

Think threads with  
**YAMAWA**

# Z-PRO

Z-PRO Ultimate Machining Taps.

# Z-PRO

Ultimate Machining Taps

For North American market



## Product Features



Coated Spiral Pointed Taps

**VUPO**



### Features

- Longer Life—Improved tool life from using a high grade of powder high speed steel with a special coating!
  - Flute Shape—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 tapping fluid.
- The Z-PRO VUPO is designed for use with water-soluble tapping fluid where there is a good coolant supply.

## Recommended tapping range

Recommended for high performance machining centers with water soluble tapping fluid.

Lubricant	Hole Shape	Tapping Range	Hand Tapping			Drilling Machine			Low Speed			Middle Speed			High Speed		
			Water Soluble												 <b>VUSP</b> <b>VUSP 1.5P</b> <b>VUSP CH</b> <b>VUPO</b>		
Water Insoluble			IHT	ISP	SP	ZELX SS SP ZELX NI SP ZELX TI SP											
				IPO	PO	ZELX SS PO ZELX NI PO ZELX TI LHSP											

## Tapping Conditions

### VUPO metric threads

Workpiece Material	Tapping Speed(sfm)
General Structure Steel(1018)	30~70
Carbon Steel(1050)	30~70
Alloy Steel(4140)	30~70
Stainless Steel(304)	10~15



### VUPO unified threads

Workpiece Material	Tapping Speed(sfm)
General Structure Steel(1018)	30~80
Carbon Steel(1050)	30~80
Stainless Steel(304)	15~30

**Tapping Data**

**Tapping Conditions M10×1.5**

Workpiece Matetial	1050
Tapping Length	0.8inch
Tapping Speed	70sfm
Machinery	Vertical Machining center
Tapping Fluid	Water-soluble tapping fluid


	Conventional tap	VUPO
Wear After 560 Threads		

**Tapping Conditions 1/4-20UNC**

Size	1/4-20UNC
Workpiece Material	1050 steel
Tapping Speed	70sfm
Feed	Synchronous
Bored Hole Size	Φ0.205inch
Tapping Length	0.47inch(2D, through hole)
Tapping Machine	Vertical Machining Center BT30
Tapping Fluid	Water-soluble tapping fluid FX-30 5%
Number of processed holes	100

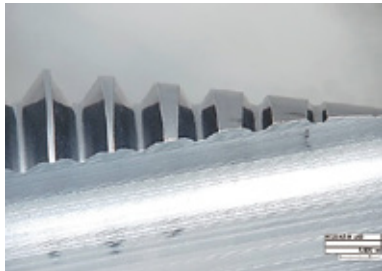
The unique flute shape produces excellent internal threads and the longer overall length allows a longer projected length out of the holder for better application of tapping fluid.

**Excellent internal thread surface finish**




You will have an excellent internal thread surface finish even with using water-soluble cutting fluid.

**Cutting edges**




Cutting edges after tapping 100 holes.

**Ejected chips**

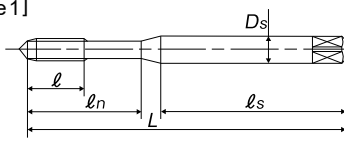


**Ejected chips**

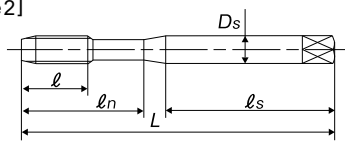


## Coated Spiral Pointed Taps VUPO

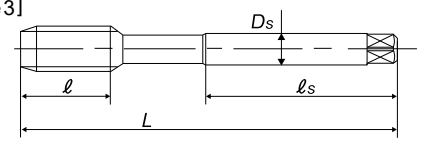
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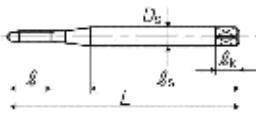
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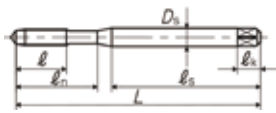
For unified threads

Size	Class	EDP	Chamfer	L (inch)	l (inch)	ln (inch)	ls (inch)	Ds (inch)	No. of flutes	Type
5-40UNC	GH2	392703	5P	2.205	0.433	0.736	1.339	0.141	2	1
5-44UNF	GH2	392792	5P	2.205	0.433	0.736	1.339	0.141	2	1
6-32UNC	GH3	392704	5P	2.205	0.433	0.748	1.339	0.141	2	1
6-40UNF	GH2	392784	5P	2.205	0.433	0.748	1.339	0.141	2	1
8-32UNC	GH3	392706	5P	2.48	0.512	0.827	1.535	0.168	2	1
8-36UNF	GH2	392786	5P	2.48	0.512	0.827	1.535	0.168	2	1
10-24UNC	GH3	392709	5P	2.756	0.551	0.945	1.654	0.194	2	1
10-32UNF	GH3	392710	5P	2.756	0.551	0.945	1.654	0.194	2	1
12-24UNC	GH3	392788	5P	3.15	0.591	0.984	1.953	0.22	2	1
12-28UNF	GH3	392789	5P	3.15	0.591	0.984	1.953	0.22	2	1
1/4-20UNC	GH5	392744	5P	3.15	0.591	1.181	1.713	0.255	3	1
1/4-28UNF	GH4	392731	5P	3.15	0.591	1.181	1.713	0.255	3	1
5/16-18UNC	GH5	392745	5P	3.543	0.748	1.378	1.831	0.318	3	2
5/16-24UNF	GH4	392732	5P	3.543	0.748	1.378	1.831	0.318	3	2
3/8-16UNC	GH5	392747	5P	3.937	0.906	1.535	2.028	0.381	3	2
3/8-24UNF	GH4	392733	5P	3.937	0.906	1.535	2.028	0.381	3	2
7/16-14UNC	GH5	392749	5P	3.937	0.906	-	2.008	0.323	3	3
7/16-20UNF	GH5	392750	5P	3.937	0.906	-	2.008	0.323	3	3
1/2-13UNC	GH5	392751	5P	4.331	1.024	-	2.205	0.367	3	3
1/2-20UNF	GH5	392752	5P	4.331	1.024	-	2.205	0.367	3	3
9/16-12UNC	GH5	392753	5P	4.331	1.024	-	2.205	0.429	3	3
9/16-18UNF	GH5	392754	5P	4.331	1.024	-	2.205	0.429	3	3
5/8-11UNC	GH5	392755	5P	4.331	1.024	-	2.205	0.48	3	3
5/8-18UNF	GH5	392756	5P	4.331	1.024	-	2.205	0.48	3	3
3/4-10UNC	GH5	392757	5P	4.921	1.299	-	2.52	0.59	3	3
3/4-16UNF	GH5	392758	5P	4.921	1.299	-	2.52	0.59	3	3
7/8-9UNC	GH6	392795	5P	5.512	1.299	-	2.795	0.697	3	3
7/8-14UNF	GH6	392799	5P	5.512	1.299	-	2.795	0.697	3	3

[Type1]



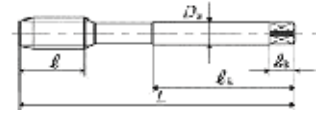
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For metric threads

Size	Class	EDP	Chamfer	L (inch)	ℓ (inch)	ℓn (inch)	ℓs (inch)	Ds (inch)	No. of flutes	Type
M2 X 0.4	D4	392645	5P	1.772	0.314	-	1.161	0.141	2	1
M2.2 X 0.45	D4	392646	5P	1.772	0.314	-	1.161	0.141	2	1
M2.3 X 0.4	D4	392647	5P	1.772	0.314	-	1.161	0.141	2	1
M2.5 X 0.45	D4	392648	5P	2.205	0.354	0.693	1.28	0.141	2	2
M2.6 X 0.45	D4	392649	5P	2.205	0.354	0.709	1.28	0.141	2	2
M3 X 0.5	D4	392615	5P	2.205	0.433	0.736	1.339	0.141	3	2
M3 X 0.35	D4	392644	5P	2.205	0.256	0.736	1.339	0.141	3	2
M4 X 0.7	D5	392617	5P	2.48	0.512	0.815	1.535	0.168	3	2
M4 X 0.5	D4	392643	5P	2.48	0.354	0.815	1.535	0.168	3	2
M5 X 0.8	D5	392619	5P	2.756	0.551	0.984	1.654	0.194	3	2
M5 X 0.5	D4	392642	5P	2.756	0.354	0.984	1.654	0.194	3	2
M6 X 1	D6	392620	5P	3.15	0.591	1.181	1.713	0.255	3	2
M6 X 0.75	D6	392641	5P	3.15	0.591	1.181	1.713	0.255	3	2
M6 X 0.5	D4	392635	5P	3.15	0.354	1.181	1.713	0.255	3	2
M8 X 1.25	D7	392623	5P	3.543	0.748	1.378	1.831	0.318	3	3
M8 X 1	D6	392622	5P	3.543	0.748	1.378	1.831	0.318	3	3
M10 X 1.5	D8	392625	5P	3.937	0.906	1.535	2.126	0.381	3	3
M10 X 1.25	D7	392624	5P	3.937	0.906	1.535	2.126	0.381	3	3
M10 X 1	D6	392601	5P	3.937	0.906	1.535	2.126	0.381	3	3
M12 X 1.75	D8	392627	5P	4.331	1.024	-	2.205	0.367	3	4
M12 X 1.5	D8	392650	5P	4.331	1.024	-	2.205	0.367	3	4
M12 X 1.25	D7	392626	5P	4.331	1.024	-	2.205	0.367	3	4
M14 X 2	D9	392629	5P	4.331	1.024	-	2.205	0.429	3	4
M14 X 1.5	D8	392628	5P	4.331	1.024	-	2.205	0.429	3	4
M16 X 2	D9	392631	5P	4.331	1.024	-	2.205	0.48	3	4
M16 X 1.5	D8	392630	5P	4.331	1.024	-	2.205	0.48	3	4
M18 X 2.5	D9	392633	5P	4.921	1.299	-	2.52	0.542	3	4
M18 X 1.5	D8	392632	5P	4.921	0.945	-	2.52	0.542	3	4
M20 X 2.5	D9	392636	5P	5.512	1.299	-	2.795	0.652	3	4
M20 X 1.5	D8	392637	5P	5.512	0.945	-	2.795	0.652	3	4
M22 X 2.5	D9	392638	5P	5.512	1.299	-	2.795	0.697	3	4
M22 X 1.5	D8	392639	5P	5.512	0.945	-	2.795	0.697	3	4
M24 X 3	D10	392640	5P	6.299	1.457	-	3.228	0.76	3	4
M24 X 1.5	D8	382651	5P	6.299	1.063	-	3.228	0.76	3	4

Processing data

**VUPO** Z-PRO  
Coated Spiral Pointed Taps



Ideal for machining with water-soluble tapping fluid!  
A durable spiral pointed tap that can be machined on a wide range of work materials.

VUPO Size	Material symbol (Hardness)	Hole size (mm)	Tapping condition				Tapping fluid	Tool life (Holes)	Tapping result
			Tapping length (mm)(*)	Machine	Tapping speed (m/min)	Feed			
M3 X 0.5	SCM440 (39HRC)	2.5	6 (2D)	NC Lathe	5.6	Fully synchronous	Water soluble	1,260	Improved the surface finish of internal threads
M3 X 0.5	S45C (25HRC)	2.5	9 (3D)	Machining center	10	Fully synchronous	Water soluble	500	Excellent
M4 X 0.7	SUS304	3.3	10 (2.5D)	Machining center	10	Fully synchronous	Water soluble	825	Excellent
M4 X 0.7	A5052	3.4	12 (3D)	Machining center	12	Fully synchronous	Water soluble	1,500	Excellent
M6 X 1	S33C	5.1	9 (1.5D)	Machining center	20	Fully synchronous	Water soluble	4,500	Excellent
M8 X 1.25	SUS304	6.8	20 (2.5D)	Machining center	20	Non synchronous	Water soluble	5,700	Excellent
M10 X 1.5	S45C	8.5	25 (2.5D)	Machining center	7.5	Fully synchronous	Water soluble	3,600	Improved the surface finish of internal threads
M12 X 1.75	SCM415	10.3	24 (2D)	Machining center	15	Fully synchronous	Water soluble (20 to 1 dilution)	1,000	Eliminates chipping on cutting edge
M12 X 1.75	SCM440 (30HRC)	10.4	30 (2.5)	NC Lathe	11	Fully synchronous	Water soluble	650	Eliminates chipping on cutting edge
M12 X 1.25	S45C	10.2	36 (3D)	Machining center	30	Non synchronous	Water soluble	1,100	Excellent
M12 X 1.25	S43C	10.8	24 (2D)	Machining center	15	Fully synchronous	Water soluble (20 to 1 dilution)	1,500	Eliminates chipping on cutting edge

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



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.

For inquiries, please contact below :



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