



## N-CT FC

Carbide Taps for Cast Irons

### Specification

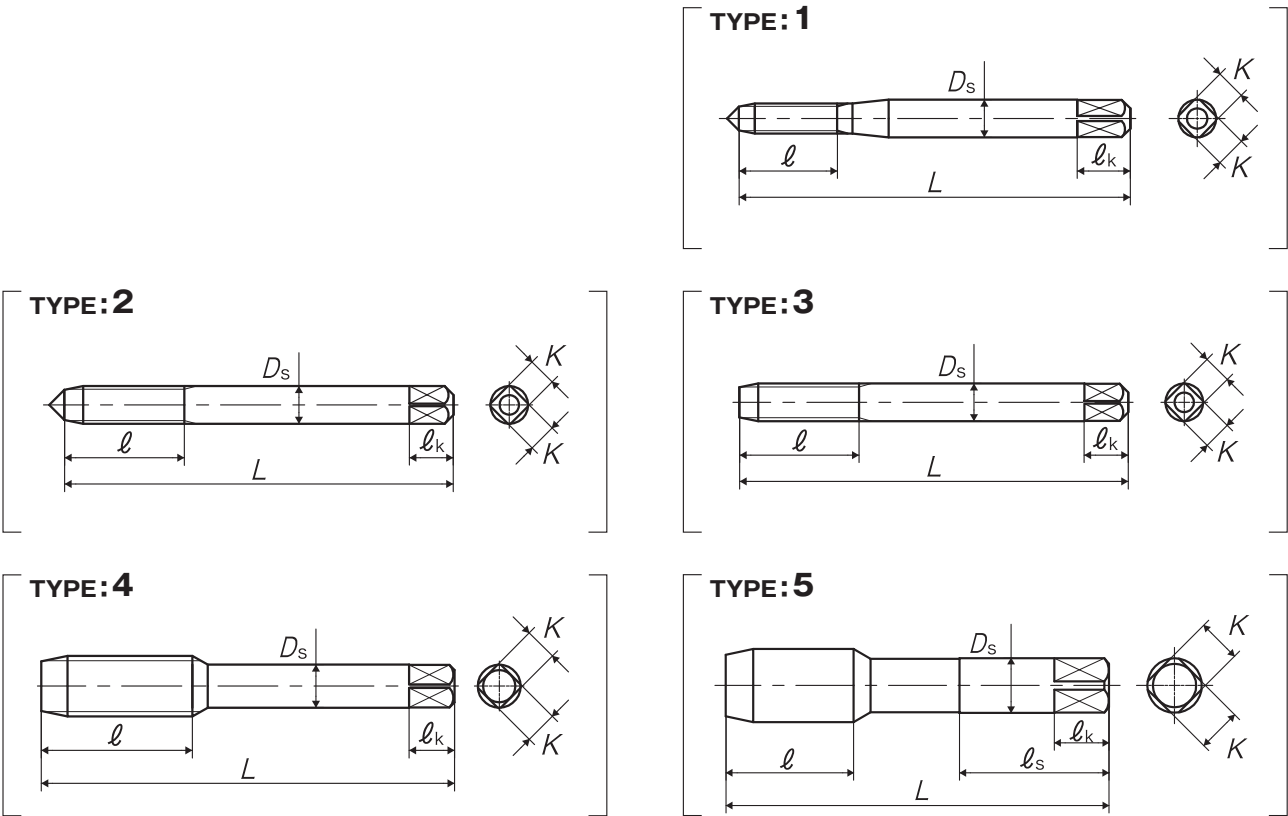


■ N-CT FC is the carbide tap suitable for hard and abrasive materials such as cast irons. For volume production.

### Tapping Speeds depending on Materials

Cast irons 鑄鉄	Ductile cast irons 強靱鑄鉄	Brass castings 黄銅鑄物
<b>5~15</b> (m/min)	<b>5~15</b> (m/min)	<b>5~15</b> (m/min)

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



Segment : 1L

Size	Class	Code	Chamfer	L (mm)	ℓ (mm)	ℓs (mm)	Ds (mm)	K (mm)	ℓk (mm)	No. of flutes	TYPE	MSRP
For Metric Threads												
M1.4 × 0.3	P3	TCNR1.4C3	3P	34	7	-	3	2.5	5	3	1	¥ 18,700*
M1.4 × 0.3	P3	TCNR1.4C1	1.5P	34	7	-	3	2.5	5	3	1	¥ 18,700*
M1.6 × 0.35	P3	TCNR1.6D3	3P	36	8	-	3	2.5	5	3	1	¥ 16,600*
M1.6 × 0.35	P3	TCNR1.6D1	1.5P	36	8	-	3	2.5	5	3	1	¥ 16,600*
M1.7 × 0.35	P3	TCNR1.7D3	3P	36	8	-	3	2.5	5	3	1	¥ 16,600*
M1.7 × 0.35	P3	TCNR1.7D1	1.5P	36	8	-	3	2.5	5	3	1	¥ 16,600*
M2 × 0.4	P3	TCNR2.0E3	3P	40	8	-	3	2.5	5	3	1	¥ 15,200
M2 × 0.4	P3	TCNR2.0E1	1.5P	40	8	-	3	2.5	5	3	1	¥ 15,200
M2.2 × 0.45	P3	TCNR2.2F3	3P	42	9.5	-	3	2.5	5	3	1	¥ 14,500*

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

# 5 Cemented Carbide Tap Series

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

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## N-CT FC Carbide Taps for Cast Irons

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

Size	Class	Code	Chamfer	L (mm)	ℓ (mm)	ℓs (mm)	Ds (mm)	K (mm)	ℓk (mm)	No. of flutes	TYPE	MSRP
M2.2 × 0.45	P3	TCNR2.2F1	1.5P	42	9.5	-	3	2.5	5	3	1	¥ 14,500*
M2.3 × 0.4	P3	TCNR2.3E3	3P	42	8	-	3	2.5	5	3	1	¥ 14,500*
M2.3 × 0.4	P3	TCNR2.3E1	1.5P	42	8	-	3	2.5	5	3	1	¥ 14,500*
M2.5 × 0.45	P3	TCNR2.5F3	3P	44	9.5	-	3	2.5	5	3	1	¥ 14,400*
M2.5 × 0.45	P3	TCNR2.5F1	1.5P	44	9.5	-	3	2.5	5	3	1	¥ 14,400*
M2.6 × 0.45	P3	TCNR2.6F3	3P	44	9.5	-	3	2.5	5	3	1	¥ 14,400
M2.6 × 0.45	P3	TCNR2.6F1	1.5P	44	9.5	-	3	2.5	5	3	1	¥ 14,400
M3 × 0.5	P3	TCNR3.0G3	3P	46	11	-	4	3.2	6	3	1	¥ 14,000
M3 × 0.5	P3	TCNR3.0G1	1.5P	46	11	-	4	3.2	6	3	1	¥ 14,000
M3 × 0.35	P3	TCNR3.0D3	3P	46	8	-	4	3.2	6	3	1	¥ 16,400*
M3 × 0.35	P3	TCNR3.0D1	1.5P	46	8	-	4	3.2	6	3	1	¥ 16,400*
M3.5 × 0.6	P3	TCNR3.5H3	3P	48	11	-	4	3.2	6	3	1	¥ 14,700
M3.5 × 0.6	P3	TCNR3.5H1	1.5P	48	11	-	4	3.2	6	3	1	¥ 14,700
M4 × 0.7	P3	TCNR4.0I3	3P	52	13	-	5	4	7	4	1	¥ 14,700
M4 × 0.7	P3	TCNR4.0I1	1.5P	52	13	-	5	4	7	4	1	¥ 14,700
M4 × 0.5	P3	TCNR4.0G3	3P	52	11	-	5	4	7	4	1	¥ 16,400*
M4 × 0.5	P3	TCNR4.0G1	1.5P	52	11	-	5	4	7	4	1	¥ 16,400*
M5 × 0.8	P3	TCNR5.0K3	3P	60	16	-	5.5	4.5	7	4	1	¥ 15,500
M5 × 0.8	P3	TCNR5.0K1	1.5P	60	16	-	5.5	4.5	7	4	1	¥ 15,500
M5 × 0.5	P3	TCNR5.0G3	3P	52	11	-	5.5	4.5	7	4	1	¥ 16,700*
M5 × 0.5	P3	TCNR5.0G1	1.5P	52	11	-	5.5	4.5	7	4	1	¥ 16,700*
M6 × 1	P3	TCNR6.0M3	3P	62	19	-	6	4.5	7	4	2	¥ 16,600
M6 × 1	P3	TCNR6.0M3F	3P	62	19	-	6	4.5	7	4	3	¥ 16,600
M6 × 1	P3	TCNR6.0M1	1.5P	62	19	-	6	4.5	7	4	2	¥ 16,600
M6 × 1	P3	TCNR6.0M1F	1.5P	62	19	-	6	4.5	7	4	3	¥ 16,600
M6 × 0.75	P3	TCNR6.0J3	3P	62	13	-	6	4.5	7	4	2	¥ 18,300
M6 × 0.75	P3	TCNR6.0J1	1.5P	62	13	-	6	4.5	7	4	2	¥ 18,300
M6 × 0.5	P3	TCNR6.0G3	3P	55	11	-	6	4.5	7	4	2	¥ 21,400*
M6 × 0.5	P3	TCNR6.0G1	1.5P	55	11	-	6	4.5	7	4	2	¥ 21,400*
M7 × 1	P3	TCNR7.0M3	3P	65	19	-	6.2	5	8	4	4	¥ 21,600
M7 × 1	P3	TCNR7.0M1	1.5P	65	19	-	6.2	5	8	4	4	¥ 21,600
M7 × 0.75	P3	TCNR7.0J3	3P	62	13	-	6.2	5	8	4	4	¥ 23,400*
M7 × 0.75	P3	TCNR7.0J1	1.5P	62	13	-	6.2	5	8	4	4	¥ 23,400*
M8 × 1.25	P3	TCNR8.0N3	3P	70	22	-	6.2	5	8	4	4	¥ 21,600
M8 × 1.25	P3	TCNR8.0N1	1.5P	70	22	-	6.2	5	8	4	4	¥ 21,600
M8 × 1.25	P4	TCNS8.0N3	3P	70	22	-	6.2	5	8	4	4	¥ 21,600*
M8 × 1.25	P4	TCNS8.0N1	1.5P	70	22	-	6.2	5	8	4	4	¥ 21,600*
M8 × 1	P3	TCNR8.0M3	3P	70	19	-	6.2	5	8	4	4	¥ 21,600
M8 × 1	P3	TCNR8.0M1	1.5P	70	19	-	6.2	5	8	4	4	¥ 21,600
M8 × 0.75	P3	TCNR8.0J3	3P	62	13	-	6.2	5	8	4	4	¥ 23,400*
M8 × 0.75	P3	TCNR8.0J1	1.5P	62	13	-	6.2	5	8	4	4	¥ 23,400*
M10 × 1.5	P3	TCNR010O3	3P	75	24	-	7	5.5	8	4	4	¥ 29,300
M10 × 1.5	P3	TCNR010O1	1.5P	75	24	-	7	5.5	8	4	4	¥ 29,300
M10 × 1.5	P4	TCNS010O3	3P	75	24	-	7	5.5	8	4	4	¥ 29,300*
M10 × 1.5	P4	TCNS010O1	1.5P	75	24	-	7	5.5	8	4	4	¥ 29,300*
M10 × 1.25	P3	TCNR010N3	3P	75	22	-	7	5.5	8	4	4	¥ 29,300
M10 × 1.25	P3	TCNR010N1	1.5P	75	22	-	7	5.5	8	4	4	¥ 29,300
M10 × 1.25	P4	TCNS010N3	3P	75	22	-	7	5.5	8	4	4	¥ 29,300*
M10 × 1.25	P4	TCNS010N1	1.5P	75	22	-	7	5.5	8	4	4	¥ 29,300*
M10 × 1	P3	TCNR010M3	3P	70	19	-	7	5.5	8	4	4	¥ 29,300



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

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

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## N-CT FC Carbide Taps for Cast Irons

Size	Class	Code	Chamfer	L (mm)	ℓ (mm)	ℓs (mm)	Ds (mm)	K (mm)	ℓk (mm)	No. of flutes	TYPE	MSRP
M10 × 1	P3	TCNR010M1	1.5P	70	19	-	7	5.5	8	4	4	¥ 29,300
M10 × 1	P4	TCNS010M3	3P	70	19	-	7	5.5	8	4	4	¥ 29,300*
M10 × 1	P4	TCNS010M1	1.5P	70	19	-	7	5.5	8	4	4	¥ 29,300*
M12 × 1.75	P3	TCNR012P3	3P	82	30	-	8.5	6.5	9	4	4	¥ 38,900
M12 × 1.75	P3	TCNR012P1	1.5P	82	30	-	8.5	6.5	9	4	4	¥ 38,900
M12 × 1.75	P4	TCNS012P3	3P	82	30	-	8.5	6.5	9	4	4	¥ 38,900
M12 × 1.75	P4	TCNS012P1	1.5P	82	30	-	8.5	6.5	9	4	4	¥ 38,900
M12 × 1.5	P3	TCNR012O3	3P	82	24	-	8.5	6.5	9	4	4	¥ 38,900
M12 × 1.5	P3	TCNR012O1	1.5P	82	24	-	8.5	6.5	9	4	4	¥ 38,900
M12 × 1.5	P4	TCNS012O3	3P	82	24	-	8.5	6.5	9	4	4	¥ 38,900*
M12 × 1.5	P4	TCNS012O1	1.5P	82	24	-	8.5	6.5	9	4	4	¥ 38,900*
M12 × 1.25	P3	TCNR012N3	3P	80	22	-	8.5	6.5	9	4	4	¥ 38,900
M12 × 1.25	P3	TCNR012N1	1.5P	80	22	-	8.5	6.5	9	4	4	¥ 38,900
M12 × 1.25	P4	TCNS012N3	3P	80	22	-	8.5	6.5	9	4	4	¥ 38,900*
M12 × 1.25	P4	TCNS012N1	1.5P	80	22	-	8.5	6.5	9	4	4	¥ 38,900*
M12 × 1	P3	TCNR012M3	3P	70	19	-	8.5	6.5	9	4	4	¥ 42,900*
M12 × 1	P3	TCNR012M1	1.5P	70	19	-	8.5	6.5	9	4	4	¥ 42,900*
M12 × 1	P4	TCNS012M3	3P	70	19	-	8.5	6.5	9	4	4	¥ 42,900*
M12 × 1	P4	TCNS012M1	1.5P	70	19	-	8.5	6.5	9	4	4	¥ 42,900*
M14 × 2	P3	TCNR014Q3	3P	88	30	34	10.5	8	11	4	5	¥ 40,200*
M14 × 2	P3	TCNR014Q1	1.5P	88	30	34	10.5	8	11	4	5	¥ 40,200*
M14 × 2	P4	TCNS014Q3	3P	88	30	34	10.5	8	11	4	5	¥ 40,200
M14 × 2	P4	TCNS014Q1	1.5P	88	30	34	10.5	8	11	4	5	¥ 40,200
M14 × 1.5	P3	TCNR014O3	3P	88	24	34	10.5	8	11	4	5	¥ 40,200
M14 × 1.5	P3	TCNR014O1	1.5P	88	24	34	10.5	8	11	4	5	¥ 40,200
M14 × 1.5	P4	TCNS014O3	3P	88	24	34	10.5	8	11	4	5	¥ 40,200*
M14 × 1.5	P4	TCNS014O1	1.5P	88	24	34	10.5	8	11	4	5	¥ 40,200*
M14 × 1.25	P3	TCNR014N3	3P	88	22	34	10.5	8	11	4	5	¥ 43,900*
M14 × 1.25	P3	TCNR014N1	1.5P	88	22	34	10.5	8	11	4	5	¥ 43,900*
M14 × 1.25	P4	TCNS014N3	3P	88	22	34	10.5	8	11	4	5	¥ 43,900*
M14 × 1.25	P4	TCNS014N1	1.5P	88	22	34	10.5	8	11	4	5	¥ 43,900*
M14 × 1	P3	TCNR014M3	3P	70	19	37	10.5	8	11	4	5	¥ 43,900*
M14 × 1	P3	TCNR014M1	1.5P	70	19	37	10.5	8	11	4	5	¥ 43,900*
M14 × 1	P4	TCNS014M3	3P	70	19	37	10.5	8	11	4	5	¥ 43,900*
M14 × 1	P4	TCNS014M1	1.5P	70	19	37	10.5	8	11	4	5	¥ 43,900*
M16 × 2	P4	TCNS016Q3	3P	95	30	37	12.5	10	13	4	5	¥ 48,900
M16 × 2	P4	TCNS016Q1	1.5P	95	30	37	12.5	10	13	4	5	¥ 48,900
M16 × 1.5	P3	TCNR016O3	3P	95	24	37	12.5	10	13	4	5	¥ 48,900*
M16 × 1.5	P3	TCNR016O1	1.5P	95	24	37	12.5	10	13	4	5	¥ 48,900*
M16 × 1.5	P4	TCNS016O3	3P	95	24	37	12.5	10	13	4	5	¥ 48,900
M16 × 1.5	P4	TCNS016O1	1.5P	95	24	37	12.5	10	13	4	5	¥ 48,900
M16 × 1	P4	TCNS016M3	3P	75	19	41	12.5	10	13	4	5	¥ 52,200
M16 × 1	P4	TCNS016M1	1.5P	75	19	41	12.5	10	13	4	5	¥ 52,200
M18 × 2.5	P4	TCNS018R3	3P	100	35	38	14	11	14	4	5	¥ 57,600*
M18 × 2.5	P4	TCNS018R1	1.5P	100	35	38	14	11	14	4	5	¥ 57,600*
M18 × 1.5	P4	TCNS018O3	3P	95	24	43	14	11	14	4	5	¥ 57,600
M18 × 1.5	P4	TCNS018O1	1.5P	95	24	43	14	11	14	4	5	¥ 57,600
M20 × 2.5	P4	TCNS020R3	3P	105	35	41	15	12	15	4	5	¥ 67,900
M20 × 2.5	P4	TCNS020R1	1.5P	105	35	41	15	12	15	4	5	¥ 67,900
M20 × 1.5	P4	TCNS020O3	3P	95	24	43	15	12	15	4	5	¥ 67,900

Spiral Fluted Taps  
(for blind hole)

①

Spiral Fluted Taps  
(for through hole)

②

Spiral 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

⑪

Precision Machinery/  
Metal Surgical Instruments

⑫

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

Think threads with  
**YAMAWA**

# 5 Cemented Carbide Tap Series

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

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## N-CT FC Carbide Taps for Cast Irons

- ① Spiral Fluted Taps (for blind hole)
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- 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

Size	Class	Code	Chamfer	L (mm)	ℓ (mm)	ℓs (mm)	Ds (mm)	K (mm)	ℓk (mm)	No. of flutes	TYPE	MSRP
M20 × 1.5	P4	TCNS020O1	1.5P	95	24	43	15	12	15	4	5	¥ 67,900
M22 × 2.5	P4	TCNS022R3	3P	115	35	45	17	13	16	4	5	¥ 76,800*
M22 × 2.5	P4	TCNS022R1	1.5P	115	35	45	17	13	16	4	5	¥ 76,800*
M22 × 1.5	P4	TCNS022O3	3P	95	24	42	17	13	16	4	5	¥ 76,800*
M22 × 1.5	P4	TCNS022O1	1.5P	95	24	42	17	13	16	4	5	¥ 76,800*
M24 × 3	P4	TCNS024S3	3P	120	35	47	19	15	18	4	5	¥ 86,300*
M24 × 3	P4	TCNS024S1	1.5P	120	35	47	19	15	18	4	5	¥ 86,300*
M24 × 1.5	P4	TCNS024O3	3P	95	24	42	19	15	18	4	5	¥ 86,300*
M24 × 1.5	P4	TCNS024O1	1.5P	95	24	42	19	15	18	4	5	¥ 86,300*
M30 × 3.5	P5	TCNT030T3	3P	135	45	53	23	17	20	4	5	¥ 109,000*
M30 × 3.5	P5	TCNT030T1	1.5P	135	45	53	23	17	20	4	5	¥ 109,000*
For Unified Threads												
No.4-40UNC	P3	TCNRUN4H3	3P	44	9.5	-	3	2.5	5	3	1	¥ 15,900*
No.4-40UNC	P3	TCNRUN4H1	1.5P	44	9.5	-	3	2.5	5	3	1	¥ 15,900*
No.4-48UNF	P3	TCNRUN4F3	3P	44	9.5	-	3	2.5	5	3	1	¥ 15,900*
No.4-48UNF	P3	TCNRUN4F1	1.5P	44	9.5	-	3	2.5	5	3	1	¥ 15,900*
No.5-40UNC	P3	TCNRUN5H3	3P	46	9.5	-	4	3.2	6	3	1	¥ 16,700*
No.5-40UNC	P3	TCNRUN5H1	1.5P	46	9.5	-	4	3.2	6	3	1	¥ 16,700*
No.6-32UNC	P3	TCNRUN6J3	3P	48	11	-	4	3.2	6	3	1	¥ 16,700*
No.6-32UNC	P3	TCNRUN6J1	1.5P	48	11	-	4	3.2	6	3	1	¥ 16,700*
No.8-32UNC	P3	TCNRUN8J3	3P	52	11	-	5	4	7	4	1	¥ 17,300*
No.8-32UNC	P3	TCNRUN8J1	1.5P	52	11	-	5	4	7	4	1	¥ 17,300*
No.10-24UNC	P3	TCNRUNAM3	3P	60	16	-	5.5	4.5	7	4	1	¥ 17,300*
No.10-24UNC	P3	TCNRUNAM1	1.5P	60	16	-	5.5	4.5	7	4	1	¥ 17,300*
No.10-32UNF	P3	TCNRUNAJ3	3P	60	11	-	5.5	4.5	7	4	1	¥ 17,300*
No.10-32UNF	P3	TCNRUNAJ1	1.5P	60	11	-	5.5	4.5	7	4	1	¥ 17,300*
1/4-20UNC	P3	TCNRU04N3	3P	62	19	-	6	4.5	7	4	3	¥ 19,200*
1/4-20UNC	P3	TCNRU04N1	1.5P	62	19	-	6	4.5	7	4	3	¥ 19,200*
1/4-28UNF	P3	TCNRU04K3	3P	62	16	-	6	4.5	7	4	3	¥ 19,200*
1/4-28UNF	P3	TCNRU04K1	1.5P	62	16	-	6	4.5	7	4	3	¥ 19,200*
5/16-18UNC	P3	TCNRU05O3	3P	70	22	-	6.1	5	8	4	4	¥ 24,600*
5/16-18UNC	P3	TCNRU05O1	1.5P	70	22	-	6.1	5	8	4	4	¥ 24,600*
5/16-24UNF	P3	TCNRU05M3	3P	70	16	-	6.1	5	8	4	4	¥ 24,600*
5/16-24UNF	P3	TCNRU05M1	1.5P	70	16	-	6.1	5	8	4	4	¥ 24,600*
3/8-16UNC	P3	TCNRU06P3	3P	75	24	-	7	5.5	8	4	4	¥ 33,600*
3/8-16UNC	P3	TCNRU06P1	1.5P	75	24	-	7	5.5	8	4	4	¥ 33,600*
3/8-24UNF	P3	TCNRU06M3	3P	75	16	-	7	5.5	8	4	4	¥ 33,600*
3/8-24UNF	P3	TCNRU06M1	1.5P	75	16	-	7	5.5	8	4	4	¥ 33,600*
7/16-14UNC	P3	TCNRU07Q3	3P	80	24	-	8	6	9	4	4	¥ 44,700*
7/16-14UNC	P3	TCNRU07Q1	1.5P	80	24	-	8	6	9	4	4	¥ 44,700*
7/16-20UNF	P3	TCNRU07N3	3P	80	19	-	8	6	9	4	4	¥ 44,700*
7/16-20UNF	P3	TCNRU07N1	1.5P	80	19	-	8	6	9	4	4	¥ 44,700*
1/2-13UNC	P3	TCNRU08R3	3P	85	30	32	9	7	10	4	5	¥ 47,400*
1/2-13UNC	P3	TCNRU08R1	1.5P	85	30	32	9	7	10	4	5	¥ 47,400*
1/2-20UNF	P3	TCNRU08N3	3P	85	19	32	9	7	10	4	5	¥ 47,400*
1/2-20UNF	P3	TCNRU08N1	1.5P	85	19	32	9	7	10	4	5	¥ 47,400*
5/8-11UNC	P4	TCNSU10U3	3P	95	30	38	12	9	12	4	5	¥ 56,100*
5/8-11UNC	P4	TCNSU10U1	1.5P	95	30	38	12	9	12	4	5	¥ 56,100*
5/8-18UNF	P4	TCNSU10O3	3P	95	22	38	12	9	12	4	5	¥ 56,100*

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

### N-CT FC Carbide Taps for Cast Irons

Size	Class	Code	Chamfer	L (mm)	ℓ (mm)	ℓs (mm)	Ds (mm)	K (mm)	ℓk (mm)	No. of flutes	TYPE	MSRP
5/8-18UNF	P4	TCNSU1001	1.5P	95	22	38	12	9	12	4	5	¥ 56,100 <sup>*</sup>
3/4-10UNC	P4	TCNSU12V3	3P	105	35	41	14	11	14	4	5	¥ 77,400 <sup>*</sup>
3/4-10UNC	P4	TCNSU12V1	1.5P	105	35	41	14	11	14	4	5	¥ 77,400 <sup>*</sup>
3/4-16UNF	P4	TCNSU12P3	3P	95	24	43	14	11	14	4	5	¥ 77,400 <sup>*</sup>
3/4-16UNF	P4	TCNSU12P1	1.5P	95	24	43	14	11	14	4	5	¥ 77,400 <sup>*</sup>

Spiral Fluted Taps  
(for blind hole) ①

Spiral Fluted Taps  
(for through hole) ②

Spiral 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 ⑪

Precision Machinery/  
Metal Surgical Instruments ⑫