

① Spiral Fluted Tap Series for blind hole

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

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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

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①-171

ZEN-B

Spiral Fluted Taps for Nickel Base Alloys



Specification



Tapping Speeds depending on Materials

Low carbon steels 低炭素鋼	Medium carbon steels 中炭素鋼	Stainless steels ステンレス鋼	Nickel base alloys ニッケル基合金
5~15 (m/min)	5~15 (m/min)	5~15 (m/min)	5~10 (m/min)

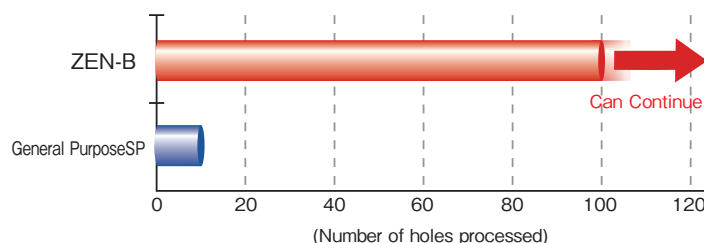
Product Features

- The tap is produced from a high grade powder high speed steel that is excellent for heat resistance and wear resistance.
- The optimum thread relief is adopted in consideration of the shrinkage and cutting heat for Nickel Base Alloys.
- The ZEN-B has a flute design for nickel base alloy to smooth the discharge of chips.
- Optimum surface treatment is applied to prevent welding.
- Considering the shrinkage of the internal screw thread, the tap is produced to a moderate oversize condition.

Tapping Data

Tapping Conditions [M6×1]

Work Piece Material	Hastelloy C-276
Bored Hole Size	φ5.0
Tapping Length	10mm
Tapping Speed	5m/min
Machinery Type	CNC tapping center
Tapping Fluid	Water soluble cutting fluid



Characteristics of nickel base alloys

- Nickel based alloys have much better corrosion and heat resistance than steel. In general, nickel based alloys are much more difficult to process than steels and stainless steels. Nickel based alloys include A286, inconels, hastelloys, waspalloys and more. There are many kinds of nickel based alloys, but one of the more difficult ones to cut is inconel 718.

Types of tapping problems

- Nickel based alloys have high temperature strength and the thermal diffusivity is small so, abrupt abrasion occurs on the tap.
- The material tends to spring back so, internal threads may shrink or the tap may be crimped causing breakage.
- The material tends to cause welding on the cutting chamfer and the thread flank surface. The finished surface of the internal screw thread can become rough.

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Spiral Fluted Taps
(for blind hole) ①Spiral Fluted Taps
(for through hole) ②Spiral Pointed Taps
(for through hole) ③

Hand Taps ④

Cemented Carbide Taps ⑤

Roll Taps ⑥

Special Thread Taps
Simple Inspection Tools ⑦

Pipe Taps ⑧

Thread Mills
Premium Thread Mills ⑨

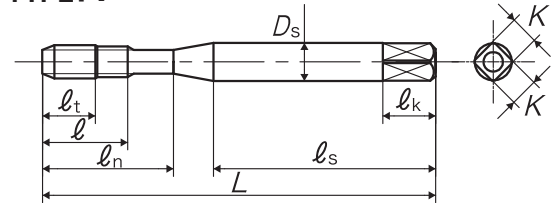
Dies ⑩

Center Drills
Centering Tools ⑪Precision Machinery/
Metal Surgical Instruments ⑫

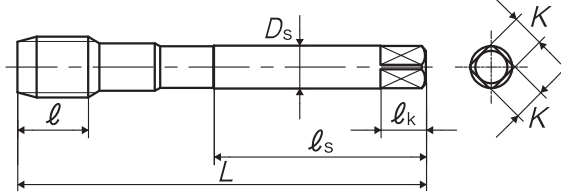
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①-172

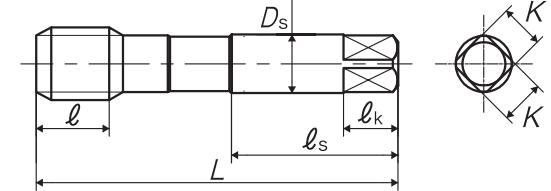
TYPE: 1



TYPE: 2



TYPE: 3



Segment : 1D

Size	Class	Code	Chamfer	L (mm)	ℓ_t (mm)	ℓ (mm)	ℓ_n (mm)	ℓ_s (mm)	Ds (mm)	K (mm)	ℓ_k (mm)	No. of flutes	TYPE	MSRP
For Metric Threads														
M3 × 0.5	P2	ZENBMQ3.0G	3P	46	5	9	14	26	4	3.2	6	3	1	¥ 2,880
M4 × 0.7	P3	ZENBMR4.0I	3P	52	7	11	17	29	5	4	7	3	1	¥ 2,880
M5 × 0.8	P3	ZENBMR5.0K	3P	60	9	13	22	33	5.5	4.5	7	3	1	¥ 2,900
M6 × 1	P3	ZENBMR6.0M	3P	62	11	15	26	33	6	4.5	7	3	1	¥ 3,200
M8 × 1.25	P3	ZENBMR8.0N	3P	70	-	12	-	36	6.2	5	8	3	2	¥ 4,460
M10 × 1.5	P3	ZENBMR010O	3P	75	-	13	-	38	7	5.5	8	3	2	¥ 5,670
M10 × 1.25	P3	ZENBMR010N	3P	75	-	13	-	38	7	5.5	8	3	2	¥ 5,670
M12 × 1.75	P3	ZENBMR012P	3P	82	-	15	-	42	8.5	6.5	9	3	2	¥ 8,030
M12 × 1.5	P3	ZENBMR012O	3P	82	-	15	-	42	8.5	6.5	9	3	2	¥ 8,030 *
M12 × 1.25	P3	ZENBMR012N	3P	82	-	15	-	42	8.5	6.5	9	3	2	¥ 8,030 *
M14 × 2	P3	ZENBMR014Q	3P	88	-	18	-	45	10.5	8	11	3	2	¥ 11,000 *
M14 × 1.5	P3	ZENBMR014O	3P	88	-	14	-	45	10.5	8	11	3	2	¥ 11,000 *
M16 × 2	P3	ZENBMR016Q	3P	95	-	18	-	48	12.5	10	13	3	2	¥ 14,800 *
M16 × 1.5	P3	ZENBMR016O	3P	95	-	14	-	48	12.5	10	13	3	2	¥ 14,800 *
M18 × 2.5	P4	ZENBMS018R	3P	100	-	20	-	51	14	11	14	4	2	¥ 19,700 *
M18 × 1.5	P3	ZENBMR018O	3P	100	-	14	-	51	14	11	14	4	2	¥ 19,700 *
M20 × 2.5	P4	ZENBMS020R	3P	105	-	20	-	50	15	12	15	4	3	¥ 26,700 *
M20 × 1.5	P4	ZENBMS020O	3P	105	-	14	-	50	15	12	15	4	3	¥ 26,700 *
For Unified Threads														
No.4-40UNC	P2	ZENBMQUN4H	3P	46	5	9	14	25	4	3.2	6	3	1	¥ 3,630 *
No.6-32UNC	P3	ZENBMRUN6J	3P	52	7	11	17	27	5	4	7	3	1	¥ 3,380 *
No.8-32UNC	P3	ZENBMRUN8J	3P	60	7	13	22	31	5.5	4.5	7	3	1	¥ 3,400 *
No.10-24UNC	P3	ZENBMRUNAM	3P	60	9	13	22	32	5.5	4.5	7	3	1	¥ 3,400 *
No.10-32UNF	P3	ZENBMRUNAJ	3P	60	9	13	22	32	5.5	4.5	7	3	1	¥ 3,400 *
1/4-20UNC	P3	ZENBMRU04N	3P	62	11	15	26	33	6	4.5	7	3	1	¥ 3,650 *
1/4-28UNF	P3	ZENBMRU04K	3P	62	11	15	26	33	6	4.5	7	3	1	¥ 3,650 *
5/16-18UNC	P3	ZENBMRU05O	3P	70	-	12	-	36	6.2	5	8	3	2	¥ 5,130 *
5/16-24UNF	P3	ZENBMRU05M	3P	70	-	12	-	36	6.2	5	8	3	2	¥ 5,130 *
3/8-16UNC	P3	ZENBMRU06P	3P	75	-	13	-	38	7	5.5	8	3	2	¥ 6,570 *
3/8-24UNF	P3	ZENBMRU06M	3P	75	-	13	-	38	7	5.5	8	3	2	¥ 6,570 *
7/16-14UNC	P3	ZENBMRU07Q	3P	82	-	13	-	42	8.5	6.5	9	3	2	¥ 9,260 *
7/16-20UNF	P3	ZENBMRU07N	3P	82	-	13	-	42	8.5	6.5	9	3	2	¥ 9,260 *

* = Specified Distribution Items. Made to order products.

 Think threads with
YAMAWA

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JIS

ZEN-B Spiral Fluted Taps for Titanium Alloys

Size	Class	Code	Chamfer	L (mm)	ℓt (mm)	ℓ (mm)	ℓn (mm)	ℓs (mm)	Ds (mm)	K (mm)	ℓk (mm)	No. of flutes	TYPE	MSRP
1/2-13UNC	P3	ZENBMRU08R	3P	88	-	15	-	45	10.5	8	11	3	2	¥ 9,820 ※
1/2-20UNF	P3	ZENBMRU08N	3P	88	-	15	-	45	10.5	8	11	3	2	¥ 9,820 ※
5/8-11UNC	P3	ZENBMRU10U	3P	95	-	18	-	48	12.5	10	13	3	2	¥ 14,800 ※
5/8-18UNF	P3	ZENBMRU10O	3P	95	-	14	-	48	12.5	10	13	3	2	¥ 14,800 ※
3/4-10UNC	P4	ZENBMSU12V	3P	105	-	20	-	50	15	12	15	4	3	¥ 26,700 ※
3/4-16UNF	P4	ZENBMSU12P	3P	105	-	14	-	50	15	12	15	4	3	¥ 26,700 ※

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