Taps for Cast Irons

Material Specific Series

Think threads with YAMAWA

GG-HT

Z-PRO
Ultimate Machining Taps

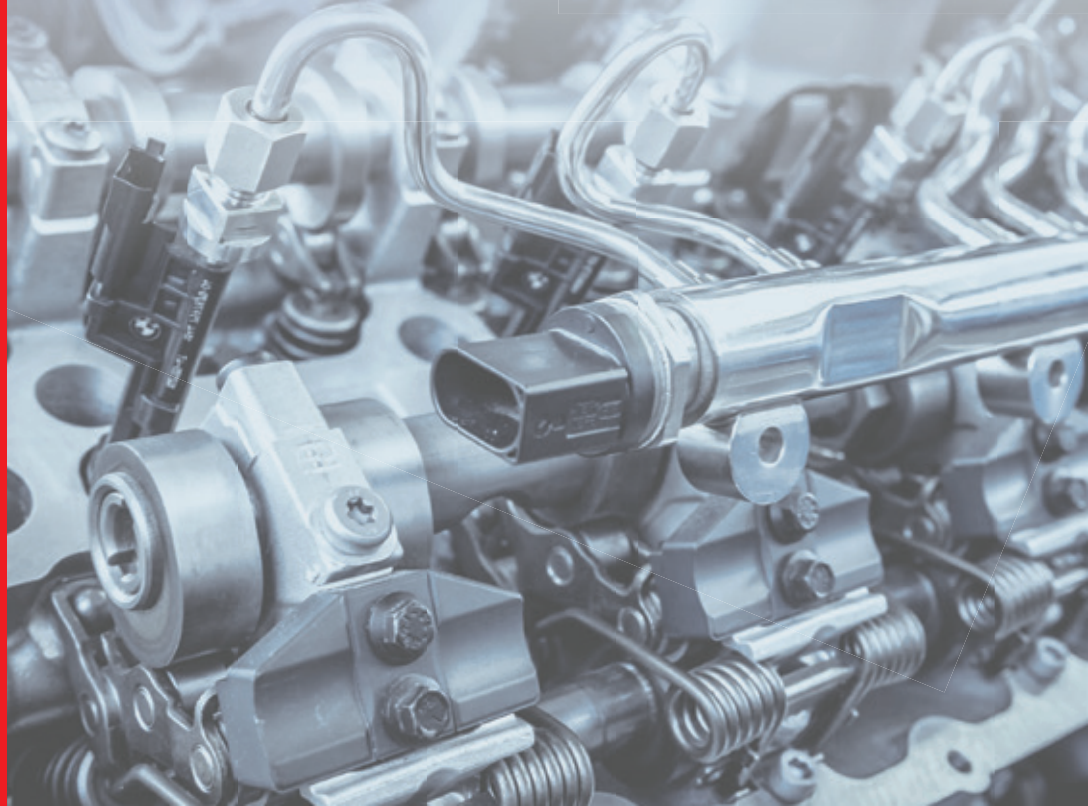
GGST

GGST CH M24X3 is now available !

Z-PRO
Ultimate Machining Taps

GGST CH

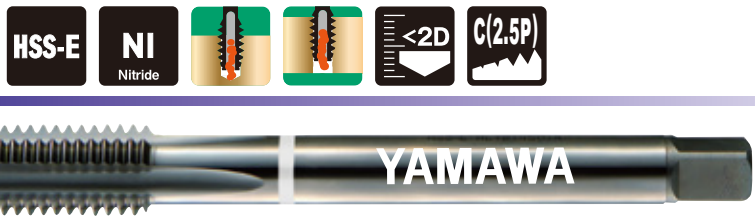
CT-FC



DIN

Straight Fluted Taps for Cast Irons (For General machining)

GG-HT



Features of GG-HT

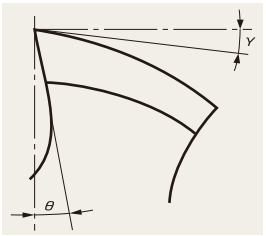
Rake angle : The cutting edge shape has a rake angle with high rigidity.

Surface treatment :
When a Nitride treatment is applied to the tap surface, the hardness of the tap becomes 1,000 to 1,300HV and the wear resistance very high.

Applicable Machine :
Can be used from CNC machining centers to drilling machines.

Recommend tapping speed : ~10m/min

Chip shape : Chips are very fine since cast irons are abrasive.

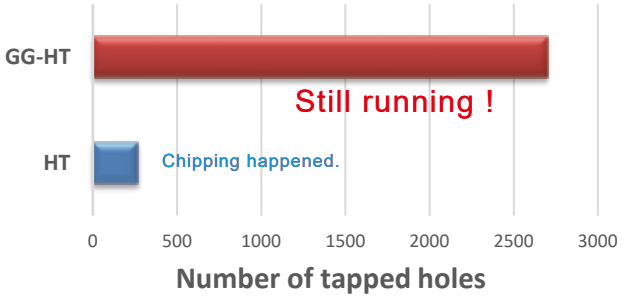


Rake angle
(Θ:Cutting angle,
γ:Chamfer relief angle)

Chip shape

Tapping data

The following table is performing test on GG25 with general purpose tap and GG-HT.
GG-HT achieves more than 10 times the number of holes tapped with a general purpose HT.



<Tapping condition>

Product	GG-HT M8X1.25
	HT M8X1.25
Material grade	GG25
Bored hole	6.8mm, Through hole
Machine	M/C (Synchronous)
Tapping speed	10m/min
Lubrication	Water soluble (*20 Dilution ratio)

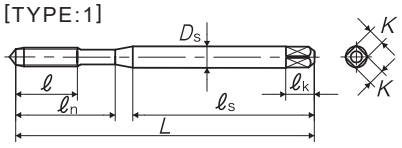
Tapping record of GG-HT

Size	Material grade	Bored hole size (mm)	Tapping length (mm)	Machine	Tapping speed (m/min)	Feed	Lubrication	No. of tapped holes
M5X0.8	GG25	4.28	12(2.4D)	M/C	15	Synchronous	Water soluble	2,100
M8X1.25		6.85	18(2.3D)	Special machine	8	Non-synchronous	Water soluble	2,400
M10X1.5		8.60	20(2D)	Special machine	8.5	Non-synchronous	Insoluble	2,500
M10X1.5		8.60	12(1.2D)	Special machine	7.5	Synchronous	Insoluble	3,000

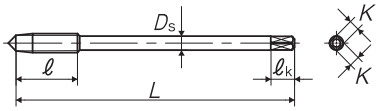
GG-HT

DIN

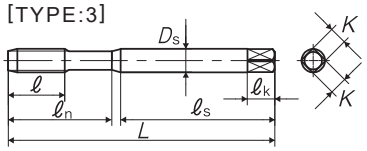
[TYPE:1]



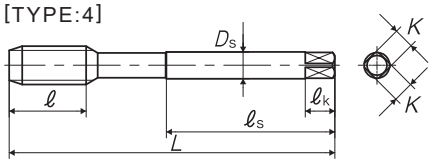
[TYPE:2]



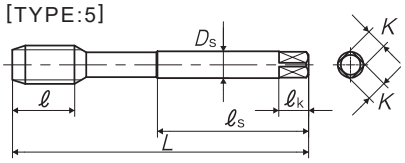
[TYPE:3]



[TYPE:4]



[TYPE:5]



Dimensions and Sizes

Size	Code	L (mm)	ℓ (mm)	ℓn (mm)	ℓs (mm)	Ds (mm)	K (mm)	ℓk (mm)	No. of flutes	Type	Bored hole diameter (ref.) (mm)
M											
M3X0.5	TD3.0GBAENC	56	9	18	34	3.5	2.7	6	3	1	2.56
M4X0.7	TD4.0IBAENC	63	13	21	38	4.5	3.4	6	4	1	3.38
M5X0.8	TD5.0KBAENC	70	14	25	39	6	4.9	8	4	1	4.28
M5X0.8	TG5.0KBAENC	70	14	-	-	3.5	2.7	6	4	2	4.28
M6X1	TD6.0MBAENC	80	15	30	45	6	4.9	8	4	1	5.09
M6X1	TG6.0MBAENC	80	15	-	-	4.5	3.4	6	4	2	5.09
M8X1.25	TD8.0NBAENC	90	19	35	47	8	6.2	9	4	3	6.85
M8X1.25	TG8.0NBAENC	90	19	-	46	6	4.9	8	4	4	6.85
M10X1.5	TD010OBAENC	100	23	39	52.5	10	8	11	4	3	8.60
M10X1.5	TG010OBAENC	100	23	-	51	7	5.5	8	4	4	8.60
M12X1.75	TG012PBAENC	110	26	-	56	9	7	10	4	4	10.4
M14X2	TG014QBAENC	110	26	-	56	11	9	12	4	4	12.1
M16X2	TG016QBAENC	110	26	-	56	12	9	12	4	4	14.1
M18X2.5	TG018RBAENC	125	33	-	64	14	11	14	4	4	15.6
M20X2.5	TG020RBAENC	140	33	-	71	16	12	15	4	4	17.6
M22X2.5	TG022RBAENC	140	33	-	71	18	14.5	17	4	4	19.6
M24X3	TG024SBAENC	160	37	-	82	18	14.5	17	4	4	21.1
MF											
M8X1	TM8.0MBAENC	90	19	-	46	6	4.9	8	4	5	7.09
M10X1.25	TM010NBAENC	100	23	-	51	7	5.5	8	4	5	8.85
M10X1	TM010MBAENC	90	19	-	46	7	5.5	8	4	5	9.09
M12X1.5	TM012OBAENC	100	21	-	51	9	7	10	4	5	10.60
M12X1.25	TM012NBAENC	100	21	-	51	9	7	10	4	5	10.85
M12X1	TM012MBAENC	100	21	-	51	9	7	10	4	5	11.09
M14X1.5	TM014OBAENC	100	21	-	51	11	9	12	4	5	12.60
M16X1.5	TM016OBAENC	100	21	-	51	12	9	12	4	5	14.60
M18X1.5	TM018OBAENC	110	24	-	56	14	11	14	4	5	16.60
M20X1.5	TM020OBAENC	125	24	-	64	16	12	15	4	5	18.60
M22X1.5	TM022OBAENC	125	24	-	64	18	14.5	17	4	5	20.60
M24X1.5	TM024OBAENC	140	27	-	71	18	14.5	17	4	5	22.60
G											
G1/8-28	TVG0020AENC	90	19	-	46	7	5.5	8	4	5	8.78
G1/4-19	TVG0040AENC	100	21	-	51	11	9	12	4	5	11.78
G3/8-19	TVG0060AENC	100	21	-	51	12	9	12	4	5	15.28
G1/2-14	TVG0080AENC	125	24	-	64	16	12	15	4	5	19.0
G3/4-14	TVG0120AENC	140	27	-	71	20	16	19	4	5	24.5
G1-11	TVG0160AENC	160	29	-	82	25	20	23	4	5	30.8

DIN

Straight Fluted Taps for Cast Irons (For Medium Tapping Speed)

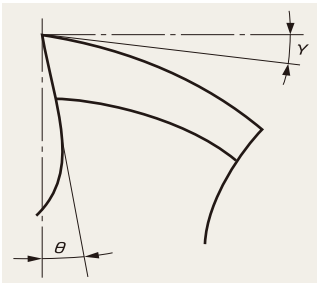
Z-PRO Ultimate Machining Taps **GGST**

HSS-E | Coating | <2D | C(2.5P)

Old code : GG-HT Coating

Features of GGST

- GGST has an optimized cutting geometry and coating.
- C (2.5P) chamfer are available.
- Recommended tapping speed is 10~20m/min with outside coolant.
- Size range: Metric: M3 to M24. Pipe: G1/8 to G1.



Rake angle
(Θ:Cutting angle,
γ:Chamfer relief angle)

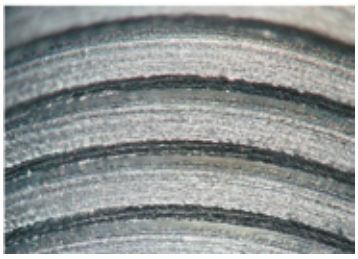
hydraulic component
made of Cast Irons

To keep a high accuracy of the shank diameter and circularity, the marking has been transferred from the shank to the square portion of the tap.

<GGST Tapping condition>

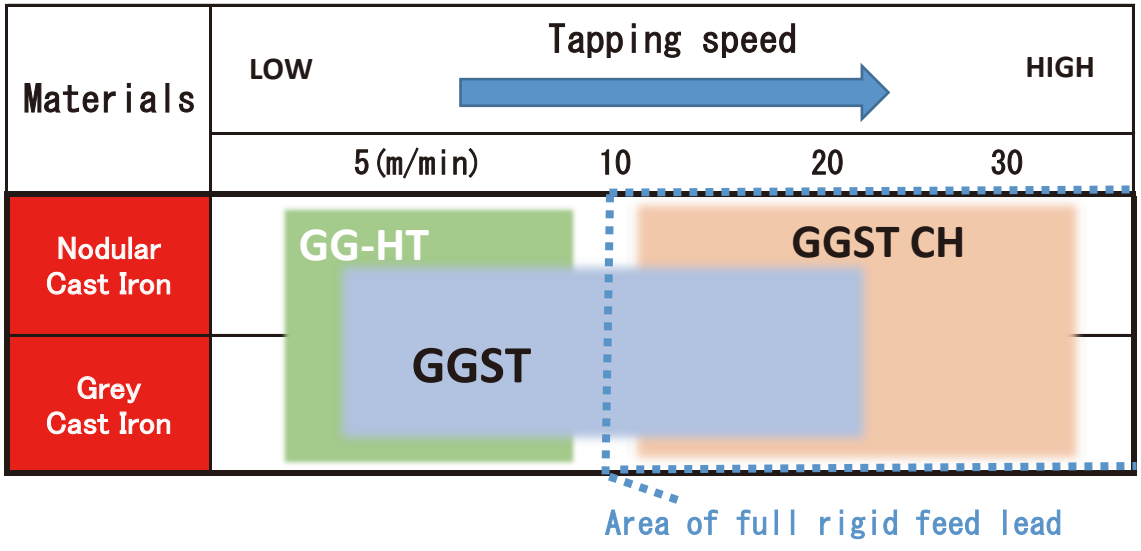
Size	G1/8-28
Material grade	GG25
Bored hole	8.8mm, Through hole
Tapping length	25.3mm
Machine	M/C Veritical
Tapping speed	20m/min
Lubrication	Water soluble oil
Feed	Rigid

Excellent internal thread surface !



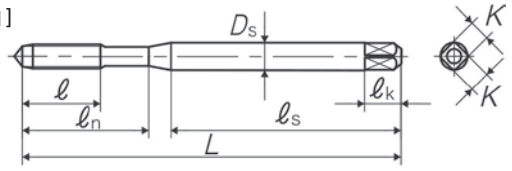
Recommended tapping speed of GG Taps

System Chart of GG Taps series

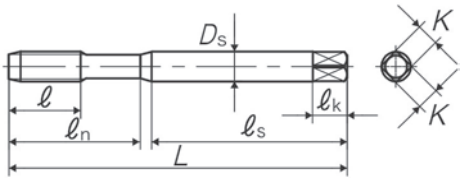


Think threads with YAMAWA

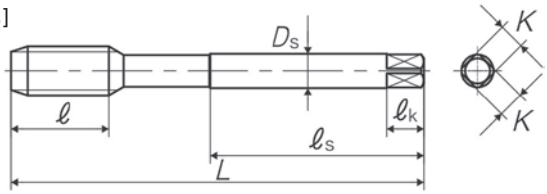
[TYPE:1]



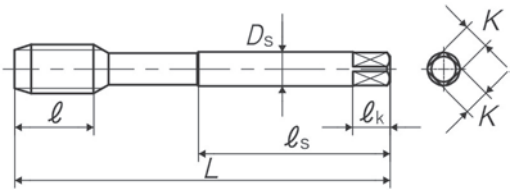
[TYPE:2]



[TYPE:3]



[TYPE:4]



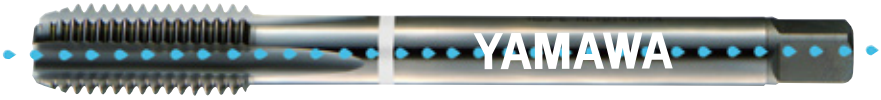
Dimensions and Sizes

Size	Code	L (mm)	ℓ (mm)	ℓn (mm)	ℓs (mm)	Ds (mm)	K (mm)	ℓk (mm)	No. of flutes	Type	Bored hole diameter (ref.) (mm)
M											
M3X0.5	3104101035	56	9	18	34	3.5	2.7	6	3	1	2.56
M4X0.7	3104101042	63	13	21	38	4.5	3.4	6	4	1	3.38
M5X0.8	3104101049	70	14	25	39	6	4.9	8	4	1	4.28
M6X1	3104101055	80	15	30	45	6	4.9	8	4	1	5.09
M8X1.25	3104101064	90	19	35	47	8	6.2	9	4	2	6.85
M10X1.5	3104101078	100	23	39	52	10	8	11	4	2	8.60
M12X1.75	3104101088	110	26	-	56	9	7	10	4	4	10.4
M14X2	3104101100	110	26	-	56	11	9	12	4	4	12.1
M16X2	3104101114	110	26	-	56	12	9	12	4	4	14.1
M18X2.5	3104101128	125	33	-	64	14	11	14	4	4	15.6
M20X2.5	3104101141	140	33	-	71	16	12	15	4	4	17.6
M22X2.5	3104101156	140	33	-	71	18	14.5	17	4	4	19.6
M24X3	3104101167	160	37	-	82	18	14.5	17	4	4	21.1
MF											
M8X1	3104101065	90	19	-	46	6	4.9	8	4	3	7.09
M10X1.25	3104101079	100	23	-	51	7	5.5	8	4	3	8.85
M10X1	3104101080	90	19	-	46	7	5.5	8	4	3	9.09
M12X1.5	3104101089	100	21	-	51	9	7	10	4	3	10.60
M12X1.25	3104101090	100	21	-	51	9	7	10	4	3	10.85
M12X1	3104101091	100	21	-	51	9	7	10	4	3	11.09
M14X1.5	3104101102	100	21	-	51	11	9	12	4	3	12.60
M16X1.5	3104101116	100	21	-	51	12	9	12	4	3	14.60
M18X1.5	3104101130	110	24	-	56	14	11	14	4	3	16.60
M20X1.5	3104101144	125	24	-	64	16	12	15	4	3	18.60
M22X1.5	3104101158	125	24	-	64	18	14.5	17	4	3	20.60
M24X1.5	3104101170	140	27	-	71	18	14.5	17	4	3	22.60
G											
G1/8-28	3104130004	90	19	-	46	7	5.5	8	4	3	8.78
G1/4-19	3104130006	100	21	-	51	11	9	12	4	3	11.78
G3/8-19	3104130008	100	21	-	51	12	9	12	4	3	15.28
G1/2-14	3104130009	125	24	-	64	16	12	15	4	3	19.0
G3/4-14	3104130011	140	27	-	71	20	16	19	4	3	24.5
G1-11	3104130013	160	29	-	82	25	20	23	4	3	30.8

DIN

Straight Fluted Taps for Cast Irons with Internal coolant (For Automobile parts)

Z-PRO Ultimate Machining Taps **GGST CH** HSS-E Coating C(2.5P) E(1.5P) Old code : GG-HT-OH Coating

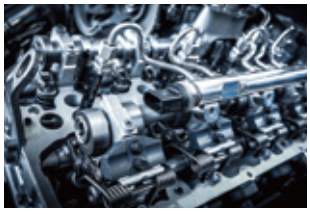


Automobile Parts made of Cast Irons

In the field of automotive parts machining, faster tapping speed and water soluble cutting fluid are using for the higher productivity.

Followings are the examples of automobile parts made of cast irons.

Engine Block



Cylinder head

Differential gear

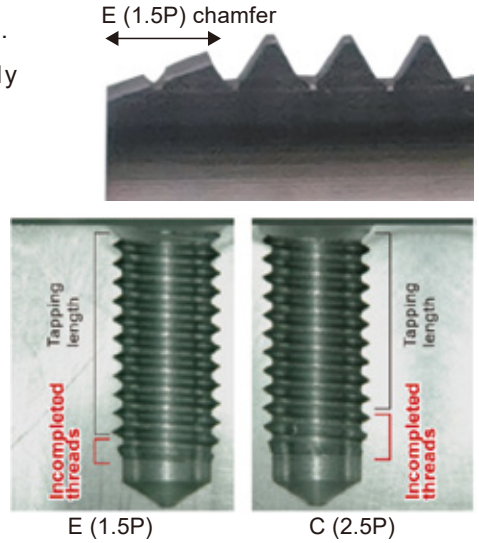
Counterweight

Popular thread size of automobile parts

M6X1 M8X1.25 M10X1.5 M10X1.25 M12X1.5 M12X1.25 M14X1.5 M16X1.5

Features of GGST CH

- GGST CH has an optimized cutting geometry and coating.
- Both C (2.5P) and E (1.5P) chamfer are available and only for blind hole use.
- E(1.5P) chamfer enables to produce threads as close as possible to the bottom of the blind holes. It can make shorter hole and can minimize the size of work piece.
- Axial Coolant Hole helps to eject powder shape chips and clean the hole.
- Recommended tapping speed is 10~30m/min.
- Sizes are available from M6 to M24.



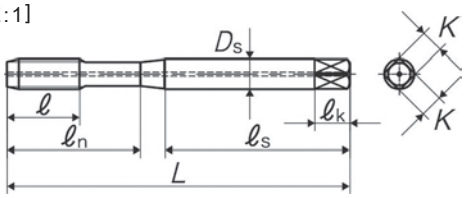
Tapping record of GGST CH

Size	Parts	Workpiece Material	Bored hole size (mm)	Hole depth	Tapping length	Machine	Tapping speed (m/min)	Feed	Lubrication	No. of tapped holes
M10X1.5	Engine block	GG25	8.60	19 (1.9D)	16.5	M/C	30	Synchronous	Emulsion	7,000
M10X1.5	Cylinder head	Grey cast iron	8.60	19 (1.9D)	16.5	M/C	30		Water soluble	3,000

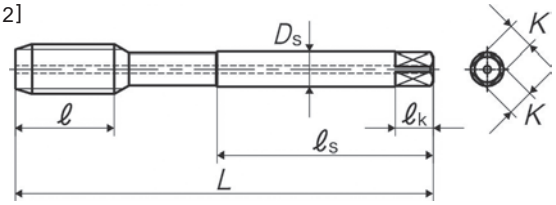
Still Running!

GGST CH C (2.5P)
GGST CH E (1.5P)

[TYPE:1]



[TYPE:2]



Dimensions and Sizes

Size	Code C (2.5P)	Code E(1.5P)	L (mm)	ℓ (mm)	ℓn (mm)	ℓs (mm)	Ds (mm)	K (mm)	ℓk (mm)	No. of flutes	Type	Bored hole diameter (ref.) (mm)
M												
M6X1	3205101055	3206101055	80	15	30	45	6	4.9	8	4	1	5.09
M7X1	3205101060	3206101060	80	15	30	45	7	5.5	8	4	1	6.09
M8X1.25	3205101064	3206101064	90	19	35	47	8	6.2	9	4	1	6.85
M10X1.5	3205101078	3206101078	100	23	39	52	10	8	11	4	1	8.60
M12X1.75	3205101088	3206101088	110	26	-	56	9	7	10	4	2	10.4
M14X2	3205101100	3206101100	110	26	-	56	11	9	12	4	2	12.1
M16X2	3205101114	3206101114	110	26	-	56	12	9	12	4	2	14.1
M18X2.5	3205101128	-	125	33	-	64	14	11	14	4	2	15.6
M20X2.5	3205101141	-	140	33	-	71	16	12	15	4	2	17.6
New M24X3	3205101167	-	160	37	-	82	18	14.5	17	4	2	21.1
MF												
M8X1	3205101065	-	90	19	-	46	6	4.9	8	4	1	7.09
M10X1.25	3205101079	3206101079	100	23	-	51	7	5.5	8	4	1	8.85
M10X1	3205101080	3206101080	90	19	-	46	7	5.5	8	4	1	9.09
M12X1.5	3205101089	3206101089	100	21	-	51	9	7	10	4	2	10.60
M12X1.25	3205101090	3206101090	100	21	-	51	9	7	10	4	2	10.85
M14X1.5	3205101102	3206101102	100	21	-	51	11	9	12	4	2	12.60
M16X1.5	3205101116	3206101116	100	21	-	51	12	9	12	4	2	14.60
M18X1.5	3205101130	-	110	24	-	56	14	11	14	4	2	16.60
M20X1.5	3205101144	-	125	24	-	64	16	12	15	4	2	18.60

DIN

Carbide Taps for Cast Irons, CT-FC (For Mass production)

CT-FC

HF | Grey cast iron ISO K1 5~15 (m/min) | Nodular cast iron ISO K2 5~15 (m/min) | C(2.5P)

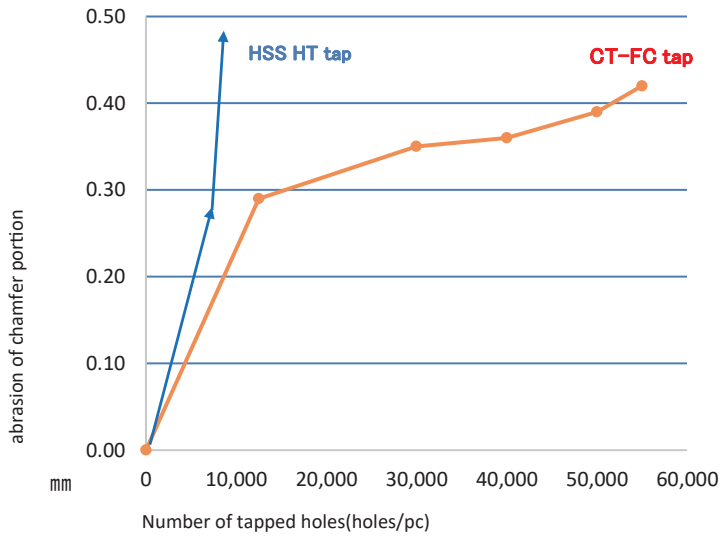
Taps are being used on machines that are dedicated like automated machines, CNC and Machining Centers. Yamawa recommends a carbide taps that is popular for mass production and that offers greater cost production. If applied properly, it is more than 50 times durable than the HSS taps. CT-FC is a carbide tap with a cutting angle specification based on the GG-HT tap to greatly increase wear resistance.

This graph shows the number of tapped holes and the number of taps using a M5X0.8 CT-FC with a 3 thread chamfer, and standard HSS HT tap with a 5 thread chamfer in GG25.

The CT-FC tap has about 50 times longer life than a standard HSS HT tap.

Comparison graph of abrasion amount of cutting edge at chamfer portion between CT-FC and HSS HT tap.

Tapping condition
Size: M5X0.8 Workpiece material: GG25 Bored hole size: 4.2mm
Machining Center Tapping speed: 8m/min Lubrication: Water soluble oil



Usage notes

To use the CT-FC taps properly without having problems, it is important to improve the processing environment. The hardness of CT-FC is much harder than HSS, but the toughness is low, so chipping and breakage problems may occur if not applied properly. When using the CT-FC, please be careful of any deviation of processing axis,curvature of pilot hole and positional deviation.

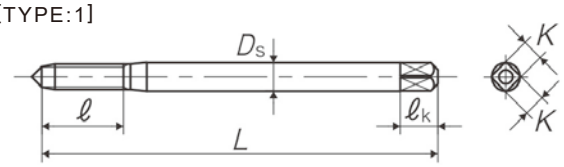
Tapping record of CT-FC

Size	Material grade	Bored hole size (mm)	Tapping length (mm)	Machine	Tapping speed (m/min)	Feed	Lubrication	No. of tapped holes
M6X1	GG25	5.09	12(2D)	M/C	12	Synchronous	Water soluble	70,000
M6X1		5.00	10(1.6D)	M/C	8			53,000
M8X1.25		6.85	16(2D)	M/C	16			18,860
M10X1.25		8.70	18(1.8D)	Special machine	15			38,500
M8X1.25	GG30	6.85	24(3D)	M/C	10			64,000

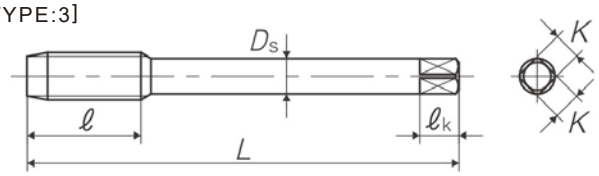
CT-FC

DIN

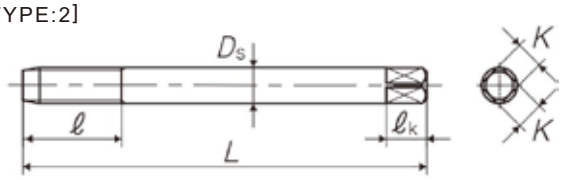
[TYPE:1]



[TYPE:3]



[TYPE:2]



Dimensions and Sizes

Size	Class	Code	L (mm)	ℓ (mm)	Ds (mm)	K (mm)	ℓk (mm)	No. of flutes	Type	Bored hole diameter (ref.) (mm)
M										
M3X0.5	ISO2X	36263.0	56	11	3.5	2.7	6	3	1	2.56
M4X0.7	ISO2X	36264.0	63	13	4.5	3.4	6	4	1	3.38
M5X0.8	ISO2X	36265.0	70	16	6	4.9	8	4	1	4.28
M6X1	ISO2X	36266.0	80	19	6	4.9	8	4	1	5.09
M8X1.25	ISO2X	36268.0	90	22	8	6.2	9	4	2	6.85
M10X1.5	ISO2X	3626010	100	24	10	8	11	4	2	8.60
M12X1.75	ISO2X	3726012	110	29	9	7	10	4	3	10.4
M14X2	ISO2X	3726014	110	30	11	9	12	4	3	12.1
M16X2	ISO2X	3726016	110	32	12	9	12	4	3	14.1

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.

YAMAWA MFG. Co., Ltd.

Head office Nakajima Gold bldg.13-10 Kyobashi 3chome, Chuo-ku, Tokyo 104-0031, JAPAN

Website:http://www.yamawa.com

YAMAWA group for Overseas

YAMAWA International Co., Ltd.

ISO 9001 JQA-QMA14664

ISO 14001 JQA-EM3465