



# YG Synchro TAP

**TIN/TiCN-COATED  
HSS-PM (Powder Metallurgy) TAPS**  
For High-Speed Tapping on Rigid CNC Machine

## YG-1 CO., LTD.

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**Note** The new address above has currently been updated since Korean new postal standard was valid from 2014.  
Be noticed that the physical Headquarter location is NOT changed.

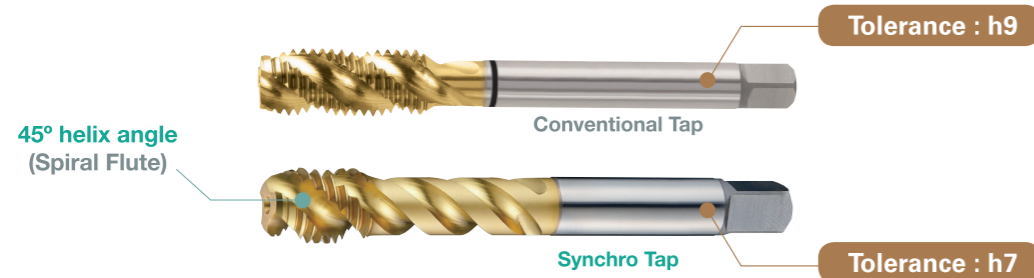


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## FEATURES OF GEOMETRY

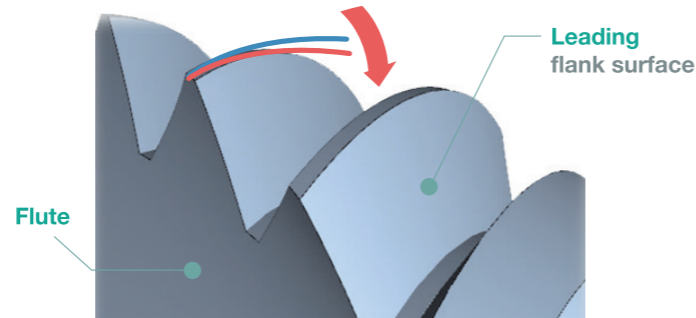
- ▶ **Shorter thread length** will reduce chip problems at higher speed tapping conditions



- ▶ **Shank Tolerance 'h7'** for precision clamping and rigid tapping

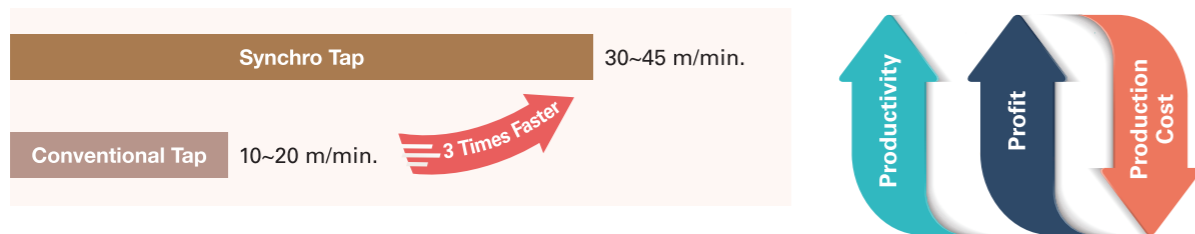
- ▶ **More thread relief** allows high speed cutting

- ▶ **HSS-PM (Powder Metallurgy)** for more reliable performance and wear resistance

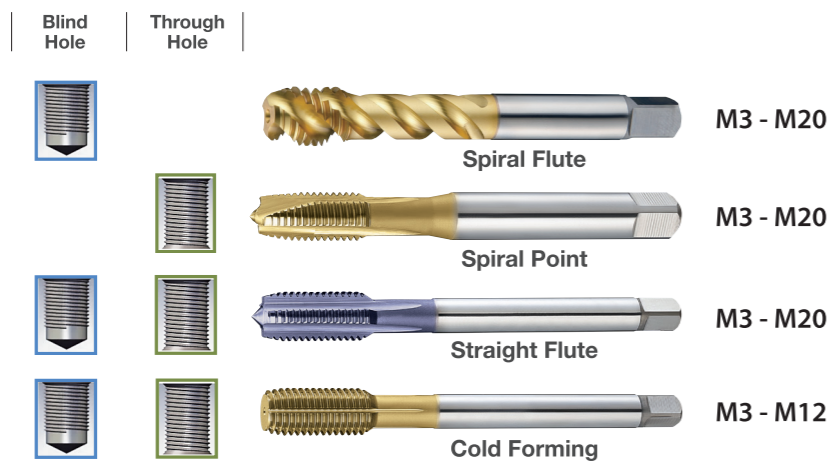


## ADVANTAGES

- ▶ **PRODUCTIVITY**  
Up to 3 times Faster in tapping compared to conventional taps (General Steel)

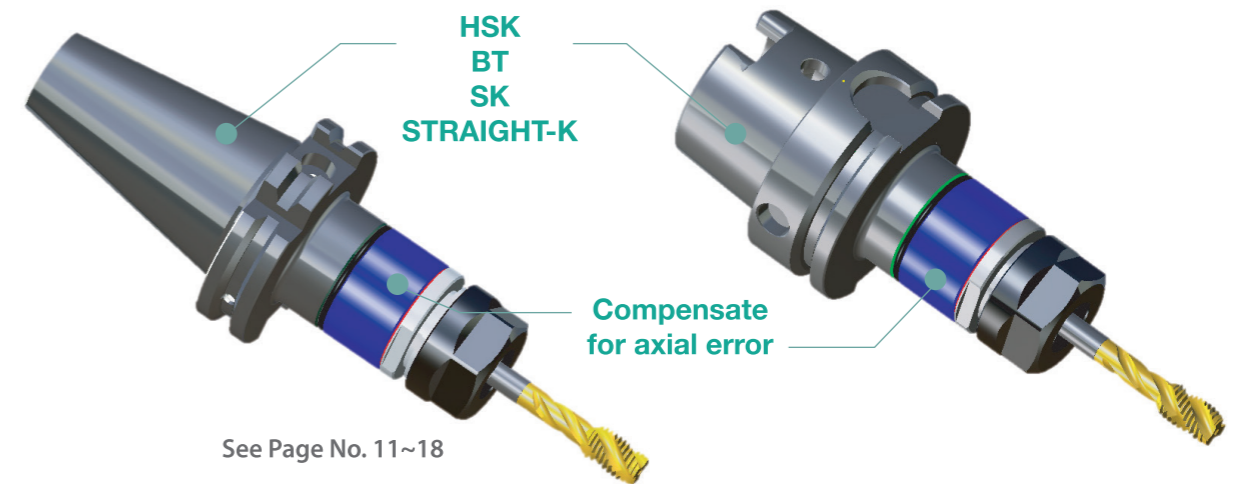


- ▶ **4 kinds of taps are available**



## SYNCHRO TAPPING CHUCK (ER TYPE)

- ▶ When using Synchro taps, YG-1 strongly recommends SYNCHRO Tapping Chuck for the best thread quality and superior tool life



## GUIDE LINE TO ICONS

### Working Material

**GS**  
Steels with good machinability  
Rm < 850N/mm<sup>2</sup>

**GV**  
Any material with at least  
8~10% elongation

### Tool Raw Material

**HSS-PM**

### Helix Angle

**R45**

### Standard of Tools

**DIN 371/376**  
Number of DIN Standard

### Class of Thread

**6H 6HX**

### Thread Angle

**60°**

### Chamfer Lead

**B C**

### Surface Treatment

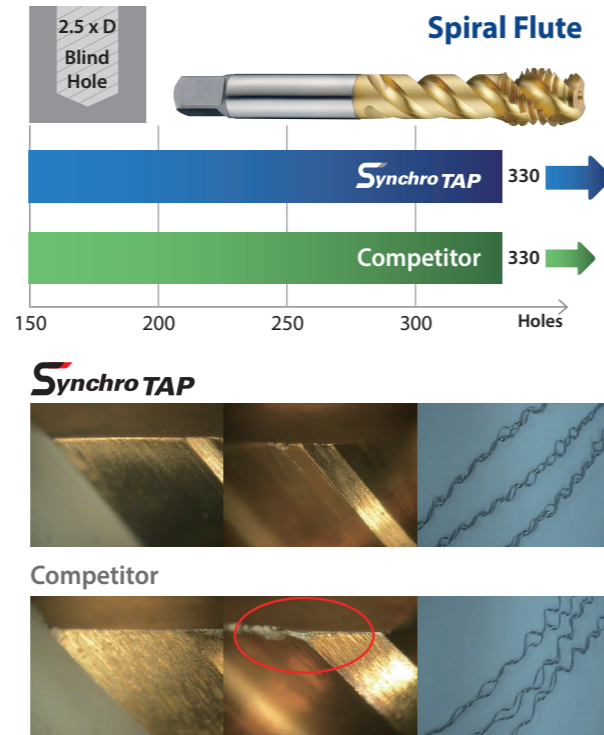
**TICN**  
Titanium Carbon Nitride Coating

**TIN**  
Titanium Nitride Coating

## CASE STUDY

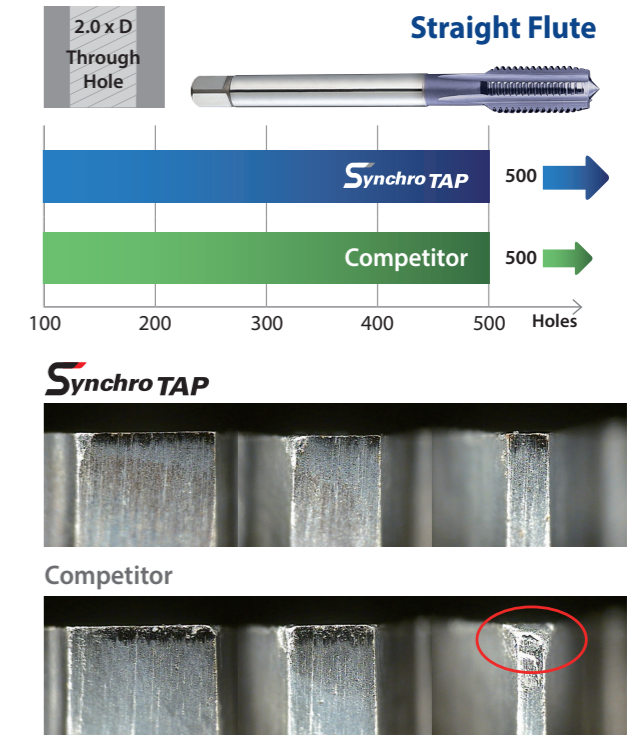
### ► SPIRAL FLUTE TAP M10 x 1.5

Tool	Synchro TAP Spiral Flute Tap	Competitor
Size	M10 x 1.5	
Work Material	C45 / 1045 / S45C Hardness : HRc20	
Cutting Speed	30 m/min.	
RPM	955 rev./min.	
Tapping Depth	25.0 mm (2.5xD / Blind Hole)	
Tapping Holes	330	
Cooling Method	External Cooling Water Soluble (9% Emulsion)	
Machine	Vertical Machining Center	



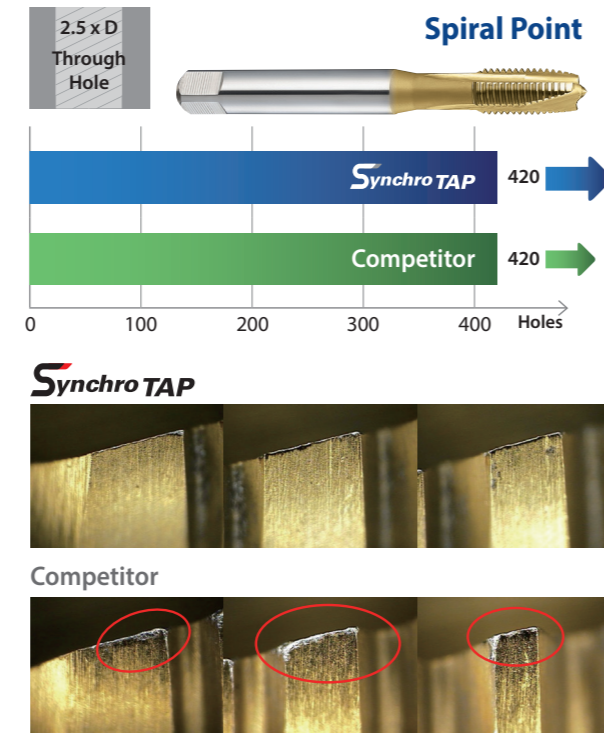
### ► STRAIGHT FLUTE TAP M10 x 1.5

Tool	Synchro TAP Straight Flute Tap	Competitor
Size	M10 x 1.5	
Work Material	4140 / 42CrMo4 / SCM440 Hardness : HRc20	
Cutting Speed	25 m/min.	
RPM	1326 rev./min.	
Tapping Depth	20.0 mm (2.0xD / Through Hole)	
Tapping Holes	500	
Cooling Method	External Cooling Water Soluble (9% Emulsion)	
Machine	Vertical Machining Center	



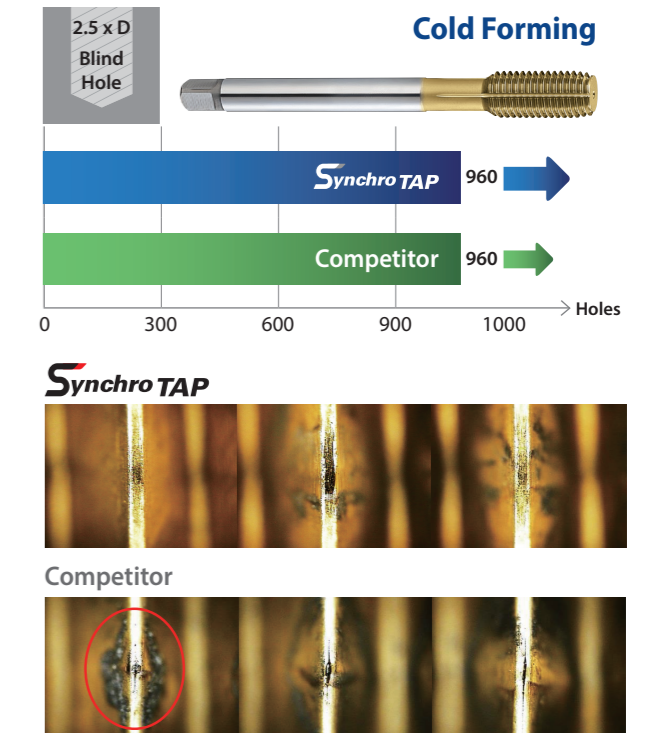
### ► SPIRAL POINT TAP M6 x 1.0

Tool	Synchro TAP Spiral Point Tap	Competitor
Size	M6 x 1.0	
Work Material	4140 / 42CrMo4 / SCM440 Hardness : HRc20	
Cutting Speed	30 m/min.	
RPM	1592 rev./min.	
Tapping Depth	15.0 mm (2.5xD / Through Hole)	
Tapping Holes	420	
Cooling Method	External Cooling Water Soluble (9% Emulsion)	
Machine	Vertical Machining Center	

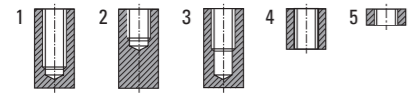


### ► COLD FORMING TAP M6 x 1.0

Tool	Synchro TAP Cold Forming Tap	Competitor
Size	M6 x 1.0	
Work Material	1045 / C45 / S45C Hardness : HRc20	
Cutting Speed	35 m/min.	
RPM	1857 rev./min.	
Tapping Depth	15.0 mm (2.5xD / Blind Hole)	
Tapping Holes	960	
Cooling Method	External Cooling Water Soluble (9% Emulsion)	
Machine	Vertical Machining Center	



### MACHINE TAPS RECOMMENDATION TABLE



MATERIAL GROUPS	GS	GS	GS	GV
SERIES	TTS31	TTS33	TKS35	TTS37
FLUTE TYPE	Spiral Flute	Spiral Point	Straight Flute	Cold Forming
PAGE	7	8	9	10
THREAD TYPE	M	M	M	M
TAP MATERIAL	HSS-PM	HSS-PM	HSS-PM	HSS-PM
DESCRIPTION	DIN 371/376			
SURFACE TREATMENT / COATING	TiN	TiN	TiCN	TiN
SPIRAL FLUTE ANGLE	R45	-	-	-
CHAMFER LEAD ACC. DIN 2197	C	B	C	C
THREAD DEPTH	2.5D	3.0D	2.0D	3.0D
HOLE TYPE	2-3	4-5	1-2-3 -4-5	1-2-3 -4-5

### Synchro TAP

TiN/TiCN-COATED HSS-PM TAPS

USE ◎ = EXCELLENT ○ = GOOD

MATERIAL GROUPS	LIST OF MATERIALS	TENSILE STRENGTH N/mm <sup>2</sup>	HARDNESS HB	CUTTING SPEED m/min.					
10. STEELS	11 Steel	Magnetic Soft Steels	< 400	< 120	41~46	◎	◎	◎	◎
	12 Steel	Structure Steels	< 700	< 200	41~46	◎	◎	◎	◎
	13 Steel	Plain Carbon Steels	< 850	< 250	35~40	◎	◎	◎	◎
	14 St. Alloy	Alloy Steels	< 850	< 250	28~33	◎	◎	◎	◎
	15 St. Alloy	Alloy Steels, Hardened Steels	≤1,200	< 350	17~22				
	16 St. Alloy	Alloy Steels, Hardened Steels	> 1,200	> 350	7~12				
20. STAINLESS STEELS	21 INOX Free	Free Machining	< 850	< 250	18~23				◎
	22 INOX Aust.	Austenitic	< 850	< 250	13~18				◎
	23 INOX	Ferritic, Ferritic+Austenitic, Martensitic	< 1,000	< 300	10~15				
30. CAST IRON	31 GG cast	Grey Cast Iron	< 500	< 150	28~33	○	○	○	
	32 GG cast	Grey Cast Iron	< 1,000	< 300	13~18				
	33 GGG cast	Nodular Graphite, Malleable Cast Iron	< 700	< 200	28~33	◎	◎	◎	
	34 GGG cast	Nodular Graphite, Malleable Cast Iron	< 1,000	< 300	13~18				
60. COPPER, BRASS, BRONZE	61 Cu	Copper, Unalloyed	< 350	< 100	22~27	○	○		◎
	62 Cu Alloy (Short)	Short chip Brass, Bronze, Copper	< 700	< 200	72~77				
	63 Cu Alloy (Long)	Long chip Brass, Bronze, Copper	< 700	< 200	41~46	◎	◎		○
	64 Cu-Al-Fe	Cu-Al-Fe Alloys	< 1,500	< 470	7~12				
70. ALUMINUM	71 Al / Mg	Aluminum, Magnesium, Unalloyed	< 350	< 100	28~33				◎
	72 Al Wrought	Aluminum, Alloyed, Si < 1.5%	< 500	< 150	72~77				◎
	73 Al (Si ≤ 10%)	Aluminum, Alloyed, Si ≤ 10%	< 400	< 120	41~46	◎	◎		◎
	74 Al (Si > 10%)	Aluminum, Alloyed, Si > 10%	< 400	< 120	28~33	◎	◎	○	○
80. PLASTICS	81 Thermosoft	Thermoplastics			60~65	○	○		
	82 Thermoset	Thermosetting Plastics			22~27				
	83 FRP	Fiber Reinforced Plastics			12~17				

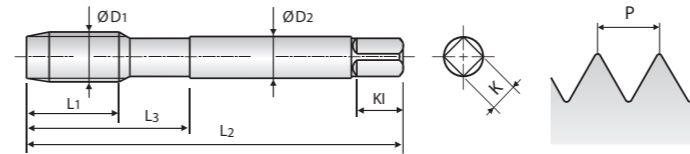
SERIES	MODEL	DESCRIPTION	PAGE
SYTER		SYNCHRO TAPPING CHUCK (ER TYPE)	11~14
CAT			15
SYTC		SYNCHRO TAPPING CHUCK (QUICK CHANGE TYPE)	16~18

## M SPIRAL FLUTE TAPS ISO metric coarse threads DIN 13

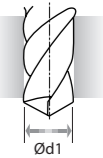
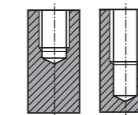
TTS31 SERIES



- ▶ Suitable for high speed machining and high precision threads
- ▶ Applicable to 2-3 times faster cutting speed than minimum general GS Taps cutting speeds



Hole type 2.5XD



Material groups: **GS** HSS-PM DIN 371/376 6H 60° C TiN R45

Size	Pitch	EDP No.	Thread Length	Overall Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Flute	Tapping Drill Diameter
ØD1	P	TiN	L1	L2	L3	ØD2	K	KI	Z	Ød1
M3	x 0.5	TTS31206	6	56	18	3.5	2.7	6	3	2.5
M4	x 0.7	TTS31246	7	63	21	4.5	3.4	6	3	3.3
M5	x 0.8	TTS31286	8	70	25	6	4.9	8	3	4.2
M6	x 1.0	TTS31316	10	80	30	6	4.9	8	3	5
M8	x 1.25	TTS31366	13	90	35	8	6.2	9	3	6.8
M10	x 1.5	TTS31426	15	100	39	10	8	11	3	8.5
M12	x 1.75	TTS31506	18	110	44	9	7	10	3	10.2
M14	x 2.0	TTS31546	20	110	44	11	9	12	3	12
M16	x 2.0	TTS31606	20	110	44	12	9	12	3	14
M18	x 2.5	TTS31656	25	125	50	14	11	14	4	15.5
M20	x 2.5	TTS31706	25	140	54	16	12	15	4	17.5

- ▶ DIN 371(M3-M10) and DIN 376(M12-M20)
- ▶ Coating(TiAlN) is available on your request.

Unit : N/mm<sup>2</sup> ◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎						○		◎			
Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si ≤ 10%	Al Si > 10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
				○		◎				◎	◎	○		

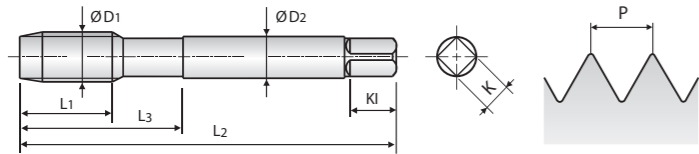
# M SPIRAL POINT TAPS

## ISO metric coarse threads DIN 13

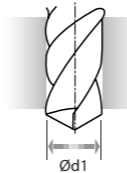
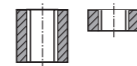
**TTS33** SERIES



- Suitable for high speed machining and high precision threads
- Applicable to 2-3 times faster cutting speed than minimum general GS Taps cutting speeds



Hole type 3.0XD



Material groups: **GS** HSS-PM DIN 371/376 6HX 60° B TiN

Unit : mm

Size	Pitch	EDP No.	Thread Length	Overall Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Flute	Tapping Drill Diameter
ØD1	P	TiN	L1	L2	L3	ØD2	K	KI	Z	Ød1
M3	x 0.5	<b>TTS33206</b>	5	56	18	3.5	2.7	6	3	2.5
M4	x 0.7	<b>TTS33246</b>	7	63	21	4.5	3.4	6	3	3.3
M5	x 0.8	<b>TTS33286</b>	8	70	25	6	4.9	8	3	4.2
M6	x 1.0	<b>TTS33316</b>	10	80	30	6	4.9	8	3	5
M8	x 1.25	<b>TTS33366</b>	13	90	35	8	6.2	9	3	6.8
M10	x 1.5	<b>TTS33426</b>	15	100	39	10	8	11	3	8.5
M12	x 1.75	<b>TTS33506</b>	18	110	44	9	7	10	4	10.2
M14	x 2.0	<b>TTS33546</b>	20	110	44	11	9	12	4	12
M16	x 2.0	<b>TTS33606</b>	20	110	44	12	9	12	4	14
M18	x 2.5	<b>TTS33656</b>	25	125	50	14	11	14	4	15.5
M20	x 2.5	<b>TTS33706</b>	25	140	54	16	12	15	4	17.5

- DIN 371(M3-M10) and DIN 376(M12-M20)
- Coating(TiAIN) is available on your request.

Unit : N/mm<sup>2</sup> ◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤1200	St. Alloy >1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎						○		◎			
Ti Alloy ≤1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
				○		◎			◎	◎		○		

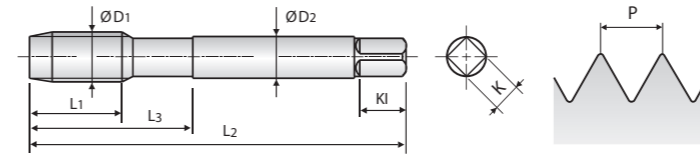
# M STRAIGHT FLUTE TAPS

## ISO metric coarse threads DIN 13

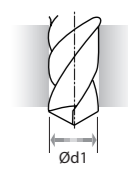
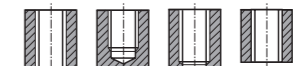
**TKS35** SERIES



- Suitable for high speed machining and high precision threads
- Applicable to 2-3 times faster cutting speed than minimum general GS Taps cutting speeds



Hole type 2.0XD



Material groups: **GS** HSS-PM DIN 371/376 6HX 60° C TiCN

Unit : mm

Size	Pitch	EDP No.	Thread Length	Overall Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Flute	Tapping Drill Diameter
ØD1	P	TiCN	L1	L2	L3	ØD2	K	KI	Z	Ød1
M3	x 0.5	<b>TKS35206</b>	5	56	18	3.5	2.7	6	3	2.5
M4	x 0.7	<b>TKS35246</b>	7	63	21	4.5	3.4	6	3	3.3
M5	x 0.8	<b>TKS35286</b>	8	70	25	6	4.9	8	3	4.2
M6	x 1.0	<b>TKS35316</b>	10	80	30	6	4.9	8	3	5
M8	x 1.25	<b>TKS35366</b>	13	90	35	8	6.2	9	3	6.8
M10	x 1.5	<b>TKS35426</b>	15	100	39	10	8	11	4	8.5
M12	x 1.75	<b>TKS35506</b>	18	110	44	9	7	10	4	10.2
M14	x 2.0	<b>TKS35546</b>	20	110	44	11	9	12	4	12
M16	x 2.0	<b>TKS35606</b>	20	110	44	12	9	12	4	14
M18	x 2.5	<b>TKS35656</b>	25	125	50	14	11	14	4	15.5
M20	x 2.5	<b>TKS35706</b>	25	140	54	16	12	15	4	17.5

- DIN 371(M3-M10) and DIN 376(M12-M20)
- Coating(TiAIN) is available on your request.

Unit : N/mm<sup>2</sup> ◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤1200	St. Alloy >1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎						○		◎			
Ti Alloy ≤1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
				○					◎	◎		○		

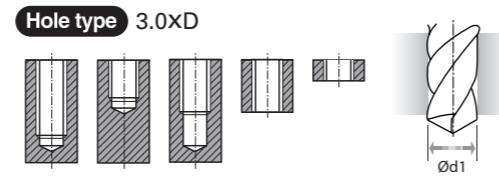
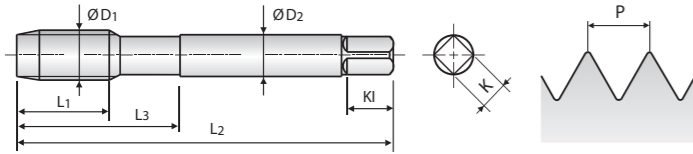
# M COLD FORMING TAPS

## ISO metric coarse threads DIN 13

**TTS37** SERIES



- ▶ Suitable for high speed machining and high precision threads
- ▶ Applicable to 2-3 times faster cutting speed than minimum general GV Taps cutting speeds



Material groups: **GV** HSS-PM DIN 371/376 6HX 60° C TiN

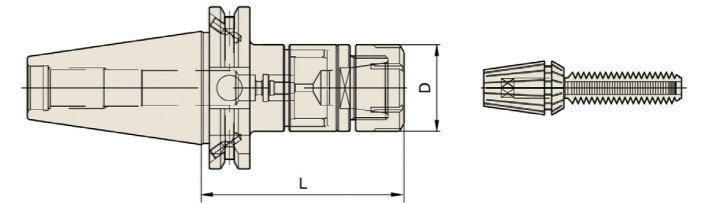
Unit : mm

Size	Pitch	EDP No.	Thread Length	Overall Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Lobe	Tapping Drill Diameter
ØD1	P	TiN	L1	L2	L3	ØD2	K	Kl	Z	Ød1
M3	x 0.5	<b>TTS37206</b>	5	56	18	3.5	2.7	6	5	2.8
M4	x 0.7	<b>TTS37246</b>	7	63	21	4.5	3.4	6	5	3.7
M5	x 0.8	<b>TTS37286</b>	8	70	25	6	4.9	8	5	4.65
M6	x 1.0	<b>TTS37316</b>	10	80	30	6	4.9	8	5	5.55
M8	x 1.25	<b>TTS37366</b>	13	90	35	8	6.2	9	5	7.4
M10	x 1.5	<b>TTS37426</b>	15	100	39	10	8	11	6	9.3
M12	x 1.75	<b>TTS37506</b>	18	110	44	9	7	10	6	11.2

▶ DIN 371(M3-M10) and DIN 376(M12)

# SYNCHRO TAPPING CHUCK (ER TYPE)

**SYTER** SERIES



## ■ DIN 69871-SK

DIN 69871 -SK Taper Accuracy AT3 G Value - RPM - Coolant System AD/B

Unit : mm

TAPER No.	MODEL No.	EDP No.	Tap Size	Clamping Range	Nut	D	L
40	<b>SK40AD/B-SYTER12-79</b>	<b>P2773701</b>	M2-M8	3.0 - 6.2	ER16	28	79
	<b>SK40AD/B-SYTER16-85</b>	<b>P2773702</b>	M3-M10	4.0 - 7.0	ER20	34	85
	<b>SK40AD/B-SYTER20-90</b>	<b>P2773703</b>	M3-M14	4.0 - 10.5	ER25	42	90
	<b>SK40AD/B-SYTER27-100</b>	<b>P2773704</b>	M4-M18	5.0 - 14.0	ER32	50	100
	<b>SK40AD/B-SYTER33-120</b>	<b>P2773705</b>	M8-M24	6.2 - 19.0	ER40	63	120
50	<b>SK50AD/B-SYTER12-79</b>	<b>P2773706</b>	M2-M8	3.0 - 6.2	ER16	28	79
	<b>SK50AD/B-SYTER16-85</b>	<b>P2773707</b>	M3-M10	4.0 - 7.0	ER20	34	85
	<b>SK50AD/B-SYTER20-90</b>	<b>P2773708</b>	M3-M14	4.0 - 10.5	ER25	42	90
	<b>SK50AD/B-SYTER27-100</b>	<b>P2773709</b>	M4-M18	5.0 - 14.0	ER32	50	100
	<b>SK50AD/B-SYTER33-105</b>	<b>P2773710</b>	M8-M24	6.2 - 19.0	ER40	63	105

▶ FEATURE :

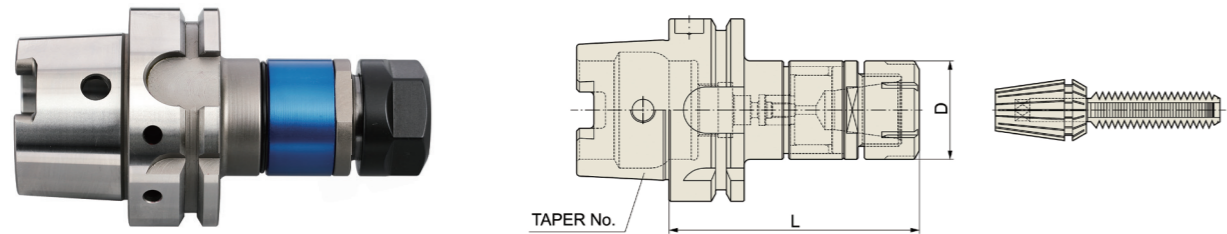
- To compensate for synchronization errors to extend tap life and to improve thread quality
- To compensate for pitch tolerances of taps
- For machine with synchronized spindle

Unit : N/mm<sup>2</sup> ◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎			◎	◎							
Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
				◎		○		◎	◎	◎	○			

## SYNCHRO TAPPING CHUCK (ER TYPE)

**SYTER** SERIES



### ■ DIN 69893/ISO 12164-1-HSK FORM A

DIN 69893 - HSK	Taper Accuracy -	G Value -	RPM -	Coolant System AD
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Unit : mm

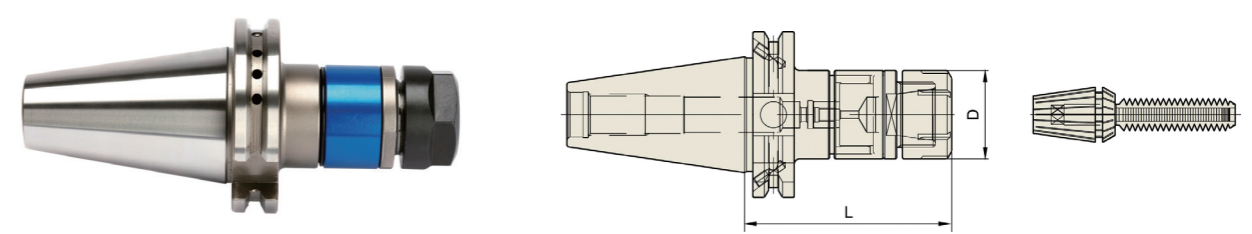
TAPER No.	MODEL No.	EDP No.	Tap Size	Clamping Range	Nut	D	L
63A	HSK63A-SYTER16-90	P2773801	M3-M10	4.0 - 7.0	ER20	34	90
	HSK63A-SYTER20-94	P2773802	M3-M14	4.0 - 10.5	ER25	42	94
	HSK63A-SYTER27-105	P2773803	M4-M18	5.0 - 14.0	ER32	50	105

#### ▶ FEATURE :

- To compensate for synchronization errors to extend tap life and to improve thread quality
- To compensate for pitch tolerances of taps
- For machine with synchronized spindle

## SYNCHRO TAPPING CHUCK (ER TYPE)

**SYTER** SERIES



### ■ JIS B6339/MAS 403-BT

JIS B6339 - BT	Taper Accuracy AT3	G Value -	RPM -	Coolant System AD/B
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Unit : mm

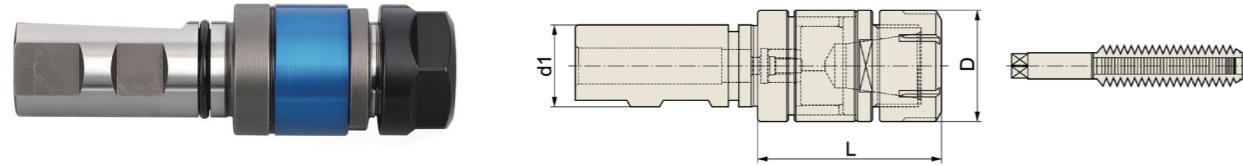
TAPER No.	MODEL No.	EDP No.	Tap Size	Clamping Range	Nut	D	L
40	BT40AD/B-SYTER12-79	P2776301	M2-M8	3.0 - 6.2	ER16	28	79
	BT40AD/B-SYTER16-85	P2776302	M3-M10	4.0 - 7.0	ER20	34	85
	BT40AD/B-SYTER20-90	P2776303	M3-M14	4.0 - 10.5	ER25	42	90
	BT40AD/B-SYTER27-100	P2776304	M4-M18	5.0 - 14.0	ER32	50	100
	BT40AD/B-SYTER33-125	P2776305	M8-M24	6.2 - 19.0	ER40	63	125
50	BT50AD/B-SYTER12-100	P2776306	M2-M8	3.0 - 6.2	ER16	28	100
	BT50AD/B-SYTER16-100	P2776307	M3-M10	4.0 - 7.0	ER20	34	100
	BT50AD/B-SYTER20-100	P2776308	M3-M14	4.0 - 10.5	ER25	42	100
	BT50AD/B-SYTER27-110	P2776309	M4-M18	5.0 - 14.0	ER32	50	110
	BT50AD/B-SYTER33-125	P2776310	M8-M24	6.2 - 19.0	ER40	63	125

#### ▶ FEATURE :

- To compensate for synchronization errors to extend tap life and to improve thread quality
- To compensate for pitch tolerances of taps
- For machine with synchronized spindle

## SYNCHRO TAPPING CHUCK (ER TYPE)

### SYTER SERIES



#### STRAIGHT-K

Unit : mm

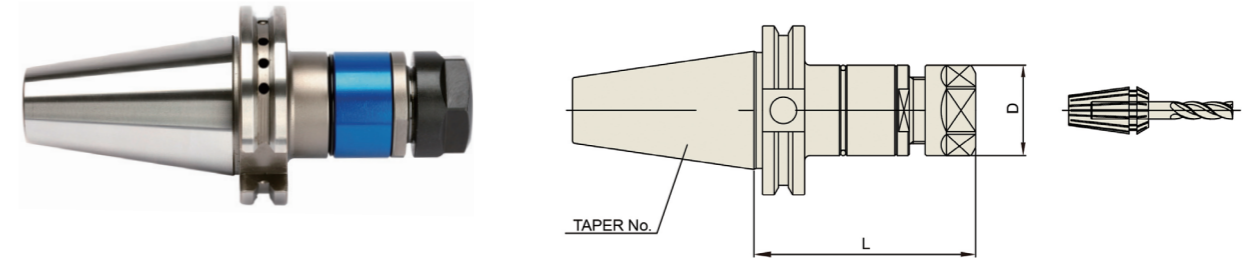
MODEL No.	EDP No.	Tap Size	Clamping Range	Nut / Collect	D	L	d1
<b>K20-SYTER16</b>	<b>P2773901</b>	M3-M10	4.0 - 7.0	ER20	34	58	20
<b>K25-SYTER16</b>	<b>P2773902</b>	M3-M10	4.0 - 7.0	ER20	34	61	25
<b>K25-SYTER27</b>	<b>P2773903</b>	M4-M18	5.0 - 14.0	ER32	50	69	25

#### FEATURE :

- To compensate for synchronization errors to extend tap life and to improve thread quality
- To compensate for pitch tolerances of taps
- For machine with synchronized spindle

## SYNCHRO TAPPING CHUCK (ER TYPE)

### CAT SERIES



ASME B5.50 -CAT	Taper Accuracy AT3	G Value -	RPM -	Coolant System AD/B
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#### ASME B5.50-2009-CAT

Unit : mm

TAPER No.	MODEL No.	EDP No.	Tap Size	Clamping Range	Nut	D	L
40	<b>CAT40AD/B-SYTER12-79</b>	<b>JK060SYT</b>	M3-M12	3.5 - 10.0	ER16	28	79
	<b>CAT40AD/B-SYTER16-85</b>	<b>JK062SYT</b>	M3-M16	3.5 - 10.0	ER20	35	85
	<b>CAT40AD/B-SYTER20-90</b>	<b>JK064SYT</b>	M3-M20	3.5 - 16.0	ER25	42	90
	<b>CAT40AD/B-SYTER27-100</b>	<b>JK066SYT</b>	M4-M27	3.5 - 16.0	ER32	50	100
	<b>CAT40AD/B-SYTER33-105</b>	<b>JK068SYT</b>	M4-M33	7.0 - 16.0	ER40	63	105
50	<b>CAT50AD/B-SYTER12-79</b>	<b>JL060SYT</b>	M3-M12	3.5 - 10.0	ER16	28	79
	<b>CAT50AD/B-SYTER16-85</b>	<b>JL062SYT</b>	M3-M16	3.5 - 10.0	ER20	35	85
	<b>CAT50AD/B-SYTER20-90</b>	<b>JL064SYT</b>	M3-M20	3.5 - 16.0	ER25	42	90
	<b>CAT50AD/B-SYTER27-100</b>	<b>JL066SYT</b>	M4-M27	3.5 - 16.0	ER32	50	100
	<b>CAT50AD/B-SYTER33-105</b>	<b>JL068SYT</b>	M4-M33	7.0 - 16.0	ER40	63	105

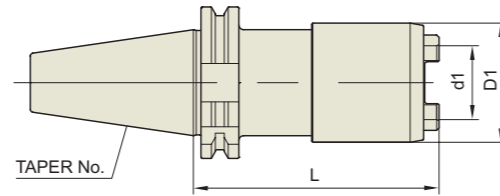
#### FEATURE :

- To compensate for synchronization errors to extend tap life and to improve thread quality
- To compensate for pitch tolerances of taps
- For machine with synchronized spindle



## SYNCHRO TAPPING CHUCK (QUICK CHANGE TYPE)

**SYTC** SERIES



### ■ DIN 69871-SK

DIN 69871 -SK	Taper Accuracy AT3	G Value -	RPM -	Coolant System A
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Unit : mm

TAPER No.	MODEL No.	EDP No.	Tap Size	Matching Inserts	d1	D1	L	Weight (Kg)
30	SK30-SYTC12-65	P2774207	M3-M12	1	19	36	65	0.50
	SK30-SYTC20-89	P2774208	M6-M24	2	31	50	89	1.00
40	SK40-SYTC12-65	P2774201	M3-M12	1	19	36	65	1.10
	SK40-SYTC20-79	P2774202	M6-M24	2	31	50	79	1.50
50	SK40-SYTC33-115	P2774203	M18-M38	3	48	74	115	3.30
	SK50-SYTC12-65	P2774204	M3-M12	1	19	36	65	3.00
	SK50-SYTC20-79	P2774205	M6-M24	2	31	50	79	3.30
	SK50-SYTC33-115	P2774206	M18-M38	3	48	74	115	5.20

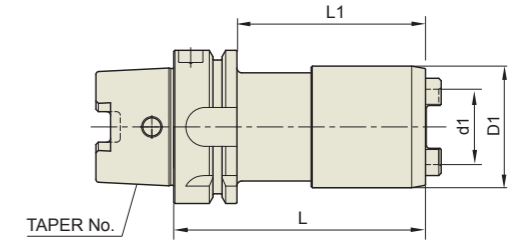
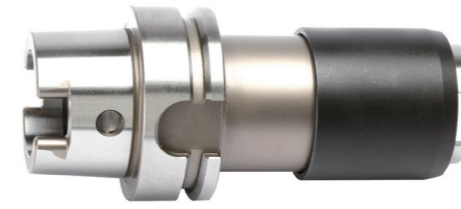
#### ► FEATURE :

- To compensate for synchronization errors to extend tap life and to improve thread quality
- To compensate for pitch tolerances of taps
- For machine with synchronized spindle

► CAT(ANSI B5.50) taper and Inch type products are available.

## SYNCHRO TAPPING CHUCK (QUICK CHANGE TYPE)

**SYTC** SERIES



### ■ DIN 69893/ISO 12164-1-HSK FORM A

DIN 69893 -HSK	Taper Accuracy -	G Value -	RPM -	Coolant System A
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Unit : mm

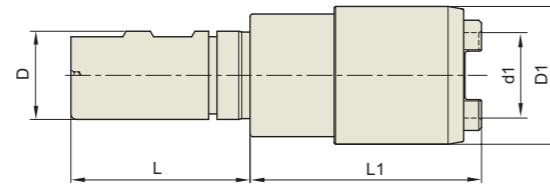
TAPER No.	MODEL No.	EDP No.	Tap Size	Matching Inserts	d1	D1	L	L1
32A	HSK32A-SYTC12-75	P2774314	M3-M12	1	19	36	75	55
50A	HSK50A-SYTC12-72	P2774315	M3-M12	1	19	36	72	46
	HSK50A-SYTC20-91	P2774316	M6-M24	2	31	50	91	65
63A	HSK63A-SYTC12-75	P2774301	M3-M12	1	19	36	75	49
	HSK63A-SYTC12-80	P2774302	M3-M12	1	19	36	80	54
	HSK63A-SYTC12-120	P2774303	M3-M12	1	19	36	120	94
	HSK63A-SYTC12-152	P2774304	M3-M12	1	19	36	152	126
	HSK63A-SYTC12-180	P2774305	M3-M12	1	19	36	180	154
	HSK63A-SYTC20-89	P2774306	M6-M24	2	31	50	89	63
100A	HSK63A-SYTC33-121	P2774307	M18-M38	3	48	74	121	95
	HSK100A-SYTC12-75	P2774308	M3-M12	1	19	36	75	43
	HSK100A-SYTC12-160	P2774309	M3-M12	1	19	36	160	131
	HSK100A-SYTC20-94	P2774310	M6-M24	2	31	50	94	65
	HSK100A-SYTC20-160	P2774311	M6-M24	2	31	50	160	131
	HSK100A-SYTC33-127	P2774312	M18-M38	3	48	74	127	98
	HSK100A-SYTC33-160	P2774313	M18-M38	3	48	74	160	131

#### ► FEATURE :

- To compensate for synchronization errors to extend tap life and to improve thread quality
- To compensate for pitch tolerances of taps
- For machine with synchronized spindle

## SYNCHRO TAPPING CHUCK (QUICK CHANGE TYPE)

**SYTC** SERIES



### ■ STRAIGHT-K

Unit : mm									
TAPER No.	MODEL No.	EDP No.	Tap Size	Matching Inserts	d1	D1	L	L1	D1
20	K20-SYTC12-46	P2774401	M3-M12	1	19	36	50	46	20
	K20-SYTC12-107.5	P2774406	M3-M12	1	19	36	50	107.5	20
25	K25-SYTC12-46	P2774402	M3-M12	1	19	36	56	46	25
	K25-SYTC20-74	P2774403	M6-M24	2	31	50	56	74	25
	K25-SYTC33-107.5	P2774404	M18-M38	3	48	74	56	107.5	25
32	K32-SYTC12-74	P2774405	M3-M12	1	31	50	60	74	32

#### ► FEATURE :

- To compensate for synchronization errors to extend tap life and to improve thread quality
- To compensate for pitch tolerances of taps
- For machine with synchronized spindle

## TECHNICAL DATA

## TROUBLE SHOOTING GUIDE

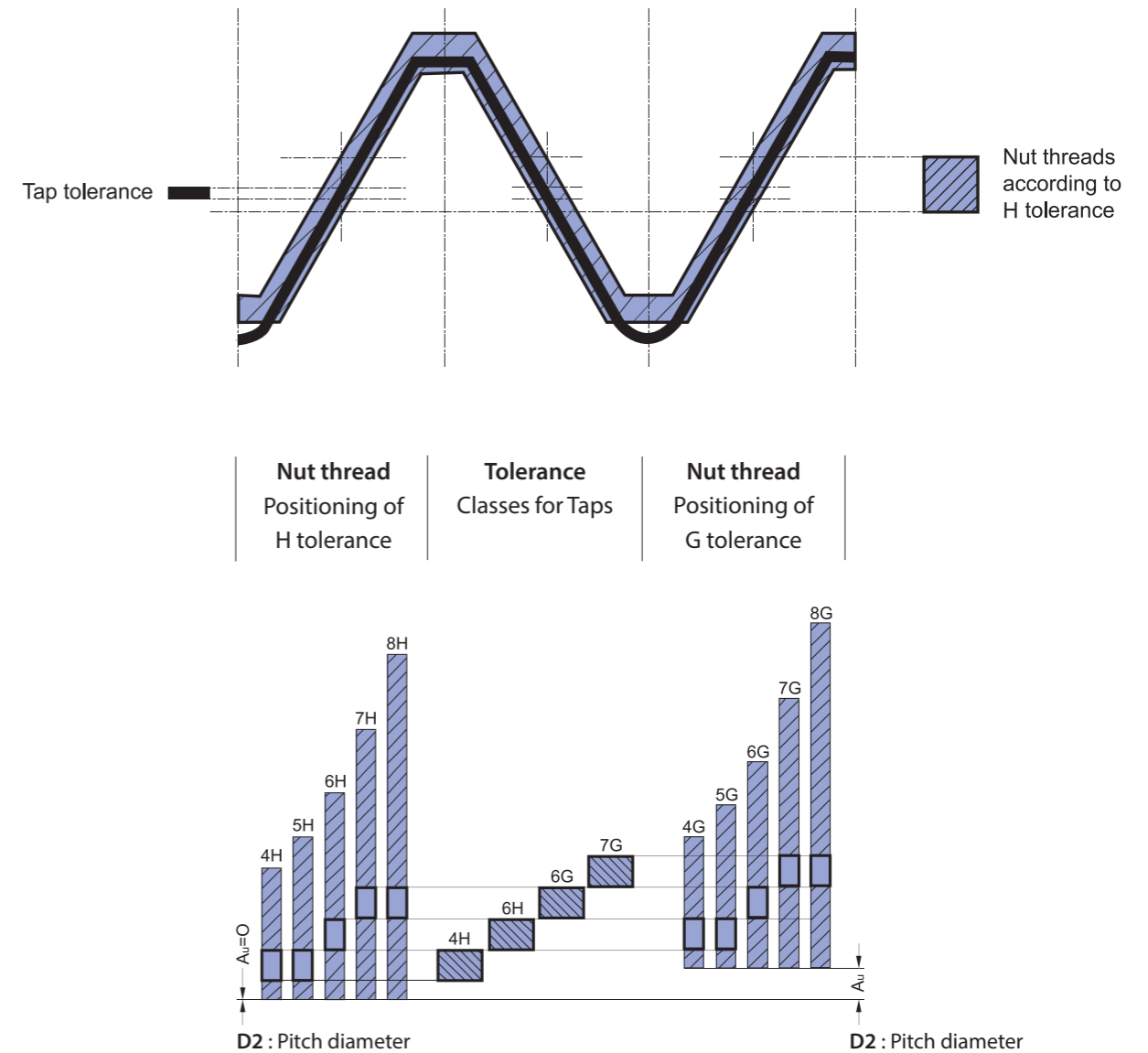
Specific Problem	Cause	Solution
<b>Dimensional Accuracy</b>		
<b>Oversize Pitch Diameter</b>	Incorrect Tap	1. Use proper limits of taps 2. Use longer chamfered taps
	Chip Packing	1. Use spiral point or spiral fluted taps 2. Reduce number of flutes to provide extra chip room 3. Use larger hole size 4. If tapping a hole, allow deeper hole where applicable or shorten the thread length of the parts 5. Use proper lubricant
	Galling	1. Apply proper surface treatment such as Hardslick or chrome 2. Use proper cutting lubricant 3. Reduce tapping speed 4. Use proper cutting angle in accordance with material being tapped 5. Use large hole size
	Operating Conditions	1. Apply proper tapping speed 2. Correct alignment of tap and drill hole 3. Free cutting either tap or workpiece 4. Use proper tapping speed to avoid torn or rough threads 5. Use lead screw tapper 6. Use proper tapping machine with suitable power 7. Avoid misalignment of the tap and drill hole from loose spindle or worn holder
	Tool Condition	1. Obtain proper indexing angle for the flutes at the cutting edge 2. Grind proper cutting angle and chamfer angle 3. Avoid too narrow a land width 4. Remove burrs from regrinding
<b>Oversize Internal Diameter</b>	Hole Size	1. Use minimum hole size 2. Avoid tapered hole 3. Use proper chamfered taps
	Galling	1. Galling solutions 1 through 4 above can be applied to this specific problem
<b>Undersize Pitch Diameter</b>	Incorrect Tap	1. Use oversize taps 2. Apply proper chamfer angle 3. Increase cutting angle
	Damaged Thread	1. Use proper reversing speed to avoid damaging tapped thread on the way out of the hole
	Left-over Chips	1. Increase cutting performance to avoid any left over chips in the hole 2. Remove left over chips from the hole for gage checking
<b>Undersize Internal Diameter</b>	Hole Size	1. Use maximum drill size
<b>Breakage</b>	Incorrect Tap Selection	1. Avoid chip packing in the flutes or on the bottom of the hole Use spiral pointed or spiral fluted taps or fluteless taps 2. Apply correct surface treatment such as Hardslick or bright
	Excessive Tapping Torque	1. Use larger drill size 2. Try to shorten thread length 3. Increase cutting angle 4. Apply a tap with more thread relief and reduced land width 5. Apply correct surface treatment such as Hardslick

### TROUBLE SHOOTING GUIDE

Specific Problem	Cause	Solution
<b>Dimensional Accuracy</b>		
<b>Breakage</b>	Operating Conditions	<ol style="list-style-type: none"> <li>1. Reduce tapping speed</li> <li>2. Avoid misalignment between tap and the hole and tapered hole</li> <li>3. Use floating type of tapping holder</li> <li>4. Use tapping holder with torque adjustment</li> <li>5. Avoid hitting bottom of the hole with tap</li> </ol>
	Tool Condition	<ol style="list-style-type: none"> <li>1. Do not grind the bottom of the flute</li> <li>2. Avoid too narrow a land width</li> <li>3. Remove all worn sections when regrinding the flutes</li> <li>4. Regrind tool more frequently</li> </ol>
<b>Chipping</b>	Incorrect Tap Selection	<ol style="list-style-type: none"> <li>1. Reduce cutting angle</li> <li>2. Use a different kind of high-speed steel tap</li> <li>3. Reduce hardness of the tap</li> <li>4. Increase chamfer length</li> <li>5. Avoid chip packing in the flutes or in the bottom of the hole by using spiral fluted or spiral pointed taps</li> </ol>
	Operating Conditions	<ol style="list-style-type: none"> <li>1. Reduce tapping speed</li> <li>2. Avoid misalignment between tap and hole</li> <li>3. Avoid sudden return of reverse in blind hole tapping</li> <li>4. Avoid galling</li> <li>5. Use larger hole size</li> </ol>
<b>Wear</b>	Incorrect Tap Selection	<ol style="list-style-type: none"> <li>1. Apply specially designed tap for tapping heat treated material</li> <li>2. Change to a type of high-speed steel tap that contains vanadium</li> <li>3. Apply special surface treatment such as TiCN, TiAlN or Hardslick</li> <li>4. Increase chamfer length</li> </ol>
	Operating Conditions	<ol style="list-style-type: none"> <li>1. Reduce tapping speed</li> <li>2. Apply proper cutting lubricants</li> <li>3. Avoid work hardened hole</li> <li>4. Use larger hole size</li> </ol>
	Tool Condition	<ol style="list-style-type: none"> <li>1. Grind proper cutting angle</li> <li>2. Avoid hardness reduction from grinding process</li> </ol>
<b>Torn or Rough Thread</b>	Chamfer Too Short	<ol style="list-style-type: none"> <li>1. Increase chamfer length</li> </ol>
	Wrong Cutting Angle	<ol style="list-style-type: none"> <li>1. Apply proper cutting angle</li> </ol>
	Galling	<ol style="list-style-type: none"> <li>1. Use thread relieved taps</li> <li>2. Reduce land width</li> <li>3. Apply surface treatment such as Hardslick or chrome</li> <li>4. Use proper cutting lubricant</li> <li>5. Reduce tapping speed</li> <li>6. Use larger hole size</li> <li>7. Obtain proper alignment between tap and work</li> </ol>
	Chip Packing	<ol style="list-style-type: none"> <li>1. Use spiral pointed or spiral fluted taps</li> <li>2. Use larger drill size</li> </ol>
<b>Chattering on Tapped Thread</b>	Tool Free Cutting	<ol style="list-style-type: none"> <li>1. Reduce cutting angle</li> <li>2. Reduce amount of thread relief</li> </ol>
	Tool Condition	<ol style="list-style-type: none"> <li>1. Avoid too narrow land width</li> <li>2. Do not grind the bottom of the flute</li> </ol>

### TAP TOLERANCES

► Tolerance classes of taps and tolerance positions for screw threads as per Metric ISO Standard.



► Taps tolerances and recommended classes

Tap tolerance ISO	Tap tolerance DIN	Correct class to obtain Nut thread with tolerance			
ISO 1	4H	4H	5H		
ISO 2	6H	4G	5G	6H	
ISO 3	6G			6G	7H 8H
	7G				7G 8G

# SOLID DRILLS

## PERFECT HOLES FOR PRECISE THREADING

# YG DRILLING TOOLS

YG-1 Drilling tools are well known for its tight tolerance and high technology, continuously impressing various manufacturers around the world. Its advance designed geometry brings out extraordinary performances, creating a longer tool life with outstanding productivity. Also a variety of size and shapes are available for multiple applications.

**P M K** SOLID CARBIDE



**DREAM DRILLS  
GRENERAL**

2-Flute Drills with/without Internal Coolant  
Wide range of sizes and flute lengths  
Perfect choice for general purpose

**P K** SOLID CARBIDE



**DREAM DRILLS  
HIGH FEED**

3-Flute Drills with Internal Coolant  
Up to 1.6 times faster drilling  
compared to conventional 2-flute drills

**P M N S** SOLID CARBIDE



**DREAM DRILLS  
INOX**

For drilling Stainless Steels  
Special geometry and flute shape  
for excellent chip evacuation and self-centering

**N** SOLID CARBIDE



**DREAM DRILLS  
ALU**

For drilling Aluminum & Aluminum Alloys  
Good chip evacuation due to  
flute geometry & enough chip space

**P M K N** SOLID CARBIDE



**DREAM DRILLS  
FLAT BOTTOM**

180° Point Angle with/without Internal Coolant  
Perfect choice for a various angled surface

**P M K N S** PREMIUM HSS-PM



**MULTI-1 DRILLS  
Multi-Purpose**

For Drilling various work materials;  
Carbon Steel, Alloy Steels, Cast Iron,  
Stainless Steels, Aluminum, Titanium, etc

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