

HVSP

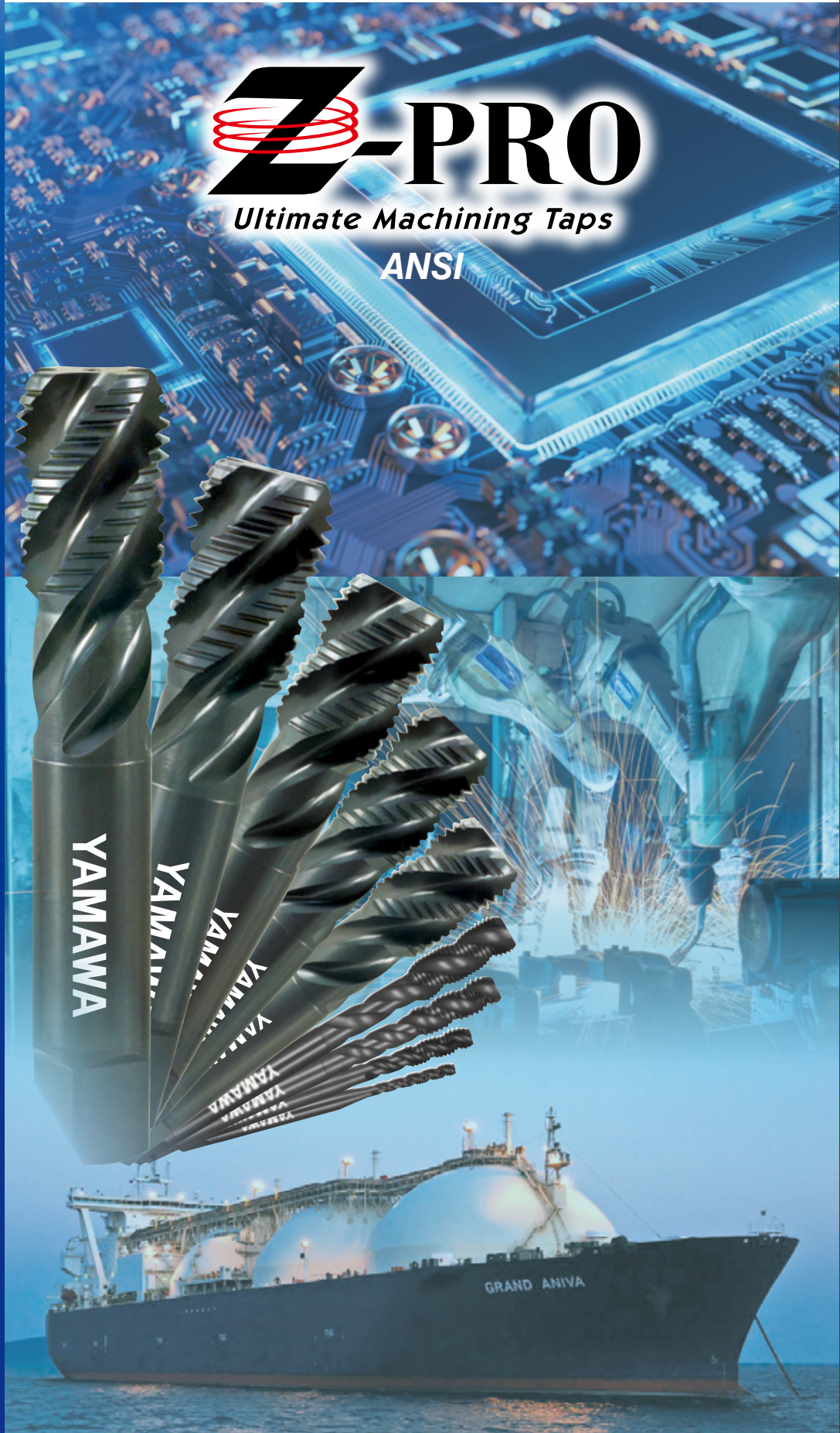
Z-PRO

Ultimate Machining Taps

ANSI

HVSP

Z-PRO Hybrid Value
Spiral Fluted Taps
for steels.



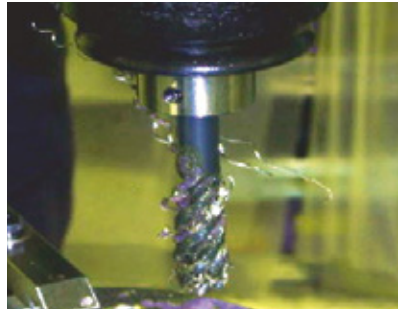
Z-PRO HVSP Z-PRO Hybrid Value Spiral Fluted taps for Steels



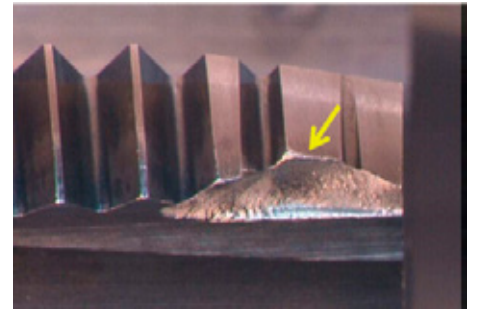
Soft structural steels such as 1018 and low carbon steels are widely used in larger size tapping. Large size taps produce a chip that is very large and thick which causes them to be entangled with the spindle and results in the tap chipping.



Ejected chips by large size taps



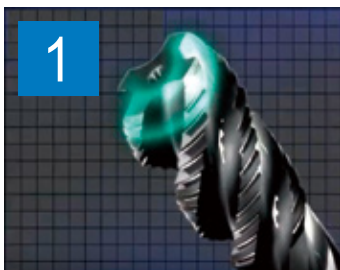
Entangled chips



Chipping

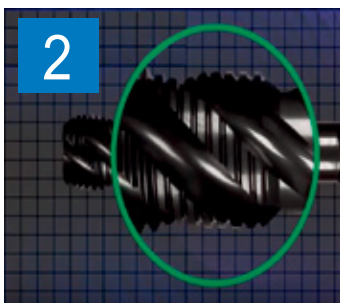
HVSP enables stable tapping performance with excellent chip ejection.

Features that prevent chipping issues



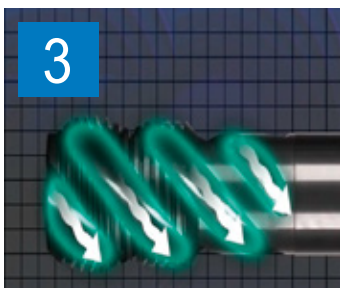
Advanced cutting edge

Specially designed geometry in the cutting edge prevents any chip incursion from the back side of the chamfered thread portion during the reversal of the tap.



BLF shape on full thread portion

The BLF shape improves the heel cut on the tap to produce excellent cutting performance which eliminates the flute chipping issues. This prevents the chips from clogging on the full threaded portion of the tap.



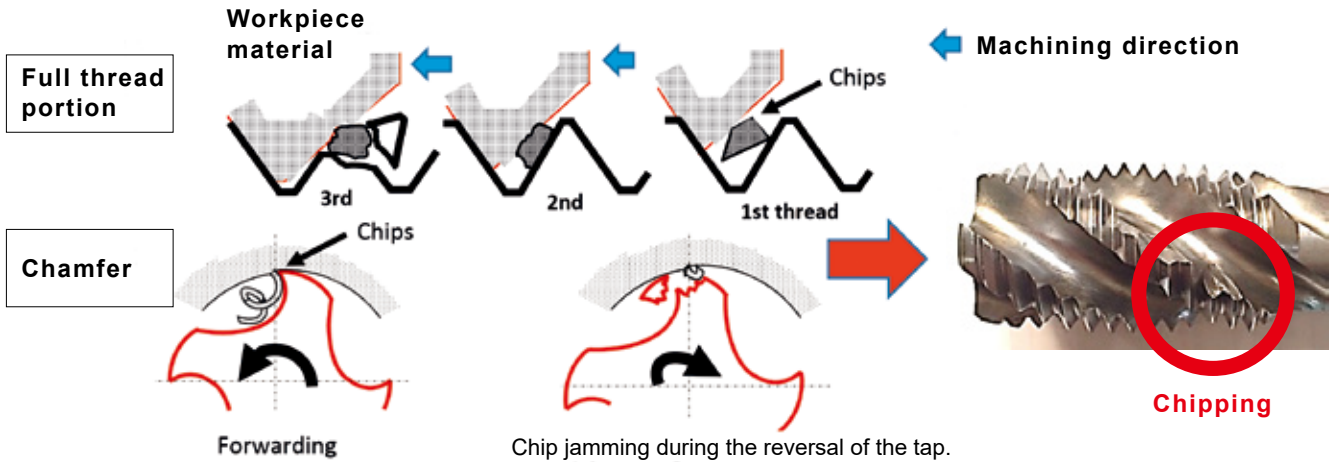
Unique flute design

Unique flute design for smooth chip ejection.

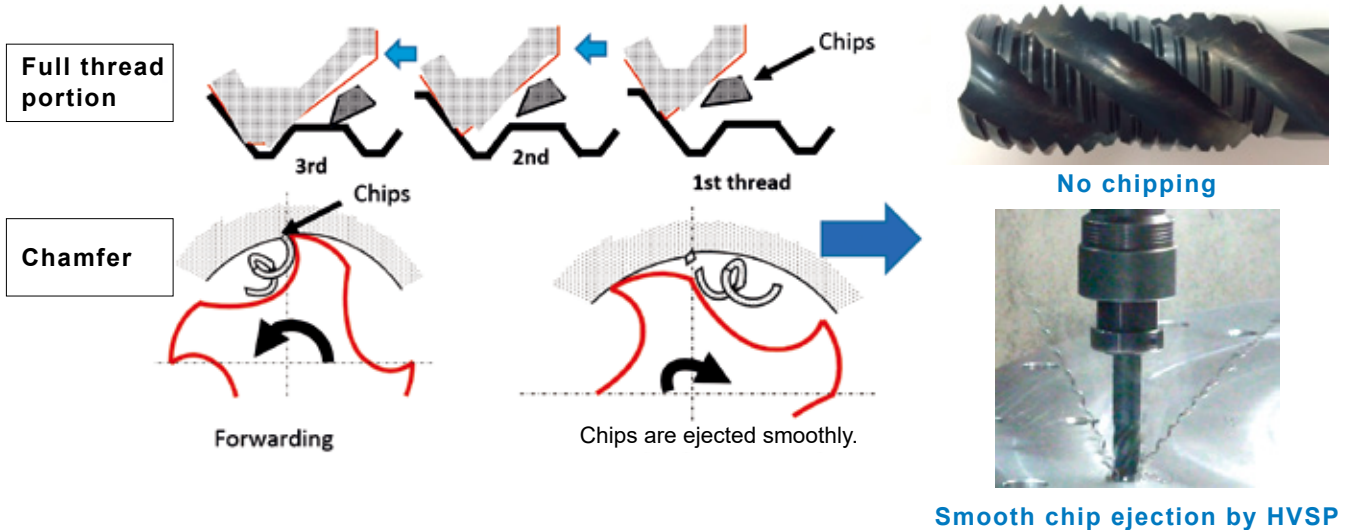
Prevention of chip jamming ensured by improved thread portion

The full threaded portion of the HVSP is specially designed to have the first 3 threads at full height and the balance of threads at the pitch diameter height. By adopting this unique design the "BLF", HVSP maximizes a smooth chip ejection.

<Tapping with a conventional tap> Chipping happens on the thread portion



<Tapping with HVSP> No chipping



Combination with straight oil

Large diameter taps are more effective with an oxidation treatment as this helps the oil to stay on the flutes while tapping.

Chip welding causes a galling affect on the tapped thread surface.

Using non-water soluble cutting oil adds lubricity to the tapping operation and helps with welding problems on the thread portion on the tap.



Excellent internal thread surface !

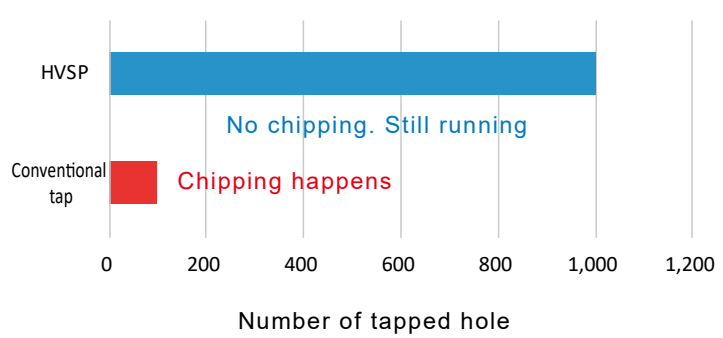
Recommended tapping condition

For both synchronous and asynchronous feed

Workpiece materials		Recommended tapping speed(m/min)		
		M3~M5	M6~M16	M18~M48、U1~U2
Low Carbon Steels	~S20C/SS400	3~9	3~12	3~8
Medium Carbon Steels	S25~S45C	3~9	3~12	3~8
High Carbon Steels	S45C~	3~9	3~12	3~8
Alloy Steels	SCM/SCr	3~9	3~12	3~8
Thermal Refined Steels	25~35HRC	3~9	3~12	3~8
Cast Steels	SC	3~9	3~12	3~8
Stainless Steels	SU303/SUS304	~5	~5	~5

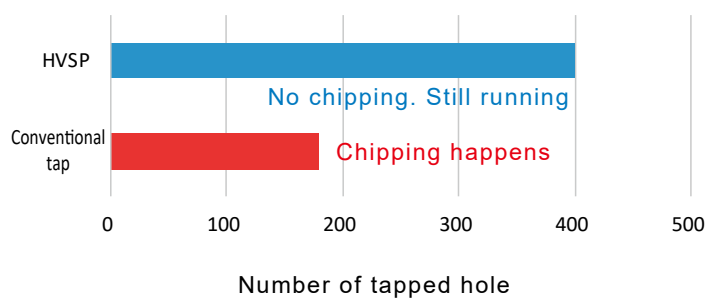
Tapping data

Case 1. Comparison with a conventional tap



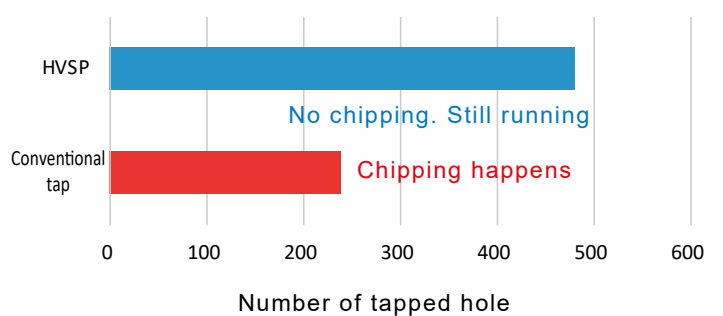
Item	HVSP M16X2
	Conventional tap M16X2
Workpiece material	1018
Tapping length	Blind hole 1.65inch
Direction	Horizontal
Bored hole dia. (mm)	0.56inch
Machine	Special machine (Non rigid)
Cutting speed (m/min)	25sfm
Lubrication	Straight oil

Case 2. Comparison with a conventional tap



Item	HVSP M30X3.5
	Conventional tap M30X3.5
Workpiece material	4120
Tapping length	Blind hole 2.36inch
Direction	Horizontal
Bored hole dia. (mm)	1.04inch
Machine	Machining Center (Non rigid)
Cutting speed (m/min)	15sfm
Lubrication	Straight oil

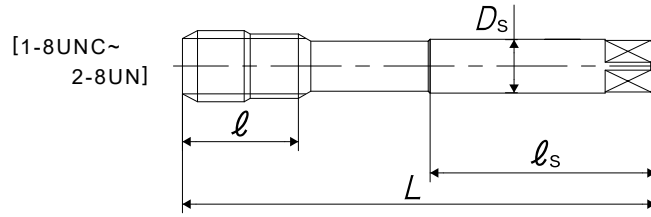
Case 3. Comparison with a conventional tap



Item	HVSP M36X4
	Conventional tap M36X4
Workpiece material	1060
Tapping length	Blind hole 3.54inch
Direction	Vertical
Bored hole dia. (mm)	1.28inch
Machine	Drilling machine (Non rigid)
Cutting speed (m/min)	15sfm
Lubrication	Straight oil

Dimension and Sizes

<For Unified Threads>



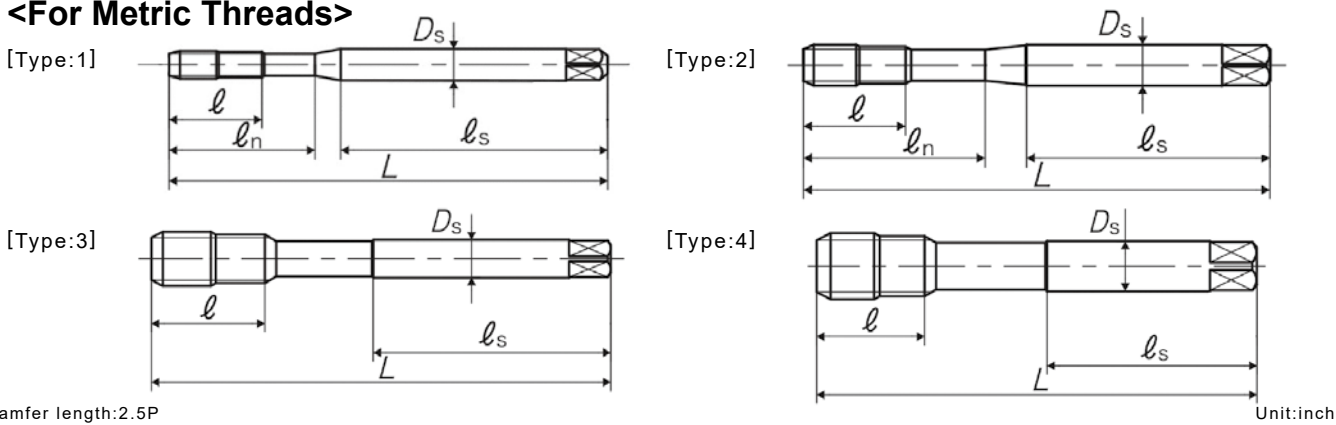
Chamfer length:2.5P

Unit:inch

Size	Class	Product code	L (inch)	l (inch)	ls (inch)	Ds (inch)	No. of flutes	Minor diameter of 2B internal threads		Recommended bored hole size	MSRP (JPY)
								Max.	Min.		
1-8UNC	2BX	SSU16XYEEXCJ	6.299	1.457	3.228	0.800	4	0.890	0.865	ø0.884	32,700
1-12UNF	2BX	SSU16SYEEXCJ	6.299	1.457	3.228	0.800	4	0.928	0.910	ø0.923	32,700
1 1/8-7UNC	2BX	SSU18XYEEXCJ	7.087	1.732	3.622	0.896	4	0.998	0.970	ø0.991	40,900
1 1/8-8UN	2BX	SSU18XYEEXCJ	7.087	1.732	3.622	0.896	4	1.015	0.990	ø1.009	40,900
1 1/8-12UNF	2BX	SSU18SYEEXCJ	7.087	1.732	3.622	0.896	4	1.053	1.035	ø1.048	40,900
1 1/4-7UNC	2BX	SSU20XYEEXCJ	7.087	1.929	3.622	1.021	4	1.123	1.095	ø1.116	47,800
1 1/4-8UN	2BX	SSU20XYEEXCJ	7.087	1.929	3.622	1.021	4	1.140	1.115	ø1.134	47,800
1 1/4-12UNF	2BX	SSU20SYEEXCJ	7.087	1.929	3.622	1.021	4	1.178	1.160	ø1.173	47,800
1 3/8-6UNC	2BX	SSU22ZYEEXCJ	7.874	2.165	4.016	1.108	4	1.225	1.195	ø1.218	60,000
1 3/8-8UN	2BX	SSU22XYEEXCJ	7.874	2.165	4.016	1.108	4	1.265	1.240	ø1.259	60,000
1 3/8-12UNF	2BX	SSU22SYEEXCJ	7.874	2.165	4.016	1.108	4	1.303	1.285	ø1.298	60,000
1 1/2-6UNC	2BX	SSU24ZYEEXCJ	7.874	2.323	4.016	1.108	4	1.350	1.320	ø1.343	64,000
1 1/2-8UN	2BX	SSU24XYEEXCJ	7.874	2.323	4.016	1.108	4	1.390	1.365	ø1.384	64,000
1 1/2-12UNF	2BX	SSU24SYEEXCJ	7.874	2.323	4.016	1.108	4	1.428	1.410	ø1.423	64,000
1 3/4-5UNC	2BX	SSU280YEEXCJ	8.661	2.559	4.409	1.430	4	1.567	1.533	ø1.559	81,000
1 3/4-8UN	2BX	SSU28XYEEXCJ	8.661	2.559	4.409	1.430	4	1.640	1.615	ø1.634	81,000
1 3/4-12UN	2BX	SSU28SYEEXCJ	8.661	2.559	4.409	1.430	4	1.678	1.660	ø1.673	81,000
2-4.5UNC	2BX	SSU329YEEXCJ	9.843	2.874	5.039	1.644	4	1.795	1.759	ø1.786	118,000
2-8UN	2BX	SSU32XYEEXCJ	9.843	2.874	5.039	1.644	4	1.890	1.865	ø1.884	118,000

Dimension and Sizes

<For Metric Threads>



Size	Class	Product code	L	l	ls	Ds	No. of flutes	TYPE	Recommended bored hole size	MSRP (JPY)
M3X0.5	D4	SS3.0G4EEXJ	2.205	0.433	1.358	0.141	3	1	ø0.1009	1,680
M3X0.35	D4	SS3.0D4EEXJ	2.205	0.256	1.358	0.141	3	1	ø0.1063	2,870
M4X0.7	D5	SS4.0I5EEXJ	2.480	0.512	1.535	0.168	3	1	ø0.133	1,680
M4X0.5	D4	SS4.0G4EEXJ	2.480	0.354	1.535	0.168	3	1	ø0.1402	2,460
M5X0.8	D5	SS5.0K5EEXJ	2.756	0.551	1.654	0.194	3	1	ø0.1687	1,700
M5X0.5	D4	SS5.0G4EEXJ	2.756	0.354	1.654	0.194	3	1	ø0.1795	2,460
M6X1	D6	SS6.0M6EEXJ	3.150	0.591	1.713	0.255	3	1	ø0.2005	1,940
M6X0.75	D6	SS6.0J6EEXJ	3.150	0.591	1.713	0.255	3	1	ø0.2098	2,730
M6X0.5	D4	SS6.0G4EEXJ	3.150	0.354	1.713	0.255	3	1	ø0.2189	2,730
M8X1.25	D7	SS8.0N7EEXJ	3.543	0.748	1.831	0.318	3	2	ø0.2695	2,730
M8X1	D6	SS8.0M6EEXJ	3.543	0.748	1.831	0.318	3	2	ø0.2793	3,100
M10X1.5	D8	SS010O8EEXJ	3.937	0.906	2.126	0.381	3	2	ø0.3386	3,270
M10X1.25	D7	SS010N7EEXJ	3.937	0.906	2.126	0.381	3	2	ø0.3483	3,270
M10X1	D6	SS010M6EEXJ	3.937	0.906	2.126	0.381	3	2	ø0.358	3,880
M12X1.75	D8	SS012P8EEXJ	4.331	1.024	2.205	0.367	3	3	ø0.4078	4,280
M12X1.5	D7	SS012O7EEXJ	4.331	1.024	2.205	0.367	3	3	ø0.4174	4,280
M12X1.25	D7	SS012N7EEXJ	4.331	1.024	2.205	0.367	3	3	ø0.427	4,280
M14X2	D9	SS014Q9EEXJ	4.331	1.024	2.205	0.429	3	3	ø0.477	5,750
M14X1.5	D8	SS014O8EEXJ	4.331	1.024	2.205	0.429	3	3	ø0.4961	5,750
M16X2	D9	SS016Q9EEXJ	4.331	1.024	2.205	0.480	3	3	ø0.5558	7,670
M16X1.5	D8	SS016O8EEXJ	4.331	1.024	2.205	0.480	3	3	ø0.5748	7,670
M18X2.5	D9	SS018R9EEXJ	4.921	1.299	2.520	0.542	4	3	ø0.6154	10,300
M18X1.5	D8	SS018O8EEXJ	4.921	0.945	2.520	0.542	4	3	ø0.6536	10,400
M20X2.5	D9	SS020R9EEXJ	5.512	1.299	2.795	0.652	4	3	ø0.6942	13,700
M20X1.5	D8	SS020O8EEXJ	5.512	0.945	2.795	0.652	4	3	ø0.7323	13,800
M22X2.5	D9	SS022R9EEXJ	5.512	1.299	2.795	0.697	4	3	ø0.7729	17,200
M22X1.5	D8	SS022O8EEXJ	5.512	0.945	2.795	0.697	4	3	ø0.8111	17,200
M24X3	D9	SS024S9EEXJ	6.299	1.457	3.228	0.760	4	4	ø0.8318	21,500
M24X1.5	D8	SS024O8EEXJ	6.299	1.063	3.228	0.760	4	4	ø0.8898	21,500
M27X3	D10	SS027S0EEXJ	7.087	1.732	3.622	0.896	4	4	ø0.9499	29,700
M27X1.5	D8	SS027O8EEXJ	7.087	1.063	3.622	0.896	4	4	ø1.0079	29,800
M30X3.5	D10	SS030T0EEXJ	7.087	1.732	3.622	1.021	4	4	ø1.0485	37,800
M30X3	D10	SS030S0EEXJ	7.087	1.732	3.622	1.021	4	4	ø1.0669	37,800
M30X1.5	D8	SS030O8EEXJ	7.087	1.063	3.622	1.021	4	4	ø1.126	37,800
M33X3.5	D10	SS033T0EEXJ	7.087	1.732	3.622	1.108	4	4	ø1.1666	44,000
M33X3	D10	SS033S0EEXJ	7.087	1.732	3.622	1.108	4	4	ø1.1850	44,000
M36X4	D10	SS036U0EEXJ	7.874	2.047	4.016	1.108	4	4	ø1.2646	50,800
M36X3	D10	SS036S0EEXJ	7.874	2.047	4.016	1.233	4	4	ø1.3042	50,800
M39X4	D10	SS039U0EEXJ	7.874	2.047	4.016	1.305	4	4	ø1.3827	58,300
M39X3	D10	SS039S0EEXJ	7.874	2.047	4.016	1.305	4	4	ø1.4223	58,300
M42X4.5	D10	SS042V0EEXJ	7.874	2.047	4.016	1.430	4	4	ø1.4816	70,900
M42X3	D10	SS042S0EEXJ	7.874	2.047	4.016	1.430	4	4	ø1.5394	70,900
M48X5	D11	SS048W-EEXJ	9.843	2.559	5.039	1.644	4	4	ø1.6976	104,000
M48X3	D10	SS048S0EEXJ	9.843	2.559	5.039	1.644	4	4	ø1.7767	104,000



JQA-QMA14664



JQA-EM3465

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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