

Superior

Servo Motor for Industrial Sewing Machine

SV-71 Ver. 0.2 Old Style



More efficient and more energy saving than a clutch motor

SV-71

INSTRUCTION MANUAL

Ver. 0.2 Old Style

For safe operation

1. Prior the use of this product, please read the instruction Manual. Keep this Instruction Manual and the user may read it at any time when necessary.
2. Before turn on the power, be sure to check the power voltage and phase agreeing with the nameplate that indicated in the control box.
3. Grounding the machine is always necessary for safe and normal operation.
4. Check lubricating oil prior to operation.
5. Check that rotational direction of the motor is correct prior to operation.
6. So as to prevent personal injuries during operation, be careful not to allow your head and hands to come close to the moving parts. Also never try to stop it with external forces.
7. For the following conditions, turn off the power or disconnect the power plug from receptacle.
 - For threading needle or replacing bobbin.
 - To plug or unplug any connectors from control box.
 - For maintenance and repairing.
 - When machine is not at use, inspected or adjusted.
 - When lightning and thunder occurs.
8. Repairing, remodeling and adjusting works must only be done by appropriately trained technicians or especially skilled personnel.

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I. Set up

1. For motor & control box set up

Dimensions of motor & control box as shown below in Fig. 1

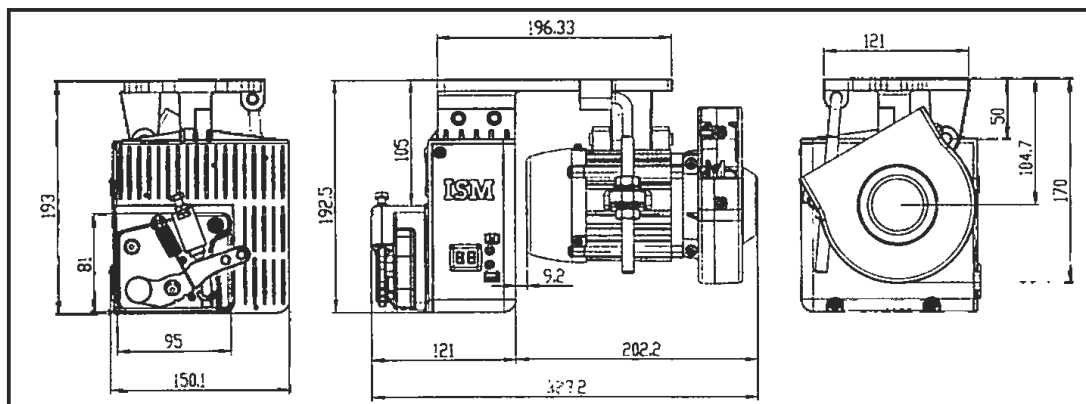


Fig. 1

Drill three 9mm holes on the machine table; attach the suspending bracket assembly under the table. Making sure that both the machine and motor pulleys are parallel.

Using the up-down shift tension adjust nuts. Adjust the tension on the belt. Tension should ranging from 15mm/1kgf located in the center position as shown in Fig. 2.

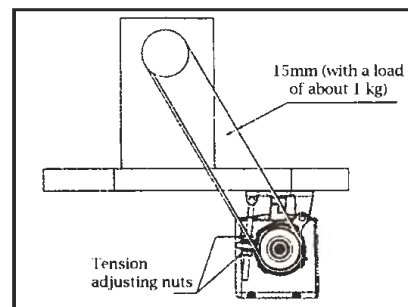


Fig. 2

2. How to connect the cord

Open the front cover of the control box, the connections for the P.C.B. is shown in Fig. 3 below. In accordance to the sewing machine model, connect the lines in the appropriate position.

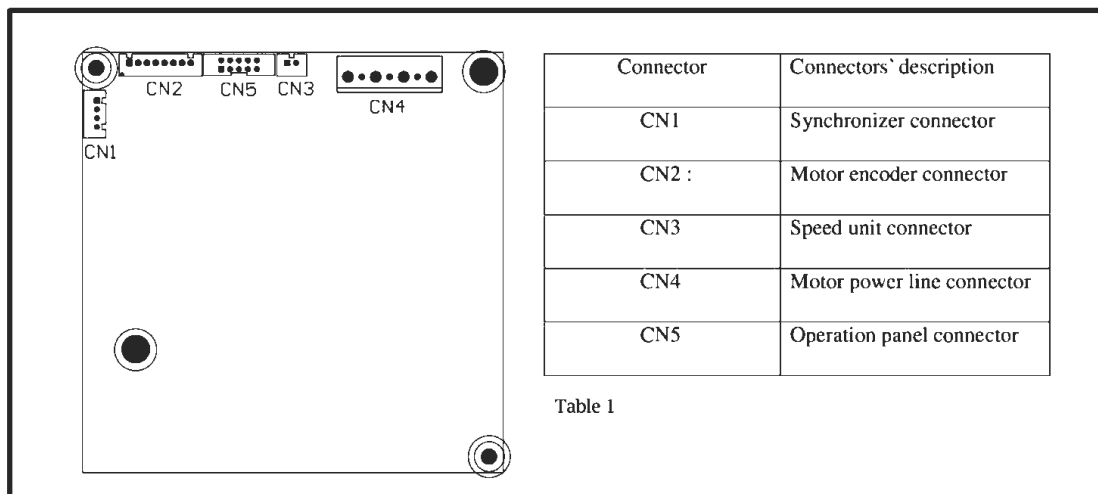


Fig. 3

3. Installing the connection rod

Install the connecting rod in opening A or B, depending on pedal sensor lever 2, using nut 3 as shown in Fig. 4.

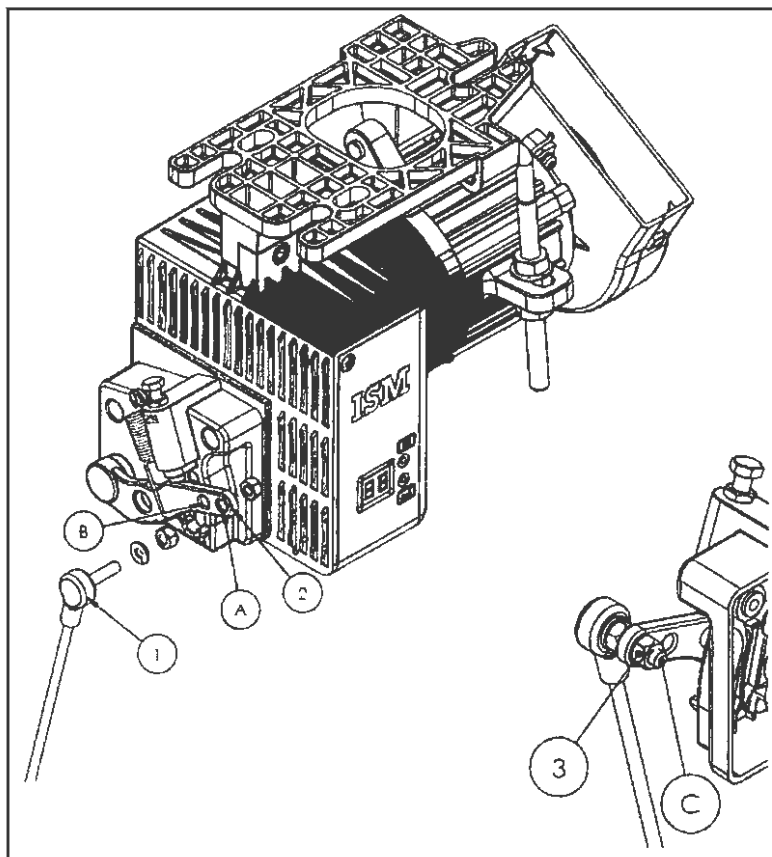


Fig. 4

4. Installing the synchronizer

Carefully attach adapter 1 in the tapped hole in the main shaft of the sewing machine using screw 2. Place supporting rod 3 in the machine as shown in Fig. 5.

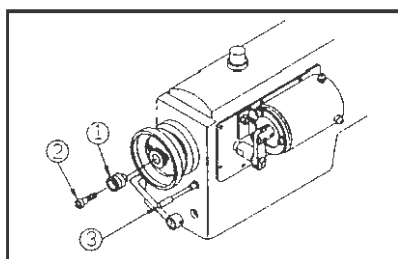


Fig. 5

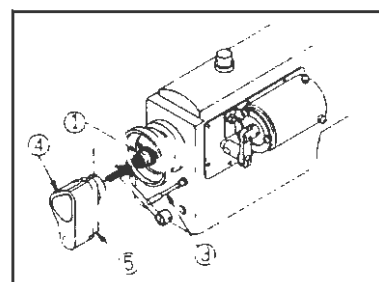


Fig. 6

Then insert the supporting rod 3 into slit 5 on the synchronizer stopper. Install synchronizer 4 on adapter 1 in the direction on the arrow shown in Fig. 6

Now tighten set screw 6 on the synchronizer by turning it in the direction of the arrow in diagram. Attach cord 7 of the synchronizer to supporting rod 3 using the cord clamp 8 as shown on Fig. 7.

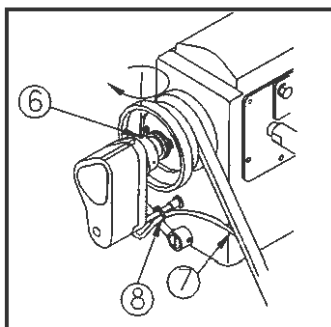
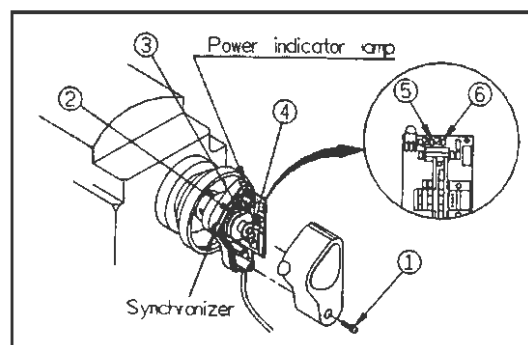


Fig. 7

5. Adjusting the synchronizer (Fig. 8)

1. Loosen screw 1 and remove the cover. Loosen screw 4 located at the top of the shaft.
2. Adjust the machine's pulley manually to needle down position (In the same direction as the machine rotates)
3. Adjust the photo disc 2 until LED 5 is on (Also in the same direction as the machine rotates)
4. Repeat step 2, then adjust the sewing machine's pulley manually until needle remains in needle up position
5. Adjust the photo disc 3 until LED 6 is on. *Note: Prior to the execution of this procedure, never rotate pulley and photo disc 2*
6. Tighten screw 4
7. Confirm the needle up / down position of the needle by operating the pedal. In case of error please repeat steps 2 through 5.
8. Replace cover and tighten with screw 1



II. Operating

For regular operations: (Turning the power switch on without pressing any button)

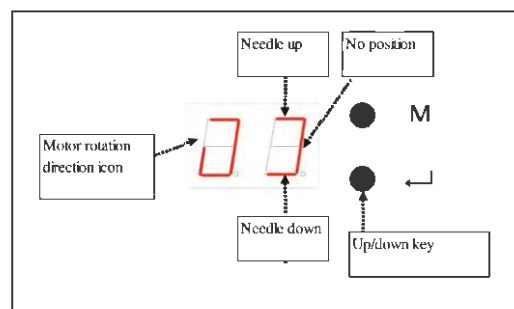


Fig. 9

III. Error message indicator

When abnormal conditions occur, the error message will display as seen below on Fig. 10 and Table 2.

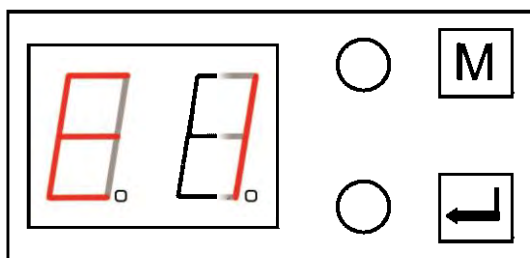


Fig. 10

Error message display:

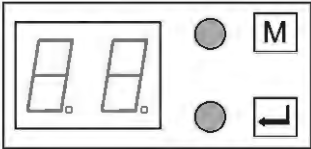

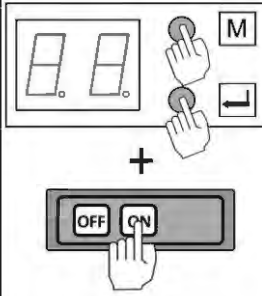
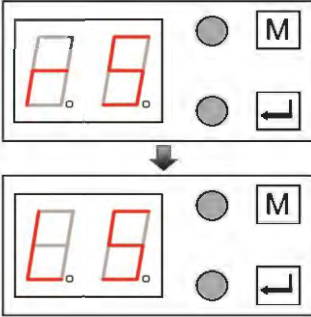

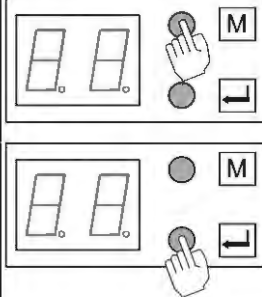
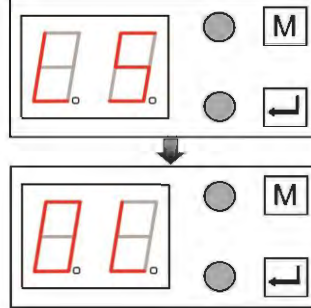
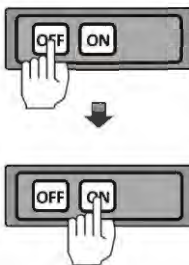
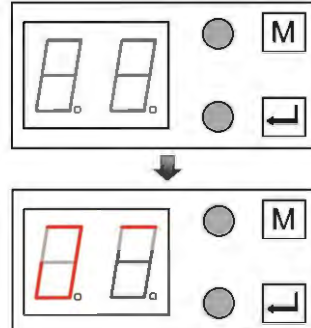
Table 2

Error Code	Error	Check Items
E.1 or E.2	Synchronizer failure	-Synchronizer connector is loose or line is broken
E.2	Motor is not rotating	-Machine head is locked -Motor is locked -Motor power line or encoder line is broken or connector is loose
E.5	Speed unit output failure	-Speed unit connector is loose -Speed unit is broken - Connecting rod installation is incorrect
E.6	CPU error	-Noise interference (E.g. High frequency machine, welding machine)
E.8	Setting speed is over the motors maximum speed	-Parameter No. 1 setting value is too high -Motor pulley diameter is too small -Motor pulley ratio setting error
E.9	Power transistor module has failed	-Power module overheated -Short circuit or low voltage -Voltage is too high -Increase value of parameter F6
E.0 or E.C	Braking timing error	-Increase value of parameter F5


IV. Settings



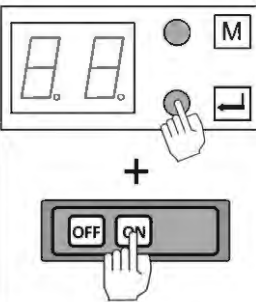
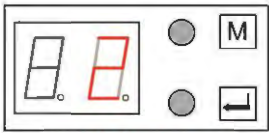
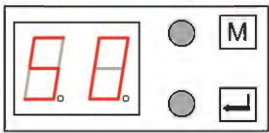
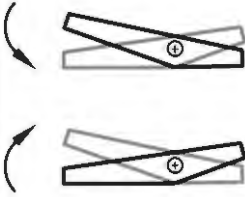
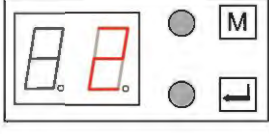
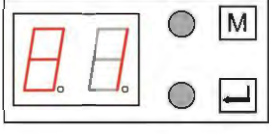

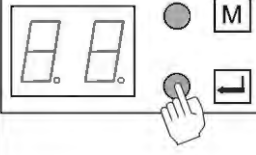
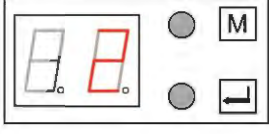
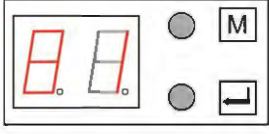
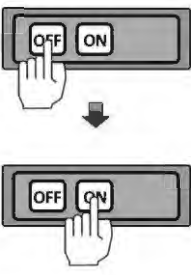
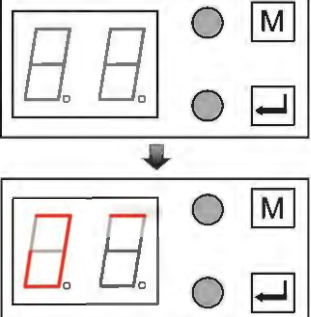
1. Selecting the machine type

LS	Lockstitch	TN	Twin Needle
OL	Overlock	CS	Chainstitch
PB	Postbed		

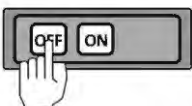
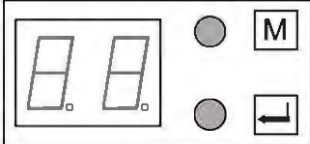
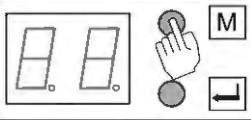
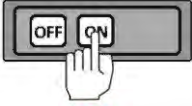
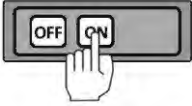
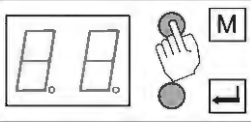
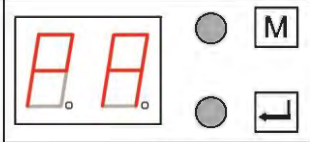
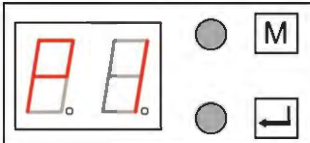
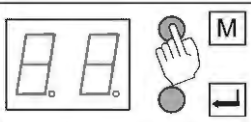
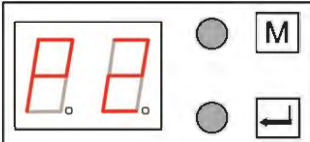
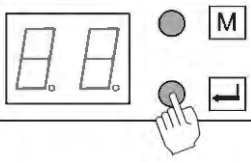
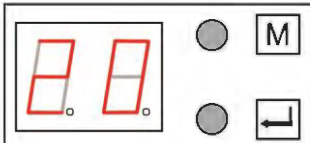
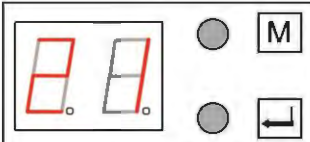
1. Turn off the power.		
2. Press M and  simultaneously and turn on the power until panel displays rS then release the keys.		
3. If not displayed as shown above, please repeat steps 1 and 2.		
4. Press M key, machine will begin to cycle machine types. Then press  key to save machine type.		
5. Turn off the power, then turn ON the power again. It will operate according to the Initial values stated on the instruction manual.		


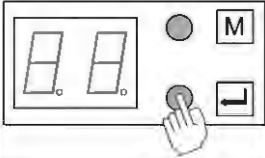
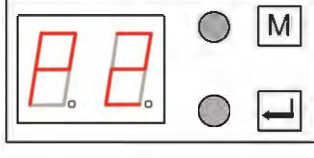

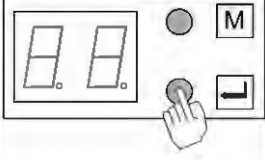
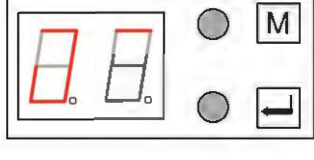
2. Motor pulley ratio measurement

1. Turn off the power.		
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<p>2. Press  key and turn ON the power until the panel displays the pulley ratio flickering. Release  key. First digital display is hundreds, second digital display is tens and ones respectively.</p>		<p>Hundreds</p>  <p>↓ Flickering ↑</p> <p>Tens / Ones</p> 
<p>3. If not displayed as shown above, please repeat steps 1 and 2.</p>		
<p>4. If the pedal is pressed forward, the motor will rotate 7 turns in positioning speed. Once motor stops, the pulley ratio will be displayed. (Sewing machine 360° = motor ? degrees). then step 4 can be repeated to confirm</p>		<p>Hundreds</p>  <p>Tens / Ones</p> 
<p>5. Press  key to save. If this procedure is not performed, old values will remain.</p>		<p>Hundreds</p>  <p>Tens / Ones</p> 
<p>6. Turn OFF the power then turn ON the power, new pulley ratio values have been saved.</p>		

3. Parameter Setting

<p>1. Turn off the power.</p>		
<p>There are two ways can enter parameter settings.</p> <p>2-1. Press M key and turn on the power until the panel displays PS. Release M key, the panel display parameters no.</p> <p>2-2. Turn on the power enter normal mode then press M key until panel displays PA. Release M key, the panel display parameter no.</p>	 <p style="text-align: center;">+</p>  <p style="text-align: center;">OR</p>  <p style="text-align: center;">↓</p> 	 <p style="text-align: center;">↓</p> 
<p>3. The parameter number will increase by one when you press the M key one time.</p> <p>When you press and hold the M key it will decrease the parameter number continuously.</p>		<p style="text-align: center;">↓</p> 
<p>4. Once the modifying parameter has been found, press Enter key, and the relative parameter setting will display accordingly.</p>		<p style="text-align: center;">↓</p> 
<p>5. The parameter value will increase by one when you press the M key one time.</p> <p>When you press and hold the M key it will decrease the parameter value continuously.</p>		<p style="text-align: center;">↓</p> 

6. Pressing  key can return the parameter number selection. Repeat steps 4 - 6 to modify the parameter value.		
7. Once all specified values have been changed, press  key 2 seconds until display returns to normal operation mode. It will operate with new parameter values.		

V. SV-71 Control Box Parameter List:

No	Item	Range	Unit	Lockstitch	Overlock	Postbed	Twin Needle	Chainstitch
P1	Sewing machine maximum speed	2 ~ 80	*100spm	40	60	20	25	40
P2	Sewing machine positioning speed	10 ~ 25	*10spm	20	20	20	20	20
P3	Motor's pulley dimension	50 ~ 100 (note 1)	*1mm	75	85	65	65	75
P4	Machine's pulley dimension	50 ~ 120 (note 1)	*1mm	75	55	65	80	65
P5	Pulley ratio setting mode	ON: Refer motor pulley ratio measurement OFF: Refer P3 and P4	--	ON	ON	ON	ON	ON
P6	Virtual needle down positioning function	ON: With the function OFF: No such function	--	OFF	OFF	OFF	OFF	OFF
P7	Angle between virtual needle down positioning point and needle up signal	70 ~ 250 (note 1)	*1°	180	180	180	180	180
P8	Soft start stitches	0 ~ 19	*1 stitch	0	0	0	0	0
P9	Soft start speed	25 ~ 200 (note 1)	*10spm	40	40	25	40	40
F1	No synchronizer operation mode	OFF: Ineffective ON: Effective	--	OFF	OFF	OFF	OFF	OFF
F2	Motor rotation direction	OFF: Counterclockwise ON: Clockwise	--	ON	OFF	ON	ON	OFF

F3	Motor static brake function	0. No such function 1 ~ 20 The bigger value means the more powerful braking force	--	0	0	0	0	0
F4	Accelerating slope	1 ~ 8 The bigger value means slowly accelerating	--	3	3	3	3	3
F5	Decelerating speed slope choice	1 ~ 8 The bigger value means the longer time of decelerating	--	3	3	3	3	3

Note: 1) Digit display is hundreds
2) Digital displays are tens and ones respectively.