

# ② Spiral Fluted Tap Series for through hole

Overall length	Thread length	Thread + Neck length	Shank length	Shank dia.	Size of square	Length of square
L	ℓ	ℓn	ℓs	Ds	K	ℓk

- ① Spiral Fluted Taps (for blind hole)
- ② Spiral Fluted Taps (for through hole)
- ③ Spiral Pointed Taps (for through hole)
- ④ Hand Taps
- ⑤ Cemented Carbide Taps
- ⑥ Roll Taps
- ⑦ Special Thread Taps (Simple inspection tools)
- ⑧ Pipe Taps
- ⑨ Thread Mills (Premium Thread Mills)
- ⑩ Dies
- ⑪ Center Drills (Centering Tools)
- ⑫ Precision Machinery/ Medical Surgical Instruments



## ZET-P



Spiral Fluted Taps for Titanium Alloys, Through Hole Use (with LH Spiral Flutes)

### Specification



### Tapping Speeds depending on Materials

Titanium alloys  
チタン合金  
**5~10**  
(m/min)

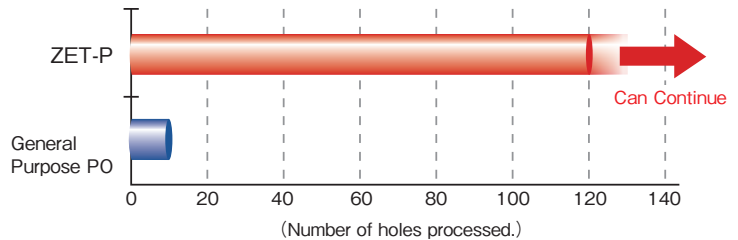
### Product Features

- The tap is produced from a high grade powder high speed steel that is excellent in heat resistance and abrasion resistance applications.
- A left hand spiral flute with a right hand screw thread helps prevent material shrinkage and the chips are pushed forward out of the hole to allow the cutting heat to be carried out.
- Appropriate flute shape for titanium alloy is utilized, and the discharge of chips is made smooth.
- A nitride surface treatment is performed for added wear resistance.
- Considering the shrinkage of the internal screw thread, the tap is produced to a moderate oversize condition.

### Tapping Data

#### Tapping Conditions [M6×1]

Workpiece Material	Ti-6Al-4V
Bored Hole Size	φ5.0
Tapping Length	12mm
Tapping Speed	8m/min
Machinery Type	CNC tapping center
Tapping Fluid	Water soluble cutting fluid



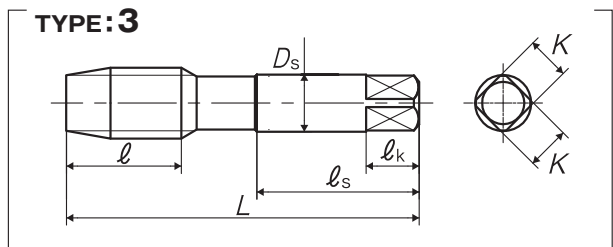
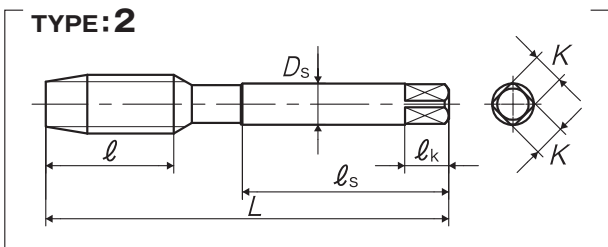
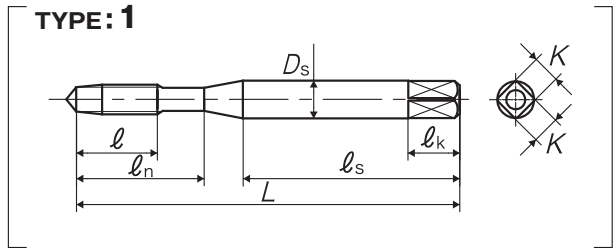
### Characteristics of titanium alloy

- It is mainly composed of titanium that has a high strength and is light weight. It has excellent heat resistance. There are various kinds of titanium alloys such as Ti - 5Al - 2.5Sn, Ti - 5Ta, and the most popular Ti - 6Al - 4V which is commonly used due to its good characteristics.

### Examples of problems in tapping

- Titanium alloys have high temperature strength and the thermal diffusion is small, so abrupt abrasion occurs on the tap.
- The spring back on internal screw threads may cause diameters to shrink and the tap may be crimped causing breakage.
- Chip welding occurs easily on the cutting chamfer of the tap and the threads flank surface. The finished threads surface of the internal screw thread also becomes rough and coarse.

Overall length	Thread length	Thread + Neck length	Shank length	Shank dia.	Size of square	Length of square
L	ℓ	ℓ <sub>n</sub>	ℓ <sub>s</sub>	D <sub>s</sub>	K	ℓ <sub>k</sub>



Segment : 1T

Size	Class	Code	Chamfer	L (mm)	ℓ (mm)	ℓ <sub>n</sub> (mm)	ℓ <sub>s</sub> (mm)	D <sub>s</sub> (mm)	K (mm)	ℓ <sub>k</sub> (mm)	No. of flutes	TYPE	MSRP
For Metric Threads													
M3 × 0.5	P3	ZETPMR3.0G	5P	46	9	14	26	4	3.2	6	3	1	¥ 2,520
M4 × 0.7	P3	ZETPMR4.0I	5P	52	11	17	29	5	4	7	3	1	¥ 2,520
M5 × 0.8	P3	ZETPMR5.0K	5P	60	13	22	33	5.5	4.5	7	3	1	¥ 2,540
M6 × 1	P3	ZETPMR6.0M	5P	62	15	26	33	6	4.5	7	3	1	¥ 2,800
M8 × 1.25	P4	ZETPMS8.0N	5P	70	19	-	36	6.2	5	8	3	2	¥ 3,840
M10 × 1.5	P4	ZETPMS010O	5P	75	23	-	38	7	5.5	8	3	2	¥ 4,880
M10 × 1.25	P4	ZETPMS010N	5P	75	23	-	38	7	5.5	8	3	2	¥ 4,880 ※
M12 × 1.75	P5	ZETPMT012P	5P	82	26	-	42	8.5	6.5	9	3	2	¥ 6,920
M12 × 1.5	P4	ZETPMS012O	5P	82	26	-	42	8.5	6.5	9	3	2	¥ 6,920 ※
M12 × 1.25	P5	ZETPMT012N	5P	82	26	-	42	8.5	6.5	9	3	2	¥ 6,920 ※
M14 × 2	P5	ZETPMT014Q	5P	88	26	-	45	10.5	8	11	3	2	¥ 9,440 ※
M14 × 1.5	P4	ZETPMS014O	5P	88	26	-	45	10.5	8	11	3	2	¥ 9,440 ※
M16 × 2	P5	ZETPMT016Q	5P	95	26	-	48	12.5	10	13	3	2	¥ 12,700 ※
M16 × 1.5	P4	ZETPMS016O	5P	95	26	-	48	12.5	10	13	3	2	¥ 12,700 ※
M18 × 2.5	P5	ZETPMT018R	5P	100	33	-	51	14	11	14	4	2	¥ 16,900 ※
M18 × 1.5	P5	ZETPMT018O	5P	100	33	-	51	14	11	14	4	2	¥ 16,900 ※
M20 × 2.5	P5	ZETPMT020R	5P	105	33	-	50	15	12	15	4	3	¥ 23,000 ※
M20 × 1.5	P5	ZETPMT020O	5P	105	33	-	50	15	12	15	4	3	¥ 23,000 ※
For Unified Threads													
No.4-40UNC	P3	ZETPMRUN4H	5P	46	9	14	25	4	3.2	6	3	1	¥ 3,180 ※
No.6-32UNC	P3	ZETPMRUN6J	5P	52	11	17	27	5	4	7	3	1	¥ 2,960 ※
No.8-32UNC	P3	ZETPMRUN8J	5P	60	13	22	31	5.5	4.5	7	3	1	¥ 2,980 ※
No.10-24UNC	P3	ZETPMRUNAM	5P	60	13	22	32	5.5	4.5	7	3	1	¥ 2,980 ※
No.10-32UNF	P3	ZETPMRUNAJ	5P	60	13	22	32	5.5	4.5	7	3	1	¥ 2,980 ※
1/4-20UNC	P3	ZETPMRU04N	5P	62	15	26	33	6	4.5	7	3	1	¥ 3,200 ※
1/4-28UNF	P3	ZETPMRU04K	5P	62	15	26	33	6	4.5	7	3	1	¥ 3,200 ※
5/16-18UNC	P4	ZETPMSU05O	5P	70	19	-	36	6.2	5	8	3	2	¥ 4,420 ※
5/16-24UNF	P4	ZETPMSU05M	5P	70	19	-	36	6.2	5	8	3	2	¥ 4,420 ※
3/8-16UNC	P4	ZETPMSU06P	5P	75	23	-	38	7	5.5	8	3	2	¥ 5,660 ※
3/8-24UNF	P4	ZETPMSU06M	5P	75	23	-	38	7	5.5	8	3	2	¥ 5,660 ※
7/16-14UNC	P4	ZETPMSU07Q	5P	82	26	-	42	8.5	6.5	9	3	2	¥ 7,980 ※
7/16-20UNF	P4	ZETPMSU07N	5P	82	26	-	42	8.5	6.5	9	3	2	¥ 7,980 ※
1/2-13UNC	P5	ZETPMTU08R	5P	88	26	-	45	10.5	8	11	3	2	¥ 8,460 ※

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1/2-20UNF	P4	ZETPMSU08N	5P	88	26	-	45	10.5	8	11	3	2	¥ 8,460 <sup>*</sup>
5/8-11UNC	P5	ZETPMTU10U	5P	95	26	-	48	12.5	10	13	3	2	¥ 12,700 <sup>*</sup>
5/8-18UNF	P4	ZETPMSU10O	5P	95	26	-	48	12.5	10	13	3	2	¥ 12,700 <sup>*</sup>
3/4-10UNC	P5	ZETPMTU12V	5P	105	33	-	50	15	12	15	4	3	¥ 23,000 <sup>*</sup>
3/4-16UNF	P5	ZETPMTU12P	5P	105	33	-	50	15	12	15	4	3	¥ 23,000 <sup>*</sup>

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⑫ Precision Machinery/ Medical Surgical Instruments

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②-25



\* = Specified Distribution Items. Made to order products.