

Tapping Just Got Faster...



The Synchro Tap Series is specifically designed for modern machines, where the spindle revolution (A-Axis) & feed movement (Z-Axis) are synchronously controlled.

Sutton Tools has optimised the design of the Synchro Tap Series to work in unison with the accurate pitch controlling capabilities of the modern machine tool. This will not only reduce cycle time but also extend tool life.

Significant increases in speed can be achieved, up to 100m/min!

Benefits

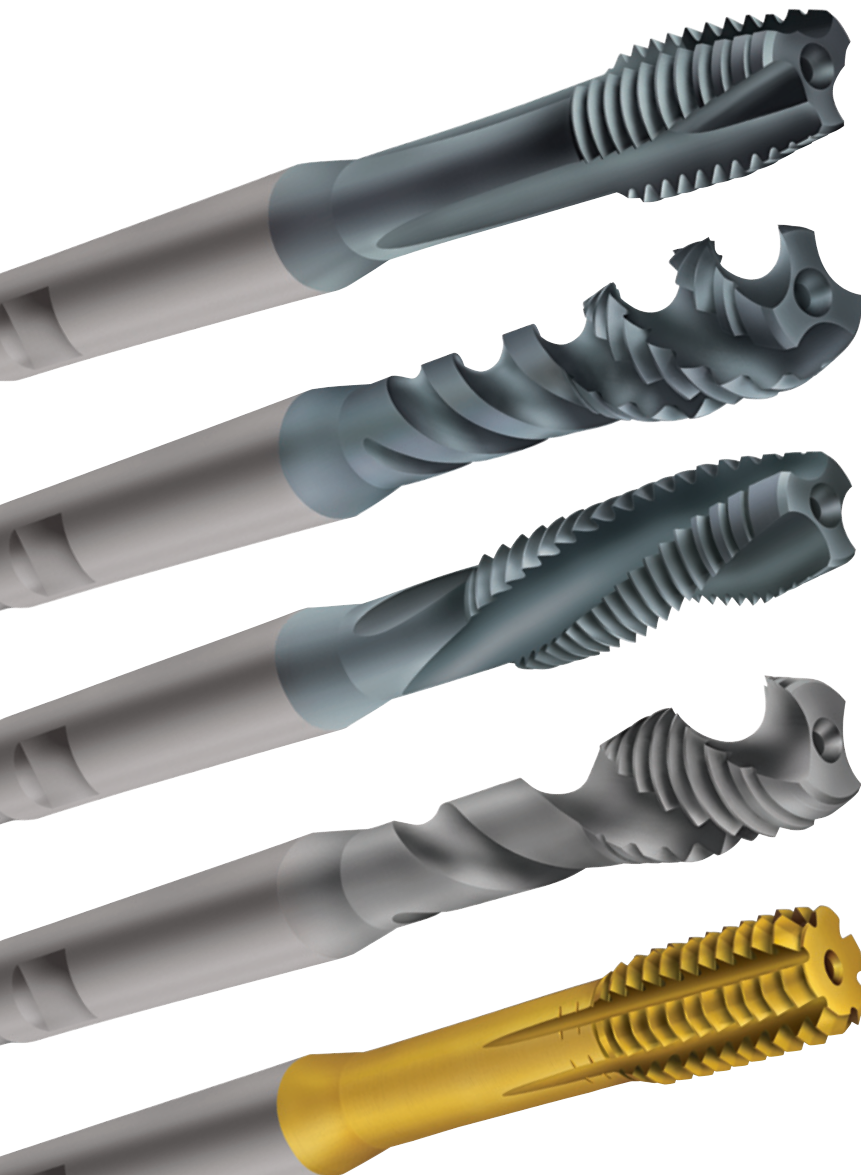
- Production reliability & safety
- Shorter cycle times
- Increased speeds
- Increased tool life
- Optimal thread quality
- Precise threads depths
- Lower tooling costs

SYNCHRO TAP SERIES



suttontools
world class cutting tools

For Longer...



Gun Synchrono

General purpose steel, heat treatable steel, stainless steel, aluminum, and copper alloys
Through holes

R50 Synchrono

General purpose steel, heat treatable steel, and stainless steel
Blind holes

L20 Synchrono

General purpose steel, heat treatable steel, stainless steel, aluminum, and copper alloys
Through holes with interruptions or angular exit

R45 Synchrono

Aluminum, and copper alloys
Blind holes

RLC Synchrono

General purpose steel, heat treatable steel, stainless steel, aluminum, and copper alloys
Forming blind or through holes

Case Study

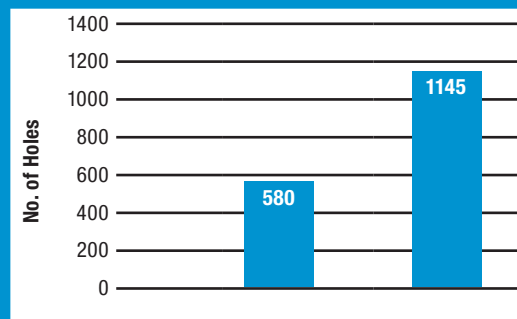
Material: AISI 4140/ 1.7223 / 41CrMo4
Tap size: M6
Drill size: 5,1
Depth: 12mm (blind hole)
Machine: Haas VF2-SS
Lubrication: Emulsion 7%

Comments:

- Synchrono taps reduce costs & cycle time
- With the additional use of Synchrono holder, approx 100% longer tap life was achieved.

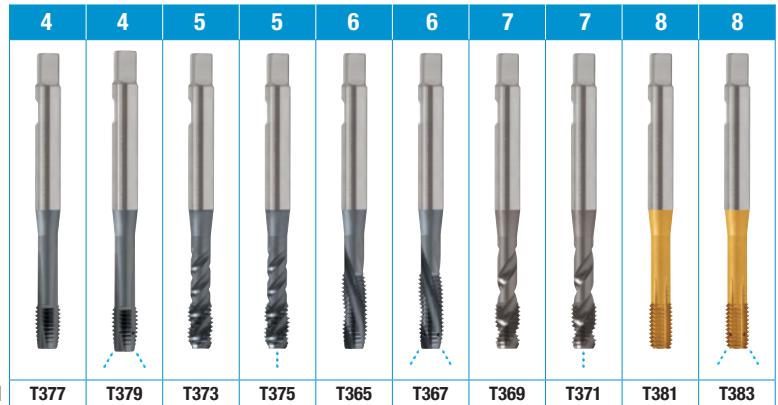
Inputs:

Vc (m/min)	12	25
Pitch	1	1
Size	M6	M6
RPM	636	1325
Feed (mm/min)	636	1325
Depth	12	12



Tap type	R40-N TiN	R50 Sync TiCN
Material:	HSSE-V	PM-HSSE
Vc:	12m/min	25m/min
Tapping process:	Floating holder	Rigid holder
Holder type:	with length compensation	Sutton Synchrono
Machine hourly rate:	€90,00	€90,00
Tool Cost:	€14,90	€25,20
Time/hole(secs):	5,7	2,7
Cost per hole:	€0,17	€0,09

ISO	VDI	Material Group	Sutton
P	A	Steel	N
M	R	Stainless Steel	VA
K	F	Cast Iron	GG
N	N	Non-Ferrous Metals, Aluminiums & Coppers	Al W
S	S	Titaniums & Super Alloys	Ti Ni
H	H	Hard Materials (≥ 45 HRC)	H



Catalogue Code M
MF
Material
Surface Finish
Sutton Designation
Tapping Depth

PM-HSSE V3									
TiCN					CrN			TiN	
High Speed Cutting									
2 x Ø									
T377	T379	T373	T375	T365	T367	T369	T371	T381	T383

ISO	VDI 3323	Material	Condition	HB	N/mm²											
P	1	Steel - Non-alloy, cast & free cutting	~ 0.15 %C	A	125	440	●	●	●	●	●	●	●	●	●	
	2			A	190	640	●	●	●	●	●	●	●	●	●	
	3		QT	250	840	●	●	●	●	●	●	○	○	○	○	
	4		~ 0.75 %C	A	270	910	●	●	●	●	●	●	●	●	●	●
	5		QT	300	1010	○	○	○	○	○	○	○	○	○	○	○
	6	Steel - Low alloy & cast < 5% of alloying elements	A	180	610	●	●	●	●	●	●	●	●	○	○	
	7		QT	275	930	●	●	●	●	●	●	●	●	○	○	
	8		QT	300	1010	○	○	○	○	○	○	○	○	○	○	○
	9		QT	350	1180	○	○	○	○	○	○	○	○	○	○	○
	10	Steel - High alloy, cast & tool	A	200	680	●	●	●	●	●	●	●	●	○	○	
	11		HT	325	1100	○	○	○	○	○	○	○	○	○	○	○
12	Steel - Corrosion resistant & cast	Ferritic / Martensitic	A	200	680	●	●	●	●	●	●	●	○	○	○	
13		Martensitic	QT	240	810	○	○	○	○	○	○	○	○	○	○	
M	14.1	Stainless Steel	Austenitic	AH	180	610	●	●	●	●	●	●	●	●	●	
	14.2		Duplex	250	840	●	●	●	●	●	●	●	○	○	○	
	14.3		Precipitation Hardening	250	840	○	○	○	○	○	○	○	○	○	○	○
K	15	Cast Iron - Grey (GG)	Ferritic / Pearlitic	180	610	●	●	●	●	●	●	●	○	○	○	
	16		Pearlitic	260	880	○	○	○	○	○	○	○	○	○	○	
	17	Cast Iron - Nodular (GGG)	Ferritic	160	570	●	●	●	●	●	●	●	○	○	○	
	18		Pearlitic	250	840	○	○	○	○	○	○	○	○	○	○	
	19		Ferritic	130	460	●	●	●	●	●	●	●	○	○	○	
20	Cast Iron - Malleable	Pearlitic	230	780	○	○	○	○	○	○	○	○	○	○		
N	21	Aluminum & Magnesium - wrought alloy	Non Heat Treatable	60	210	●	●	●	●	●	●	●	●	●	●	
	22		Heat Treatable	AH	100	360	●	●	●	●	●	●	●	●	●	●
	23	Aluminum & Magnesium - cast alloy ≤12% Si	Non Heat Treatable	75	270	●	●	○	○	●	●	●	●	●	●	
	24		Heat Treatable	AH	90	320	●	●	○	○	●	●	●	●	○	○
	25	Al & Mg - cast alloy >12% Si	Non Heat Treatable	130	460	○	○	●	●	○	○	○	○	○	○	
	26	Copper & Cu alloys (Brass/Bronze)	Free cutting, Pb > 1%	110	390	●	●	○	○	●	●	●	●	○	○	○
	27		Brass (CuZn, CuSnZn)	90	320	○	○	○	○	○	○	○	○	○	○	○
	28		Bronze (CuSn)	100	360	●	●	○	○	●	●	●	●	●	●	●
	29		Non-metallic - Thermosetting & fiber-reinforced plastics													
	30	Non-metallic - Hard rubber, wood etc.														
S	31	High temp. alloys	Fe based	A	200	680	●	●	●	●						
	32			AH	280	950										
	33		Ni / Co based	A	250	840	●	●	●	●						
	34			AH	350	1180										
	35			C	320	1080										
	36	Titanium & Ti alloys	CP Titanium	400 MPa												
	37.1		Alpha alloys	860 MPa			●	●								
	37.2		Alpha / Beta alloys	A	960 MPa			●	●							
37.3	AH			1170 MPa												
37.4	Beta alloys		A	830 MPa			●	●								
37.5			AH	1400 MPa												
H	38.1	Hardened steel	HT	45 HRC												
	38.2			55 HRC												
	39.1			58 HRC												
	39.2			62 HRC												
	40	Cast Iron	Chilled	C	400	1350										
	41			HT	55 HRC											

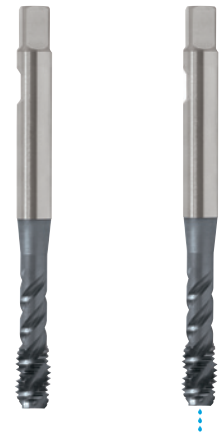
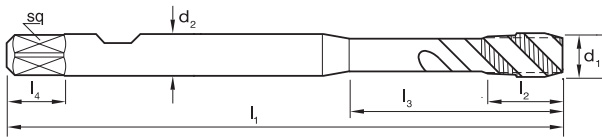
Condition: A (Annealed), AH (Age Hardened), C (Cast), HT (Hardened & Tempered), QT (Quenched & Tempered)

● Optimal ○ Effective

Synchro Spiral Flute, R50

suttontools

- For high speed and precision tapping
- For rigid tapping in CNC machines with synchronised feed
- Suitable for materials up to 850N/mm²
- Blind holes up to 2 x d₁
- h6 endmill shank



Catalogue Code	T373	T375
Discount Group	D0412	D0412
Material	PM-HSSE V3	PM-HSSE V3
Surface Finish	TICN	TICN
Geometry	R50	R50 Internal Coolant
Chamfer	Form C / 2.5 x P	Form C / 2.5 x P
Shank Form (~DIN 1835)	B	B
Limit & Nut Tolerance	6HX	6HX

Size Ref.	d ₁	Pitch	l ₁	l ₂	l ₃	d ₂	sq	l ₄	z	drill Ø	Item #	Item #
0200	M 2 x 0,40		70	4	13	6,0	4,9	8,0	3	1,6	T373 0200	
0250	M 2,5 x 0,45		70	4,5	14	6,0	4,9	8,0	3	2,1	T373 0250	
0300	M 3 x 0,50		70	5	18	6,0	4,9	8,0	3	2,5	T373 0300	
0400	M 4 x 0,70		70	7	21	6,0	4,9	8,0	3	3,3	T373 0400	
0500	M 5 x 0,80		70	8	25	6,0	4,9	8,0	3	4,2	T373 0500	T375 0500
0600	M 6 x 1,00		80	10	30	6,0	4,9	8,0	3	5,0	T373 0600	T375 0600
0800	M 8 x 1,25		90	13	35	8,0	6,2	9,0	3	6,8	T373 0800	T375 0800
1000	M 10 x 1,50		100	15	39	10,0	8,0	11,0	3	8,5	T373 1000	T375 1000
1200	M 12 x 1,75		110	18	42	12,0	9,0	12,0	4	10,3	T373 1200	T375 1200
1400	M 14 x 2,00		110	20	49	14,0	11,0	14,0	4	12,0	T373 1400	T375 1400
1600	M 16 x 2,00		110	20	55	16,0	12,0	15,0	4	14,0	T373 1600	T375 1600
1800	M 18 x 2,50		125	25	-	16,0	12,0	15,0	4	15,5	T373 1800	T375 1800
2000	M 20 x 2,50		140	25	-	16,0	12,0	15,0	4	17,5	T373 2000	T375 2000
T762												T764
0805	MF 8 x 1,00		90	13	30	8,0	6,2	9,0	3	7,0	•	•
1005	MF 10 x 1,00		100	15	39	10,0	8,0	11,0	3	9,0	•	•
1006	MF 10 x 1,25		100	15	39	10,0	8,0	11,0	3	8,8	•	•
1205	MF 12 x 1,00		110	18	42	12,0	9,0	12,0	3	11,0	•	•
1206	MF 12 x 1,25		110	18	42	12,0	9,0	12,0	3	10,8	•	•
1207	MF 12 x 1,50		110	18	42	12,0	9,0	12,0	3	10,5	•	•

ISO	P										M				K				N										S										H												
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41		
T373	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
T375	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials
 ● Optimal ○ Effective

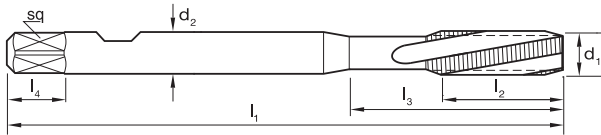
• Available on request as special manufacture. Subject to lead time.

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Synchro Spiral Flute, L20

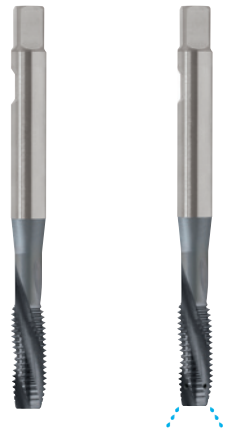


- Right hand cutting / Left hand helix
- For high speed and precision tapping
- For rigid tapping in CNC machines with synchronised feed
- Suitable for materials up to 850N/mm²
- Ideal for through holes with angular exit or interrupted hole



Size Ref.	d ₁	Pitch	l ₁	l ₂	l ₃	d ₂	sq	l ₄	z	drill Ø
0200	M 2	x 0,40	70	8	13	6,0	4,9	8,0	3	1,6
0250	M 2,5	x 0,45	70	9	14	6,0	4,9	8,0	3	2,1
0300	M 3	x 0,50	70	11	18	6,0	4,9	8,0	3	2,5
0400	M 4	x 0,70	70	13	21	6,0	4,9	8,0	3	3,3
0500	M 5	x 0,80	70	16	25	6,0	4,9	8,0	3	4,2
0600	M 6	x 1,00	80	19	30	6,0	4,9	8,0	3	5,0
0800	M 8	x 1,25	90	22	35	8,0	6,2	9,0	3	6,8
1000	M 10	x 1,50	100	24	39	10,0	8,0	11,0	3	8,5
1200	M 12	x 1,75	110	29	42	12,0	9,0	12,0	3	10,3
1400	M 14	x 2,00	110	30	49	14,0	11,0	14,0	4	12,0
1600	M 16	x 2,00	110	32	55	16,0	12,0	15,0	4	14,0
1800	M 18	x 2,50	125	34	-	16,0	12,0	15,0	4	15,5
2000	M 20	x 2,50	140	34	-	16,0	12,0	15,0	4	17,5

0805	MF 8	x 1,00	90	13	30	8,0	6,2	9,0	3	7,0
1005	MF 10	x 1,00	100	15	39	10,0	8,0	11,0	3	9,0
1006	MF 10	x 1,25	100	15	39	10,0	8,0	11,0	3	8,8
1205	MF 12	x 1,00	110	18	42	12,0	9,0	12,0	3	11,0
1206	MF 12	x 1,25	110	18	42	12,0	9,0	12,0	3	10,8
1207	MF 12	x 1,50	110	18	42	12,0	9,0	12,0	3	10,5



Catalogue Code	T365	T367
Discount Group	D0412	D0412
Material	PM-HSSE V3	PM-HSSE V3
Surface Finish	TICN	TICN
Geometry	L20	L20 Internal Coolant
Chamfer	Form D / 4 x P	Form D / 4 x P
Shank Form (~DIN 1835)	B	B
Limit & Nut Tolerance	6HX	6HX

	Item #	Item #
	T365 0200	
	T365 0250	
	T365 0300	
	T365 0400	
	T365 0500	T367 0500
	T365 0600	T367 0600
	T365 0800	T367 0800
	T365 1000	T367 1000
	T365 1200	T367 1200
	T365 1400	T367 1400
	T365 1600	T367 1600
	T365 1800	T367 1800
	T365 2000	T367 2000

	T754	T756
	•	•
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	•	•
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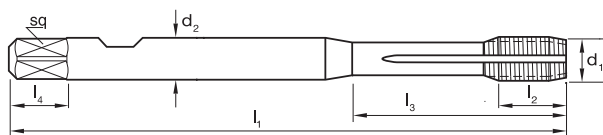
ISO	P										M			K				N						S						H																						
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41			
T365	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
T367	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials • Optimal ○ Effective

• Available on request as special manufacture. Subject to lead time.

suttontools

- For high speed and precision tapping
- For rigid tapping in CNC machines with synchronised feed
- For aluminium and aluminium alloys
- Process of plastic deformation to imprint thread on material
- Blind and through holes up to $2 \times d_1$
- h6 endmill shank



Size Ref.	d ₁	Pitch	l ₁	l ₂	l ₃	d ₂	sq	l ₄	z	drill Ø
0200	M 2	x 0,40	70	4	13	6,0	4,9	8,0	1,8	
0250	M 2,5	x 0,45	70	4,5	14	6,0	4,9	8,0	2,3	
0300	M 3	x 0,50	70	5	18	6,0	4,9	8,0	2,8	
0400	M 4	x 0,70	70	7	21	6,0	4,9	8,0	3,7	
0500	M 5	x 0,80	70	8	25	6,0	4,9	8,0	4,6	
0600	M 6	x 1,00	80	10	30	6,0	4,9	8,0	5,5	
0800	M 8	x 1,25	90	13	35	8,0	6,2	9,0	7,4	
1000	M 10	x 1,50	100	15	39	10,0	8,0	11,0	9,3	
1200	M 12	x 1,75	110	18	42	12,0	9,0	12,0	11,2	
1400	M 14	x 2,00	110	20	49	14,0	11,0	14,0	13,1	
1600	M 16	x 2,00	110	20	55	16,0	12,0	15,0	15,1	
1800	M 18	x 2,50	125	25	-	16,0	12,0	15,0	16,9	
2000	M 20	x 2,50	140	25	-	16,0	12,0	15,0	18,9	

Item #	Item #
T381 0200	
T381 0250	
T381 0300	
T381 0400	
T381 0500	T383 0500
T381 0600	T383 0600
T381 0800	T383 0800
T381 1000	T383 1000
T381 1200	T383 1200
T381 1400	T383 1400
T381 1600	T383 1600
T381 1800	T383 1800
T381 2000	T383 2000

Item #	Item #
T770	T772
•	•
•	•
•	•
•	•
•	•
•	•

ISO	P													M			K				N							S							H																	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41			
T381	●	●	●	●	○					○				●	○								●	●	●	○							●																			
T383	●	●	●	○	○					○				●	○								●	●	○								●																			

● Optimal ○ Effective
P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

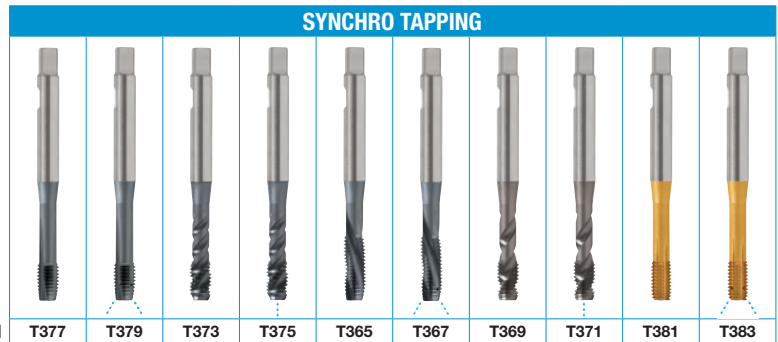
• Available on request as special manufacture. Subject to lead time.



Catalogue Code	T381	T383
Discount Group	D0412	D0412
Material	PM-HSSE V3	PM-HSSE V3
Surface Finish	TIN	TIN
Geometry	Multi-Coolant Groove	Multi-Coolant Groove IK
Chamfer	Form C / 2.5 x P	Form C / 2.5 x P
Shank Form (~DIN 1835)	B	B
Limit & Nut Tolerance	6HX	6HX

ISO	VDI	Material Group	Sutton
P	A	Steel	N
M	R	Stainless Steel	VA
K	F	Cast Iron	GG
N	N	Non-Ferrous Metals, Aluminiums & Coppers	Al W
S	S	Titaniums & Super Alloys	Ti Ni
H	H	Hard Materials (≥ 45 HRC)	H

^ VDI 3323 material groups can also be determined by referring to the workpiece material cross reference listing. Refer to main index of this section.



Catalogue Code M
MF
UNC
UNF
G (BSP)
Material
Surface Finish
Sutton Designation
Geometry
Thread Depth

T377	T379	T373	T375	T365	T367	T369	T371	T381	T383

ISO	VDI ³³²³	Material	Condition	HB	N/mm ²	Vc (m/min)											
						IK	R50	R50 IK	L20	L20 IK	R45	R45 IK	IK				
P	1	Steel - Non-alloy, cast & free cutting	~ 0.15 %C	A	125	440	39	47	31	31	31	37	-	-	25	30	
	2			A	190	640	39	47	31	31	31	37	-	-	25	30	
	3		QT	250	840	32	39	26	26	26	31	-	-	21	25		
	4		A	270	910	36	43	29	29	29	34	-	-	23	27		
	5	QT	300	1010	29	35	23	23	23	28	-	-	-	-			
	6	Steel - Low alloy & cast < 5% of alloying elements	~ 0.45 %C	A	180	610	39	47	31	31	31	37	-	-	25	30	
	7			QT	275	930	26	31	21	21	21	25	-	-	17	20	
	8			QT	300	1010	19	23	16	16	16	19	-	-	-	-	
	9			QT	350	1180	-	-	-	-	-	-	-	-	-	-	
	10			Steel - High alloy, cast & tool	~ 0.75 %C	A	200	680	26	31	21	21	21	25	-	-	17
	11	HT	325			1100	-	-	-	-	-	-	-	-	-		
12	Steel - Corrosion resistant & cast	Ferritic / Martensitic	A	200	680	16	19	13	13	13	16	-	-	-	-		
13			QT	240	810	10	12	8	8	8	9	-	-	-	-		
M	14.1	Stainless Steel	Austenitic	AH	180	610	19	23	16	16	16	19	-	-	12	15	
	14.2			Duplex	250	840	13	16	10	10	10	12	-	-	8	10	
	14.3			Precipitation Hardening	250	840	10	12	8	8	8	9	-	-	-	-	
K	15	Cast Iron - Grey (GG)	Ferritic / Pearlitic	AH	180	610	39	47	31	31	31	37	-	-	-	-	
	16			Pearlitic	260	880	32	39	26	26	26	31	-	-	-	-	
	17	Cast Iron - Nodular (GGG)	Ferritic	AH	160	570	39	47	31	31	31	37	-	-	-	-	
	18			Pearlitic	250	840	32	39	26	26	26	31	-	-	-	-	
	19	Cast Iron - Malleable	Ferritic	AH	130	460	49	58	39	39	39	47	-	-	-	-	
20	Pearlitic			230	780	39	47	31	31	31	37	-	-	-	-		
N	21	Aluminum & Magnesium - wrought alloy	Non Heat Treatable	AH	60	210	39	47	31	31	31	37	31	31	25	30	
	22			Heat Treatable	100	360	49	58	39	39	39	47	39	39	31	37	
	23	Aluminum & Magnesium - cast alloy ≤12% Si	Non Heat Treatable	AH	75	270	49	58	39	39	39	47	39	39	31	37	
	24			Heat Treatable	90	320	49	58	39	39	39	47	39	39	31	37	
	25	Al & Mg - cast alloy >12% Si	Non Heat Treatable	AH	130	460	32	39	26	26	26	31	-	-	-	-	
	26	Copper & Cu alloys (Brass/Bronze)	Free cutting, Pb > 1%	AH	110	390	26	31	21	21	21	25	21	21	-	-	
	27			Brass (CuZn, CuSnZn)	90	320	58	70	47	47	47	56	47	47	-	-	
	28			Bronze (CuSn)	100	360	45	54	36	36	36	44	36	36	29	35	
29	Non-metallic - Thermosetting & fiber-reinforced plastics					-	-	-	-	-	-	-	-	-	-		
30	Non-metallic - Hard rubber, wood etc.					-	-	-	-	-	-	-	-	-	-		
S	31	High temp. alloys	Fe based	A	200	680	10	12	8	8	-	-	-	-	-	-	
	32			AH	280	950	-	-	-	-	-	-	-	-	-	-	
	33			Ni / Co based	A	250	840	8	10	6	6	-	-	-	-	-	-
	34				AH	350	1180	-	-	-	-	-	-	-	-	-	-
	35				C	320	1080	-	-	-	-	-	-	-	-	-	-
	36	Titanium & Ti alloys	CP Titanium	AH	400 MPa	-	-	-	-	-	-	-	-	-	-	-	
	37.1			Alpha alloys	860 MPa	-	-	-	-	-	13	16	-	-	-	-	
	37.2			Alpha / Beta alloys	A	960 MPa	-	-	-	-	-	13	16	-	-	-	-
	37.3				AH	1170 MPa	-	-	-	-	-	-	-	-	-	-	-
	37.4			Beta alloys	A	830 MPa	-	-	-	-	-	8	9	-	-	-	-
37.5	AH	1400 MPa	-	-	-	-	-	-	-	-	-	-	-	-			
H	38.1	Hardened steel	HT	A	45 HRC	-	-	-	-	-	-	-	-	-	-		
	38.2			AH	55 HRC	-	-	-	-	-	-	-	-	-	-		
	39.1			A	58 HRC	-	-	-	-	-	-	-	-	-	-		
	39.2			AH	62 HRC	-	-	-	-	-	-	-	-	-	-		
	40	Cast Iron	Chilled	C	400	1350	-	-	-	-	-	-	-	-	-		
41	HT			55 HRC	-	-	-	-	-	-	-	-	-	-			

Condition: A (Annealed), AH (Age Hardened), C (Cast), HT (Hardened & Tempered), QT (Quenched & Tempered)
 Bold = Optimal | Regular = Effective

Notes on Tapping

- The speeds listed above are a recommendation only, and are based on depth of thread listed, speeds can be adjusted on application.
 As a general rule;
 -If hole depth required is less than above mentioned = increase speed
 -If hole depth required is more than above mentioned = reduce speed
- Taps must be driven by the square to eliminate slippage, eg, ER-GB collets (square drive).

METRIC TAPS (mm size)

Φ = nominal tap size (mm)
 P = thread pitch (mm)
 n = spindle speed (RPM)
 v_c = cutting speed (m/min)
 v_f = feed rate (mm/min)
 v_r = feed rate per rev (mm/rev)

$$n = \frac{v_c \times 1000}{\Phi \times P} \approx \frac{v_c}{\Phi} \times 318$$

$$v_c = \frac{n \times \Phi \times P}{1000} \approx \frac{n \times \Phi}{318}$$

$$v_f = n \times P$$



Sutton Tools Synchro with unique Double Flexure

Unlike other "synchronous" tap drivers that use soft plastic components or Belleville washers similar as above, to cushion the taps' entry into the hole, Sutton Synchro utilizes a patented (computer generated, precisely machined, special steel alloy) Double Flexure between the mount and the chuck.

It compensates both axially and radially for the unavoidable discrepancies between the machine's programmed RPM, feed and traverse and the exact thread pitch and precise hole location.

The Sutton Synchro is dependable and predictable. You can expect long life performance under all working conditions. What's more, you'll make significant savings when it comes to tap costs.

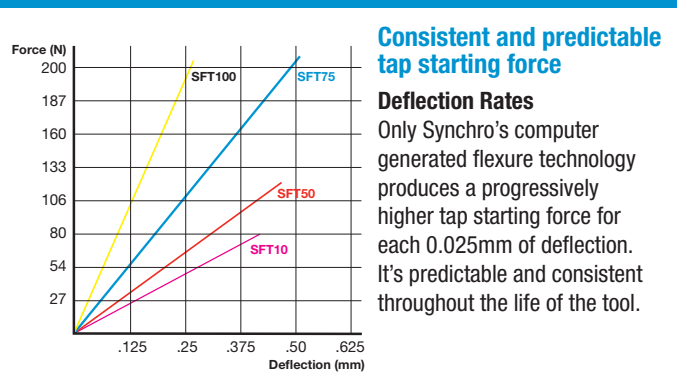
The Sutton Synchro is available now from Sutton Tools. We also stock other models in the Sutton range, for both manual and automated tapping applications.

Synchro Proven Results

Independent tests in real world applications confirm Synchro is unmatched in performance

- Tap life increased by 100% or more
- Thread quality improved
- Increased production due to less tap breakage
- Less down time
- Reduced costs. The most economical rigid tapping

Synchro exerts lower thrust and torque forces than any other tap holder on the market. In any given material the lower the thrust and torque forces on the tap, the longer the tap life.

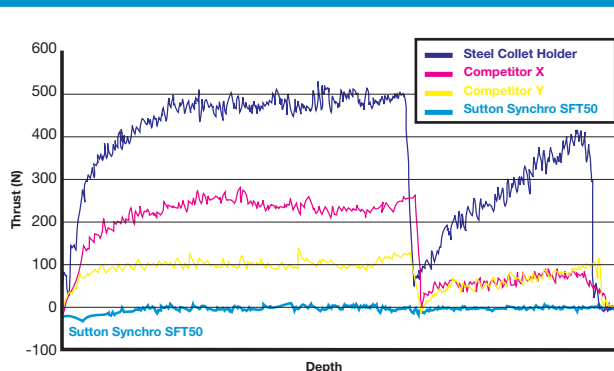


Test One (Thrust): 10 holes, M6 R45Al, 2 flute tap, 3x Dia deep in AL7075 at 1000 RPM

Holder Type	Average Thrust (N)	Average Down Cut Thrust (N) Entering Hole	Average Reverse Thrust (N) Exiting Hole
Steel Collet Holder (Rigid)	1008	1379	930
Competitor X	681	879	445
Competitor Y	320	425	266
Sutton Synchro	-12	-29	-31

Test Two (Torque): 10 holes, M6 R45Al, 2 flute tap, 3x Dia deep in AL7075 at 2000 RPM

Holder Type	Average Torque (Ncm)	Average Down Cut Torque (Ncm) Entering Hole	Average Reverse Torque (Ncm) Exiting Hole
Steel Collet Holder (Rigid)	481	631	-387
Competitor X	593	639	-354
Competitor Y	542	730	-392
Sutton Synchro	268	371	-190



Graph illustrates the final hole tapped by each tap driver.

suttontools

- For the best rigid tapping results
- Holder designed for machines with rigid tapping
- Machine reversal required
- Increases tap life by 100% or more
- Improve thread quality
- Flexure design, acts like shock absorber



Patented Flexure Design



BT-40 Arbor

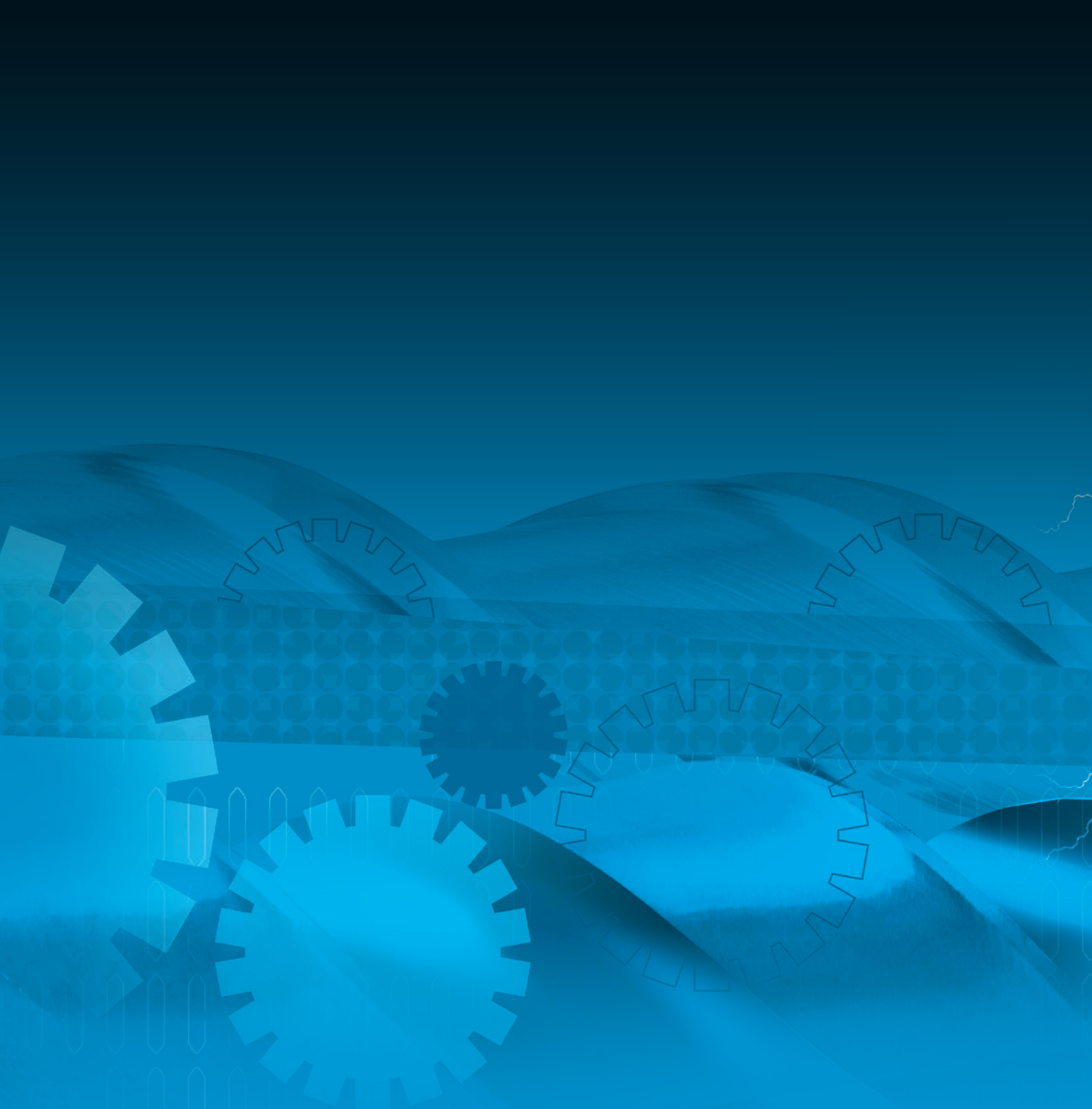


ER25 Collet (Sq. Drive)



Synchro SFT100

Size Ref.	Description	Size Capacity	Mount	Collet Series	Item #
Tapping Attachments (Discount Group Z1104)					Z101
SFT10	Synchro SFT10	M1-M6 #2-#10	25mm SS	ER11	Z101 SFT10
SFT50	Synchro SFT50	M4-M12 #8-1/2	25mm SS	ER20	Z101 SFT50
SFT75	Synchro SFT75	M4-M16 3/8 - 3/4	25mm SS	ER25	Z101 SFT75
SFT100	Synchro SFT100	M8-M30	25mm SS	ER40	Z101 SFT100
Collets - SFT10 (Round Drive) (Discount Group Z1110)					Z110
0025	2-2,5mm	M1-1,8	-	ER11	Z110 0025
0030	2,5-3mm	M2-2,6	-	ER11	Z110 0030
0035	3-3,5mm	M3	-	ER11	Z110 0035
0040	3,5-4mm	M3,5	-	ER11	Z110 0040
0045	4-4,5mm	M4	-	ER11	Z110 0045
0050	4,5-5mm	M4 JIS	-	ER11	Z110 0050
0055	5-5,5mm	M5 JIS	-	ER11	Z110 0055
0060	5,5-6mm	M5 / M6 / M2-M6 Synchro	-	-	Z110 0060
Collets - SFT50 (Square Drive) (Discount Group Z1110)					Z111
0045	Ø 4,5mm	M4 DIN371	-	ER20	Z111 0045
0050	Ø 5mm	ISO	-	ER20	Z111 0050
0060	Ø 6mm	M5 / M6 DIN371 / M2-M6 Synchro	-	ER20	Z111 0060
0070	Ø 7mm	M10 DIN376	-	ER20	Z111 0070
0080	Ø 8mm	M8 DIN371 / M8 Synchro	-	ER20	Z111 0080
0090	Ø 9mm	M12 DIN376	-	ER20	Z111 0090
0100	Ø 10mm	M10 DIN371 / M10 Synchro	-	ER20	Z111 0100
Collets - SFT75 (Square Drive) (Discount Group Z1110)					Z112
0045	Ø 4,5mm	M4 DIN371	-	ER25	Z112 0045
0060	Ø 6mm	M5 / M6 DIN371 / M2-M6 Synchro	-	ER25	Z112 0060
0070	Ø 7mm	M10 DIN371	-	ER25	Z112 0070
0080	Ø 8mm	M8 DIN371 / M8 Synchro	-	ER25	Z112 0080
0090	Ø 9mm	M12 DIN376	-	ER25	Z112 0090
0100	Ø 10mm	M10 DIN371 / M10 Synchro	-	ER25	Z112 0100
0110	Ø 11mm	M14 DIN376	-	ER25	Z112 0110
0120	Ø 12mm	M16 DIN376 / M12 Synchro	-	ER25	Z112 0120
Collets - SFT100 (Square Drive) (Discount Group Z1110)					Z113
0080	Ø 8mm	M8 DIN371 / M8 Synchro	-	ER40	Z113 0080
0100	Ø 10mm	M10 DIN371 / M10 Synchro	-	ER40	Z113 0100
0120	Ø 12mm	M16 DIN376 / M12 Synchro	-	ER40	Z113 0120
0140	Ø 14mm	M18 DIN376 / M14 Synchro	-	ER40	Z113 0140
0160	Ø 16mm	M20 DIN376 / M16 Synchro	-	ER40	Z113 0160
Accessories (Discount Group Z1108)					Z130
3943	BT-40 Arbor W/25mm Bore	-	-	-	Z130 3943
3945	BT-50 Arbor W/25mm Bore	-	-	-	Z130 3945
Accessories (Discount Group Z135)					Z135
BT40	Pull stud BT40	-	-	-	Z135 BT40
BT50	Pull stud BT50	-	-	-	Z135 BT50



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