

SYNCHRO TAPPERS

AND ACCESSORIES



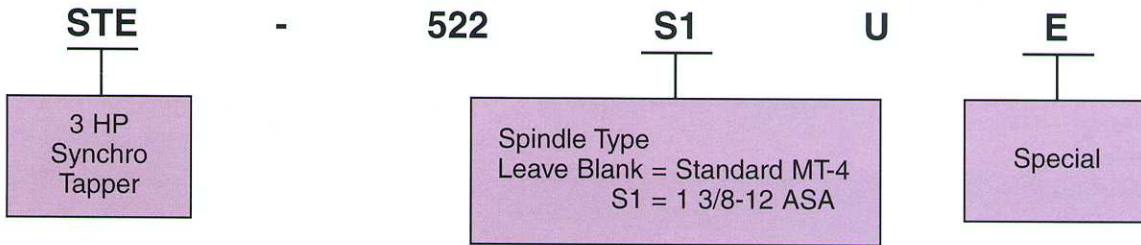
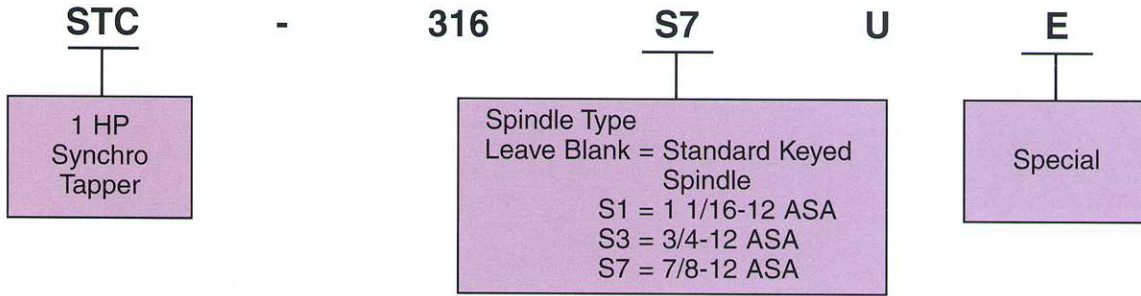
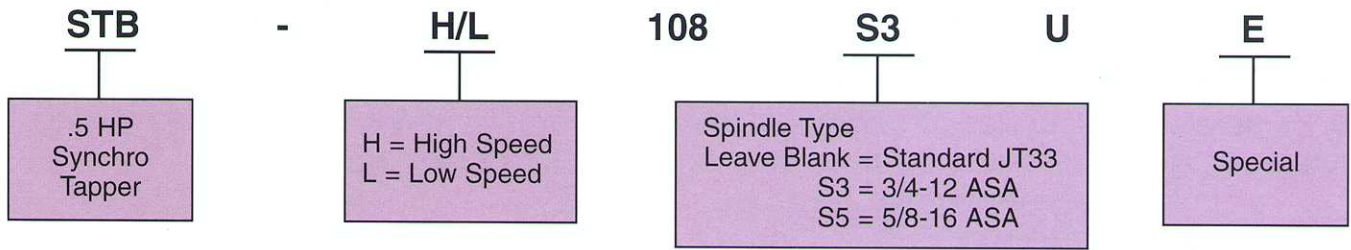
Sugino Corp.

SUGINO SYNCHRO TAPPERS

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How To ORDER



Note: When Ordering Synchro Tappers Please Include:

1. Motor Voltage (ST2 & ST3 220V only)
2. Spindle RPM (ST2 & ST3 Not Required)
3. Thread Pitch

SYNCHRO TAPPER STB-H, STB-L

STB-H (High speed type) max. 2,100rpm

STB-L (High torque type) max. 7/16 (M12)

The Sugino Synchro Tapper is an electrically operated automatic tapping system that quickly completes work cycles through its fast-action approach and reverse strokes. Acting independently, it complements any system using automatic drilling equipment.

Model STB-H/L108U

(shown with tap holder)

• Features

1. Faster production

Feeds are automatically changed from rapid approach to pitch feed to reverse feed on retract. This speed cycle greatly increases production capacity.

2. Capable of class 3 thread accuracy

Feed rate is synchronized with tool rotation allowing thin or soft materials to be worked efficiently.

3. Flexibility to meet your specifications

Easy adjustment for tap diameter, thread pitch and stroke length.

4. Compact, versatile set-up

Compact size allows installation in small spaces and operation at any angle.

5. Long stroke, a variety of attachments

Simple changeover from single tap head to multi-tap heads allows flexibility for use in either small lot or large lot production runs.



• Specifications

Model	Spindle rpm (60Hz)	Tapping capacity (based on number of spindles tapping simultaneously)								Stroke			Fast stroke speed	Minimum cycle time (sec.)	Thread	
		1 spindle		2 spindle		3 spindle		4 spindle		Total stroke	Fast approach stroke	Pitch feed stroke			Number of thds per inch	Thread pitch (mm)
		Alumi-num	Steel	Alumi-num	Steel	Alumi-num	Steel	Alumi-num	Steel							
STB-H108U	2,100	#6[#8]	#4[#6]	#4[#6]	#1[#1]	#3[#3]	#1[#1]	-	-	.47~ 3.15 in. (12~ 80 mm)	.407~ 2.95 in. (10~ 75 mm)	0~ 1.57 in. (0~ 40 mm)	4.13~ in./sec. (105 mm/ sec.)	2	100	0.25
		M4[M5]	M3[M4]	M3[M4]	M2[M2]	M3[M3]	M2[M2]	-	-						80	0.3
	1,440	#8[#12]	#6[#6]	#6[#8]	#3[#6]	#3[#6]	#1[#3]	#3[#6]	#1[#1]						64	0.35
		M5[M6]	M4[M4]	M4[M5]	M3[M4]	M3[M4]	M2[M3]	M3[M4]	M2[M2]						56	0.4
	900	#12[1/4]	#8[#8]	#8[#12]	#6[#6]	#6[#8]	#3[#3]	#3[#6]	#1[#3]						48	0.45
		M6[M8]	M5[M5]	M5[M6]	M4[M4]	M4[M5]	M3[M3]	M3[M4]	M2[M3]						44	0.5
	620	1/4[1/4]	#12[#12]	#12[#12]	#8[#8]	#8[#12]	#6[#6]	#6[#8]	#3[#6]						36	0.6
		M8[M8]	M6[M6]	M6[M6]	M5[M5]	M5[M6]	M4[M4]	M4[M5]	M3[M4]						32	0.7
STB-L108U	1,100	#12[1/4]	#6[#8]	#8[#8]	#3[#6]	#6[#6]	#1[#3]	#3[#6]	#1[#1]	28	0.75					
		M6[M8]	M4[M5]	M5[M5]	M3[M4]	M4[M4]	M2[M3]	M3[M4]	M2[M2]	26	0.8					
	690	1/4[1/4]	#8[#12]	#12[#12]	#6[#8]	#8[#8]	#3[#6]	#6[#8]	#3[#3]	24	1					
		M8[M8]	M5[M6]	M6[M6]	M4[M5]	M5[M5]	M3[M4]	M4[M5]	M3[M3]	20	1.25					
	420	1/4[3/8]	#12[1/4]	#12[1/4]	#8[#12]	#8[#12]	#6[#8]	#6[#8]	#3[#6]	19	1.5					
		M8[M10]	M6[M8]	M6[M8]	M5[M6]	M5[M6]	M4[M5]	M4[M5]	M3[M4]	18	1.75					
	260	3/8[7/16]	#1/4[3/8]	1/4[3/8]	#12[1/4]	#12[1/4]	#8[#12]	#8[#12]	#6[#8]	16	1.5					
		M10[M12]	M8[M10]	M8[M10]	M6[M8]	M6[M8]	M5[M6]	M5[M6]	M4[M5]	14	1.75					

Motor Specs

3 phase Volts (V)	220 @ 60Hz	440 @ 60Hz
Amps (A)	1.75	.90
Power (HP)	1/2 (0.35kw)	
Poles (P)	4/1800rpm	

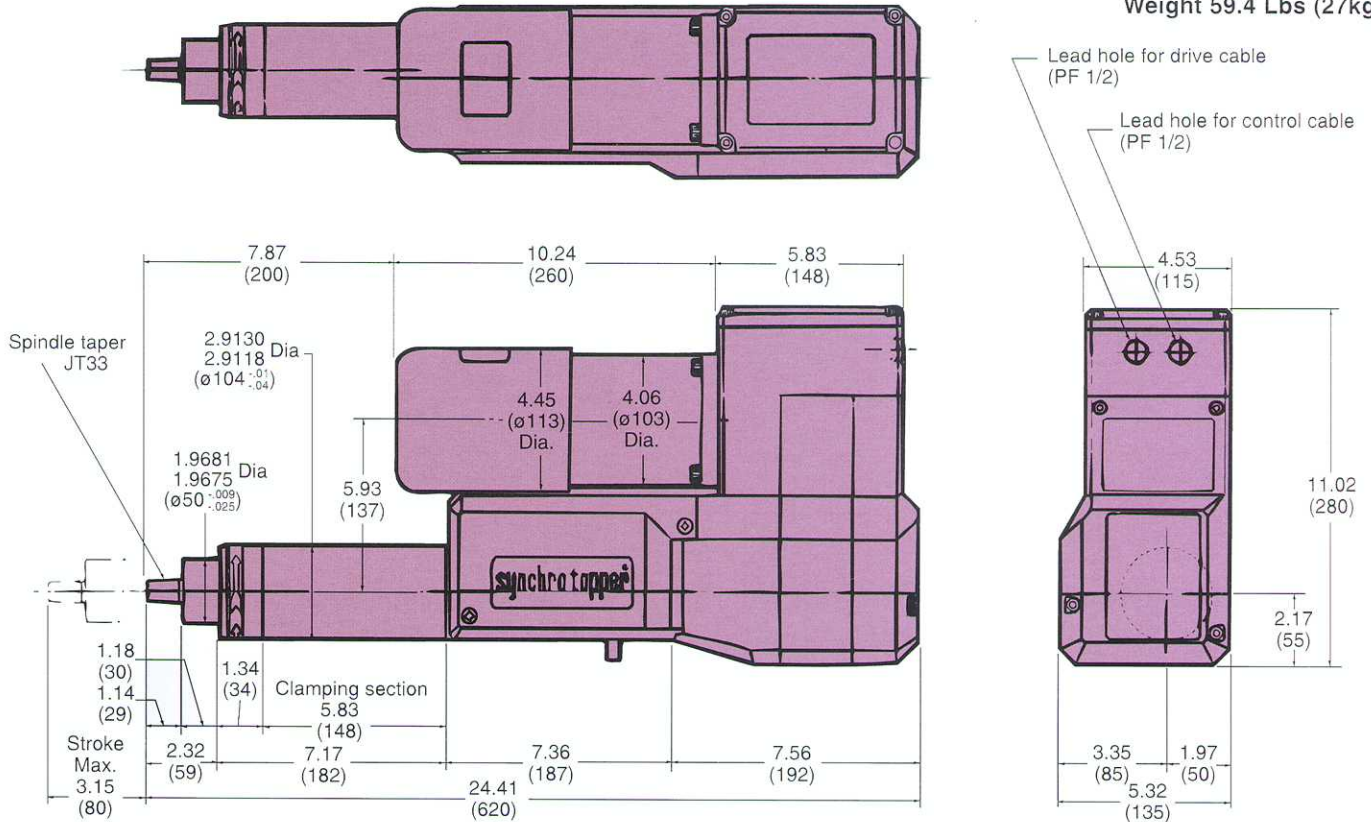
Notes:

- Tapping capacities are for a three-fluted #2 hand tap. The capacities are based on the depth of tapping being limited to 1.5 times the tap diameter.
- Tapping capacities in brackets are for a spiral flute tap or spiral point tap (for through hole tapping).

• Synchro Tapper Model STB-1108U

Dimensions: Inches
(mm)

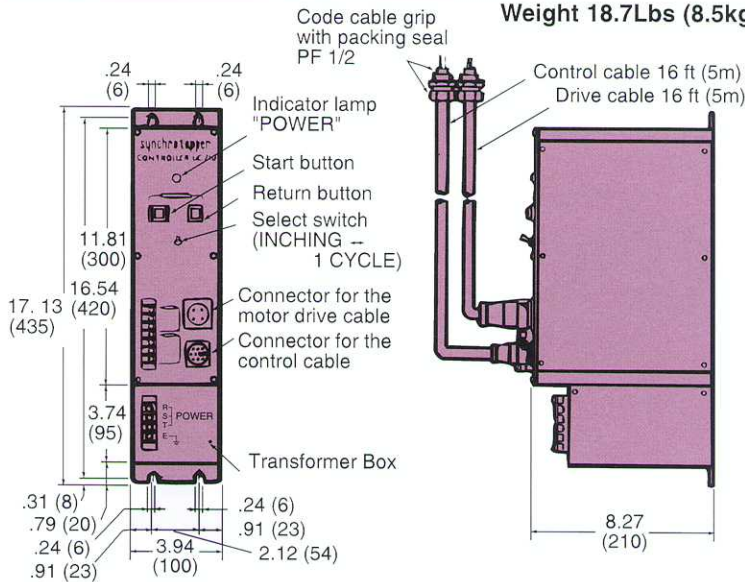
Weight 59.4 Lbs (27kgf)



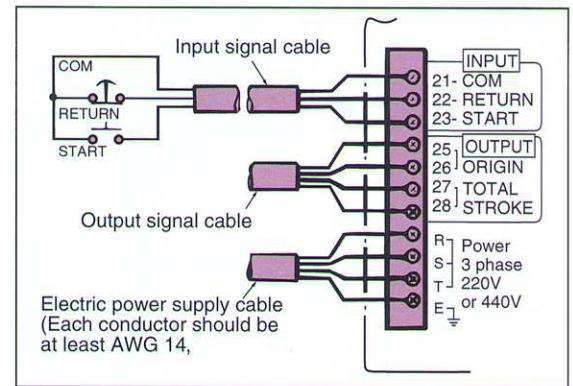
For ASA Spindle Dimensions see page 25

• Controller Model UC-21U

Weight 18.7Lbs (8.5kgf)



• Wiring of power supply, input and output signals



■ Specifications of input and output signals

Input signal	Form	No-voltage contact
	Input time	Min. 0.1 sec.
	Input voltage	DC24V (Internal supply)
	Description	Start - - - Normally open contact Return - - - Normally closed contact

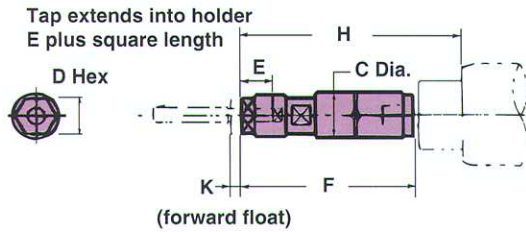
Output signal	Form	<ul style="list-style-type: none"> No-voltage (1a) contact output (Relay contact) Max. applicable load AC220V - 1A (Inductive load)
	Description	<ul style="list-style-type: none"> ORIGIN - - - Continuous signal at full return position Total - - - Continuous signal from full forward position until 0.5 sec. after unit retracts to the origin point.

• Tapper Heads for Model STB-1108U

Dimensions: Inches
(mm)

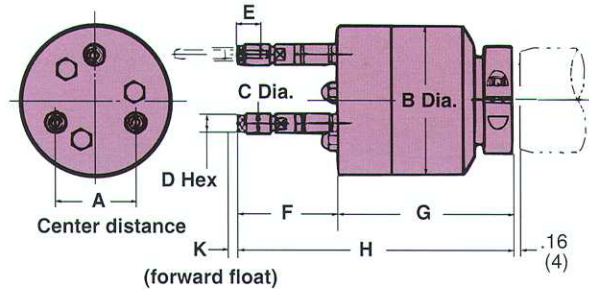
• Mini-Tapper

Model 1 TC-100CU, 1 TC-100FU



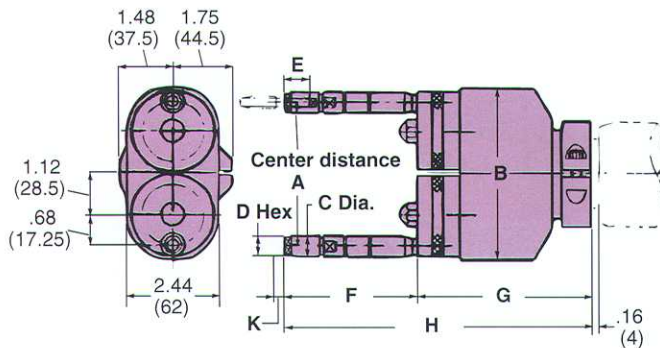
• 3-Spindle Tapper Head (Fixed type)

Model 3TC-E1040BFU, 3TC-E3080BFU



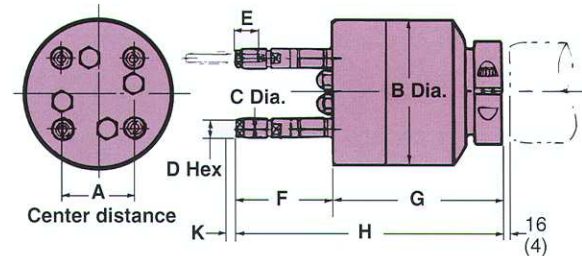
• Twin Tapper Head (Adjustable type)

Model 2 TC-E1040ACU, 2TC-E3080AFU



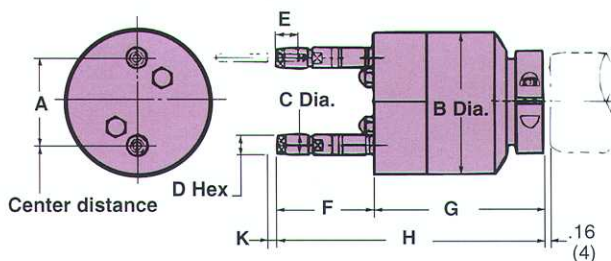
• 4 Spindle Tapper Head (Fixed type)

Model 4 TC-E1040BFU, 4TC-E3080BFU



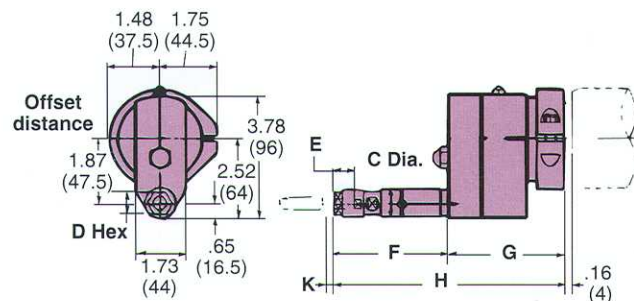
• Twin Tapper Head (Fixed type)

Model 2 TC-E1040BFU, 2TC-E3080BFU



• Offset Tapper Head

Model OTC-100FU



See page 6 for dimensions.

Notes:

- When ordering a fixed type tapper head, please provide the following information.
 - Model of Tapper Head.
 - Spindle arrangement and center distance(s).
 - Tap diameter.
 - Workpiece material.

- Sugino can provide Tap Heads for your special requirements other than those shown above.
- Please refer to page 26 for Erickson collets and nose pieces.

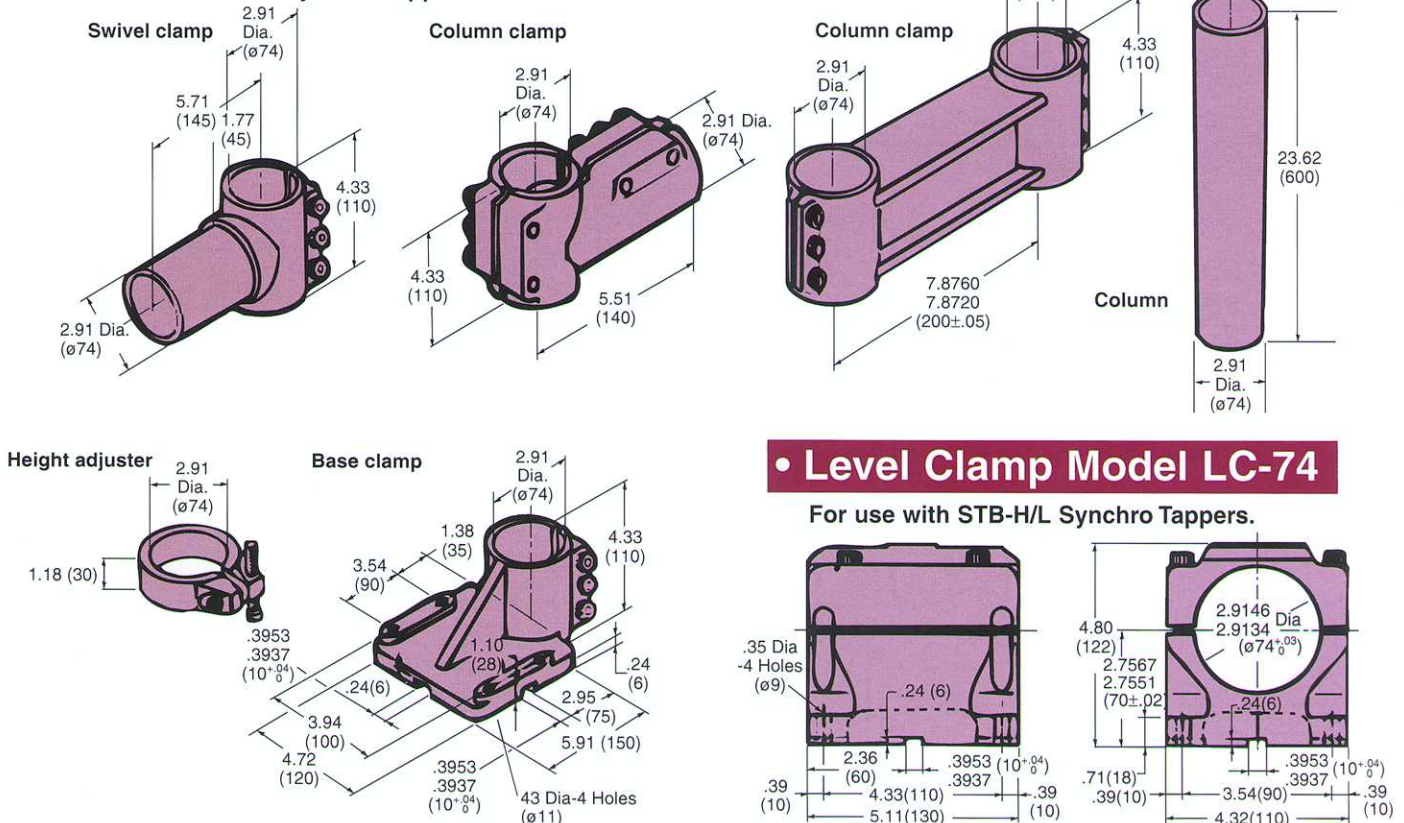
• Dimensions of Tapper Heads for Model STB-H108U

Model	Number of spindles	Erickson collet model	Scale	A Min. to Max.	B	C	D	E	F	G	H	K	Alignment tolerance	
1TC-100CU	1	K09	Inch	—	—	1.30	1-1/8	.60	4.78	—	6.12	.41	± .002	
			mm	—	—	33	28.6	15.3	121.5	—	155.5	10.5	±0.05	
Inch			—	—	1.30	1-1/8	.60	4.78	—	6.12	.41	± .008		
mm			—	—	33	28.6	15.3	121.5	—	155.5	10.5	±0.2		
2TC-E1040ACU	2	J09	Inch	.90 ~ 3.59	4.72	.83	11/16	.58	3.66	4.76	8.42	.29	± .002	
			mm	23 ~ 91	120	21	17.5	14.7	93	121	214	7.4	±0.05	
Inch			.90 ~ 3.59	4.72	.83	11/16	.58	3.66	4.76	8.42	.29	± .004		
mm			23 ~ 91	120	21	17.5	14.7	93	121	214	7.4	±0.1		
2TC-E3080AFU		300	J09	Inch	.60 ~ 2.48	3.46	.58	1/2	.50	2.76	5.83	8.59	.43	± .002
				mm	15 ~ 63	88	14.7	12.7	12.7	70	148	218	11	±0.05
2TC-E1040BFU		J09	300	Inch	.90 ~ 3.59	4.88	.83	11/16	.58	3.66	4.80	8.46	.29	± .004
				mm	23 ~ 91	124	21	17.5	14.7	93	122	215	7.4	±0.1
3TC-E1040BFU	3	300	Inch	.60 ~ 2.16	3.46	.58	1/2	.50	2.76	5.83	8.59	.43	± .002	
			mm	15 ~ 55	88	14.7	12.7	12.7	70	148	218	11	±0.05	
3TC-E3080BFU		J09	Inch	.90 ~ 3.07	4.88	.83	11/16	.58	3.66	4.80	8.46	.29	± .004	
			mm	23 ~ 78	124	21	17.5	14.7	93	122	215	7.4	±0.1	
4TC-E1040BFU	4	300	Inch	.60 ~ 2.51	4.88	.58	1/2	.50	2.76	4.80	7.56	.43	± .002	
			mm	15 ~ 64	124	14.7	12.7	12.7	70	122	192	11	±0.05	
4TC-E3080BFU		J09	Inch	.90 ~ 2.51	4.88	.83	11/16	.58	3.66	4.80	8.46	.29	± .004	
			mm	23 ~ 64	124	21	17.5	14.7	93	122	215	7.4	±0.1	
OTC-100FU	1	K09	Inch	—	—	1.30	1-1/8	.60	4.25	3.58	7.83	.41	± .008	
			mm	—	—	33	28.6	15.3	108	91	199	10.5	±0.2	

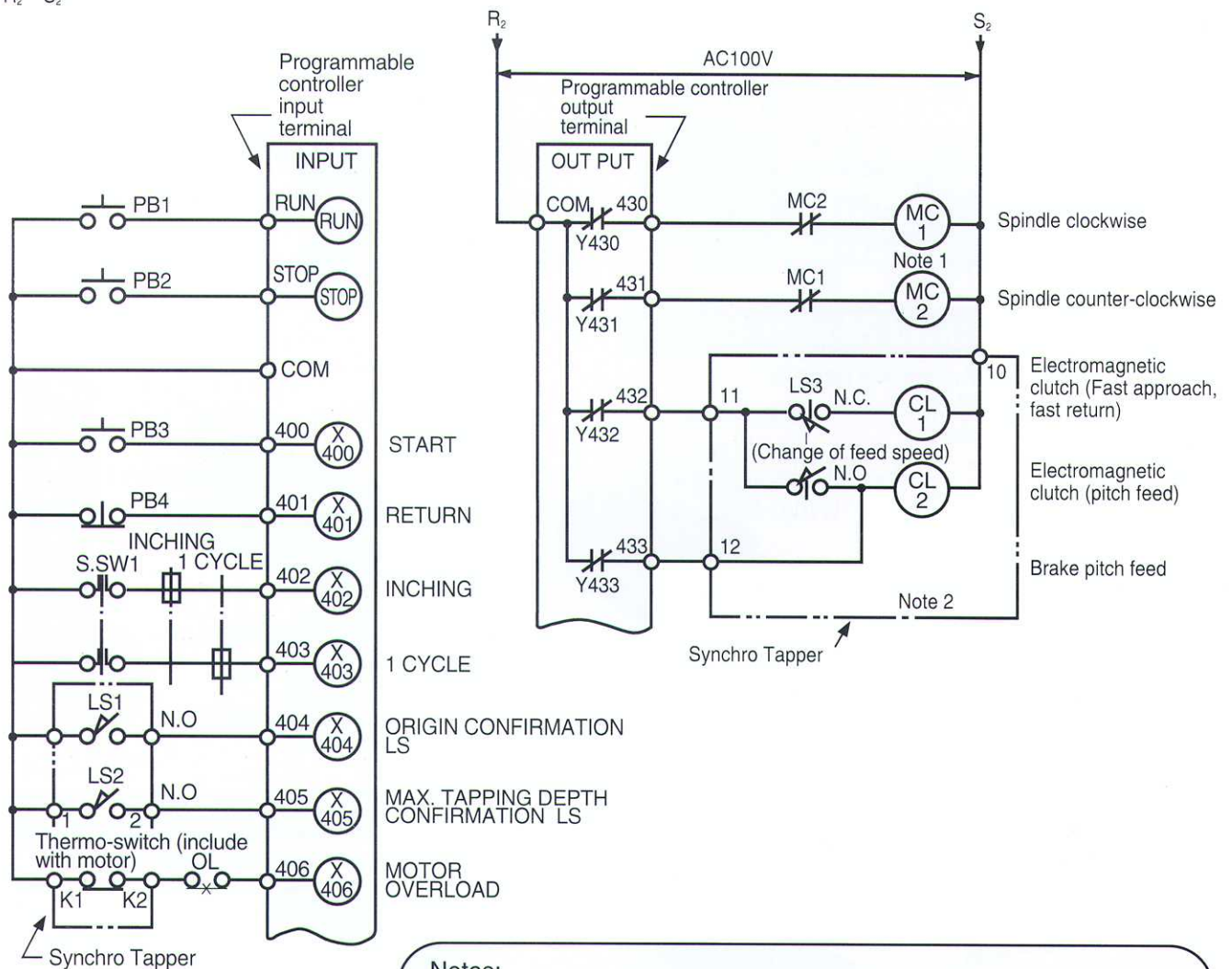
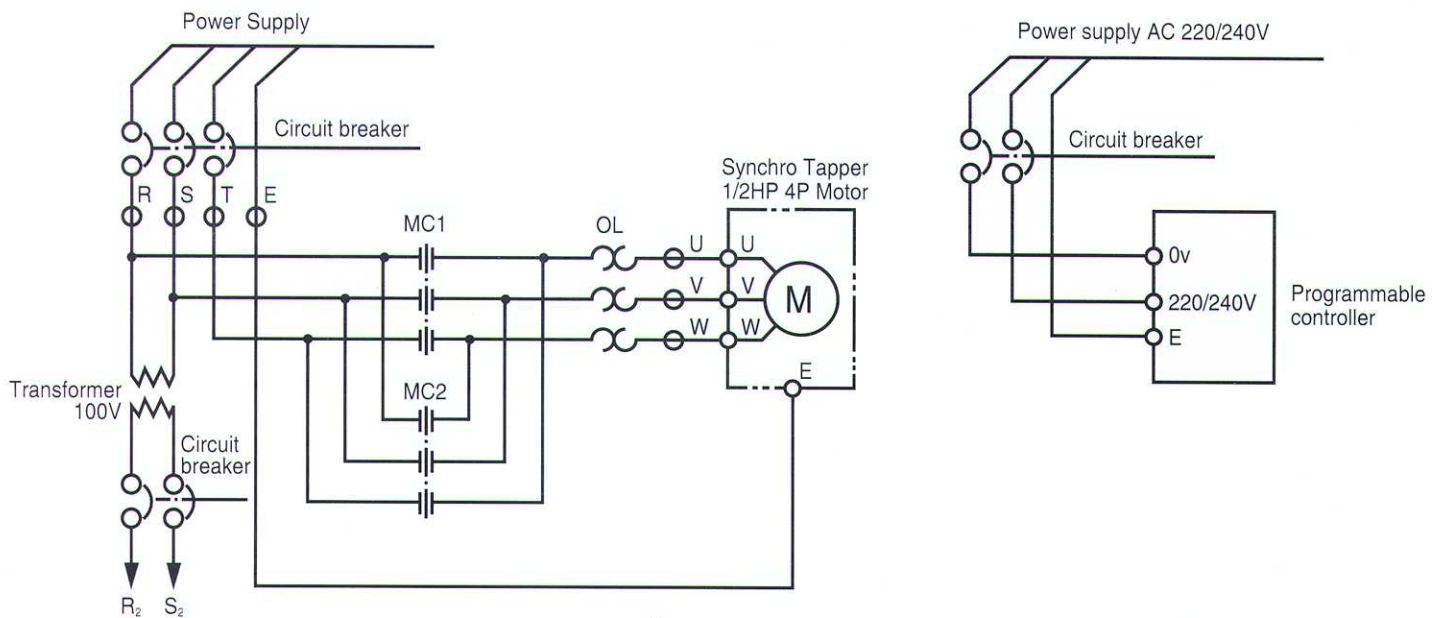
• Universal Stand Model US-74

Dimensions: Inches (mm)

For use with STB-H/L Synchro Tappers.



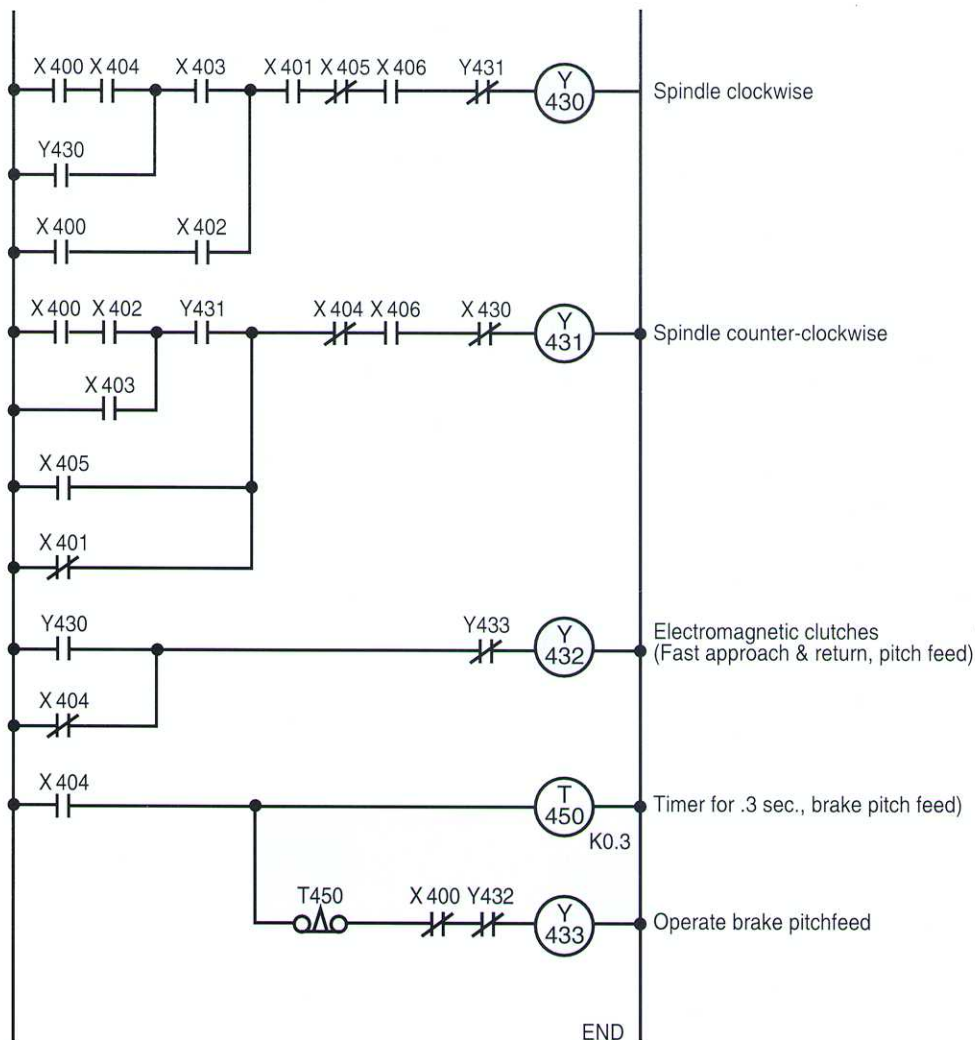
• Controller Electric Circuit For Programmable Controller (STB- Γ 108U)



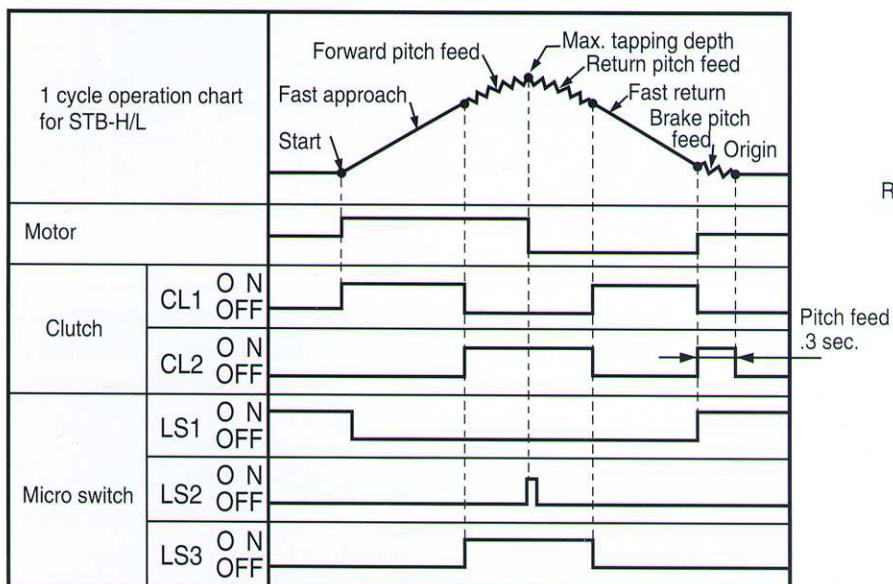
Notes:

1. Spindle rotation (clockwise and counter-clockwise) should be controlled by magnetic contactor (MC1, MC2) with mechanical interlock (supplied by customer).
2. AC100V source voltage is converted within the unit to DC45V for electro-magnetic clutches

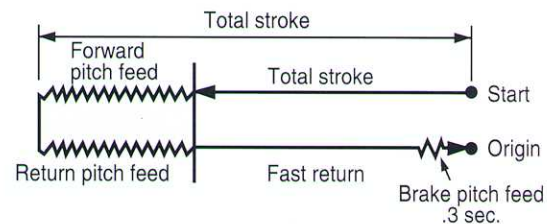
• Control Program (STB-H108U)



• Operation Chart for One Cycle



• Travel Chart for One Cycle



SYNCHRO TAPPER STC-P

- Powerful 1HP(0.75kw) • Long stroke 4.72inch(120mm) • Capable of producing class 3 threads with fully synchronized feed and rotation • Fast production with rapid feed available

• Features

1. Faster production

Feeds are automatically changed from rapid approach to pitch feed to reverse feed on retract. This speed cycle greatly increases production capacity.

2. Capable of class 3 thread accuracy

Feed rate is synchronized with tool rotation allowing thin or soft materials to be worked efficiently.

3. Flexibility to meet your specifications

Easy adjustment for tap diameter, thread pitch and stroke length.

4. Compact, versatile set-up

Compact size allows installation in small spaces and operation at any angle.

5. Long stroke, a variety of attachments

Simple changeover from single tap head to multi-tap heads allows flexibility for use in either small lot or large lot production runs.



Model STC-P316U
(shown with tap holder)



• Specifications

Model	Spindle rpm (60Hz)	Tapping capacity (based on number of spindles tapping simultaneously)								Stroke			Fast stroke speed	Minimum cycle time (sec.)	Thread		
		1 spindle		2 spindle		3 spindle		4 spindle		Total stroke	Fast approach stroke	Pitch feed stroke			Number of thds per inch	Thread pitch (mm)	
		Alumi-num	Steel	Alumi-num	Steel	Alumi-num	Steel	Alumi-num	Steel								
STC-P316U	720	7/16 [1/2]	1/4 [1/4]	3/8 [7/16]	#12 [1/4]	1/4 [3/8]	#8 [#12]	#12 [1/4]	#8 [#8]	.79~ 4.72 in. (20~ 120 mm)	1.18~ 4.33 in. (30~ 110 mm)	0~ 1.57 in. (0~ 40 mm)	3.93~ in./sec. (100 mm/ sec.)	6	40	0.5	
		M12 [M14]	M8 [M8]	M10 [M12]	M6 [M8]	M8 [M10]	M5 [M6]	M6 [M8]	M5 [M5]						36		
	490	9/16 [5/8]	7/16 [1/2]	7/16 [1/2]	1/4 [3/8]	3/8 [7/16]	#12 [1/4]	1/4 [3/8]	#12 [#12]						28		1.25
		M16 [M18]	M12 [M14]	M12 [M14]	M8 [M10]	M10 [M12]	M6 [M8]	M8 [M10]	M6 [M6]						27		
		26	24	20	19	18	16	14	13						12		
	250	3/4 [7/8]	9/16 [9/16]	1/2 [9/16]	3/8 [7/16]	7/16 [1/2]	1/4 [3/8]	3/8 [7/16]	#12 [1/4]						16		1.75
		M22 [M22]	M16 [M16]	M14 [M16]	M10 [M12]	M12 [M14]	M8 [M10]	M10 [M12]	M6 [M8]						14		2

Motor Specs		
3 phase Volts (V)	220 @ 60Hz	440 @ 60Hz
Amps (A)	3.3	1.6
Power (HP)	1 (0.75kw)	
Poles (P)	4/1800rpm	

Notes:

1. Tapping capacities are for a three-fluted #2 hand tap and 80% full thread.
2. Capacities are based on the depth of tapping being limited to 1.5 times the hand tap diameter.
3. Tapping capacities in brackets are for a spiral flute tap or spiral point tap (for through hole tapping).
4. Maximum weight of Multi Spindle Heads are as follows.

*Unit mounted horizontalUp to 77 Lbs. (35 kgf)

*Unit mounted vertical upwardUp to 55 Lbs. (25 kgf)

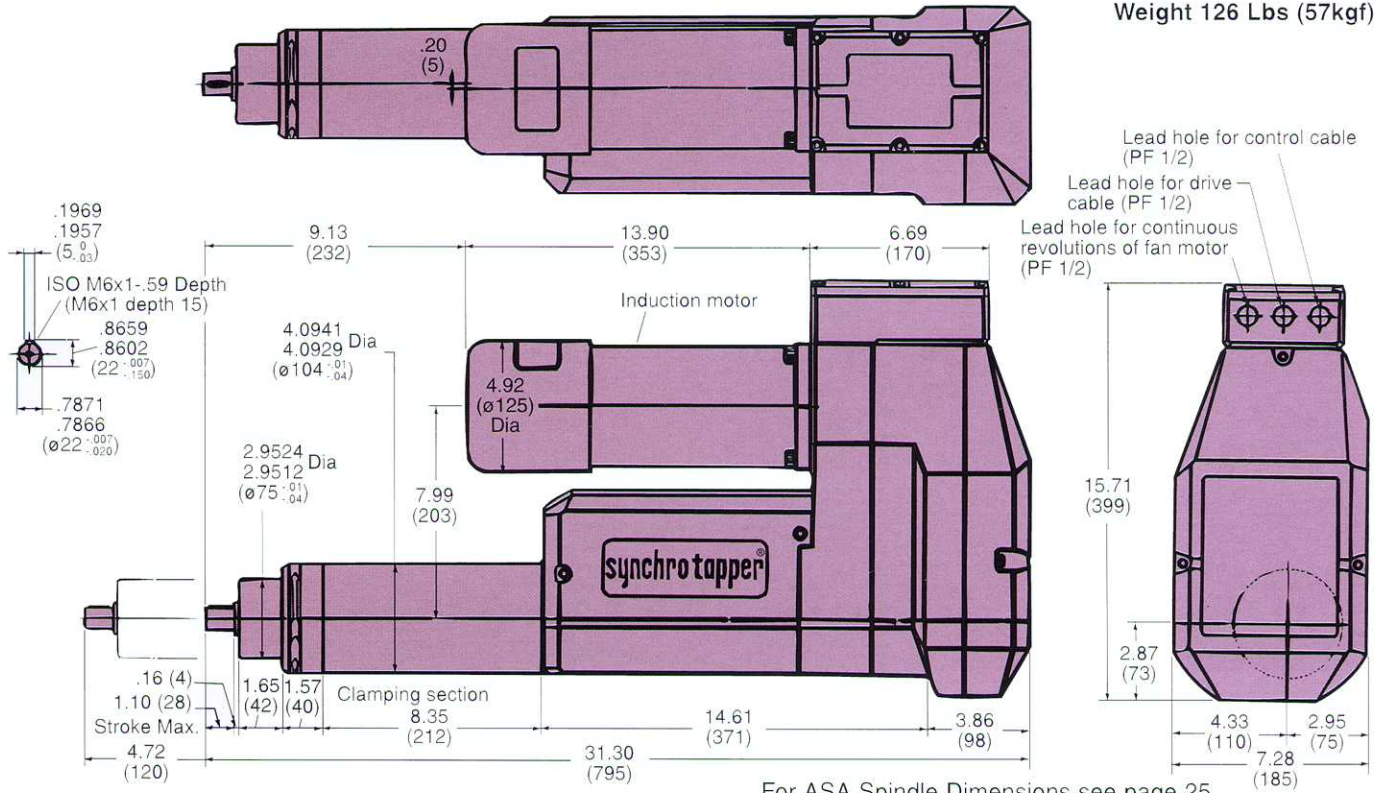
*Unit mounted vertical downwardUp to 55 Lbs. (25 kgf)

- When mounting the unit upward, please provide water proof cover in order to protect the unit from cutting oil.

• Synchro Tapper Model STC-P316U

Dimensions: Inches
(mm)

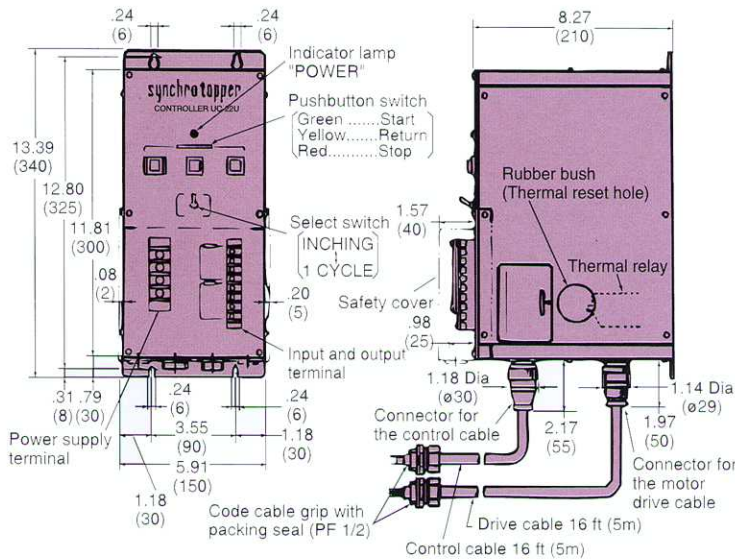
Weight 126 Lbs (57kgf)



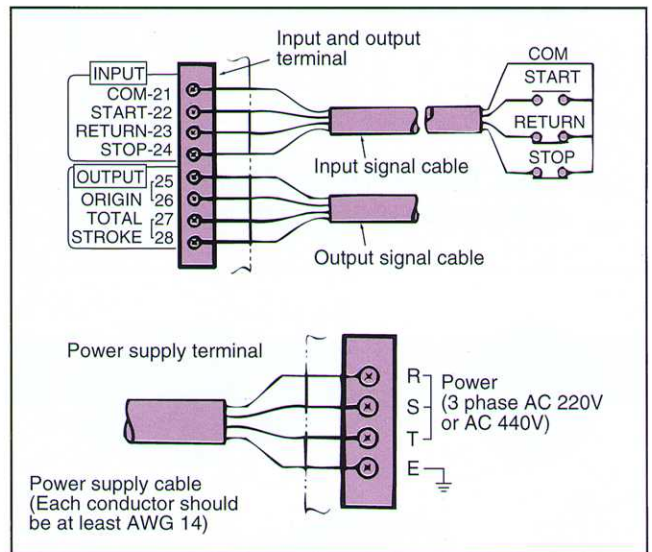
For ASA Spindle Dimensions see page 25

• Controller Model UC-22U

Weight 16.5 Lbs (7.5kgf)



• Wiring of power supply, input and output signals



■ Specifications of input and output signals

Input signal	Form	No-voltage contact	
	Input time	Min. 0.1 sec.	
	Input voltage	DC24V (Internal supply)	
	Description	Start - - -	Normally open contact
		Return - - -	Normally closed contact
Stop - - -		Normally closed contact	

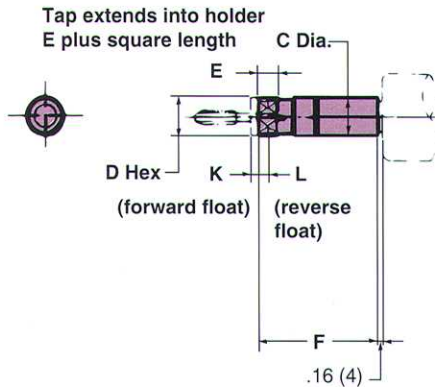
Output signal	Form	<ul style="list-style-type: none"> No-voltage (1a) contact output (Relay contact) Max. applicable load AC220V - 1A (Inductive load)
	Description	<ul style="list-style-type: none"> ORIGIN - - - Continuous signal at full return position TOTAL STROKE - - - Continuous signal from full forward position until 0.5 sec. after unit retracts to the origin point.

• Tapper Heads for Model STC-P316U

Dimensions: Inches
(mm)

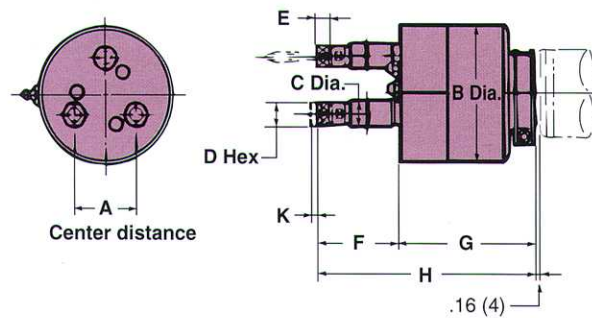
• Tap Holder

Model 1 TD-160FU, 1TD-220FU



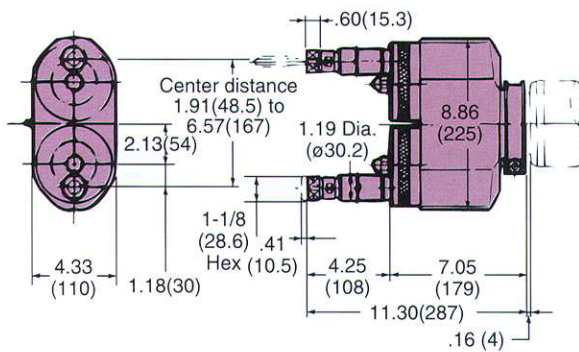
• 3 Spindle Tapper Head (Fixed type)

Model 3TD-3080BFU, 3TD-60120BFU



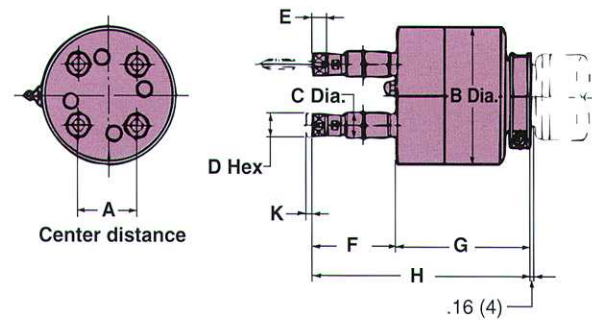
• Twin Tapper Head (Adjustable type)

Model 2TD-60120AFU



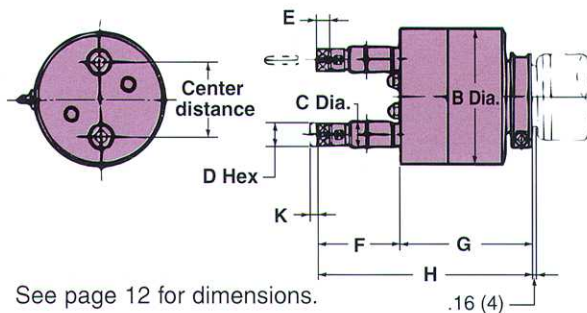
• 4 Spindle Tapper Head (Fixed type)

Model 4TD-3080BFU, 4TD-60120BFU



• Twin Tapper Head (Fixed type)

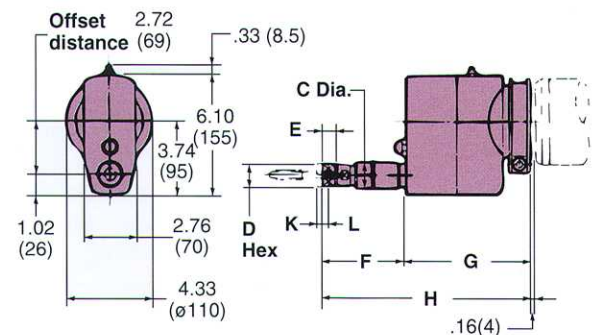
Model 2TD-3080BFU, 2TD-60120BFU



See page 12 for dimensions.

• Offset Tapper Head

Model OTD-160FU, OTD-220FU



Notes:

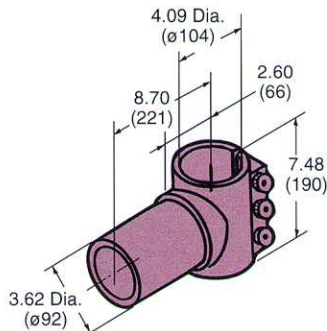
- When ordering a fixed type tapper head, please provide the following information:
 - Model of tapper head
 - Spindle arrangement and center distance(s).
 - Tap diameter.
 - Workpiece material.
- Sugino can provide tap heads for your special requirements other than those shown above.
- Please refer to page 26 for Erickson collets and nose pieces.

• Dimensions of Tapper Heads for Model STC-P316U

Model	Number of spindles	Erickson collet model	Scale	A Min. to Max.	B	C	D	E	F	G	H	K	L	Alignment tolerance
1TD-160FU	1	K09	Inch	–	–	1.57	1-1/8	.60	5.12	–	–	.06	.06	±.008
			mm	–	–	40	28.6	15.3	130	–	–	1.5	1.5	
1TD-220FU	1	L09	Inch	–	–	1.88	1-5/8	.71	5.12	–	–	.06	.06	±0.2
			mm	–	–	47.6	41.3	18	130	–	–	1.5	1.5	
2TD-3080BFU	2	J09	Inch	.91~1.14	5.43	.87	11/16	.58	3.66	6.73	10.39	.29	–	±.004
			mm	23~29	138	22	17.5	14.7	93	171	264	7.4	–	
			Inch	1.14~3.54	5.43	.87	11/16	.58	3.66	5.79	9.45	.29	–	
			mm	29~90	138	22	17.5	14.7	93	147	240	7.4	–	
			Inch	3.54~5.11	7.01	.87	11/16	.58	3.66	5.79	9.45	.29	–	
			mm	90~130	178	22	17.5	14.7	93	147	240	7.4	–	
2TD-60120BFU	2	K09	Inch	1.38~3.54	5.43	1.30	1-1/8	.60	4.25	7.05	11.30	.41	–	±0.1
			mm	35~90	138	33	28.6	15.3	108	179	287	10.5	–	
			Inch	3.54~4.92	7.01	1.30	1-1/8	.60	4.25	7.05	11.30	.41	–	
			mm	90~125	178	33	28.6	15.3	108	179	287	10.5	–	
3TD-3080BFU	3	J09	Inch	1.14~3.14	5.43	.87	11/16	.58	3.66	5.79	9.45	.29	–	±.004
			mm	29~80	138	22	17.5	14.7	93	147	240	7.4	–	
			Inch	3.14~4.33	7.01	.87	11/16	.58	3.66	5.79	9.45	.29	–	
			mm	80~110	178	22	17.5	14.7	93	147	240	7.4	–	
3TD-60120BFU	3	K09	Inch	1.38~3.07	5.43	1.30	1-1/8	.60	4.25	7.05	11.30	.41	–	±0.1
			mm	35~78	138	33	28.6	15.3	108	179	287	10.5	–	
			Inch	3.07~4.33	7.01	1.30	1-1/8	.60	4.25	7.05	11.30	.41	–	
			mm	78~110	178	33	28.6	15.3	108	179	287	10.5	–	
4TD-3080BFU	4	J09	Inch	1.14~2.60	5.43	.87	11/16	.58	3.66	5.79	9.45	.29	–	±.004
			mm	29~66	138	22	17.5	14.7	93	147	240	7.4	–	
			Inch	2.60~3.66	7.01	.87	11/16	.58	3.66	5.79	9.45	.29	–	
			mm	66~93	178	22	17.5	14.7	93	147	240	7.4	–	
4TD-60120BFU	4	K09	Inch	1.38~3.66	7.01	1.30	1-1/8	.60	4.25	7.05	11.30	.41	–	±0.1
			mm	35~93	178	33	28.6	15.3	108	179	287	10.5	–	
OTD-160FU	1	K09	Inch	–	–	1.57	1-1/8	.60	4.69	6.50	11.19	.06	.06	±.008
			mm	–	–	40	28.6	15.3	119	165	284	1.5	1.5	
OTD-220FU	1	L09	Inch	–	–	1.88	1-5/8	.71	4.69	6.50	11.19	.06	.06	±0.2
			mm	–	–	47.6	41.3	18	119	165	284	1.5	1.5	

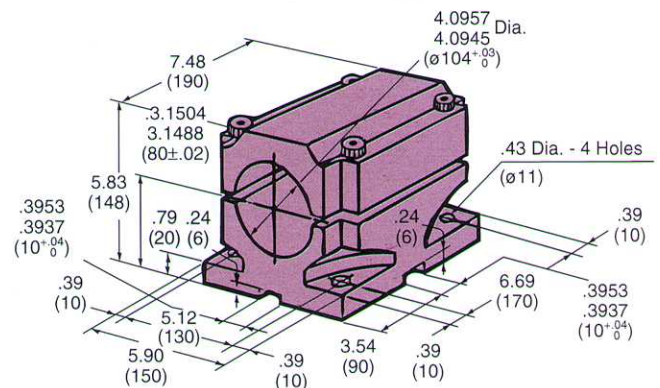
• Swivel Clamp Model US-104

For use with STC-P Synchro Tapper.



• Level Clamp Model LC-104

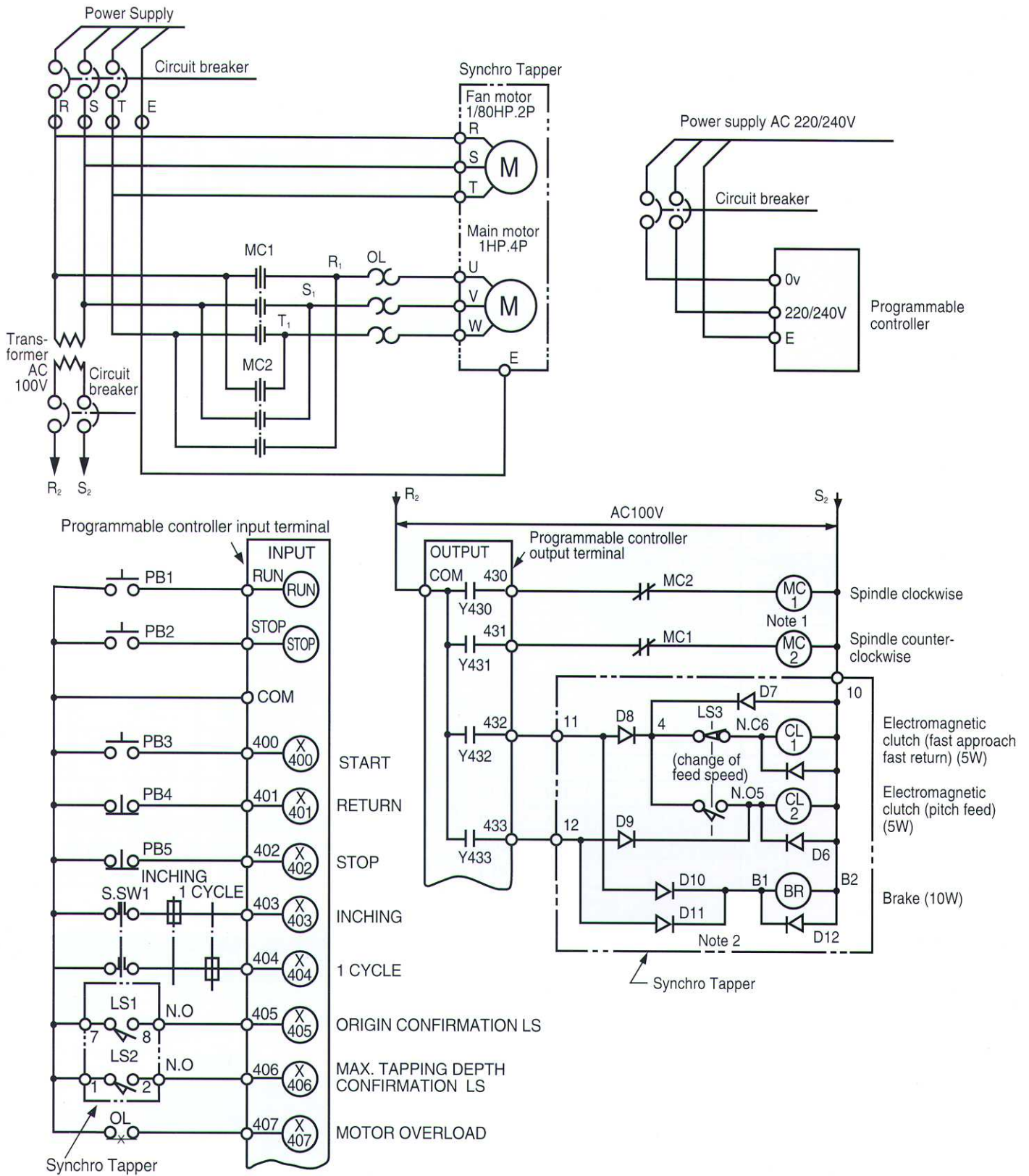
For use with STC-P Synchro Tapper.



Please use standard US-92 for rest of Universal Stand components. (Base Clamp, Column, Column Clamp and Height Adjuster)

Dimensions: Inches (mm)

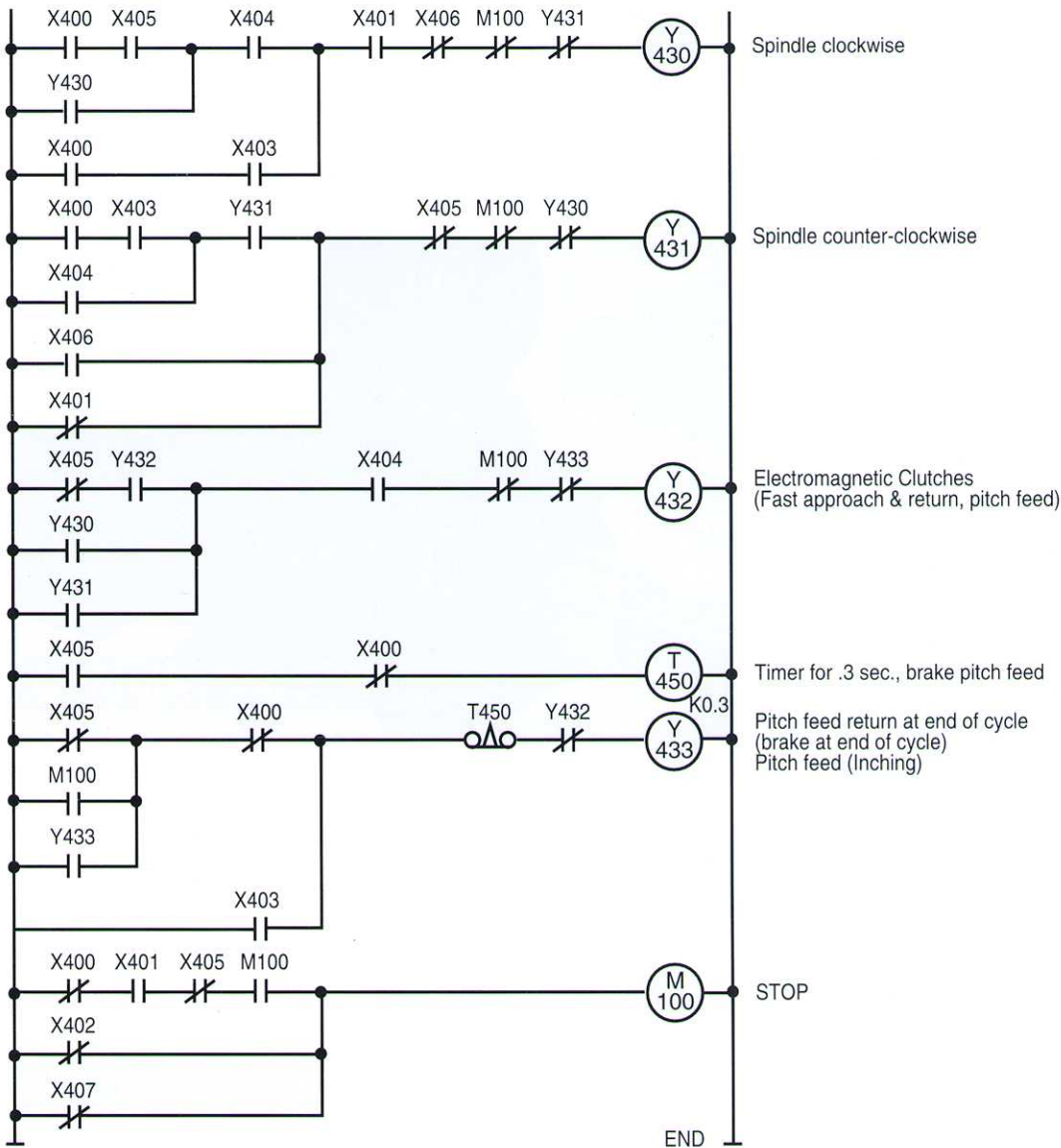
Controller Electric Circuit For Programmable Controller (STC-P316U)



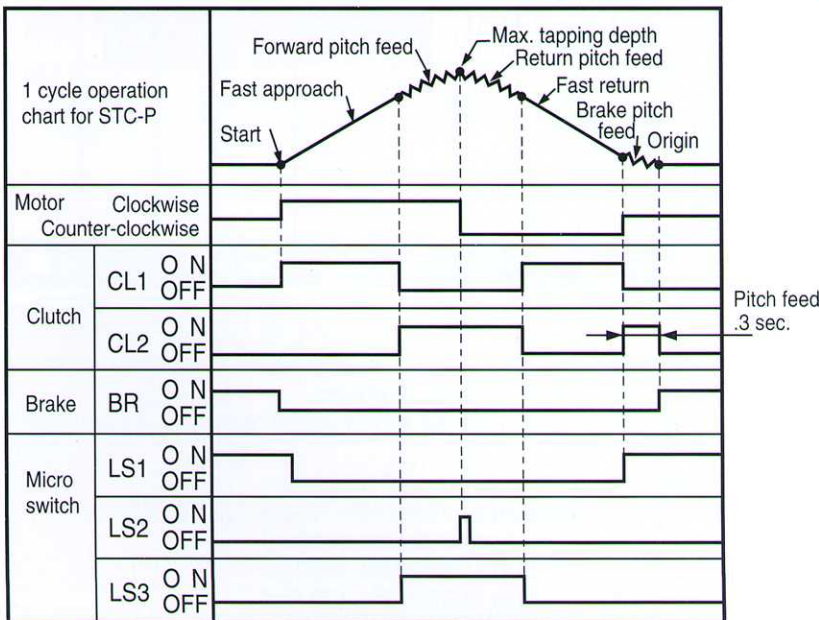
Notes:

- Spindle rotation (clockwise and counter-clockwise) should be controlled by magnetic contactor (MC1, MC2) with mechanical interlock (supplied by customer).
- AC100V source voltage is converted within the unit to DC45V for electro-magnetic clutches

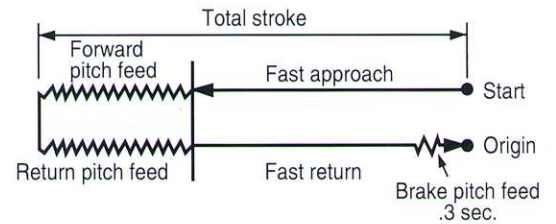
Control Program (STCP316U)



Operation Chart for One Cycle



Travel Chart for One Cycle

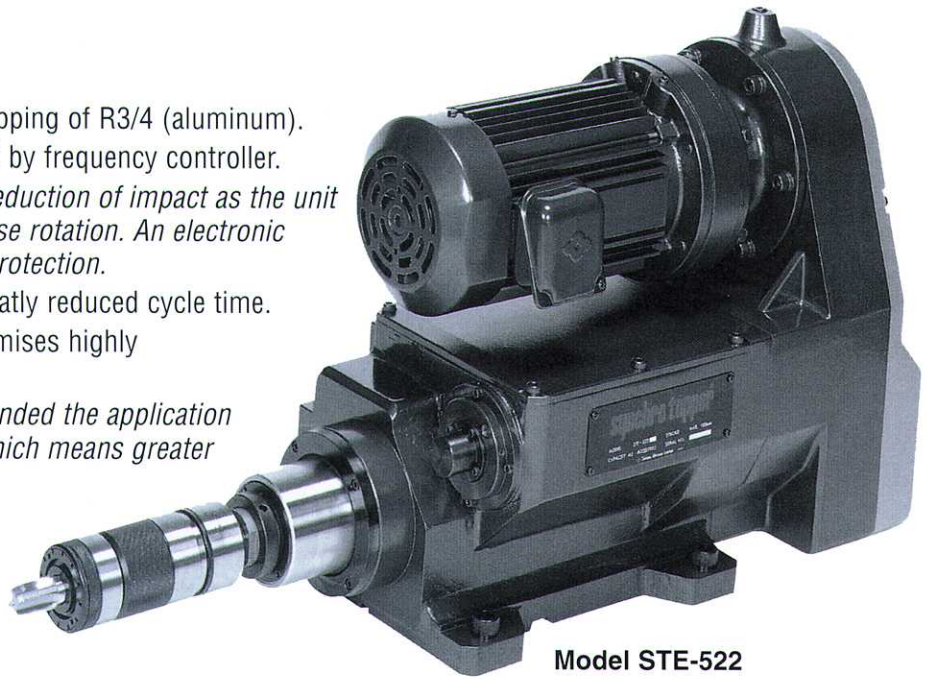


SYNCHRO TAPPER STE-522

- Large-diameter tapping unit • The best tapping unit for automatic high-speed tapping
- 1/2(M45) tapping capacity

• Features

1. Powerful 3HP (2.2 kw) motor allows tapping of R3/4 (aluminum).
2. Forward and reverse rotation controlled by frequency controller.
Using a frequency controller allows a reduction of impact as the unit changes from forward rotation to reverse rotation. An electronic thermal relay is included for overload protection.
3. A second reference point allows for greatly reduced cycle time.
4. Sugino's multi-spindle tapper head promises highly efficient tapping.
Increased power of the motor has expanded the application range of multi-spindle tapper heads, which means greater cost reduction in tapping.



Model STE-522
(shown with optional tap holder)

• Specifications

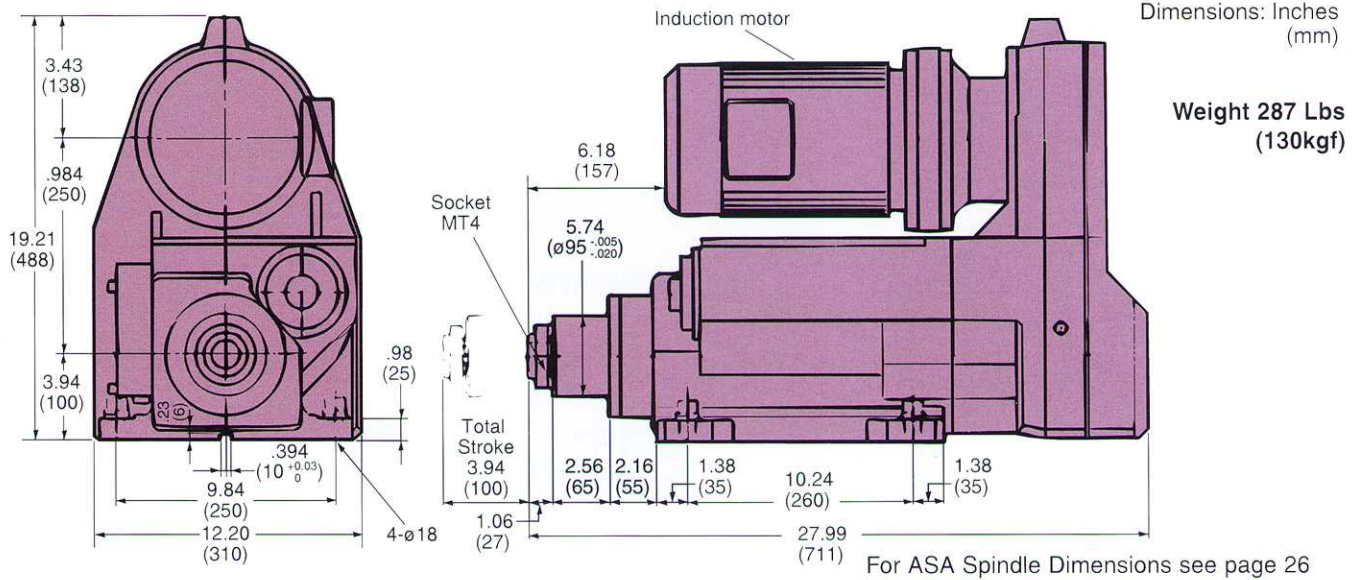
Model	Spindle rpm (60Hz)	Tapping capacity (based on number of spindles tapping simultaneously)								Stroke			Fast stroke speed	Minimum cycle time (sec.)	Thread																					
		1 spindle		2 spindle		3 spindle		4 spindle		Total stroke	Fast approach stroke	Pitch feed stroke			Number of thds per inch	Thread pitch (mm)																				
		Aluminum	Steel	Aluminum	Steel	Aluminum	Steel	Aluminum	Steel																											
STE-522	420	7/8 [1]	1/2 [9/16]	9/16 [3/4]	3/8 [7/16]	9/16 [5/8]	3/8 [3/8]	1/2 [9/16]	5/16 [3/8]	.79~3.94 in. (20~100 mm)	N/A	.79~3.94 in. (20~100 mm)	N/A	8	28	0.80																				
		M24 [M27]	M14 [M16]	M16 [M20]	M10 [M12]	M16 [M18]	M10 [M10]	M14 [M16]	M8 [M10]						24	1.00																				
	310	1 [1 1/8]	1/2 [5/8]	3/4 [7/8]	7/16 [9/16]	5/8 [3/4]	3/8 [7/16]	9/16 [5/8]	3/8 [3/8]						.79~3.94 in. (20~100 mm)	N/A	.79~3.94 in. (20~100 mm)	N/A	8	19	1.25															
		M27 [M33]	M14 [M18]	M22 [M24]	M12 [M16]	M16 [M22]	M10 [M12]	M16 [M18]	M10 [M10]											18	1.50															
	210	1 1/8 [1 3/8]	5/8 [7/8]	7/8 [1]	9/16 [5/8]	3/4 [7/8]	7/16 [9/16]	5/8 [3/4]	3/8 [7/16]											.79~3.94 in. (20~100 mm)	N/A	.79~3.94 in. (20~100 mm)	N/A	8	16	1.75										
		M33 [M39]	M18 [M24]	M24 [M27]	M16 [M16]	M22 [M24]	M12 [M16]	M16 [M22]	M10 [M12]																14	2.00										
	110	1 3/8 [1 1/2]	7/8 [1]	1 1/8 [1 3/8]	3/4 [7/8]	1 [1 1/8]	9/16 [3/4]	3/4 [1]	1/2 [9/16]																.79~3.94 in. (20~100 mm)	N/A	.79~3.94 in. (20~100 mm)	N/A	8	12	2.50					
		M39 [M45]	M22 [M30]	M33 [M39]	M20 [M22]	M27 [M33]	M16 [M20]	M22 [M27]	M16 [M16]																					11	3.00					
																																			10	3.50
																																			9	
																																			8	

Motor Specs		
3 phase Volts (V)	220 @ 60Hz	460 @ 60Hz
Amps (A)	8.3	4.2
Power (HP)	3 (2.2kw)	
Poles (P)	4/1800rpm	

Notes:

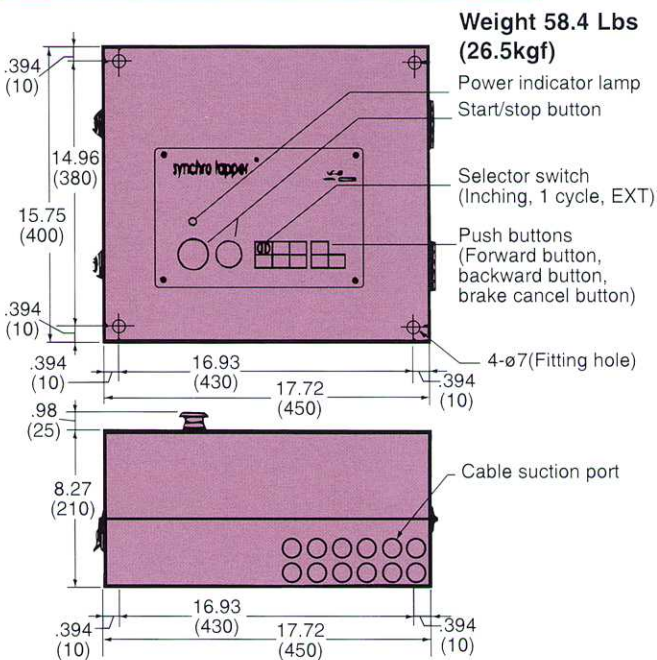
1. Tapping capacities are for three-flute #2 hand taps. The capacities are based on the depth of tapping being limited to 1.5 times the tap diameter.
2. Tapping capacities in brackets are for a spiral flute tap or spiral point tap (for through hole tapping).
3. The STE-522 is NOT equipped with a "fast approach" function.
4. Maximum recommended weight when using multi-spindle heads are as follows:
 - Unit mounted horizontal.....Up to 220 Lbs. (100kgf)
 - Unit mounted vertical upward.....Up to 200 Lbs. (90 kgf)
 - Unit mounted vertical downward.....Up to 200 Lbs. (90 kgf)

• Synchro Tapper Model STE-522

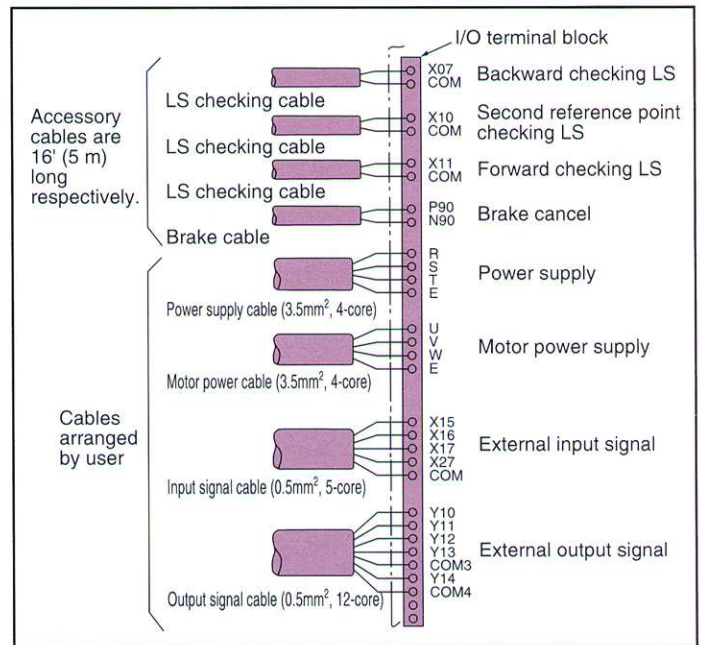


Note: Synchro Tapper System includes Synchro Tapper unit and Controller UC-23U

• Controller Model UC-23U



• Power and I/O Signals Connection Diagram



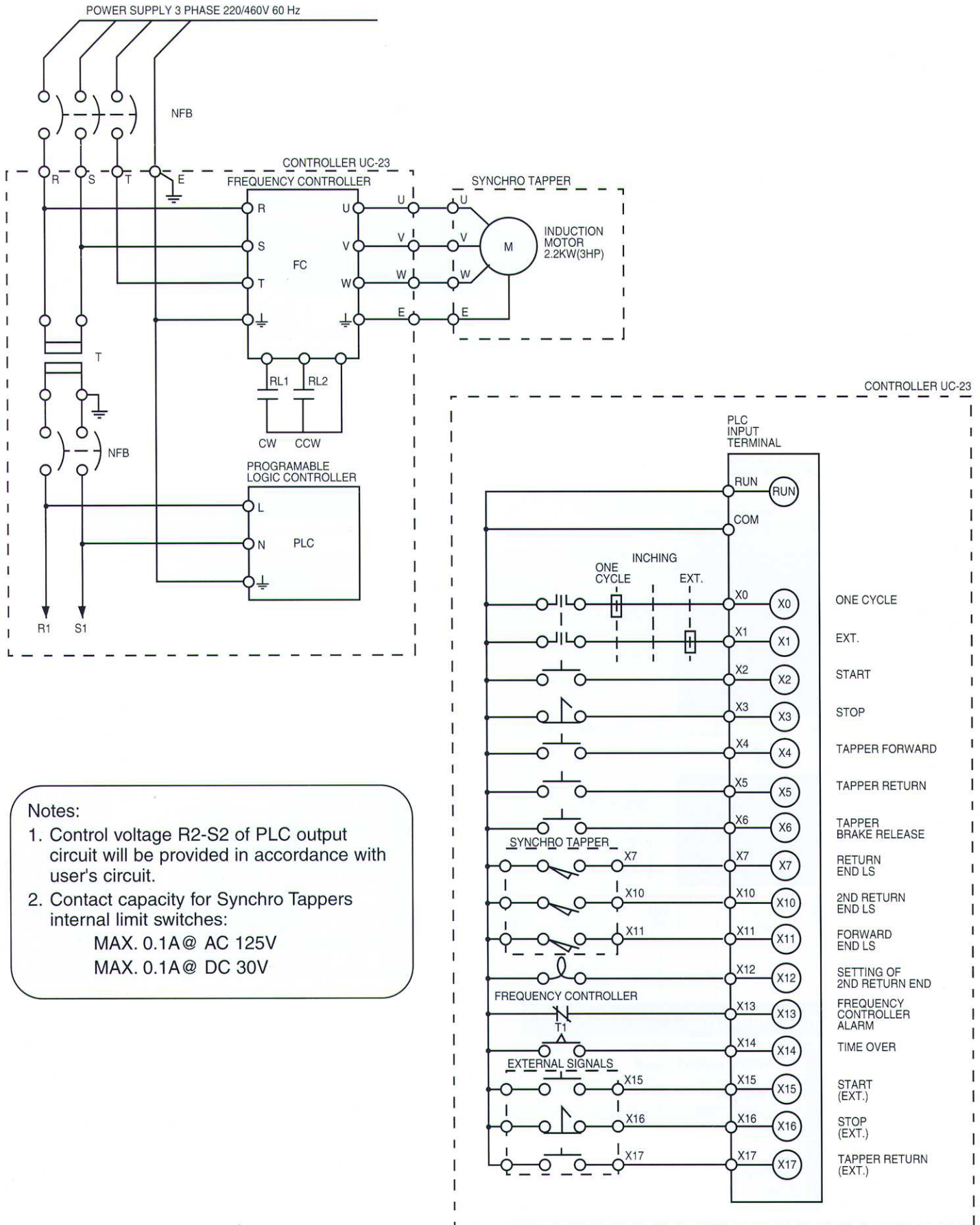
■ I/O signal specifications

External Input signal	Form	No-voltage contact signal
	Input length	Min. 0.1 sec.
	Circuit voltage	DC24V (Internal supply)
	Types	Start --- Normally open contact Return --- Normally closed contact Stop --- Normally closed contact (Use a micro-load relay contact. Example: OMRON G2A or MY2Z)

Output signal	Form	Brake cancel DC 90V (Power inside the unit) No-voltage (1a) contact output Max. load: AC 220V 1A (Inductive load)
	Types	Brake cancel: Canceled when motor starts. Origin: Output in the starting position. 1-cycle end: 0.5 seconds after completing 1 cycle Abnormal condition: Abnormal output signal (Motor, cycle-time over)

* Controller UC-23U operates on voltages between 380V and 460V.

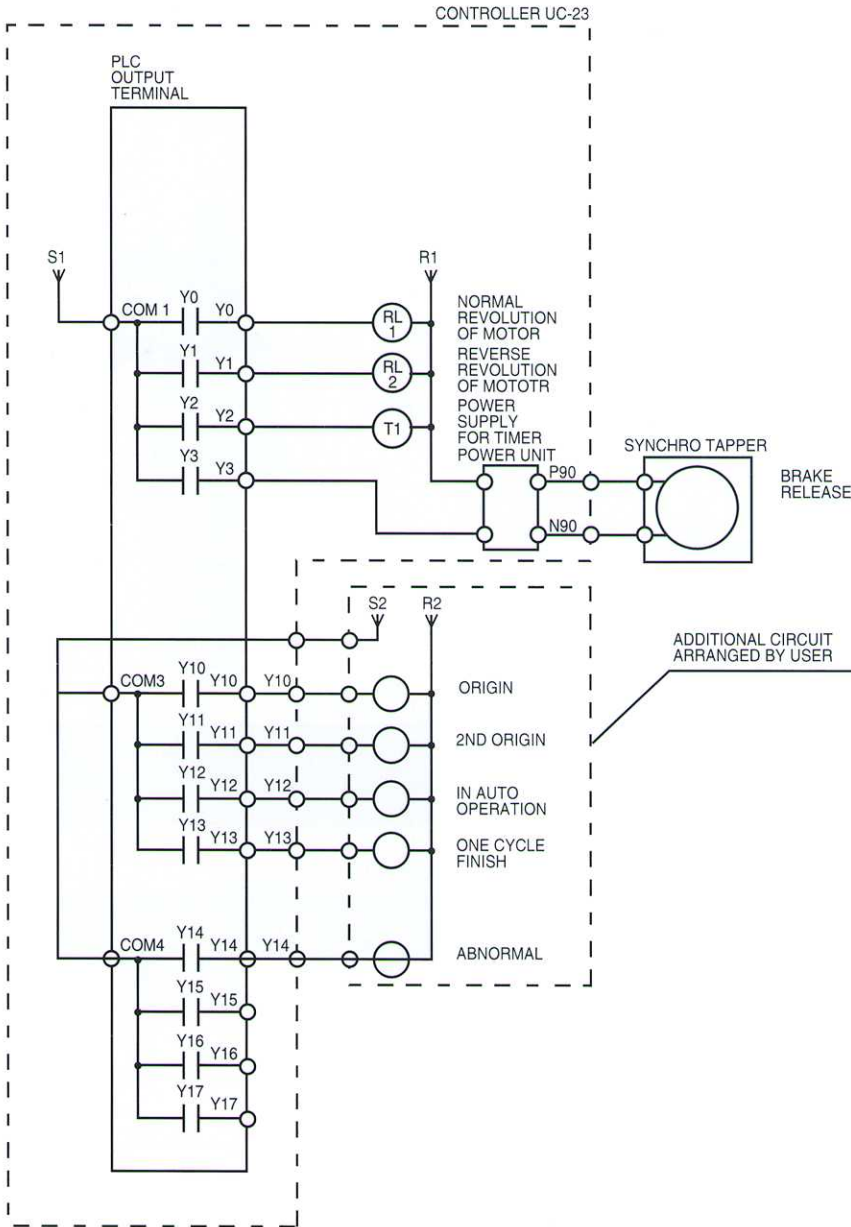
Controller Electric Circuit For Programmable Controller (STE-522)



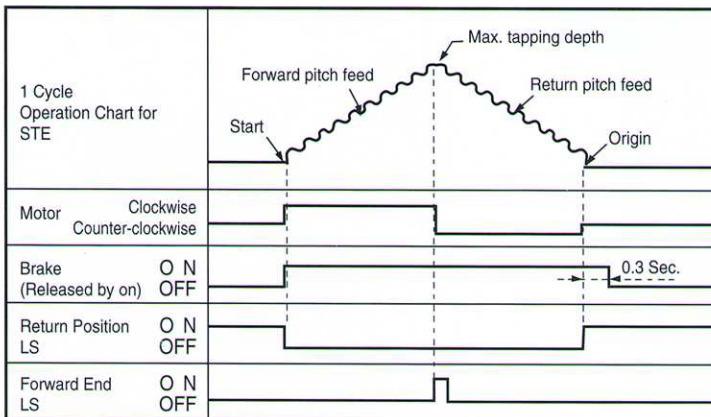
Notes:

1. Control voltage R2-S2 of PLC output circuit will be provided in accordance with user's circuit.
2. Contact capacity for Synchro Tappers internal limit switches:
 MAX. 0.1A@ AC 125V
 MAX. 0.1A@ DC 30V

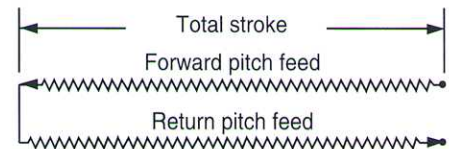
• Programmable Controller (STE-522)



• Operation Chart for One Cycle

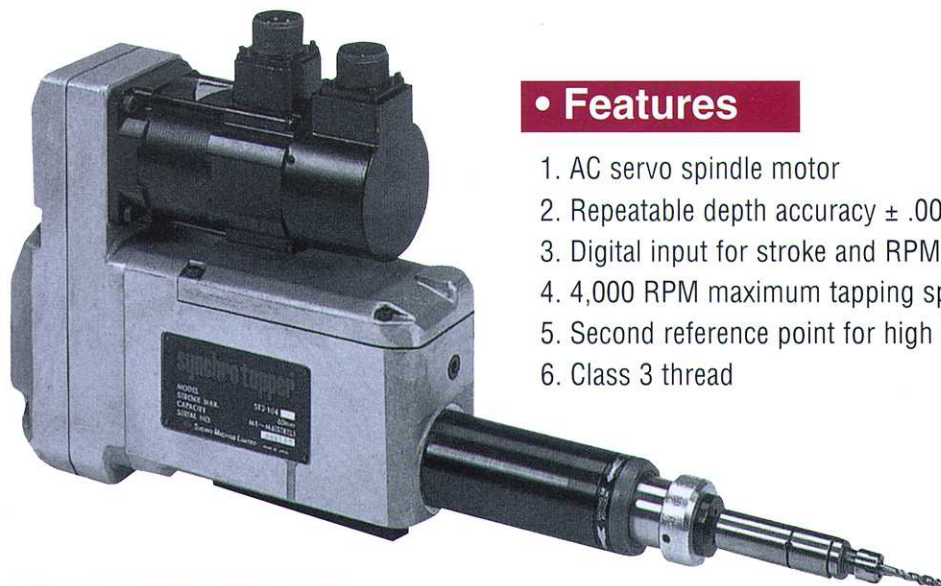


• Travel Chart for One Cycle



SYNCHRO TAPPER ST-2

Mechanical feed/electronically controlled



• Features

1. AC servo spindle motor
2. Repeatable depth accuracy $\pm .001"$ (± 0.03 mm)
3. Digital input for stroke and RPM
4. 4,000 RPM maximum tapping speed
5. Second reference point for high efficiency
6. Class 3 thread



Model ST2
(shown with tap holder)

• Specifications

Model	Spindle rpm range	Max. tap size		Motor	Stroke			Type of spindle stroke	Threads		Pitch feed speed (spindle RPM)	Weight
		Alumi-num	Steel		Total stroke	Fast approach stroke	Pitch feed stroke		Number of thds per inch	Thread pitch (mm)		
ST2-104	1-4,000	#12 (#12)	#6 (#8)	0.8 h.p. AC servo motor (0.6 Kw)	2.36 max. (60 mm)	2.36 max. (60 mm)	2.36 max. (60 mm)	JT1	100	0.25	Using #1 through #8 taps: 1-4,000 RPM --- Using #10 through #12 taps: 1-3,000 RPM	29 lbs. (13 Kg)
		M6 (M6)	M4 (M5)						80			
72												
64												
56												
48												
44												
40												
36												
32												
28												
27												
24												

Notes: Tapping capacities are for three flute #2 hand taps with tapping depth 1.5 times tap diameter, max. capacities in parenthesis are for spiral flute or spiral point taps (for through hole tapping.)

• Controller Model UC-51

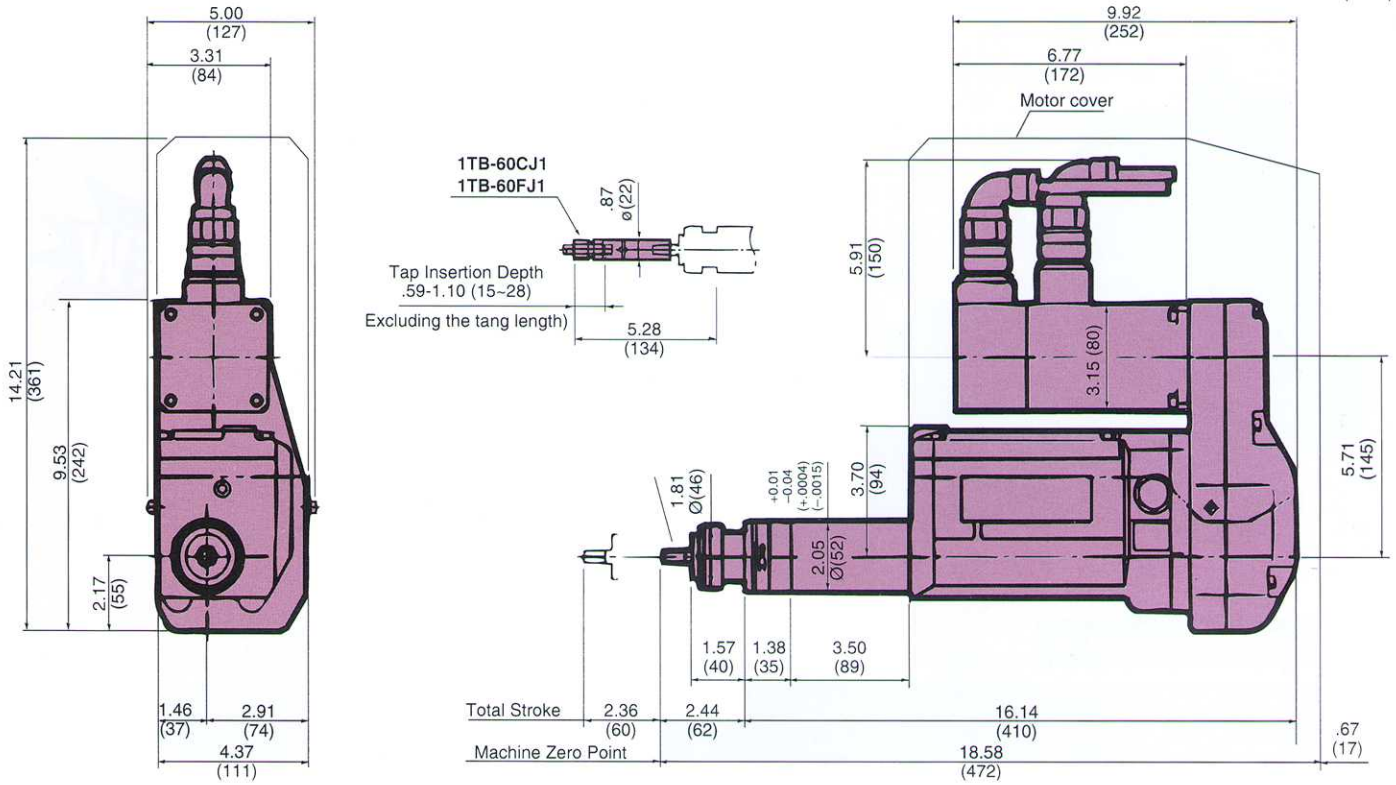
For use with model ST-2.
Features digital input of stroke and speed.

Dimensions:
3.78"W x 8.74"L x 8.66"H
(96mmW x 222mmL x 220mmH)
Weight: 4.41 lbs. (2 Kgf)

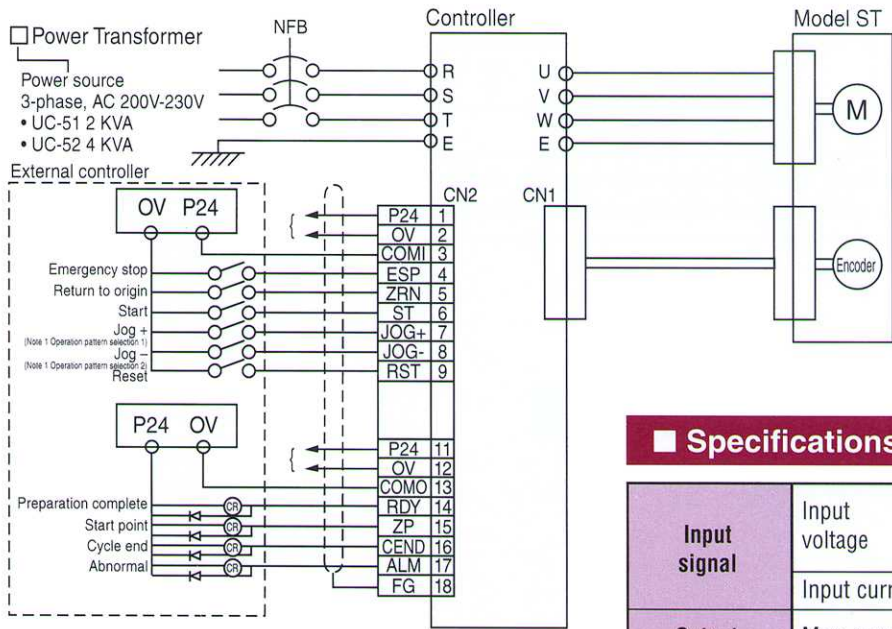


• Model ST2-104

Dimensions: Inches
(mm)



• Wiring of Power Supply, Input and Output Signals



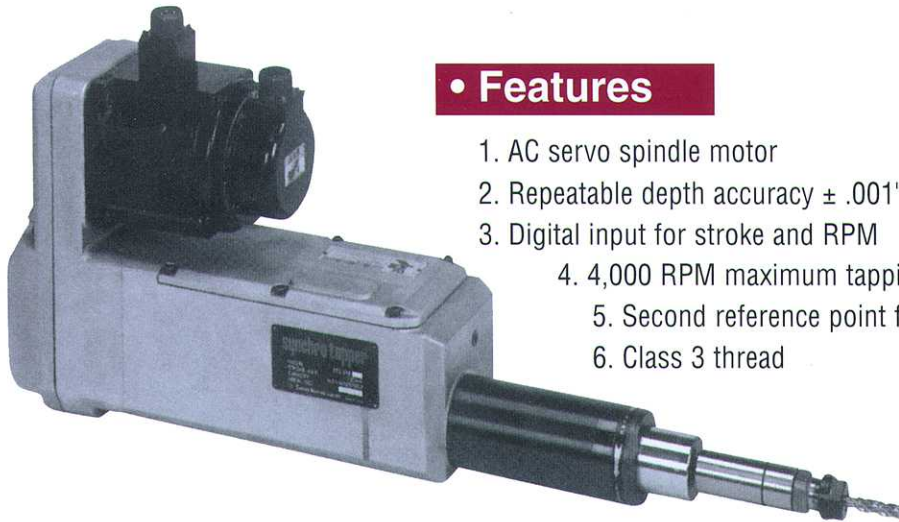
Note: Maximum 4 operation patterns are available for selection

■ Specifications for Input and Output Signals

Input signal	Input voltage	DC 24V (The signal should be provided by means of a relay contact or open collector transistor.)
	Input current	11mA
Output signal	Max. open/close capacity	Open collector DC 24V, 50 mA (A miniature relay or photo coupler can be signaled.)
External power supply	DC 24V, 200 mA (The total current for the input and output must not exceed 200 mA.)	

SYNCHRO TAPPER ST-3

Mechanical feed/electronically controlled



• Features

1. AC servo spindle motor
2. Repeatable depth accuracy $\pm .001"$ (± 0.03 mm)
3. Digital input for stroke and RPM
4. 4,000 RPM maximum tapping speed
5. Second reference point for high efficiency
6. Class 3 thread



Model ST3
(shown with tap holder)

• Specifications

Model	Spindle rpm range	Max. tap size		Motor	Stroke			Type of spindle stroke	Threads		Pitch feed speed (spindle RPM)	Weight
		Aluminum	Steel		Total stroke	Fast approach stroke	Pitch feed stroke		Number of thds per inch	Thread pitch (mm)		
ST3-310U	1-4,000	3/8 (1/2)	1/4 (3/8)	2.3 h.p. AC servo motor (1.8 Kw)	4.72 max. (120 mm)	4.72 max. (120 mm)	4.72 max. (120 mm)	JT33 or 5/8 ASA or 3/4 ASA	40	0.5	Using #1 through #12 taps: 1-4,000 RPM ---	68 lbs. (31 Kg)
		M10 (M14)	M8 (M10)						36			

Notes: Tapping capacities are for three flute #2 hand taps with tapping depth 1.5 times tap diameter, max. capacities in parenthesis are for spiral flute or spiral point taps (for through hole tapping.)



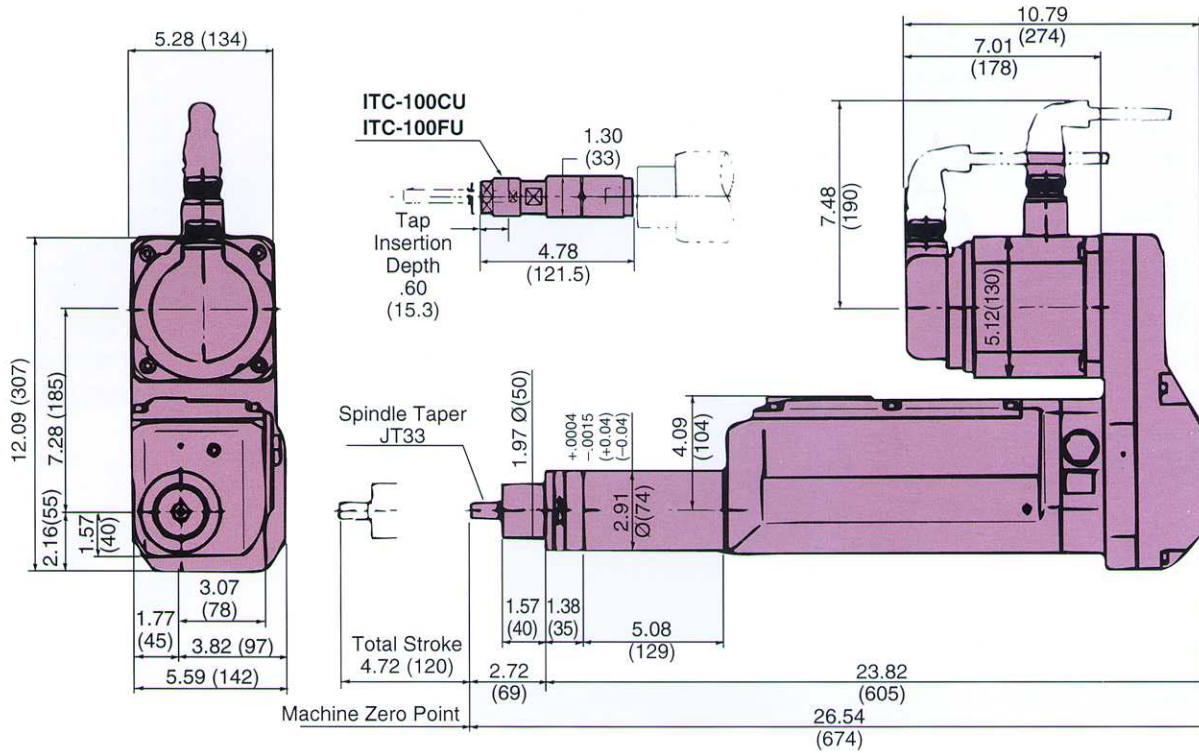
• Controller Model UC-52

For use with model ST-3.
Features digital input of stroke
and speed.

Dimensions:
5.47"W x 8.82"L x 10.83"H
(139mmW x 224mmL x 275mmH)
Weight: 12.3 lbs. (5.6 Kgf)

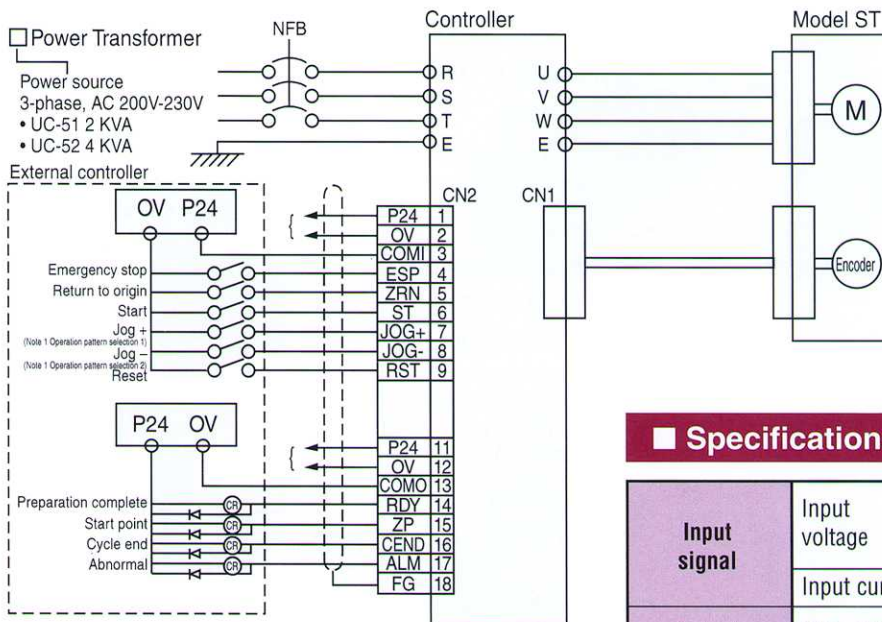
• Model ST3-310U

Dimensions: Inches
(mm)



For ASA spindle dimensions see page 26.

• Wiring of Power Supply, Input and Output Signals



Note: Maximum 4 operation patterns are available for selection

■ Specifications for Input and Output Signals

Input signal	Input voltage	DC 24V (The signal should be provided by means of a relay contact or open collector transistor.)
	Input current	11mA
Output signal	Max. open/close capacity	Open collector DC 24V, 50 mA (A miniature relay or photo coupler can be signaled.)
External power supply	DC 24V, 200 mA	(The total current for the input and output must not exceed 200 mA.)

• Electrical Schematic ST-2 & ST-3

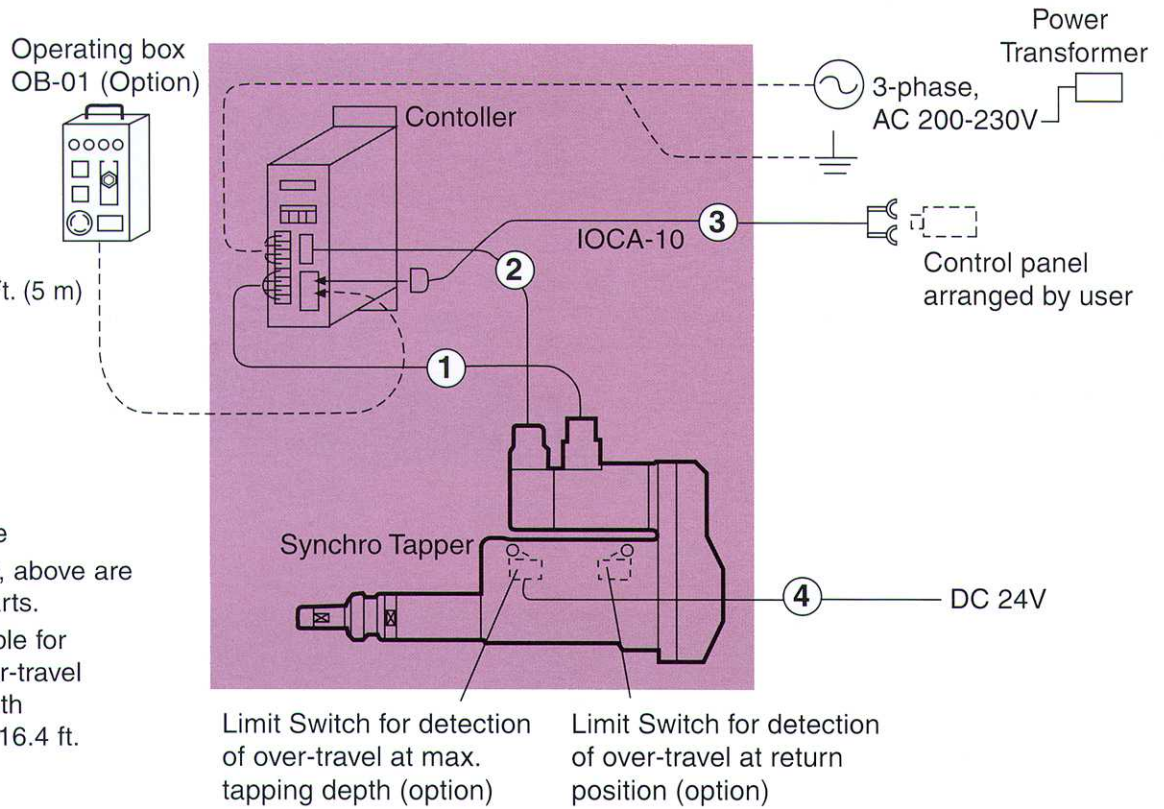
Electrical components indicated inside the box are provided by Sugino. Other cables and equipment are to be provided by user.

Model ST2-104 & ST3-310U

1. Motor cable:
4-wire cable x 16.4 Ft. (5 m)
2. Encoder cable:
20-wire cable x 16.4 Ft. (5 m)
3. I/O cable (with
solderless terminal
on an end)
1 m ---IOCA-10 type

The cables 1, 2, and 3, above are standard accessory parts.

4. Limit switch and cable for
the detection of over-travel
at max. tapping depth
and return position 16.4 ft.
(5 m) (Option)

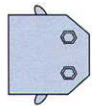


• Options

• I/O cable

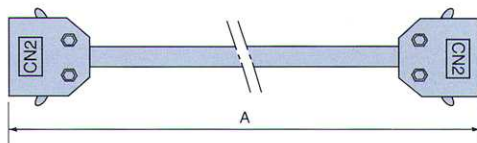
The IOCA-10 cable indicated in the electrical schematic above is a standard accessory.

The following are available as options.

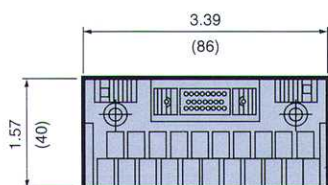


1. Connector MR-20LM
(used with I/O cable provided by user)

2. I/O cable IOCA-※※W



Dimension A: 3.3 ft (1 m)(IOCA-10W)
1.7 ft (0.5 m) (IOCA-05W)



Terminal block connector
PCN-2M20BS (used with
control panel provided by
user)

• Operating box OB-01 Features

- Return to origin
- Cycle operation
- Jogging
- Emergency stop
- Abnormal reset
- Status indication

Notes: Bracket OBB-01 is available for mounting OB-01.



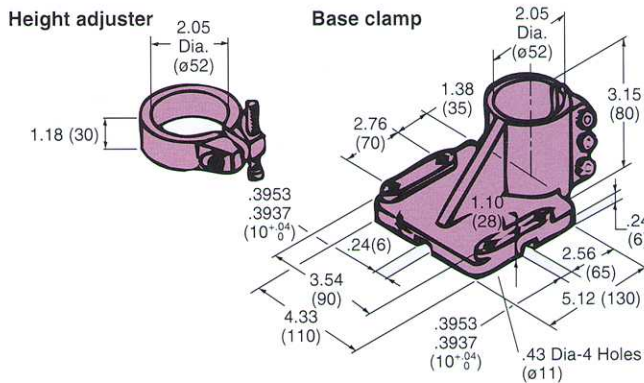
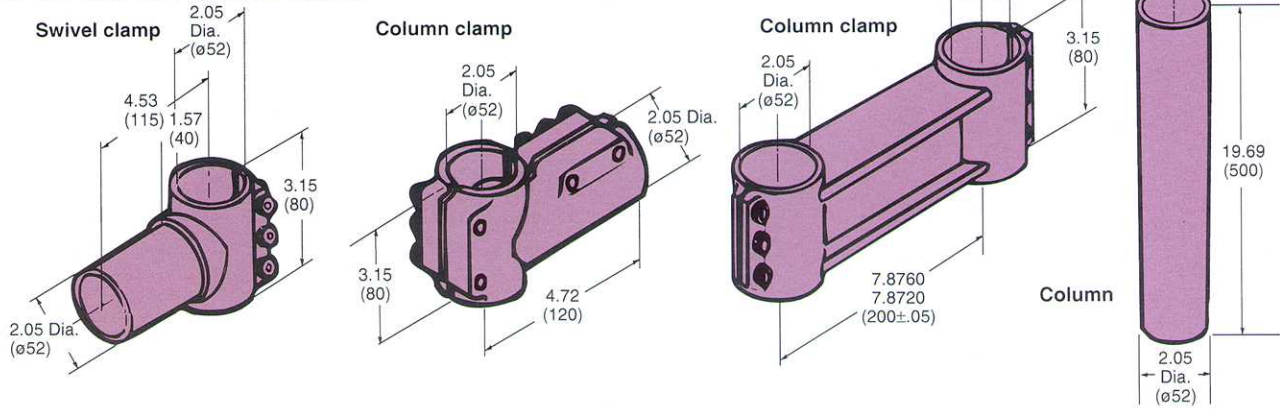
• Overtravel Limit Switch

Limit Switch and cable for the detection of over-travel at max. tapping depth and return position. The cable is to be connected to the control panel provided by the user. For details, refer to the electrical schematic above.

• Universal Stand Model US-52

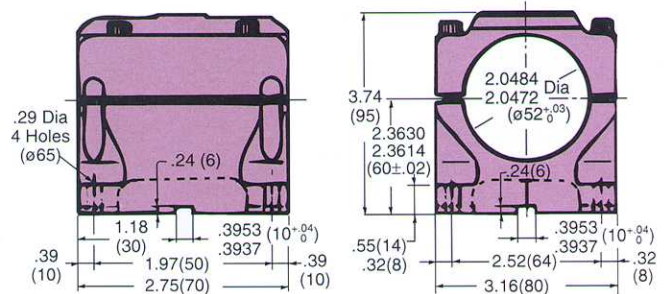
Dimensions: Inches (mm)

For use with ST2 Synchro Tapper.



• Level Clamp Model LC-52

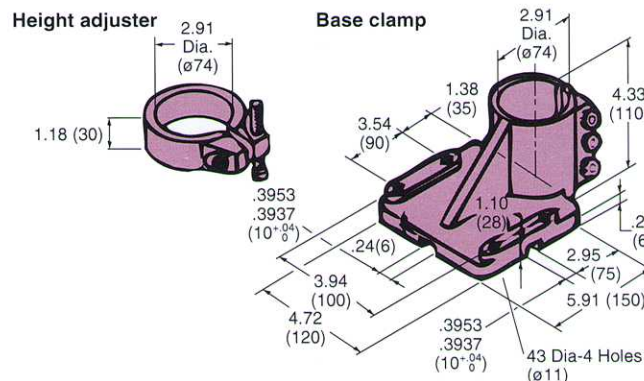
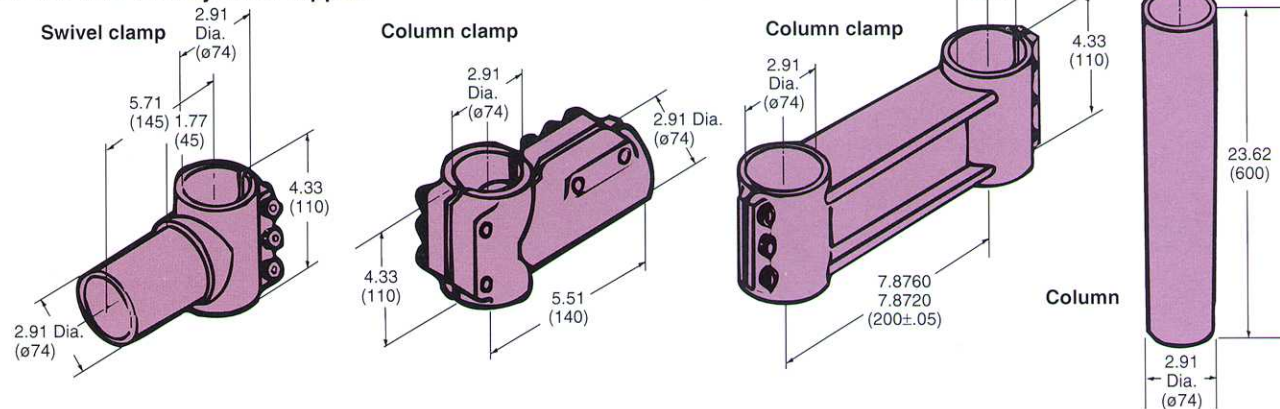
For use with ST2 Synchro Tapper.



• Universal Stand Model US-74

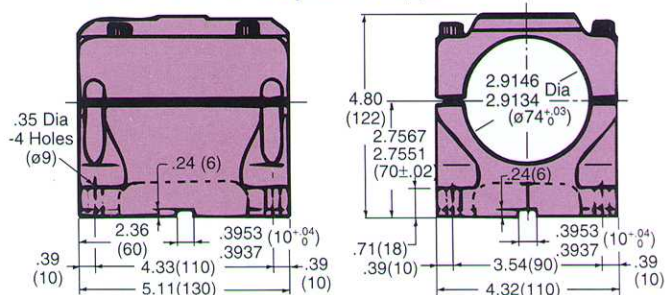
Dimensions: Inches (mm)

For use with ST3 Synchro Tapper.



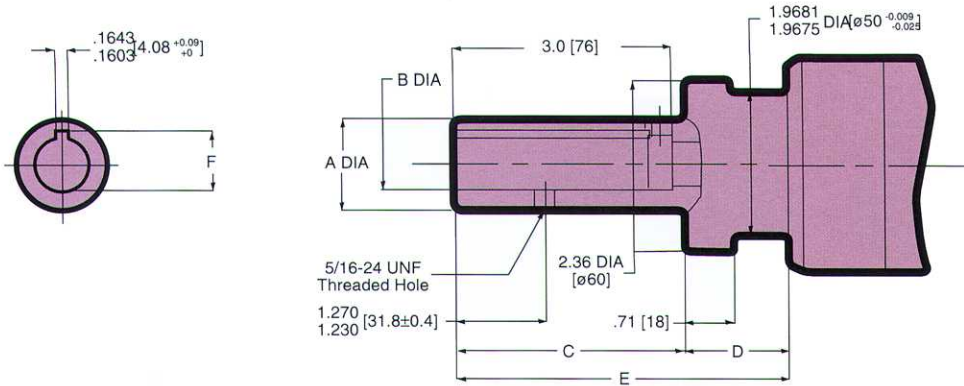
• Level Clamp Model LC-74

For use with ST3 Synchro Tapper.



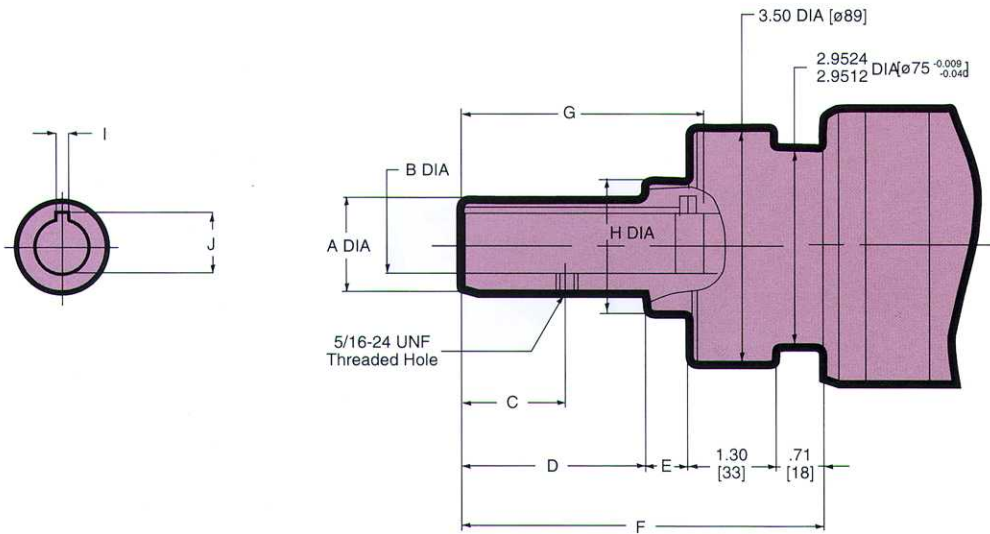
• ASA Spindle for STB- $\frac{1}{2}$ 108U

Dimensions: Inches
(mm)



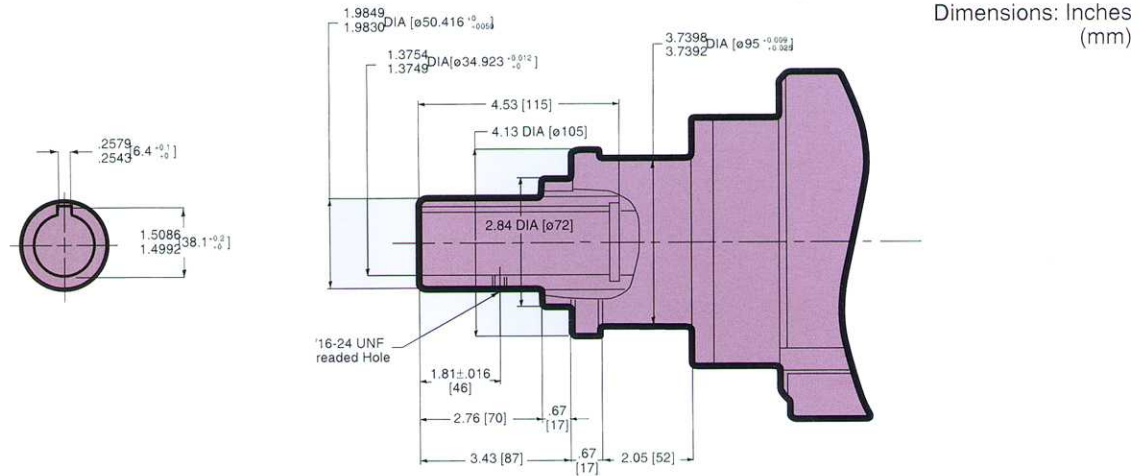
ASA Spindle Size	A		B		C		D		E		F	
	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm
5/8-16	.985 .983	25.019 ⁺⁰ -0.050	.6255 .6250	15.875 ^{+0.012} -0	1.92	48.7	1.26	32	3.18	80.7	.7132 .7032	17.9 ^{+0.2} -0
3/4-12	1.235 1.233	31.369 ⁺⁰ -0.050	.7505 .7500	19.050 ^{+0.012} -0	3.15	80	1.46	37	4.61	117	.8399 .8299	21.1 ^{+0.2} -0

• ASA Spindle for STC-P316U

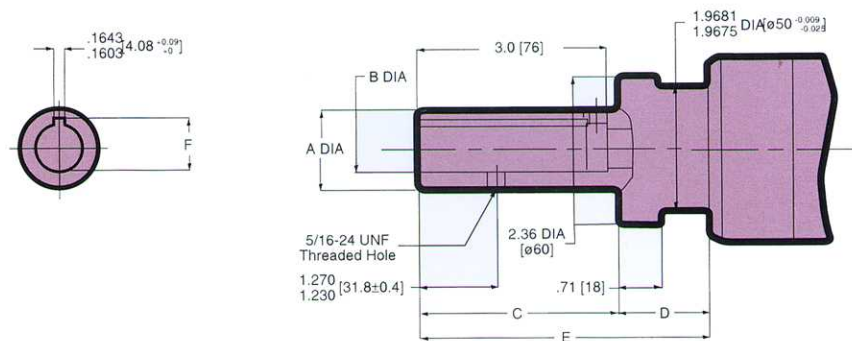


ASA Spindle Size	A		B		C		D		E		F		G		H		I		J	
	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm
3/4-12	1.235 1.233	31.369 ⁰ -0.050	.7505 .7500	19.050 ^{+0.012} 0	1.270 1.230	31.8 ± 0.4	2.24	57	.63	16	4.88	124	3.00	76.2	1.811	46	.1643 .1603	4.08 ^{+0.09} -0	.8399 .8299	21.1 ^{+0.2} -0
7/8-12	1.360 1.358	34.544 ⁰ -0.050	.8755 .8750	22.225 ^{+0.012} 0	1.582 1.542	39.7 ± 0.4	2.76	70	.63	16	5.40	137	3.60	91.4	1.969	50	.1955 .1915	4.86 ^{+0.1} -0	.9785 .9685	24.6 ^{+0.2} -0
1-1/16-12	1.610 1.608	40.894 ⁰ -0.050	1.0630 1.0625	26.988 ^{+0.012} 0	1.582 1.542	39.7 ± 0.4	1.83	46.5	.67	17	4.82	122.5	3.50	88.9	2.24	57	.1955 .1915	4.86 ^{+0.1} -0	1.1679 1.1579	21.1 ^{+0.2} -0

• ASA Spindle for STE-522



• ASA Spindle for ST3-310U



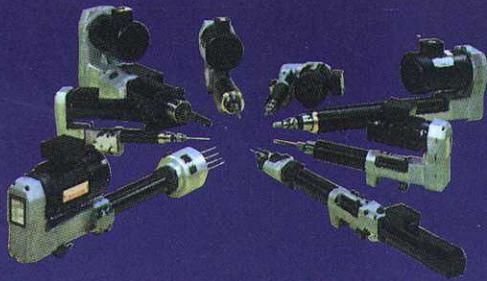
ASA Spindle Size	A		B		C		D		E		F	
	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm
5/8-16	.985 .983	25.019 ⁺⁰ _{-0.050}	.6255 .6250	15.875 ^{+0.012} ₋₀	1.92	48.7	1.26	32	3.18	80.7	.7132 .7032	17.9 ^{+0.2} ₋₀
3/4-12	1.235 1.233	31.369 ⁺⁰ _{-0.050}	.7505 .7500	19.050 ^{+0.012} ₋₀	3.15	77	1.46	47.5	4.61	124.5	.8399	21.1 ^{+0.2} ₋₀

• Applicable Erickson Collets & Nose Pieces (for tapping)

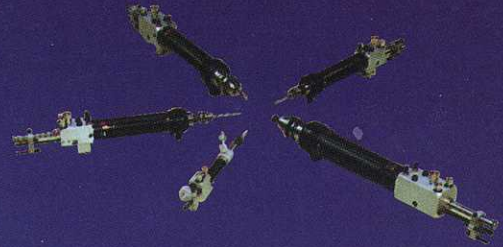
Model 300		
Tap size	Collet size	Erickson tool #
#0 ~ #6	.141	300DA0156
Model J09		
Tap size	Collet size	Erickson tool #
#0 ~ #6	.141	JTC6
#8	.168	JTC8
#10	.194	JTC10
#12	.220	JTC12
#14 & 1/4	.255	JTC025
Model L09		
Tap size	Collet size	Erickson tool #
3/8	.381	LTC037
7/16	.323	LTC043
1/2	.367	LTC050
9/16	.429	LTC056
5/8	.480	LTC062
11/16	.542	LTC054
3/4	.590	LTC075
7/8	.697	LTC087

Model K09		
Tap size	Collet size	Erickson tool #
#0 ~ #6	.141	KTC6
#8	.168	KTC8
#10	.194	KTC10
#12	.220	KTC12
#14 & 1/4	.255	KTC025
5/16	.318	KTC031
3/8	.381	KTC037
7/16	.323	KTC043
1/2	.367	KTC050
9/16	.429	KTC056
Nosepiece Assembly		
Collet series	Erickson tool #	
300	NPA 304	
JTC	A132566	
KTC	NPA K08	
LTC	NPA F08	

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Contact SUGINO directly or your authorized SUGINO representative immediately following discovery of the defect. SUGINO will make the final determination as to the cause of the defect. Transportation costs of the product to SUGINO or your authorized SUGINO representative are the responsibility of the end user of the product.

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1700 N. Penny Lane • Schaumburg, Illinois 60173
Phone: 847/397-9401 • Fax: 847/397-9490
Toll Free: 888/SUGINO 1
www.sugino.com • mach@sugino.com

SUGINO REGIONAL OFFICES

California
1682 Langley Ave. • Irvine, CA 92714
Phone: 714/476-8366 • Fax: 714/261-8710

Illinois
310 E. Pine Ave. • Roselle, IL 60172
Phone: 630/980-4661 • Fax: 630/980-5525

Massachusetts
8 Main St. • Westfield, MA 01085
Phone: 413/568-9640 • Fax: 413/568-6092

North Carolina
18525 Statesville Rd. Suite D-02 Cornelius, NC 28031
Phone: 704/655-0995 • Fax: 704/655-0974

Texas
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Suite 200 I
Arlington, TX 76013
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