

# Operating manual SV 550

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# GLOBAL

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## 1. Safety Instruction



### Caution

Please read the operating instruction of this product carefully before operating this product. Our products are applicable to stated sewing equipments only, don't use them for other applications.

1. Please read the operating instruction carefully before installing and adjusting the product
2. This product should be installed and operated by professionally trained personal only
3. It is users forbidden to change any part of the controller, users take all consequences caused by the change themselves
4. Make sure the power is connected to ground safety and confirmed to the correct voltage and technical requirements written on the products model plate
5. Move your foot away from the pedal when the power is turned On or OFF
6. Please turn the power OFF when doing the following operations:
  - A Install the equipment
  - B Insert or pull out any plug of the controller
  - C Thread the needle, replace the needle or rotate the machine hand wheel
  - D Maintain the machine or when the machine is idle
7. Setting the controller and maintenance should be done by trained personal

## 2. Product Introduction

### 2.1 Overview

The SV-550, energy saving industrial sewing machine brushless motor has many advantages compared to the traditional clutch motor: low friction, low noise and vibration level, low temperature rise, longer working life, smaller dimensions and lighter in weight. But what's most important, SV-550 can save about 71% energy compared to clutch motors and can be used widely on various industrial sewing machines to replace the clutch motor perfectly.

### 2.2 Components (check if all components are complete)

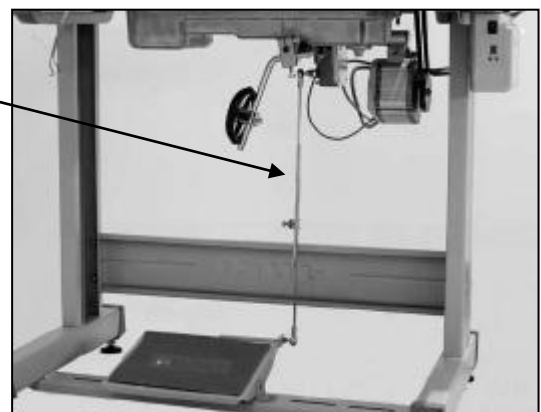
- A: Controller including power board
- B: Motor including bracket and speed control unit and V-belt cover



The motor is a brushless permanent magnet motor, the rotor is made of a neodymium magnet, the strongest magnet material possible, it makes the motor small in volume, high in power, energy saving, environmental friendly, working steadily and reliable.

- C: pedal rod (see picture 1)
- D: Manual
- E: Optional: external synchronizer for needle positioning

Picture 1



### 2.3 Specifications

| <b>Model SV 550</b>     | <b>Energy Saving Servo Motor</b>     |
|-------------------------|--------------------------------------|
|                         |                                      |
| Motor type              | Brushless Permanent Magnet Motor     |
| Voltage                 | AC 220 ± 10% Volt 50 Hz              |
| Output power            | 550 Watt                             |
| Speed setting           | 3575 rpm                             |
| Max speed               | 6000 rpm                             |
| Max torque              | 550 Watt / 3 Nm                      |
| Needle Up/Down          | Optional function (synchro required) |
| Overload protection     | Yes                                  |
| Accelerate time         | ≤ 0,3 sec.                           |
| Carton size             |                                      |
| Gross weight per carton |                                      |

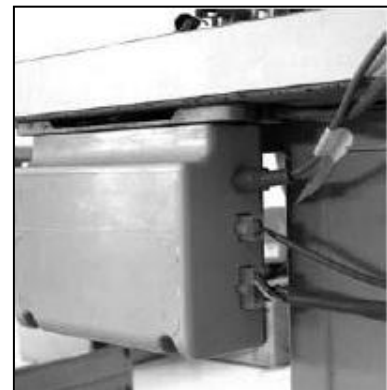
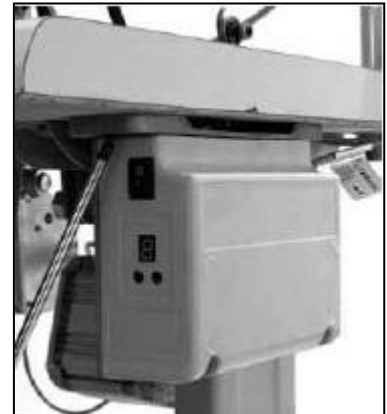
### 2.4 Applications

SV 550 motor can be used for light and medium weight single needle lockstitch machine, light weight double needle lockstitch machine and heavy duty overlock and interlock sewing machines.

### 3. Installation

#### 3.1 Installation of Motor Module

- A: Fix the three bracket screws into the reserved holes on the table of the sewing machine, then fix the motor under the table by the motor bracket. Adjust the position of the motor bracket so the motor pulley and the machine pulley are aligned properly.
- B: Adjust the tension of the V-belt; press the belt with one kilogram force, concave down 1,5 cm is good, if not, the tension of the V-belt must be adjusted. Mount the V-belt cover and tighten the connecting bolts between motor and bracket.

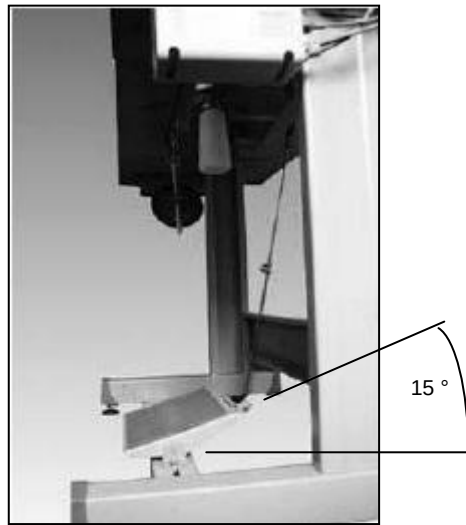
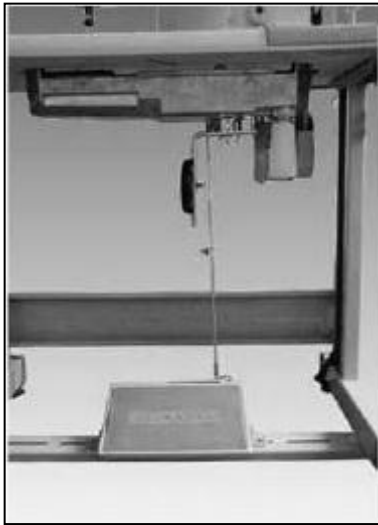


#### 3.2 Installation of Control Box

Drill two holes ( $\varnothing$  3 mm, 1 cm deep, hole pitch 195 mm) in the right front side under the table and fix the control box firmly with the supplied screws. Insert the 2 x motor plug, the synchro plug and the plug of the speed control unit into the corresponding sockets. Then bind the cables together and fix them far away from the V-belt so the V-belt can not damage the cables.

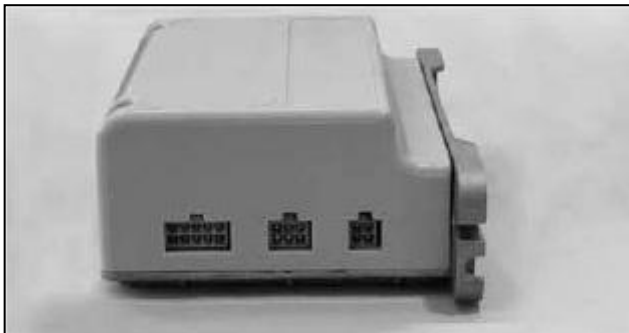
### 3.3 Installation of Pedal

Correct mounting of the pedal rod is in a vertical position between pedal and speed control unit. Adjust the angle of the pedal to a 15 degree angle between pedal and the ground.



### 3.4 Connection of system power

Connect the power cord of the control box to a 220 Volt single phase power supply with separate earth device. The power cord of the control box must be connected to earth safely. Insert the plugs of motor, speed control unit and synchronizer (optional). Check all plugs on pins pulled back. Finally, adjust the position of the plug covers to protect the connections of the plugs.



Definition of the control box connections:

|       |   |   |   |     |
|-------|---|---|---|-----|
| earth | U | V | W |     |
| 5V    | A | B | C | GND |

|       |  |     |
|-------|--|-----|
| Sign. |  |     |
| 5V    |  | GND |

|    |     |
|----|-----|
| UP | DN  |
| 5V | GND |

### 3.5 Setting the needle positions

If the motor is used without synchronizer (parameter M = 0), this step can be ignored.

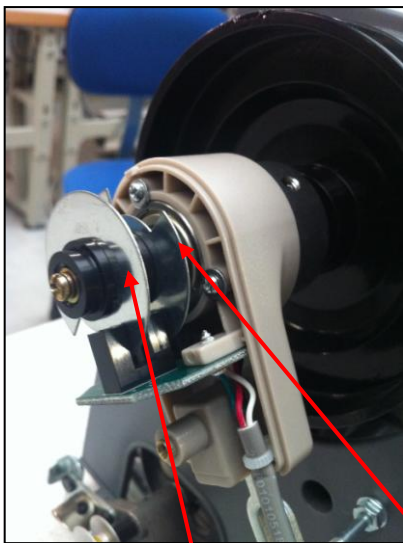
Needle DOWN position:

1. Rotate the handwheel until the needle is in the Needle DOWN position
2. Rotate the Needle DOWN disk (see picture 2) in the correct direction until the gap in the disc is equal to the photo sensor (see picture 3 and 4)

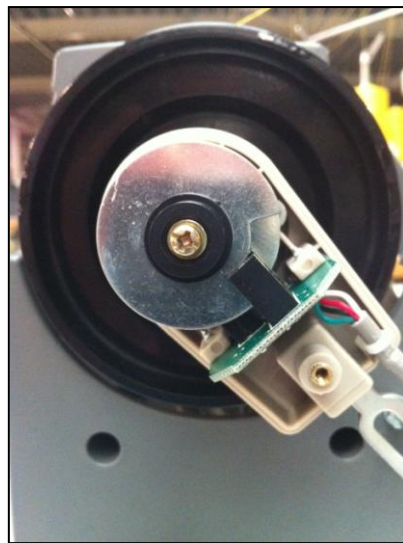
Needle UP position:

1. Rotate the handwheel until the needle is in the Needle UP position
2. Rotate the Needle UP disk (see picture 2) until the gap in the disc is equal to the photo sensor (see picture 3 and 4)

Picture 2



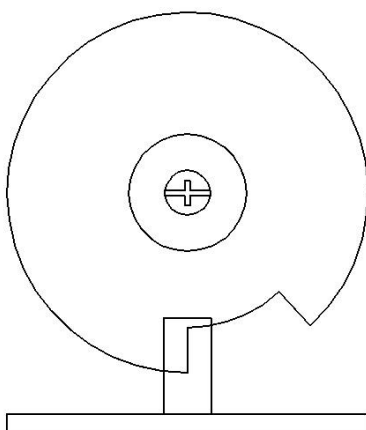
Picture 3



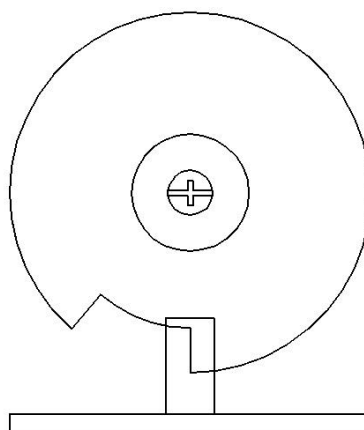
Needle DOWN disc    Needle UP disc

Picture 4

Lockstitch



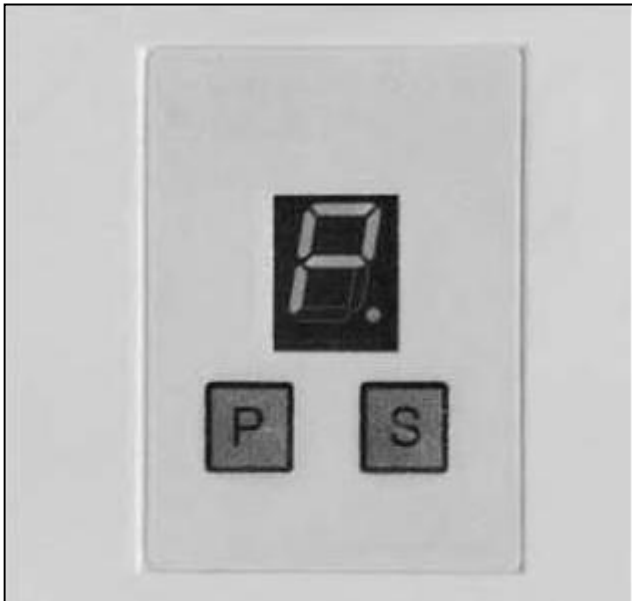
Chainstitch





## 4. Parameter setting

Normal mode P: if the dot is shown in the display this means lockstitch rotation direction, no dot means chainstitch rotation direction.



On the SV 550 there are 2 parameter levels:

1. operator level P
2. technician level F

### 4.1 Operator level P:

In normal mode (P.) press the P button to select a parameter

V = max. speed setting by operator (9 = highest speed, 1 = lowest speed)

Y = needle positioning UP or DOWN (0 = DOWN, 1 = UP)

B = rotation direction (0 = lockstitch, 1 = chainstitch)

When the correct parameter is selected, press the S button to read the current value of the parameter. Press the S button again to change the value of the selected parameter. When the selected parameter is set to the correct value, press the P button to confirm the value. Display will now show "O" and then "K" (OK).

## **4.2 Technician level F:**

To enter the technician level, in normal mode, first press the S button and then also press the P button for 3 seconds until the display shows "F".

Display will now show the technician level F.

Press P button to select a parameter in the technician level F:

M = synchronizer mode (0 = no synchro, 1 = synchro)

Z = speed level setting (see columns next page)

L = speed limit setting (see columns next page)

C = torque setting (1 = lowest, 9 = highest)

N = low speed setting (positioning speed, 0 = highest, 9 = lowest)

A = save parameter setting as factory setting, press S button for 3 seconds until display shows "O" and then "K" (OK).

When the correct parameter is selected with the P button, press the S button to read the current value of the parameter. Press the S button again to change the value of the selected parameter. When the selected parameter is set to the correct value, press the P button to confirm the value. Display will now show "O" and then "K" (OK).

## **4.3 Parameter Reset:**

In normal mode (P.) press the S button for 3 seconds until the display shows "O" and then "K" (OK).

#### 4.4 Max Speed Setting:

1. With Z=0, below is the speed range (RPM) under different settings of parameter L:

| L          | 0    | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    |
|------------|------|------|------|------|------|------|------|------|------|------|
| Max. speed | 1500 | 2000 | 2500 | 3000 | 3500 | 4000 | 4500 | 5000 | 5500 | 6000 |

For example, set Z=0 and L=8, the speed range is between 0-5500 RPM  
(adjustable by parameter V in the operator parameter level)

2. When Z=1, below is the speed range (RPM) under different settings of parameter L:

| L         | 0    | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    |
|-----------|------|------|------|------|------|------|------|------|------|------|
| Max speed | 2500 | 3000 | 3500 | 4000 | 4500 | 5000 | 5500 | 6000 | 6500 | 7000 |

For example, set Z=1 and L=2, the speed range is between 0-3500 RPM  
(adjustable by parameter V in the operator parameter level)

#### 4.5 Alphabet display:

|                  |   |   |   |    |   |   |   |   |   |   |
|------------------|---|---|---|----|---|---|---|---|---|---|
| Actual Alphabet  | A | B | C | D  | E | F | G | H |   | J |
| Display Alphabet | R | b | C | d  | E | F | G | H |   | J |
| Actual Alphabet  | K | L | M | N  | O | P | Q | R | S | T |
| Display Alphabet | t | L | n | n  | o | P | q | r | S | r |
| Actual Alphabet  | U | V | W | X  | Y | Z |   |   |   |   |
| Display Alphabet | U | u | 8 | 11 | P | E |   |   |   |   |

## 5. Environment Requirements

1. Keep the motor and control box away from high magnetic field environments and radiation environments to avoid malfunction.
2. The work environment temperature must be in the range of 5 – 45 °C.
3. Don't use this product next to heat sources (such as radiator).
4. Don't use this product in a too humid environment.
5. Don't use this product near to corrosive liquids and explosive substances.
6. Always keep ventilation for the control box and motor to ensure good heat output.
7. Keep the power input voltage stable.
8. Make sure there is a reliable earthing device for the system.

## 6. Troubleshooting

If the machine can not work very well, maintenance and repair must be operated by professionally trained personal.

**Fault 1:** The display does not light up when the power is turned ON.

Check if the power plug is connected to the socket properly.

Check if the protective fuse is broken. If it is broken, replace the fuse with a new one (5 A / 250 V Ø5 x 20 mm). To check and replace the fuse, open the cover of the control box (see picture).

Picture 5



**Fault 2:** The display lights up but the motor does NOT run when pressing the pedal.

Check if the connections of the speed control unit plug, the motor plugs and the synchronizer (if applicable) are connected properly. If yes, check if the speed control unit switch is good.

**Fault 3:** The speed of the motor is not stable.

Check if the V-belt tension is good. If the V-belt tension is too loose, the motor pulley (and /or machine pulley) can slip over the V-belt. Also check the input power if it is stable.

**Fault 4:** The motor stops running by itself.

Check if the machine load is too heavy (material too heavy) or if there is a mechanical blockage on the machine. Then check and make sure all plugs are connected properly. If all above is good, check if the display is showing "E1" or "E2". If so, this motor stop is self protection. The control box needs to be restarted.

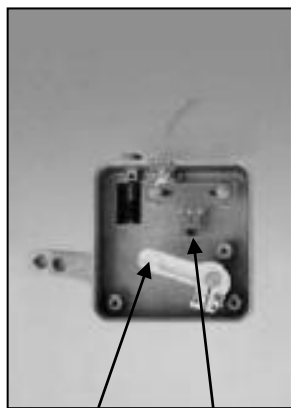
**Fault 5:** The motor keeps running by itself when the power is turned ON.

Check if parameter M is set correctly. When parameter M is set to 1 but NO synchro is used the motor will start to run automatically when the power is turned ON. For use WITHOUT synchro parameter M must be set to 0.

If parameter M is set correctly, check if the position of the magnet on the end of the swinging arm inside the speed control unit is good. This magnet moves across a Hall sensor on the electronic board to vary the motor speed. Do this the following way:

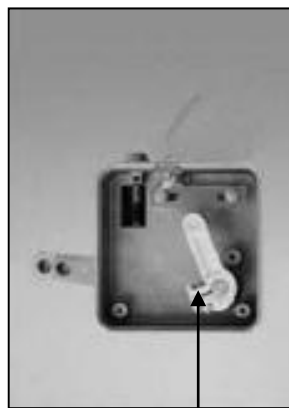
1. turn OFF the power of the control box
2. open the plastic cover of the speed control unit and loosen the bolt of the swinging arm.
3. move the swinging arm in the position of picture 6
4. turn ON the power of the control box, take care not to touch the electronic components on the electronic board.
5. move the swinging arm back in the direction of picture 7, first the speed will go up but as soon as the magnet goes over the Hall sensor the speed will go down again.
6. At the point where the motor stops running, secure the bolt of the swinging arm.
7. put the cover of the speed control unit back in the original position and secure the screws of the cover.

Picture 6



swinging arm      Hall sensor

Picture 7



bolt of the swinging arm

**Fault 6:** The display shows “E1”

“E1” means the motor has an operational failure, check if the sewing material is too heavy, the machine is stuck or some other reason that makes the load heavier. Also check if all plugs are connected properly and check the pins inside the plugs (pin drawn back).

**Fault 7:** The display shows “E2”

“E2” means the motor has an over-current or under-voltage failure. Check if the power supply if the range is within 200-240 Volts.

**Fault 8:** The display shows “E3”

Turn OFF the power of the control box, wait 10 seconds and turn the power back ON.

**Fault 9:** The fuse is blown as soon as the power of the control box is turned ON.

If the problem can not be solved by replacing the fuse contact your distributor.

**Fault 10:** Any other problem

If there is another problem that can not be solved, contact your distributor.

### **Additional remarks:**

When the control box does not work properly, in the normal mode press the S button for 3 seconds. The control box will now be reset and show “O” and “K” when ready. After the reset, try again.