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CAUTION :

Please read instruction manual carefully before operating. The installation and operation must be operated under professional trained staff.

SAFETY INSTRUCTION:

- 1: Please read this manual carefully before installation and adjustment.
- 2: Installation and operation must be operated under professional trained staff.
- 3: It is not allowed change the structure of any motor parts, otherwise the customer should take full responsibility
- 4: Confirm the power connected to the ground safety and keep in accordance with the voltage range and technical requirements in the nameplate.
- 5: Please leave your feet away from the speed governor when power is turned on or off.
- 6: You must cut the power off under below mentioned operation:
 - 1: install the machine
 - 2: insert or pull out any plug in the control box
 - 3: threading, changing needle and rotate the machine head.
 - 4: machine maintenance and machine is in idle state.
- 7: The setting of control system and maintenance should be operated by trained staff.
- 8: There should be 20 seconds separate during changes of power
- 9: The system must be connected to the ground safety

I . PRODUCT INTRODUCTION

1. OVERVIEW

Energy-saving, cost-reducing and environment protecting is the core mission of 21st century. The energy-saving control system is extensive apply for industrial sewing machine and apparel industry. This system has the advantages of energy saving, high efficiency, stable performance and reasonable price which win a good reputation since the system being launched. This system is the best replace for clutch motor which used widely in industrial sewing machine.

2. COMPONENT

The system is made of controller and motor.

Controller: The controller includes speed governor and control box (as picture 1)



Picture 1: control box and speed governor

MOTOR

The product has pensile type (as picture 2) and direct-drive type. Direct-drive including direct-drive for overlock as picture 3 and lockstitch as picture 4.



Picture 2



Picture 3



Picture 4

Accessories selection: positioner, also called synchronizer and detector, including internal type and external type



Picture 5 internal type



Picture 6 external type

Attention: If choose the internal type have to make sure the machine head has the relative hole to fix otherwise can not us. Suggest to use the external type.

3. PERFORMANCE AND PARAMETER

PERFORMANCE AND PARAMETER FOR ENERGY-SAVING SERVO MOTOR

power voltage range (please confirm the supply voltage)	AC 220V±10% 50HZ/60HZ (some countries) AC 110V±10% 50HZ/60HZ (some countries)
motor output (three motor types)	400W/550W/750W
Maximum torque (three motor types)	400W /1N.m 550W/1.5 N.m 750W/2.5 N.m
Rated speed (three motor types)	400W/7000r/min 550W/4500r/min 750W/3500r/min
needle up/down	Optional (synchronized needed)
transistor protection	yes

4. APPLICATION

1. 400W/550W Motor is applicable to ordinary lockstitch and over lock sewing machine.
2. 750W motor is applicable to double needle sewing machine, interlock sewing machine and ordinary heavy duty lockstitch sewing machine.
3. The customers should select proper power according to the concrete condition.

II . INSTALLATION AND ADJUSTMENT OF PENSILE TYPE SYSTEM

1. Installation of motor module (as picture 6)

- 1): Set three lifting screws into the hole in the table, and fix the motor and motor rack to the table.

Adjust the position of motor rack and keep the motor belt puller at the same lever as hand wheel and belt of sewing machine.
 2): Adjustment of the belt with a force of if the belt concave centimeter, if not, the adjustment. Install the See as picture 7



machine.
 elasticity: press one kg. It is ok down one belt need belt cover back.

Picture 7

2. Installation of control box

Cutting two holes for the depth of 2 centimeters by the drill of $\Phi 3$ in the right hand front bottom of table, with the distance 195mm between them, and then fix the control box tightly with wooden screw attached with motor. Insert the motor plug of synchronizer and speed controller into relevant socket, and then fix the packed cable to the table where far away from belt. (as picture 8 and 9)



Picture 8

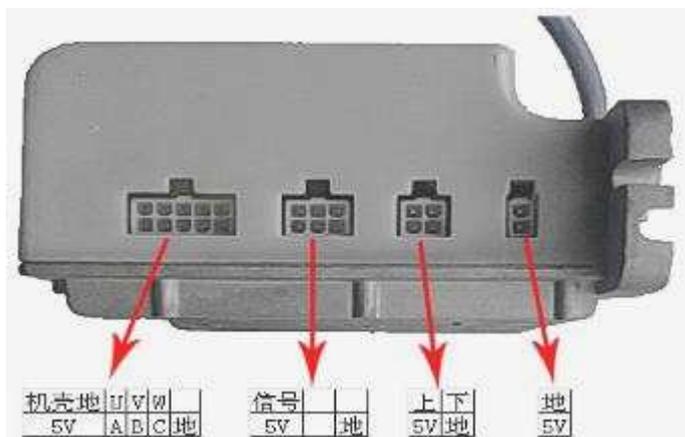


Picture 9

Picture 8 fasten the screw to fix the control box Picture 9 the control box after fixing

Attention: Please make sure the 10core line for the motor, 6core line for the speed governor and 4core line for the needle position(it is optional accessory) connect to the control box corretly.

3. System Connection (as picture 10)



Picture 10

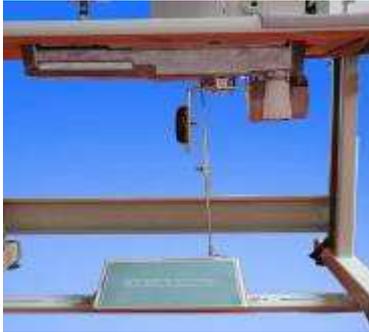
Insert the wire of controller into the regulated power system, which should have separately

ground device, and the control box must be connected to ground safely. Insert the motor plug, speed controller and synchronizer into the socket behind the control box. When everything is ready, check it if the connection stable, and then adjust the position of plastic sheath in order to cover the plugs totally.

Note: The LED light is the new function of this product. The specification is 5V, 0.5W and less than 100MA.

4. Installation of speed governor

Make sure the tension rod should be perpendicular to the pedal. Adjust the angel of tension rod, and keep the pedal tilted angel to the ground level as 15 degree.



Picture 11 from the front



Picture 12 from the side

III. INSTALLATION AND ADJUSTMENT OF DIRECT DRIVED TYPE SYSTEM

1. Installation Of Motor Module

Already installed in manufactory and no need to install

2. Installation Of Control Box

Same as the way to install the control box for ensile type system

3. Installation Of Speed Governo

Same as the way to install the control box for ensile type system

IV. INSTALLATION OF INTERNAL NEEDLE POSITION ACCESSELY

1. Installation Of Internal Needle Position:

1) Remove the hand wheel from the machine head and then you will see as the picture 13 show. Assemble the positioner to the machine head



Picture 13 machine head after remove the hand wheel



Picture 14 positioner

Following picture show the hole leave for fix the positioner and the machine head after fixed with the positioner



Picture 15 the hole leave for fix the positioner

Picture 16 machine head after fixed with the positioner

2) Assemble the alnico on the hand wheel, and the first main shaft screw(counter-clockwise) as the basis. When assemble please pay attention to the color mark.



Red color is the location for the upper needle position alnico

Picture 17 the alnico location and color

Attention: Please make sure to assemble the alnico according to the different color otherwise if wrong will make the machine can't stop with the correct needle position

1) Installation of hand wheel

Ajust the location of the hand wheel on the main shaft to make sure the space between alnico and the positioner is 2mm to 3mm. To turn or counter-turn the hand wheel to make sure the hand wheel can run smoothly. Following picture 18 show the alnico in the hand wheel, picture 19 show the machine after fix the hand wheel and the positioner.



To make sure the side with alnico close connects to the main shaft

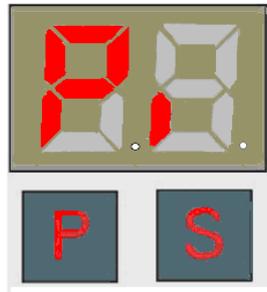


Picture 18 : the alnico in the hand wheel

Picture 19: the machine after fix the hand wheel and the positioner.

V. OPERATION INSTRUCTION OF OPERATION PANEL

This products with the double digit tube display and two press key.



Picture 20: the interface when turn on the machine

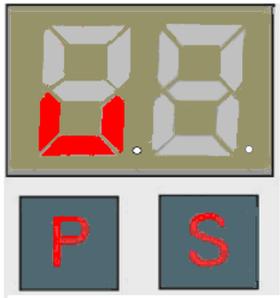
1. Parameter list

Parameter	function	description
V	Parameter for adjust the speed	Speed=Value show in the digital X100(RPM/Min)
M	Parameter for turn on the needle position function	0: turn off needle position function 1: turn on needle position function
Y	Parameter for needle position	The right side of the digital tube show “-” in upper location means upper needle position The right side of the digital tube show “-” in down location means down needle position Note: If parameter M value is 0 then this parameter not work
b	Parameter for adjust the rotation of the motor	The LED light running direction in the right side digital tube means the rotation of the motor

2. Parameter adjustment

2.1 Parameter Adjustment For Speed

On the interface, press the left side key P, and the the digital will show V, when press the right side key S will show the speed value for the motor, continue press S can adjust the speed value. When you adjust the speed value if the small point in the right side of the digital is twinkling that means the parameter adjustment is not saved, please save the parameter after make adjustment.



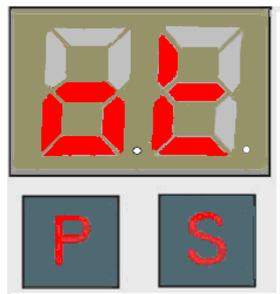
Picture 21: left side digital show V



Picture 22: show the speed of the motor

If want to save the parameter adjustment, please press the left side key P. Show OK means success, show Er means failed

If want to give up the parameter adjustment, please turn off the power, wait till the digital tube light turn off(around wait for 20 seconds), and then turn on the machine.



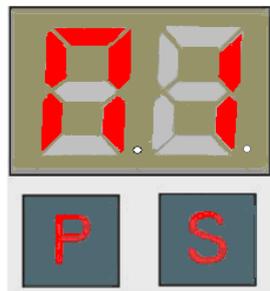
Picture 23: show OK if save success



Picture 24: show Er if save failed

Parameter Adjustment For Auto-Needle Position Function

In the P interface, press key P several times quickly, will enter parameter M. Through press the right key S can adjust the value of M



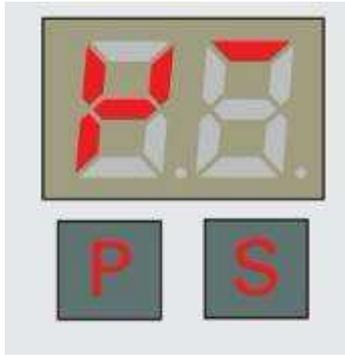
Picture 25: M interface

If want to save the parameter adjustment, please press the left side key P. Show OK means success, show Er means failed

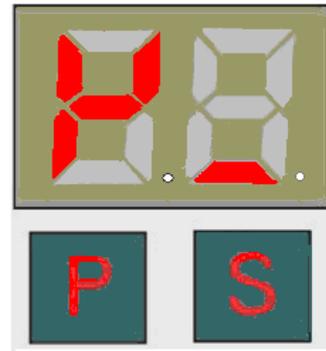
If want to give up the parameter adjustment, please turn off the power, wait till the digital tube light turn off(around wait for 20 seconds), and then turn on the machine.

Auto-Needle Position Model Adjustment

In P interface, to press the key P with several times quickly, the left side digital tube will show Y, and then press the right side key to adjust the needle position model.



Picture 26: show upper needle position



Picture 27: show down needle position

Note: If parameter M value is 0 then this parameter not work

Motor Rotation Adjustment

In P interface, press left side key with several times quickly till the left side digital tube show b, then through press the right side key to adjust the ration of the motor.



Picture 28: the left side digital tube show parameter b

- 1) Before use the motor please check the rotation of the sewing machine head first(clockwise rotation or counter clockwise rotation)
- 2) When the motor used in different type of sewing machines, please to adjust the motor rotation accordingly in parameter b.

Please find the list of motor parameter and motor direction. as below

Parameter b	Belt Driver	Direct Driver Overlock/Interlock	Direct Driver Lockstitch
Single digit tube set as 1 or the second digit of Double digit tube run in counterclockwise			
Single digit tube set as 0 or the second digit of Double digit tube run in clockwise			

2.5 Restoring To Factory Setup

When the control box can not work regularly, through restoring to factory setup make the machine can work regular again.

press S (about 3 seconds) on the P interface till the digital tube shows “OK” will recover the system parameter to the factory setting. If shows Er means failed.

VI. OPERATIONAL REQUIREMENTS

- 1 Please keep the control-box far away strong magnetic or high radiation environment in order to avoid obstructions.
- 2 The operational temperature must be in the range of 5°C--40°C
- 3 Please don't use this product near to any kind of heater (heat, radiator)
- 4 Please don't use this product in over-wet circumstances.
- 5 Please don't use this product under the corrosive and explosion situation..
- 6 Keep ventilation where the control-box and motor stored.
- 7 Keep the power supply voltage steady.
- 8 There must be qualified connector to the ground in order to make sure safety.

VII. MANTAINANCE AND GENERAL RECOVERY PROCESSING

If the machine went wrong, maintenance and operation should be operated under professional trained person.

1. No reaction when turn on the power control box.

Please check if the power plug connected to the socket tightly, or the fuse is burnt, if yes, change the fuse. Open the cover of control box first, and then find the position of fuse (as picture29), take the burnt fuse out and change a new one which as the same type as before.



Picture 29: Fuse location

2. Control box is connected, but the motor doesn't work when pressing the pedal.

Please check if the plug of speed controller, motor and motor signal wire is connected to the socket in control box correctly. Check if the speed controller is broken or not.

3. The rotate speed of motor sometimes fast and sometimes slow

Please check if the belt is too loose, or the belt puller slipped, or the pedal and tension rod is loose.

4. The motor suddenly stopped during running

Please check if the machine load too heavy first or there is mechanical problems. Then check if the power socket and plug connect well to the motor hall socket and plugs well. It's same to the socket and plug of speed controller.

5. The motor will run without stop when the control box is turning on.

1): Check if the working model is setting at 0, if setting at other model without installation of synchronizer, the motor will run without stop.

Encountered such case, please re-operation according to mode setting method, the specific operation instructions see the operating panel 3

2): Please check it if the position of alnico within speed adjustor changed. The method is as below

mentioned:

Open the plastic cover of speed controller, loose the fixed screw. Then adjust the position of swinging arm (picture 30 is the position of swinging arm when working), make the alnico within swinging arm on the right up of the part hall, (picture 31 is the position of swinging arm when stopping), generally, the machine could stop. If not, adjust the position again by clockwise.



Picture 30



Picture 31

6. If turn on the machine the fuse immediately burnt, after change the same specification fuse the problem still can't solve, please contact with the local agent to repair.
7. Other problems not list above, please contact with the local agent to repair.

Error code list

Error code	Reasons	Solution
E1	Motor with locked-rotor problem	The motor run out of load capacity, please reduce the load capacity for the motor and then restart the motor please check if the sewing material is too heavy Please check if the machine needs lubrication. Please check if the 10core line connect well or not
E2	motor is over-current or under-voltage	Please check the voltage Usually because the motor run out of load capacity or the control box with problem cause this error code, if turn on the motor again can't solve the problem, please contact the local agent to solve the problem Please check if the 10core line connect well or not
E3	the mainboard can not read the correct parameter	Please turn off the power and then turn it on again. If still can't solve the problem, please contact the local agent to solve the problem
E4	Hall of the motor with problem	Please check if the 10core line connect well or not, please check if the connect line of hall is well or not
E5	定针位出错 Needle position with problem	Please check if the positioner connect well (if the positioner damage or don't need needle position function and with Er5 code, please press the right side key around 3seconds, enter the parameter adjustment model, to set the parameter M value into 0 can turn off the needle position function

Note: If the control box give the error code made the machine can't run, please don't turn on the power till the problem solved