


A6F Operation Manual

Safety Instruction

- Please read this manual carefully, also with related manual for the machinery before use the controller.
- For installing and operating the controller properly and safely, qualified engineers are required.
- Please stay away from arc welding equipment, in order to avoid electromagnetic interference and malfunction of the controller.
- Keep room temperature bellow 45°C and above 0°C
- Do not use in humidity below 30% or above 95% or dew and mist places.
- Please turn off the power and unplug the power cord, before install the control box and other components,
- To prevent interference or electric leakage accidents, please make the ground work; the power cord ground wire must be securely connected to earth by an effective way.
- All parts for the repair provided by the Company or approved before use.
- Please turn off the power and unplug the power cord before any maintenance action. There is dangerous high voltage control box, you must turn the power off after one minute before opening the control box.
- The symbol  in this manual means Safety Precautions, please pay attention to it and strictly follow it, to avoid any unnecessary damage.

1 Installation Instructions

1.1 Product specifications

Product Type	AHE59	Supply Voltage	AC 220 ±20%V
Power frequency	50Hz/60Hz	Maximum output power	550W

1.2 Interface plug connections

Connecting the plugs of pedaland machine head to the corresponding sockets at the back of controller, as Figure 1-2. Please check and confirm the plug is inserted firmly.

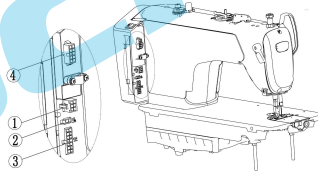



Fig.1-1 Controller Socket Diagram

- ① Pedal socket; ② Presser Foot lifter solenoid socket ; ③ Solenoid socket; ④ Auxiliary Solenoid socket

: If it is difficult to insert plug into socket, please check whether they are matching with each other, or the inserting direction or needle insertion direction is correct!

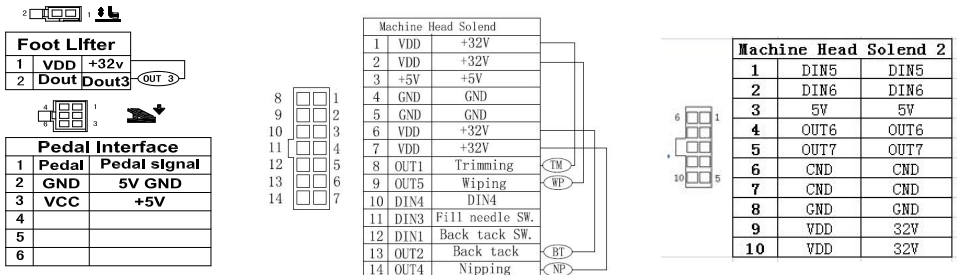


Fig.1-2 Controller Interface Definition

1.3 Wiring and Grounding

We must prepare the system grounding project, a qualified electrical engineer is requested for the construction. Product is energized and ready for use; you must ensure that the power outlet the AC input is securely grounded. The grounding wire is yellow and green lines, it must be connected to the grid and reliable security protection on the ground to ensure safe use, and prevent abnormal situation.

⚠: All power lines, signal lines, ground lines, wiring not to be pressed into other objects or excessive distortion, to ensure safe use!

2 Operation Panel Instructions

2.1 Operation Panel Display Instruction

According to the system working state, the LCD module of operation panel will display the current sewing mode, parameters, start / end back tacking, and presser foot, needle position, trimming, soft start sewing etc. Function mark of the operation panel is as follows:

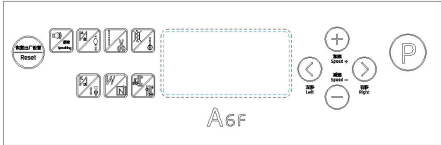


Fig.2-1

Operation Panel

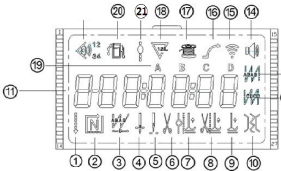


Fig.2-2






























Operation Panel LCD display

Index mark Description Index Icon Description

Index	Icon	Description	Index	Icon	Description
①		Free sewing	⑫		Start back tacking
②		Multi-section constant-stitch sewing	⑬		End back tacking
③		W bar tacking sewing	⑭		Voice reminder
④		Down needle Position	⑮		One-Shot-Sewing in constant-stitch
⑤		Up needle Position	⑯		Soft start
⑥		Automatic trimming	⑰		Stitch counter
⑦		Foot lifting at seam End	⑱		Trimming counter
⑧		Foot lifting after trimming	⑲	A B C D	Sewing segments
⑨		Presser foot lifting	⑳		Oil quantity alarm
⑩		Thread clamp	㉑		Little Bird's Nest
⑪	8 8 8 8 8 8 8 8	Number/parameter display			








2.2 Key FunctionsS/L mark Key Name Description

Key	Name	Description
	Parameter setting key	In the boot state, long press key to enter the parameter modes. After modify the parameters, press key to storage. Then long press key to exit this mode.
	Factory reset	Long press button for 5 seconds to restore the factory Settings.
	Start-up Voice and Voice key	1, Short press Key, Turn on Start-up Voice off , Then short press key, Turn on Start-up Voice on. 2, Long press Key, Turn on voice off , Then long press key, Turn on voice on.
	Forward reinforcing sewing key and small bird nest key	1. Short press Key, Switch during all start tacking type when pressing. (No tacking, single tacking ,double tacking). The icon of LCD is lit. The number of needle selecting the corresponding keys can be set to A, B segment, default needle number 1~F corresponds to the 1~15 stitch. 2. Long press Key,Whether the loop in between is on for the small bird nest, and the corresponding LCD screen icon lights up.

Key	Name	Description
	End back tacking setting key and Stop position key	1, Short press  Key, Switch during all end tacking type when pressing. (No tacking, single tacking  , double tacking ). The icon of LCD is lit. The number of needle selecting the corresponding keys can be set to C, D segment, default needle number 1~F corresponds to the 1~15 stitch. 2, Long press  Key, Select up/down stop position.
	Free sewing/trimming key	1, Short press  key, the free sewing mode is selected. 2, Long press  key, the icon  of LCD is lit, the automatic trimming function turns on. Then long press  key, the automatic trimming function turns off.
	Clamp key and short thrum key	1, Short press  key, the icon  of LCD is lit, the thread clamp function turns on. Then short press  key, the thread clamp function turns off. 2, Press and hold  key to activate the short thrum function. Press and hold it again, and the short thrum function is off.
	W bar tacking /Multi-section constant-stitch sewing	1, Short press  key, the icon  of LCD is lit, W seam marking function turns on. 2, Long press  key, the icon  of LCD is lit, the multi-section constant-stitch sewing function turns on.
	Presser foot key	1, Short press  key, the icon  of LCD is lit, the c sewing after the end of automatic trimming presser foot function turns on. 2, Long press  Key, the icon  of LCD is lit, the cycle sewing midway parking presser foot function turns on.
	The parameter increment setting key	Parameter value increment key.
	The parameter Decrement setting key	Parameter value decrement key.
	The left selection key	Parameters selection toward to left key. (In constant-stitch sewing mode, long press this key, One-shot-sewing can be turned on or turned off.)
	The right selection key	Parameters selection toward to right key.

3 System parameters setting list

3.1 Parameter mode

- 1、In the standby state ,press  key to enter the parameter modes.
- 2、Press corresponding key   and key   to adjust the corresponding parameter.
- 3、When the parameter values have increased and decreased, parameter interface flash. Short press  key to save the modified parameters .Long press  key to exit parameter interface, return to standby model.

NO.	Range	Default	Description
P 0 1	200~5000	3500	the maximum speed of free sewing (the global maximum speed)
P 0 3	0/1	1	Needle stop position selection (0:up; 1: down)
P 0 4	200~3000	1500	Start back tacking speed
P 0 5	200~3000	1500	End back tacking speed
P 0 6	200~3000	1500	Continuous back sewing speed (W sewing)
P 0 8	0~360	27	Clamp Angle compensation
P 0 9	0/1	0	Soft start switch (0:off; 1: on)
P 0 B	0~20	1	Short trim needle number
P 0 C	0~359	0	Short trim angle

P 15	0~2	0	Mode of adding stitch 0: continuous; 1:half stitch; 2:one stitch
P 18	1~120	32	Stitch balance for start back tacking No.1(Pull in compensation)
P 19	1~120	22	Stitch balance for start back tacking No.2(Release of compensation)
P 22	0-50	0	Threshold of the backsewing function off.
P 24	0~1024	80	Trimming point of pedal
P 25	1~120	35	Stitch balance for end back tacking No.1
P 26	1~120	20	Stitch balance for end back tacking No.2
P 32	1~500	60	Thread clamp solenoid full open time (ms)
P 33	0~100	0	Thread clamp solenoid off time per cycle (ms)
P 37	0~100	5	Thread clamp solenoid on time per cycle (ms), means the clamp strength.
P 45	0~100	1	Back stitch electromagnet per cycle opening time (ms)
P 46	0~100	2	Back stitch electromagnet per cycle closing time (ms)
P 47	200~360	360	After trimming anti pull (It realizes trimming is pulled back function)
P 49	100~500	250	Trimming speed
P 50	1~500	150	Presser foot lifting electromagnet full output time ms
P 51	0~100	9	Presser foot lifting electromagnet per cycle opening time (ms)
P 52	1~800	100	Running delay time when presser footer comes down (ms)
P 53	0/1	1	Presser foot lifting function selection 0: off 1: on
P 54	0~100	15	Presser foot lifting electromagnet per cycle closing time (ms)
P 56	0/1	1	Run to up needle position after Power on 0: no action 1: action
P 57	0~600	100	Presser foot lifting electromagnet protection time 100ms
P 60	200~5000	3000	The maximum speed of constant sewing (Automatic test speed)
P 62	0/1/2/3	0	Special mode: 0: normal Mode ;1: simply sewing mode ;2: motor initial angle measurement (Do not remove the belt);3: Automatically setting the pulley ratio by the CPU. (Synchronizer is necessary and the belt not removed);4: automatic test mode 1 (It has needle stop position of automatic test, running and stopping 5S)
P 66	0/2	2	Safety switch function set: 2:on 0:off
P 76	1~500	60	Back sewing electromagnet full output time ms
P 78	1~359	120	Start angle
P 79	0~359	320	End angle
P 98	0~4	4	Voice volume adjustment (restore factory default without change)
P 99	0~2	1	language selection 0: off, 1: Chinese, 2:English, default language 1 Chinese
PA 5	0/1/2	0	0 Boot voice and key voice 1 Boot voice only 2 Key voice only
PA 6	1~100	1	Stitch count ratio setting
PA 7	1~9999	1	Stitch count upper limit setting
PA 8	0~6	0	Stitch counter mode option: 0: No counting;1: Count up according to stitch count, and recount automatically after the set value is count 2: Count down according to stitch count, and recount automatically after the set value is count 3: Count up according to stitch count, and motor stops automatically after the set value is count, restart by P button on the panel required. 4: Count down according to stitch count, and motor stops automatically after the set value is count, restart by P button on the panel required. 5: Count up according to the number of stitches. After counting up to the set value, an error is reported, and the motor does not stop. When the pedal is stepped on, the motor stops and

			the P key on the panel should be used to initiate the recount. 6: Count down according to the number of stitches. After counting up to the set value, an error is reported, and the motor does not stop. When the pedal is stepped backward, the motor stops and P key on the panel should be used to initiate the recount.
PA9	1~100	1	Trimming counter function ratio setting
PAA	1~9999	9999	Trimming count setting
PAB	0~6	0	Trimming counter mode option: 0: No counting;1: Count up according to Trimming count, and recount automatically after the set value is count 2: Count down according to Trimming count, and recount automatically after the set value is count 3: Count up according to Trimming count, and motor stops automatically after the set value is count, restart by P button on the panel required. 4: Count down according to Trimming count, and motor stops automatically after the set value is count, restart by P button on the panel required.

3.2 Monitor mode

No.	Description	No.	Description
010	stitch counter	025	The sampling voltage of pedal
011	Counter for sewing pieces	026	The ratio between motor and machine
012	The head of real speed	027	The total used time(hours) of motor
013	State of encoder	028	The sampling voltage of interaction
020	DC voltage	029	Software version
021	Machine speed	02A	Analog input 1
022	The phase current	02B	Analog input 2
023	Initial electrical angle	02C	Error counter
024	Machine angle	030-037	The history record of error codes

3.3 The warning message

Alarm code	Description	Corrective
ALA-2	Stitch counter alarm	The stitch counter reaches the limit. Press P key to cancel the alarm and reset the counter.
ALA-3	Trimming counter alarm	The trimming counter reaches the limit. Press P key to cancel the alarm and reset the counter.
POW OFF	Power is off alarm	Please wait for 30 seconds, then turn on the power switch
ARN UP	Safety switch alarm	Adjust the machine to the correct position.

3.4 Error mode

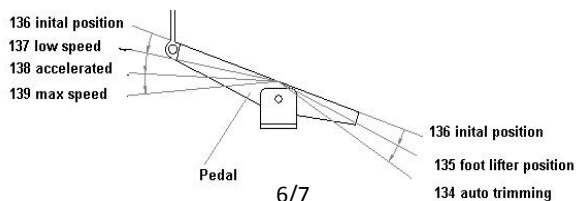
If the error code appears, please check the following items first: 1. Make sure the machine has been connected correctly; 2. Confirm that the control box match with the machine head. 3. Confirm factory reset is accurate

Error Code	Description	Solution
Err-01	Hardware overcurrent	Turn off the power switch, and restart after 30 seconds. If the controller still does not work, please replace it and inform the manufacturer.
Err-03	Under-voltage	Disconnect the power to the controller; check the input power supply voltage is low or not (less than 176V). If the power supply voltage is low, please start the controller after recovers the voltage. If the controller still does not work, please inform the manufacturer and replace the controller.
Err-04	Over-voltage when the machine is off	Disconnect the controller power and check if the input voltage is too high (higher than 264V). If yes, please restart the controller when the normal voltage is resumed. If the controller still does not work when the voltage is at normal level, please replace the controller and inform the manufacturer.
Err-05	Over-voltage in operation	

Err-06	Solenoid circuit fault	Turn off the system power. Check carefully, if the solenoid connection is loose or damage, please change it in time. Then restart the system after confirmation, if it still does not work, please inform the manufacturer and replace the controller.
Err-07	Motor current measuring failure	Turn off the system power, restart after 30 seconds to see if it works well. If such failure happens frequently, seek technical support.
Err-08	Sewing motor blocked	Turn off the system power. Check whether the motor power input plug is off, loose or broken, or there is something tangled on the machine head. Please make them correct then restart the system. If it still does not work, please inform the manufacturer and replace the controller.
Err-10	Communication failure	Check carefully, if the connection between the control panel and controller is off, loose, or broken, please make it correct then restart the system, if it still does not work, please inform the manufacturer and replace the controller.
Err-11	Machine head needle positioning failure	Check if the connection line between machine head synchronizer and controller is loose or not, restore it and restart the system. If it still does not work, please replace the controller and inform the manufacturer.
Err-12	Initial motor electrical angle failure	- Try 2 to 3 more times after power down - if it still does not work, please replace the controller and inform the manufacturer.
Err-13	Motor HALL failure	Turn off the system power, check if the motor sensor plug is loose or dropped off, restore it and restart the system. If it still does not work, please replace the controller and inform the manufacturer.
Err-14	DSP Read/Write EEPROM failure	Turn off the system power, restart the system after 30 seconds, if it still does not work, please replace the controller and inform the manufacturer.
Err-15	Motor over-speed protection	
Err-16	Motor reversion	
Err-17	HMI Read/Write EEPROM failure	
Err-18	Motor overload	Check if the motor stalls. Otherwise, please replace the controller and notify the manufacturer.
Err-20	Oil shortage alarm	The system detects that the oil quantity has fallen below the normal level and exceeded the set time, alarm alert.
Err-23	Motor blocked encoder failure	Turn off the system power. Check whether the motor power input plug is off, loose or broken, or there is something tangled on the machine head. Please make them correct then restart the system. If it still does not work, please inform the manufacturer and replace the controller.
Err-24	Bobbin detection alarm	Check if the bobbin is sufficient. If the bobbin is sufficient while the error still exists, please replace the controller and notify the manufacturer.
Err-26	Thread end detection alarm	Restart after clearing the thread end. If it still fails to work properly, please replace the controller and notify the manufacturer.
Err-30	Password lock shutdown alarm	If continued use is required when the set time for machine use is up, please contact your local service provider.

4 Pedal sensitivity adjustment

Pedal movement starts from the initial position (p.136) where the motor stops, slowly stepped forward to the low speed point (p.137) where the motor runs at the minimum speed (p.100), proceeding to the accelerated point (p.138) where the motor start fasten, until the max speed point (p.139) where the motor run up to the maximum speed (p.101). And when the pedal steps back to the foot lifter position (p.135), the automatic presser foot lifting. Continuing back to the auto trimming position (p.134), thread trimming is completed automatic. The parameter value is set for an assurance (No. 134 parameters) < (No. 135 parameter) < (No. 136 parameters) < (No. 137 parameters) < (No. 138 parameters) < (No. 139 parameters). Adjusting the corresponding parameters, user can acquire the proper pedal response to fit the personal habit.



Digital AC Servo Controller
Packing List



Attention:

Please check carefully whether the components listed on the packing list are all included. Please contact your supplier for compensation in case of missing parts.

Item	Type	Unit	Quantity
Controller		piece	1
Pedal assembly(including bracket)		set	1
Operation Panel <OPTIONAL> (including Operation Panel Bracket and Screws)		piece	1
Fetlock pitman		piece	1
Wood screw	ST5.5×25	piece	6
User manual			1

Warranty Card

Please fulfill this Warranty Card and fax it to us, purpose for getting a customer servicenumber, only through it the products maintenance and other technical service could be warranted. In case of more than one set of product are once purchased, only one warranty card needed but all product bar code should be enclosed.

Model : _____ Warranty Period : 2 years Product bar code : _____
User Name : _____ Address : _____ Purchasing date : _____

Notice :

- This card is important evidence with which customer can obtain maintenance service and technology support, please keep it well.
- The warranty period is calculated since the product is sold,if the proof is not provided,corresponding time will adds one month from production date.
- For those errors which happen in normal condition and without man-made misplay during theperiod, in terms of warranty content, with original warranty card and purchasing certification.We will provide free repair service and technology support till the product can work normally.
- Repair service and technology support under following conditions will charge during warranty period.
 - Valid warranty card and purchase certification can not be provided.
 - Contents of the warranty card are not complete or be altered.
 - The fault or damage is caused by unavoidable force.
 - The fault or damage is caused during transportation or uploading.
 - The fault or damage is caused by unauthorized removing, repairing and/or refitting.
 - The fault or damage is caused by irrational operation, which does not obey the regulatedmethods in the manual.

Toll free Hotline: 800-820-7693/400-820-7693 www.powermaxtech.com

INSPECTION
CERTIFICATE

NAME Digital AC Servo System DATE See bar code
MODEL See bar code INSPECTION _____