

GT856D

INSTRUCTION BOOK



COMPUTER CONTROLLED, DIRECT DRIVE,
ZIG-ZAG SEWING MACHINE
CONTROL BOX



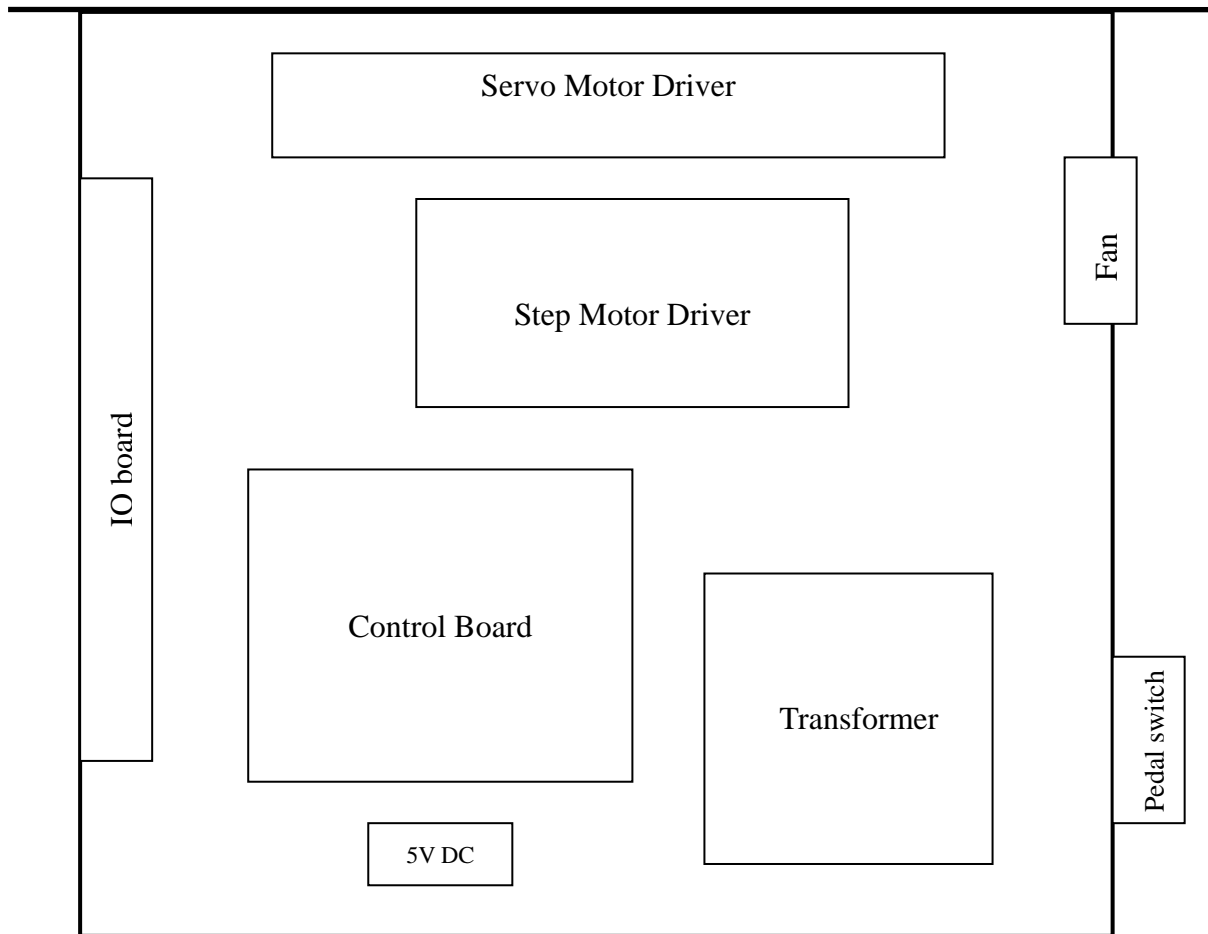
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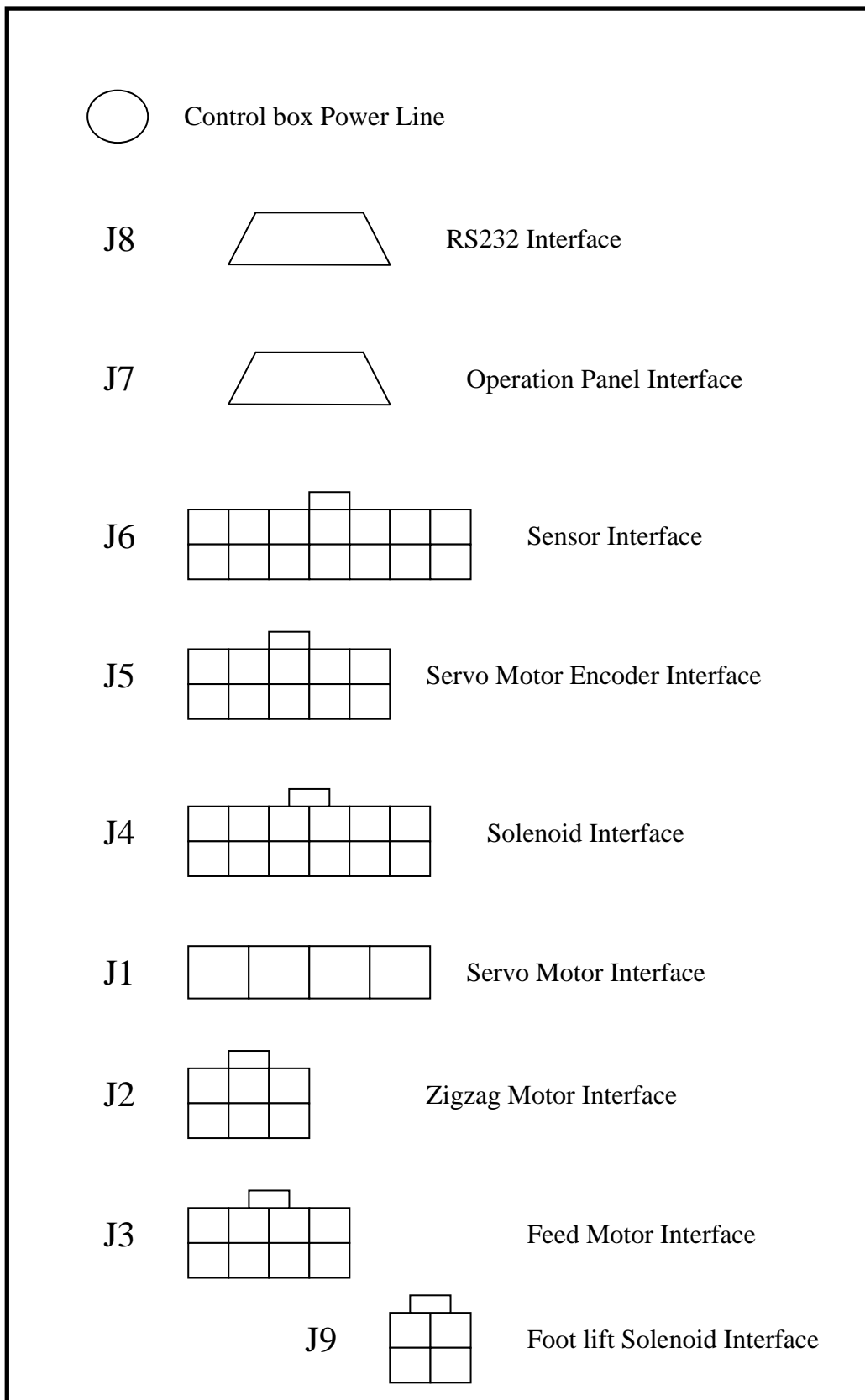
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1 Control Box Hardware

1.1 Inner structure of the Control Box



1.2 External Interface of the Control Box



Control Box's External Interface Specification:

1. Control Box's Power Wiring

This interface input AC220V to the Control Box. In the general condition, Power Wiring is connected to the power button which is under the sewing plate.

The list of the Power wiring

Color	Signal
Brown	Live line
Blue	Neutral line
Yellow/Green	Earth line

2. RS232 Interface (J8)

You'll use the Computer Serial Port line to download the pattern. It is used to connect to the control box and the computer Serial Port. The Port which is connected with the electrical control box is DB9 male connector. And the other Port which is connected with the computer is DB9 female connector. Computer Serial Port Line is the common serial port line. We use 2,3,5 three wires in the inner parts.

The list of the J8 Interface Signal

Socket No.	Signal
2	PC-RXD
3	PC-TXD
5	GND
Others	No Use

3. Control Panel Interface (J7)

Control Panel Interface is used to insert control panel Interface plug. The Plug is DB9 female connector.

4. Sensor Interface (J6)

Sensor Interface is used to connect two step motors' zero position sensor signal, machine safe switch and hand switch signal.

The list of the J6 Interface Signal

Signal	No.	No.	Signal
5V	8	1	Reserved Input
GND	9	2	Reserved Input
Hand Switch	10	3	Hand Switch
Machine Safe Switch	11	4	Machine Safe Switch
GND	12	5	GND
Feed Zero Position Sensor Input	13	6	Zigzag Zero Position Sensor Input
5V	14	7	24V

5. Servo motor encoder signal interface (J5)

This interface is connected to the servo motor encoder signal plug.

The list of the J5 Interface Signal

Signal	No.	No.	Signal
Up Needle Position Signal	6	1	
Encoder A Phase Signal	7	2	Encoder B Phase Signal
Hall V Phase Signal	8	3	Hall W Phase Signal
GND	9	4	Hall U Phase Signal
	10	5	5V

6. Solenoid Interface (J4)

The list of the J4 Interface Signal

Signal	No.	No.	Signal
	7	1	
	8	2	
Thread Nipper solenoid	9	3	Thread Nipper solenoid
Thread Trimmer solenoid	10	4	Thread Trimmer solenoid
Thread Wiper Solenoid	11	5	Thread Wiper Solenoid
	12	6	

7. Servo motor interface (J1)

The list of the J1 Interface Signal

No.	Signal
1	Earth Wire (Yellow Green)
2	A Phase (Green)
3	B Phase (Yellow)
4	C Phase (Red)

8. Zigzag Motor Interface (J2)

This interface is used to connect to the step motor which drives the motion of the needle bar.

The list of the J2 Interface Signal

Color	No.	No.	Color
Red (A+)	4	1	Green (A-)
	5	2	Yellow (B+)
	6	3	Blue (B-)

9. Feed motor interface (J3)

This interface is used to connect to the 2 Phase step motor which drives the motion of the feed dog.

The list of the J3 Interface Signal

Signal	No.	No.	Signal
	5	1	Red (A+)
	6	2	Green (A-)
	7	3	Yellow (B+)
	8	4	Blue (B-)

10 .Foot-lifting Solenoid Interface (J9)

This interface is use to connect to the solenoid which is used to lift the foot.

The list of the J9 Interface Signal

Signal	No.	No.	signal
	3	1	
Foot Lift solenoid	4	2	Foot Lift solenoid

1.3 Power Specification

Power Voltage: Signal Phase 220V \pm 20%

Supply Current: Average Current is lower than 3 A. Peak Current is lower than 7 A

1.4 Change the Fuse

There are 3 piece fuses on the main control board.

The Capacity and the Usage of the Fuse:

No.	Capacity	Usage
FP1	10A	Protect the Main AC Power
FP2	10A	Protect the step motor driver
FP4	10A	Protect the Solenoids

In order to avoid the electric shock,When you open the chassis cover,please make sure to cut off the power and wait 3 minutes at least.

2 The Introduction to the Operation Panel and the Sewing Operations

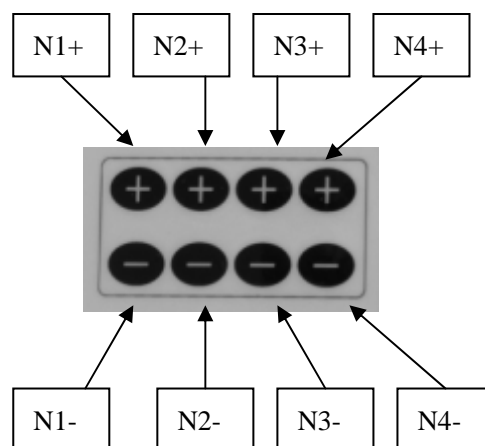
2.1 Operation Panel Introduction



No.	Key/Display Name	Function
1	Basic pattern No. 1	Select basic pattern No. 1
2	Basic pattern No. 2	Select basic pattern No. 2
3	Basic pattern No. 3	Select basic pattern No. 3
4	Basic pattern No. 4	Select basic pattern No. 4
5	Basic pattern No. 5	Select basic pattern No. 5
6	Basic pattern No. 6	Select basic pattern No. 6
7	Basic pattern No. 7	Select basic pattern No. 7
8	Basic pattern No. 8	Select basic pattern No. 8

9	ROM pattern	Select ROM-stored pattern
10	Zigzag width	Set work zigzag width
11	Baseline position	Set baseline position
12	Left/Right Stop	Set left stop or right stop option of sewing
13	Start condensation	Set parameters for start condensation sewing
14	End condensation	Set parameters for end condensation sewing
15	Stitch-counted Sew	Set parameters for Stitch-counted sewing
16	Up Down Stop Switch	Switch between up needle position stop or down needle position stop
17	Foot Switch	Enable or Disable Foot Lifter
18	Thread Trimmer Switch	Enable or Disable Thread Trimmer
19	Thread Wiper Switch	Enable or Disable Thread Wiper
20	Speed Control	Set Max. sew speed
21	Half Stitch Motion	Move needle bar by half cycle
22	Parameter	View and set system parameters
23	Set	Enter changed mode;Confirm and save all changes
24	Main Display	Show all information except feed pitch information
25	Reverse Feed Pitch Display	Show reverse feed pitch value
26	Normal Feed Pitch Display	Show normal feed pitch value
27	Reverse feed switch	Switch display between positive reverse feed and negative reverse feed.
28	Increase(+)/Decrease(-) keys	Adjust value displayed nearby.

The following “+” “-” keys have secondary names.



2.2 Start up

The control box will auto start up when its power turns on. During the start process, after you hear the “Bee Bee” warning tone and the main display show “UP”,

The operator need to move the hand wheel forward less than one circle by manual until the warning tone disappear. During the process of the start-up initialization, if the system find any fault by self check, it will show error code in main display to inform the user (details please see the chapter 3: Failure Warning and the Processing method). After Initialization success, the operation panel will enter ready mode, then you can begin your sewing work.

2.3 Sewing of the Standard Patterns





■ Operation steps

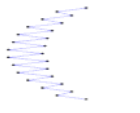

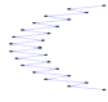

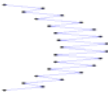

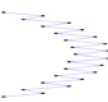
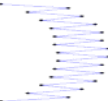
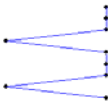

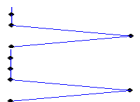


- 1) Turn on the Power. The control panel is at the initial condition. The typical setting status is as follows.

Main display show Max.Width(mm)	8.0
Standard pattern 2 indicator	ON
Up Down Stop indicator	ON
Foot indicator	ON
Trimmer indicator	ON
Wiper indicator	ON

- 2) Press one of the basic pattern keys 1 to 8. The indicator nearby that key will turn on. The system load that pattern and search for step motor origin. After that, the needle bar move to the start stitch.
- 3) Press the pedal and beginning your sewing.
- 4) After finish the sewing, press the pedal backward to trim thread. (Thread trimmer and wiper is the option item).

■ The list of basic sewing patterns:

Pattern No.	Name of pattern	Display status	Stitch pattern
1	Straight Stitch	1 - - -	
2	One step zigzag stitch	2 - - -	
3	Two step zigzag stitch	3 - - -	
4	Three step zigzag stitch	4 - - -	

5	Left callop stitch	1 (24 stitch)	5 - 1 -	
		2 (12 stitch)	5 - 2 -	
		3 (24 stitch)	5 - 3 -	
		4 (24 stitch)	5 - 4 -	
6	Right callop stitch	1 (24 stitch)	6 - 1 -	
		2 (12 stitch)	6 - 2 -	
		3 (24 stitch)	6 - 3 -	
		4 (24 stitch)	6 - 4 -	
7	Left	bline stitch	7 - * *	
		L-stitch	7 = * *	
8	Right	bline stitch	8 - * *	
		L-stitch	8 = * *	
9	ROM Pattern		P* * * such as P007	

2.4 Sewing of the Left/Right Scallop pattern

For example: Sewing Left Scallop No.3 pattern (5 – 3 -)

■ Operation Steps

- 1) Press the Standard Pattern 5 key. The indicator nearby that key will turn on. At same time the main display area show 5-3- for a second and show the work width of the pattern after that.
- 2) If you want to change pattern shape, press “Set” key. The width data in main display area will blink. At this time you press the Standard Pattern 5 key, the main display will show pattern shape code “5-3-”.
- 3) Press Increase or Decrease key to change pattern shape code.
- 4) If you confirm your choice, press “Set” key. Then the main display shows the work width of the pattern again.
- 5) Press the pedal and beginning your sewing.

■ Note

The sewing of the Right Scallop is similar as above.

2.5 Sewing of the left/right Bline Stitch pattern

For example: Sewing the Left Bline Stitch with 5 straight stitch (7 – 05)

■ Operation Steps

- 1) Press the Standard Pattern 7 key. The indicator nearby that key will turn on. At same time the main display area show 7-05 for a second and show the work width of the pattern after that.
- 2) If you want to change pattern’s shape, press “Set” key. The width data in main display area will blink. At this time you press the Standard Pattern 7 key, the main display will show pattern shape code “7-05”.
- 3) Press Increase or Decrease key to change straight stitch number. 05 means there is 5 straight stitch between left bline stitch. The straight stitch number can be set from 1 to 99.
- 4) Press N2+ key. The main display shows “7=00”. At here you must make sure the digit equal “7=00”, otherwise the shape will become T stitch shape.
- 5) If you press N2- key, the main display show “7-05” again, you can change straight stitch number again.
- 6) Press “Set” key to confirm your choice. Then the main display shows the work width of the pattern again.
- 7) Press the pedal and beginning your sewing.

■ Note

The sewing of the Right Bline is similar as above.

2.6 Sewing of the left/right T Stitch pattern

For example:Sewing the Left T Stitch with 5 straight stitch and 2 repeated T stitch(7 =02)

■ Operation Steps

- 1) Press the Standard Pattern 7 key. The indicator nearby the key will turn on.At same time the main display area show 7-05 for a second and show the work width of the pattern after that.
- 2) If you want to change pattern's shape, press "Set" key. The width data in main display area will blink. At this time you press the Standard Pattern 7 key, the main display will show pattern shape code "7-05".
- 3) Press Increase or Decrease key to change straight stitch number. 05 means there is 5 straight stitch between left T stitch. The straight stitch number can be set from 1 to 99.
- 4) Press N2+ key. The main display shows "7=02". At here you can set the repeated time of the T stitch. "02" means the T stitch will be repeated 2 times. The repeated time can be set from 1 to 99. If you set digit to "7=00", the shape becomes Bline stitch pattern.
- 5) If you press N2- key, the main display show "7-05" again, you can change straight stitch number again.
- 6) Press "Set" key to confirm your choice. Then the main display shows the work width of the pattern again.
- 7) Press the pedal and beginning your sewing.

■ Note

The sewing of the Right T stitch is similar as aboved.

2.7 Sewing of ROM pattern

After you press "ROM pattern" key, you can sew the current ROM pattern.

The machine can store up to 1000 ROM patterns, coding from P000 to P999. You can select one of ROM patterns as current ROM pattern. The operation step to set the current pattern is:

- 1) Press "Set" key, the width data shown in the main display blinks.
- 2) Press "ROM Pattern" key, the main display shows the current ROM pattern code which is blinking.
- 3) Press "+"/ "-" key to change the pattern code.
- 4) Press "Set" key to confirm the change. The display shows the work width data and stop blinks.

2.8 Work zigzag width setting

Zigzag width unit: 1.0mm
Max. zigzag width: 8.0mm
Setting precision : 0.1mm

■ Operation Steps

Asume the control panel is at the normal condition.

- 1) Press “Set” key, then press “Zigzag width” key. The width data shown in the main display blinks.
- 2) Press “+”/ “-” key to change the width data.
- 3) Press “Set” key to confirm the change. The display stop blinks.

■ Note

The work zigzag width 0 is unchangable for basic pattern 1.

2.9 The Work Feed Pitch Length Setting

The Max. Feed pitch: 5.0mm
Setting Precision: 0.1mm

■ Operation Steps

- 1) Press corresponding “+” / “-” key to change normal feed pitch data.
- 2) The data in Normal Feed Pitch Display blinks. Continue to press “+” / “-” key to change data.
- 3) Press “Set” key to confirm the change. The data stop blinks.

2.10 Sewing Speed Setting

Asume the control panel is at the normal condition. The main display show the work zigzag width.

■ Operation Steps

- 1) Press “Speed” key, the main display show the max. work speed .
- 2) Press “+”/ “-” key to change the speed value.

■ Note

The max sewing speed is restricted by the max.zigzag pitch length and the max.feed pitch length. According to the different stitch structure, the allowed max.sewing speed is different. You can see the list below.

Max. sewing speed according max zigzag pitch length

No.	Max.zigzag pitch length (mm)	Max.Speed(spm)
1	0.0 - 2.0	5000
2	2.1 - 3.0	4500

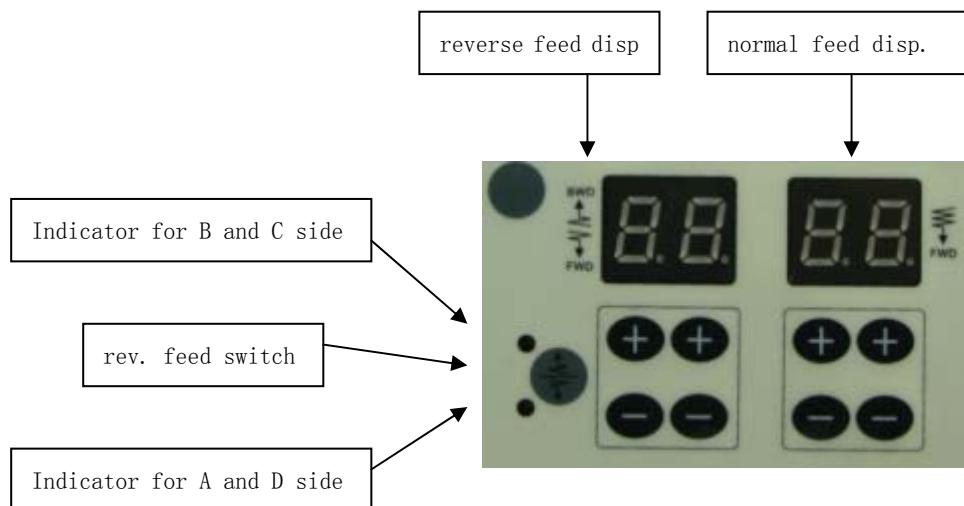
3	3.1 – 4.0	4000
4	4.1 - 6.0	3500
5	6.1 - 8.0	3000

Max. sewing speed according max zigzag pitch length

No.	Max.feed pitch length(mm)	Max.Speed(spm)
1	0	5000
2	0.1 – 2.0	3500
3	2.1 - 3.0	3000
4	3.1 - 4.0	2500
5	4.1 - 5.0	2000

2.11 Start Condensation Operation

Panel section concerned with start condensation setting is as below.



■ Operation Steps

- 1) Press “Start condensation” key in the normal state, the indicator nearby the key will be lit up. The main display will show the number of condensation stitches in the “A” side. Such as “A-**”
- 2) Press “Start condensation” key for second time, the main display will show the number of condensation stitches in the “B” side. Such as “b-**”.
- 3) Press “Start condensation” key for third time, the main display will show the width of condensation stitches. Such as “U-**”.The data range is 0.0~8.0mm.If you press “Start condensation” key for fourth time, then the start condensation operation will be cancelled and the indicator for start condensation is off and the indicator for pattern width is lit up. Then

the main display will show the pattern width.

- 4) Press “Width” key, the main display will show the pattern width.
- 5) Press down the pedal to start sewing. If the indicator for start condensation is on, then the specified numbers of stitches for condensation is sewed first, then followed is the normal sewing.
- 6) After finish the sewing, press the pedal backward to trim thread .

■ Note

- 1) To set feed pitch for A or D side: Press “Reverse feed switch” key to light up the indicator for A and D side, then the reverse feed display show the feed pitch for that side. Press corresponding “+”/ “-” key to adjust that value.
- 2) To set feed pitch for B or C side: Press “Reverse feed switch” key to light up the indicator for B and C side, then the reverse feed display show the feed pitch for that side. Press corresponding “+”/ “-” key to adjust that value.

■ Setting steps for condensation stitches and width

- 1) Press “Start condensation” key in the normal state, the indicator nearby the key will be lit up. The main display will show the number of condensation stitches in the “A” side. You can press the corresponding “+”/ “-” key to change this value. The data range is 0~99 stitches.
- 2) Press “Start condensation” key for second time, the main display will show the number of condensation stitches in the “B” side. You can press the corresponding “+”/ “-” key to change this value. The data range is 0~99 stitches.
- 3) Press “Start condensation” key for third time, the main display will show the width of condensation stitches. Such as “U-***”. To change this value, press “Set” key, then the value start to blink, you can press corresponding “+”/ “-” key to change this value. The data range is 0.0~8.0mm.
- 4) Press “Set” key to save all the changes made.
- 5) Press pedal to start sewing.

■ Note

- 1) The speed of start condensation: when the work speed is larger than 1200 rpm, the start condensation is sewed by the speed of 1200 rpm. when the work speed is less than 1200 rpm, it is done as work speed.
- 2) The condition for start condensation to work is: all of the A,B,U value is larger than 0 and the indicator for start condensation is on.
- 3) The start condensation is done before any other sewing operations.
- 4) To disable start condensation, press “Start condensation” key for four times. When it is disabled, the indicator is off.

2.12 End Condensation Operation

■ Operation Steps

- 1) Press “End condensation” key in the normal state, the indicator nearby the key will be lit up. The main display will show the number of condensation stitches in the “C” side. Such as “C-***”
- 2) Press “End condensation” key for second time, the main display will show the number of condensation stitches in the “D” side. Such as “d-***”.
- 3) Press “End condensation” key for third time, the main display will show the width of condensation stitches. Such as “U-***”.The data range is 0.0~8.0mm.If you press “End condensation” key for fourth time, then the end condensation operation will be cancelled and the indicator for end condensation is off and the indicator for pattern width is lit up. Then the main display will show the pattern width.
- 4) Press “Width” key, the main display will show the pattern width.
- 5) Press forward the pedal to start sewing.
- 6) After finish the sewing, press the pedal backward to do end condensation. If the indicator for end condensation is on, the specified numbers of stitches for condensation is sewed first, then followed is the action of trimming thread .

■ Setting steps for condensation stitches and width

- 1) Press “End condensation” key in the normal state, the indicator nearby the key will be lit up. The main display will show the number of condensation stitches in the “C” side. You can press the corresponding “+”/ “-” key to change this value. The data range is 0~99 stitches.
- 2) Press “End condensation” key for second time, the main display will show the number of condensation stitches in the “D” side. You can press the corresponding “+”/ “-” key to change this value. The data range is 0~99 stitches.
- 3) Press “End condensation” key for third time, the main display will show the width of condensation stitches.Such as “U-***”.To change this value, press “Set” key, then the value start to blinks, you can press corresponding “+”/ “-” key to change this value. The data range is 0.0~8.0mm.
- 4) Press “Set” key to save all the changes made.
- 5) Press pedal to start sewing.
- 6) After finish the sewing, press the pedal backward to do end condensation and thread trimming.

■ Note

- 1) The speed of end condensation: when the work speed is larger than 1200

rpm, the end condensation is sewed by the speed of 1200 rpm.when the work speed is less than 1200 rpm, it is done as work speed.

- 2) The condition for end condensation to work is: all of the C,D,U value is larger than 0 and the indicator for end condensation is on.
- 3) The end condensation is the latest sewing operations.
- 4) To disable end condensation, press “End condensation” key for four times. When it is disabled, the indicator for end condensation is off.

2.13 Setting the Position of the Sewing Base line

The default sewing base line is in the center of the zigzag range.The max.adjustment range is ± 4 mm distance from the center.

■ Operation Steps

- 1) Press “Baseline position” key in the normal state, the indicator nearby the key will be lit up. The main display will show the current base line position. Such as “L-00”.
- 2) Press “Set” key to enable the change of the base line position.
- 3) Press “N1+” key to select the rightward change of the base line.The main display will show “r-***”. Or press “N1-” key to select the leftward change of the base line. In that case the main display will show “L-***”.
- 4) Press the corresponding “+/-” key to change the base line position. The range of the adjustment range is $(8.0\text{mm} - \text{The work zigzag width}) / 2$.
- 5) Press “Set” key to save the changes made. The main display show the current base line position for a second and then show the work width. If the current base line position is not 0, the indicator for baseline will be lit up, otherwise, it is off.

■ Note

To get rid of the baseline setting, please change the value to 0.

2.14 Needle Left/Right Stopping

When the machine is on the normal state, pressing “Left/Right Stop” key can show the current stop state on the main display. There are 3 kind of left-right stop state.

Left Stop	the display show	“☰ - - - ”
Right Stop	the display show	“- - -☷”
Free Stop	the display show	“- - - - ”
End Stop	the display show	“- -☷-”

To set the left-right stop state, operate as following:

- 1) Press “Set” key. The main display show current stop state and blinks.
- 2) Press “N1+” key to set to left stop,or press “N4+” key to set to right

stop, or press “N2+” key to set free stop, or press “N3+” key to set “end stop” state.

- 3) Press “Set” key to confirm the change. The display stop blinks.

Note:

“Stitch-counted Sew” will not consider the setting of left/right stopping.

2.15 Needle Up/Down Stopping

When the “Up /Down Stop” indicator lights on, the needle will stop at up position at the end of sewing. If not, it will stop at down position. Press “Up Down Stop Switch” key to switch between the two state.

The default set is up stop positioning for the machine.

2.16 Flip operation

For example, in normal state, set down stop position. Then operate as following steps:

- 1) Press the “Standard Pattern 5” key. The indicator nearby that key will turn on. At same time the main display area show 5-3- for a second and show the work width of the pattern after that.
- 2) Press “Set” key. The width data in main display area will blink. At this time you press the Standard Pattern 5 key, the main display will show pattern shape code “5-3-”.
- 3) Press “N2+” key to select flip operation, this makes the main display show “5-3A”. Here you can press “N2-” key to unselect flip function, that makes the main display show “5-3-“ again.
- 4) Press “Set” key to confirm you choice.
- 5) Press pedal to start sewing.
- 6) Stop sewing, rotate cloth by 90 degree.
- 7) Press “Reverse Button ” to flip the stitch shape.
- 8) Press pedal again to start flip sewing.

2.17 Stitch-counted Sew

■ Operation Steps

- 1) Press “Stitch-counted Sew” key in the normal state, the indicator nearby the key will be lit up. The main display will show the number of stitches in vertical side. Such as “E-***”. If you want to change this value, press the corresponding “+”/ “-” key. The biggest stitch number is 99.
- 2) Press “Stitch-counted Sew” key again, the main display will show the

number of stitches in horizontal side. Such as “F-***”. If you want to change this value, press the corresponding “+”/ “-” key. The biggest stitch number is 99.

- 3) Press “Width” key, the main display show the work width.
- 4) Press pedal forward to start sewing. After the number of stitches set by vertical side in “E-***” is sewed, the sewing will stop automatically.
- 5) Rotate the cloth by 90 degree. Then press pedal forward to start sewing of horizontal side. After the number of stitches set by horizontal side in “F-***” is sewed, the sewing will stop automatically.
- 6) Rotate the cloth by 90 degree again. Repeat the step 4 and 5 by one time.
- 7) After sewing stop, the machine will trim thread automatically.
- 8) If the stitches of horizontal side is set to “F-00”, the sewing will be finished after the first side is sewed and then the machine will trim thread automatically.

■ Note

- 1) Only set the number of stitches of vertical side (E-***) can work also.
- 2) Press “Stitch-counted Sew” key by 3 times to cancel this function.
- 3) The sewing speed can be controlled by control panel.

2.18 The Enable and Disable of the Presser Foot Lifter

When the foot switch indicator lights on, the pressor foot lifter is enabled. If not, it is disabled. Press “Foot Switch” key to switch between the two state.

When enabled, the presser foot is controlled by pedal instruction.

2.19 The Enable and Disable of the Trimmer and Wiper

When the thread trimmer switch indicator lights on, the trimmer is enabled. If not, it is disabled. Press “Thread Trimmer Switch” key to switch between the two state.

When the thread wiper switch indicator lights on, the wiper is enabled. If not, it is disabled. Press “Thread Wiper Switch” key to switch between the two state.

If the thread trimmer is disabled, the thread wiper can not be enabled.

2.20 Half Stitch Motion

When the machine is at rest, press “Half Stitch Motion” key to start low speed half stitch sewing.

The speed of the half stitch is setting by the system parameter P-02. The default value is 200 spm.

2.21 The Use of Reverse Button

There is three different use of reverse button.

1. Flipment of the pattern. This function is suitable for pattern 5-*A and 6-*A. In the stop state, when pedal be in free position, press reverse button will make main display show “AAAA”, this make the following sew be in flip mode. Each time you need to flip, you must press reverse button once.
2. Reverse feed. In the sewing process, press reverse button will manually control the condensation stitch. If the indicator for forward reverse feed is on, then the feed pitch of condensation is as forward feed pitch. else if the indicator for backward reverse feed is on, the feed pitch is as backward feed pitch. The forward or backward feed pitch is shown in the reverse feed display in both case. The above reverse feed function of the reverse button is only applicable to standard patterns.
3. Mirroring of the pattern. In the normal state, press the reverse button to switch between the On and Off state of the mirroring function. When the mirroring function is on, the pattern will be sewed with the shape which is mirrored horizontally. When the state is off, the pattern will be sewed in original shape. Note that this function is only applicable to ROM patterns.

2.22 Restore the Default Setting

You may need to reset all the setting of the machine to the default value by vendor at som time. You can complete this by pressing these three keys at same time:

- “Up Down Stop Switch” key
- “Foot Switch” key
- “Thread Trimmer Switch” key

2.23 Use Patterns in U-Disk

The GT856D control box support U-Disk as external pattern storage device. User can design new patterns in computer and save them to the U-Disk. When the U-Disk contain valid patterns is inserted to the USB socket in the GT856D control box, user can sew these patterns directly. Also, user can copy pattern datas from U-Disk to control box or from control box to U-Disk.

The pattern data is saved to U-Disk by file format. The valid file name is restricted from 300.sss to 999.sss. The pattern files must locate in the root directory of U-Disk.

The system parameter “P-51” controls the use of U-Disk. When the value of “P-51” parameter is set to 1, the U-Disk is enabled. When the value is set to 0, the

U-Disk is disabled. In the control box which doesn't support U-Disk, the value is always 0 and can not be changed by user.

To use patterns in a U-Disk, just plug the U-Disk to the USB device socket in the GT856D control box. After that, when you want to select a ROM pattern, you can only "see" the patterns in the U-Disk. The patterns stored in the machine can not be select at this state. After you un-plug the U-Disk, you can use the ROM pattern stored in the machine again.

If you want to copy patterns from the U-Disk to the ROM storage of the machine, or if you want to copy the ROM pattern from the machine to U-Disk, you need enter the U-Disk operation state first.

To do this, firstly, you insert the U-Disk to the control box when the power of control box is off. Secondly, you hold pressing the "ROM" key in the control panel and then turn on the power of the control box. After you hear the beep voice you can release the key press. The main display will show "U OP", which means U-Disk operation. Now the machine enters the U-Disk operation state.

In this state, there are only 3 function keys.

"N1+" key: Copy user patterns from U-Disk to machine.

"N2+" key: Delete user patterns in the machine.

"N3+" key: Copy user patterns from machine to U-Disk.

The patterns in the control box is divided into 2 groups: basic patterns and user patterns. The basic patterns' code is from 000 to 299, while the user patterns' code is from 300 to 999. The above U-Disk operation can only process user patterns.

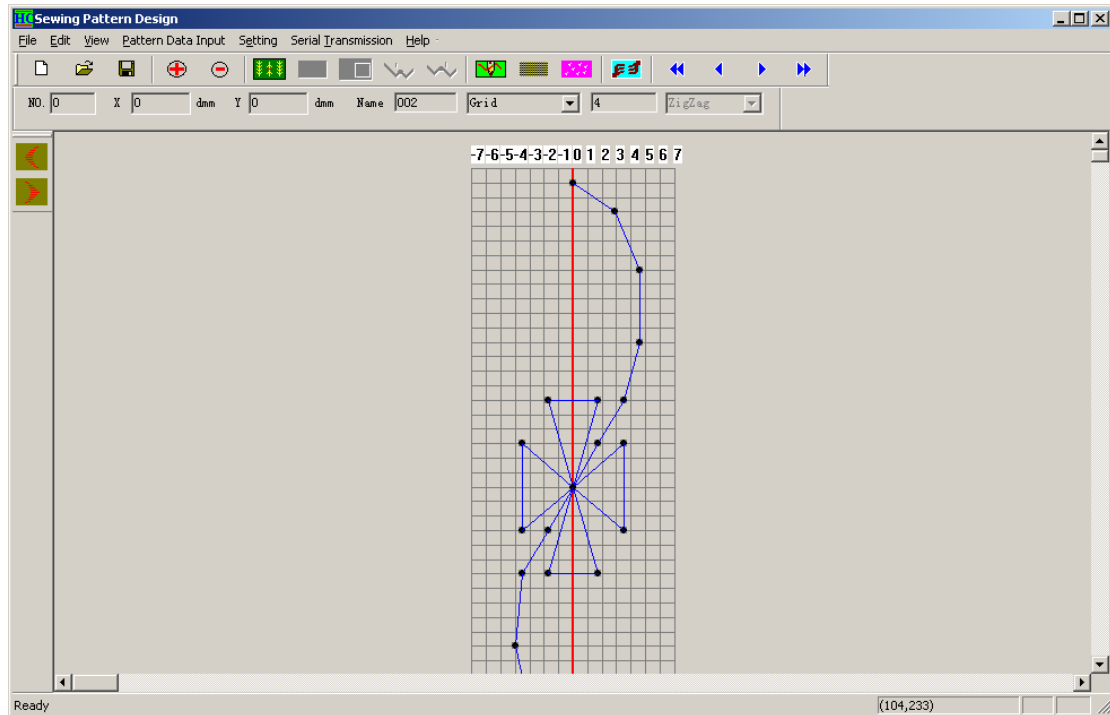
The copy operation will automatically search all the user pattern and copy it to the destination storage. If the destination storage contain the valid data of the same pattern number, the machine will give a warning "Er55" or "Er56". On the moment, you can press "Set" key to allow the existing pattern be overwritten, or you can press "Half stitch move" key to skip the copy of this pattern.

The copy operation may last for tens of seconds. After it is finished, the main display will show "U OP" again.

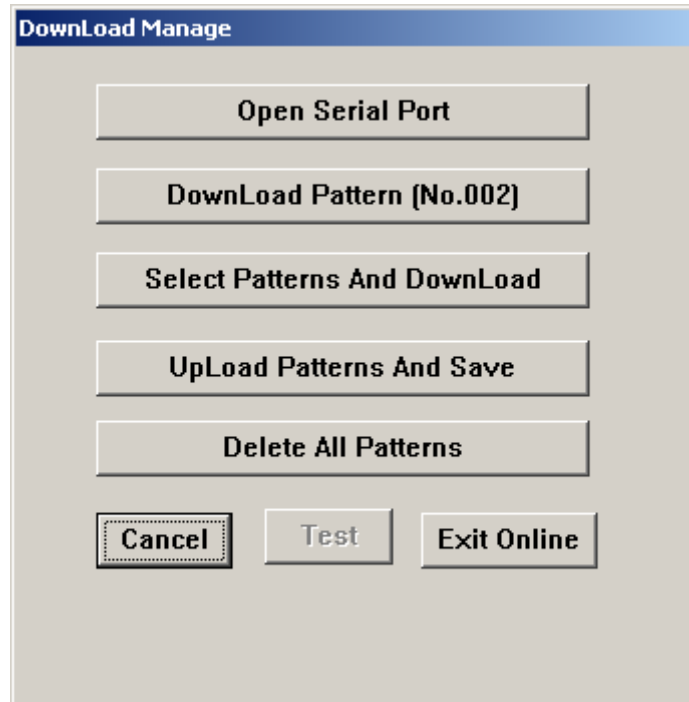
You can press "N4+" key to quit U-Disk operation state and enter the normal work state.

3 Download Pattern From PC to Machine

The machine can store up to 1000 ROM patterns. User can edit these patterns from PC and download them to the machine through RS232 port. The pattern edit tool in PC is “Style Edit”. The following is the main view of the edit tool.



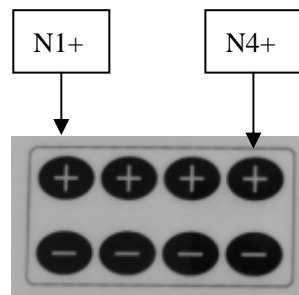
The following is the view of the download dialog.



For the detailed introduction to the edit tool, please refer to its manual. Here we only introduce the operation in the control panel about how to enter the communication mode to receive patterns.

■ Operation Steps

- 1) Press “N1+” key and “N4+” key simultaneously. “Prog” will show on main display.
- 2) Press “N1+” key. “L-PC” will show on main display. The machine enters the communication mode and wait the commands from the PC.



- 3) If the pattern download transaction finishes, the machine will automatically exit the the communication mode. If you want to exit manually, please press “Set” key. The follwing “+” “-” keys have a secondary name and functions.

■ Note:

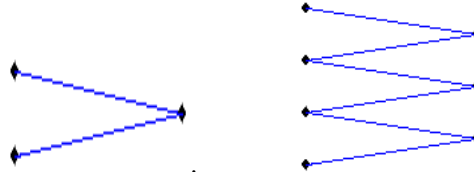
An RS232 cable is needed to connect the machine to PC.

4 Create Pattern Through Control Panel

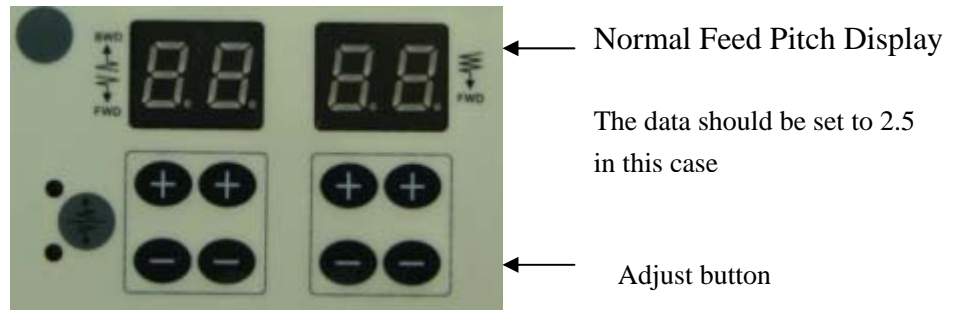
User can create new pattern directly through the control panel. It is useful when the user can not get a computer to create a pattern. The operation steps to do this job is described below by 2 examples.

Example 1:

We need to create a pattern which drawing is as follows.

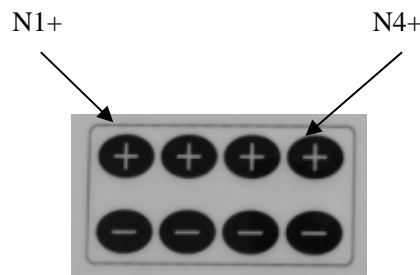


There are 3 stitches in this pattern. Assume that the coordinate of the 3 stitches is: $(-4,2.5)$, $(4,2.5)$, $(-4,2.5)$. It must be pointed out that the x coordinate (for width) is absolute value but the y coordinate (for feed pitch) is relative value to the previous stitch. We note that the y coordinates of the 3 stitches equal to each other. We name this type of pattern as “constant feed” pattern. To input the stitches of constant feed pattern, for efficiency, we only need input the x coordinate. The y coordinate should be set through the Normal Feed Pitch Display before enter into the pattern create mode.



The following is the operation steps to create this pattern.

(1) Press the N1+ and N4+ key simultaneously to let the main display show “Prog”.



(2) Press N1- key, the main display will show the number of the first unused pattern, e.g.

P001.

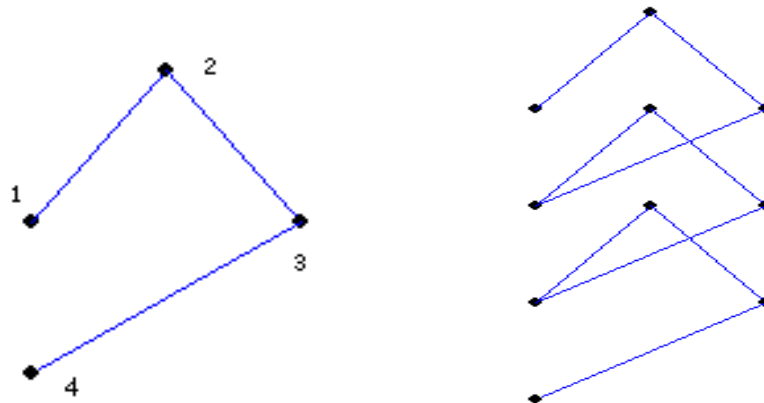
- (3) Use “+”/“-” key to choose the pattern number you want to use, e.g. P200.
- (4) Press N1- key, the display will show the stitch number “n 1”
- (5) Press N1- key, the display will show “0.0” as current value of the x coordinate of stitch

No. 1.

- (6) Use “+”/“-” key to adjust this value to “-4.0”.
- (7) Press N1- key, the display will show the current stitch number “n 1” again.
- (8) Use “+”/“-” key to adjust current stitch number to “n 2”.
- (9) Press N1- key, the display will show “0.0” as current x value of stitch No. 2.
- (10) Use “+”/“-” key to adjust this value to “4.0”.
- (11) Press N1- key, the display will show the current stitch number “n 2” again.
- (12) Use “+”/“-” key to adjust current stitch number to “n 3”.
- (13) Press N1- key, the display will show “0.0” as current x value of stitch No. 3.
- (14) Use “+”/“-” key to adjust this value to “-4.0”.
- (15) Press N1- key, the display will show the current stitch number “n 3” again.
- (16) Press N1+ key to stop input, the display will show “End”.
- (17) Press “Set” key to save the pattern and return to normal state.

Example 2:

We need to create a pattern which drawing is as follows.



There are 4 stitches in this pattern. Assume that the coordinate of the 4 stitches is: (-4,2.5), (0,-2.5), (4,2.5), (-4,2.5). We note that the y coordinates of the 4 stitches do not equal to each other. We name this type of pattern as “non-constant feed” pattern. To input the stitches of non-constant feed pattern, we have to input the x coordinate and the y coordinate for each stitch.

The following is the operation steps to create this pattern.

(1) Press the N1+ and N4+ key simultaneously to let the main display show “Prog”.

(2) Press N1- key, the main display will show the number of the first unused pattern, e.g. P001.

(3) Use “+”/“-” key to choose the pattern number you want to use, e.g. P201.

(4) Press N1- key, the display will show the stitch number “n 1”

(5) Press N1- key, the display will show “0.0” as current value of the x coordinate of stitch

No. 1.

(6) Use “+”/“-” key to adjust this value to “-4.0”.

- (7) Press N1+ key to enable the X/Y alternative input.
- (8) The display will show “o -4.0”, here “o” indicates that the the X/Y alternative input is enabled. If you press the N1+ again, the display will show “-4.0” which mean the X/Y alternative input is disabled.
- (9) Press N1- key, the display will show the current data number “n 1” again.
- (10) Use “+”/“-” key to adjust current data number to “n 2”.
- (11) Press N1- key, the display will show “o 0.0” as current value of data No. 2(Actually y value of stitch No. 1).
- (12) Use “+”/“-” key to adjust this value to “o 2.5”.
- (13) Press N1- key, the display will show the current data number “n 2” again.
- (14) Use “+”/“-” key to adjust current data number to “n 3”.
- (15) Press N1- key, the display will show “o 0.0” as current value of data No. 3(Actually x value of stitch No. 2).
- (16) Press N1- key, the display will show the current data number “n 3” again.
- (17) Use “+”/“-” key to adjust current data number to “n 4”.
- (18) Press N1- key, the display will show “o 0.0” as current value of data No. 4(Actually y value of stitch No. 2).
- (19) Use “+”/“-” key to adjust this value to “o-2.5”.
- (20) Press N1- key, the display will show the current data number “n 4” again.
- (21) Use “+”/“-” key to adjust current data number to “n 5”.
- (22) Press N1- key, the display will show “o 0.0”
- (23) Use “+”/“-” key to adjust this value to “o 4.0”.
- (24) Press N1- key, the display will show the current data number “n 5” again.
- (25) Use “+”/“-” key to adjust current data number to “n 6”.
- (26) Press N1- key, the display will show “o 0.0”
- (27) Use “+”/“-” key to adjust this value to “o 2.5”.
- (28) Press N1- key, the display will show the current data number “n 6” again.
- (29) Use “+”/“-” key to adjust current data number to “n 7”.
- (30) Press N1- key, the display will show “o 0.0”
- (31) Use “+”/“-” key to adjust this value to “o-4.0”.
- (32) Press N1- key, the display will show the current data number “n 7” again.
- (33) Use “+”/“-” key to adjust current data number to “n 8”.
- (34) Press N1- key, the display will show “o 0.0”
- (35) Use “+”/“-” key to adjust this value to “o 2.5”.
- (36) Press N1- key, the display will show the current data number “n 8” again.
- (37) Press N1+ key to stop input, the display will show “End”.
- (38) Press “Set” key to save the pattern and return to normal state.

5 Setting the System Parameter

User can solve some sewing faults or adjust the sewing to the optimum condition by use system parameter setting.

5.1 The list of the System Parameter

Parameter Items	Function Description	Range	Default value	Unit	Remark
P-01	Max. sewing speed	100~5000	5000	spm	
P-02	Half stitch speed	100~600	200	spm	
P-03	Max.zigzag width	0.0~8.0	8.0	mm	
P-04	Max feed pitch	0.0~5.0	5.0	mm	
P-05	Zigzag origin offset	-4.0~4.0	0	mm	
P-06	Feed origin offset	-2.5~2.5	0	mm	
P-07	Sewing speed while trimming	100~500	200	spm	
P-08	Latency time after trimmer	4~100	4	ms	
P-09	Open angle of the thread trimmer	0~180	30	°	
P-10	Close angle of the thread wiper	0~360	210	°	
P-11	Close angle of the thread trimmer	0~360	350	°	
P-12	Presser foot auto-fall time	1~60	30	s	
P-13	Latency time before presser foot rise	4~500	200	ms	
P-14	Latency time before presser foot fall	4~500	100	ms	
P-15	Total period of solenoids control	1~9999	200	0.05us	
P-16	Turn-on time of trimmer solenoid control	1~9999	200	0.05us	
P-17	Turn-on time of wiper solenoid control	1~9999	200	0.05us	
P-18	Turn-on time1 of foot solenoid control	1~9999	200	0.05us	
P-19	Turn-on time2 of foot solenoid control	1~9999	90	0.05us	

P-20	Feed forward direction compensation pulse count	0~9	0		
P-21	Feed reverse direction compensation pulse count	0~9	0		
P-22	Working time on the Test Run mode	1~60	5	s	
P-23	Pause time on the Test Run mode	1~60	5	s	
P-24	Max.sewing speed of the patterns with variable feed pitch	400~3500	3500	spm	
P-25	Whether allow the arm shaft motor working or not	0-Prohibit, 1-Allow	1		
P-26	Feed Origin Sensor's polarity	0-Normal 1-Reverse	0		
P-27	Zigzag Origin Sensor's polarity	0-Normal 1-Reverse	0		
P-28	Up needle position	0~1439	100		
P-29	Read the present encoder's position	0~1439			Read-only
P-30	Inner high gear's start speed	100~2000	1500		Read-only
P-31	Min. time interval from the pedal stop to re-start	0~500	200	ms	
P-32	Offset of zigzag start move position	-100~+100	0		Read-only
P-33	The time of the zigzag axis search origin	70~300	100		Read-only
P-34	The time of the Feed axis search origin	70~300	90		Read-only
P-35	Buzzer Beep time	0~100	60	ms	Read-only
P-36	The Min.Sewing speed	100~500	100	spm	
P-37	Open angle of the thread nipper	0~360	90	°	
P-38	Close angle of the thread nipper	0~360	340	°	
P-39	Open angle of the thread wipper	0~360	30	°	
P-40	Soft-Start enable control	0:disable 1:enable	1		
P-41	Sew speed of 1st stitch	100~5000	400	spm	
P-42	Sew speed of 2nd stitch	100~5000	800	spm	

P-43	Sew speed of 3rd stitch	100~5000	1200	spm	
P-44	Sew speed of 4th stitch	100~5000	2400	spm	
P-45	Sew speed of 5th stitch	100~5000	3600	spm	
P-46	Slope adjust for pedal	1~100	30	%	
P-47	Reserved	-	0		Reserved
P-48	Reserved	-	0		Reserved
P-49	Reserved	-	0		Reserved
P-50	Reserved	-	0		Reserved
P-51	U-disk enable control	0:disable 1:enable	1		
P-52	AC voltage warning enable	0:disable 1:enable	0		
P-53	Low end of voltage warning	150~200	165	volt	
P-54	High end of voltage warnng	240~280	270	volt	
P-55	Show current voltage	0~280	220	volt	
P-56	Threashold vaule for low speed stage of pedal	450~650			
P-57	Product test switch	0:disable 1:enable	0		
P-58	X pos switch when cut	0:disable 1:enable	0		
P-59	Up stop position offset for trimming thread	-120~120	0		
P-60	The angle to slow down on the last work cycle	180~340	315	°	

5.2 The Setting of the System Parameters

According to the bellowed steps to set the system parameters:

- 1) On the normal state(no blinking data on main display),press “Parameter” key to enter the parameter setting mode.The main display will show “P-01”.
- 2) Press “+” / “-” key to select parameter item to be changed.
- 3) Press “Parameter” key to show the current value of this parameter item.
- 4) Press “+” / “-” key to change parameter value.
- 5) Press “Set” key to confirm and save the modification to the parameters, or press “Half stitch motion” key to cancel the modification to the parameters. Either key pressed will exit the parameter setting mode and return to normal state.

5.3 The Description of Specific Parameters

(1) Adjust the up needle positioning

Please press the “Half stitch motion” key two times. If you find out that the needle bar position is not in the “U” and “D” position respectively, you need to adjust the up needle position.

Adjustment method:

- 1) Turn hand wheel to move the needle bar to “U” position.
- 2) Press “Parameter” key to enter to the system parameter setting mode and choose the P-29 parameter item.
- 3) Press “Parameter” key to get the P-29 parameter value. This value is the encoder position for the “U” position.
- 4) Choose the P-28 parameter item. And use the present encoder position of “U” to modify P-28 parameter item value.
- 5) Press “Set” key to save the modification and return to normal state.

(2) Feed Pitch Offset Fine Tuning

Choose the No.1 basic sewing pattern and set the normal feed pitch to 0.0 and sewing. The material must stay unmoved on the foot dog. If it's moved forward or backward, that means the feed origin is not accurate. Now you can adjust the mechanical parts or set the P-06 system parameter item to solve the problem. The latter is better for fine tuning of feed origin.

Adjustment method:

- 1) If the material move forward, you need to set the system parameter P-06's value to be a negative number. Such as -0.1. Then try to sew again. If the material still move forward, change the parameter to -0.2. Try again and again like this until the material not move.
- 2) If the material move backward, you need to set the system parameter P-06's value to be positive number. Such as 0.1. Then try to sew again. If the material still move backward, change the parameter to 0.2. Try again and again like this until the material not move.

The offset setting of parameter P-06 will influence all pattern's origin searching process.

6 The Test of IO Device

Beside the normal work mode, the control box supply two test work mode to support the test of IO device: the input device test mode and the output device test mode. They are useful for the identification of the source of mechanical or electrical malfunction.

6.1 The Test of Input Device

If something is wrong with X/Y origin sensor, safe switch, reverse-feed switch, pedal switch, servo encoder and the key in the control panel, you may need to enter the input device test mode to locate the fault.

To enter the mode, keep pressing the key “N1+” when you turn on the power of the control box. Release the key after you hear beep sound. Now the main display will show “i 1”. Here “i” means the machine is in the input device test mode and “1” is the index of the input device. You can use “N4+” key an “N4-”key to change the index of the input device and use “Parameter” key to view the input value of that input device.

The list of input devices

index	value	description
i 1	[H]/[L]	The output signal of X origin sensor. High level or Low level.
i 2	[H]/[L]	The output signal of Y origin sensor. High level or Low level.
i 3	[0]~[1439]	The encoder value of arm shaft motor
i 4	[on]/[oFF]	The output signal of Up stop position sensor. Switch on or off.
i 5	[on]/[oFF]	Reverse Feed Switch. Switch on or off.
i 6	key index	Show the index of the key pressed
i 7	[0]~[1023]	Show current ADC value of the voltage of Pedal Switch
i 8	[on]/[oFF]	Safe Switch. Switch on or off.

Note:

To check the X/Y origin sensor, you may need unplug the X/Y motor cable from the control box.

6.2 The Test of Output Device

If something is wrong with X/Y motion, Arm shaft motion, solenoid action and panel display, you may need to enter the output device test mode to locate the fault.

To enter the mode, keep pressing the key “N1-” when you turn on the power of the control box. Release the key after you hear beep sound. Now the main display will show “o 1”. Here “o” indicates that the machine is in the output device test mode and “1” is the index of the output device. You can use “N4+” key an “N4-”key to change the index of the output device and use “Parameter” key to switch to the action check state of that output device.

The list of output devices

index	description
o 1	Test Zigzag motor. press “N4+”, needle bar move right, press “N4-”, needle bar move left.

o 2	Test Feed motor. press “N4+”, motor move forward, press “N4-”, motor move backward.
o 3	Test control panel display element. Press pedal to trigger. Indicator is light on one by one. Then Digit is show one by one.
o 4	Test Thread Trimmer. press “N4+” or “N4-”, the Trimmer do a action.
o 5	Test Thread Nipper. press “N4+” or “N4-”, the Nipper do a action.
o 6	Test Thread Wiper. press “N4+” or “N4-”, the Wiper do a action.
o 7	Test Foot Lifter. press “N4+” or “N4-”, the Foot Lifter do a action.
o 8	Test Arm Shaft Motor. press “N4+” or “N4-”, the motor turn 40 rounds.

7 Error Code and Processing Method

Error code list


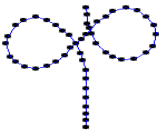
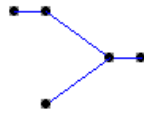



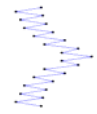



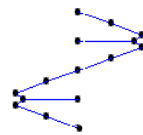
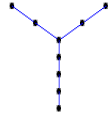
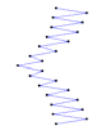
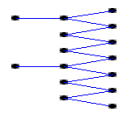
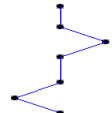
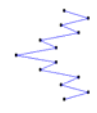
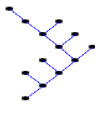
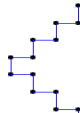
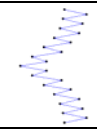
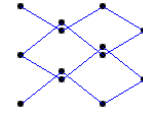
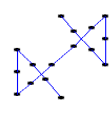
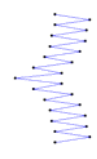
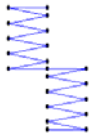
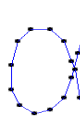
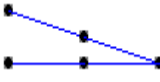
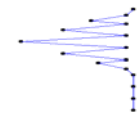
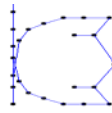
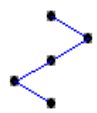
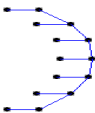
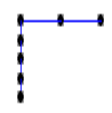
Error code	Description	Failure cause and the processing method
Er01	Machine head tilt	Machine head tilt; Safe switch connecting line not connected or poor contact.
Er02	Abnormal arm shaft motor speed	Check the arm shaft motor power line and the encoder wiring
Er03	Abnormal encoder signal	Check the arm shaft motor encoder wiring
Er04	Arm shaft motor overload	Check if the power supply voltage is low
Er06	Not pass the mainboard hardware self-test	Main board failure.Contact vendor.
Er07	Not pass the mainboard software self-test	Main board failure.Contact vendor.
Er10	Servo motor driver alarming	Check the servo motor driver and wiring
Er11	Arm shaft motor return home failed	Check the servo motor driver and wiring
Er15	Abnormal pedal switch signal	Pedal switch failure.Contact vendor.
Er19	Config memory failure	Main board failure.Contact vendor.
Er21	Zigzag origin search failure	The zigzag origin sensor’s wiring not connect or poor connect. Sensor failure or poor induction
Er22	Feed origin search failure	The feed origin sensor’s wiring not connect or poor connect. Sensor failure or poor induction

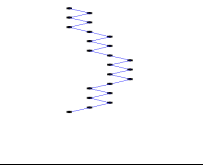
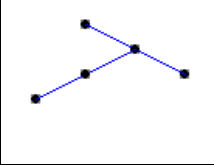
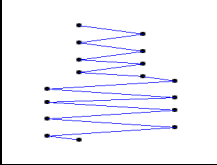
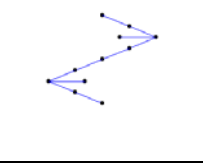
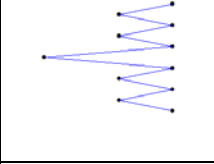
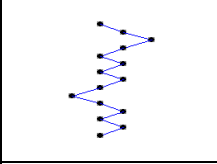
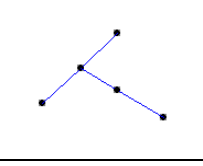
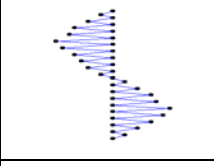
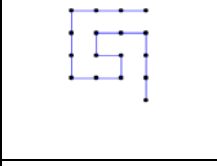
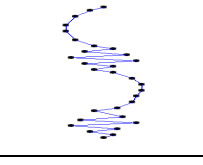
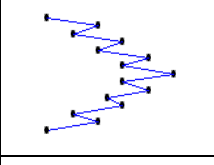
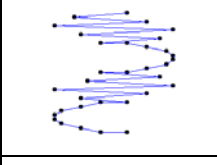
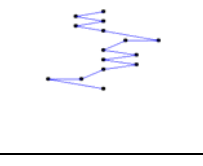
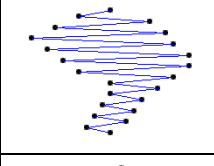
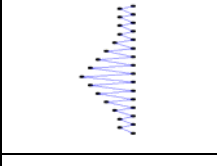
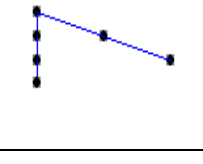
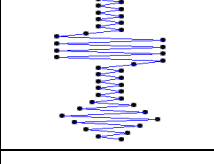
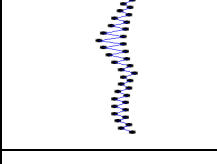
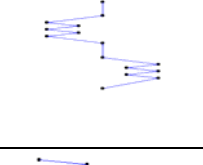
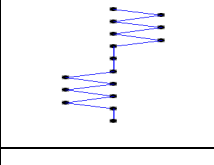
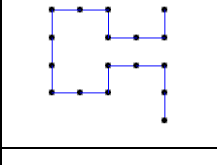
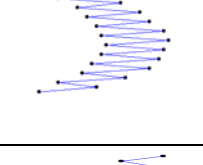
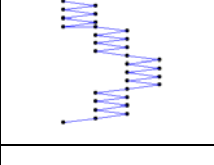
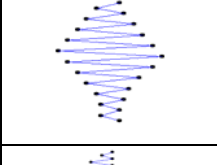
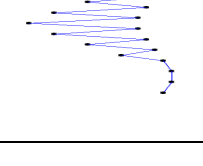
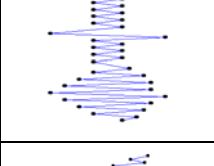
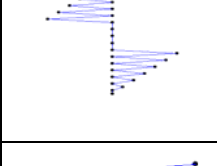
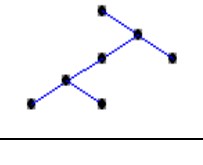
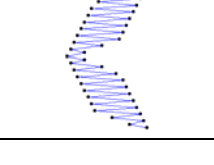
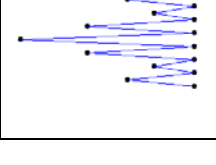
Er23	No sewing pattern	Choose another sewing pattern
Er24	Sewing pattern contain invalid data	Modify the sewing pattern
Er45	Stitch number of current sewing pattern exceed the Max. stitch limit	Reduce the total stitch number of current pattern.
Er55	Pattern already exist in U-Disk	Whether overwrite the pattern with same number
Er56	Pattern already exist in ROM memory	Whether overwrite the pattern with same number
Er57	No enough pattern memory	Clear pattern memory space
Er58	Read failure from U-Disk	Check U-Disk connection
Er59	U-Disk File Format Uncompatible	Convert the file format of U-Disk
Er61	Power Off	Check the AC power supply
Er62	Voltage too high	Check the AC power supply
Er63	Voltage too low	Check the AC power supply

Note: Er01~Er20 is the fatal error warning. You must fix the failure before working. Er21-Er24 is the common fault. You can clear the error display by press the “Half Stitch Motion” key and then go on working. But this operation can’t fix the error.

The control box maintain an error log. User can view this error log. To enter the view mode, please keep pressing “Half stitch move” key when the power of the control box is turned on.

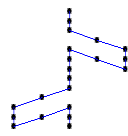
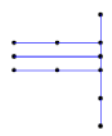

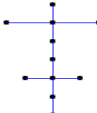
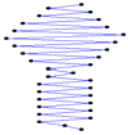
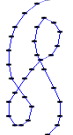
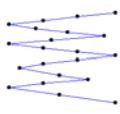




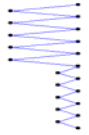



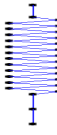


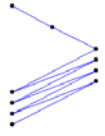

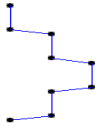
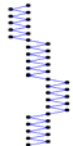

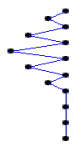


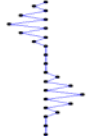
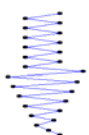
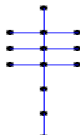
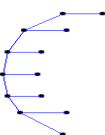
8 Appendix—ROM Pattern Table



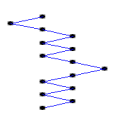


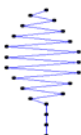


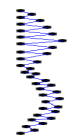


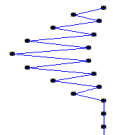

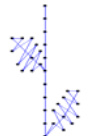


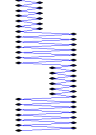
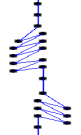

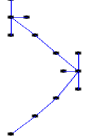


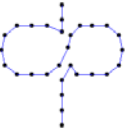
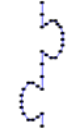

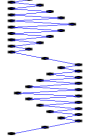
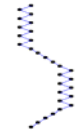

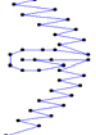
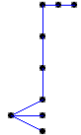
No.	Pattern	No.	Pattern	No.	Pattern
1		11		21	
2		12		22	
3		13		23	
4		14		24	
5		15		25	
6		16		26	
7		17		27	
8		18		28	
9		19		29	
10		20		30	

No.	Pattern	No.	Pattern	No.	Pattern
31		41		51	
32		42		52	
33		43		53	
34		44		54	
35		45		55	
36		46		56	
37		47		57	
38		48		58	
39		49		59	
40		50		60	

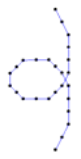



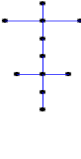


No.	Pattern	No.	Pattern	No.	Pattern
61		71		81	
62		72		82	
63		73		83	
64		74		84	
65		75		85	
66		76		86	
67		77		87	
68		78		88	
69		79		89	
70		80		90	

No.	Pattern	No.	Pattern	No.	Pattern
91		101		111	
92		102		112	
93		103		113	
94		104		114	
95		105		115	
96		106		116	
97		107		117	
98		108		118	
99		109		119	
100		110		120	

No.	Pattern	No.	Pattern	No.	Pattern
121		131		141	
122		132		142	
123		133		143	
124		134		144	
125		135		145	
126		136		146	
127		137		147	
128		138		148	
129		139		149	
130		140		150	

No.	Pattern	No.	Pattern	No.	Pattern
151		161		171	
152		162		172	
153		163		173	
154		164		174	
155		165		175	
156		166		176	
157		167		177	
158		168		178	
159		169		179	
160		170		180	

Table

No.	Pattern	No.	Pattern	No.	Pattern
181		185			
182		186			
183		187			
184					

GT856D

COMPUTER CONTROLLED, DIRECT DRIVE,
ZIG-ZAG SEWING MACHINE
CONTROL BOX



This machine may only be operated by adequately trained operators only after having completely read and understood the instruction manual.

Parts are subject to changes in design without prior notice.



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