

**GT690DA Intelligent Electronic Knotting Machine**

**GT691DA Intelligent Electronic Buttoning Machine**

# **Instruction Manual**

**XFQ-01C**

## **Foreword**

Thank you for selecting our intelligent electronic knotting machine/intelligent electronic buttoning machine. In order to fully exert excellent performance of the product and guarantee operator safety and equipment security, before using machines, please carefully read the specification. Specifications are attachments. Please keep them properly after use to be fully prepared for equipment overhaul and maintenance.

In case of any doubt or special requirement to the knotting machine/buttoning machine, please contact local office or dealer or after-sale service center of our corporation.

The specification is subject to change without prior notice.

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# 1. Safety instruction

## 1.1 Basic safety

To use the product, in order to avoid fire, electric shock or casualties, please observe following basic safety precaution all along:

 Caution	Do not try to repair or test the electric parts by yourself. Otherwise, device performance shall be decreased, the system shall be unstable, fault range shall be expanded or personnel shall be injured or the property shall be lost. The supplier shall send a specialized technical person to carry out maintenance and debugging.
 Dangerous	During operating process of the product, do not open the cabinet cover panel. Certain part in the cabinet may possess super high voltage which may cause personal injury.
 Warning	Confirm the cabinet cover must be opened. At first, cut off the power supply (pull out power plug of the machine from the power socket); The cabinet can be opened 5 minutes after the power is cut off.
 Prohibit	It is prohibited to operate electric devices in area with moisture, dust, corrosive gas and flammable gas. Otherwise, it can cause electric shock or fire.
 Prohibit	It is prohibited to perform insulation test to input or output circuit of the controller. Otherwise, it may directly cause electric device damage.
 Warning	Fire, shock or other severe damage may be caused if using spare parts not supplied or recommended by our corporation.
 Caution	Please strictly observe various requirements and cautions marked on the product to guarantee personnel and property security.
 Caution	Circuit board may be damaged by static electricity and can not be disassembled by a person who is not specialized technical personnel.
 Prohibit	It is strictly prohibited to connect overload electric implement to outlet or connecting terminal of the controller.

## 1.2 Wiring security

1. Any wiring error and fault shall directly affect system reliability and stability, cause electric shock and equipment damage. Therefore, wires must be arranged and operated carefully.
2. Confirm good insulation of various connecting wire cables (signal line or power line). No envelope damage is permitted.
3. Arrange various cables reasonably. No wire cable stress is permitted. While passing through such acute surface as structural holes, the wire cable must be treated to avoid wire cable damage. If necessary, add wire cable cover to improve insulation strength of wire cable.

## 1.3 Insulation of electric element and electric equipment

Confirm good insulation between internal circuit and shell during installation and using process of electric control moving parts, including spindle motor, stepping motor, power

switch and various electromagnets.

#### **1.4 Connection of power line**

1. Use multimeter to measure types of power supply and confirm that they are identical with nominal value on nameplate of the product. In region where power grid fluctuation exceeds nominal value of voltage by  $\pm 15\%$ , use AC regulated power supply with more than 1KW power and grounding function.
2. In order to use the product safely, do not use same power supply with intermittent high power load (elevator, operating machine, etc.) while selecting power supply.
3. Erect power line in safe position.
4. Fix outlet firmly in correct connection position and direction.

#### **1.5 Grounding**

In order to prevent personal safety accident or fire caused by creepage and guarantee long-term and stable operation of electronic knotting machine/ buttoning machine, the controller must be reliably grounded with less than 10  $\Omega$  grounding resistance.

#### **1.6 Rejection notice**

While treating rejected knotting machine/ buttoning machine controller, pay attention to following matters:

1. Electrolytic capacitor: internal electrolytic capacitor may explode during incineration.
2. Plastic: internal plastic rubber element may generate noxious and toxic gas during burning. Pay special attention during burning.
3. Treat rejected knotting machine/buttoning machine controller as industrial waste.

## 2. Product characteristic and performance index

### 2.1 Product characteristic

1. Spindle motor adopts AC servo control technology to guarantee high positioning accuracy, reliable and stable performance.
2. Breakdown technology is adopted in stepping motor for driving so that the machine can operate stably to improve sewing quality greatly.
3. The main controller adopts advanced middle or large scale integrated circuit in multiple CPU control mode which greatly improve system reliability.
4. Advanced multi spindle motion control algorithm software is adopted to realize stable five-spindle gang control.
5. Production is organized under ISO9000 quality system to guarantee reliable quality.

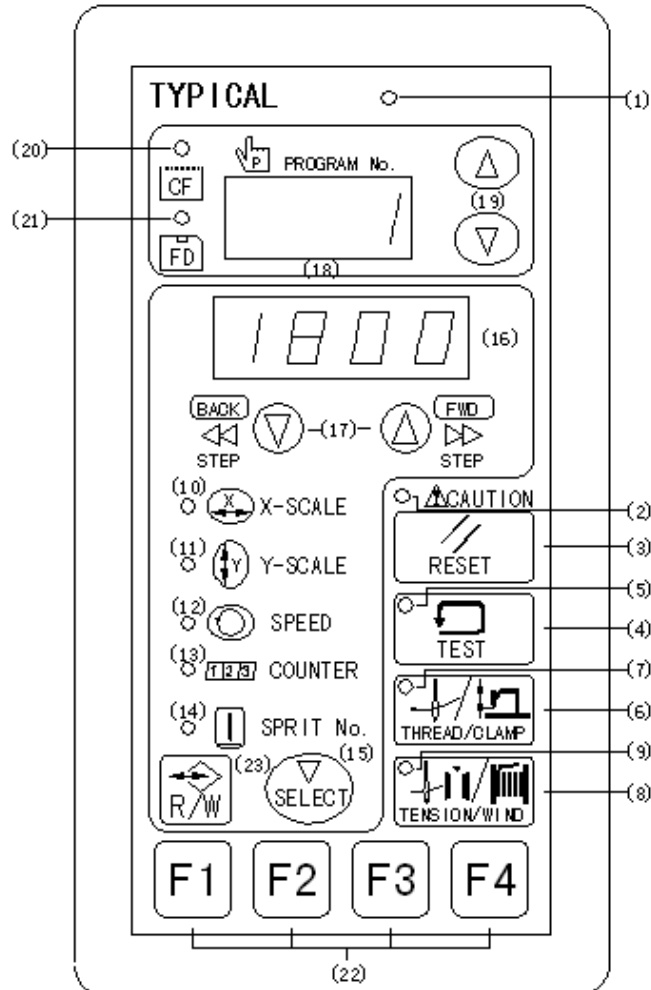
### 2.2 Performance index

	<b>GT690DA intelligent electronic knotting machine</b>	<b>GT691DA intelligent electronic buttoning machine</b>
Sewing range	Maximal 40mm*30mm (transverse * longitudinal)	
Range of sewing speed	400~3200rpm	400~2700rpm
Gauge distance	0.1~12.7mm	
User program	50	
Cyclic program	10	
Preset pattern	93 sewing patterns have already been set	35 sewing patterns have already been set
Range of bottom line counter	0~9999	
Range of output counter	0~9999999	
Memory function	In case of power breakdown, it can automatically memorize all used patterns and speed.	
Presser foot/button clip rising quantity	Maximal 17mm	Maximal 13mm
Pattern magnification and reduction function	Pattern can be independently magnified or reduced by 20% to 200% at X/Y direction during sewing process (step: 1%)	
Built-in memory capacitance	400,000 stitches at most	
Overall dimension of controller	340mm*300mm*170mm (L*W*H)	
Temperature range of work environment	5°C~40°C	






Ambient humidity	≤85%RH without dewing
Absolute altitude	Used for speed reduction in case of ≤1500m or greater than 1500m
Electric power supply	Rated voltage AC220V±15%; rated frequency 50/60HZ
Power of spindle motor	550W
Static power of machine	≤50W
Dynamic power of machine	≤200W










### 3. Basic operation of machine

#### 3.1 Name and function of various parts of operation keyboards










Name and function of keys:

Code	Key	Function
(3)	Key 	Release error, reset or zero clearing
(4)	Key 	Use function combination key and other keys together. Save setting and return key.
(6)	Key 	Get into threading mode and presser foot/button clip rising quantity setting mode.
(8)	Key 	Get into bottom line coiling mode.
(15)	Key 	Switch menu (transverse multiplying factor, longitudinal multiplying factor, sewing speed and counter display) and program step selection

		in cyclic program.
(17)	Setting key  and 	Change value displayed in menu display area (16)
(19)	Setting key  and 	Change values in PROGRAM No. display area (18).
(22)	Function key  ,  ,  and 	Selection of user program and cyclic program
(23)	Key 	Read or delete pattern set by user.

### 3.2 Display status of indicator light

Code	Indicator light	Status
(1)	Power light	It is on while power switch is turned on.
(2)	CAUTION light	The light is on in case of any error.
(5)	TEST light	The light is on after  key is pressed.
(7)	THREAD/CLAMP light	The light is on after  key is pressed.
(9)	TENSION/WIND light	The light is on while coiling bottom line
(10)	X-SCALE light	The light is on if key  is switched to transverse multiplying power.
(11)	Y-SCALE light	The light is on if key  is switched to longitudinal multiplying power.
(12)	SPEED light	The light is on when it is switched to sewing speed with key  .
(13)	COUNTER light	The light is on if it is switched to bottom line counter/production quantity counter display interface with key  .
(14)	SPRIT No. light	During switching process with key  : 1. If current pattern number is user program, the menu display area (16) shall display original pattern number of related user program.

		2. If current pattern number is cyclic program, the menu display area (16) shall display program step of related cyclic program. The light is on if it is in above 2 status.
(20)	CF indicator light	The light is on if self woven pattern is read from SD card.
(21)	FD indicator light	It is not used.
(16)	Menu display area	It is used to display various parameter values, content and error code of memory switch.
(18)	PROGRAM No. display area	Display pattern number, user program number and cyclic program number, etc.

Inspection of knotting machine/buttoning machine before and after power on

Inspection before power on:

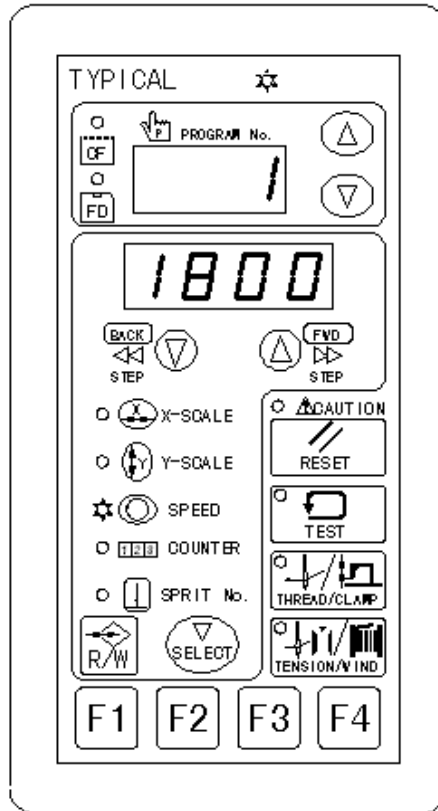
1. Inspect that all connector wires between controller and head are connected firmly in accurate connecting position.
2. Install head switch and stop normally and motors in various positions are installed stably.

Inspection after power on:

Turn on power switch.

Display machine type in operating keyboard at first and then find origin. The take-up lever stops at the top point. Central site of presser foot/button clip coincide with centre of needle hole. Press presser foot/button clip.

PROGRAM No. display space displays pattern number and flickers. The menu display space displays speed value, the power light is on (green); SPEED light is on (red).

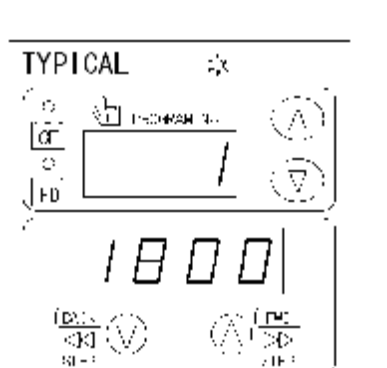


If the phenomenon conforms to above description after power on, it indicates that the machine can be started normally.

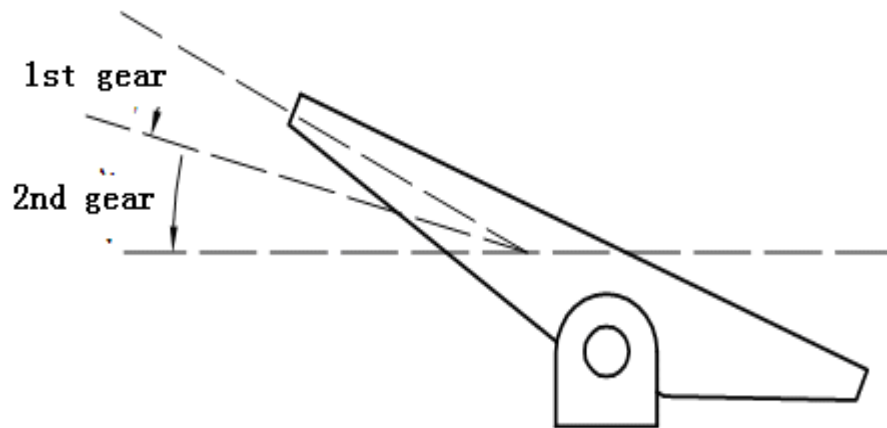
**Note:**

1. Pattern sewing range can not exceed sewing range of presser foot/button clip, otherwise needle breakage or other fault may occur.
2. After turned off each time, knotting machine/buttoning machine can be started again one minute later. Otherwise, false alarm may occur to affect normal use.



**3.3 Setting method of pattern number**



**Fig.1**




**Fig.2 Schematic diagram of treadle**

1. Press key  or key  to select pattern number. Pattern number in PROGRAM No. display area flickers (see fig.1)
2. Step treadle onto shift 2 position (see fig.2) to confirm the selected pattern number. By this time, presser foot/button clip rises and moves to the first stitch position of the pattern. The pattern number grows to normal on from flickering.

**Note:**

1. After the setting is finished, please "confirm 3.7 sewing pattern" and confirm whether the dropper position is correct.
2. To select certain pattern, "E.501" alarm indicates that the pattern is beyond machine presser foot frame/button clip sewing range. Normal sewing can be performed only after presser foot frame/ fastener clip is changed and sewing range is readjusted. The alarm shall not affect pattern selection.

**3.4 Bottom line coiling**


1. Press and hold key , step treadle onto shift 2, TENSION/WIND indicator light is on. By this time, only spindle operates and start winding.

By this time, you can come off key . However, the treadle can not be come off.

2. After the treadle is come off, the machine stop winding and TENSION/WIND indicator light is off.
3. Repeat action 1 and 2, you can start winding again.



**3.5 Setting method of transverse multiplying factor/ longitudinal multiplying factor**

Set the multiplying factor as 100 (%), namely original size.

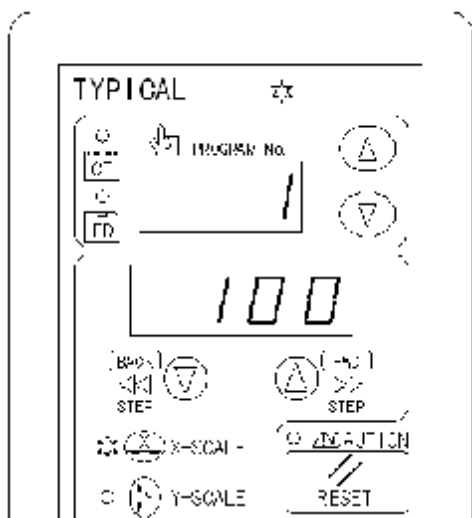
Press key  to switch to transverse multiplying factor or longitudinal multiplying factor setting interface. The menu display section shall display current setting value.

After switching to transverse multiplying factor setting interface, X-SCALE indicator light is on (see fig.1). By this time, you can regulate left and right length of the pattern.

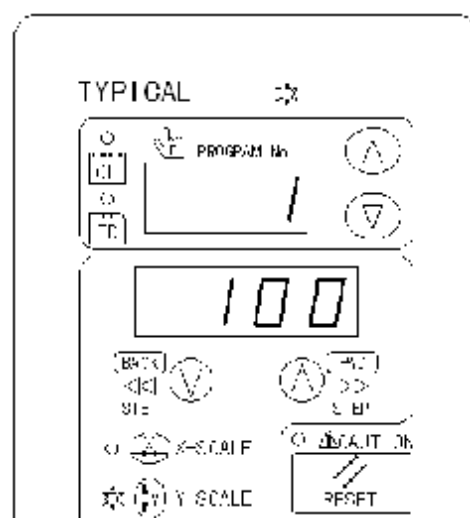
After switching to longitudinal multiplying factor setting interface, Y-SCALE indicator light is on (see fig.2). By this time, you can regulate front and rear width of the pattern.

2. Press key  or key  to set the multiplying factor within 20~200(%).

3. Step treadle onto shift 2 position to confirm the set pattern. The presser foot/button clip moves to the first stitch position of the pattern. The pattern number changes into normal on from flickering.



**Fig.1 Display of multiplying factor at X direction**




**Fig.2 Display of multiplying factor at Y direction**

**Note:**

1. When memory switch 402# parameter is set as ON, complete step 1. The multiplying factor in menu display area shall be displayed in mm.
2. After the setting is finished, please be sure to “confirm 3.7 sewing pattern”, and confirm whether the dropper position is correct.
3. E.500 alarm may occur during multiplying factor setting process. For treatment method, see alarm information list.

**3.6 Setting method of sewing speed**

The default sewing speed is 1800 (rpm).

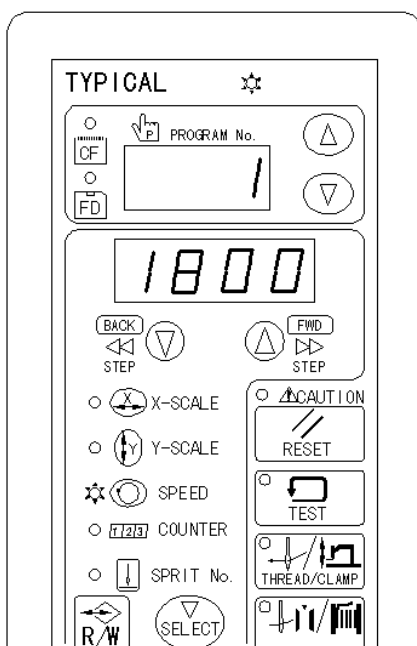
1. Press key  to switch to speed setting interface.

By this time, SPEED indicator light is on. The menu display area shall display the setting value.

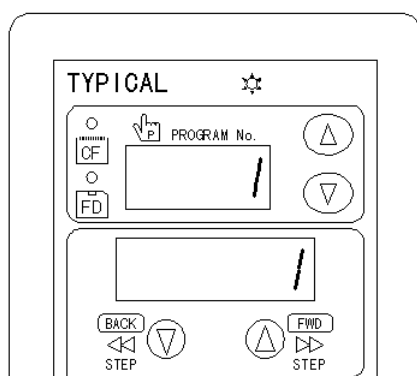
2. Press key  or key  to set sewing speed 400~3200(rpm).

**Note:**

Sewing speed setting range: GT690DA is 400~3200 and GT691DA is 400~2700.





### 3.7 Confirmation of sewing pattern





The default pattern number is No.1 pattern.


1. Step the treadle to shift 2 for confirmation. The pattern number turns to normal on from flickering.

2. Step treadle onto shift 1 position, press key  or key  to get into needle 1 cloth feeding mode. By this time, you can come off the treadle.

3. The menu display area displays [ 1 ]. By this time, presser/button clip is at the first stitch position of the pattern. You can drop the needle by rotating hand wheel to confirm whether the needle touch presser foot/button clip.

4. Press key  or key  to feed cloth by test. Press the key once, presser foot/button clip shall draw back or move forward once in accordance with sewing sequence of the pattern and the needle keep unmoved.

5. Step treadle onto shift 1 to feed cloth quickly. Presser foot/button clip moves in accordance with setting mode of 200# parameter value.

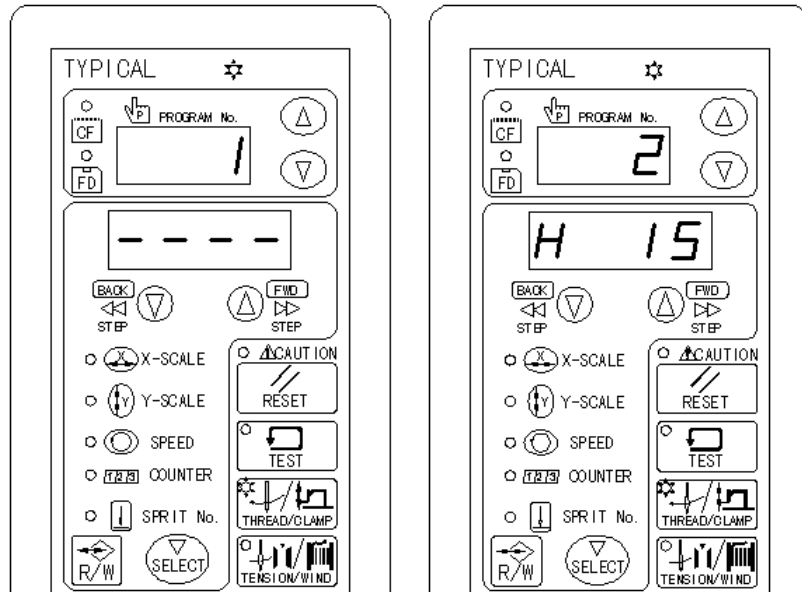
6. Press key  to exit from sewing pattern confirmation mode.

#### **Note:**

1. Before exiting from sewing pattern confirmation mode, guarantee that the needle rises and the lever is at the top.

2. When memory switch 200# is under OFF status, the treadle is stepped to shift 1, presser foot/button clip moves to last stitch of the pattern in accordance with stitch sequence of the pattern. When memory switch 200# parameter is under ON status, the presser foot/button clip shall move once in accordance with pattern stitch number after the treadle is stepped to shift 1 once.


### **3.8 Setting of threading mode, presser foot/button clip rise quantity**



**Threading mode**



**Setting mode of presser  
foot height**

Fault rise quantity of presser foot/button clip is GT690DA:15(mm)/GT691DA:13(mm).

1. Press key  to get into threading mode and THREAD/CLAMP light is on. PROGRAM No. display area displays [ 1]. The presser foot is pressed down and the thread release electromagnet close. By this time, the menu display area displays [----].



2. Press key  or key  to select the mode:

1) When PROGRAM No. display area displays [ 2], you can get into presser foot/button clip rise quantity setting mode. Presser foot/button clip rises to the set height displayed in the



menu. Press key  or  to set presser foot/button clip height again. The presser foot/button clip shall move upwards and downwards in accordance with change of the value set.

Default height of GT690DA presser foot is 15 (mm).

Default height of GT691DA button clip is 13 (mm).


2) When setting value of memory switch 003# parameter is ON, press key  or  to get into middle presser foot/middle button clip height setting mode.

By this time, when PROGRAM No. display area displays [ 3], presser foot/button clip

moves to the set height displayed in the menu. Press key  or  to set height of middle presser foot/middle button clip. Presser foot/button clip shall move upwards and downwards in accordance with change of set value.

Default height of GT690DA middle presser foot is 10 (mm).

Default height of GT691DA middle button clip is 6 (mm).



















3. Press key  to exit from and save the setting value. After THREAD/CLAMP light goes out, return to pattern number flickering status.

**Note:**

Please remember that you shall not use threading mode for more than 5 minutes. Otherwise, the machine shall automatically return to previous interface. The presser foot shall lift automatically.



## 4. Advanced operation of machine

### 4.1 List of shortcut operation function



No.	Function	Key	Content
1	Setting mode of memory switch	 + 	Get into user memory switch setting mode. Press key  to save and exit.
2	Setting mode of bottom line counter	 + 	Get into bottom line counter setting mode. Press key  to save and exit.
3	Setting mode of production capability counter	 + 	Get into production capability counter setting mode. Press key  to save and exit.
4	Instant display function of production capability counter	 + 	Under speed display status, it instantly displays production capability counter. It shall exit after coming off.
5	User program and cyclic program setting mode	 + 	Get into user program setting program. By this time, press any key from F1 to F4 to get into cyclic program setting mode. Press key  to save and exit.
6	Self-woven pattern reading mode in SD card	 + 	Read self woven pattern of the user from SD to FLASH memory area.
7	Self woven pattern deleting mode of a user	 + 	Delete self woven pattern of users in FLASH memory area.





### 4.2 Setting method and list of memory switch

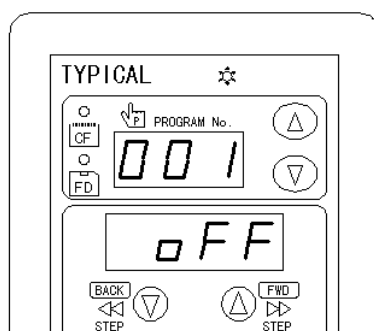
Setting method:


1. Press key  while pressing key  at the same time to get into memory

switch setting mode.

2. Press key  or key  to select memory switch number.

3. When it reaches to the memory switch number to be set, press key   or key   to change setting value of the parameter.



4. Press  to exit from setting mode and memorize the setting value after change.

List of memory switch:

No.	Parameter	Set value	Initial value	Content
001	Rising sequence of presser foot/button clip after sewing is finished	ON/OFF	OFF	ON = rise after moving to start point of sewing. OFF = rise at final position of needle.
003	Shift 2 presser foot/button clip	ON/OFF	OFF	ON = step foot on treadle; presser foot/button clip stop falling at shift 1 and is completely pressed at shift 2. OFF = ineffective.
007	Sudden stop function	ON/OFF	OFF	ON = effective sudden stop function. OFF = ineffective sudden stop function.
100	Slow start	ON/OFF	OFF	ON = slow start: GT690D/ GT691D start it in 400rpm at first stitch, 400rpm at second stitch, 600rpm at third stitch, 800rpm at fourth stitch, 1800rpm at 5th stitch. OFF=at beginning of sewing, speed of 1~5

				conforms to the speed set in memory switch 151 ~ 155# (for memory switch No. 151~155, please refer to the service manual).
200	1 needle test and cloth feeding	ON/OFF	OFF	ON = start from stepping of treadle; presser foot/button clip move a step at each stepping. OFF= start from stepping of treadle; presser foot/button clip moves until the last stitch in accordance with stitches of the pattern.
300	Count display	ON/OFF	OFF	ON= Display of production counter. OFF= Display of bottom line counter.
400	User program	ON/OFF	ON	ON= effective user program mode. OFF=ineffective user program mode.
401	Cyclic program	ON/OFF	ON	ON= effective user program mode. OFF=ineffective user program mode.
402	Percentage display and millimeter display	ON/OFF	OFF	ON=effective millimeter display. OFF=effective percentage display.
403	Limitation of sewing range	ON/OFF	ON	ON=sewing range must be within presser foot/button clip range. Otherwise, it shall alarm. OFF=sewing range is unrelated to presser foot/button clip.
556	Trapper stitches	1~10	1	Effective closing stitches of trapper electromagnet at start of sewing
557	Trapper device	ON/OFF	OFF	ON=effective trapper device OFF=ineffective trapper device

### 4.3 Operating method of trapping function

Start trapper function to reduce flying line, drawing and other problems;

1. Start trapper function while memory switch 557# parameter is ON. For setting method, see "4.2 Setting Method and List of Memory Switch".
2. Set memory switch 556# parameter which is closing stitch of trapper electromagnet at start of sewing. The setting range is from 1 to 10 stitches. For example, 1 indicates previous stitch is closed of the sewing pattern. 2 indicates that previous two stitches of the sewing pattern are closed.
3. During sewing process, in case of severe flying or drawing line, increase trapper stitches of

memory switch 556# parameter; in case of overlone thread end at start, decrease trapper stitch of memory switch 556# parameter.

#### 4.4 Operating method of sudden stop function

During sewing process, in case of flying line, broken line and exhausting of bottom line, carry out sudden stop operation to the machine. By this time, pattern not completed can be sewed again.

The sudden function is under closed status at release. Start sudden stop function if memory switch 007# parameter is set as ON. For setting method, see “4.2 Setting Method and List of Memory Switch”.

〈Under the status no sewing is performed〉

1. In speed setting interface, X/Y multiplying factor setting interface, counter display interface, cyclic program step viewing interface and other interfaces, back the treadle once. The operation keyboard is shown in fig.1. The machine is under sudden stop status and all other operations are ineffective.

2. Back the treadle once again and exit from the sudden stop status to return to the previous display interface.

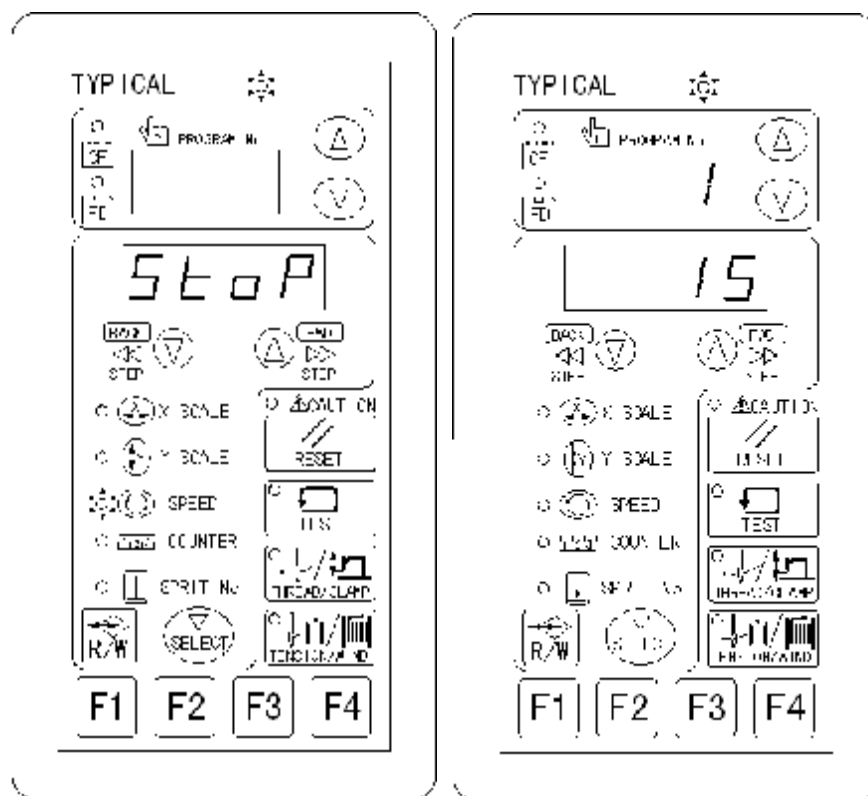


Fig.1



Fig.2

〈Under sewing status〉

1. During sewing process, back the treadle once and the operation keyboard is shown in fig.1 to set the machine in sudden stop status. The machine stop operating and all operations are

effective.


2. Back treadle once again to get into supplement sewing status, such as shown in fig.2. By this time, PROGRAM No. display area displays number of existing pattern number. The menu display area displays stitch position of the pattern where machine stops.

3. Press key  or  to regulate machine presser foot frame/button clip in accordance with forward or backward stitch sequence of the pattern. The presser frame/button clip move once after the key is pressed once.

You can also step treadle to shift 1 position. Presser frame/button clip shall go back once in accordance with pattern stitches.

4. Moving to proper position, after the bottom line is changed or the face line is threaded, directly step treadle to shift 2 position. The machine shall directly sew remaining stitches in accordance with sewing speed in accordance with pattern stitches.

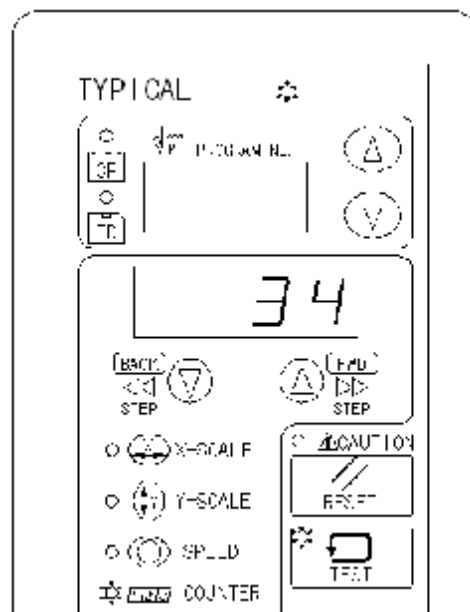
**Note:**



After getting into supplement sewing status, if you do not want to continue following operation, you can directly press key  to exit from sudden stop interface.

**4.5 Operating method of bottom line counter**

In accordance with sewing quantity in the cop latch, set the sewing quantity in the bottom line counter to prevent bottom line exhausting during midway of sewing.

<Setting of initial value>





1. Press key  while pressing key  at the same time.

Existing value is displayed in menu display area. TEST light is on and COUNTER light flickers.


2. Press key  or key  to set initial value.

1) The initial value can be set as [0000]~[9999].

2) If  key is pressed in setting mode, the value shall become [0000]. The set counting value =0. The bottom line counter is ineffective and normal sewing can be performed after exiting.


3. Press key  to store the set value. Return to the mode before setting after TEST light goes out.



<Operation of bottom line counter>

When memory switch 300# is OFF, the bottom line counter operates. If press key  to select counter display menu. COUNTER light is on and the menu display area displays value of bottom line counter.

1. When value of bottom line counter is greater than 0, finish sewing once. The value in menu display area shall be subtracted by 1.

2. When bottom line counter is decreased to [0000], step the treadle once again and the electronic buzzer sounds again. By this time, the machine shall not work even if you step on the treadle.

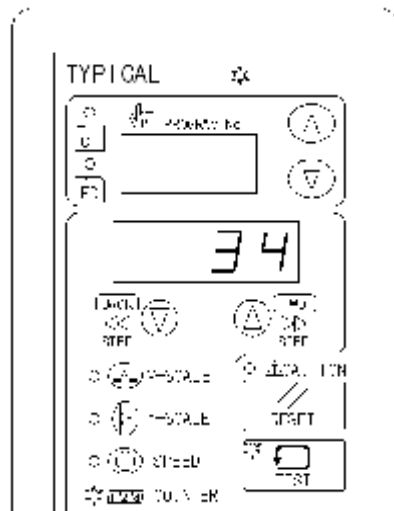
3. If you press key  the electronic buzzer shall stop sounding. The menu display area shall display set value of bottom line counter to continue sewing.



1) Under bottom line counter display status, press key  or  to change display value of bottom line counter (range: 0 ~ set value).

2) If value of the bottom line counter is not 0 and the memory switch 300# is OFF, even if it is not under bottom line counter display status, the counter can count also.

#### 4.6 Operating method of production capability counter

<Counter setting>





1. Press key  while pressing key  at the same time. PROGRAM No. display area and menu display area display set value in 7 digits. By this time, TEST and SPEED light are on. COUNTER light flickers.

2. Press key  or key  to change the set value.


1) Setting range of counter [000][0000]~[999][9999].

2) If the production capability is greater than 9999, PROGRAM No. display area shall display value in 3 digits. Totally, there are 7 display digits.


3) If you press key  in setting mode and the value shall be [000][0000].

3. Press key  and set values are saved. Exit from setting mode and TEST light goes out.



### <Operation of Production Capability Counter>

If you press key  to select counter display menu when memory switch 300# is ON, SPEED and COUNTER lights are on. PROGRAM No.

1. All values in menu display area shall be increased by 1 if sewing is completed once.

2. If you hold key  for more than 2 seconds, value of the counter shall return to [000] [0000].

### Instant display function

When SPEED indicator light is on, press key  and then key , the menu display area and PROGRAM No display area shall jointly display production capability counter. It returns to original status if you let the key off.

#### 4.7 Operating method of user program





If you set a user program in advance, it is convenient to switch the selected sewing pattern.

You can establish 50 user programs (U1~U50) at most. In each user program, you can set and save 5 parameters including transverse multiplying factor, longitudinal multiplying factor, sewing speed, presser foot/button clip height, and middle presser foot/middle button clip height.



User programs shall be effective if storage switch 400# is ON.

<Establishment method>




##### 1. Enter into user program establishment mode

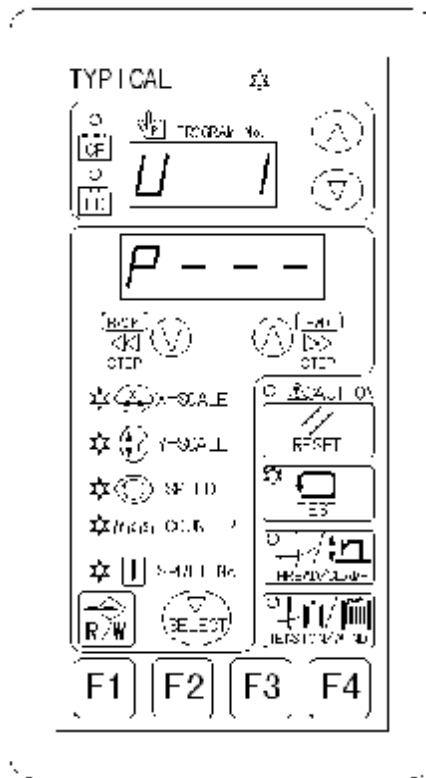
Press key  and  to get into user program establishment mode, the keyboard light flickers. PROGRAM No. display area shall display [U1] and menu display area shall display [P---]. Press key  or  to select user program number.

##### 2. Select pattern number




After getting into user program establishment mode, press key  or key  to select pattern number to be entered from existing user program.

##### 3. Setting traverse multiplying factor




Press key  and when X-SCALE light flickers, press key  or  to set traverse multiplying factor of existing user program.






#### 4. Setting longitudinal multiplying factor

Press key  and when Y-SCALE light flickers, press key  or key  to set longitudinal multiplying factor of existing user program.


#### 5. Setting sewing speed

Press key  and when SPEED light flickers, press key  or  to set speed of existing user program.

#### 6. Setting height of presser foot/button clip

Press key  and when THREAD/CLAMP light flickers, the menu display area displays [H presser foot/button clip height]. Press key  or  to set presser foot/button clip height in existing user program. Default presser foot height of GT690D is 15(mm). Default button clip height of GT691D is 13 (mm).

#### 7. Setting height of middle presser foot/middle button clip

When THREAD/CLAMP light flickers and the menu display area displays [H presser foot/button clip height]. Press key  again and THREAD/CLAMP light flickers. The menu display area displays [L middle presser foot/middle button clip height]. Press key



or to set middle presser foot/middle button clip height of existing user program. Default middle presser foot height of GT690D is 10 (mm). Default middle button clip height of GT691D is 6 (mm).



8. Repeat step (2) – (7) to continue establishment.

9. Exit from user program establishment mode




Press key the user program is saved and return to the status before establishment of user program.

<Operating Method>



1. Press key  or  to select the user program to be sewed.



1) When user program flickers, step on treadle for origin detection.


2) Confirm whether the dropper position is correct and then sew.


3) Press key  to view user program parameter.

<Deletion Method>

1. Press key  and  to get into user program establishment mode and confirm the menu light flickers. PROGRAM No. display area shall display user program number [U1].

The menu display area shall display [Pxxx]. Press key  or  to select the user program number to be deleted.

2. Press key  the buzzer shall sound and user programs selected shall be deleted; if the user program deleted is in cyclic program, the program step where the user program is located shall become empty.

3. Press key  for 2 seconds or longer time, all user programs shall be deleted; if a cyclic program is established, it shall also be deleted.

#### 4.8 Operating method of cyclic program

If you shall sew several patterns in sequence, it is more convenient to pre-establish a cyclic program.




Each cyclic program is composed of a user program. As the program step, the user program is logged in cyclic program. At most, 10 cyclic programs can be established (C1~C10).



At most 80 program steps can be set in a cyclic program (1.U--~80.--).

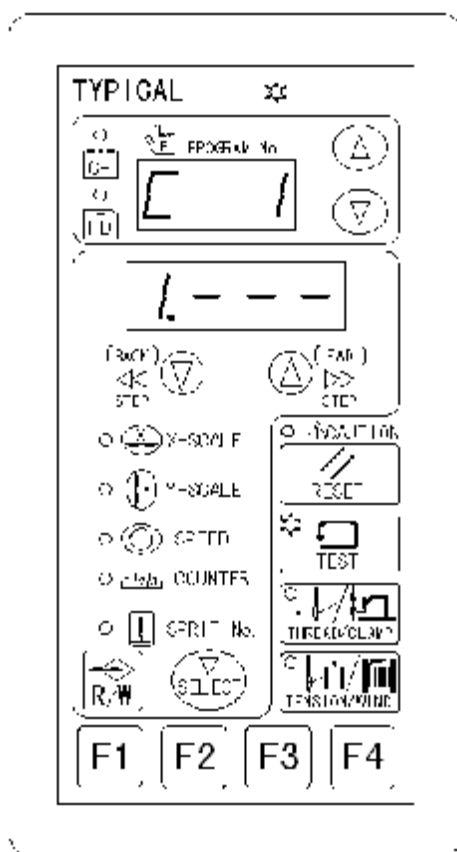
The user program is effective when memory switch 401# is ON.

<Establishment method>




1. To establish the pattern to be sewed circularly and parameters as user program.
2. Get into cyclic program establishment mode,

Press key  and  to get into user program establishment mode. Press functional key , PROGRAM No. display area shall display cyclic program number C1. The menu display area shall display program step [1.---].

3. Press key  or  to select cyclic program number.




4. Set program step:

Press key  to select program step. There are 80 steps at most (it is from [1.U--] to [80.--] during sewing. Press key  or  to select the user program required by the existing program step. The menu display area displays program step and user program number.



5. To continue to set other program steps, repeat operation (4) until required program steps

are set.




6. Repeat step (3) ~ (5) to continue to establish other cyclic programs.

7. Press key  to save the cyclic program and return. Establishment of cyclic program is completed.







<Operating Method>


1. Press key  or  to select cyclic program numbers to be used.
2. When cyclic program number flickers, step on treadle to shift 2 position. The cyclic program number is under normal on status.
3. Step on treadle to shift 2 position. Start to sew existing program step; after existing program step is completed, we shall automatically get into next program step.

**Note:**

1. Press key  or  to manually switch to the current program step.
2. Press key  to display parameter of existing program step (X-SCALE, Y-SCALE, SPEED etc.). However, it can not be altered.

<Deletion method>

1. Press key  and  to get into user program establishment mode.
2. Press functional key  to get into cyclic program establishment mode. Press key  or  to select the cyclic program number to be deleted.
3. Press key  the buzzer sounds and the selected cyclic program selected is deleted.

Press key  for 2 seconds or longer time the buzzer sounds. All cyclic programs are deleted.

#### 4.9 Quick selection method of user program and cyclic program

1. Use functional key F1~F4 to select C1~C4 (cyclic program) or U1~U4 (user program) to preferentially select the cyclic program.
2. Press several functional keys F1~F4 at the same time (addition combination) to select C5~C10 (cyclic program) or U5~U10 (user program) to preferentially select the cyclic program.

Such as shown below:

U5/C5	U6/C6	U7/C7
<div style="display: flex; justify-content: space-around; border: 1px solid black; padding: 2px;"> <span>F1</span> <span>+</span> <span>F4</span> </div> <p>or</p> <div style="display: flex; justify-content: space-around; border: 1px solid black; padding: 2px;"> <span>F2</span> <span>+</span> <span>F3</span> </div>	<div style="display: flex; justify-content: space-around; border: 1px solid black; padding: 2px;"> <span>F2</span> <span>+</span> <span>F4</span> </div> <p>or</p> <div style="display: flex; justify-content: space-around; border: 1px solid black; padding: 2px;"> <span>F1</span> <span>+</span> <span>F2</span> <span>+</span> <span>F3</span> </div>	<div style="display: flex; justify-content: space-around; border: 1px solid black; padding: 2px;"> <span>F3</span> <span>+</span> <span>F4</span> </div> <p>or</p> <div style="display: flex; justify-content: space-around; border: 1px solid black; padding: 2px;"> <span>F1</span> <span>+</span> <span>F2</span> <span>+</span> <span>F4</span> </div>
U8/C8	U9/C9	U10/C10
<div style="display: flex; justify-content: space-around; border: 1px solid black; padding: 2px;"> <span>F1</span> <span>+</span> <span>F3</span> <span>+</span> <span>F4</span> </div>	<div style="display: flex; justify-content: space-around; border: 1px solid black; padding: 2px;"> <span>F2</span> <span>+</span> <span>F3</span> <span>+</span> <span>F4</span> </div>	<div style="display: flex; justify-content: space-around; border: 1px solid black; padding: 2px;"> <span>F1</span> <span>+</span> <span>F2</span> <span>+</span> <span>F3</span> <span>+</span> <span>F4</span> </div>

#### 4.10 Read self woven pattern of user

Users can establish self woven pattern data file `***.ktp` (such as `301.ktp`) on PC. Transmit completed pattern data file into SD card through a card reader. Insert through SD card on the controller to transmit self woven pattern data in SD card to FLASH memory space of the machine.

##### Note:

1. Before reading pattern data, carry out FAT16 (FAT) or FAT32 formatting to SD card.
2. Pattern data file (namely `***.ktp` file) must be put under root directory of SD card.
3. Name of data file must be within 300 to 999. The file name can not be changed.

##### 4.10.1 Read self woven pattern of user from SD card

Description of pattern reading process from SD:

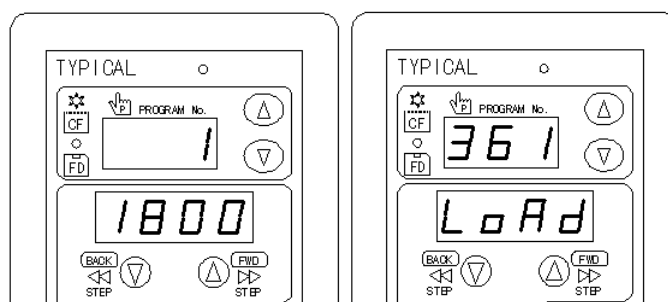


Fig.1

Fig.2

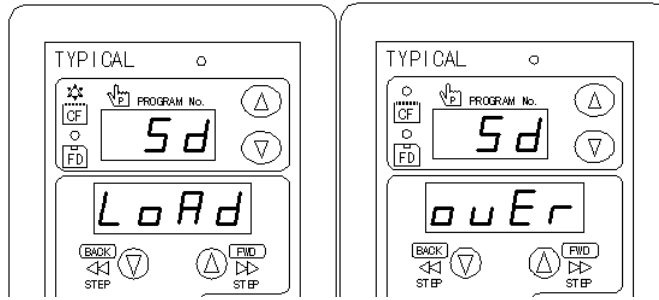





Fig.3


Fig.4



1. Insert SD card into slot of controller SD card. Press key  and  at the same time and CF  light is on and other lights go out (see fig.1, sometimes [ 1] is not displayed in PROGRAM No display area).

2. PROGRAM No. display area displays pattern number to be read in turn. The menu display area shall display[LOAD] (see fig.2).

3. After all pattern numbers to be read display, PROGRAM No. display area displays [SD]. The menu display area displays[LOAD] and flickers (see fig.3).

4. Several seconds later, the menu display area displays[OVER] and flickers (see fig.4).

5. SD card reads all patterns until operation keyboards display pattern number and sewing speed. At the same time, CF  light goes out. The user takes SD card out and finish the operation.

After SD card is inserted, press key  + . If one of following characters is displayed in the menu display area, the meaning is:

CURR——FLASH memory space is full.

PRCC——Name of pattern number in SD is same as name of pattern number in FLASH.




E SD——Pattern data quantity in SD card is greater than the whole FLASH memory space.

ERR—— It indicates that SD card is damaged, not inserted or data format of SD card is wrong.

EULL—— There is no pattern data in SD card.



#### 4.10.2 Processing method if CURR character is displayed

After the menu display area displays CURR character, the user is required to delete self woven patterns saved in FLASH one by one.

Press key  or  to select the pattern number to be deleted. Press key  to delete existing pattern number. If CURR displays after deleting, it indicates that there is no sufficient vacant FLASH memory after deletion. It is required to continue to delete until it displays LOAD.

After all data are read into FLASH, the menu display area displays OVER. Knotting machine/buttoning machine returns to original operating status. Take SD card out and finish the operation.

#### 4.10.3 Processing method if PRCC character is displayed

After PRCC character is displayed in menu display area, press key  to cover and key  not to cover. If PRCC or CURR displays after processing, adopt corresponding method until the menu display area displays OVER. Knotting machine/buttoning machine returns to original operating status and SD card reading is finished.

#### 4.10.4 Processing method if ERR character is displayed

If the menu display area displays ERR, inspect:

1. Whether SD card is damaged.
2. Whether SD card is well inserted.
3. Whether file system of SD card is FAT16 (FAT) or FAT32.




#### 4.10.5 Processing method if ESD character is displayed

Pattern data quantity in SD card is greater than maximal memory space in FLASH memory space. Delete pattern data in SD card and pattern data in SD card is less than maximal memory space in FLASH memory space. Start reading after the card is reinserted.



#### 4.10.6 Processing method if EULL character is displayed

Inspect whether there is pattern data on SD card.

#### 4.10.7 Delete all self woven pattern in FLASH

Press  +  and CF  is on. The buzzer sounds. The menu display area displays F-CL. After all patterns are deleted, return to original operating status.


## 5. Sewing

1. Turn on the power supply. Press key  or  to select the pattern number to be sewed.
2. Step on the treadle and move it to shift 2 position to confirm the pattern.
3. Put the cloth under the presser foot. Step on the treadle and move it to shift 2 position to start sewing.
4. If storage switch 003 is ON, when stepping on shift 1, presser foot/button clip decrease to middle presser foot/middle button clip position; continue to step on shift 2, presser foot/button clip presses the cloth and start sewing.
5. After sewing finishes, presser foot/button clip rises.




## 6. Keyboard locking

### 6.1 Functions can be operated even after the keyboard is locked

(1) Perform threading .

(2) Perform winding .

(3) Lock release key .

(4) If existing pattern is cyclic pattern, you can press key ,  and .

### 6.2 Locking operation object and method

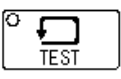


(1) Advanced parameter 666# is the control switch for locking/unlocking. The function aims to operation keyboard.

(2) 666#=OFF, unlocking; all operations of the controller is permitted.



(3) 666#=ON, locking; for detailed operation instruction, see 6.3; users must input password to unlock the operation keyboard.



(4) 002, 003; in case of reset, 666#=OFF.

(5) 666# parameter modification operation:

-1. Press key  and  at the same time to turn on power switch .

PROGRAM No. display area displays number of memory switch. The menu display area displays the set value.

-2. Press key  or  to select 666# as number of memory switch.

-3. Press key  or  to change the set value ON/OFF.

-4. After the setting is finished, press  to exit. Changed contents are memorized.


### 6.3 Locking and unlocking operation of operation board

(1) Locking operation:

Under 666#=ON status, if the operation board is not locked, sewing can be performed. If there is no key pressing operation in continuous 5 minutes, it is locked automatically. It prompts “-SM-” in case of successful operation, the buzzer gives out a sound and the

operation board is locked. The operation can be performed without password.


(2) Unlocking operation:

When the operation board is under locking status, press key  to unlock. You must enter a password to unlock. It prompts “-JM-” in case of successful operation and the buzzer gives out a sound. All operations are permitted by the operation board.


#### 6.4 Password operation method

(1) Enter password for confirmation

After getting into password operation, the menu display area is the password entering area.


Press key  to switch position of password bit entering. The selected nixie tube dot


position is lit. Press key  and  to change value of existing password bit.

After the password in 4 bits is entered, press key  for confirmation. The buzzer shall give out a sound if you enter a correct password to prompt that existing operation is effective. The release password: 6666.

(2) Change original password

Press key  at the same time while powering on. It shall prompt “PIN”. At this time,

you should enter original password and press key  to confirm original passwords and then it prompts “PWR”. By this time, you can enter new password. Press key

 to confirm modification operation. After the password is changed, the original password shall be ineffective. If you fail to enter a correct original password, exit from password changing process.



#### 6.5 Power on again after locking

If the operation keyboard is locked, the operation keyboard is under locking status if you power on next time.

Note: to change maximal limit speed, you must enter a password.



## 7. Manual edition operation instruction

### 7.1 Enter into and exit from manual edition mode

After the machine is started, press key  and then  to get into manual edition mode. The needle shall return to original point. By this time, CAUTION light is on. PROGRAM No. display area displays input type [- - d] (default). The menu display area displays stitch number [n000] from 0 ~ 999.

Press key  and then  to exit from manual edition mode.





### 7.2 Setting parameter

After entering into manual edition mode, press key  or  to select one mode from following three edition modes:

[- - d]: dot input;

[- - L]: linear input;

[- - H]: circular input.





Press key  and then  to get into edition parameter setting mode. By this time, CAUTION and TENSION/WIND lights are on. PROGRAM No. display area displays parameter [Mov] (default). Press key  or  to select following parameters:

[Mov]: moving distance;

[Pit]: stitch length;

[SEW]: sewing speed;

[Edt]: edition speed.


The menu display area displays corresponding parameter value. Press key  or  or  or  to change parameter value:

[Mov]: [0.1](default); range 0.1 ~ 10.0mm;

[Pit]: [3.0](default); range 0.0 ~ 12.7mm;

[SEW]: [H], [Md2], [Md1], [L];













[Edt]: [400], [800], [1200]

After parameter setting is completed, press key  to save and exit from edition

parameter setting mode.











### 7.3 Edition operation

Direction key description:

Key	Moving direction of needle
	Up
	Down
	Left
	Right
 + 	Down left
 + 	Down right
 + 	Up left
 + 	Up right

#### 7.3.1 Dot input


Operation step:


- 1) Press key  or  to select dot input [- - d].
- 2) Press key  +  to get into edition parameter setting mode. Press key  or  to select the parameter to be modified; press key  or  to change parameter value. After parameter setting is finished, press key  to save the value and exit.
- 3) According to specific patter, press direction key. By this time, CAUTION and TEST lights are on. PROGRAM No. display area displays input type [- - d]. The menu display area displays key dot number [K001]. At the same time, the needle moves to the specified direction.
- 4) After the needle moves to the specified point, press key  to confirm the point. By this time, CAUTION light is on and TEST light goes off. PROGRAM No. display area displays line type [- - d]. The total stitch number is displayed in lower part of the display.

5) Repeat 3) and 4) until dot input is finished.

6) Modification operation:

During operation process, you can modify edition parameter, the step is same as 2) .



Press key  to eliminate input of previous segment.








Press key  to delete all inputs.

### 7.3.2 Linear input


Note: 2 dots must be entered to compose a line.

Operation step:


1) Press key  or  to select dot input [- - L], which shall be automatically saved after a line type is selected.

2) Press key  +  to set edition parameter. Press key  or  to select the parameter to be changed; press key  or  to change the parameter value. After parameter setting is finished, press key  for saving.

3) In accordance with specific type, press a direction key. By this time, CAUTION and TEST lights are on. PROGRAM No. display area displays line type [- - L]. The menu display area displays key dot number [K001]. At the same time, the needle moves to appointed direction.

4) After the needle moves to the first dot, press key  to confirm the dot. By this time, CAUTION light is on and TEST light goes off. Line type [- - L] is displayed in upper part of the display. Total stitch number [nXXX] is displayed in lower part of the display.


5) Press a direction key. By this time, CAUTION and TEST lights are on. Line type [- - L] is displayed in upper part of the display. Key dot number [K002] is displayed in lower part of the display. At the same time, the needle moves to appointed direction.


6) After the needle moves to the second dot, press key  to confirm the dot. By this time, CAUTION light is on and TEST light goes out. Line type [- - L] is displayed in upper part of the display. Total stitch number [nXXX] is displayed in lower part of the display.

End of line input.

7) Modification operation:

During operation process, edition parameter can be changed. The step is same as 2).



Press key  to eliminate input of the previous stage.








Press key  to eliminate all inputs.

### 7.3.3 Circular input


Note: 3 dots must be entered to compose a circular. They can not be in a line.

Operation step:


1) Press key  or  to select dot input [- - H]. Automatically save the line type after selection.

2) Press key  +  to set edition parameter. Press key  or  to select the parameter to be changed; press key  or  to change the parameter value. After the parameter setting is finished, press key  to save the value.


3) In accordance with specific pattern, press a direction key. By this time, CAUTION and TEST lights are on. PROGRAM No. display area displays line type [- - H]. The menu display area displays key dot number [K001]. At the same time, the needle moves to the specified direction.

4) After the needle moves to the first point, press key  to confirm the point. By this time, CAUTION light is on and TEST light goes off. PROGRAM No. display area displays line type [- - H]. The total stitch number is displayed in lower part of the display.

5) Continue to press a direction key. By this time, press a direction key, CAUTION and TEST lights are on. PROGRAM No. display area displays line type [- - H]. The menu display area displays key dot number [K002]. At the same time, the needle moves to the specified direction.

6) After the needle moves to the second point, press key  to confirm the point. By this time, CAUTION light is on and TEST light goes off. PROGRAM No. display area displays line type [- - H]. The menu display area displays total stitch number [nXXX].

7) Continue to press the direction key. By this time, CAUTION and TEST lights are on. PROGRAM No. display area displays line type [- - H]. The menu display area displays key dot number [K003]. At the same time, the needle moves to the specified direction.


8) After the needle moves to the third point, press key  to confirm the point. By this time, CAUTION light is on and TEST light goes off. Line type [- - H] is displayed in upper


part of the display. Total stitch number [nXXX] is displayed in lower part of the display.

Circular is generated slowly. After 1 to 3 seconds, the circular input is finished.

#### 9) Modification operation

During operation process, you can modify edition parameter, the step is same as 2) .


Press key  to eliminate input of previous segment.

Press key  to delete all inputs.

#### 7.3.4 Combined input


To input above three line types, you can operate the other input after one input is completed. End point of previous line type can be taken as start point of the latter segment. Except for the dot input, key points of linear and circular starts from the second point. Other operations are same.


#### 7.4 Save pattern



After editing is finished, press key  to save the generated pattern. CAUTION and THREAD/CLAMP lights are on. PROGRAM No. display area displays pattern name [300] (default). Range of pattern name is 300~999. Total stitch number [nXXX] is displayed in lower part.

In order to guarantee identical margin limitation of sewing pattern, take 2 times of maximal transverse coordinates value of the edited pattern as the pattern length and 2 times of maximal longitudinal coordinates value of the edited pattern as the pattern width. Center of the edition pattern is not coincided with needle center.

Press key  or  to set the pattern name.

Press key  to save the pattern name.

Press key  to give up saving.

In case of name duplication, press key  to save presently designed pattern and cover original pattern; press key  not to save presently designed pattern or cover original pattern.

#### 7.5 Alarm treatment

In case of any error, the buzzer shall alarm. The presently operated LED light flickers.

PROGRAM No. display area displays [Err]. The menu display area displays following error numbers:

[0001]: the pattern is beyond the frame range;

[0002]: during dot input, the input value is greater than 12.7;

[0003]: under non-dot input, input less stitch distance;


[0004]: no circular can be generated if three dots are not in a line.

[0005]: no line is generated;


[0006]: total stitch number of the pattern is greater than 999.



PROGRAM No. display area displays pattern name [XXX] and menu display area displays [PRCC], which indicates that duplication name of two patterns.

Clear alarm operation:

Press key  to clear error [0001] and [0006].

Press the direction key to clear [0002], [0003] and [0004] error.

Press key  to clear [0005] error.

Press key  and  to clear [PRCC] error.

## **8. Routine maintenance**

The product must operate in clean and ventilated environment. It is not permitted to put sundries around the controller so that the controller can eliminate heat well. Prevent dusts from entering into the cabinet.

Wait for a moment after power on again.

In case of sudden power off, disconnect the power switch at first.

Prevent the operation keyboard from being scratched. It is not allowed to press a key with a nail or stick.

Before system maintenance, please cut off the power supply at first.

Regularly clean the cabinet to prevent oily dirt from attaching to the controller or flowing into the controller.

Regularly inspect grounding system.

Regularly inspect connecting cables outside of the controller.

## 9. Alarm information list

In case of machine alarm, the buzzer shall sound. The operation keyboard menu display area displays alarm code. Please release the alarm in accordance with following methods.

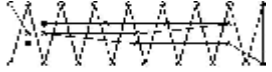
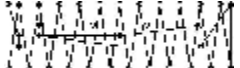
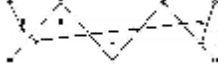



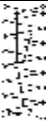
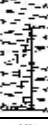



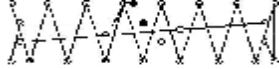
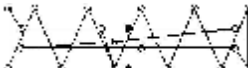
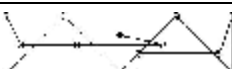
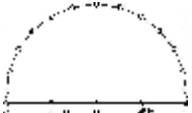

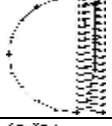

Alarm code	Cause and treatment method
E.025	Step on the treadle to shift 2 to turn on the power supply. Turn off the power supply and confirm position of the treadle. Confirm connection status of cables from two switches of the treadle to front panel YK position.
E.035	Step on the treadle to shift 1 to turn on the power supply. Turn off the power supply and confirm position of the treadle. Confirm connection status of cables from two switches of the treadle to front panel YK position.
E.050	The detection head tilts after the power supply is connected. Turn off the power supply and erect head of the sewing head. Confirm connection status of cables from head switch to front panel BK position.
E.055	The head tilts during power supply connection process. Turn off the power supply and erect head of the sewing head. Confirm connection status of cables from head switch to front panel BK position.
E.100	After the power supply is turned on, the spindle motor can not find the origin. Turn off the power supply, rotate the hand wheel to confirm whether the spindle is blocked. Confirm connection status of spindle motor to front panel ZD position.
E.110	Fault of needle stop position Turn the hand wheel until the alarm disappears.
E.111	Spindle motor operates normally; Turn off the power supply, rotate the hand wheel to confirm whether the spindle is blocked. Confirm connection status of spindle motor to front panel ZD position.
E.200	After the power supply is connected, motor of X axis can not find the origin. Turn off the power supply to inspect whether the mechanical part is blocked. Confirm connection status of cables from X axis to front panel XD position.
E.201	X axis motor falls out of step during cloth feeding process. Turn off the power supply to confirm whether feeding direction if X axis is abnormal. Confirm connection status of cables from X axis motor to front panel XD position. Confirm X axis motor encoder is installed firmly.











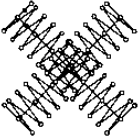
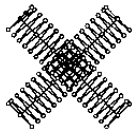


E.202	X axis motor does not operate during cloth feeding process. Turn off the power supply to confirm connection status of cables from X axis motor to front panel XD position.
E.210	After the power supply is connected, Y axis motor can not find the origin. Turn off the power supply to inspect whether the mechanical part is blocked. Confirm connection status of cables from Y axis motor to front panel YD position.
E.211	Y axis motor is out of step during cloth feeding process. Turn off the power supply to confirm whether feeding cloth direction along Y axis is abnormal. Confirm connection status of cables from Y axis motor to front panel YD position. Confirm Y axis motor encoder is installed firmly.
E.212	Y axis motor does not operate during cloth feeding process. Turn off the power supply to confirm connection status of cables from Y axis motor to front panel YD position.
E.300	After the power supply is connected, presser lifting foot can not find the origin. Turn off the power supply and turn the presser foot to view whether the presser foot part is blocked. Confirm connection status of cables from presser lifting motor to front panel TD position.
E.301	Presser lifting foot motor is out of step during cloth feeding process. Turn off the power supply to confirm whether upward and downward direction of the presser foot is abnormal. Confirm connection status of cables from presser lifting foot motor to front panel TD position. Confirm presser lifting foot motor encoder is installed firmly.
E.450	Error in head recognizer data. Confirm whether the machine is GT690DA-1, GT690DA-2 or GT691DA.
E.452	The machine recognizer is not well connected. Confirm connection status of cables from head recognizer to front panel JK position.
E.500	Because the setting is expanded, the sewing data is beyond the sewing range. Set the magnifying factor again.
E.501	Read sewing range of possible sewing range of the sewing machine. Confirm pattern data. Confirm whether presser foot/button clip is proper.
E.512	The machine stops on the way of pattern sewing (sewing is not completed) Turn off the power supply and restart it again.










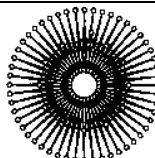


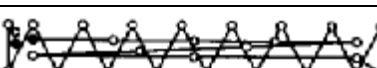
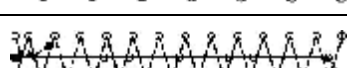
## 10. Preset pattern table

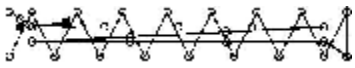
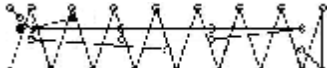


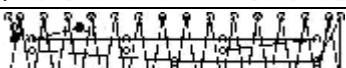
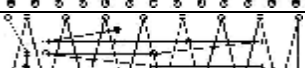
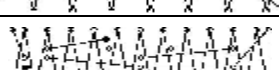
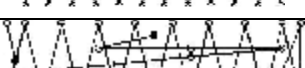
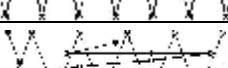

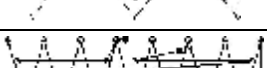
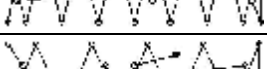
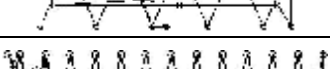
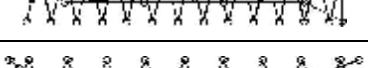
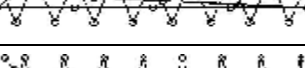
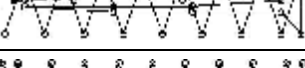

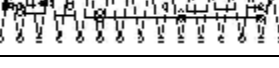
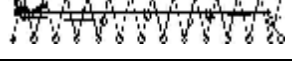
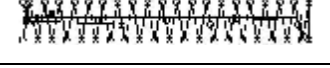
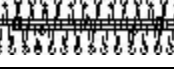

### 10.1 GT690DA electronic knotting machine preset pattern table

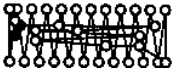

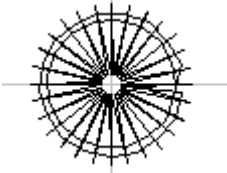
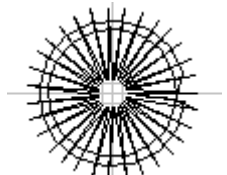
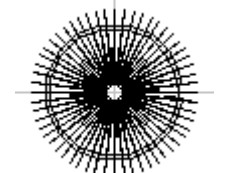
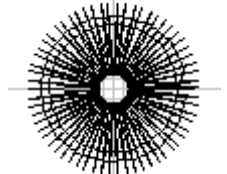
No.	Sewing pattern	Stitch (needle) number	Standard sewing length X (mm)	Standard sewing length Y (mm)
1		42	16	2
2		42	20	3
3		35	20	3
4		31	16	2
5		29	10	2
6		30	16	3
7		28	8	2
8		21	7	2
9		21	7	2
10		21	10	0.3
11		28	10	0.3
12		28	20	0.3
13		35	10	2
14		35	16	3
15		42	10	2
16		43	16	3
17		42	24	3
18		56	24	3
19		64	24	3

20		29	7	2
21		35	7	2
22		14	7	2
23		35	25	0.3
24		42	25	0.3
25		45	25	0.3
26		28	3	10
27		35	3	10
28		19	0.3	10
29		21	0.3	10
30		28	0.3	10
31		28	8	2
32		22	8	2
33		15	8	2
34		35	12	7
35		58	11.9	7
36		57	7	11.9
37		57	7	12

38		53	7	10
39		53	7	10
40		32	3	16
41		36	3	16
42		44	3	20
43		68	3	24
44		46	9	15
45		70	9	25
46		27	0.3	20
47		44	0.3	25
48		70	10	10
49		93	9.6	9.6
50		86	16	16
51		107	30	26


52		60	11.2	11.2
53		60	11.3	11.2
54		78	15.2	15.2
55		78	15.2	15.2
56		106	$\phi 1.5 * \phi 9$	
57		116	$\phi 1.5 * \phi 9$	
58		127	$\phi 1.5 * \phi 9$	
59		104	$\phi 1.5 * \phi 10$	
60		114	$\phi 1.5 * \phi 10$	
61		124	$\phi 1.5 * \phi 10$	
62		42	20	3
63		35	20	3
64		30	16	2
65		43	16	2

66		32	16	2
67		30	10	2
68		22	7	2
69		36	10	2
70		43	10	2
71		29	7	2
72		36	7	2
73		29	8	2
74		22	7	2
75		15	7	2
76		29	8	2
77		23	8	2
78		43	20	3
79		36	20	3
80		31	16	3
81		36	16	3
82		44	16	3
83		43	24	3
84		57	24	3
85		65	24	3
86		21	6	2
87		28	6	2

88		35	6	2
89		90	24	3
90		93	8.2	8.2
91		99	8.2	8.2
92		149	8.2	8.2
93		163	8.2	8.2

### 10.2 GT691DA buttoning machine preset pattern table















No.	Number of button hole	Sewing pattern	Line number	Stitch number	Sewing size X×Y(mm)
1	4		6-6	18	3.4×3.4
2			8-8	22	
3			10-10	26	
4			12-12	30	
5※			6-6	22	
6※			8-8	26	
7※			10-10	30	
8※			12-12	34	
9			6-6	18	
10			8-8	22	
11			10-10	26	
12			6-6	18	
13			8-8	22	
14			10-10	26	
15			12-12	30	
16※			6-6	22	
17※			8-8	26	
18※			10-10	30	
19※			12-12	34	
20	2		6	11	3.4×0
21			8	13	
22			10	15	
23			12	17	
24★			16	21	
25▲			6	11	0×3.4
26▲			10	15	
27▲			12	17	
28▲	4		6-6	18	3.4×3.4
29▲			10-10	26	
30※▲			6-6	22	
31※▲			10-10	30	
32▲	3		5-5-5	20	3.0×2.6
33▲			8-8-8	29	





34▲		5-5-5	20	
35▲		8-8-8	29	

**Note:**

1. The number with ※ means that the button clip shall not lift until line cutting or scanning. Sew the other side again.
2. For number with ★, please confirm that the button hole diameter is beyond  $\phi 2$ .
3. For number with ▲, please do not use button floating spring.

### Appendix 1 Increased Buttoning Machine Pattern

36	4		10-10	27	$8.0 \times 8.0$
37※			10-10	32	
38			8-8	23	
39			10-10	27	
40※			10-10	32	
41		2		12-12	
42			10-10	16	$0.0 \times 8.0$
43	4		10-10	27	$8.0 \times 8.0$
44※			10-10	32	
45	4		10-10	27	$3.4 \times 3.4$
54			10-10	27	
46※			10-10	32	
55※			10-10	32	
47			8-8	23	
56			8-8	23	
48			10-10	27	
57			10-10	27	
49※			10-10	32	

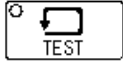


58※			10-10	32	
50	2		12-12	18	3.4×0.0
59			12-12	18	
51			10-10	16	0.0×3.4
60			10-10	16	
52	4		10-10	27	3.4×3.4
61			10-10	27	
53※			10-10	32	
62※			10-10	32	

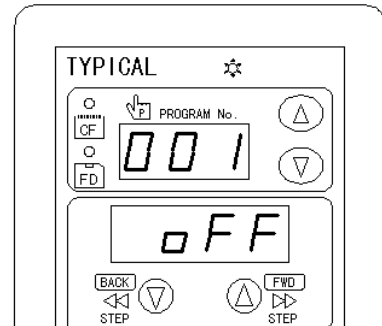
**Note:**





Needle tracking for initiative 3 needles and final 3 needles of No. 36~62 pattern is different with No. 1-31 pattern. Needle tracking for initiative 3 needles of No. 45~53 pattern is different with No.54~62 pattern, and other needle tracking is the same.





## Appendix 2 Mode Switch






### I: Adjust Knotting Machine Mode into Buttoning Machine Mode

1. Press key  and  at the same time to turn on power switch ; PROGRAM No. display area displays number of memory switch. The menu display area displays the set value. As shown in the right Fig.









2. Press key  or  to select 850 as number of the memory switch display area, and press key  or  to select 691 as number of the menu display area.





3. Continue to press key  or  till the memory switch display area displays 461, and press key  or  till the menu display area displays 4.0.






4. Press key  or  once more till the memory switch display area displays 460, and press key  or  till the menu display area displays 4.0. Press  to exit. Changed contents are memorized.

### II: Adjust Buttoning Machine Mode into Knotting Machine Mode









1. Press key  and  at the same time to turn on power switch ;

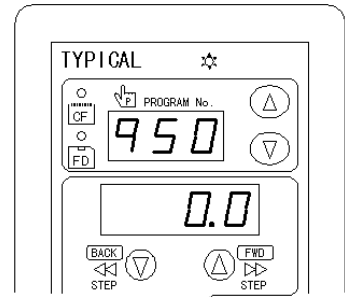
2. Press key  or  to select 850 as number of the memory switch display area, and press key , the menu display area will display 1 (thin material) or 2 (thick material).



3. Continue to press key  or  till the memory switch display area displays 460, and press key  or  till the menu display area displays 20.0.



4. Press key  or  once more till the memory switch display area displays 461, and press key  or  till the menu display area displays 3.0. Press  to exit. Changed contents are memorized.



### III: Turn to Original Position

1. When press key  and , turn on power switch .  +  +  PROGRAM No. display area displays 950, and press key  or 



to modify the number value of menu display area. The presser foot frame shifts as the change of number value. When the key  or  was pressed a time, the number value will increase or decrease 0.1mm

2. When the needle hole of needle plate is in the button clip/ presser foot frame X axle center, use rod-like product to press the key in the hole of electrical machine rear cover, and then press key  and  at the same time. Clear the number value of operation keyboard menu display area and return to [ 0.0] display status.

3. Continue to press key  or , PROGRAM No. display area displays 951. Using same method to set till the needle hole of needle plate is in the button clip/ presser foot frame Y axle center.

4. After the setting is finished, press  to exit.

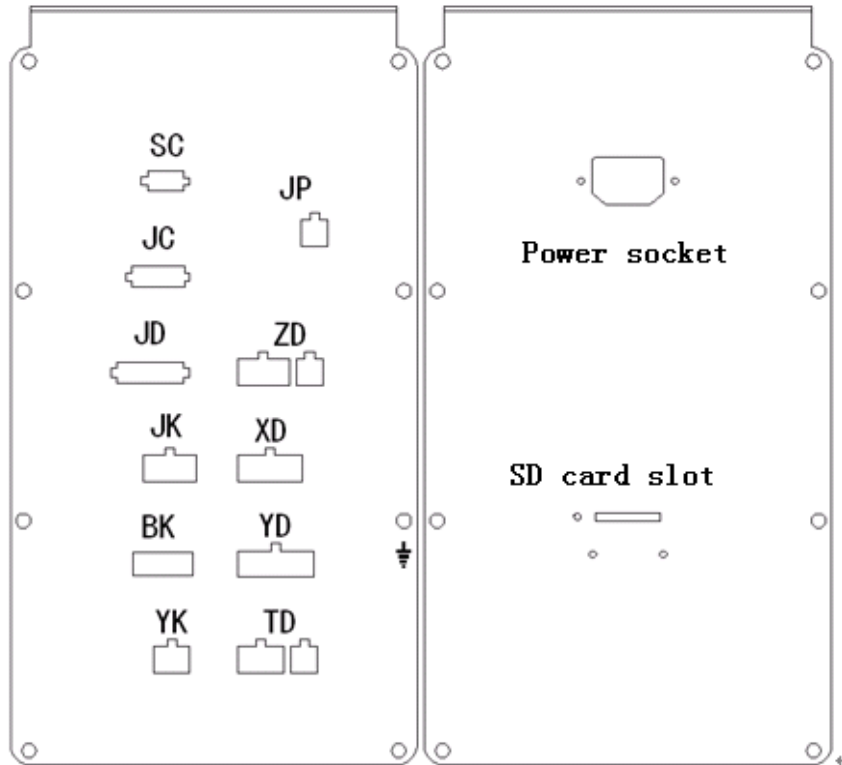
### Appendix 3 Character Comparison Table

0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
A	B	C	D	E	F	G	H	I	J
K	L	M	N	O	P	Q	R	S	T
U	V	W	X	Y	Z				

## Appendix 4 Interface description of controller

Front panel interface description of controller:

Front panel and rear panel



Character	Description
SC	Come off the electromagnet
JC	Wire cut electromagnet
JD	Wire clipping electromagnet
JK	Head recognizer
BK	Head switch
YK	Treadle switch
JP	Operation keyboard
ZD	Spindle motor and encoder
XD	X axis motor and encoder
YD	Y axis motor and encoder
TD	Presser foot lifting motor and encoder