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

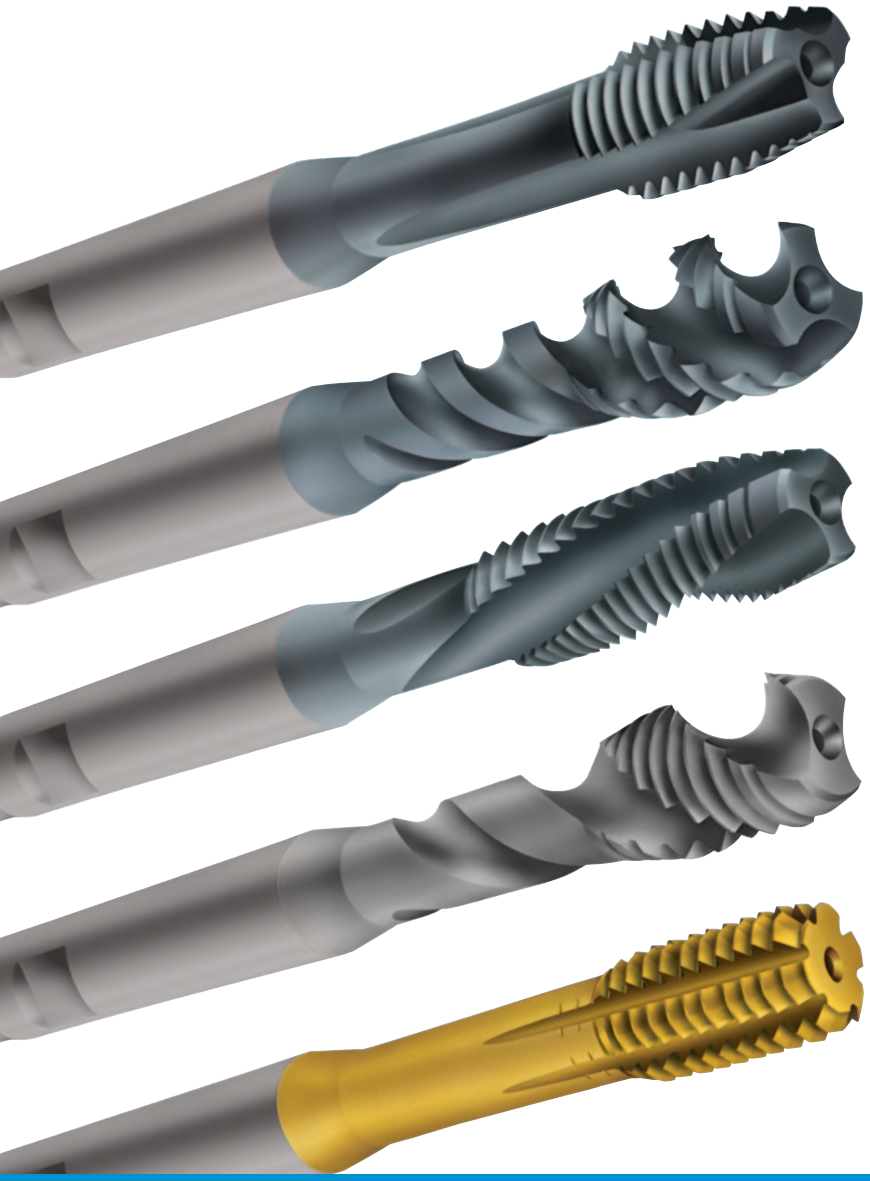
- Production reliability & safety
- Shorter cycle times
- Increased speeds
- Increased tool life
- Optimal thread quality
- Precise threads depths
- Lower tooling costs

SYNCHRO TAP SERIES

AUSTRALIAN MADE

suttontools
world class cutting tools

For Longer...



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

R50 Synchro
General purpose steel, heat treatable steel, and stainless steel
Blind holes

L20 Synchro
General purpose steel, heat treatable steel, stainless steel, aluminum, and copper alloys
Through holes with interruptions or angular exit

R45 Synchro
Aluminum, and copper alloys
Blind holes

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

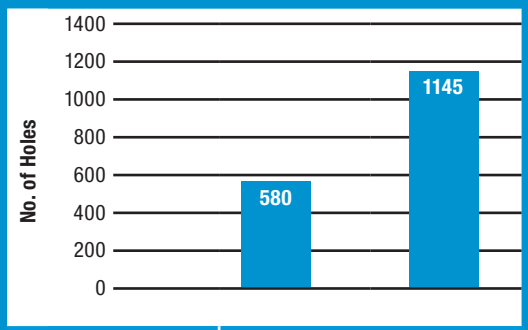
Case Study

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:
- Synchro taps reduce costs & cycle time
- With the additional use of Synchroflex 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	Tapmatic Synchroflex
Machine hourly rate:	$150.00	$150.00
Tool Cost:	$31.71	$52.50
Time/hole(secs):	5.7	2.7
Cost per hole:	**$0.29**	**$0.16**

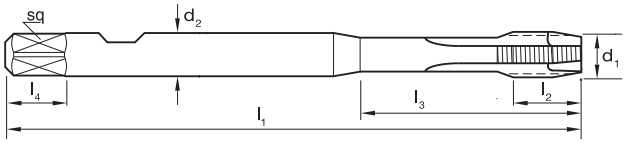
suttontools

Material	Limit & Nut Tolerance	HB	N/mm²	% Elong.	Synchro Gun	Synchro Gun, IK	Synchro Spiral Flute, R50	Synchro Spiral Flute, R50, IK	Synchro Spiral Flute, L20	Synchro Spiral Flute, L20, IK	Synchro Spiral Flute, R45 Al	Synchro Spiral Flute, R45 Al, IK	Synchro Forming	Synchro Forming, IK
	Page				3	3	3	3	3	3	3	3	3	3
	Catalogue Code				T377	T379	T373	T375	T365	T367	T369	T371	T381	T383
	Material				PM-HSSE V3									
	Surface Finish				TiCN						CrN		TiN	
	Application				High Speed Cutting									
	Tapping Depth				2 x Ø									
1.0 Steels														
1.1 Mild steels, magnetic soft steel		<200	>200 <400	10	●	●	●	●	●	●	○	○	●	●
1.2 Free cutting, structural, unalloyed		<200	>350 <700	30	●	●	●	●	●	●			●	●
1.3 Plain carbon, low alloyed		<300	>350 <850	20	●	●	●	●	●	●			○	○
1.4 Alloy steels hardened / tempered		<250	>500 <850	30	●	●	●	●	●	●				
1.5 Alloy steels hardened / tempered		<350	>850 <1200	30	○	○	○	○	○	○				
1.6 Hardened, heat treated, high tensile alloy		<420	>1500	12	○	○	○	○	○	○				
1.7 Hardened Steel 45-50 Rc		<550		<12										
1.8 Hardened Steel 50-62 Rc		<700		<12										
2.0 Stainless Steels														
2.1 Free machining		<250	<850	25	●	●	●	●	●	●			●	●
2.2 Austenitic		<250	<850	20	●	●	●	●	●	●			●	●
2.3 Ferritic + martensitic		<250	<850	20	●	●	●	●	●	●				
3.0 Cast Irons														
3.1 Lamellar graphite (Grey soft)		<150	<500	10	●	●	○	○	●	●				
3.2 Lamellar graphite (Grey hard)		<300	<1000	10	○	○	○	○	○	○				
3.3 Nodular (spheroidal) graphite & malleable		<200	<700	10	○	○	○	○	○	○				
4.0 Titaniums														
4.1 Pure Titanium		<250	<850	>20	●	●	●	●	●	●				
4.2 Titanium alloys		>250	>850 <950	<20	●	●	●	●	●	●				
4.3 Titanium alloys		>280	>950	<20	●	●	●	●	●	●				
5.0 Nickels														
5.1 Pure Nickel & Nickel alloys		<250	<850	>25	●	●	●	●	●	●				
5.2 Nickel alloys		>250	>850 <1150	<25										
5.3 Nickel alloys		>340	>1150 <1600	<20										
6.0 Coppers														
6.1 Pure Copper (electrolytic copper)		<120	<400	12	●	●	○	○	●	●	●	●	●	●
6.2 Short chip Brass, Phosphor Bronze, gun metal		<200	<700	12	○	○	○	○	○	○	●	●		
6.3 Long chip Brass, Bronze		<200	<700	12	●	●	○	○	●	●	●	●		
7.0 Aluminiums														
7.1 Aluminium unalloyed		<100	<350	15	●	●	●	●	●	●	●	●	●	●
7.2 Magnesium unalloyed		<150	<350	15	●	●	○	○	●	●	●	●	●	●
7.3 Al Alloyed Si < 1.5 %		<120	<500	15	●	●	○	○	●	●	●	●	●	●
7.4 Al Alloyed 1.5 % < Si < 10%		<120	<400	10	●	●	○	○	●	●	●	●	●	●
7.5 Al Alloyed > 10% Si		-	<400	N	○	○	●	●	○	○	○	○		
7.6 Magnesium alloys		-	<400	N	○	○	●	●	○	○	○	○		
8.0 Plastics														
8.1 Plastics, Thermoplastics, Polyethylene		<340	<50	N	●	●	○	○	●	●	●	●		

● **Optimal** ○ **Effective**

suttontools

- For high speed and precision tapping
- For rigid tapping in CNC machines with synchronised feed
- Suitable for materials up to 850N/mm^2
- Through holes up to 2 x d_1
- h6 endmill shank



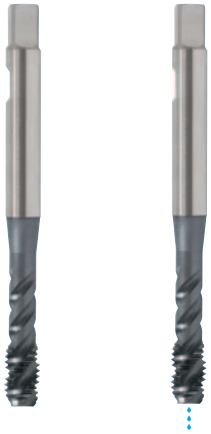
Catalogue Code	T377	T379
Discount Group	D0412	D0412
Material	PM-HSSE V3	PM-HSSE V3
Surface Finish	TiCN	TiCN
Geometry		Internal Coolant
Chamfer	Form B / 4.5 x P	Form B / 4.5 x P
Shank Form (~DIN 1835)	B	B
Limit & Nut Tolerance	6HX	6HX

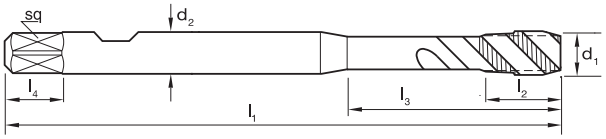
Size Ref.	d_1	Pitch	l_1	l_2	l_3	d_2	sq	l_4	z	drill Ø	Item #	Item #
0200	M 2	x 0.40	70	4	13	6.0	4.9	8.0	3	1.6	T377 0200	
0250	M 2.5	x 0.45	70	4.5	14	6.0	4.9	8.0	3	2.1	T377 0250	
0300	M 3	x 0.50	70	5	18	6.0	4.9	8.0	3	2.5	T377 0300	
0400	M 4	x 0.70	70	7	21	6.0	4.9	8.0	3	3.3	T377 0400	
0500	M 5	x 0.80	70	8	25	6.0	4.9	8.0	3	4.2	T377 0500	T379 0500
0600	M 6	x 1.00	80	10	30	6.0	4.9	8.0	3	5.0	T377 0600	T379 0600
0800	M 8	x 1.25	90	13	35	8.0	6.2	9.0	3	6.8	T377 0800	T379 0800
1000	M 10	x 1.50	100	15	39	10.0	8.0	11.0	3	8.5	T377 1000	T379 1000
1200	M 12	x 1.75	110	18	42	12.0	9.0	12.0	3	10.3	T377 1200	T379 1200
1400	M 14	x 2.00	110	20	49	14.0	11.0	14.0	3	12.0	T377 1400	T379 1400
1600	M 16	x 2.00	110	20	55	16.0	12.0	15.0	4	14.0	T377 1600	T379 1600
1800	M 18	x 2.50	125	25	-	16.0	12.0	15.0	4	15.5	T377 1800	T379 1800
2000	M 20	x 2.50	140	25	-	16.0	12.0	15.0	4	17.5	T377 2000	T379 2000
											T766	T768
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 1.5	110	18	42	12.0	9.0	12.0	3	10.5	•	•

• 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
- Suitable for materials up to 850N/mm²
- Blind holes up to 2 x d_1
- h6 endmill shank





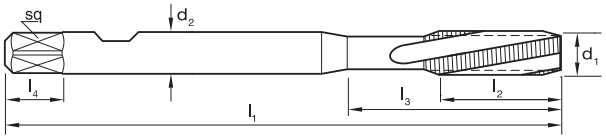
Catalogue Code	T373	T375
Discount Group	D0412	D0412
Material	PM-HSSE V3	PM-HSSE V3
Surface Finish	TiCN	TiCN
Geometry	R50	R50 Internal Coolant
Chamfer	Form C / 2.5 x P	Form C / 2.5 x P
Shank Form (~DIN 1835)	B	B
Limit & Nut Tolerance	6HX	6HX

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	•	•

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

suttontools

- 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



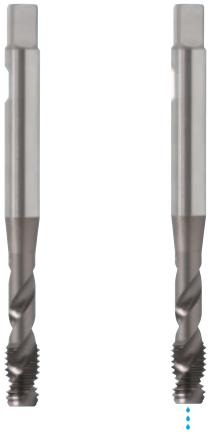
Catalogue Code	T365	T367
Discount Group	D0412	D0412
Material	PM-HSSE V3	PM-HSSE V3
Surface Finish	TiCN	TiCN
Geometry	L20	L20 Internal Coolant
Chamfer	Form D / 4 x P	Form D / 4 x P
Shank Form (~DIN 1835)	B	B
Limit & Nut Tolerance	6HX	6HX

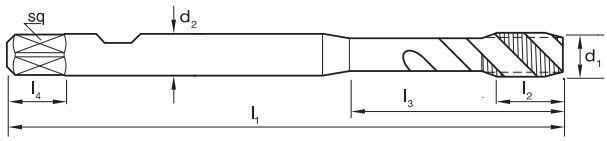
Size Ref.	d_1	Pitch	l_1	l_2	l_3	d_2	sq	l_4	z	drill Ø	Item #	Item #
0200	M 2	x 0.40	70	8	13	6.0	4.9	8.0	3	1.6	T365 0200	
0250	M 2.5	x 0.45	70	9	14	6.0	4.9	8.0	3	2.1	T365 0250	
0300	M 3	x 0.50	70	11	18	6.0	4.9	8.0	3	2.5	T365 0300	
0400	M 4	x 0.70	70	13	21	6.0	4.9	8.0	3	3.3	T365 0400	
0500	M 5	x 0.80	70	16	25	6.0	4.9	8.0	3	4.2	T365 0500	T367 0500
0600	M 6	x 1.00	80	19	30	6.0	4.9	8.0	3	5.0	T365 0600	T367 0600
0800	M 8	x 1.25	90	22	35	8.0	6.2	9.0	3	6.8	T365 0800	T367 0800
1000	M 10	x 1.50	100	24	39	10.0	8.0	11.0	3	8.5	T365 1000	T367 1000
1200	M 12	x 1.75	110	29	42	12.0	9.0	12.0	3	10.3	T365 1200	T367 1200
1400	M 14	x 2.00	110	30	49	14.0	11.0	14.0	4	12.0	T365 1400	T367 1400
1600	M 16	x 2.00	110	32	55	16.0	12.0	15.0	4	14.0	T365 1600	T367 1600
1800	M 18	x 2.50	125	34	-	16.0	12.0	15.0	4	15.5	T365 1800	T367 1800
2000	M 20	x 2.50	140	34	-	16.0	12.0	15.0	4	17.5	T365 2000	T367 2000
											T754	T756
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	•	•

• 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 & aluminium alloys
- Blind holes up to 2 x d_1
- h6 endmill shank





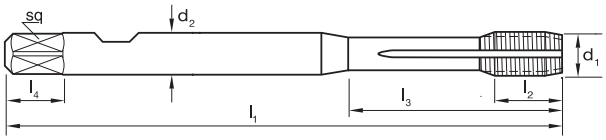
Catalogue Code	T369	T371
Discount Group	D0412	D0412
Material	PM-HSSE V3	PM-HSSE V3
Surface Finish	*CrN*	*CrN*
Geometry	R45	R45 Internal Coolant
Chamfer	Form C / 2.5 x P	Form C / 2.5 x P
Shank Form (~DIN 1835)	B	B
Limit & Nut Tolerance	6HX	6HX

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	2	1.6	T369 0200	
0250	M 2.5 x 0.45	70	4.5	14	6.0	4.9	8.0	2	2.1	T369 0250	
0300	M 3 x 0.50	70	5	18	6.0	4.9	8.0	2	2.5	T369 0300	
0400	M 4 x 0.70	70	7	21	6.0	4.9	8.0	2	3.3	T369 0400	
0500	M 5 x 0.80	70	8	25	6.0	4.9	8.0	2	4.2	T369 0500	T371 0500
0600	M 6 x 1.00	80	10	30	6.0	4.9	8.0	2	5.0	T369 0600	T371 0600
0800	M 8 x 1.25	90	13	35	8.0	6.2	9.0	2	6.8	T369 0800	T371 0800
1000	M 10 x 1.50	100	15	39	10.0	8.0	11.0	2	8.5	T369 1000	T371 1000
1200	M 12 x 1.75	110	18	42	12.0	9.0	12.0	2	10.3	T369 1200	T371 1200
1400	M 14 x 2.00	110	20	49	14.0	11.0	14.0	2	12.0	T369 1400	T371 1400
1600	M 16 x 2.00	110	20	55	16.0	12.0	15.0	2	14.0	T369 1600	T371 1600
1800	M 18 x 2.50	125	25	-	16.0	12.0	15.0	2	15.5	T369 1800	T371 1800
2000	M 20 x 2.50	140	25	-	16.0	12.0	15.0	2	17.5	T369 2000	T371 2000
										T758	T760
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	•	•

• 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 x d_1
- h6 endmill shank



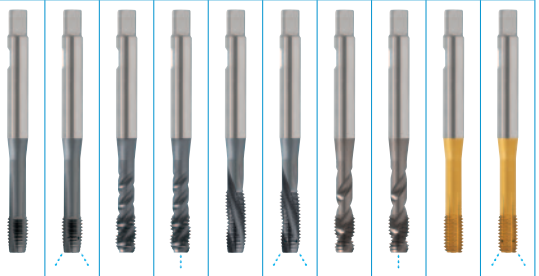
Catalogue Code	T381	T383
Discount Group	D0412	D0412
Material	PM-HSSE V3	PM-HSSE V3
Surface Finish	TiN	TiN
Geometry	Multi-Coolant Groove	Multi-Coolant Groove IK
Chamfer	Form C / 2.5 x P	Form C / 2.5 x P
Shank Form (~DIN 1835)	B	B
Limit & Nut Tolerance	6HX	6HX

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		1.8	T381 0200	
0250	M 2.5	x 0.45	70	4.5	14	6.0	4.9	8.0		2.3	T381 0250	
0300	M 3	x 0.50	70	5	18	6.0	4.9	8.0		2.8	T381 0300	
0400	M 4	x 0.70	70	7	21	6.0	4.9	8.0		3.7	T381 0400	
0500	M 5	x 0.80	70	8	25	6.0	4.9	8.0		4.6	T381 0500	T383 0500
0600	M 6	x 1.00	80	10	30	6.0	4.9	8.0		5.5	T381 0600	T383 0600
0800	M 8	x 1.25	90	13	35	8.0	6.2	9.0		7.4	T381 0800	T383 0800
1000	M 10	x 1.50	100	15	39	10.0	8.0	11.0		9.3	T381 1000	T383 1000
1200	M 12	x 1.75	110	18	42	12.0	9.0	12.0		11.2	T381 1200	T383 1200
1400	M 14	x 2.00	110	20	49	14.0	11.0	14.0		13.1	T381 1400	T383 1400
1600	M 16	x 2.00	110	20	55	16.0	12.0	15.0		15.1	T381 1600	T383 1600
1800	M 18	x 2.50	125	25	-	16.0	12.0	15.0		16.9	T381 1800	T383 1800
2000	M 20	x 2.50	140	25	-	16.0	12.0	15.0		18.9	T381 2000	T383 2000
											T770	T772
0805	MF 8	x 1.00	90	13	30	8.0	6.2	9.0		7.5	•	•
1005	MF 10	x 1.00	100	15	39	10.0	8.0	11.0		9.5	•	•
1006	MF 10	x 1.25	100	15	39	10.0	8.0	11.0		9.4	•	•
1205	MF 12	x 1.00	110	18	42	12.0	9.0	12.0		11.5	•	•
1206	MF 12	x 1.25	110	18	42	12.0	9.0	12.0		11.4	•	•
1207	MF 12	x 1.50	110	18	42	12.0	9.0	12.0		11.3	•	•

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

suttontools

	SYNCHRO TAPPING									
Thread Depth	≤ 2xØ									
Catalogue Code	**T377**	**T379**	**T373**	**T375**	**T365**	**T367**	**T369**	**T371**	**T381**	**T383**
Material	PM-HSSE V3		PM-HSSE V3		PM-HSSE V3		PM-HSSE V3		PM-HSSE V3	
Surface Finish	TiCN		TiCN		TiCN		CrN		TiN	
Colour Ring & Application	High Speed Cutting									
Geometry		IK	R50	R50 IK	L20	L20 IK	R45	R45 IK	Multi-Coolant Groove	IK



Materials	HB	N/mm²	% Elong.	Material eg.	Vc (m/min)									
1.0 Steels														
1.1 Mild steels, magnetic soft steel	<200	>200 <400	10	RFe100	50-60	50-60	40-50	40-50	50-60	50-60	-	-	20-30	20-30
1.2 Free cutting, structural, unalloyed	<200	>350 <700	30	C10, C15, ST37, ST52	40-50	40-50	30-40	30-40	40-50	40-50	-	-	20-30	20-30
1.3 Plain carbon, low alloyed	<300	>350 <850	20	C45, C92D, D95-S	30-40	30-40	20-30	20-30	30-40	30-40	-	-	20-30	20-30
1.4 Alloy steels hardened / tempered	<250	>500 <850	30	41CrMo4, 36CrNiMo4, X155CrVMo12-1, 90MnV8	20-35	20-35	15-25	15-25	20-35	20-35	-	-	10-20	10-20
1.5 Alloy steels hardened / tempered	<350	>850 <1200	30		20-35	20-35	15-25	15-25	20-35	20-35	-	-	10-20	10-20
1.6 Hardened, heat treated, high tensile alloy	<420	>1500	12		12-20	12-20	8-15	8-15	12-20	12-20	-	-	-	-
1.7 Hardened Steel 45-50 Rc	<550		<12		-	-	-	-	-	-	-	-	-	-
1.8 Hardened Steel 50-62 Rc	<700		<12	HS2-10-1-8	-	-	-	-	-	-	-	-	-	-
2.0 Stainless Steels														
2.1 Free machining	<250	<850	25	X8CrNiS18-9	15-25	15-25	20-35	20-35	15-25	15-25	-	-	10-20	10-20
2.2 Austenitic	<250	<850	20	X5CrNi18-10	12-20	12-20	15-25	15-25	12-20	12-20	-	-	10-20	10-20
2.3 Ferritic + martensitic	<250	<850	20	X20Cr13	10-15	10-15	8-15	8-15	10-15	10-15	-	-	-	-
3.0 Cast Irons														
3.1 Lamellar graphite (Grey soft)	<150	<500	10	GG10, GG40	30-40	30-40	20-25	20-25	30-40	30-40	-	-	-	-
3.2 Lamellar graphite (Grey hard)	<300	<1000	10	GGG40, GGG80	30-40	30-40	20-25	20-25	30-40	30-40	-	-	-	-
3.3 Nodular (spheroidal) graphite & malleable	<200	<700	10		20-25	20-25	12-20	12-20	20-25	20-25	-	-	-	-
4.0 Titaniums														
4.1 Pure Titanium	<250	<850	>20	Ti99.7, Ti99.8	-	-	-	-	-	-	-	-	-	-
4.2 Titanium alloys	>250	>850 <950	<20	TiAl6V4	-	-	-	-	-	-	-	-	-	-
4.3 Titanium alloys	>280	>950	<20	Ti 6Al 6V 2Sn	-	-	-	-	-	-	-	-	-	-
5.0 Nickels														
5.1 Pure Nickel & Nickel alloys	<250	<850	>25	Alloy201, Alloy400, Alloy600	5-10	-	5-10	5-10	-	-	-	-	15	-
5.2 Nickel alloys	>250	>850 <1150	<25	Alloy80A-annealed	-	-	-	-	-	-	-	-	-	-
5.3 Nickel alloys	>340	>1150 <1600	<20	Alloy718-age-hardened	-	-	-	-	-	-	-	-	-	-
6.0 Coppers														
6.1 Pure Copper (electrolytic copper)	<120	<400	12	SF-Cu	25-35	25-35	20-30	20-30	25-35	25-35	25-35	25-35	20-30	20-30
6.2 Short chip Brass, Phosphor Bronze, gun metal	<200	<700	12	G-CuSn12Ni	20-30	20-30	20-30	20-30	20-30	20-30	40-50	40-50	-	-
6.3 Long chip Brass, Bronze	<200	<700	12	G-CuPb20Sn	25-35	25-35	20-30	20-30	25-35	25-35	25-35	25-35	-	-
7.0 Aluminiums														
7.1 Aluminium unalloyed	<100	<350	15	Al99.5	60-80	60-80	50-60	50-60	60-80	60-80	60-80	60-80	80-100	80-100
7.2 Magnesium unalloyed	<150	<350	15	Al99.85Mg0.5	60-80	60-80	50-60	50-60	60-80	60-80	60-80	60-80	80-100	80-100
7.3 Al Alloyed Si < 1.5 %	<120	<500	15	AlMg1.5	40-50	40-50	30-40	30-40	40-50	40-50	40-50	40-50	60-80	60-80
7.4 Al Alloyed 1.5 % < Si < 10%	<120	<400	10	AlSi10Mg	30-40	30-40	20-30	20-30	30-40	30-40	30-40	30-40	50-60	50-60
7.5 Al Alloyed > 10% Si	-	<400	N	AlSi17Cu4	20-30	20-30	20-30	20-30	20-30	20-30	-	-	-	-
7.6 Magnesium alloys	-	<400	N	MgAl3Zn	20-30	20-30	20-30	20-30	20-30	20-30	-	-	-	-
8.0 Plastics														
8.1 Plastics, Thermoplastics, Polyethylene	<340	<50	N	ABS, PVC, Polycarbonate	50-60	50-60	50-60	50-60	50-60	50-60	60-80	60-80	-	-

Notes on Tapping

1. The speeds listed above are a recommendation only, and are based on depth of thread listed, speeds can be 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
2. Taps must be driven by either the square or flat to eliminate slippage.
   eg, ER-GB collets (square drive)

LEGEND

n = rev. per minute
v_c = cutting speed (m/min)
f = pitch (mm)
v_f = feed rate (mm/min)

FORMULAS

$n = (v_c \times 1000) / (Ø \times \pi)$
$v_c = (Ø \times \pi \times n) / 1000$
$v_f = f \times n$

Sutton Tools SynchroFlex 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 SynchroFlex 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 SynchroFlex 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.

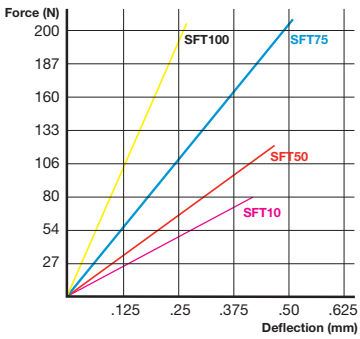
The Sutton SynchroFlex is available now from Sutton Tools. We also stock other models in the Sutton Tools range, for both manual and automated tapping applications.

Synchroflex Proven Results

Independent tests in real world applications confirm Synchroflex 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**

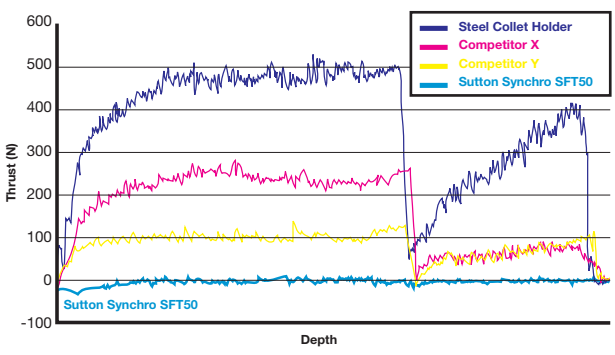
Synchroflex exerts lower thrust and torque forces than any other tap holder on the market. In any given material the lower the thrust and torque forces on the tap, the longer the tap life.



Consistent and predictable tap starting force

Deflection Rates

Only Synchroflex's computer generated flexure technology produces a progressively higher tap starting force for each 0.025mm of deflection. It's predictable and consistent throughout the life of the tool.



Graph illustrates the final hole tapped by each tap driver.

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 Synchroflex	-12	-29	-31

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

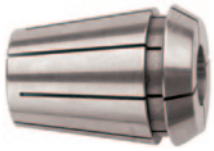
Holder Type	Average Torque (Ncm)	Average Down Cut Torque (Ncm) Entering Hole	Average Reverse Torque (Ncm) Exiting Hole
Steel Collet Holder (Rigid)	481	631	-387
Competitor X	593	639	-354
Competitor Y	542	730	-392
Sutton Synchroflex	268	371	-190

suttontools TAPMATIC

- 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 absober

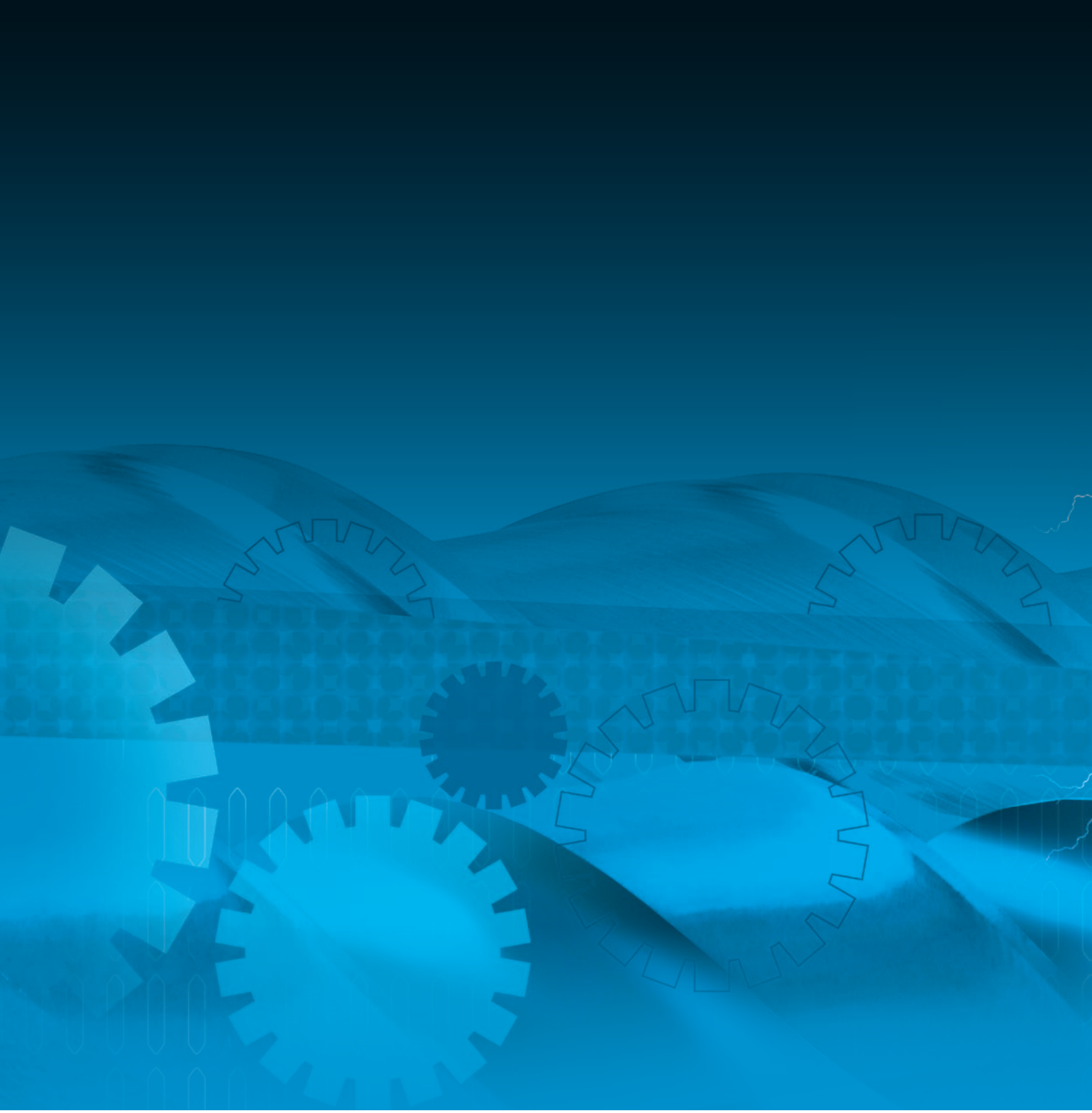
Patented Flexure Design

BT-40 Arbor



ER25 Collet (Sq. Drive)

Size Ref.	Description	Size Capacity		Mount	Collet Series	Item #
	Tapping Attachments (Discount Group Z1104)					**Z100**
SFT10	Synchroflex SFT10	M1-M6	#2-#10	25mm SS	ER11	Z100 SFT10
SFT50	Synchroflex SFT50	M4-M12	#8-1/2	25mm SS	ER20	Z100 SFT50
SFT75	Synchroflex SFT75	M4-M16	3/8 - 3/4	25mm SS	ER25	Z100 SFT75
						Z110
	Collets - SFT10 (Round Drive) (Discount Group Z1110)					
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 or 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 or M2-M6 Synchro		-	ER20	Z111 0060
0070	Ø 7mm	M10 DIN376		-	ER20	Z111 0070
0080	Ø 8mm	M8 DIN371 or M8 Synchro		-	ER20	Z111 0080
0090	Ø 9mm	M12 DIN376		-	ER20	Z111 0090
0100	Ø 10mm	M10 DIN371 or 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 or M2-M6 Synchro		-	ER25	Z112 0060
0070	Ø 7mm	M10 DIN371		-	ER25	Z112 0070
0080	Ø 8mm	M8 DIN371 or M8 Synchro		-	ER25	Z112 0080
0090	Ø 9mm	M12 DIN376		-	ER25	Z112 0090
0100	Ø 10mm	M10 DIN371 or M10 Synchro		-	ER25	Z112 0100
0110	Ø 11mm	M14 DIN376		-	ER25	Z112 0110
0120	Ø 12mm	M16 DIN376 or M12 Synchro			ER25	Z112 0120
	Accessories (Discount Group Z1108)					**Z130**
3943	BT-40 Arbor W/25mm Bore	-		-	-	Z130 3943
3945	BT-50 Arbor W/25mm Bore	-		-	-	Z130 3945
				-		**Z135**
BT40	Pull stud BT40	-		-	-	Z135 BT40
BT50	Pull stud BT50	-		-	-	Z135 BT50



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