

MJ SERIES USER MANUAL

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EC Declaration of Conformity

We hereby declare that the following products: AC servo motor—MJ series are in conformity with the provision of the EC directives as following:

- EC Low Voltage Directive (73/23/EEC)
- EC Electromagnetic Compatibility Directive (89/338/EEC)
- EC Machinery Directive (98/37/EC)

Applied harmonized standards:
EN 60204-31: Electrical equipment of industrial machines. Particular requirements for sewing machines, sewing units and sewing system.
EN 292-1: Safety of machines.
EN 292-2: Safety of machines, technical guidelines and specifications.
EN 61000-6-2: EMS for industrial environment.
EN 61000-6-3: EMI for residential environment.

Declaration of Conformity for Concentration Limits for Certain Hazardous Substances

We hereby declare that the following products: AC servo motor—MJ series are in conformity with the following directives and requirements:

1. European Union RoHS Directive (2002/95/EC) and the concentration limits for certain hazardous substances (2005/618/EC)
2. People's Republic of China Electronic Business Standard: Requirements for concentration limits for certain hazardous substances in electronic information products (SJ/T 11363-2006)

Our product itself (motor, control box) or its packing materials and accessories (box, screws package, user manual, sticker, label, print, etc.) or the suppliers of parts and raw materials are all in conformity with the provision of the European Union RoHS Directive and People's Republic of China Electronic Business Standard to conform to the following concentration limits for the six hazardous substances:

Hazardous Substance	Permissible Values
Lead (Pb)	Less than 240 ppm
Mercury (Hg)	Less than 800 ppm
Cadmium (Cd)	Less than 80 ppm
Hexavalent chromium (Cr VI)	Less than 800 ppm
Polybrominated Biphenyl (PBB)	Less than 800 ppm
Polybrominated Diphenyl ether (PBDE)	Less than 800 ppm

* The concentration of lead in the lead-free process for PCB shall be less than 800 ppm.
* For packing materials shipped with our products or parts, the hazardous substances shall be 80 ppm or less in sum of Pb+Hg+Cd+Cr+Vl.

H. S. Machinery. Co., Ltd.

Mr. C. C. Lee
Plant Manager

1. Safety Precaution :

Please read this manual with sewing machine manual thoroughly and pay attention for the following safety precaution.

Installation and operation must be done by the trained personnel, also turn off the power switch and remove the plug from outlet and wait for 5 minutes before any installation.

This product is designed for the specific sewing machines and must not be used for other purposes.

Only use the power voltage as described on the name plate of the MJ motor and control box in ±10 % ranges.

Attention : If the control box is AC 220V system, please don't connect to the AC 380V power outlet, otherwise the error will occur and panel LED will blink continually. If that happened, please turn off the power switch immediately and check the power voltage. Continue supply the 380V power over 5 minutes might damage the fuses (F2,F3) of main board and burst the electrolytic capacitors (C4,C5) of main board and even might endanger the person safety.

In order to prevent abnormal operation, keep the product away from the high frequency machines.
Don't operate in direct sun light, outdoors area and the room temperature is 45°C above or 5°C under.
Don't operate near the heater, dew area and the humidity is 30 % less or 95% more.

Don't operate in dusty, evaporate, combustible gas area, and stay away from corrosive material.
Don't apply heavy objects or excessive force on the power cord, also don't bend or pull the power cord.
Power cord must keep 3 cm or above distance away from the V-belt and the pulley.

In order to prevent the static interference and current leakage, all grounding works must be done properly.
After power on the machine for the first time, use low speed to operate and check the correct rotation direction.
During machine operation, don't touch any moving parts.

All moving parts must have protective device to avoid the body contact and objects insertion.
Maintenance and repair must be done by the properly trained technician, also all the spare parts for repair must be approved or supplied by the manufacturer.
Don't use any objects or force to hit or ram the product.

Danger and caution signs

Risks that may cause personal injury or risk to the machine are marked with this symbol in the instruction manual.

This symbol indicates electrical risks and warnings.

Limited Warranty

Warranty period of this product is 1 year from purchasing, or 18 months from our manufacturing date.

Warranty Detail

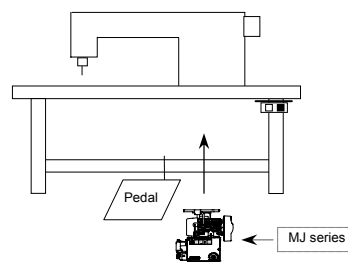
Any trouble found within warranty period under normal use condition in conformance with this manual, it will be repaired free of charge. Repair will be chargeable in the following cases even if within warranty period:

1. Inappropriate use include: wrong connecting high voltage, wrong application, disassemble, repair, modification by incompetent personnel, or operate the product without the precaution, or operate the products out of its specification range. Insert odd objects or liquids into the product.
2. Damage by fire, Earth quake, lightning, wind, flood, salt corrosive, moisture, abnormal power voltage and any other damage cause by the natural disaster or by the inappropriate environments.

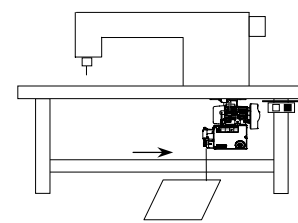
2. Installation :

MJ installation

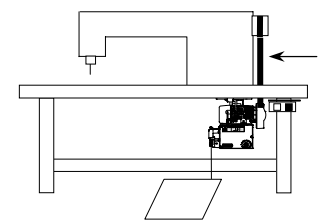
a). Install the MJ series control box (and motor) under the table.



b). Install the pedal with speed control unit.

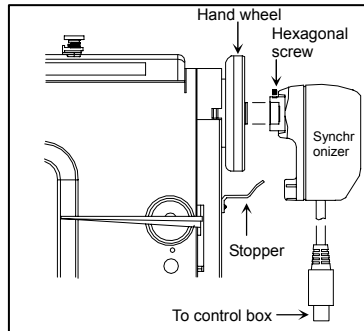


c). Install the V-Belt on the motor and machine pulley then adjust the belt to its appropriate tension.



Note: MJ series is designed for the H. S. mini motor, don't use with other brand of motor.(direct-drive motor is pre-installed on the machine head, if reinstall or disassembly is necessary, please refer to the sewing machine user manual.)

Synchroniser installation:



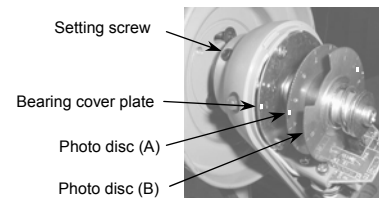
Mounting the Synchronizer onto the flange of hand wheel and match the stop groove of the synchronizer with the stopper of the machine head then tighten and secure 2 hexagonal screws of the synchronizer rotor, then connect the synchronizer cable to the control box.
Note : Stopper type and location might be varied, depend by the machine model.

Caution : For person safety, turn off the power switch and remove the power plug from outlet before any adjustment.

Synchronizer Adjustment (Please open the top cover first)

Needle up position : Rotate the machine pulley to reach mechanical needle up position and turn the photo disc (A) until its red mark is aligned with the red mark on the bearing cover plate.

Needle down position : Rotate the machine pulley to reach mechanical needle down position and turn the photo disc (B) until its blue mark is aligned with the red mark on the bearing cover plate.
Note: Instruction above is the standard adjustment. If you feel the position wasn't



Speed Control Unit adjustment

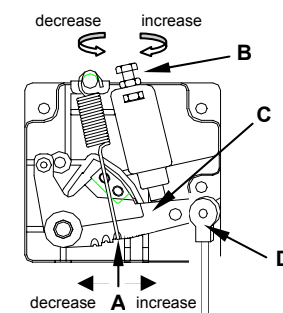


Caution : For person safety, turn off the power switch and remove the power plug from outlet before any adjustment.

Components of speed control unit : see figure

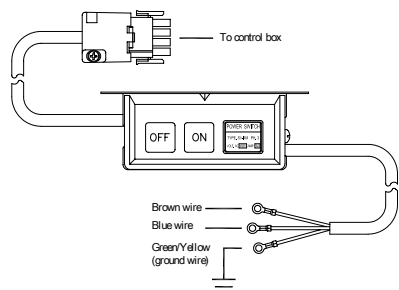
- A : Spring for toeing forward force adjustment
- B : Bolt for heeling backward force adjustment
- C : Pedal arm
- D : Pitman rod for pedal

	Term of adjustment	Adjustment result
1	Toeing forward force adjustment	Spring A move to right = force increased Spring A move to left = force decreased
	Heeling backward force adjustment	Bolt B turn = force decreased Bolt B turn = force increased
3	Pedal stroke adjustment	Rod D secure at right = stroke is longer Rod D secure at left = stroke is shorter



3. Wiring and Grounding :

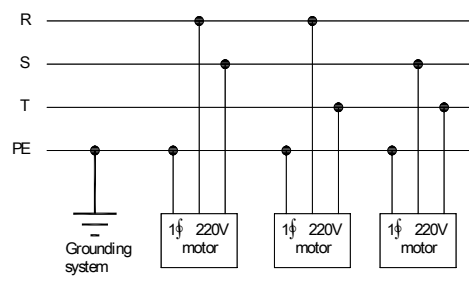
Single phase (AC220V)



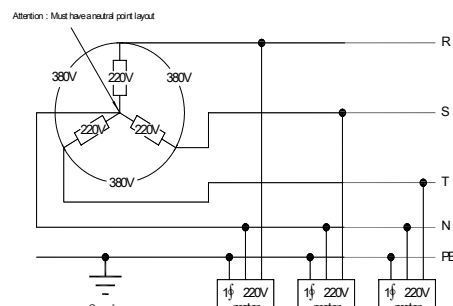
Caution : Green / yellow wire is for ground, and all grounding works must be done properly.

When multiple 1Φ / 220 V motors are connected to a power source, take caution for the load balance of each R, S, T phase, see the following diagram :

3Φ 220V power source

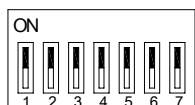


3Φ 380V power source



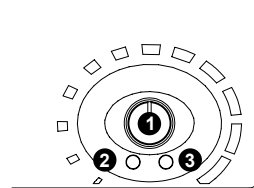
Caution : If the power source does not have the neutral point, then this 1Φ / 220 V servo motor is not suitable for this connection. Please ask supplier to offer our 3Φ / 380 V servo motor.

4. DIP-SWITCH Adjustment :



No.	Function Name	Description
1	VDN : Synchronizer Type	ON : Single signal OFF : Two signals
2	DIR : Direction of motor rotation	ON : clockwise OFF : counter clockwise
3, 4	SP1 - SP2 : Motor Max. Speed	ON - ON : 4500 rpm ON - OFF : 3500 rpm OFF - ON : 2500 rpm OFF - OFF : 1200 rpm
5, 6	TRM1-TRM2: Machine code setting	ON - ON : Chainstitch Machine ON - OFF : Chainstitch Machine OFF - ON : Slow Speed Lockstitch Machine OFF - OFF : High Speed Lockstitch Machine
7	NUD : Positioning Mode	ON : Needle up OFF : Needle down

5. Control Panel :



Control panel key functions :

- 1 Sewing speed adjust knob
Knob turn counterclockwise : speed down.
Knob turn clockwise : speed up.
- 2 Power ON LED
Power ON, LED ON.
Power OFF, LED OFF.
- 3 Synchronizer indicator / Error code indicator
Synchronizer mode : LED OFF=use synchronizer.
LED ON =without synchronizer.
Error warning : when this LED blinking, see the error code list.

6. Error Code List :

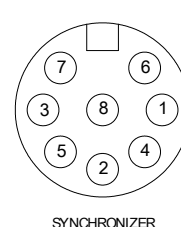
Panel LED for error code :

1. When MJ control box is malfunction or abnormal, the error message will be warned by the blinking of 2 LED on the control panel. (See the following list)
2. Repair and maintenance must be performed by the properly trained technician.

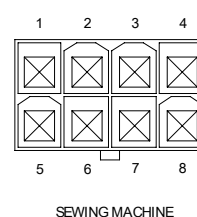
Panel LED blinking	Error code	Cause of the problem	Condition and solution
Led blinking 4 times every cycle	ER0. 4	1. When power on, higher power voltage has been detected. 2. Connect to a wrong AC power source. 3. Aluminum casing resistor for the brake circuit is defective.	Motor and machine will be shutting down. Please check the AC power source. Please check the power board. Please check the aluminum casing resistor.
Led blinking 7 times every cycle	ER0. 7	1. Bad connection to the motor connector. 2. Synchronizer (sensor) signal error. 3. Machine locked or object stuck in the motor pulley. 4. Sewing material is too thick.	Motor and machine will be shutting down. Please check the motor or motor connectors' connection. Please check the synchronizer (sensor) and its signal. Please check machine head to see if any objects stuck in the motor pulley, or machine does not rotate smoothly.

7. Connector Panel :

Caution ! ML, AFL and NCL output: only AIR type ! Trimmer: air or magnetic output



SYNCHRONIZER	
1	---
2	+5V
3	DOWN
4	0V
5	NO SYNC.
6	---
7	UP
8	---



SEWING MACHINE	
1	ML SOL. (AIR)
5	+30V
2	AFL SOL. (AIR)
6	+30V
3	NCL SOL. (AIR)
7	+30V
4	TRIMMER SOL. (MAGNETIC)
8	+30V

If you need the technical support, please contact your European distributor IMCA bv - Tel. +31 23 531 95 84