJ	2.5P	4.331	1.024	-	2.205	0.367	3	3
M12×1	D7	SS012M7EEXJ	2.5P	4.331	1.024	-	2.205	0.367	3	3
M14×2	D9	SS014Q9EEXJ	2.5P	4.331	1.024	-	2.205	0.429	3	3
M14×1.5	D8	SS014O8EEXJ	2.5P	4.331	1.024	-	2.205	0.429	3	3
M14×1.25	D7	SS014N7EEXJ	2.5P	4.331	1.024	-	2.205	0.429	3	3
M14×1	D7	SS014M7EEXJ	2.5P	4.331	1.024	-	2.205	0.429	3	3
M15×1.5	D8	SS015O8EEXJ	2.5P	4.331	1.024	-	2.205	0.48	3	3
M16×2	D9	SS016Q9EEXJ	2.5P	4.331	1.024	-	2.205	0.48	3	3
M16×1.5	D8	SS016O8EEXJ	2.5P	4.331	1.024	-	2.205	0.48	3	3
M16×1.25	D7	SS016N7EEXJ	2.5P	4.331	1.024	-	2.205	0.48	3	3
M16×1	D7	SS016M7EEXJ	2.5P	4.331	1.024	-	2.205	0.48	3	3
M18×2.5	D9	SS018R9EEXJ	2.5P	4.921	1.299	-	2.52	0.542	4	4
M18×2	D9	SS018Q9EEXJ	2.5P	4.921	1.299	-	2.52	0.542	4	3
M18×1.5	D8	SS018O8EEXJ	2.5P	4.921	0.945	-	2.52	0.542	4	5
M18×1.25	D7	SS018N7EEXJ	2.5P	4.921	0.945	-	2.52	0.542	4	5
M18×1	D7	SS018M7EEXJ	2.5P	4.921	0.945	-	2.52	0.542	4	5
M19×1.5	D8	SS019O8EEXJ	2.5P	4.921	0.945	-	2.52	0.59	4	4
M20×2.5	D9	SS020R9EEXJ	2.5P	5.512	1.299	-	2.795	0.652	4	4
M20×2	D9	SS020Q9EEXJ	2.5P	5.512	1.299	-	2.795	0.652	4	4
M20×1.5	D8	SS020O8EEXJ	2.5P	5.512	0.945	-	2.795	0.652	4	5
M20×1	D7	SS020M7EEXJ	2.5P	5.512	0.945	-	2.795	0.652	4	5
M22×2.5	D9	SS022R9EEXJ	2.5P	5.512	1.299	-	2.795	0.697	4	4
M22×2	D9	SS022Q9EEXJ	2.5P	5.512	1.299	-	2.795	0.697	4	4
M22×1.5	D8	SS022O8EEXJ	2.5P	5.512	0.945	-	2.795	0.697	4	5
M22×1	D7	SS022M7EEXJ	2.5P	5.512	0.945	-	2.795	0.697	4	5
M24×3	D9	SS024S9EEXJ	2.5P	6.299	1.457	-	3.228	0.76	4	4
M24×2	D9	SS024Q9EEXJ	2.5P	6.299	1.063	-	3.228	0.76	4	5
M24×1.5	D8	SS024O8EEXJ	2.5P	6.299	1.063	-	3.228	0.76	4	5
M24×1	D7	SS024M7EEXJ	2.5P	6.299	1.063	-	3.228	0.76	4	5
M25×2	D9	SS025Q9EEXJ	2.5P	6.299	1.063	-	3.228	0.8	4	5
M25×1.5	D8	SS025O8EEXJ	2.5P	6.299	1.063	-	3.228	0.8	4	5
M25×1	D7	SS025M7EEXJ	2.5P	6.299	1.063	-	3.228	0.8	4	5
M26×3	D10	SS026SOEEXJ	2.5P	7.087	1.732	-	3.622	0.896	4	4
M26×1.5	D8	SS026O8EEXJ	2.5P	7.087	1.063	-	3.622	0.896	4	5
M26×1	D7	SS026M7EEXJ	2.5P	7.087	1.063	-	3.622	0.896	4	5
M27×3	D10	SS027SOEEXJ	2.5P	7.087	1.732	-	3.622	0.896	4	4
M27×2	D9	SS027Q9EEXJ	2.5P	7.087	1.063	-	3.622	0.896	4	5
M27×1.5	D8	SS027O8EEXJ	2.5P	7.087	1.063	-	3.622	0.896	4	5
M28×1.5	D8	SS028O8EEXJ	2.5P	7.087	1.063	-	3.622	0.896	4	5
M28×1	D7	SS028M7EEXJ	2.5P	7.087	1.063	-	3.622	0.896	4	5

Dimensions and Sizes

Size	Class	Code	Chamfer	L (inch)	ℓ (inch)	ℓn (inch)	ℓs (inch)	Ds (inch)	No. of flutes	TYPE
Metric Threads										
M30×3.5	D10	SS030TOEEXJ	2.5P	7.087	1.732	-	3.622	1.021	4	4
M30×3	D10	SS030SOEEXJ	2.5P	7.087	1.732	-	3.622	1.021	4	4
M30×2	D9	SS030Q9EEXJ	2.5P	7.087	1.063	-	3.622	1.021	4	5
M30×1.5	D8	SS030O8EEXJ	2.5P	7.087	1.063	-	3.622	1.021	4	5
M30×1	D7	SS030M7EEXJ	2.5P	7.087	1.063	-	3.622	1.021	4	5
M32×2	D9	SS032Q9EEXJ	2.5P	7.087	1.063	-	3.622	1.021	4	5
M32×1.5	D8	SS032O8EEXJ	2.5P	7.087	1.063	-	3.622	1.021	4	5
M33×3.5	D10	SS033TOEEXJ	2.5P	7.087	1.732	-	3.622	1.108	4	4
M33×3	D10	SS033SOEEXJ	2.5P	7.087	1.732	-	3.622	1.108	4	4
M33×2	D9	SS033Q9EEXJ	2.5P	7.087	1.142	-	3.622	1.108	4	5
M33×1.5	D8	SS033O8EEXJ	2.5P	7.087	1.142	-	3.622	1.108	4	5
M35×2	D9	SS035Q9EEXJ	2.5P	7.874	2.165	-	4.016	1.108	4	4
M35×1.5	D8	SS035O8EEXJ	2.5P	7.874	1.142	-	4.016	1.108	4	5
M36×4	D10	SS036UOEEXJ	2.5P	7.874	2.047	-	4.016	1.233	4	4
M36×3	D10	SS036SOEEXJ	2.5P	7.874	2.047	-	4.016	1.233	4	4
M36×2	D9	SS036Q9EEXJ	2.5P	7.874	1.142	-	4.016	1.233	4	5
M36×1.5	D8	SS036O8EEXJ	2.5P	7.874	1.142	-	4.016	1.233	4	5
M39×4	D10	SS039UOEEXJ	2.5P	7.874	2.047	-	4.016	1.305	4	4
M39×3	D10	SS039SOEEXJ	2.5P	7.874	2.047	-	4.016	1.305	4	4
M42×4.5	D10	SS042VOEEXJ	2.5P	7.874	2.047	-	4.016	1.43	4	4
M42×3	D10	SS042SOEEXJ	2.5P	7.874	2.047	-	4.016	1.43	4	4
M42×1.5	D8	SS042O8EEXJ	2.5P	7.874	1.142	-	4.016	1.43	4	5
M45×4.5	D10	SS045VOEEXJ	2.5P	8.661	2.323	-	4.409	1.519	4	4
M45×3	D10	SS045SOEEXJ	2.5P	8.661	2.323	-	4.409	1.519	4	4
M48×5	D11	SS048W-EEXJ	2.5P	9.843	2.559	-	5.039	1.644	4	4
M48×3	D10	SS048SOEEXJ	2.5P	9.843	2.559	-	5.039	1.644	4	4
Unified Threads										
No.2-56UNC	2BX	SSUN2EYEEXJ	2.5P	1.772	0.157	0.421	1.161	0.141	2	1
No.3-48UNC	2BX	SSUN3FYEEXJ	2.5P	2.205	0.157	0.681	1.280	0.141	2	1
No.4-40UNC	2BX	SSUN4HYEEXJ	2.5P	2.205	0.197	0.709	1.280	0.141	2	1
No.5-40UNC	2BX	SSUN5HYEEXJ	2.5P	2.205	0.197	0.736	1.339	0.141	3	1
No.5-44UNF	2BX	SSUN5GYEEXJ	2.5P	2.205	0.197	0.736	1.339	0.141	3	1
No.6-32UNC	2BX	SSUN6JYEEXJ	2.5P	2.205	0.276	0.748	1.339	0.141	3	1
No.6-40UNF	2BX	SSUN6HYEEXJ	2.5P	2.205	0.276	0.748	1.339	0.141	3	1
No.8-32UNC	2BX	SSUN8JYEEXJ	2.5P	2.480	0.276	0.827	1.535	0.168	3	1
No.8-36UNF	2BX	SSUN8IYEEXJ	2.5P	2.480	0.276	0.827	1.535	0.168	3	1
No.10-24UNC	2BX	SSUNAMYEEXJ	2.5P	2.756	0.354	0.945	1.654	0.194	3	1
No.10-32UNF	2BX	SSUNAJYEEXJ	2.5P	2.756	0.354	0.945	1.654	0.194	3	1
No.12-24UNC	2BX	SSUNCMYEEXJ	2.5P	3.150	0.591	0.984	1.953	0.220	3	1
No.12-28UNF	2BX	SSUNCKYEEXJ	2.5P	3.150	0.591	0.984	1.953	0.220	3	1
1/4-20UNC	2BX	SSU04NYEEXJ	2.5P	3.150	0.433	1.181	1.693	0.255	3	1
1/4-28UNF	2BX	SSU04KYEEXJ	2.5P	3.150	0.433	1.181	1.693	0.255	3	1
5/16-18UNC	2BX	SSU05OYEEXJ	2.5P	3.543	0.748	1.378	1.831	0.318	3	1
5/16-24UNF	2BX	SSU05MYEEXJ	2.5P	3.543	0.748	1.378	1.831	0.318	3	1
3/8-16UNC	2BX	SSU06PYEEXJ	2.5P	3.937	0.906	1.535	2.028	0.381	3	1
3/8-24UNF	2BX	SSU06MYEEXJ	2.5P	3.937	0.906	1.535	2.028	0.381	3	1
7/16-14UNC	2BX	SSU07QYEEXJ	2.5P	3.937	0.906	-	2.008	0.323	3	3
7/16-20UNF	2BX	SSU07NYEEXJ	2.5P	3.937	0.906	-	2.008	0.323	3	3
1/2-13UNC	2BX	SSU08RYEEXJ	2.5P	4.331	1.024	-	2.205	0.367	3	3
1/2-20UNF	2BX	SSU08NYEEXJ	2.5P	4.331	1.024	-	2.205	0.367	3	3
9/16-12UNC	2BX	SSU09SYEEXJ	2.5P	4.331	1.024	-	2.205	0.429	3	3
9/16-18UNF	2BX	SSU09OYEEXJ	2.5P	4.331	1.024	-	2.205	0.429	3	3
5/8-11UNC	2BX	SSU10UYEEXJ	2.5P	4.331	1.024	-	2.205	0.480	3	3
5/8-18UNF	2BX	SSU10OYEEXJ	2.5P	4.331	1.024	-	2.205	0.480	3	3
3/4-10UNC	2BX	SSU12VYEEXJ	2.5P	4.921	1.299	-	2.520	0.590	4	3
3/4-16UNF	2BX	SSU12PYEEXJ	2.5P	4.921	1.299	-	2.520	0.590	4	3
7/8-9UNC	2BX	SSU14WYEEXJ	2.5P	5.512	1.299	-	2.795	0.697	4	3
7/8-14UNF	2BX	SSU14QYEEXJ	2.5P	5.512	1.299	-	2.795	0.697	4	3
1-8UNC	2BX	SSU16XYEEXCJ	2.5P	6.299	1.457	-	3.228	0.800	4	4
1-12UNF	2BX	SSU16SYEEXCJ	2.5P	6.299	1.457	-	3.228	0.800	4	4
1 1/8-7UNC	2BX	SSU18YYEEXCJ	2.5P	7.087	1.732	-	3.622	0.896	4	4
1 1/8-8UN	2BX	SSU18XYEEXCJ	2.5P	7.087	1.732	-	3.622	0.896	4	4
1 1/8-12UNF	2BX	SSU18SYEEXCJ	2.5P	7.087	1.732	-	3.622	0.896	4	4
1 1/4-7UNC	2BX	SSU20YYEEXCJ	2.5P	7.087	1.929	-	3.622	1.021	4	4
1 1/4-8UN	2BX	SSU20XYEEXCJ	2.5P	7.087	1.929	-	3.622	1.021	4	4
1 1/4-12UNF	2BX	SSU20SYEEXCJ	2.5P	7.087	1.929	-	3.622	1.021	4	4
1 3/8-6UNC	2BX	SSU22ZYEEXCJ	2.5P	7.874	2.165	-	4.016	1.108	4	4
1 3/8-8UN	2BX	SSU22XYEEXCJ	2.5P	7.874	2.165	-	4.016	1.108	4	4
1 3/8-12UNF	2BX	SSU22SYEEXCJ	2.5P	7.874	2.165	-	4.016	1.108	4	4
1 1/2-6UNC	2BX	SSU24ZYEEXCJ	2.5P	7.874	2.323	-	4.016	1.233	4	4
1 1/2-8UN	2BX	SSU24XYEEXCJ	2.5P	7.874	2.323	-	4.016	1.233	4	4
1 1/2-12UNF	2BX	SSU24SYEEXCJ	2.5P	7.874	2.323	-	4.016	1.233	4	4
1 3/4-5UNC	2BX	SSU280YEEXCJ	2.5P	8.661	2.559	-	4.409	1.430	4	4
1 3/4-8UN	2BX	SSU28XYEEXCJ	2.5P	8.661	2.559	-	4.409	1.430	4	4
1 3/4-12UN	2BX	SSU28SYEEXCJ	2.5P	8.661	2.559	-	4.409	1.430	4	4
2-4 ½UNC	2BX	SSU329YEEXCJ	2.5P	9.843	2.874	-	5.039	1.644	4	4
2-8UN	2BX	SSU32XYEEXCJ	2.5P	9.843	2.874	-	5.039	1.644	4	4

Z-PRO Ultimate Machining Taps

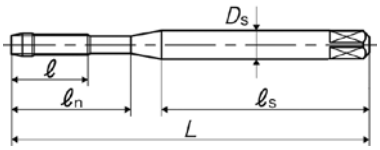
Hybrid Value Spiral Fluted Taps for Steels for Left Hand Threads

HVSP LH

HSS OX 2.5 LH Left hand

Dimensions and Sizes

TYPE:1



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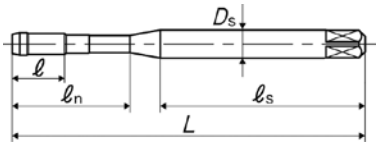

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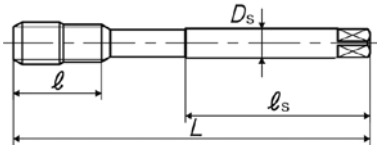

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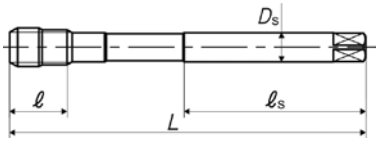

Size	Class	Code	Chamfer	L (inch)	ℓ (inch)	ℓn (inch)	ℓs (inch)	Ds (inch)	No. of flutes	TYPE
Metric Threads										
M2×0.4	D4	5116102021	2.5P	1.772	0.314	1.161	1.161	0.141	2	1
M2.3×0.4	D4	5116102026	2.5P	1.772	0.314	1.161	1.161	0.141	2	1
M2.5×0.45	D4	5116102029	2.5P	2.205	0.354	1.280	1.280	0.141	2	1
M2.6×0.45	D4	5116102032	2.5P	2.205	0.354	1.280	1.280	0.141	2	1
M3×0.5	D4	5116102035	2.5P	2.205	0.433	1.339	1.339	0.141	3	1
M3×0.35	D4	5116102036	2.5P	2.205	0.256	1.339	1.339	0.141	3	2
M4×0.7	D5	5116102042	2.5P	2.480	0.512	1.535	1.535	0.168	3	1
M4×0.5	D4	5116102043	2.5P	2.480	0.354	1.535	1.535	0.168	3	2
M5×0.8	D5	5116102049	2.5P	2.756	0.551	1.654	1.654	0.194	3	1
M5×0.5	D4	5116102051	2.5P	2.756	0.354	1.654	1.654	0.194	3	2
M6×1	D6	5116102055	2.5P	3.150	0.591	1.693	1.693	0.255	3	1
M6×0.75	D6	5116102056	2.5P	3.150	0.591	1.693	1.693	0.255	3	1
M6×0.5	D4	5116102057	2.5P	3.150	0.354	1.693	1.693	0.255	3	2
M8×1.25	D7	5116102064	2.5P	3.543	0.748	1.831	1.831	0.318	3	1
M8×1	D6	5116102065	2.5P	3.543	0.748	1.831	1.831	0.318	3	1
M10×1.5	D8	5116102078	2.5P	3.937	0.906	2.126	2.126	0.381	3	1
M10×1.25	D7	5116102079	2.5P	3.937	0.906	2.126	2.126	0.381	3	1
M10×1	D6	5116102080	2.5P	3.937	0.906	2.126	2.126	0.381	3	1
M12×1.75	D8	5116102088	2.5P	4.331	1.024	2.205	2.205	0.367	3	3
M12×1.5	D7	5116102089	2.5P	4.331	1.024	2.205	2.205	0.367	3	3
M12×1.25	D7	5116102090	2.5P	4.331	1.024	2.205	2.205	0.367	3	3
M14×2	D9	5116102100	2.5P	4.331	1.024	2.205	2.205	0.429	3	3
M14×1.5	D8	5116102102	2.5P	4.331	1.024	2.205	2.205	0.429	3	3
M16×2	D9	5116102114	2.5P	4.331	1.024	2.205	2.205	0.480	3	3
M16×1.5	D8	5116102116	2.5P	4.331	1.024	2.205	2.205	0.480	3	3
M18×2.5	D9	5116102128	2.5P	4.921	1.299	2.520	2.520	0.542	4	3
M18×1.5	D8	5116102130	2.5P	4.921	0.945	2.520	2.520	0.542	4	4
M20×2.5	D9	5116102141	2.5P	5.512	1.299	2.795	2.795	0.652	4	3
M20×1.5	D8	5116102144	2.5P	5.512	0.945	2.795	2.795	0.652	4	4
M22×2.5	D9	5116102156	2.5P	5.512	1.299	2.795	2.795	0.697	4	3
M22×1.5	D8	5116102158	2.5P	5.512	0.945	2.795	2.795	0.697	4	4
M24×3	D9	5116102167	2.5P	6.299	1.457	3.228	3.228	0.760	4	3
M24×1.5	D8	5116102170	2.5P	6.299	1.063	3.228	3.228	0.760	4	4
Unified Threads										
No.3-48UNC	2BX	5116104012	2.5P	2.205	0.157	0.681	1.280	0.141	2	1
No.4-40UNC	2BX	5116104015	2.5P	2.205	0.197	0.709	1.280	0.141	2	1
No.5-40UNC	2BX	5116104021	2.5P	2.205	0.197	0.736	1.339	0.141	3	1
No.5-44UNF	2BX	5116104022	2.5P	2.205	0.197	0.736	1.339	0.141	3	1
No.6-32UNC	2BX	5116104023	2.5P	2.205	0.276	0.748	1.339	0.141	3	1
No.6-40UNF	2BX	5116104024	2.5P	2.205	0.276	0.748	1.339	0.141	3	1
No.8-32UNC	2BX	5116104029	2.5P	2.480	0.276	0.827	1.535	0.168	3	1
No.8-36UNF	2BX	5116104030	2.5P	2.480	0.276	0.827	1.535	0.168	3	1
No.10-24UNC	2BX	5116104039	2.5P	2.756	0.354	0.945	1.654	0.194	3	1
No.10-32UNF	2BX	5116104041	2.5P	2.756	0.354	0.945	1.654	0.194	3	1
1/4-20UNC	2BX	5116104058	2.5P	3.150	0.433	1.181	1.693	0.255	3	1
1/4-28UNF	2BX	5116104062	2.5P	3.150	0.433	1.181	1.693	0.255	3	1

Dimensions and Sizes

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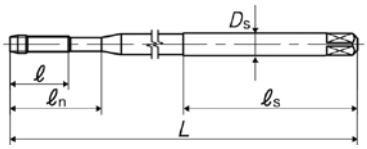

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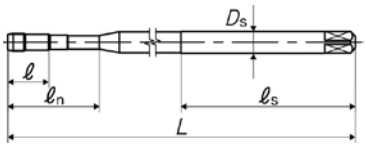

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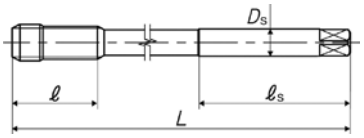

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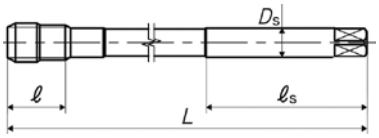


Size	Class	Code	Chamfer	L (inch)	ℓ (inch)	ℓn (inch)	ℓs (inch)	Ds (inch)	No. of flutes	TYPE
Metric Threads										
M3×0.5	D4	SS3.0G4EEXEJ	2.5P	3.937	0.433	0.736	1.339	0.141	3	1
M3×0.35	D4	SS3.0D4EEXEJ	2.5P	3.937	0.256	0.736	1.339	0.141	3	2
M4×0.7	D5	SS4.0I5EEXEJ	2.5P	3.937	0.512	0.827	1.535	0.168	3	1
M4×0.5	D4	SS4.0G4EEXEJ	2.5P	3.937	0.354	0.827	1.535	0.168	3	2
M5×0.8	D5	SS5.0K5EEX+J	2.5P	4.921	0.551	0.984	1.654	0.194	3	1
M5×0.5	D4	SS5.0G4EEX+J	2.5P	4.921	0.354	0.984	1.654	0.194	3	2
M6×1	D6	SS6.0M6EEXGJ	2.5P	5.906	0.591	1.181	1.713	0.255	3	1
M6×0.75	D6	SS6.0J6EEXGJ	2.5P	5.906	0.591	1.181	1.713	0.255	3	1
M6×0.5	D4	SS6.0G4EEXGJ	2.5P	5.906	0.354	1.181	1.713	0.255	3	2
M8×1.25	D7	SS8.0N7EEXGJ	2.5P	5.906	0.748	1.382	1.831	0.318	3	1
M8×1	D6	SS8.0M6EEXGJ	2.5P	5.906	0.748	1.382	1.831	0.318	3	1
M10×1.5	D8	SS010O8EEXGJ	2.5P	5.906	0.906	1.535	2.126	0.381	3	1
M10×1.25	D7	SS010N7EEXGJ	2.5P	5.906	0.906	1.535	2.126	0.381	3	1
M10×1	D6	SS010M6EEXGJ	2.5P	5.906	0.906	1.535	2.126	0.381	3	1
M12×1.75	D8	SS012P8EEX/J	2.5P	7.087	1.024	-	2.205	0.367	3	3
M12×1.5	D7	SS012O7EEX/J	2.5P	7.087	1.024	-	2.205	0.367	3	3
M12×1.25	D7	SS012N7EEX/J	2.5P	7.087	1.024	-	2.205	0.367	3	3
M14×2	D9	SS014Q9EEX/J	2.5P	7.087	1.024	-	2.205	0.429	3	3
M14×1.5	D8	SS014O8EEX/J	2.5P	7.087	1.024	-	2.205	0.429	3	3
M16×2	D9	SS016Q9EEX/J	2.5P	7.087	1.024	-	2.205	0.480	3	3
M16×1.5	D8	SS016O8EEX/J	2.5P	7.087	1.024	-	2.205	0.480	3	3
M18×2.5	D9	SS018R9EEX/J	2.5P	7.087	1.299	-	2.520	0.542	4	3
M18×2	D9	SS018Q9EEX/J	2.5P	7.087	1.299	-	2.520	0.542	4	3
M18×1.5	D8	SS018O8EEX/J	2.5P	7.087	0.945	-	2.520	0.542	4	4
M18×1	D7	SS018M7EEX/J	2.5P	7.087	0.945	-	2.520	0.542	4	4
M20×2.5	D9	SS020R9EEXKJ	2.5P	7.874	1.299	-	2.795	0.652	4	3
M20×2	D8	SS020Q9EEXKJ	2.5P	7.874	1.299	-	2.795	0.652	4	3
M20×1.5	D8	SS020O8EEXKJ	2.5P	7.874	0.945	-	2.795	0.652	4	4
M22×2.5	D9	SS022R9EEXKJ	2.5P	7.874	1.299	-	2.795	0.697	4	3
M22×1.5	D8	SS022O8EEXKJ	2.5P	7.874	0.945	-	2.795	0.697	4	4
M24×3	D9	SS024S9EEXNJ	2.5P	9.843	1.457	-	3.228	0.760	4	3
M24×1.5	D8	SS024O8EEXNJ	2.5P	9.843	1.063	-	3.228	0.760	4	4
M27×3	D10	SS027SOEEXNJ	2.5P	9.843	1.732	-	3.622	0.896	4	3
M27×1.5	D8	SS027O8EEXNJ	2.5P	9.843	1.063	-	3.622	0.896	4	4
M30×3.5	D10	SS030TOEEXNJ	2.5P	9.843	1.732	-	3.622	1.021	4	3
M30×3	D10	SS030SOEEXNJ	2.5P	9.843	1.732	-	3.622	1.021	4	3
M30×1.5	D8	SS030O8EEXNJ	2.5P	9.843	1.063	-	3.622	1.021	4	4
M33×3.5	D10	SS033TOEEXNJ	2.5P	9.843	1.732	-	3.622	1.108	4	3
M33×3	D10	SS033SOEEXNJ	2.5P	9.843	1.732	-	3.622	1.108	4	3
M36×4	D10	SS036UOEEXQJ	2.5P	11.811	2.047	-	4.016	1.233	4	3
M36×3	D10	SS036SOEEXQJ	2.5P	11.811	2.047	-	4.016	1.233	4	3
M39×4	D10	SS039UOEEXQJ	2.5P	11.811	2.047	-	4.016	1.305	4	3
M39×3	D10	SS039SOEEXQJ	2.5P	11.811	2.047	-	4.016	1.305	4	3
M42×4.5	D10	SS042VOEEXQJ	2.5P	11.811	2.047	-	4.016	1.430	4	3
M42×3	D10	SS042SOEEXQJ	2.5P	11.811	2.047	-	4.016	1.430	4	3
M48×5	D11	SS048W-EEXQJ	2.5P	11.811	2.559	-	5.039	1.644	4	3
M48×3	D10	SS048SOEEXQJ	2.5P	11.811	2.559	-	5.039	1.644	4	3

ANSI

Z-PRO Ultimate Machining Taps

Hybrid Value Spiral Fluted Taps for Zinc Plating HVSP ZP

HSS OX 2.5

Product Features

- The standard line includes tap classes that are optimal for tapping internal threads before zinc plating.
- We developed 3 types of oversized taps in +.004inch, +.008inch, +.012inch, which are in high market demand in certain applications.
- The specifications are based on HVSP (Hybrid Value Spiral Fluted Tap) and can be used with various workpiece materials and machines.
- Stable tapping without chipping is possible in both vertical and horizontal machining.

Applications

It is mainly used for tapping internal threads before plating to prevent rust and corrosion in applications such as road development, bridges, large structures, etc.

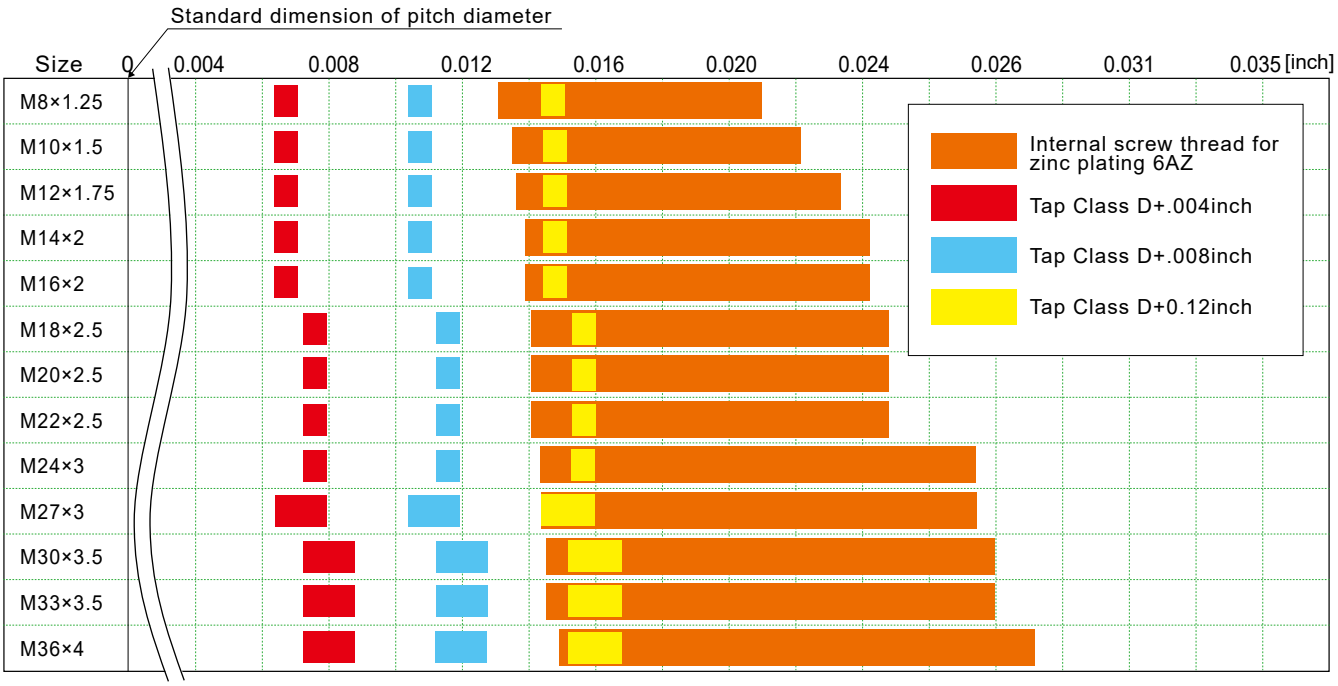


Workpiece materials and tapping speeds

Workpiece materials		Guideline for tapping speed(SFM)	
		M8~M16	M18~M36
Low Carbon Steels	1025/SS400	10~39	10~26
Medium Carbon Steels	1025~1045	10~39	10~26
High Carbon Steels	1045~	10~39	10~26

Workpiece materials		Guideline for tapping speed(SFM)	
		M8~M16	M18~M36
Alloy Steels	SCM/SCr	10~33	10~26
Thermal Refined Steels	25~35HRC	10~33	10~26
Cast Steels	SC	10~33	10~26
Stainless Steels	SUS303/SUS304	~16	~16

Pitch diameter tolerance range comparison table for tap and internal screw thread classes (for zinc plating)



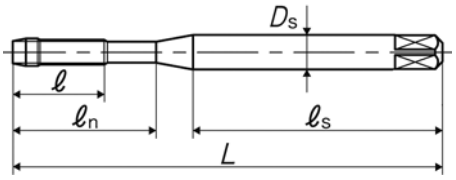
*M8x1.25 was calculated using the dimensional tolerance formula, which is the basis for tolerance positions 6AZ specified in JIS B0209-5.

Explanation

- The graph above is a comparison between the allowable dimensional limits of the internal screw thread of tolerance class 6AZ per JIS B 0209-5". The allowable dimensional limits of internal threads to be mated with zinc plating external thread with a tolerance position of h before plating" and the class and pitch diameter of HVSP ZP tap.
- For example, if the nominal size is M10x1.5 and the tolerance class is 6AZ, you can use P4+300μm(D8+0.12inch).
- Because the plating thickness varies depending on the plating type and processing method, there are cases where the required internal thread diameter does not conform to the above standards. Therefore, HVSP ZP has D class +.004inch, D class +.008inch, D class +.012inch, which are highly requested by the market as standard.

Dimensions and Sizes

TYPE:1



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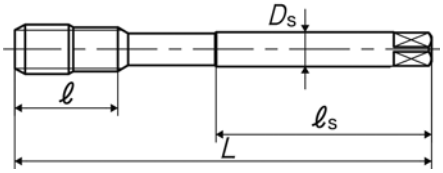


In addition to our Hybrid Value Spiral Fluted Taps for steels, we have added oversized taps that are ideal for threading before zinc plating. They can be used pre-plating for the internal threads of building materials such as those used in roads, railroads, public transportation facilities, and bridges.

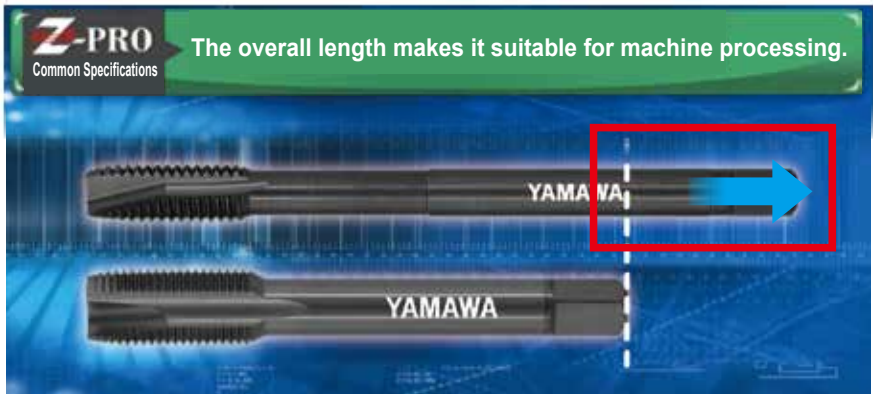
Size	Class	Code	Chamfer	L (inch)	ℓ (inch)	ℓn (inch)	ℓs (inch)	Ds (inch)	No. of flutes	TYPE
Metric Threads										
M8×1.25	D7+.004	5112201064	2.5P	3.543	0.748	1.378	1.831	0.318	3	1
	D7+.008	5112301064	2.5P	3.543	0.748	1.378	1.831	0.318	3	1
	D7+.012	5112401064	2.5P	3.543	0.748	1.378	1.831	0.318	3	1
M10×1.5	D8+.004	5112201078	2.5P	3.937	0.906	1.535	2.126	0.381	3	1
	D8+.008	5112301078	2.5P	3.937	0.906	1.535	2.126	0.381	3	1
	D8+.012	5112401078	2.5P	3.937	0.906	1.535	2.126	0.381	3	1
M12×1.75	D8+.004	5112201088	2.5P	4.331	1.024	-	2.205	0.367	3	2
	D8+.008	5112301088	2.5P	4.331	1.024	-	2.205	0.367	3	2
	D8+.012	5112401088	2.5P	4.331	1.024	-	2.205	0.367	3	2
M14×2	D9+.004	5112201100	2.5P	4.331	1.024	-	2.205	0.429	3	2
	D9+.008	5112301100	2.5P	4.331	1.024	-	2.205	0.429	3	2
	D9+.012	5112401100	2.5P	4.331	1.024	-	2.205	0.429	3	2
M16×2	D9+.004	5112201114	2.5P	4.331	1.024	-	2.205	0.480	3	2
	D9+.008	5112301114	2.5P	4.331	1.024	-	2.205	0.480	3	2
	D9+.012	5112401114	2.5P	4.331	1.024	-	2.205	0.480	3	2
M18×2.5	D9+.004	5112201128	2.5P	4.921	1.299	-	2.520	0.542	4	2
	D9+.008	5112301128	2.5P	4.921	1.299	-	2.520	0.542	4	2
	D9+.012	5112401128	2.5P	4.921	1.299	-	2.520	0.542	4	2
M20×2.5	D9+.004	5112201141	2.5P	5.512	1.299	-	2.795	0.652	4	2
	D9+.008	5112301141	2.5P	5.512	1.299	-	2.795	0.652	4	2
	D9+.012	5112401141	2.5P	5.512	1.299	-	2.795	0.652	4	2
M22×2.5	D9+.004	5112201156	2.5P	5.512	1.299	-	2.795	0.697	4	2
	D9+.008	5112301156	2.5P	5.512	1.299	-	2.795	0.697	4	2
	D9+.012	5112401156	2.5P	5.512	1.299	-	2.795	0.697	4	2
M24×3	D9+.004	5112201167	2.5P	6.299	1.457	-	3.228	0.760	4	2
	D9+.008	5112301167	2.5P	6.299	1.457	-	3.228	0.760	4	2
	D9+.012	5112401167	2.5P	6.299	1.457	-	3.228	0.760	4	2
M27×3	D10+.004	5112201186	2.5P	7.087	1.732	-	3.622	0.896	4	2
	D10+.008	5112301186	2.5P	7.087	1.732	-	3.622	0.896	4	2
	D10+.012	5112401186	2.5P	7.087	1.732	-	3.622	0.896	4	2
M30×3.5	D10+.004	5112201199	2.5P	7.087	1.732	-	3.622	1.021	4	2
	D10+.008	5112301199	2.5P	7.087	1.732	-	3.622	1.021	4	2
	D10+.012	5112401199	2.5P	7.087	1.732	-	3.622	1.021	4	2
M33×3.5	D10+.004	5112201211	2.5P	7.087	1.732	-	3.622	1.108	4	2
	D10+.008	5112301211	2.5P	7.087	1.732	-	3.622	1.108	4	2
	D10+.012	5112401211	2.5P	7.087	1.732	-	3.622	1.108	4	2
M36×4	D10+.004	5112201225	2.5P	7.874	2.047	-	4.016	1.233	4	2
	D10+.008	5112301225	2.5P	7.874	2.047	-	4.016	1.233	4	2
	D10+.012	5112401225	2.5P	7.874	2.047	-	4.016	1.233	4	2

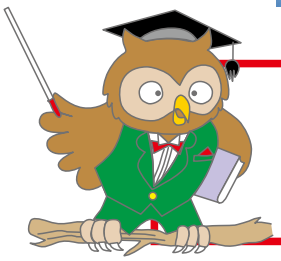
A new product line by YAMAWA

Z-PRO features

What are the most suitable tool specifications and shapes for machines?

Z-PRO is renowned for its "Tap Material" and "Surface Treatment", but its most significant feature is the "Semi-long Shape", which is suitable for machining.





Z-PRO improves chip evacuation for stable machining!
For trouble-free machining, the Z-PRO HV Series is recommended!

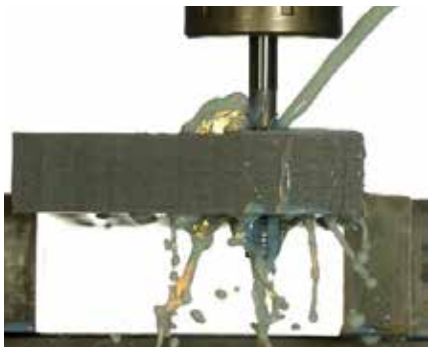
Conventional machining environment (Drilling machine, etc.)	Achieves stable machining in various machining environments from drilling machine to M/C!
ZELX SS PO(ANSI standard length) 	Z-PRO HVPO 

Advantages of using HVPO

A sufficient amount of cutting oil can be supplied thanks to the increased clearance between the holder and workpiece.

Extending life of tap+ reducing heat from tapping.

○Comparison photo of Z-PRO "HVSP" VS ANSI standard ZELX SS PO

Z-PRO HVPO	ZELX SS PO (ANSI standard length)
	

M12×1.75

Tapping length : 1.5D (effective thread)
Holding length : 31mm

▪Product Features

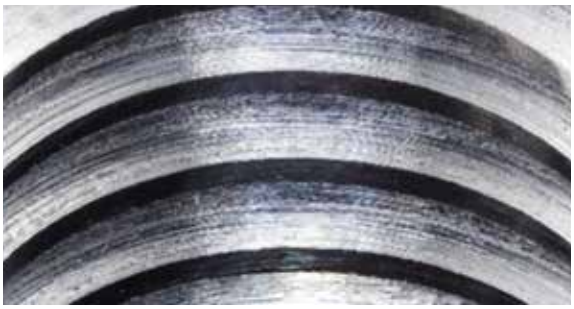
▪The unique flute shapes achieve excellent internal threads and longer tool life by improving chip evacuation and cutting resistance!
▪The longer overall length increases the clearance between the holder and workpiece, ensuring sufficient supply of cutting oil.

Tapping data

Tapping conditions: HVPO M12x1.75

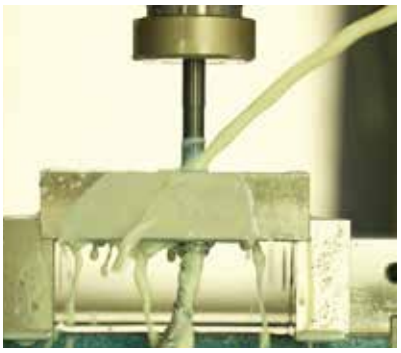
Workpiece material	SS400
Tapping Speed	33SFM
Tapping Length	24mm
Machine Type	Vertical MC
Tapping Fluid	Water soluble cutting fluid

Excellent internal threads



In SS400 tapping, an excellent internal thread surface can be obtained even using water-soluble cutting fluid.

Excellent machining conditions



Thanks to the unique flute shape and semi-long overall length of the tap, water-soluble cutting fluid is sufficiently supplied.

Excellent ejected chips

Workpiece materials and tapping speeds

Workpiece materials		Guideline for tapping speed (SFM)			
		M1.4~M2.6	M3~M5 No.6~No.12	M6~M16 U1/4~U5/8	M18~M48 U3/4~U7/8
Low Carbon Steels	1020/SS400	3~23	10~30	10~39	10~26
Medium Carbon Steels	1025~1045	3~23	10~30	10~39	10~26
High Carbon Steels	1045~	3~23	10~30	10~39	10~26
Alloy Steels	SCM/SCr	3~23	10~30	10~39	10~26
Thermal Refined Steels	25~35HRC	–	–	10~33	10~26
Cast Steels	SC	3~23	10~30	10~26	10~26
Stainless Steels	303/304	~10	~16	~16	~16

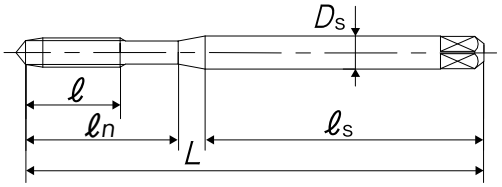
Z-PRO Ultimate Machining Taps

Hybrid Value Spiral Pointed Taps for Steels HVPO

HSS OX <2D 5

Dimensions and Sizes

TYPE:1



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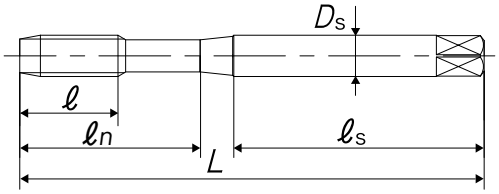
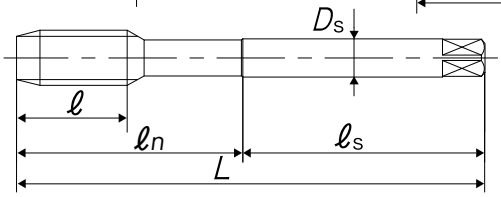


TYPE:3



Size	Class	Code	Chamfer	L (inch)	ℓ (inch)	ℓn (inch)	ℓs (inch)	Ds (inch)	No. of flutes	TYPE
Metric Threads										
M3×0.5	D4	5113101035	5P	2.205	0.433	0.736	1.339	0.141	3	1
M3×0.35	D3	5113101036	5P	2.205	0.256	0.736	1.339	0.141	3	1
M3.5×0.6	D4	5113101038	5P	2.205	0.433	0.748	1.339	0.141	3	1
M4×0.7	D5	5113101042	5P	2.480	0.512	0.815	1.535	0.168	3	1
M4×0.5	D4	5113101043	5P	2.480	0.354	0.815	1.535	0.168	3	1
M4.5×0.5	D4	5113101046	5P	2.756	0.354	0.945	1.654	0.194	3	1
M5×0.8	D5	5113101049	5P	2.756	0.551	0.984	1.654	0.194	3	1
M5×0.5	D4	5113101051	5P	2.756	0.354	0.984	1.654	0.194	3	1
M6×1	D6	5113101055	5P	3.150	0.591	1.181	1.713	0.255	3	1
M6×0.75	D5	5113101056	5P	3.150	0.591	1.181	1.713	0.255	3	1
M6×0.5	D4	5113101057	5P	3.150	0.354	1.181	1.713	0.255	3	1
M7×1	D6	5113101060	5P	3.543	0.748	1.339	1.831	0.318	3	2
M7×0.75	D5	5113101061	5P	3.543	0.748	1.339	1.831	0.318	3	2
M7×0.5	D4	5113101062	5P	3.543	0.394	1.339	1.831	0.318	3	2
M8×1.25	D7	5113101064	5P	3.543	0.748	1.378	1.831	0.318	3	2
M8×1	D6	5113101065	5P	3.543	0.748	1.378	1.831	0.318	3	2
M8×0.75	D5	5113101066	5P	3.937	0.906	1.535	2.028	0.381	3	2
M8×0.5	D5	5113101067	5P	3.543	0.394	1.378	1.831	0.318	3	2
M9×1	D6	5113101072	5P	3.937	0.906	1.535	2.028	0.381	3	2
M10×1.5	D7	5113101078	5P	3.937	0.906	1.535	2.126	0.381	3	2
M10×1.25	D6	5113101079	5P	3.937	0.906	1.535	2.126	0.381	3	2
M10×1	D6	5113101080	5P	3.937	0.906	1.535	2.126	0.381	3	2
M12×1.75	D8	5113101088	5P	4.331	1.024	-	2.205	0.367	3	3
M12×1.5	D7	5113101089	5P	4.331	1.024	-	2.205	0.367	3	3
M12×1.25	D7	5113101090	5P	4.331	1.024	-	2.205	0.367	3	3
M12×1	D6	5113101091	5P	4.331	1.024	-	2.205	0.367	3	3
M14×2	D8	5113101100	5P	4.331	1.024	-	2.205	0.429	3	3
M14×1.5	D7	5113101102	5P	4.331	1.024	-	2.205	0.429	3	3
M14×1.25	D7	5113101103	5P	4.331	1.024	-	2.205	0.429	3	3
M16×2	D8	5113101114	5P	4.331	1.024	-	2.205	0.480	3	3
M16×1.5	D7	5113101116	5P	4.331	1.024	-	2.205	0.480	3	3
M16×1.25	D7	5113101117	5P	4.331	1.024	-	2.205	0.480	3	3
M16×1	D6	5113101118	5P	4.331	1.024	-	2.205	0.480	3	3
M18×2.5	D8	5113101128	5P	4.921	1.299	-	2.520	0.542	3	3
M18×2	D8	5113101129	5P	4.921	1.299	-	2.520	0.542	3	3
M18×1.5	D7	5113101130	5P	4.921	0.945	-	2.520	0.542	3	3
M18×1	D6	5113101132	5P	4.921	0.945	-	2.520	0.542	3	3
M20×2.5	D8	5113101141	5P	5.512	1.299	-	2.795	0.652	3	3
M20×2	D8	5113101142	5P	5.512	1.299	-	2.795	0.652	3	3
M20×1.5	D7	5113101144	5P	5.512	0.945	-	2.795	0.652	3	3
M20×1	D6	5113101146	5P	5.512	0.945	-	2.795	0.652	3	3
M22×2.5	D8	5113101156	5P	5.512	1.299	-	2.795	0.697	3	3
M22×2	D8	5113101157	5P	5.512	1.299	-	2.795	0.697	3	3
M22×1.5	D7	5113101158	5P	5.512	0.945	-	2.795	0.697	3	3

Dimensions and Sizes

Size	Class	Code	Chamfer	L (inch)	ℓ (inch)	ℓn (inch)	ℓs (inch)	Ds (inch)	No. of flutes	TYPE
Metric Threads										
M24×3	D9	5113101167	5P	6.299	1.457	-	3.228	0.760	3	3
M24×2	D8	5113101169	5P	6.299	1.063	-	3.228	0.760	3	3
M24×1.5	D7	5113101170	5P	6.299	1.063	-	3.228	0.760	3	3
M25×1.5	D7	5113101177	5P	6.299	1.063	-	3.228	0.800	3	3
M26×3	D9	5113101181	5P	7.087	1.732	-	3.622	0.896	4	3
M27×3	D9	5113101186	5P	7.087	1.732	-	3.622	0.896	4	3
M27×2	D8	5113101187	5P	7.087	1.063	-	3.622	0.896	4	3
M27×1.5	D7	5113101188	5P	7.087	1.063	-	3.622	0.896	4	3
M28×1.5	D7	5113101194	5P	7.087	1.063	-	3.622	0.896	4	3
M30×3.5	D10	5113101199	5P	7.087	1.732	-	3.622	1.021	4	3
M30×3	D9	5113101200	5P	7.087	1.732	-	3.622	1.021	4	3
M30×2	D8	5113101201	5P	7.087	1.063	-	3.622	1.021	4	3
M30×1.5	D7	5113101202	5P	7.087	1.063	-	3.622	1.021	4	3
M32×2	D8	5113101207	5P	7.087	1.063	-	3.622	1.021	4	3
M32×1.5	D7	5113101208	5P	7.087	1.063	-	3.622	1.021	4	3
M33×3.5	D10	5113101211	5P	7.087	1.732	-	3.622	1.108	4	3
M33×3	D9	5113101212	5P	7.087	1.732	-	3.622	1.108	4	3
M33×2	D8	5113101213	5P	7.087	1.142	-	3.622	1.108	4	3
M33×1.5	D7	5113101214	5P	7.087	1.142	-	3.622	1.108	4	3
M35×2	D8	5113101221	5P	7.874	2.165	-	4.016	1.108	4	3
M35×1.5	D7	5113101222	5P	7.874	1.142	-	4.016	1.108	4	3
M36×4	D10	5113101225	5P	7.874	2.047	-	4.016	1.233	4	3
M36×3	D9	5113101226	5P	7.874	2.047	-	4.016	1.233	4	3
M36×2	D8	5113101227	5P	7.874	1.142	-	4.016	1.233	4	3
M36×1.5	D7	5113101228	5P	7.874	1.142	-	4.016	1.233	4	3
M39×4	D10	5113101240	5P	7.874	2.047	-	4.016	1.305	4	3
M39×3	D9	5113101241	5P	7.874	2.047	-	4.016	1.305	4	3
M42×4.5	D11	5113101250	5P	7.874	2.047	-	4.016	1.430	4	3
M42×3	D9	5113101252	5P	7.874	2.047	-	4.016	1.430	4	3
M45×4.5	D11	5113101261	5P	8.661	2.323	-	4.409	1.519	4	3
M48×5	D11	5113101271	5P	9.843	2.559	-	5.039	1.644	4	3
M48×3	D10	5113101274	5P	9.843	2.559	-	5.039	1.644	4	3
Unified Threads										
No.6-32UNC	2BX	5113103023	5P	2.205	0.433	0.748	1.339	0.141	2	1
No.6-40UNF	2BX	5113103024	5P	2.205	0.433	0.748	1.339	0.141	2	1
No.8-32UNC	2BX	5113103029	5P	2.480	0.512	0.827	1.535	0.168	2	1
No.8-36UNF	2BX	5113103030	5P	2.480	0.512	0.827	1.535	0.168	2	1
No.10-24UNC	2BX	5113103039	5P	2.756	0.551	0.945	1.654	0.194	2	1
No.10-32UNF	2BX	5113103041	5P	2.756	0.551	0.945	1.654	0.194	2	1
No.12-24UNC	2BX	5113103047	5P	3.150	0.354	0.984	1.953	0.255	2	1
No.12-28UNF	2BX	5113103048	5P	3.150	0.354	0.984	1.953	0.255	2	1
1/4-20UNC	2BX	5113103058	5P	3.150	0.591	1.181	1.713	0.255	3	1
1/4-28UNF	2BX	5113103062	5P	3.150	0.591	1.181	1.713	0.255	3	1
5/16-18UNC	2BX	5113103071	5P	3.543	0.748	1.378	1.831	0.318	3	2
5/16-24UNF	2BX	5113103074	5P	3.543	0.748	1.378	1.831	0.318	3	2
3/8-16UNC	2BX	5113103082	5P	3.937	0.906	1.535	2.028	0.381	3	2
3/8-24UNF	2BX	5113103085	5P	3.937	0.906	1.535	2.028	0.381	3	2
7/16-14UNC	2BX	5113103098	5P	3.937	0.906	-	2.008	0.323	3	3
7/16-20UNF	2BX	5113103101	5P	3.937	0.906	-	2.008	0.323	3	3
1/2-13UNC	2BX	5113103111	5P	4.331	1.024	-	2.205	0.367	3	3
1/2-20UNF	2BX	5113103115	5P	4.331	1.024	-	0.367	0.429	3	3
9/16-12UNC	2BX	5113103126	5P	4.331	1.024	-	2.205	0.429	3	3
9/16-18UNF	2BX	5113103129	5P	4.331	1.024	-	2.205	0.429	3	3
5/8-11UNC	2BX	5113103138	5P	4.331	1.024	-	2.205	0.480	3	3
5/8-18UNF	2BX	5113103142	5P	4.331	1.024	-	2.205	0.480	3	3
3/4-10UNC	2BX	5113103161	5P	4.921	1.299	-	2.520	0.590	3	3
3/4-16UNF	2BX	5113103164	5P	4.921	1.299	-	2.520	0.590	3	3
7/8-9UNC	2BX	5113103181	5P	5.512	1.299	-	2.795	0.697	3	3
7/8-14UNF	2BX	5113103184	5P	5.512	1.299	-	2.795	0.697	3	3

ANSI

Z-PRO Ultimate Machining Taps

Hybrid Value Spiral Pointed Taps for Zinc Plating

HVPO ZP

HSS OX <2D 5

Product Features

- The standard line includes tap classes that are optimal for tapping internal screw threads before zinc plating.
- We developed 3 types of oversized taps in +.004inch, +.008inch, +.012inch, which are in high market demand in certain applications.
- The specifications are based on HVPO (Hybrid Value Spiral Pointed Tap) and can be used with various workpiece materials and machines.
- Stable tapping without chipping is possible in both vertical and horizontal machining.

Applications

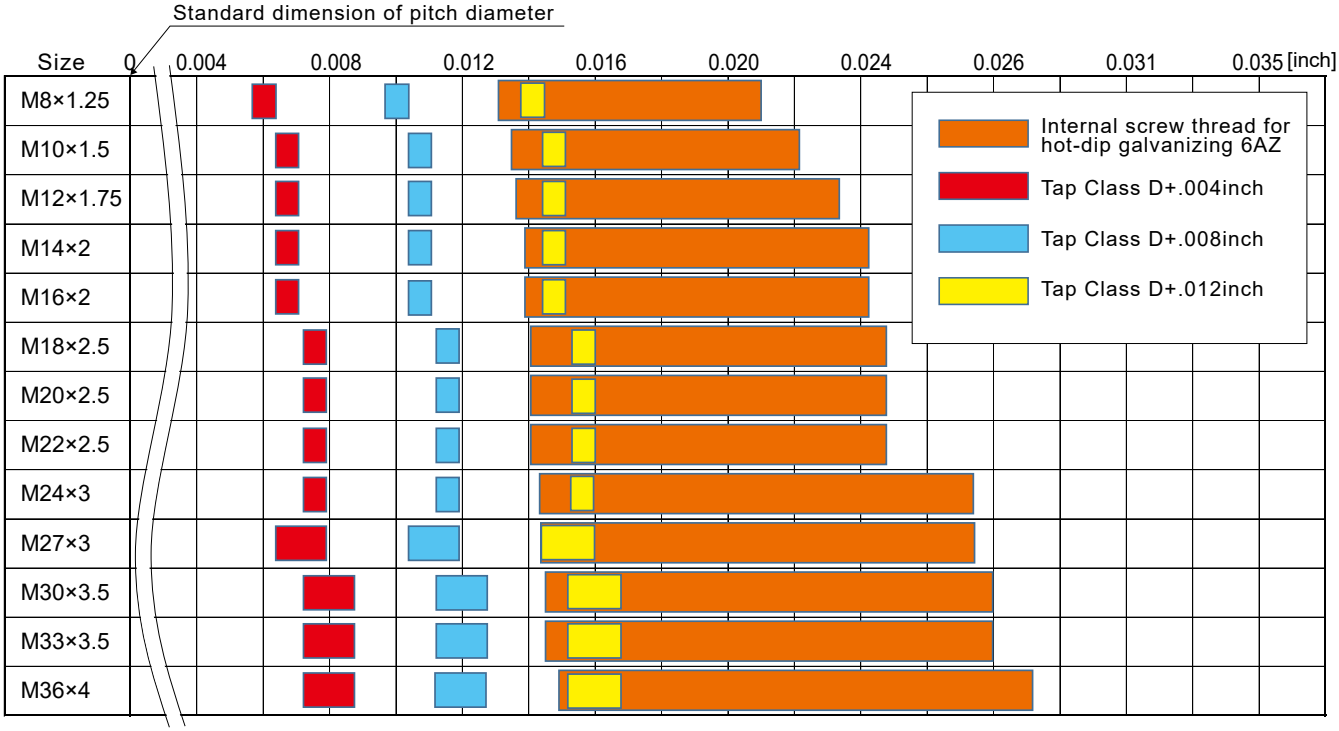
It is mainly used for tapping internal screw threads before plating to prevent rust and corrosion in applications such as road development, bridges, large structures, etc.
For internal screw thread tapping with a large plating thickness in zinc plating.

Workpiece materials and tapping speeds

Workpiece materials		Guideline for tapping speed(SFM)	
		M8~M16	M18~M36
Low Carbon Steels	1025/SS400	10~39	10~26
Medium Carbon Steels	S25C~1045	10~39	10~26
High Carbon Steels	1045~	10~39	10~26

Workpiece materials		Guideline for tapping speed(SFM)	
		M8~M16	M18~M36
Alloy Steels	SCM/SCr	10~39	10~26
Thermal Refined Steels	25~35HRC	10~33	10~39
Cast Steels	SC	10~39	10~26
Stainless Steels	SUS303/SUS304	~16	10~39

Pitch diameter tolerance range comparison table for tap and internal screw thread classes (for hot-dip galvanizing)



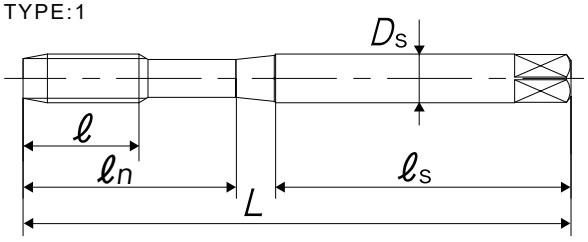
*M8x1.25 was calculated using the dimensional tolerance formula, which is the basis for tolerance positions 6AZ and 6AX specified in JIS B0209-5.

Explanation

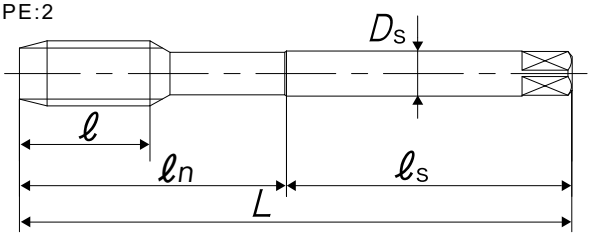
- The graph above is a comparison between the allowable dimensional limits of the internal screw thread of tolerance class 6AZ per JIS B 0209-5.""The allowable dimensional limits of internal screw threads to be mated with hot-dip galvanized external screw thread with a tolerance position of h before plating"" and the class and pitch diameter of HVPO ZP tap.
- For example, if the nominal size is M10x1.5 and the tolerance class is 6AZ, you can use D7+.012inch.
- Because the plating thickness varies depending on the plating type and processing method, there are cases where the required internal screw thread diameter does not conform to the above standards. Therefore, HVPO ZP has D class +.004inch, D class +.008inch, D class +.012inch, which are highly requested by the market, as standard.

Dimensions and Sizes

TYPE:1



TYPE:2

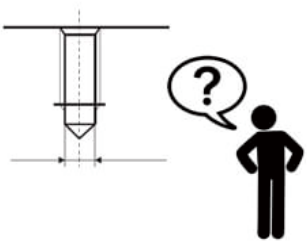


In addition to our Hybrid Value Spiral Pointed Taps for steels, we have added oversized taps that are ideal for threading before zinc plating. They can be used pre-plating for the internal screw threads of building materials such as those used in roads, railroads, public transportation facilities, and bridges.

Size	Class	Code	Chamfer	L (inch)	ℓ (inch)	ℓn (inch)	ℓs (inch)	Ds (inch)	No. of flutes	TYPE
For Metric Threads										
M8×1.25	D7+.004	5122201064	5P	3.543	0.748	1.378	1.831	0.318	3	1
	D7+.008	5122301064	5P	3.543	0.748	1.378	1.831	0.318	3	1
	D7+.012	5122401064	5P	3.543	0.748	1.378	1.831	0.318	3	1
M10×1.5	D7+.004	5122201078	5P	3.937	0.906	1.535	2.126	0.381	3	1
	D7+.008	5122301078	5P	3.937	0.906	1.535	2.126	0.381	3	1
	D7+.012	5122401078	5P	3.937	0.906	1.535	2.126	0.381	3	1
M12×1.75	D8+.004	5122201088	5P	4.331	1.024	-	2.205	0.367	3	2
	D8+.008	5122301088	5P	4.331	1.024	-	2.205	0.367	3	2
	D8+.012	5122401088	5P	4.331	1.024	-	2.205	0.367	3	2
M14×2	D8+.004	5122201100	5P	4.331	1.024	-	2.205	0.429	3	2
	D8+.008	5122301100	5P	4.331	1.024	-	2.205	0.429	3	2
	D8+.012	5122401100	5P	4.331	1.024	-	2.205	0.429	3	2
M16×2	D8+.004	5122201114	5P	4.331	1.024	-	2.205	0.480	3	2
	D8+.008	5122301114	5P	4.331	1.024	-	2.205	0.480	3	2
	D8+.012	5122401114	5P	4.331	1.024	-	2.205	0.480	3	2
M18×2.5	D8+.004	5122201128	5P	4.921	1.299	-	2.520	0.542	3	2
	D8+.008	5122301128	5P	4.921	1.299	-	2.520	0.542	3	2
	D8+.012	5122401128	5P	4.921	1.299	-	2.520	0.542	3	2
M20×2.5	D8+.004	5122201141	5P	5.512	1.299	-	2.795	0.652	3	2
	D8+.008	5122301141	5P	5.512	1.299	-	2.795	0.652	3	2
	D8+.012	5122401141	5P	5.512	1.299	-	2.795	0.652	3	2
M22×2.5	D8+.004	5122201156	5P	5.512	1.299	-	2.795	0.697	3	2
	D8+.008	5122301156	5P	5.512	1.299	-	2.795	0.697	3	2
	D8+.012	5122401156	5P	5.512	1.299	-	2.795	0.697	3	2
M24×3	D9+.004	5122201167	5P	6.299	1.457	-	3.228	0.760	3	2
	D9+.008	5122301167	5P	6.299	1.457	-	3.228	0.760	3	2
	D9+.012	5122401167	5P	6.299	1.457	-	3.228	0.760	3	2
M27×3	D9+.004	5122201186	5P	7.087	1.732	-	3.622	0.896	4	2
	D9+.008	5122301186	5P	7.087	1.732	-	3.622	0.896	4	2
	D9+.012	5122401186	5P	7.087	1.732	-	3.622	0.896	4	2
M30×3.5	D10+.004	5122201199	5P	7.087	1.732	-	3.622	1.021	4	2
	D10+.008	5122301199	5P	7.087	1.732	-	3.622	1.021	4	2
	D10+.012	5122401199	5P	7.087	1.732	-	3.622	1.021	4	2
M33×3.5	D10+.004	5122201211	5P	7.087	1.732	-	3.622	1.108	4	2
	D10+.008	5122301211	5P	7.087	1.732	-	3.622	1.108	4	2
	D10+.012	5122401211	5P	7.087	1.732	-	3.622	1.108	4	2
M36×4	D10+.004	5122201225	5P	7.874	2.047	-	4.016	1.233	4	2
	D10+.008	5122301225	5P	7.874	2.047	-	4.016	1.233	4	2
	D10+.012	5122401225	5P	7.874	2.047	-	4.016	1.233	4	2

YAMAWA's website contains a lot of valuable information!

Understanding by Manga!
YAMAWA's Tools



Bored Hole size / Bar diameter

NC Program

Safety Data Sheet (SDS)

Catalog · Flyer

YAMAWA Online EXPO NEJITEN

A convenient app that allows you to search anywhere on your smartphone! You can search for products, calculate speeds, and even check recommended drill hole diameters! Please download and use it.

Android

iPhone

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.

CERTIFIED JQA MANAGEMENT SYSTEM
ISO 9001
ISO 14001

JQA-QM5420
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