



SYNCHRO TAPPER

1. Repeatability of ± 0.01 mm
2. High speed tapping at 1000 rpm
3. A second reference point for each cycle time.

Tapping Capacity

Aluminum : 10 mm
Steel : 8 mm

1. Repeatability of $\pm 0.03\text{mm}$ or less at full stroke.
2. High speed tapping at up to $4,000\text{min}^{-1}$.
3. A second reference point allows for greatly reduced cycle time.

Tapping Capacity

Aluminum	: M6
Steel	: M5

Specs.	Spindle Speed		Tapping Capacity		Stroke			Motor	Thread Pitch	Weight	
	Fast Approach Speed	Pitch Feed Speed	AL (ADC)	ST (S45C)	Fast Approach Stroke	Pitch Feed Stroke	Full Stroke				
Model	min	mm/min	mm		mm			kW	mm	Thres./inch	kg
ST2M-04	Max 4,000	For Tapping M~M5 ~4,000 For Tapping M6 ~3,000	M 4 (M6)	M 5 (M3.5)	Max 60	Max 60	Max 60	0.75 AC Servo Motor	0.25	0.00	3
									0.3	0.00	
									0.35	0.00	
									0.4	0.00	
									0.45	0.00	
									0.5	0.00	
									0.6	0.00	
									0.7	0.00	
									0.8	0.00	
									0.8	0.00	

Notes: 1. Topping capacity is for when sprig top or port top is used, and the topping depth is 5 times of thread diameter. The value in brackets is for when hand tap No.2 is used.
2. Rotating speed of cutting feed is decided by the workpiece material, machine type, tap diameter and thread size, and tapping speed etc.
3. Select adequate **feed gears** for the pitch of the tap to be used.
4. Fast approach feed rate and cutting feed rate will differ depending on thread pitch and spindle speed. Please contact your nearest sales office for more information.
5. Maximum weight of the attachment is as follows: Horizontal use: 6kg, Vertical (downward) use: 6kg.
6. When mounting the unit upward, waterproof cover is required in order to protect the unit from cutting oil and chips. Please contact your nearest sales office for more information.
7. ALU: ALUMINUM, ST: STEEL

Technical drawing of the TAP-60CJ machine head, showing three views and dimensions:

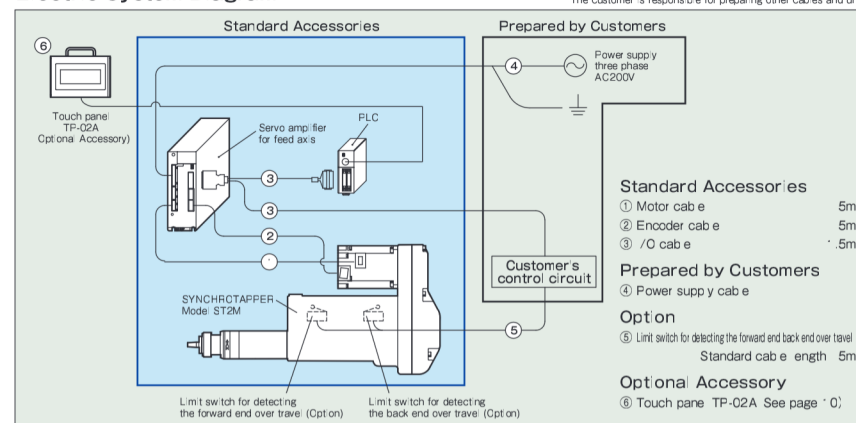
- Front View (Left):** Shows the base plate with dimensions 84mm (width), 84mm (depth), 57.1mm (corner radius), 242mm (height), 111mm (width), 37mm (width), 74mm (width), 55mm (height), and 45mm (height).
- Side View (Right):** Shows the machine's profile with dimensions 472mm (total length), 410mm (clamping range), 94mm (distance from clamping range to tapping head), 62mm (distance from machine zero point to tapping head), 40mm (distance from machine zero point to clamping range), 35mm (distance from machine zero point to clamping range), and 60mm (distance from machine zero point to tapping head).
- Detail View (Top):** Shows the tapping head with dimensions 134mm (length), 22mm (diameter), and 1.34mm (depth of tap shank insert on 1.5~2.8mm except square shank).

Labels and Notes:

- Tapping Head: TAP-60CJ, TAP-60FJ (optional)
- Depth of Tap Shank Insert on 1.5~2.8mm Except Square Shank
- Spindle Taper J/T
- Clamping Range 89
- Machine Zero Point

Note : When tapping in a small hole at high speed, please select 'TB-60CJ' (Centering type), and in a large hole at low speed, please select 'TB-60FJ' (Floating type).

Electric parts supplied as standard accessories are indicated in box.
The customer is responsible for preparing other cables and units.

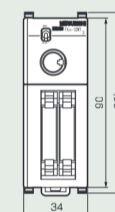


Note : In order to perform data input and to display various monitors and alarms, the optional touch panel TP-02A type is required. The attached cable length of the TP-02A is 3m.

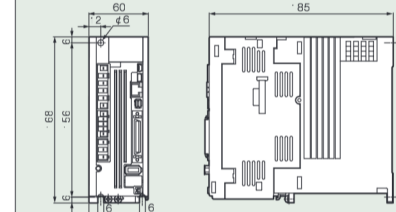
Feed Axis Servo Amplifier [MR-J4-70A]

Please contact SUGINO for parameters.
(Some parameters are different from the initial values.)

Dimensions mm)



W34×D87×H96
Weight/".0kg



Weight/° .4kg

Note : When installing, customers need to prepare the 35 mm wide DIN rail.

Notes : 1. The power supply (DC24V) needs to be prepared by customers.
2. Maximum 5 tapping patterns can be selected by adding option.

SYNCHROTAPPER Model ST3M

- 1. Repeatability of $\pm 0.03\text{mm}$ or less at full stroke.
- 2. High speed tapping at up to $4,000\text{min}^{-1}$.
- 3. A second reference point allows for greatly reduced cycle time.

Tapping Capacity
Aluminum : M $\times$ 2
Steel : M7

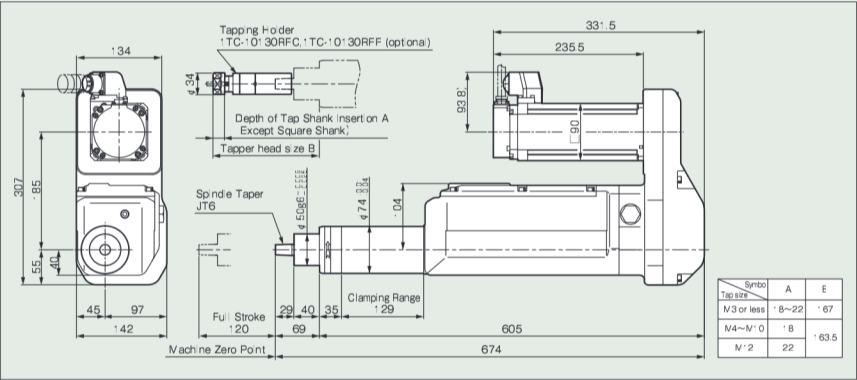


Capacity

Specs. Model	Spindle Speed		Tapping Capacities								Stroke			Motor	Thread Pitch		Weight			
			1 spindle		2 spindle		3 spindle		4 spindle		Fast Approach Stroke	Pitch Feed Stroke	Full Stroke							
	Fast Approach Speed	Pitch Feed Speed	AL* S45C	ST* ADC	AL* S45C	ST* ADC	AL* S45C	ST* ADC	AL* S45C	ST* ADC										
	min ⁻¹		mm		mm		mm		mm		mm			kW	mm	Thread	kg			
ST3M-3 ⁰	Max.4,000	For Tapping M3~M6 ~4,000	M ²	M7	M8	M5	M8	M5	M6	M4	Max. 20	Max. 20	Max. 20	2.0 AC Servo Motor	3 ⁰	0.5	40			
																0.7	36			
																0.8	32			
			1.0	28																
			1.25	27																
		For Tapping M7~M ² ~3,000	M8	M6	M7	M4	M6	M3.5	M5	M3					1.0	26				
															1.25	24				
															1.5	20				
																			1.8	18
																				1.5
																1.75	14			

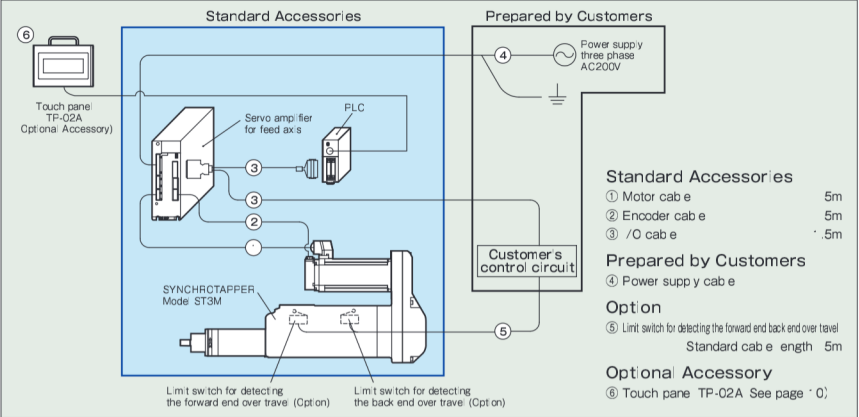
Notes : 1. The values in the upper row of tapping capacity are for when spiral tap or point tap is used, and the values in the lower row are for when hand tap No.2 is used.
2. Tapping depth is : 5 times of tap diameter.
3. Rotating speed of cutting feed is decided by the workpiece material, machinability, tap diameter and material, and tapping speed etc.
4. Select adequate feed for the pitch of the tap to be used.
5. Fast approach feed rate and cutting feed rate will differ depending on thread pitch and spindle speed. Please contact your nearest sales office for more information.
6. Maximum weight of the attachment is as follows. Horizontal use : 5kg. Vertical (downward) use : 2kg.
7. When mounting the unit upward, waterproof cover is required in order to protect the unit from cutting oil and chips. Please contact your nearest sales office for more information.
8. For multi-spindle head installation, limit the spindle speed up to 3,000 min⁻¹ for both fast approach feed and pitch feed.
9. AL : Aluminum, ST : Steel

Dimensions (mm)



Notes : 1. When tapping in a small hole at high speed, please select "TC-0" 30RFF (Centering type), and in a large hole at low speed, please select "TC-1" 30RFF (Fluting type).
2. Dimensions of tap insert on depth A and taper head dimensions on B vary depending on the tap size.

Electric System Diagram

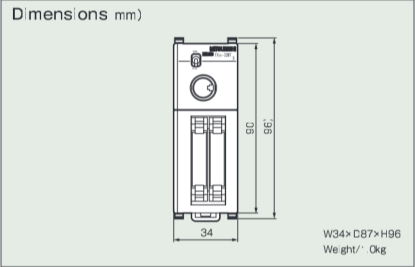


Note : In order to perform data input and to display various monitors and alarms, the optional touch panel TP-C2A type is required. The attached cable length of the TP-C2A is 3m.

Control Accessories

PLC [FX3UC-32MT/D]

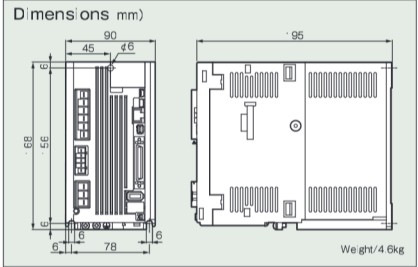
It is necessary to purchase a PLC with a dedicated software for SYNCHROTAPPER from SUGINO to operate ST3M.



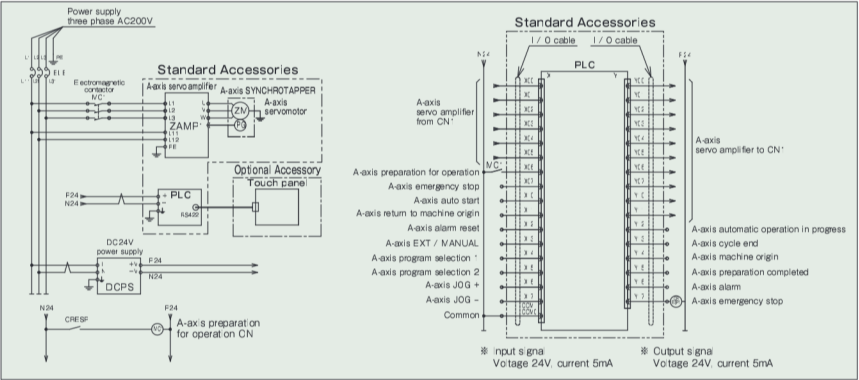
Note : When installing, customers need to prepare the 35 mm wide DIN rail.

Feed Axis Servo Amplifier [MR-J4-200A]

Please contact SUGINO for parameters (Some parameters are different from the initial values.)



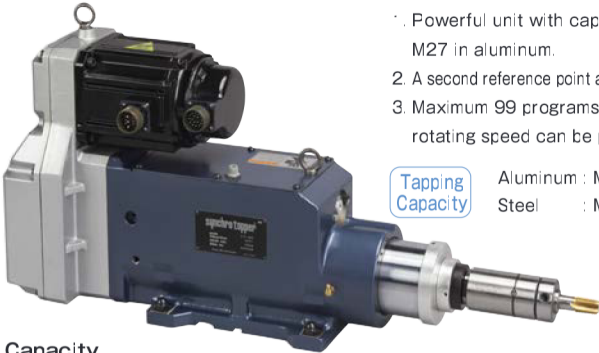
Power Supply and Input/Output Signal Wiring Diagram



Notes : 1. The power supply (CC24V) needs to be prepared by customers.
2. Maximum 5 tapping patterns can be selected by adding options.

SYNCHROTAPPER Model ST4

- 1. Powerful unit with capacity to tap large holes up to M27 in aluminum.
- 2. A second reference point allows for greatly reduced cycle time.
- 3. Maximum 99 programs with different stroke and rotating speed can be preset.



Tapping Capacity

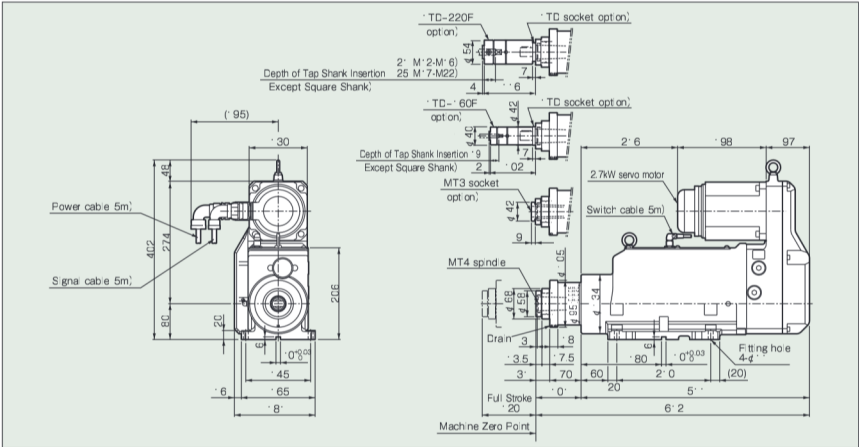
Aluminum : M27
Steel : M20

Capacity

Specs. Model	Spindle Speed for Tapping min ⁻¹	Tapping Capacities								Stroke mm	Motor kW	Thread Pitch		Weight kg	
		1 spindle		2 spindle		3 spindle		4 spindle				mm	mm / Thread/inch		
		AL* ADC)	ST* S45C)	AL* ADC)	ST* S45C)	AL* ADC)	ST* S45C)	AL* ADC)	ST* S45C)						
ST4-420	Max 550									Max. 20	2.7 AC Servo Motor	0.7	32 / 6	62	
												0.75	28 / 4		
		M27	M20	M20	M12	M16	M10	M12	M8			0.8	27 / 3		
												2.5	26 / 2		
												0.5	24 / 1		
												0.75	20 / 0		
		M22	M16	M16	M10	M12	M8	M10	M6			2	19 / 9		
												3	18 / 8		
												3.5			

Notes : 1. The values in the upper row of tapping capacity are for when spiral tap or point tap is used, and the values in the lower row are for when hand tap No.2 is used.
Tapping depth is 1/5 times of tap diameter.
2. Rotating speed of cutting feed is decided by the workpiece material, machinability, tap diameter and material, and tapping speed etc.
3. Select adequate feed gears for the pitch of the tap to be used.
4. Fast approach feed rate and cutting feed rate will differ depending on thread pitch and spindle speed. Please contact your nearest sales office for more information.
5. Maximum weight of the attachment is 40kg for both horizontal and vertical use.
6. When mounting the unit upward, waterproof cover is required in order to protect the unit from cutting oil and chips. Please contact your nearest sales office for more information.
7. AL: Aluminum, ST: Steel

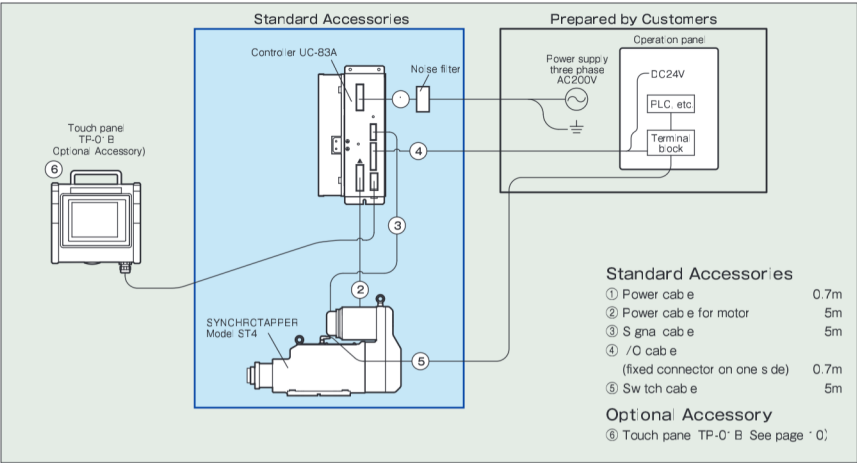
Dimensions (mm)



Notes : 1. A tapping holder can be used if TD socket is equipped. TD-60F and 220F are optional.
2. MT4 shank tapping holder can be used for MT4 spindle. Tapping holder needs to be prepared by customers.
3. MT3 shank tapping holder can be used if MT3 socket is equipped as an option. Tapping holder needs to be prepared by customers.

Electric System Diagram

Electric parts supplied as standard accessories are indicated in box. The customer is responsible for preparing other cables and units.



Note : In order to perform data input and to display various monitors and alarms, the optional touch panel TP-O'B type is required. The attached cable length of the TP-O'B is 3m.

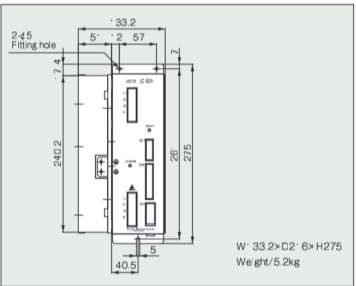
Controller UC-83A Multidrop connection with the controller of SELFEEEDER SERVO series is possible.



Function

External control start-up, stop, program complete signal etc.)

Dimensions (mm)

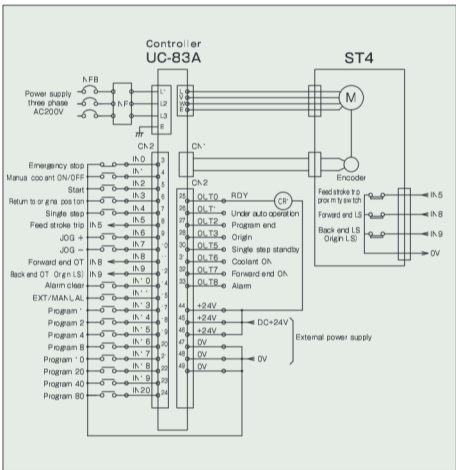


Note : Model ST4 cannot be controlled by only the PLC and requires UC-83A controller.

Specification of Signal

Input Signal	input voltage	DC24V (input signal at relay contact point or open collector transistor.)
	input electric current	10mA
Output Signal	Maximum contact capacity	Open collector DC24V, 90mA (Open collector can drive miniature relay and photo coupler.)

Power Supply and Input/Output Signal Wiring Diagram



SYNCHROTAPPER Model ST

- 1. A compact tapping unit with total length of 348mm.
- 2. Efficient tapping with maximum 3,000min⁻¹.
- 3. Maximum 99 programs with different stroke and rotating speed can be preset.



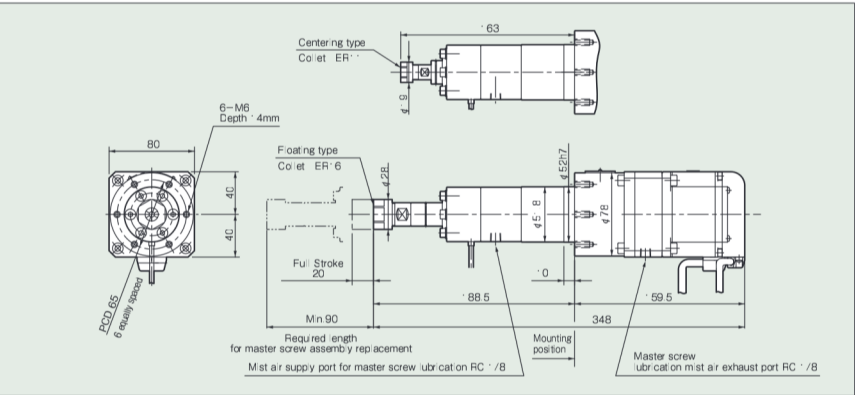
Tapping Capacity
Aluminum : M5
Steel : M3.5

Capacity

Specs. Model	Spindle Speed		Tapping Capacities		Stroke		Motor	Thread Pitch		Weight
	Fast Approach Speed min ⁻¹	Pitch Feed Speed mm	AL* S45C	ST* S45C	Fast Approach Stroke mm	Pitch Feed Stroke mm		mm	Thread/Inch	
ST - O3M	Max.3,000	Max.3,000	M5	M3.5	Max.20	Max.20	0.4 AC Servo Motor	0.25	64	7
								0.3	56	
								0.35	56	
								0.4	48	
								0.45	48	
								0.5	40	
								0.6	40	
								0.7	40	
								0.8	32	

Notes : 1. Tapping capacity is for when spiral tap or point tap is used, and the tapping depth is 1.5 times of thread diameter.
2. Rotating speed of cutting feed is decided by the workpiece material, machinability, tap diameter and material, and tapping speed etc.
3. Select an adequate master screw assembly for tap pitch to be used.
4. AL* : Aluminum, ST* : Steel

Dimensions (mm)



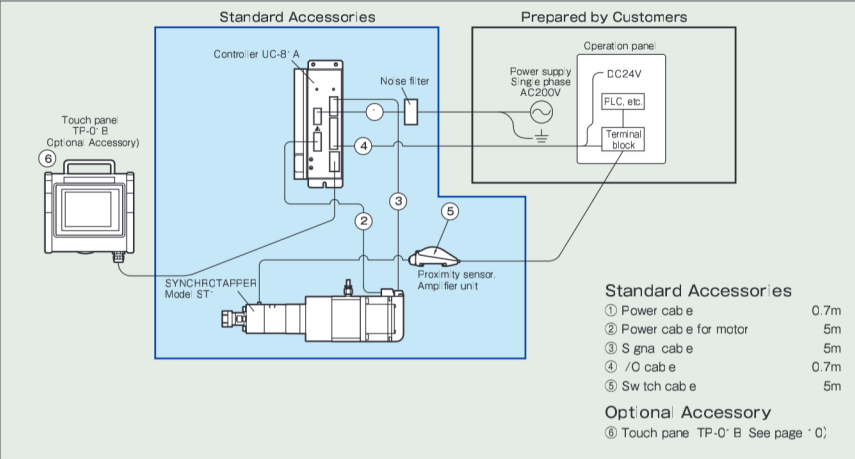
Tap holding collet chuck

We offer two types of master screw assemblies with the following tap holding collet chucks.

Floating type (For large holes / low speed tapping)
It accepts center misalignment from pre-hole.
Radial float is 0.2mm. (OD)

Centering type (For small holes / high speed tapping)
The radial float is extremely small.

Electric System Diagram



Note : In order to perform data input and to display various monitors and alarms, the optional touch panel TP-O-B type is required. The attached cable length of the TP-O-B is 3m.

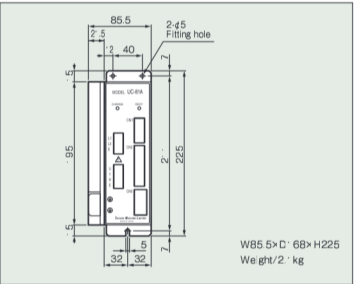
Controller UC-8-A] Multidrop connection with the controller of SELFEEEDER SERVO series is possible.



Function

External control start-up, stop, program complete signal etc.)

Dimensions (mm)

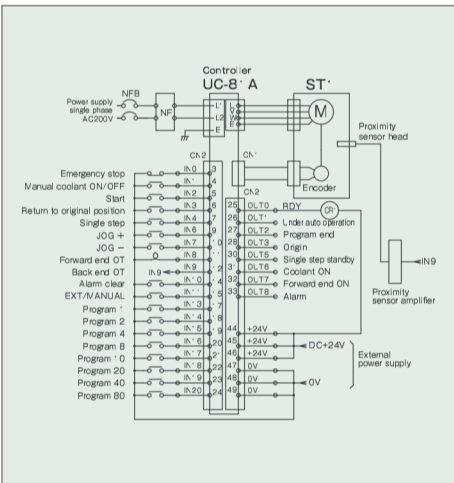


Note : Model ST* cannot be controlled by only the PLC and requires UC-8-A controller.

Specification of Signal

Input Signal	Input voltage	DC24V
	Input signal (at relay contact point or open collector transistor)	0mA
Output Signal	Maximum contact capacity	Open collector DC24V, 90mA (Open collector can drive miniature relay and photo coupler.)

Power Supply and Input/Output Signal Wiring Diagram



Optional Accessories Data Input System

Either of below listed touch panels (optional accessory) is required for data input such as stroke and rotation speed, various monitors, single manual operation, and alarm display. The model of the touch panel is depending on the applicable tapping unit. In addition, it is applicable to multiple models.

Touch Panel TP-01B

Applicable Models Model ST (UC-8 A included)
Model ST4 (UC-83A included)

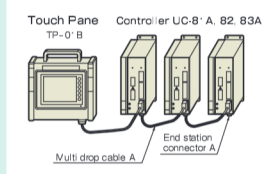
Touch panel adopting 5.7 inch color liquid crystal.
Easy to create and operate NC programs even for beginners.



TP-01B

Multi drop connection

By connecting multiple controllers "UC-8" with multi drop cable, programming can be done without pulling out cables. (Maximum 10 controllers can be connected.)



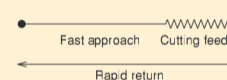
Main Specifications

Monitor size	5.7 inches
Display language	4 languages (Japanese, English, Chinese, Korean)
Included cable	3m
Backup memory (option)	Compact flash card (32 MB) Compact flash reader/writer

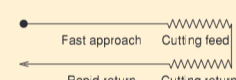
Tapping patterns

Two types of tapping patterns are programmed in the controller as standard, and it is possible to operate easily by inputting stroke and rotation speed data.

Pattern 1



Pattern 2



Touch Panel TP-02A

Applicable Models Model ST2M, ST3M
(PLC included)

A small touch panel of 4.5 inches. The tapping pattern equivalent to the controller UC-8 type can be selected.
It makes backup of parameters and programs by putting an SD card in the SD card slot.



TP-02A

Main Specifications

Monitor size	4.5 inches
Display language	English only
Included cable	3m

Optional Controlling

Device for Model ST2M and ST3M

Over travel detecting limit switch cable

Limit switch cable to detect forward end and back end over travel which is to be connected to the customer's control panel. Please see the electric wiring diagram on page 3 and 5 for details.

Optional Attachment

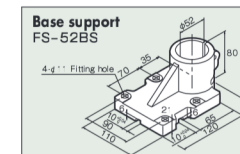
Fixture for Model ST2M and ST3M

Flex Stands

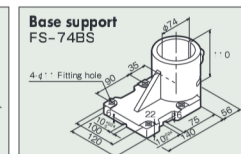
Flex stand is a fixture to fix SYNCHROTAPPER model ST2M and ST3M at a desired angle.



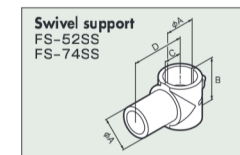
Dimensions (mm)



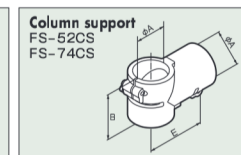
Base support
FS-52BS



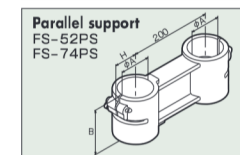
Base support
FS-74BS



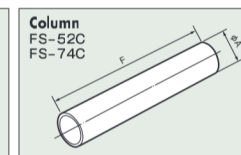
Swivel support
FS-52SS
FS-74SS



Column support
FS-52CS
FS-74CS



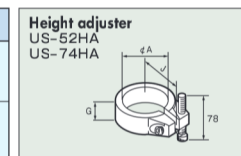
Parallel support
FS-52PS
FS-74PS



Column
FS-52C
FS-74C

Dimensions (mm)

Model	Symbol	A	B	C	D	E	F	G	H	J	Applicable
FS-52	US-52	52	80	40	55	20	500	30	43	52	ST2M
FS-74	US-74	74	100	45	35	40	600	30	56	65	ST3M



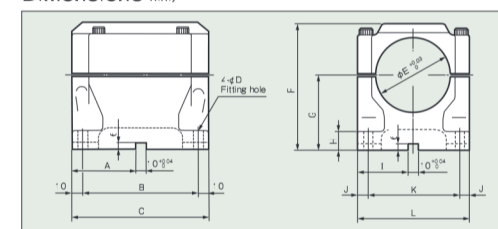
Height adjuster
US-52HA
US-74HA

Level Clamps

Fixture to set SYNCHROTAPPER model ST2M and ST3M parallel to machine base. 2 types available for different centering.



Dimensions (mm)



Dimensions (mm)

Model	Symbol	A	B	C	D	E	F	G	H	I	K	L	J	Applicable
LC-52		30	50	70	6.5	52	95	60	4	35	64	80	8	ST2M
LC-52H							35	00						
LC-74		60	100	30	9	74	20	70	8	50	90	100	0	ST3M
LC-74H							50	00						