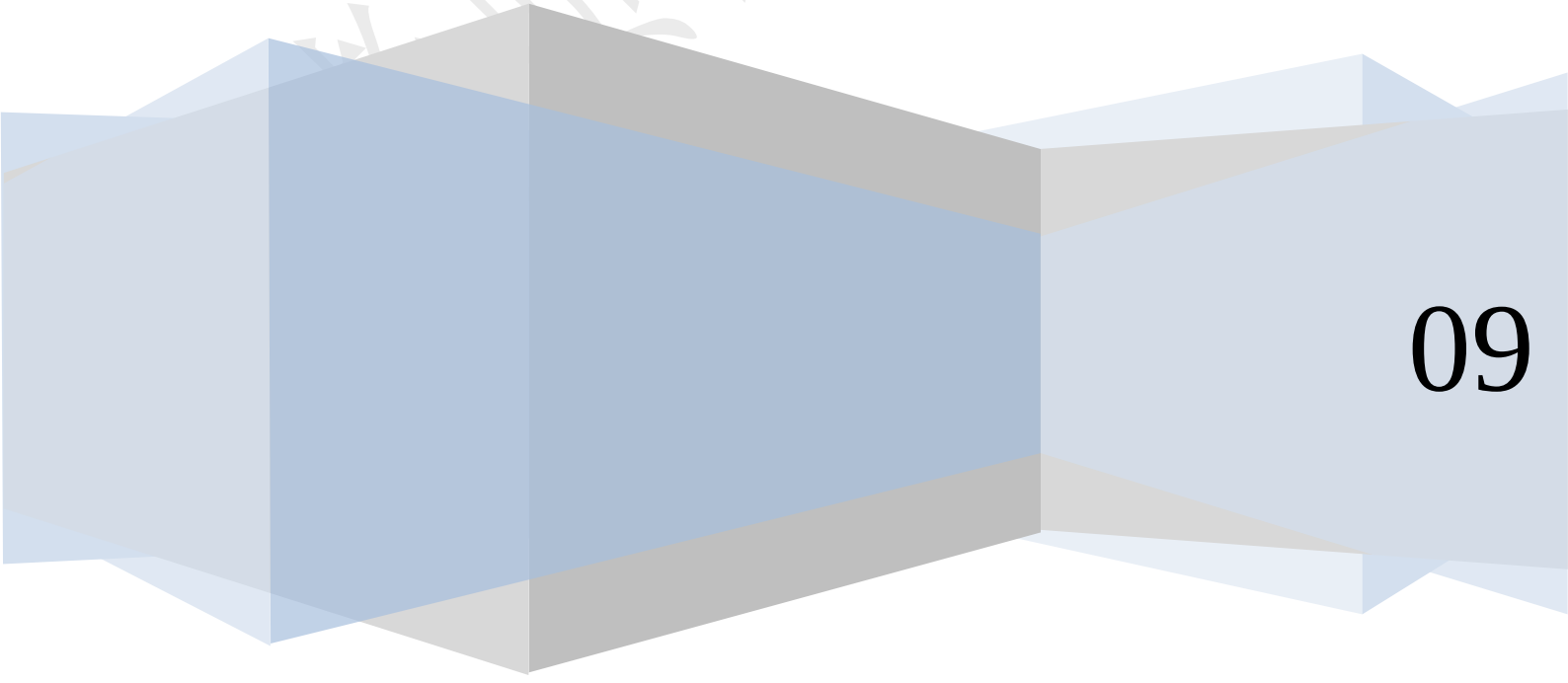
# User Guide for 335 Series Automatic Control System of Computerized Flat Knitting Machine

## 21, 22, 23(System 1, 2 and 3)

Supported by Hengqiang Technology



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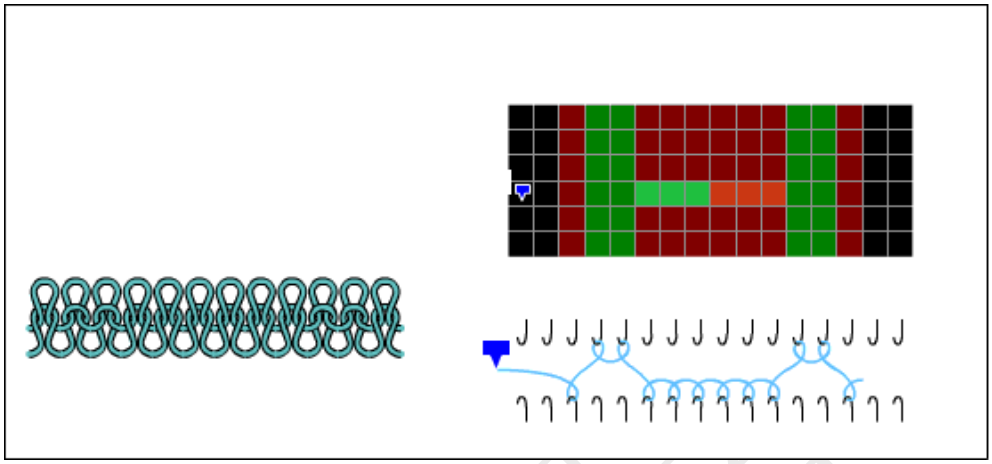
# Control System Overview



Dear clients, thank you for your choosing the latest 2x series automatic control system of computerized flat knitting machine developed and produced by Zhejiang Hengqiang Technology Co., Ltd.

The User Guide aims at introducing the operation and use of the computer control system. For the proper operation, please read carefully the User Guide which should be kept in a safe place for the convenience of reading at any time.

Zhejiang Hengqiang Technology Co., Ltd. reserves the right of final interpretation of the User Guide.



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## Main Technical Parameters of the System

| Machine No. | E3-E16 |
|---|---|
| Knitting speed | Max: 1.2 m/sec |
| System | 1, 2, 3 |
| Color system | 8 colors |
| Needle selection | High-speed 3-, 5- and 8-section (two-way 24V magnetic latching) electrometric needle selection |
| Stitch | Stepping motor drive, 32-section digital memory control (fine tuning of 0-649 per section), individual motion |
| Rocking | Servo motor drive, one inch in the left and the right |
| Roller | Stepping motor drive, torque motor drive |
| Drive mode | Synchronous cog belt, reciprocating operation, speed and breadth set and adjusted by parameters |
| Main motor | Servo motor AC220V 1000W 1000rpm (Level 1 deceleration)<br>Servo motor AC220V 1000W 2500rpm (Level 2 deceleration) |
| System voltage | System voltage consisting of DC and AC<br>DC5V, DC12V, DC ±24V<br>AC42V (weft accumulator optional), AC110V, AC220V |
| CPU | Multi-task DSP processing chip |
| Memory | 128MB |
| Storage extension | SD card |
| Auto-stop device | For yarn breakage, slub, cropping, shock act, over current, roll back, left and right emergency door, knitting completed, etc. |
| | |
| Auto program | Windows Picasso 1.0, HQ1 pattern preparation software, Hengqiang Technology abc2 and abc3 auto output and compilation. |

## Safety Precautions

The following safety precaution measures shall be strictly followed when using the control system so as to prevent the risk of body injury.

1 Only the type of power supply indicated on the product nameplate can be used. In case that the electric grid fluctuation exceeds ±10%, power voltage regulator shall be provided.

2 The power incoming line shall be fixed as required and provided with safety precaution

measures, and no force shall be imposed on the incoming line.

3 The equipment shall be properly connected to ground wire since the imperfect grounding may result in electrical shock and impact safe and reliable operation of the product.

4 Those personnel other than electrical appliance technicians are prohibited to repair and debug the electrical parts since such operation may reduce the safety performance of equipment, increase the malfunction range, and even result in body injury and property loss.

5 All the electrical components in the operation control cabinet shall be operated under the circumstance of power failure to ensure the safety of operators.

6 It is prohibited to touch any of the moving parts while the machine is running, otherwise body injury may be caused.

7 It is prohibited that the electrical equipment is placed where is damp and filled with dust, corrosive gas and inflammable and explosive gas, otherwise electric shock or fire may occur.

8 Direct insulation test for the input and output loops of the controller is prohibited, otherwise direct damage to electric equipment may occur.

9 The use of parts not provided by the Company may easily cause fire, electric shock and severe damages.

10 The replacement of fuse shall strictly follow the specification marked on the product so as to ensure the safety of operators and property.

The Company is free from any legal responsibility for the consequence of altering the system without authorization.

# 1- Kint(Run)

Keystroke: press Esc and the main menu will pop up; move the cursor by pressing "↑" and "↑" (shortcut key "1") to choose the running; and then press Enter to the operation monitoring interface.

Touch: click or double click the character area or the title bar of the main menu with the touch-pen to enter the operation monitoring interface.

- Touch options:

If the cursor is not positioned on the required menu items, it is required to click and select the required item (yellow font) with the touch-pen before re-clicking the item to enter the interface.



## Keystroke Operation:

Clients may, after entering the sub-items (multi-level menu) of the main menu, directly press the cursor key "⏩" to return to the operation monitoring interface instead of pressing Esc for several times.

The above figure is the display interface for System 2. The displays of the system may differ with the knitting systems of different machine types.

## Touch Operation:

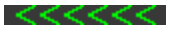
Click the red marquee area in the operation monitoring window with the touch-pen and different working parameter windows and supporting settings may pop up.

## 1.1 Operation Monitoring Interface Display Instruction

The interface mainly comprises an upper separating box, a middle separating box, a lower separating box and F1-F6 function keys.

To modify and set the working parameters of the running pattern, please press corresponding shortcut key or touch contact point.

| Upper separating box | |
|---|---|
| Row No. | Display the row number where the pattern is knitting and the total row number of the pattern.<br>Left of "/": the current knitting row<br>Right of "/": total row number of pattern<br>Maximum allowed knitting rows of system: 7168 rows (blank rows included) |
| Name | Display the file name of the current running pattern<br>The file name should follow the 8.3 naming rules, that is, the length of western characters of the file name should not exceed 8 bits and the suffix should be 3 digits.<br>The system supports simplified Chinese names, yet the file name should not have more than 4 Chinese characters.<br>The suffix of file is subject to the pattern preparation system. |
| W.Time | Display the average time required by current pattern to finish knitting a piece<br>Average time: normal knitting time + time of stoppage for different reasons |
| Needle Pos. | Display the changes to the needle positions when the carriage is running<br>To the right: the needle position progressively increases<br>To the left line: the needle position progressively decreases<br>Display the needle position when in stoppage initiated by pull rod or malfunction |
| Num(Number of finished piece) | Display the number of accumulated finished pieces by the current pattern<br>Operation for clearing the number of finished pieces: pressing the "C" key with the content to be deleted for several seconds, the system will automatically set the number of finished pieces as "0", and release the key. |
| Run Time | Display the total operation time from start-up to the current state<br>Operation time: normal accumulated knitting time + time of |

| | |
|---|---|
| Direct.(Operation direction) | stoppage for different reasons<br>Display running direction of carriage<br>  Carriage running to the right<br>  Carriage running to the left |
| SET Num(Set piece number) | Display the set piece number of the current pattern<br>Operation for setting piece number: press the "+/-" key and the set piece number box will display the yellow words with white underlines, input the set piece number, and press Enter.<br>Maximum set piece number: 9999 (pieces)<br>When the system finishes knitting the set piece number, the carriage will automatically stop at the left side (the set point of left limit) and the finish information of set pieces will pop up at the display screen. |
| System time | Display the time information of system, e.g. year, month, date, hour, minute and second.<br>Gregorian calendar and 24-hour system are adopted for the system.<br>Left: year, month and date<br>Right: hour, minute and second |

Middle separating box

This part mainly displays the knitting information in the CNT action document, e.g. the set value of the technical section of the current knitting density.

The actual density value should be displayed in the carriage testing interface (actual value = set value + modified value).

| | |
|---|---|
| PATT(Pattern line) | Display the pattern line number of the front and rear knitting systems of each system<br>Pattern line number: "PAT" lines of the pattern after coding. The pattern line is not equal to the knitting line, and there is no display of pattern line in case of a blank line. |
| H | Display H-position information<br>H-position PAT color code (O-F) and knitting information |
| A | Display A-position information<br>A-position PAT color code (O-F) and knitting information |
| YARN(Yarn feeder) | Display the yarn feeder number currently used by the knitting system<br>Two yarn feeders at most are allowed in the knitting system<br>Left side of yarn feeder display box: knitting yarn feeder<br>Right side of yarn feeder display box: plaiting yarn feeder (for the wide yarn feeder, the opening size of shuttle box is larger than that of normal shuttle box) |
| DEN. 1 – 8 | Display the set value of density currently used by the knitting system<br>The number of working density will be switched and displayed |

| | |
|---|---|
| | according to the carriage running position.<br>To the right: work if it is odd number (1, 3, 5, 7….)<br>To the left: work if it is even number (2, 4, 6, 8….)<br>The above figure is the 2 system density code display.<br>Total number of density code = system number X4 (single system: 4; 2 system: 8; 3 system: 12….) |

Lower separating box

- The part mainly displays the setting information of working parameters of the pattern
- The display information may differ due to different machine types.

| | |
|---|---|
| ST.S1(Density of System 1) | Display the information of set density section of the first knitting system<br>System 1 is switched according to the direction of carriage operation, and the antecedence system is defined as 1 system |
| ST.S2(Density of System 2) | Display the information of set density section of the second knitting system<br>System 2 is switched according to the direction of carriage operation, and the system following System 1 is defined as system 2. The definition manner is the same for the system larger than system 2.<br>The Picasso plate making auto output does not support the same knitting line, and the multi-system density respectively controls the function. Please use abc2.exe and abc.exe developed independently by Hengqiang Technology for coding. |
| M.ROLL(Main-roller) | Display information of main-roller set section<br>Section 1-32 |
| S.ROLL(Sub-roller) | Display information of sub-roller set section<br>Section 1-32 |
| Supporting-roller | Display information of supporting-roller set section<br>Section 1-32 |
| Speed | Display the information of knitting speed set section of carriage<br>Section 1-32 |
| Rock | Display rocking information of needle plate |
| R.SPD(Rocking speed) | Display the speed of rocking servo motor when the needle plate is rocking |
| YARN ADJ.(Yarn feeder point) | Display set group information of yarn feeder point |
| D.ROT(Needle lifting point) | Display the information of needle lifting point set in the working parameter page |
| Sinker | Display information of sinker section setting<br>Section 1-10<br>The segmentation function shall be effective after coding with abc2.exe and abc3.exe independently developed by Hengqiang |

| | |
|---|---|
| | Technology during the plate making process. If it is not specified, the set value of Section 1 should be adopted. |
| Rotary torque | Retained |
| Subroutine | Retained |
| Antecedence density | Display set section information of antecedence density (not participating in working density)<br>Section 1-4 |
| Density modification | Display density modification types<br>Modification types: single-side, well-balanced, user-defined 1-10<br>Single-side and well-balanced types are identified by the system automatically according to the plate making knitting organization<br>single-side type: the plate making does not comprise No. 3 and No. 10 color lump knitting line<br>well-balanced type: the plate making consists of No. 3 and No. 10 color lump knitting line<br>user-defined type: except the single-side and well-balanced types<br>For the use-defined type, users may define the start and end knitting lines to set the modification form |
| LOOP.S(Start line) | Conservation start line information (circulation knitting starts)<br>Conservation start line has to be odd number line (1, 3, 5, 7…)<br>The conservation start line, end line and circulation number should be automatically introduced in (the *.PRM file shall be copied into the system memory) after coding is set in the plate making. If they are not copied in or the knitting requires modification, the setting shall be carried out by using the conservation form provided by the system. |
| CYC.V.(Circulation number) | Display the conservation times of the conservation set section<br>Big and small circulations specified by plate making: 1-199 (times)<br>Big and small circulations specified by system: 1-1000 (times)<br>If the setting is larger than 199 circulations, the setting and modification can be carried out by using the conservation form provided by the system. |
| SUR.V.(Remainder number) | Display the remainder value at the time of current circulation knitting<br>The system will automatically minus 1 after one circulation is finished.<br>After the current circulation knitting, start line, end line, circulation number and reminder number will be cleared automatically until the start of the next circulation set section. |

# Description of F1-F6 Function Keys in Run Interface


F1-F6 function icons: Each icon has two state icons (image and tune). Press any of the F1-F6 keys and the two icons will be switched.

Help: Click the icon here with the touch pen and the description of the function keys of the system will be displayed. The touch pen may directly click the listed item.

## F1

Manual initial point reset (knitting preparation)

Dark green gradient icon: knitting preparation and resetting.

Stone yellow gradient icon: knitting confirmation and knitting commencement (switched after reset).

The pull rod starts up or the carriage is manually returned to the left limit point and enters into the initial point for reset.

◆ Initial point reset procedure

1. Reset of cutter head of needle selector (the carriage is not in the left and right limit positions)

2. Reset of electromagnet (shuttle-changing electromagnet and triangle control electromagnet)

3. Reset of cutter head of needle selector (the carriage reaches the left limit position)

4. Initial point reset of density motor and sinker motor

5. Initial point reset of rocking servo motor (demonstration of front rocking)

- The needle bar moves left and leaves the zero position detecting head (the detecting head indicator is off).

- The needle bar moves right until the zero position detecting head stops (the detecting head indicator is on) and the resetting is completed.

6. The sinker motor moves to the front and back sinker in the working parameters for reset (this step can be omitted if there is sinker step control or the sinker is effectively closed in the system parameter setting page).

After the resetting is finished, the icon will display State 2 and enter knitting operation.

CAUTION Warning

Please check the rocking position of the needle bar before pressing Key of manual initial point. If the needle plate at the rocking side is not at the initial point position and there are fabrics on both front and back needle bars, the side with fabrics should be removed before pressing Key of manual initial point.

The function of Key of manual initial point is to reset the density and rocking position to the initial point position (zero position) and reset the triangle, shuttle-changing spindle and the like on the carriage.

## F2

Repeat knitting (with line locked)

Rocked state icon: for repeating knitting, execute circulation knitting in the previous two lines.

Unlocked state icon: if unlocked, execute by the knitting line order.

CAUTION Caution

Key can be used only after batching roller (main roller or sub-roller) is applied.

If there is no action by pressing the repeat key during the knitting process, a warning will pop up. In other words, it works only by pressing Key and then starting up the operation pull rod after the initial point resetting is finished. It also works by pressing Key and then starting up the pull rod after the first-line carriage moves right until the halfway pull rod stops (preparation for advance line selection).

## F3

Switch for fast and slow knitting of carriage (rabbit icon and turtle icon)

Turtle icon: slow knitting (slow motion of pull rod).

Rabbit icon: fast knitting (fast motion of pull rod).

The knitting speed can be switched without the need of stop.

If the current state is slow knitting, the switching to fast knitting can be executed in the next line.

If the current state is fast knitting, the switching to slow knitting can be immediately executed in the current line.

## F4

Switching between one-piece knitting (single-piece) and circulation knitting.

Dark green gradient icon: circulation knitting.

Stone yellow gradient: single-piece knitting. After the single-piece knitting is finished, the carriage stops at the outside of the needle lifting point of the left pattern and the buzzer keeps warning.

## F5

Open and closed states of system alarm function

Default: open

Stone yellow gradient: alarm closed

Dark green gradient icon: alarm open (the buzzer keeps warning in case of alarm)

When the alarm is closed, it only works in terms of broken yarn, severe yarn knot and side yarn, while the other alarms are still active.

## F6

Yarn feeder enable and pause

Default: enbale

Dark green gradient icon: yarn feeder enable.

Stone yellow gradient: yarn pause.

NOTICE Notice

When the carriage is running in the knitting zone, due to the causes such as sudden yarn breaking (the machine stops between garment pieces), the electromagnet with yarn feeder is in the work position. Press Key to enable the yearn feeder to be in the pause position, so that the yarn feeder may be extracted fast.

When then yarn feeder pauses, the operation of startup of the operation pull rod will not be executed. Knitting operation can be re-started by re-pressing Key to enable the yarn feeder.

## Help

This function is for the convenience of clients to check Help instruction of the keys in the system display and operation interface. For touch operation, just click the item character space.

Click Key with touch pen in the operation monitoring interface for online help, and click Esc character display space or press Esc to exit.


## 2- System setup(Parameter Setting)

Keys: press "↑" and "↓" keys to move the cursor (shortcut key "2") to select the parameter setting, and press Enter to enter the parameter setting page.

Touch: click or double click with touch pen the character space of parameter setting.

This page has six items. Move the cursor by up and down keys, select the item needed, and press Enter to pop up the setting page.


The name of parameter item is followed by round crossing signs, indicating there are sub-item settings of the item.

## 2-1 System Para Setup(Setting of System Parameter)

The setting items of system parameters differ according to the requirements of flat knitting machine manufacturers.

Key: press "↑" and "↓" keys to move the cursor to select "Setting system parameters" (Key "1" is the shortcut key).

Press Enter to pop up the password inputting box, input the correct passwords, and enter the system parameter setting form.

Touch: click or double click with touch pen the character space of system parameter setting.

After the password inputting box pops up, click the number keys in the soft keyboard to input the correct passwords, and click Enter to enter the system parameter setting form.

The password for system parameter setting is set by different manufacturers to generate different program versions. If the password is not set, the default one is "8888" and Key code is 0-9.

Character size: eight characters (Max)

The system supports the functions of copying and saving of adjusted system parameters. When the initialization of system parameter is required, the saved system parameters will be automatically called. The setting of system parameters shall be saved at least once after the installation and debugging of new machines.

Keystroke: press Key "F2" in the system parameter setting window and the message "copied" will pop up.

Touch: click the icon "save" in the left of the title bar to save the setting.

Move the cursor to the selection items by pressing the up, down, left and right keys. The characters of the selected item will become red.



◆Needle Zero[Zero position of needle]

Setting of initial point of machine

After the reset, start up the pull rod so that the carriage may stop after passing through the zero position of needle. Manually press Key A (move left) and Key B (move right) to move the carriage to the left side of the needle bar, align the left outside (external frame or fence according to the parameters provided by clients) of the carriage to the first needle of the needle bar, and press Key F1 or click with touch pen the value bar to pop up the confirmation option, and write in the currently displayed needle value.

For new machine debugging, please set the parameter as follows:

Keystroke: set the one-inch gauge of the flat knitting machine (machine number E) and the basic parameters of total gauge of flat knitting machine (breadth), press Esc to exit the setting window, and keep pressing Esc and "⏩" (returning to the operation interface) to return to the operation monitoring interface and the pull rod will automatically be reset.

Touch: click with touch pen the one-inch gauge of the flat knitting machine (machine number E) and the value indication zone of the total gauge of flat knitting machine (breadth) to finish the basic parameter setting, click the tip column to exit the setting window, and then click the menu tip column to exit to the operation monitoring interface step by step and the pull rod will automatically be reset.

Keystroke: set the timing belt tooth pitch correction parameter, press Esc to exit the setting window, and key pressing Key "Esc" or "⏭" (returning to the operation interface) to return to the operation monitoring interface and the pull rod will automatically be reset.

Touch: click with touch pen the timing belt tooth pitch correction parameter to finish the setting of correction parameters, click the tip column to exit the setting window, and then click the menu tip column to exit to the operation monitoring interface step by step and the pull rod will automatically be reset.

The zero position of needle is an important system parameter (initial point) of the machine, and the value shall be positive.

After the fixed positions of the initial point reference base (magnetic steel) or sensing and detecting head of the zero position needle are adjusted, this parameter shall be reset (usually the timing belt tooth pitch is not required to reset, unless otherwise the looseness exceeds the requirement).

◆L.Sys Yarn R.Zero[Zero position of left system yarn feeder to move right]

Set the distance value (gauge) between the left system yarn feeder having moved right and the initial point.

Manually align the outlet center of a yarn feeder (generally No. 1) to the center of the first needle at the left side of the fixed needle plate, then manually move the carriage or press Key "A" (moving left) and Key "B" (moving right) to move the carriage, align the right side of the left system No. 1 shuttle-changing electromagnet core to the right side of the displacement gap at the top of the shuttle box, press Key F1 or click with touch pen the value space to pop up the confirmation option, and write in the current gauge value.

◆R.Sys Yarn L.Zero[Zero position of left system yarn feeder to move left]

Set the distance value (gauge) between the left system yarn feeder having moved left and the initial point.

Manually align the outlet center of a yarn feeder (generally No. 1) to the center of the first needle at the left side of the fixed needle plate, then manually move the carriage or press Key "A" (moving left) and Key "B" (moving right) to move the carriage, align the left side of the left system No. 1 shuttle-changing electromagnet core to the left side of the displacement gap at the top of the shuttle box, press Key F1 or click with touch pen the value space to pop up the confirmation option, and write in the current needle value.

◆System L Bound[Left limit position of carriage]

Set the distance value (gauge) between the left limit position of carriage and the initial point.

Manually move the carriage or press Key "A" (moving left) to move left to enable the carriage limit position iron sheet to approach the left limit position detecting head and keep certain gauge distance (the detecting head indicator is off and the signal inspection state is "0"), stop moving the carriage head, press Key F1 or click with touch pen the value space to pop up the confirmation option, and write in the current needle value (usually a negative integer).

- When the main motor servo is moved out for opening, the gauge distance set should be larger than the reverse inertial distance.

The function of the left and right detecting head of carriage (the indicator is on and the signal inspection state is "1"): mainly for protecting the safety control of carriage during the knitting process due to abnormal stroke excess.

◆System R Bound[Right limit position of carriage]

Set the distance value (gauge) between the right limit position of carriage and the initial point.

Manually move the carriage or press Key "B" (moving right) to move right to enable the carriage limit position iron sheet to approach the right limit position detecting head and keep certain gauge distance (the detecting head indicator is off and the signal inspection state is "0"), stop moving the carriage head, press Key F1 or click with touch pen the value space to pop up the confirmation option, and write in the current gauge value (usually a positive integer).

- When the main motor servo is moved out for opening, the gauge distance set should be larger than the reverse inertial distance.

◆ Machine Type[One-inch gauge of flat knitting machine]

Set the flat knitting machine number E (gauge in one inch).

Keystroke: press Enter to display the yellow words with white underlines, enter correct machine number value (E) of the flat knitting machine needle bar, and press Enter to end the setting.

Touch: click with touch pen the value space of the item and the soft keyboard will pop up, input the required gauge, and click Enter to end.

◆ Jacquard Right[Offset of needle selector when moving right]

Set the offset value range of needle selector when moving right: -79-+79

Min. set unit: 0.1 (needle)

In order to minimize Key pressing times and for the convenience of value input, the set value will be displayed by amplifying by 10 times. For example, if the inputted offset value is 5, the actual value is 0.5 needle (the actual setting = set value / 10).

Keystroke: press Enter to display the yellow words with white underlines, enter digits and "+/-" keys

to input (negative sign), which may be inputted either in front of or after the value, and press Enter to end.

Touch:

This parameter is about the advance and delayed quantity (needle) when the cutter head of needle selector is moving right for knitting, and is effective to all selective needle selectors when moving right for knitting.

| **Instructions of offset plus and minus signs** | |
|---|---|
| + | - |
| Positive number indicates that the working cutter head works with delay. | Negative number indicates that the working cutter head works in advance. |

◆Jacquard Left[Offset of needle selector when moving left]

Set the offset value range of needle selector when moving left: -79-+79

The operation and instruction are the same with that of needle selector when moving right.

This parameter is about the advance and delayed quantity (needle) when the cutter head of needle selector is moving left for knitting, and is effective to all selective needle selectors when moving left for knitting.

◆ Knife Number[Number of blades of needle selector]

Set the number of working blades of needle selector.

Setting range: 3-8 (knives)

For E5-E16 models, 8-knife bi-directional magnetic latching needle selectors are often applied.

◆ Magnet High Time[High pressure of electromagnet]

Set the high pressure value (sensitivity) of operating magnet.

Range: 1-10.

Default: 5

Keystroke: press Enter to display the yellow words with white underlines, enter the modified value, and press Enter to end.

Touch: click with touch pen the value space of the item and the soft keyboard will pop up, input the set value, and click Enter to end.

The value is inversely proportional to the sensitivity, that is, the higher value, the lower sensitivity. It is recommended to appropriately adjust the parameter to be higher after the electromagnet is used for a long period.

◆ Jaq.High Time[High pressure of needle selector]

Set the high pressure value (sensitivity) of needle selector

Range: 2-5.

Default: 3

Keystroke: press Enter to display the yellow words with white underlines, enter the modified value, and press Enter to end.

Touch: click with touch pen the value space of the item and the soft keyboard will pop up, input the set value, and click Enter to end.

The value is inversely proportional to the sensitivity, that is, the higher value, the lower sensitivity. It is recommended to appropriately adjust the parameter to be higher after the needle selector is used for a long period.

◆ STI Reset Speed[Reset speed of density motor]

Set the reset speed for density motor.

Range: 1-10.

Default: 4

Keystroke: press Enter to display the yellow words with white underlines, enter the modified value, and press Enter to end.

Touch: click with touch pen the value space of the item and the soft keyboard will pop up, input the set value, and click Enter to end.

This value is the time percentage for density motor to move to the zero position sensor. The higher the value, the shorter the reset time.

◆ STI Work Speed[Work speed of density motor]

Set the speed when the density motor reaches the work position.

Range: 1-10.

Default: 6

Keystroke: press Enter to display the yellow words with white underlines, enter the modified value, and press Enter to end.

Touch: click with touch pen the value space of the item and the soft keyboard will pop up, input the set value, and click Enter to end.

This value is the time percentage for density motor to move to the work position. The higher the value, the shorter the time.

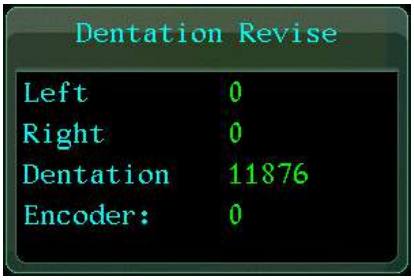
◆ Dentation Revise[Correction of timing belt tooth pitch]

Set the timing belt tooth pitch (pulse value within the total gauge when the carriage is knitting.

Setting:

Keystroke: press Enter to enter into the interface of correction of the timing belt pitch

Touch: click with touch pen the value space of the item to enter into the interface of correction of the timing belt pitch.




1. Manually move the carriage to the left and right, and observe the code value changes (item CODER) in the LCD.

◆ Move right: the code value keeps increasing.

◆ Move left: the code value keeps decreasing.

When the carriage moves from left to right or from right to left in full stroke, there should be no sudden changes (during the movement in the same direction, a certain position suddenly changes to zero, and then keeps increasing or decreasing) to the encoder. If such sudden changes occur, whether the frequency division settings of the main motor encoder or the main motor servo are correct should be checked.

2. Move the carriage to the left side of the needle bar, align the left lateral of the carriage to the first needle of the needle bar, press Key "1" or click with touch pen the left value space, and input the left pulse value.

3. Move the carriage to the right side of the needle bar, align the left lateral of the carriage to the last needle of the needle bar, press Key "2" or click with touch pen the right value space, and input the right pulse value.

4. Then press Key "3" or click with touch pen the CODER value space, and compute the left and right pulse difference value (3=2-1).

5. Press Enter to end.

◆ All Needle[Total gauge of flat knitting machine]

Set the total gauge of flat knitting machine (the maximum knitting breadth of needle bar).

Keystroke: press Enter to display the yellow words with white underlines, enter the modified value, and press Enter to end.

Touch: click with touch pen the value space of the item and the soft keyboard will pop up, input the set value, and click Enter to end.

Maximum set value: 1000 (needle).

◆ Rack Speed[Setting of rocking speed]

Set rocking speed.

Press Enter to display the yellow words with white underlines, enter the modified value, and press Enter to end.

Range: 1-100

The parameter value is directly proportional to the rocking speed. The higher the value, the faster the rocking speed, and vice versa.

◆ Sinker Enable[Effect setting of sinker]

Set the working modes of sinker stepping control motor.

Yes: sinker motor is effective.

No: sinker motor is ineffective.

Keystroke: press Enter to switch the mode.

Touch: click with touch pen the item character space to switch the working mode.

This parameter is applicable to sinker mechanism of the stepping control motor.

◆ Language [Language switch]

Switch the languages among Chinese, English and Arabic.

The current available version is simplified Chinese, and the support of other languages will be further noticed.

◆ Jacquard Mode[Re-selection of needle selector]

Set whether to open the re-selection and energy-conservation function of needle selector.

Default: open

Close: check energy conservation (all cutter heads moved to needle selection position)

Open: check work (cutter head involved in needle selection action)

Keystroke: press Enter for switch between the states of open and close.

Touch: click with touch pen the item character space to switch between the states of open and close.

◆ Full-Range[Carriage shift-out enable]

Set carriage side-approaching enable.

Keystroke: press Enter for switchover between the open and close states.

Touch: click with touch pen the item character space to switch between the states of open and close.

Open: during the knitting process, the carriage may reach the fastest position (left and right limit position setting point, with pattern width omitted) at both sides of machine body at each line.

Closes: the stroke of carriage can be controlled according to pattern width to recover the normal production.

When the "carriage shift-out enable" is opened, it is mainly used for the settings of correcting the relation between yarn feeder point and carriage knitting speed. After the relation setting is set up, the "carriage enable" should be closed, and the system will automatically compute the yarn feeder falling and lifting points according to the corrected value.

Setting of comparison form for yarn feeder stopping point and carriage speed

◆ Rack Comp[Amendment of rocking space]

Set the amendment if there is space due to reciprocating motion of rocking ball screws.

Unit: pulse.

Range: 0-100

Keystroke: press Enter to display the yellow words with white underlines, enter the modified value, and press Enter to end.

◆ Rack Place[Rocking position]

Set the needle plate installation position (front and rear) of the rocking mechanism of flat knitting machine.

Front: displacement of front needle plate

Rear: displacement of rear needle plate

Keystroke: press Enter to switch between the front rocking and the rear rocking.

Touch: click with touch pen the item character space to switch the setting between the front rocking and the rear rocking.

◆ Roller Ratio[Velocity ratio of main roller]

Set the velocity ratio for stepping main roller batching.

Range: 1-8

Keystroke: press Enter to display the yellow words with white underlines, enter the modified value, and press Enter to end.

Touch: click with touch pen the value space of the item and the soft keyboard will pop up, input the set value, and click the Enter to end.

The value is directly proportional to the batching speed. The higher the value, the faster the batching speed.

The adjustment should be subject to the size of the flat knitting machine and the division number of

stepper driver. Generally, the higher the subdivision number, the more stable the motor operation and the smaller the operation noise. In this case, the batching coefficient should be adjusted for normal batching of roller.

◆ Roller Open[Amendment to roller opening]

Set the initial point amendment to stepping main roller when reversely opened to the furthest position.

Unit: pulse.

Range: ±50

| Sign definition | |
|---|---|
| + | - |
| Opening range increasing | Opening range decreasing |

Keystroke: press Enter to display the yellow words with white underlines, enter the modified value, and press Enter to end.

Touch: click with touch pen the value space of the item and the soft keyboard will pop up, input the set value, and click the Enter to end.

◆ This setting item is for the stepping roller structure with reversing inspection sensor.

## 2-2 Work Para Setup(Setting Operating Parameters)

Keystroke: press “↑” and “↓” to move the cursor and select "Setting Operating Parameters” (Shortcut Key “2”).

Press Enter to the form for setting operating parameters, and press “↑”, “↓”, “←” and “→” to move the cursor to the required option. The selected option will display in red.

Touch: click or double click the character area of “Setting Operating Parameters” window with the touch pen and the form for setting operating parameters will pop up.

Click the prompt area of numerical value and character with the touch pen, and the selected option will display in red.



## Description for Operating Parameters Setting

### Needle Start[PAT start needle]

Set the initial operative needle position of the knitting PAT on the needle bar.

Range: 1-640 (needle)

Default: 1 (needle)

Keystroke: press Enter and the yellow font with white subscript will display, input the required number and press Enter to end.

Touch: click with the touch pen the value bar of the item and the soft keyboard will pop up, then input the required number and click Enter to end.

System intelligent function

When the start needle + PAT maximum breath is more than the set total needle number of the needle bar, the alarm that Please reset the start needle properly will pop up.

### Main Low Spd1 [Low speed-1 (slow motion + tortoise)]

Set the percentage when the main motor is knitting at a low speed.

Range: 5-30

Default: 20

Keystroke: press Enter and the yellow font with white subscript will display, input the required number and press Enter to end.

Touch: click with the touch pen the value bar of the item and the soft keyboard will pop up, then input the required number and click Enter to end.

Effective when the pull rod is in slow motion and tortoise icon (Key F3 for cutover) mode is initiated.

Instructions for starting pull rod, fast and slow speed icon combination

### Main Low Spd1[Low speed-2 (slow motion + kangaroo)]

Set the percentage when the main motor is knitting at an intermediate speed.

Range: 5-30

Default: 20

Keystroke: press Enter and the font is yellow, input required number and press Enter to end.

Touch: click with the touch pen the value bar of the item and the soft keyboard will pop up, then input the required number and click Enter to end.

Effective when the pull rod is in slow motion and rabbit icon (Key F3 for cutover) mode is initiated.

### Main Reset Spd[Carriage reset speed]

Set the speed percentage when the carriage is repositioned at the initial point.

Range: 5-15

Default: 10

Keystroke: press Enter and the yellow font with white subscript will display, input the required number and press Enter to end.

Touch: click with the touch pen the value bar of the item and the soft keyboard will pop up, then input the required number and click Enter to end.

### Main Mid.Spd [Intermediate speed of carriage (fast motion + tortoise)]

Set the percentage when the main motor is knitting at an intermediate speed.

Range: 5-40

Default: 40

Keystroke: press Enter and the yellow font with white subscript will display, input the required number and press Enter to end.

Touch: click with the touch pen the value bar of the item and the soft keyboard will pop up, then input the required number and click Enter to end.

Effective when the pull rod is in fast motion and tortoise icon (F3 key for cutover) mode is initiated.

### Main High Spd. [High speed of carriage (fast motion + kangaroo)]

Set the percentage when the main motor is knitting at a high speed.

Range: 60-100.

Default: 80.

Keystroke:press Enter and the yellow font with white subscript will display, input the required number and press Enter to end.

Touch: click with the touch pen the value bar of the item and the soft keyboard will pop up, then input the required number and click Enter to end.

Effective when the pull rod is in fast motion and rabbit icon (Key F3 for cutover) mode is initiated.

### Yarn Down Ahead [Falling initial lead of yarn feeder]

Set the falling initial lead (needle) of yarn feeder when knitting

Range: 1-100

Default: 20

Keystroke:press Enter and the yellow font with white subscript will display, input the required number and press Enter to end.

Touch: click with the touch pen the value bar of the item and the soft keyboard will pop up, then input the required number and click Enter to end.

This parameter must be properly set, otherwise, the yarn feeder leakage will occur when

knitting.

### Turning Space[Carriage rotary distance]

Set the rotary distance (needle) of the reversing between two sides when the carriage is knitting patterns.

Range: 5-50

Default: 20

Keystroke: press Enter and the yellow font with white subscript will display, input the required number and press Enter to end.

Touch: click with the touch pen the value bar of the item and the soft keyboard will pop up, then input the required number and click Enter to end.

Causes for changes to rotary distance

Broken edges on the fabric edge, or sharp turning causes the touch needle sensor to touch the yarn feeder, thus there is the alarm for needle breakage.

There are lots of yarn feeders in mass production, when the carriage rotary distance needs to be adjusted.

### B.Sinker Reset[Back sinker reposition]

Set the distance value (pulse) between the stepping control motor of back sinker and the zero position detecting head of sinker after the carriage is repositioned in the initial point.

Range: 0-650.

Default: 200

Keystroke: press Enter and the yellow font with white subscript will display, input the required number and press Enter to end.

Touch: click with the touch pen the value bar of the item and the soft keyboard will pop up, then input the required number and click Enter to end.

The set pulse is in direct proportion to the distance value.

This parameter is applicable to Sinker control organ driven by stepping motor.

### F.Sinker Reset [Front sinker reposition]

Set the distance value (pulse) between the stepping control motor of front sinker and the zero position detecting head of sinker after the carriage is repositioned in the initial point.

Range: 0-650.

Default: 200

Keystroke: press Enter and the yellow font with white subscript will display, input the required number and press Enter to end.

Touch: click with the touch pen the value bar of the item and the soft keyboard will pop up, then input the required number and click Enter to end.

The set pulse is in direct proportion to the distance value.

This parameter is applicable to Sinker control organ driven by stepping motor.

### Auto Rst Pieces [Number of auto-zero pieces]

Set that the carriage knitting automatically steps into the initial point reposition after the set pieces are completed, and automatically knits after initial point reposition, when manual intervention is not required.

Position of auto-zero point: left limit set location on the interface of system parameter setting.

Range: 0-100.

Default: 0 (infinite loop)

The system automatically adds "1" after one piece is completed until the set pieces are completed.

Keystroke: press Enter and the yellow font with white subscript will display, input the required number and press Enter to end.

Touch: click with the touch pen the value bar of the item and the soft keyboard will pop up, then input the required number and click Enter to end.

### Scr-Saver Time [Starting time of screen saver]

Set the resting time when the screen saver effects (no time for keyboard operation).

Unit: minute

Range: 1-14

Default: 3

Keystroke: press Enter and the yellow font with white subscript will display, input the required number and press Enter to end.

Touch: click with the touch pen the value bar of the item and the soft keyboard will pop up, then input the required number and click Enter to end.

Start the screen saver, and it effects only when the item of effective parameter is set to be "Yes".

### Screen-Saver [Effectiveness of screen saver]

Set the on and off states of screen saver.

Yes: start the screen saver

No: shut-off the screen saver

Keystroke: press Enter for cutover.

Touch: click with the touch pen the switch status on the character prompt area.

### Shock Enable[Enable needle bar shock sensor]

Set the Yes or No state (on or off) of the shock sensor of the needle bar.

Default: Yes

Keystroke: press Enter for cutover.

Touch: click with the touch pen the switch status on the character prompt area.

### F-Sensibility [Shock sensitivity of the front needle bar]

Set the sensitivity of the front needle bar sensor when in shock.

Range: 0-100

Default: 60

Keystroke: press Enter and the yellow font with white subscript will display, input the required number and press Enter to end.

Touch: click with the touch pen the value bar of the item and the soft keyboard will pop up, then input the required number and click Enter to end.

The setting value of this parameter is directly proportional to the sensor sensitivity.

Precondition: effective when the parameter of "enable needle bar striking" is set to be "On" state.

### B-Sensibility [Shock sensitivity of the back needle bar]

Set the sensitivity of the back needle bar sensor when in shock.

Range: 0-100

Default: 60

Keystroke: press Enter and the yellow font with white subscript will display, input the required number and press Enter to end.

Touch: click with the touch pen the value bar of the item and the soft keyboard will pop up, then input the required number and click Enter to end.

The setting value of this parameter is directly proportional to the sensor sensitivity.

Precondition: effective when the parameter of "enable needle bar striking" is set to be "On" state.

### Stop Rol.Open [Roller slackening in stopinterface]

Set the open or close state of roller when the main-roller stops.

Unit: pulse.

Default: 0 (close)

Range: 0-100

When the value is greater than "0" and the pull rod stops, the roller opens and the open size is directly proportional to the value.

Keystroke: press Enter and the yellow font with white subscript will display, input the required number and press Enter to end.

Touch: click with the touch pen the value bar of the item and the soft keyboard will pop up, then input the required number and click Enter to end.

### Left Carriage [Enable left yarn feeding]

Set the open or close state of left moment yarn feeding motor.

Default: open

Keystroke: press Enter for switchover between the open and close states.

Touch: click with the touch pen the switch status on the character prompt area.

Open: start moment yarn feeding

Close: close moment yarn feeding

This setting is available in the window which pops up after the "PU" key is pressed on the operation monitoring interface.

### Right Carriage [Enable right yarn feeding]

Set the open or close state of right moment yarn feeding motor.

Default: open

Keystroke: press Enter for switchover between the open and close states.

Touch: click with the touch pen the switch status on the character prompt area.

Open: start moment yarn feeding

Close: close moment yarn feeding

This setting is available in the window which pops up after the "PU" key is pressed on the operation monitoring interface.

### K-SYS Lock [Single-port lock]

Set 2 System and above knitting systems; a system is fixed for working when there is only 1 system operating in a knitting row (the default is alteration of left and right systems).

System lock may shorten the carriage torque so as to improve knitting efficiency.

For example, there is only 1 system working in the knitting system for the system 2. By default, the antecedence system S1 is used, and each line of carriage needs to cover all breadth.

When the fixed system is knitting, the carriage may turn moment without the need to cover all breadth.

The locking system knitting is not controlled if there are 2 or more systems working in one line.

Default: unlock

Keystroke: press Enter for selection.

Touch: click with the touch pen the character prompt area for selection.

Left system: lock left system knitting

Middle system: lock middle system knitting (3 system carriage)

Right system: lock right system knitting

### Carr.S.Time [Starting time of yarn feeding device]

Set the delay starting time interval (the antecedent starting time of yarn feeding moment motor) of the carriage when the moment yarn feeding device enabled setting is opened and the pull rod is started.

Unit: ms (millisecond)

Default: 2000 (ms)

Note: 1 s = 1000 ms

Keystroke: press Enter and the yellow font with white subscript will display, input the required number and press Enter to end.

Touch: click with the touch pen the value bar of the item and the soft keyboard will pop up, then input the required number and click Enter to end.

### Moment yarn feeding strategy

The moment yarn feeding motor stalls when “F6” is pressed for antenna platform, side yarn and stop working.

When the pull rod stops for more than 30 seconds, the moment yarn feeding motor will stall.

## 2-3 Rack Amend(Rocking Amendment)

Keystroke: press “↑” and “↓” to move the cursor and select "Rocking Amendment” (Shortcut Key “3”).

Press Enter to call out the password inputting box, input the correct passwords, and enter the rocking amendment interface.

Touch: click or double click with touch pen the character area of rocking amendment.

The password inputting box pops up, click the soft keyboard and input the correct passwords, then click Enter and enter the rocking amendment interface.

The password is set by different manufacturers to generate different program versions. If the password is not set, the default one is “8888”.

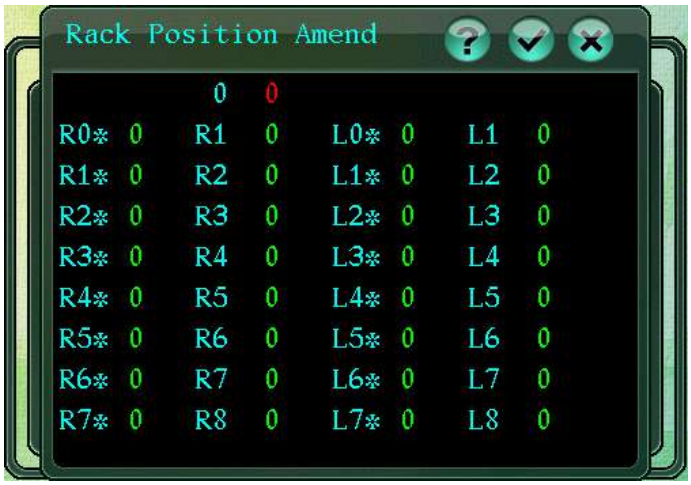
Key code: 0-9

Character size: eight characters (Max)

There are 4 items in this interface. Press “↑” and “↓” to move the cursor (or shortcut keys) for selection, and press Enter to select the amendment form.



2-3-1 Rack Position Amend(Rocking Position Amendment)





Rocking amendment is the system corrections for the difference between the positions of front and back needle plates.

Keystroke: press "↑" and "↓" to move the cursor to select "Rocking Position to Amend" (or Shortcut Key "1"), press Enter to call out the form for rocking position amendment.

Touch: click or double click with touch pen the character area of rocking position amendment.

Amendment unit: pulse

Setting range: ±2000

| **Rocking Position Amendment** | |
|---|---|
| Needle-to-tooth | Needle-to-needle |
| 0 | R0*, L0* |
| R1 - R8 | R1* - R7* |
| L1 - L7 | L1* - L7* |

Key Operation:

Move "↑" and "↓" to select the test item of rocking needle position, press Enter and the

selected needle position displays yellow characters and white subscript, here the needle plate moves based on selected needle position value and direction, observe whether the needle plate moves to the selected rocking needle position, input the value if amendment is required and press Enter to end.

Touch Operation:

Click with the touch pen to select the test item of rocking needle position, input value by soft keyboard after the yellow characters with white subscript are displayed, and click Enter to end.

According to the setting of flat knitting machine number (E), check the needle offset of the rocking and compare it with the theoretical value (magnitude and direction of error), if the error is beyond the allowable range, press the number key, +/- symbolic keys to input the offset.

With the help of measurement dial indicator installed on the side of the mobile needle plate, the needle position detection in all directions in the form can accurately amend the value of each needle position.

Please press the key combination (Key C) for copying and pasting if the value of other unmodified items need to be the same as that of the amendment item. At this time, the cursor must stay in the amendment item.

The instruction for the key combination is subject to 7" screen. Please operate according to the actual screen size and face operation.

The direction of front needle bar should be taken as the reference for the rocking direction R or L.

The rocking directions R and L are arranged in the front or back needle bars according to the rocking mechanism. See form of relation between the sliding direction of needle plate and the left and right symbols (R, L) of the tested items.

| Symbol of test direction | Arrangement of rocking mechanism | Displacement direction of sliding needle plate |
|---|---|---|
| R | Back needle bar | Shift to the left |
| L | | Shift to the right |
| R | Front needle bar | Shift to the right |
| L | | Shift to the left |

Correction of unit pulse (rocking parameters of some manufacturers)

| Rocking transmission ratio i | Ball screw pitch t | Displacement value for unit pulse mm |
|---|---|---|
| 8:5 | 5 | 0.0031 |
| 2:1 | 5 | 0.0025 |

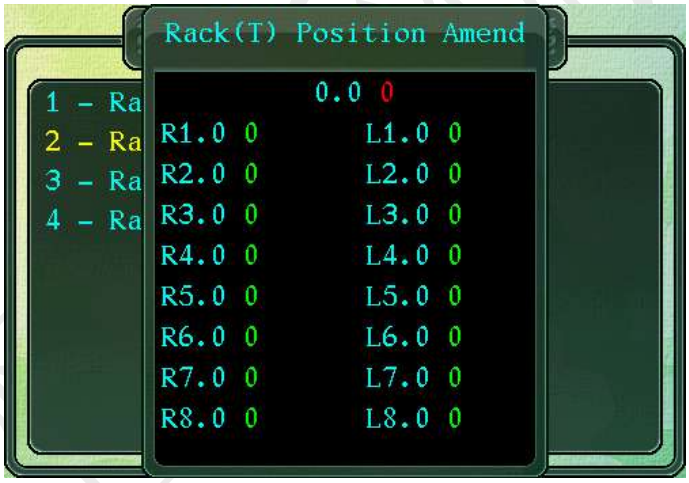
| | | |
|---|---|---|
| 7:4 | 5 | 0.0029 |

The complete test must be conducted on all the needle positions of the rocking when the new machine is installed and commissioned. It is optimal that the error magnitude for each needle position is less than or equal to 0.02mm.

### 2-3-2 Rack(T) Position Amend(Transfer (T) Rocking Position Amendment)

Keystroke: move "↑" and "↓" (or Shortcut Key "2") to select "Transfer (T) Rocking Position Amendment", press Enter to call out the form of transfer (T) rocking position amendment.

Touch: click or double click with touch pen the character area of transfer (T) position rocking amendment.


Systematic amendment of rocking position error during the transferring.

Amendment unit: pulse

Setting range: ±2000

**Transfer(T) Rocking Position Amendment**

| | |
|---|---|
| **Transfer (T) position** | 0 |
| **Right rocking transfer** | R1 - R8 |
| **Left rocking transfer** | L1 - L8 |

Key Operation:

Move "↑" and "↓" and select the items to be amended for transfer (T) rocking position, press Enter and the selected needle position displays underlined yellow characters, at this time, the needle plate moves based on selected needle position value and direction, observe whether the needle plate moves to the selected position, key in the value if amendment is required and press Enter to end.

Touch Operation:

Click the value bar required amendment with the touch pen and call out the soft keyboard, then input the amended value and click Enter to end.

According to the setting of flat knitting machine number (E), check the transfer offset and compare it with the theoretical value (magnitude and direction of error), if the error is beyond the allllowable range, press the number key, +/- symbolic keys to input the amended offset.

With the help of measurement dial indicator installed on the side of the mobile needle plate, the needle position detection in all directions in the form can accurately amend the value of each needle position.

Please press the key combination (Key C) for copying and pasting or click the prompt area

for amendment items with the touch pen if the value of other unmodified items needs to be the same as that of the amendment item. At this time, the cursor must stay in the amendment item.

The instruction for the key combination is subject to 7" screen. Please operate according to the actual screen size and face operation.

## 2-4 Stitch Setup(Stitch Setting)

Keystroke: move "↑" and "↓" to select "Stitch Setting" (Shortcut Key "4").

Press Enter to password inputting box, key in the correct passwords, and enter the stitch setting interface.

Touch: click or double click the character area of stitch setting with the touch pen.

The dialog box for inputting passwords pops up, click the number key of the soft keyboard with the touch pen, then click Enter for confirmation.

Key code: 0-9

Character size: eight characters (Max)

There are 4 items totally in this interface.

Keystroke: press "↑" and "↓" to move the cursor, select the item needed, and press Enter to call out setting and amendment form.

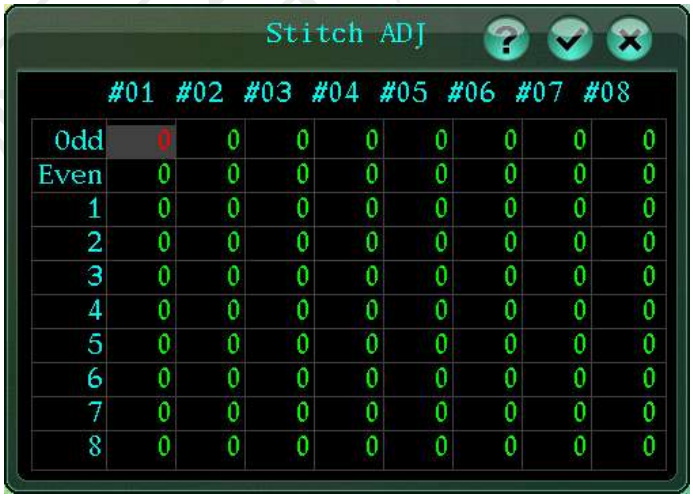
Touch: click the item needed with the touch pen and the setting and amendment form pops up.


## 2-4-1 Stitch ADJ ODD(Jersey Stitch Zero Position Amendment)

Keystroke: select parameter setting – stitch setting, and press Enter to access to stitch setting.

Move the cursor by "↑" and "↓" to select "Stitch ADJ" (Shortcut Key "1"), press Enter to call out the form of Stitch ADJ.

Touch: click or double click with the touch pen the character area of Stitch ADJ

Stitch ADJ ODD

Zero position amendment of front and back density motor when the single jersey is knitted.

Definition of single-sided structure: patterns drawn by lumps of colors except No.3 or No.10 lumps of color.

The number of density motor is related to the system, usually 4/system. The displayed amendment number is different on this interface according to different systems.

| Range | + 127 |
|---|---|
| | - 128 |

Default: 0

| Definition of stitch amendment number (2 system) | |
|---|---|
| Left system | Right system |
| #01, #02, #05, #06 | #03, #04, #07, #08 |

See 1. Operating Stitch Amendment for detailed definition of stitch number.

Keystroke: move the cursor by "↑" and "↓" to the needed item (the font is red), press Enter and the yellow font with white underline will be displayed, then press number keys, +/- keys to input the amended value, and press Enter to end.

Touch: click the stitch numeral value bar with the touch pen and the soft keyboard will pop up, input the amended value, and click the Enter to end.

- The function of overall copying and pasting is not used on this interface.

This parameter setting is to amend the difference between each stitch of the knitting system and the stitch value of operating section due to the abrasion of stitch control mechanism after installation and commissioning of new machines and long-term operation.

There are plus and minus values for amendment setting ("+/-" functional keys for cutover).

Plus: low fabric density

Minus: high fabric density

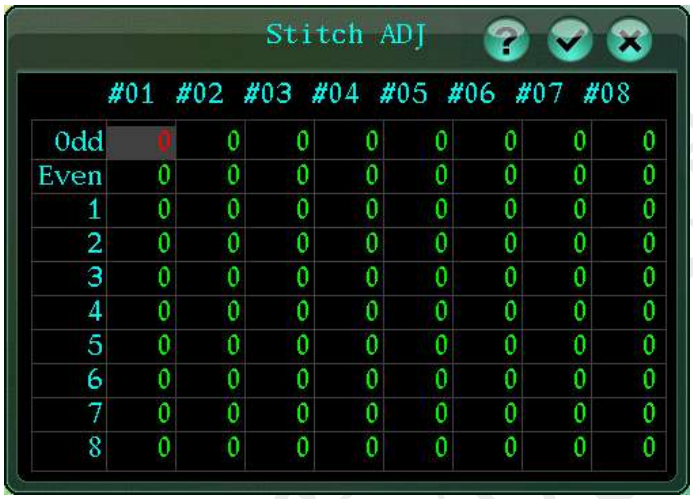
- The system can automatically distinguish the stitch amendment forms for single jersey and Full needle.

## 2-4-2 Stitch ADJ Even(Full Needle Stitch Zero Position Amendment)

Keystroke: select parameter setting – stitch setting, and press Enter to access to stitch setting.

Move the cursor by "↑" and "↓" to select "Stitch ADJ" (Shortcut Key "2"), press Enter to call out the form of Even.

Touch: click or double click the character area of Stitch ADJ Even with the touch pen.


Zero position amendment of front and back density motor when the full needle is knitted.

Definition of full needle: patterns that are all drawn by No.3 or No.10 lumps of color.

The number of density motor is related to the System, usually 4/system. The displayed amendment number is different on this interface according to different systems.

| **Range** | **+ 127**<br>**-**<br>128 |
|---|---|

Default: 0

| **Definition of stitch amendment number (2 system)** | |
|---|---|
| Left system | Right system |
| #01, #02, #05, #06 | #03, #04, #07, #08 |

See 1. Operating Stitch Amendment for detailed definition of stitch number.

Keystroke: move the cursor by "↑" and "↓" keys to the needed item (the font is red), press

Enter and the yellow font with white underline will be displayed, then press number keys, +/- keys to input the amended value, and press Enter to end; press Key “Esc” to exit.

Touch: click the stitch numeral value bar with the touch pen and the soft keyboard will pop up, input the amended value, and click the Key “Enter” to end; click the amendment prompt bar to exit.

- The function of overall copying and pasting is not used on this interface.

This parameter setting is to amend the difference between each stitch of the knitting system and the stitch value of operating section due to the abrasion of stitch control mechanism after installation and commissioning of new machines and long-term operation.

There are plus and minus values for amendment setting (“+/-" functional keys for cutover).

Plus: low fabric density

Minus: high fabric density

The system can automatically distinguish the stitch amendment forms for jersey and full needle.

## 2-5 Yarn Replace (Yarn Feeder Replacement Setting)

Knitting pattern yarn feeder replacement setting

Set the temporary yarn feeder replacement of working patterns. When such patterns are output to USB flash disk, the information for yarn feeder replacement will not be output. Conduct substitution operation in CNT editor for permanent replacement if required.

Keystroke: move the cursor by “↑” and “↓” (or Shortcut Key “5”) and select “Yarn Feeder Replacement Setting”, press Enter to call out the form of yarn feeder replacement setting.

Touch: click or double click the character area of yarn replacement setting with the touch pen, and the form of yarn feeder replacement setting will pop up.


Key Operation:

Move the cursor to the original yarn feeder area, press Enter and there will be yellow characters with white subscript, press the number keys to input the replaced yarn feeder number, and press Enter to end.

Move the cursor to the target yarn feeder area by the "↓" key, press Enter and there will be yellow characters with white subscript, press the number keys to input the replacing yarn feeder number, and press Enter to end.

Touch Operation:

Click the original yarn feeder area with the touch pen and the soft keyboard will pop up, input the replaced yarn feeder number with soft keys, and click Enter to end.

Click the target yarn feeder area with the touch pen and the soft keyboard will pop up, input the replacing yarn feeder number with soft keys, and click Enter to end.

**Only one yarn feeder can be replaced in one serial line. If several yarns need to be replaced, please continue the setting in next serial number.**

As to undo the yarn feeder replacement setting, reenter "0" again in the original yarn feeder area and the yarn feeder replacement setting will be automatically cancelled.

## 2-6 System Para Init(Initialization of System Parameters)

Keystroke:move the cursor by "↑" and "↓" to select "Initialization of System Parameters" (Shortcut Key "6").

Touch: click or double click the character area of system parameter initialization with touch pen.


Reset system parameters to be the factory default. If the system parameters have been saved on the system parameter setting interface (by Key F2), the saved system parameters will be called automatically.

Keystroke: press Enter to call out the password inputting box, input "8888" and press Enter, then information about completion of initialization pops up; press Key Esc in the case of cancellation.

Touch: click or double click the character area of initialization of system parameters with the touch pen and the password inputting box pops up, input "8888" with soft keys, then click Enter and information about completion of initialization pops up; press Key Esc in the case of cancellation.

Before commissioning of new machines, please complete initialization of system parameters before resetting system parameters. The item and default of system parameters vary with customer models of flat knitting machine.

## 3-Pattern Manage(Pattern Management)

Keystroke: move the cursor by "↑" and "↓" to select "Pattern Management" (Shortcut Key "3"), and press Enter to enter the pattern management interface.

Touch: click or double click the character area of pattern management with the touch pen.

This interface has six items. Move the cursor by "↑" and "↓", select the item needed, and press Enter to the setting interface.



## 3-1 PAT Selection(Working Pattern Selection)

Keystroke: press "↑" and "↓" to select "Working Pattern Selection" (Shortcut Key "1"), press Enter to enter the window for working pattern selection.

Touch: click or double click the character area of working pattern selection with the touch pen and enter the working pattern selection window.


Select the pattern files which have been input to the system internal memory.

Keystroke: move the cursor by "↑" and "↓" to select currently required knitting patterns, the font of the selected pattern is red; press Enter to the prompt window which is processing patterns, and return to the working pattern selection interface after processing..

Touch: click or double click the required pattern files with the touch pen. If it is difficult to select files with the touch pen, the soft keyboard can be called by clicking the lower right corner of the screen so as to use "↑" and "↓" soft keys for file selection, then click Enter.

The pattern name and size, latest revision date, pattern width and height are displayed on this interface.

After working pattern selection is completed, press Key ▸▸ to directly (or Key Esc to progressively) return to the operation interface, and the system enters into the reset state automatically.

The working pattern selection window supports the sorting mechanism for file selection (sorted by name, size or date).

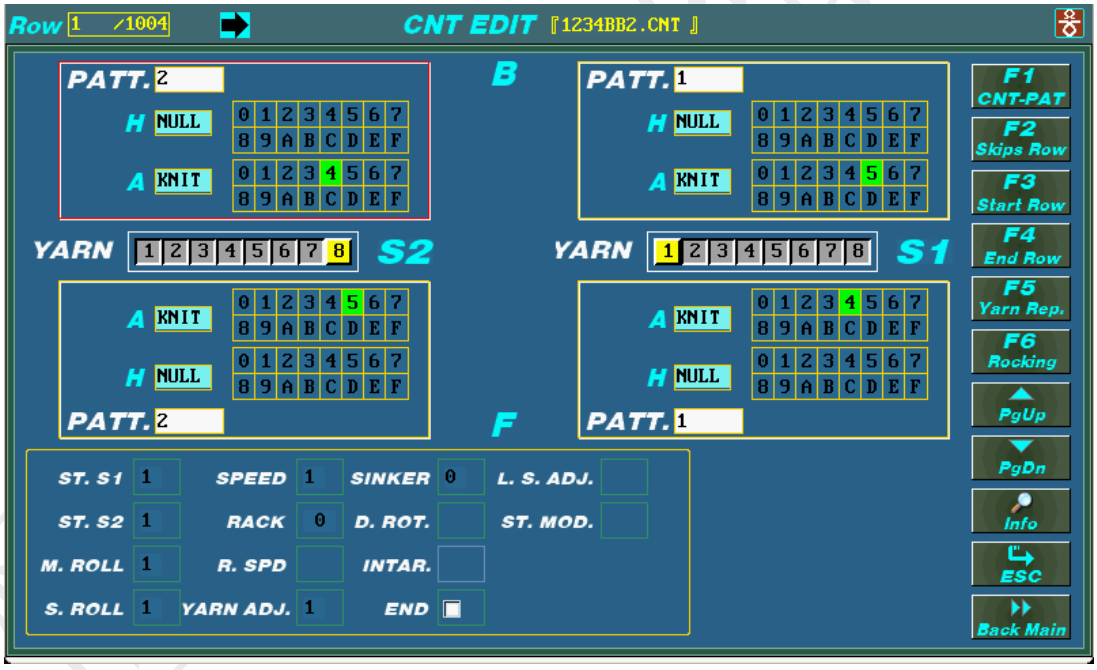
| Key | Sorting instructions | Remark |
|---|---|---|
| F1 | Sorted by name | Press F1 repeatedly, files will be sorted by number from zero to nine or by letter from A to Z, or conversely. |
| F2 | Sorted by size | Press F2 repeatedly, files will be sorted by size in ascending or descending sequences. |
| F3 | Sorted by date | Press F3 repeatedly, files will be sorted by date either in ascending or descending sequences (year, month, day) |

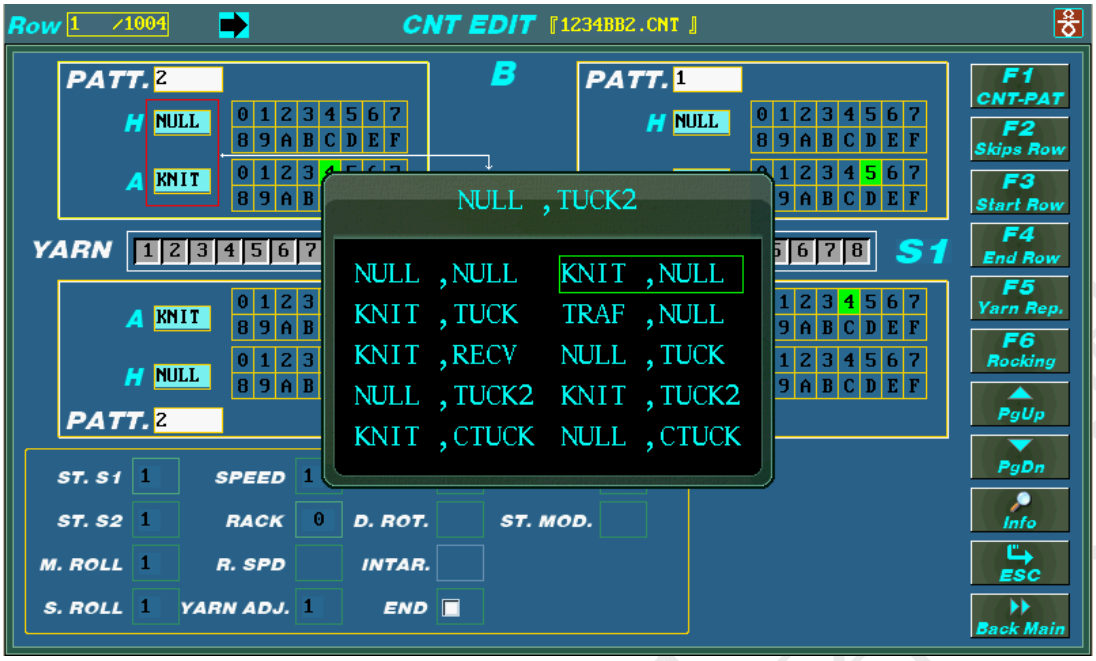
If the pattern width (number of needle) input to the internal memory is beyond the range of total number of needles set by the system, the prompt that "The pattern is too wide, please reselect!" will pop up when such pattern is selected. The pattern width has to be modified, then reselect.

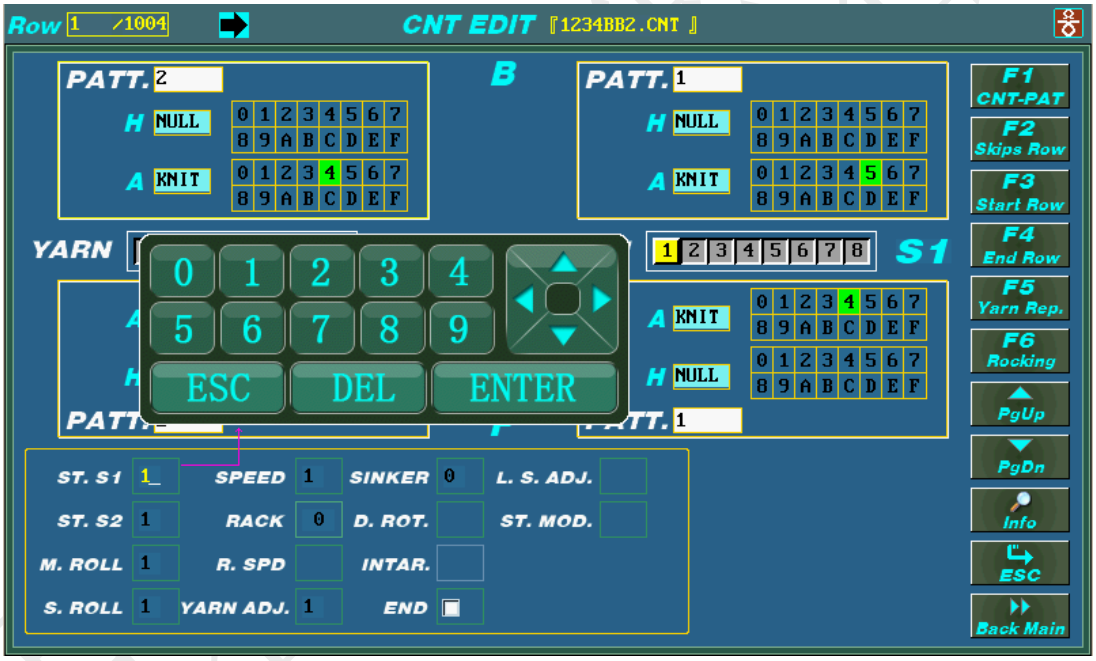
## 3-2 CNT Edit(CNT File Editing)

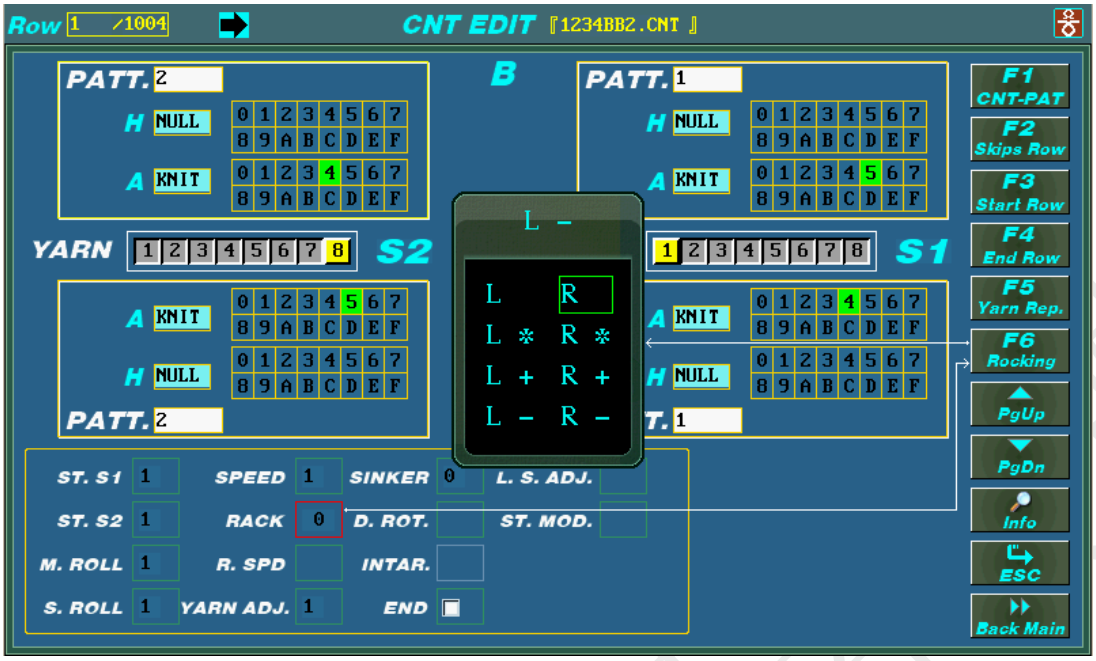
Keystroke: select "CNT File Editing" (Shortcut Key "2") by "↑" and "↓", press Enter to enter CNT file editing interface.

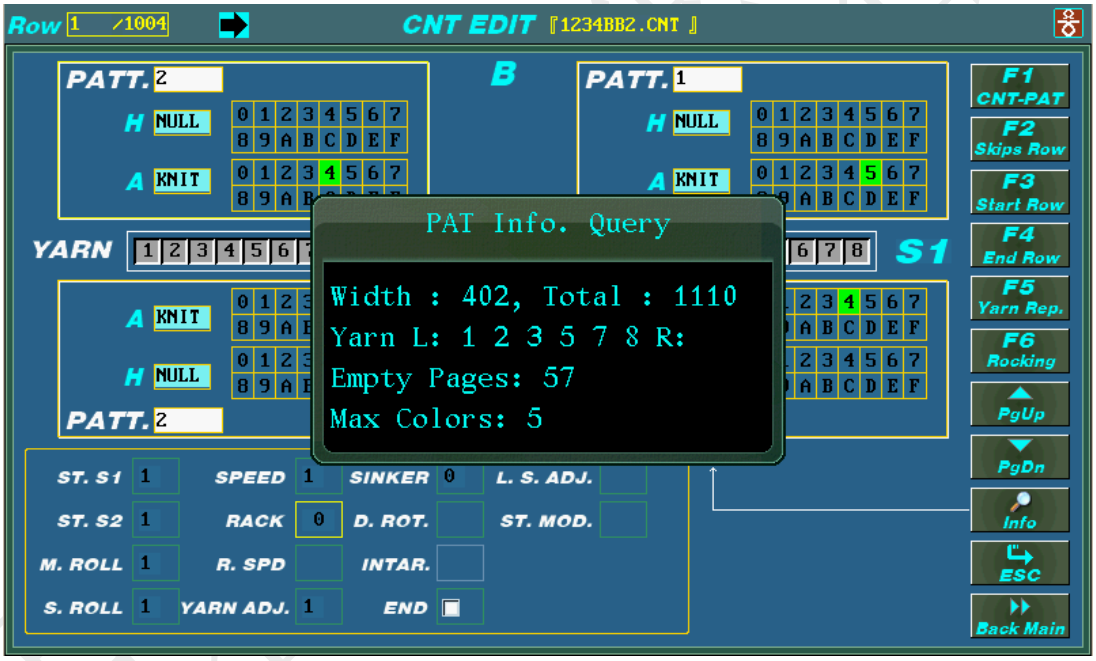
Touch: click or double click the character area of CNT file editing with touch pen, enter the CNT file editing interface.


Row 1 /1004
CNT EDIT 『1234BB2.CNT 』
PATT. 2
PATT. 1
NULL , TUCK2
NULL ,NULL
KNIT ,NULL
KNIT ,TUCK
TRAF ,NULL
KNIT ,RECV
NULL ,TUCK
NULL ,TUCK2
KNIT ,TUCK2
KNIT ,CTUCK
NULL ,CTUCK
YARN
S1
ST. S1
SPEED
ST. S2
RACK
D. ROT.
ST. MOD.
M. ROLL
R. SPD
INTAR.
S. ROLL
YARN ADJ.
END
F1 CNT-PAT
F2 Skips Row
F3 Start Row
F4 End Row
F5 Yarn Rep.
F6 Rocking
PgUp
PgDn
Info
ESC
Back Main


Row 1 /1004
CNT EDIT 『1234BB2.CNT 』
PATT. 2
PATT. 1
YARN
S1
0 1 2 3 4
5 6 7 8 9
ESC DEL ENTER
ST. S1 1_
SPEED 1
SINKER 0
L. S. ADJ.
ST. S2 1
RACK 0
D. ROT.
ST. MOD.
M. ROLL 1
R. SPD
INTAR.
S. ROLL 1
YARN ADJ. 1
END
F1 CNT-PAT
F2 Skips Row
F3 Start Row
F4 End Row
F5 Yarn Rep.
F6 Rocking
PgUp
PgDn
Info
ESC
Back Main




Edit and check the control data (*.CNT) of current knit patterns.

The control data is the main data of the knitting data and is used for needle selection and reading other service data, etc.

After entering the editing interface:

Keystroke: press "↑", "↓", "←" and "→" to move the red circle cursor to select the content area requiring modification currently and the circle cursor of the selected option glints.

If the modified area includes several sub-items, press Enter to enter each sub-item for

modification after locating the large circled area, move the cursor to select sub-item requiring modification, then press Enter, press Key Esc for exit.

Touch: click the area that needs to be modified with touch pen and the soft keyboard setting or modification window pops up, modify it as required.

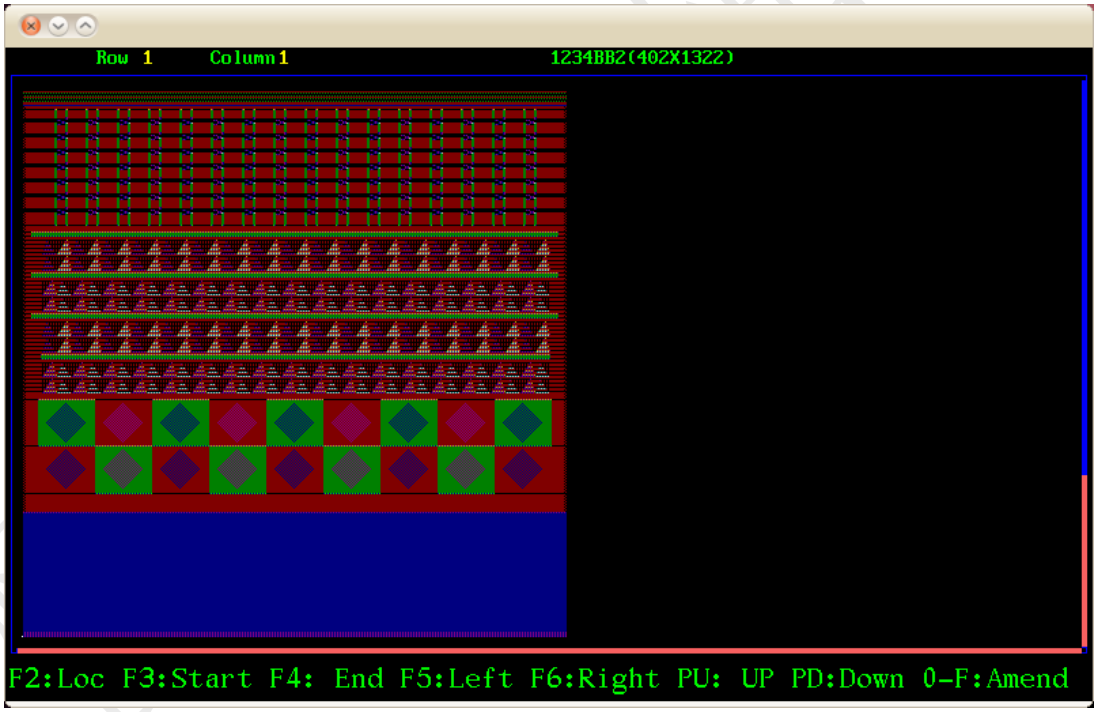
| Functional keys for line | Remark |
|---|---|
| PU, PD | Interface up and down<br>PU: interface up<br>PD: interface down |
| F2 | Skip to the designated PAT row<br>Move to the window showing the row number after pressing F2, input the row number needed, press Enter to save it, or press Key Esc to cancel the operation. |
| F3 | Move to start row |
| F4 | Move to end row |
| F5 | Yarn feeder replacement<br>Permanent replacement of yarn feeder on the program control interface.<br>Yarn feeder replacement window pops up after pressing Key F5.<br>1. Input the yarn feeder number that needs to be replaced on the program control interface (left).<br>2. Input the yarn feeder number after replacement (right).<br>Press Enter for confirmation, or Key Esc for cancellation. |
| F6 | Setting of rocking parameters (the option of rocking setting needs to be selected). |

## 3-3 PAT Editor

Keystroke: press "↑" or "↓" to select PAT Editor (Shortcut Key "3"), and press Enter to enter PAT Edit page.

Touch: To enter the PAT editing interface, select PAT Edit character area by touch pen, enter the PAT editing interface.


当前行 14
当前列 59
1234BB2.PAT
1 2 3 4
5 6 7 8
9 0 A B
C D E F
ESC ENTER
F2:定位 F3:开始 F4:结束 F5:左翻 F6:右翻 PU:上翻 PD:下翻 0~F:修改


Row 1
Column 1
1234BB2(402X1322)
F2:Loc F3:Start F4: End F5:Left F6:Right PU: UP PD:Down 0-F:Amend

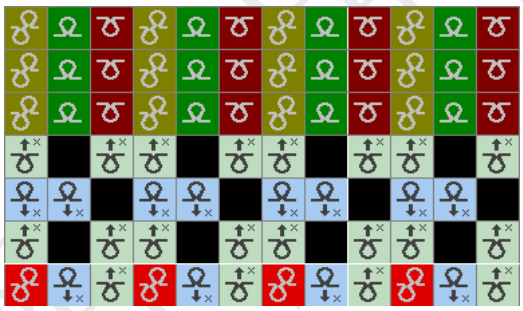

Edit and view the information of pattern being knitted (*.PAT), and that is the codes for Needle Selection.

Needle Selection:

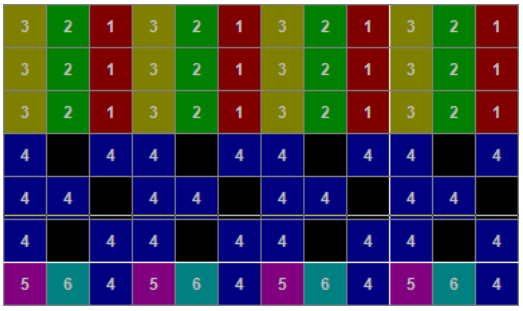
Select the needle from those lined on the needle bar.

On the PAT interface, the PAT row is shown on the vertical direction and the needles are showed on the horizontal direction.

When the original view is under auto-output operation, the color of the first drawing area will be converted to pattern information called pattern codes, indicating by numbers from 0 to 9 or by letters from A to F.



The original view (BMP)



The pattern information (PAT)

After entering the editing interface:

Keystroke: press ↑, ↓, ←, and → to move the cursor, locate the color codes which need to be revised, press Enter to pop up the soft keyboard and then revise the corresponding color code.

Touch: double-click the color code which needs to be revised by touch pen, revise it as required on the soft keyboard revise window.

| Function keys and touch area | Instructions |
|---|---|

| | |
|---|---|
| PU, PD | Page up and down PU: page up PD: page down |
| F2 | Move to the designated PAT row. Move to the window showing the row number after pressing F2, input the row number needed, press Enter to save it, or. press Esc to cancel the operation. |
| F3 | Move to the first line |
| F4 | Move to the last line |
| F5 | Scroll the screen by left |
| F6 | Scroll the screen by right |
| 0-F | Soft keyboard |

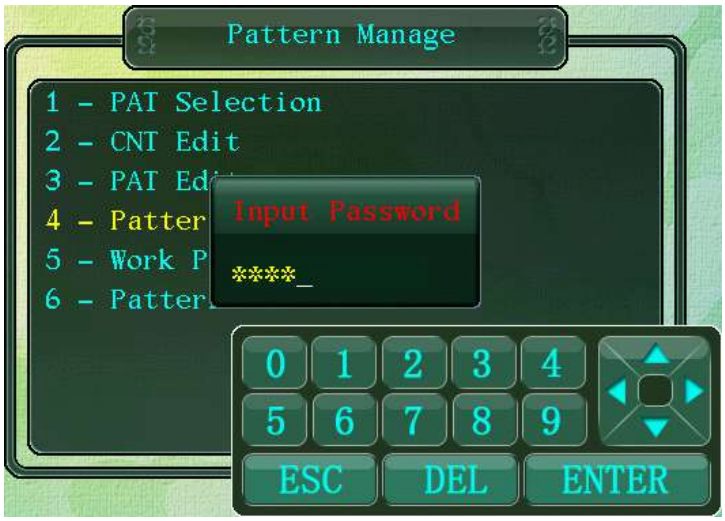
## 3-4 Pattern Delete(Memory Pattern Deletion)

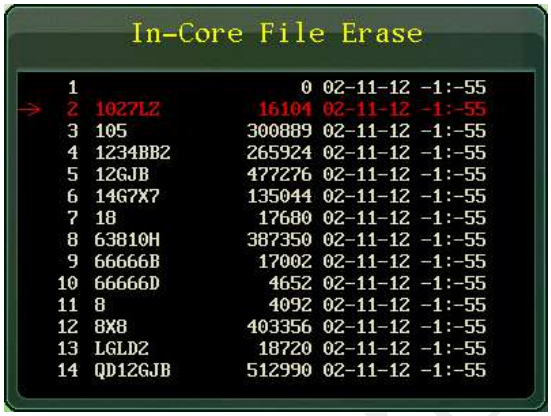
Keystroke: press "↑" and "↓" to select the option of Memory Pattern Deletion (shortcut key "4").

Press Enter to pop up the password input window, input "8888", and then enter the Memory Pattern Deletion window.

Touch: click or double-click the character area of Memory Pattern Deletion window by touch pen.

Pop up password input window, input "8888" by soft keyboard to enter the Memory Pattern Deletion window.




### Keystroke Operation:

Press "↑" and "↓" to select the pattern required to be deleted. The selected pattern will be shown in red font. Press Enter to pop up the Memory Pattern Deletion confirmation window. Choose Yes by pressing Enter and the window shows "deleting pattern". The indication window will pop up again when deletion is completed.

### Touch Operation:

Click or double-click the PAT File required to be deleted by touch pen. If it is hard to select files by touch pen, click the screen on the lower right corner to open the soft keyboard, press "↑" and "↓" **to** select files, click Enter to pop up the Memory Pattern Deletion confirmation window, click Yes to delete the file, or press Esc to cancel the operation, or click Del to close the soft keyboard.

Press Enter, Esc or click the deletion completion prompt column to turn back to the Memory Pattern Deletion window, and then you can continue to delete.

Please process deletion operation with caution for they are irreversible.

Kinds of deletion: *.CNT, *.PAT, *.PRM, *.YTX, *.SAV

The listing window shows the name, size and last revised date of the pattern.

The Memory Pattern Deletion listing window supports the sorting mechanism for files (sorted

by name, size and date)

| Key | Sorting instructions | Instruction |
|---|---|---|
| F1 | Sort by names | Press F1 repeatedly, files will be sorted by number from zero to nine or by letter from A to Z, or conversely. |
| F2 | Sort by sizes | Press F2 repeatedly, files will be sorted by sizes in ascending or descending sequences. |
| F3 | Sort by dates | Press F3 repeatedly, files will be sorted by dates either in ascending or descending sequences (year, month, day) |

## 3-5 Work Para .Copy(Copy the Operating Parameters)

Keystroke: press "↑" and "↓" to select the option of Copy the Operating Parameters (shortcut key "5").

Touch: click or double-click Copy the Operating Parameters character area.




Keystroke Operation:

Press Enter to pop up Select Pattern 1 listing window, press "↑" and "↓" to move the cursor to select the pattern that needs to copy the Operating Parameters (the copy object), and then the selected pattern will be showed in red font.

Press Enter to pop up Select Pattern 2 listing window, press "↑" and "↓" to select the duplicated pattern (as is shown on the picture above).

Press Enter to pop up the window indicating whether to copy the Operation Parameters of Pattern 63810H to Pattern QD12GJB, press Enter to copy it, and press Esc to cancel copying.

Touch operation:

Click or double-click the pattern which needs to copy the Operating Parameters (copy object) by touch pen.

Click or double-click to select the pattern copied by touch pen.

Click Enter on the soft keyboard to confirm duplication or ESC to cancel operation on the window that indicating whether to copy the Operation Parameters of Pattern 63810H to Pattern QD12GJB.

The working pattern selection window supports the sorting mechanism for file selection (sorted by name, size or date).

| Keystroke | Sorting instructions | Description |
|---|---|---|
| F1 | Sorted by name | Press F1 repeatedly, files will be sorted by number from zero to nine or by letter from A to Z, or conversely. |
| F2 | Sorted by size | Press F2 repeatedly, files will be sorted by size in ascending or descending sequences. |
| F3 | Sorted by date | Press F3 repeatedly, files will be sorted by dates either in ascending or descending sequences (year, month, day) |

## 3-6 Pattern Clear(All Clear the Memory Pattern)

Keystroke: select All Clear the Memory Pattern by“↑” and “↓” keys (shortcut key “6”).

Press Enter to pop up password input window, input 8888 to pop up All Clear the Memory Pattern confirmation window, select Yes by pressing Enter to clear all Memory Pattern Files.

Touch: click or double- click All Clear the Memory Pattern character area by touch pen.

Pop up password input window, input 8888 by soft keyboard to pop up All Clear the Memory Pattern confirmation window, click Yes to clear all Memory Pattern Files.

You can not go back to the operation monitoring frame after all clearing the Memory Patterns. You should input a new pattern, select it, and then you will have access to the operation monitoring frame and enter the reset state automatically

Please take care of the operation for All Clear the Memory Pattern is irreversible.



## 4- File Manage(File Storage)

Keystroke: move the cursor by"↑" and "↓" keys to select File Storage (shortcut key "4"), and press Enter to enter the File Storage page.

Touch: click or double click the File Storage character area by touch pen.

The page contains eight items, among which the system log is used by our company for checking, so the final users do not have to use it.

Keystroke: move the cursor by"↑" and "↓" keys, select the item needed, and press Enter to pop up setting page.

Touch: click or double- click the items needed by touch pen.


## 4-1 PAT Input(Pattern File Input)

Please insert USB flash disc to the proper spigot of display screen.

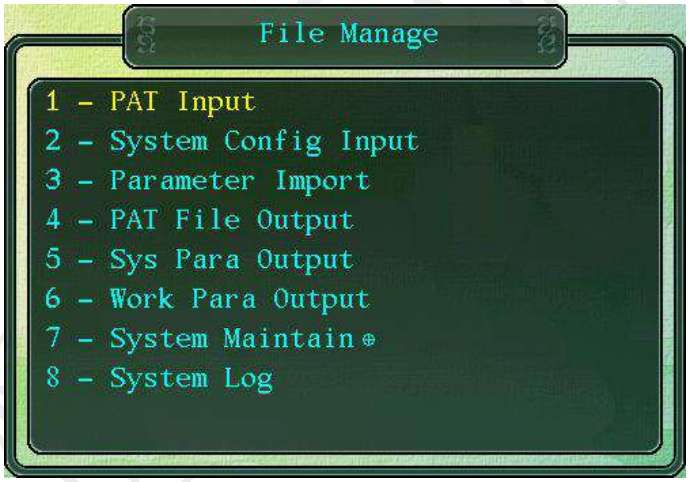
Keystroke: select File Storage on the menu, press Enter to enter File Storage page.

Move the cursor by"↑" and "↓" keys to select Pattern File Input (shortcut key "1"), press Enter to pop up Pattern File Input window.

Touch: click File Storage on the menu by touch pen to pop up File Storage list item.

The supported file formats for the USB flash disk of this system are FAT, FAT32. Please transform the formats to FAT or FAT32 if they are different from the supported ones.

Storage capacity: less than 2GB. Hengqiang Technology can provide customers with USB flash disk with capacity less than 128MB.




Input the new patterns or those that had been tested and debugged by other flat knitting machines from the USB flash disk to system internal memory.

Keystroke: move the cursor by "↑" and "↓" keys, select the pattern that USB flash disk needs, the font of the selected pattern will be colored red, press Enter to pop up the progress bar indicating "inputting Pattern File", the input completion indication window will pop up when the inputting is completed, press Enter to go back to the Pattern File Input window

Touch:

Click the Pattern listing line that needed to be input by touch pen.

Click the lower right corner of the screen to open the soft keyboard. Click "↑" and "↓" to select file and press Enter to input information.

Click the completion prompt bar after inputting to go back to the Pattern File Input window.

| Input File Types | |
|---|---|
| *.CNT | Pattern Document Actions |
| *.PAT | Pattern Files |
| *.PRM | Saving Files, the savings set on the plate making. |
| *.SAV | Pattern Operating Parameters File, stitch settings, batch settings, etc. |
| *.YTX | Intarsia Files |

The number of Pattern Input Files depends on whether the USB flash disk has Saving Files or Operating Parameter Files. Usually, it can input at least two files with the same name to system internal memory with four files to be the maximum.

* CNT and *PAT are the files required to form knitting patterns. Neither of them can be omitted, otherwise, the system will generate alarm indicating the lack of that file.

The system will input the information to the system internal memory according to the file number of the USB flash disk.

**The listing window will not show the pattern's name if there is no *CNT File on the USB flash disk.**

When there is no *PAT File on the USB flash disk, the system will pop up a window indicating that Flower-shape File is out of existence, please check your USB flash disk.

The Operating Parameter cover will generate alarm when the system's file is cover by that with the same name on the USB flash disk.

The page will show names, sizes and last revised date of patterns in USB flash disk.

The Pattern File Input window supports the sorting mechanism (sorted by name, size or date).

| Keystroke | Sorting instructions | Description |
|---|---|---|
| F1 | Sorted by name | Press F1 repeatedly, files will be sorted by number from zero to nine or by letter from A to Z, or conversely. |
| F2 | Sorted by size | Press F2 repeatedly, files will be sorted by sizes in ascending or descending sequences. |
| F3 | Sorted by date | Press F3 repeatedly, files will be sorted by date either in ascending or descending sequences (year, month, day) |

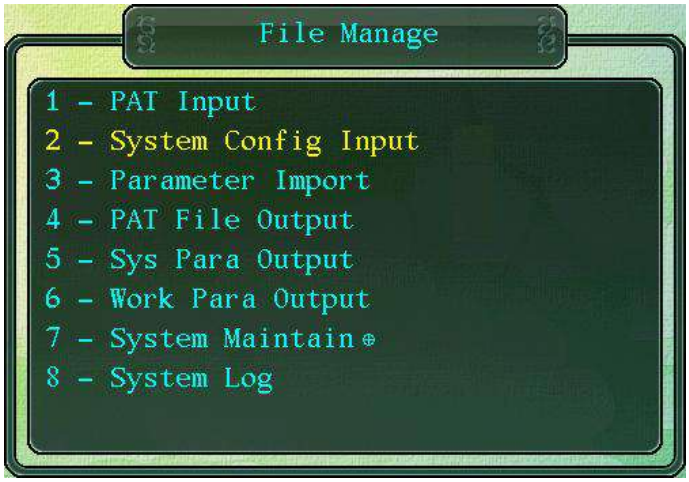
## 4-2 System Config Input (Input System Parameters)

Please insert USB flash disc to the proper spigot of display screen.

Keystroke: select File Storage on the menu, and press Enter to enter the File Storage page.

Move the cursor by"↑" and "↓" keys to select Input System Parameters (shortcut key "2"), press Enter to pop up Input System Parameters window.

Touch: click or double-click Input System Parameters character area by touch pen.





### Save the Input System Parameters in the USB flash disk to current system internal memory

#### Keystroke:

If there are several System Parameter backups, move the cursor by "↑" and "↓" keys to select the one needed, the font of the selected one will be colored red, press Enter to pop up the window indicating the process of inputting files, press Enter or Esc to go back to File Storage page when it is completed.

#### Touch Operation:

Click the name of System Parameter which is required to input by touch pen.

Click the lower right corner of the screen by touch pen to open the soft keyboard, click the"↑" and "↓" to select files and press Enter to input information.

The page will show the name, size and last revised date of the system parameters in USB system.

The Pattern File Input window supports the sorting mechanism (sorted by name, size or date).

| Keystroke | Sorting instructions | Description |
|---|---|---|
| F1 | Sorted by name | Press F1 repeatedly, files will be sorted by number from zero to nine or by letter from A to Z, or conversely. |
| F2 | Sorted by size | Press F2 repeatedly, files will be sorted by size in ascending or descending sequences. |
| F3 | Sorted by date | Press F3 repeatedly, files will be sorted by date either in ascending or descending sequences (year, month, day) |

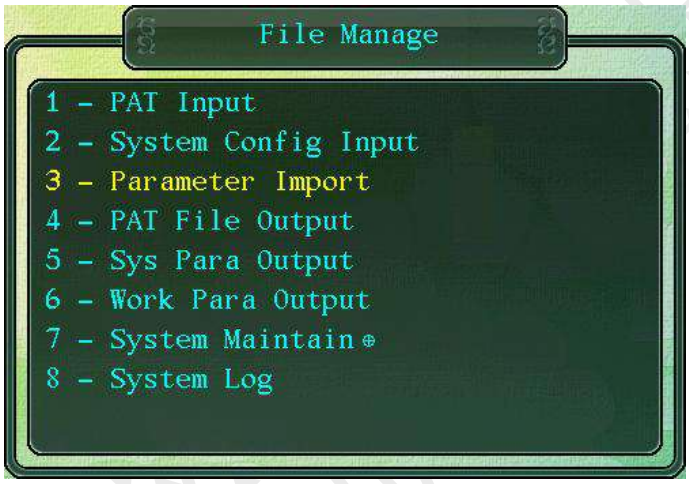
## 4-3 Parameter Import (Operating Parameters Input)

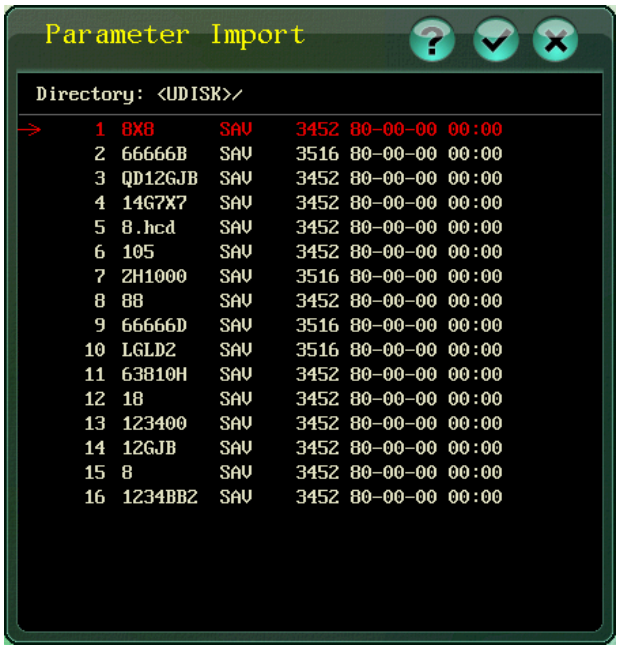
Please insert USB flash disc to the proper spigot of display screen.

Keystroke: select File Storage on the menu, press Enter to enter the File Storage page.

Move the cursor by"↑" and "↓" keys to select Operating Parameters Input (shortcut key "3"), press Enter to pop up Operating Parameters Input window.

Touch: click or double-click Operating Parameters Input character area by touch pen.






Input the Operating Parameters saved in the USB flash disk to current pattern.

Keystroke:

If there are several Operating Parameters backups, move the cursor by"↑" and "↓" keys to select the one needed, the font of the selected one will be colored red, press Enter to pop up the window indicating the process of inputting files, press Enter or Esc to go back to the file storage page when it is completed.

Touch Operation:

Click the name of the Operating Parameters which is required to input.

Click the lower right corner of the screen by touch pen to open the soft keyboard, click the"↑" and "↓" to select files and press Enter to input information.

The page will show the name, size and last revised date of the Operating Parameters in USB.

The Pattern File Input window supports the sorting mechanism (sorted by name, size or date).

| Keystroke | Sorting instructions | Description |
|---|---|---|
| F1 | Sorted by name | Press F1 repeatedly, files will be sorted by number from zero to nine or by letter from A to Z, or conversely. |
| F2 | Sorted by size | Press F2 repeatedly, files will be sorted by size in ascending or descending sequences. |
| F3 | Sorted by date | Press F3 repeatedly, files will be sorted by date either in ascending or descending sequences (year, month, day) |

## 4-4 PAT File Output (Pattern File Output)

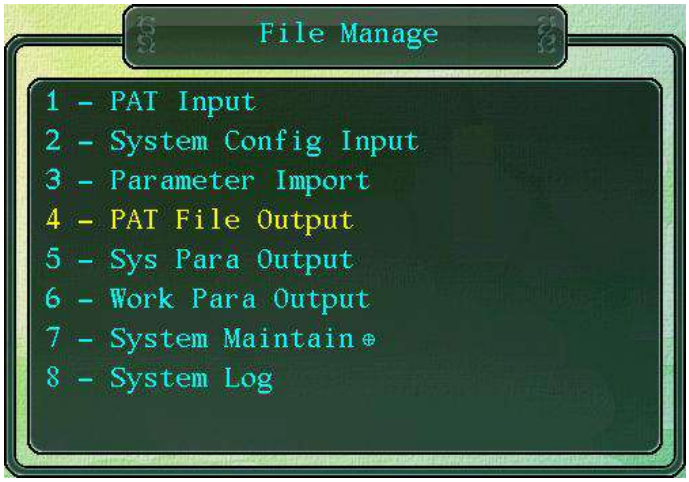
Please insert USB flash disc to the proper spigot of display screen.

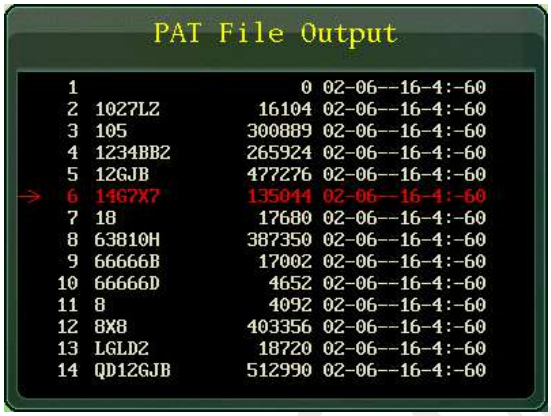
Keystroke: select File Storage on the menu, press Enter to enter the File Storage page.

Move the cursor by "↑" and "↓" keys to select Pattern File Output (shortcut key "4"), press

Enter to pop up Flower -shaped File Output window.

Touch: click or double-click Flower- shaped File Output character area by touch pen.




### Flower- shaped File Output

Output the patterns saved in the system internal memory to USB flash disk so that you can input the patterns that had been tested and debugged to other flat knitting machines, or just save the patterns for other use.

The window lists all the Flower- shaped Files saved in the internal memory, please press PD key to move to next page or move the down key to continue selecting when the Pattern Files are listed in more than one page.

### Keystroke:

Move the cursor by"↑" and "↓" keys to select the pattern that the internal memory needs to output, the font of the selected pattern will be colored red. Press Enter to pop up the window indicating the progress of Outputting Pattern Files. The completion prompt column will pop up again when it is completed.

### Touch:

Click the Pattern File which needs to be output by touch pen.

Click the lower right corner of the screen by touch pen to open the soft keyboard, click the up and down arrows to select files and press the Enter key to input information.

| Output File Types | |
|---|---|
| *.CNT | Pattern File Actions |
| *.PAT | Pattern Files |
| *.PRM | Saving Files, the savings set on the plate making. |
| *.SAV | Pattern Operating Parameters File, stitch settings, batch settings, etc. |
| *.YTX | Intarsia Files |

The number of Pattern Output Files depends on whether the system internal memory has Saving Files (*.PRM) or not. Usually, it can output at least three files with the same name to USB flash disk with four files to be the maximum.

The page will show names, sizes and last revised date of patterns in internal memory.

The Pattern File Output window supports the sorting mechanism (sorted by name, size or date).

| Keystroke | Sorting instructions | Description |
|---|---|---|
| F1 | Sort by name | Press F1 repeatedly, files will be sorted by number from zero to nine or by letter from A to Z, or conversely. |
| F2 | Sort by size | Press F2 repeatedly, files will be sorted by size in ascending or descending sequences. |
| F3 | Sorted by date | Press F3 repeatedly, files will be sorted by date either in ascending or descending sequences (year, month, day) |

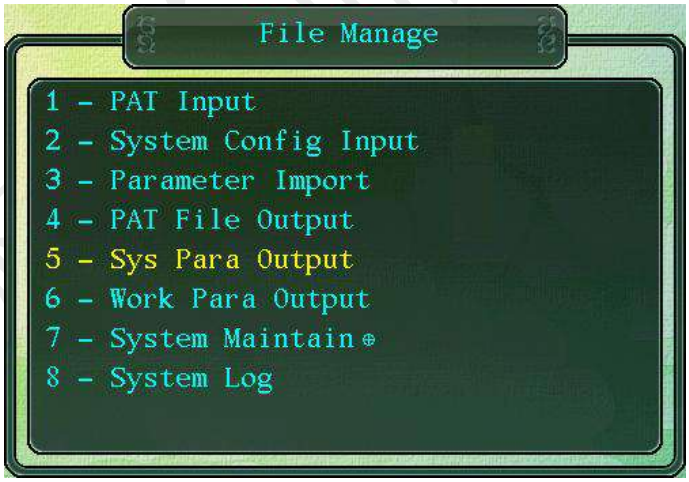
## 4-5 Sys Para Output (Output of System Parameters)

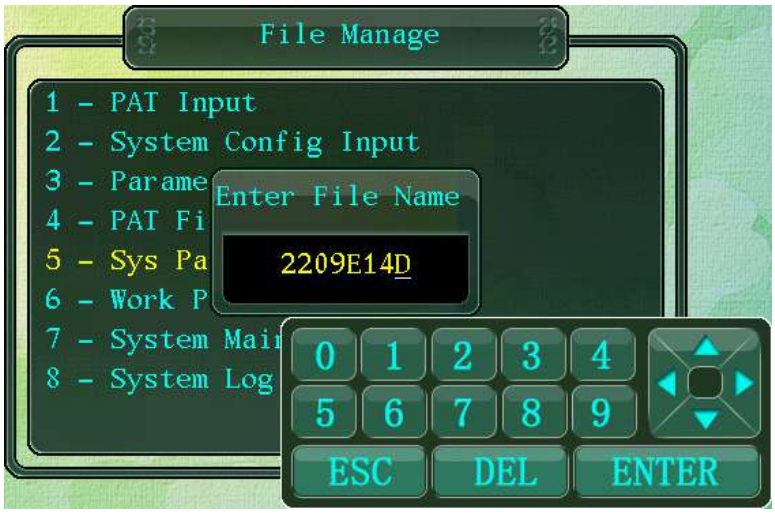
Please insert USB flash disc to the proper spigot of display screen.

Keystroke: select File Storage on the menu, and press Enter to enter the File Storage page.

Move the cursor by“↑” and “↓” keys to select Output of System Parameters (shortcut key"5").

Touch: click or double-click Output of System Parameter character area by touch pen.






Save the Output of System Parameters being used in the system internal memory to USB flash disc.

Keystroke:

Press Enter to pop up the window indicating "please input the name of the file", input the name in number and press Enter, the progress bar showing outputting files will pop up, and the completion prompt bar will pop up again when it is completed, press Enter or Esc to go back to File Storage page.

Touch:

Click the number key on the soft keyboard to input the name of the file, and click Enter to complete the output of the file to the USB flash disk.

Names of Files: from zero to nine.

Character Size: eight characters are the maximum

**Please name the files according to the corresponding nameplate numbers of the machines to input information easily or diminish the resetting procedure when the system parameters are initialized.**

System Parameters are one of the most essential parameters for flat knitting machines, please backup them in time for unexpected needs.

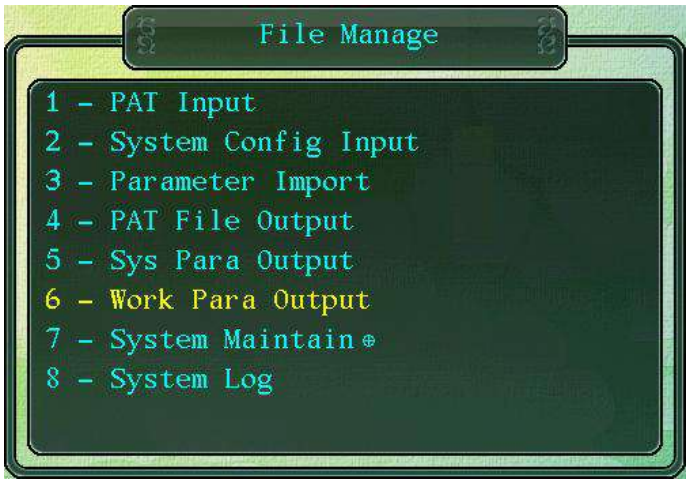
## 4-6 Work Para Output(Output of Operating Parameters)

Please insert USB flash disc to the proper spigot of display screen.

Keystroke: select File Storage on the menu, press Enter to enter the File Storage page.

Move the cursor by "↑" and "↓" keys to select Output of Operating Parameters (shortcut key"6").

Touch: click or double-click Output of Operating Parameters character area by touch pen.





Save the Output of Operating Parameters of the pattern being used to the USB flash disk so that you can input them to the patterns that share the same settings.

Keystroke:

Press Enter to pop up the progress bar indicating Outputting Files, the completion prompt bar will pop up again when it is completed, press Enter or Esc to go back to File Storage page.

Touch:

Output the Operating Parameters to USB flash disk by touch pen.

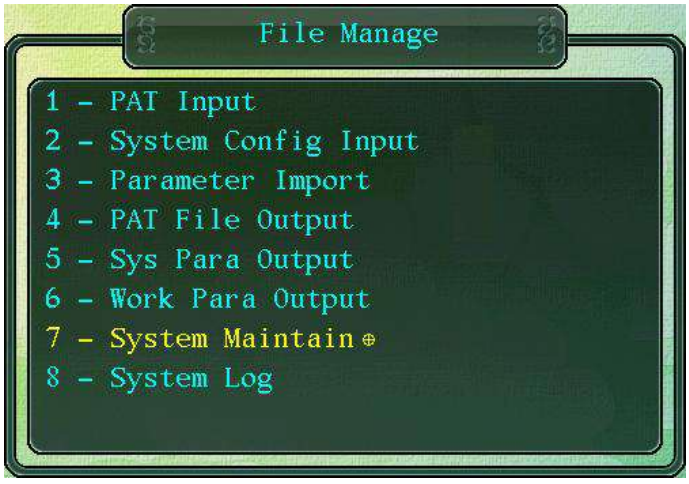
## 4-7 System Maintain(System Maintenance)

Keystroke: move the cursor by "↑" and "↓" keys to select System Maintenance (shortcut key "7").

Press Enter to pop up the password inputting window, input the correct passwords, and press Enter to enter the sub-item page.

Touch: click or double click System Maintenance character area by touch pen.

This page has four settings. Please move the cursor by "↑" and "↓" keys to select the item you need.




## 4-7-1 Upgrade(Upgrade Procedure)

Please insert USB flash disc to the proper spigot of display screen.

Keystroke: press"↑" and "↓" to move the cursor to select Upgrade Procedure (shortcut key "1").

Touch: click or double click Upgrade Procedure character area by touch pen.


Read the System Upgrade Procedure from USB flash disk (*,pg3)

Keystroke:

Press Enter to pop up Upgrade File for USB flash disk selection window. Move the cursor by "↑" and "↓" keys to select the file needing to be upgraded. Press Enter to pop up the progress bar indicating upgrading procedure. The system will automatically enter the blue screen

upgrade interface after the completion of the duplication. The buzzer will produce sounds intermittently from the time when the progress bar indicating 100% and Upgrade Produce is completed after restarting the system.

Touch:

Click or double –click the file that needs to be upgraded. If it is hard to select by touch pen, you can click the lower right corner of the screen to open the soft keyboard, press"↑" or"↓", and then click Enter to confirm upgrading the file.

Click DEL to close the soft keyboard.

When the upgrade procedure fails in the process of copying the upgrade procedure to the system due to the power outages or the fault of USB flash disk, the system will re-operate according to the upgrade procedure next time, and the failure of the upgrade procedure will have no influence to normal operation of the system.

When the electricity goes off suddenly in the process of blue screen upgrade, the system will automatically go to the upgrade procedure until the upgrade is completed when the electricity goes on again.

This system is in support of restoration of upgrade, with five-time' upgrade records to be the maximum restoration.

Press number "1" and "C" in the meantime to start up the machine after powering off, the system will pop up a window indicating whether to restore or not. If you select Yes, the system will restore to the latest upgrade (according to the date of Upgrade Procedure).

**The main aims of System Upgrade Procedure are to enhance the stability of system, improve the reliability and perfect some functions.**

This system supports the transforming of documents to customers via internet, and customers can download them to USB flash disk to upgrade their systems.

## 4-7-2 Version Maintenance

Keystroke: move the cursor by "↑" and "↓" keys to select Version Maintenance (shortcut key "2"), press Enter to enter other input windows.

Touch: click or double click Version Maintenance character area by touch pen.

This item has three sub-items.


4-7-2-1 Data File Input

Firstly, please insert USB flash disc to the proper spigot of display screen.

Keystroke: move the cursor by up and don keys to select Other File Input (shortcut key "1"), the Graphics File Input window for USB flash disk will pop up, listing Graphics Files in USB flash disk.

Move the cursor by "↑" and "↓" keys, select the Graphics File that the USB flash disk needs, and press Enter to input information.

Touch: click or double-click Other File Input character area by touch pen.

Click or double –click the Graphics File needed by touch pen. If it is hard to select by touch pen, you can click the lower right corner of the screen to open the soft keyboard, click "↑" or "↓", and then Enter to confirm it.

4-7-2-2 Machine Configuration View

Check machine system functions, manufacturer and the customer code of the company.

Keystroke: press"↑" and "↓" to move the cursor to select The Machine Configuration File Check (shortcut key "2"), press Enter to pop up The Machine Configuration Instructions, and press Enter or Esc to exit.

Touch: click or double click The Machine Configuration File Check character area by touch pen.


4-7-2-3 System Ver. View

Check the Program Version information currently used by the control system.

Keystroke: press "↑" and "↓" to move the cursor to select Program Version Check (shortcut key "3"), press Enter to pop up the query window showing the current version and last revised date of the program.

Touch: click or double click Machine Configuration File Check character area by touch pen.


## 4-7-3 Time Setup(Set System Time)

Keystroke: press "↑" or "↓" to set the system time item (Shortcut Key "3") and press Enter.

Touch: click or double click to set the system time character area with touch pen.



While installing and debugging a new machine, please first set the accurate system date and time.

## 5- Machine Test

Keystroke: press "↑" or "↓" to move the cursor and choose machine testing (Shortcut Key "5"), and press Enter to the machine testing interface.

Touch: click or double click the machine testing character area with touch pen.

The machine testing interface has 3 testing items in total.

Keystroke: press "↑" or "↓" to move the cursor and choose the testing item (or press the Shortcut Key), and press Enter to the selected testing item.

Touch: use touch pen to click or double click the selected character item or click the lower right corner of the display screen to call out the soft keyboard, press "↑" or "↓" to move and locate the cursor, and click Enter to the testing interface.



## 5-1 Head Test(Carriage Testing)

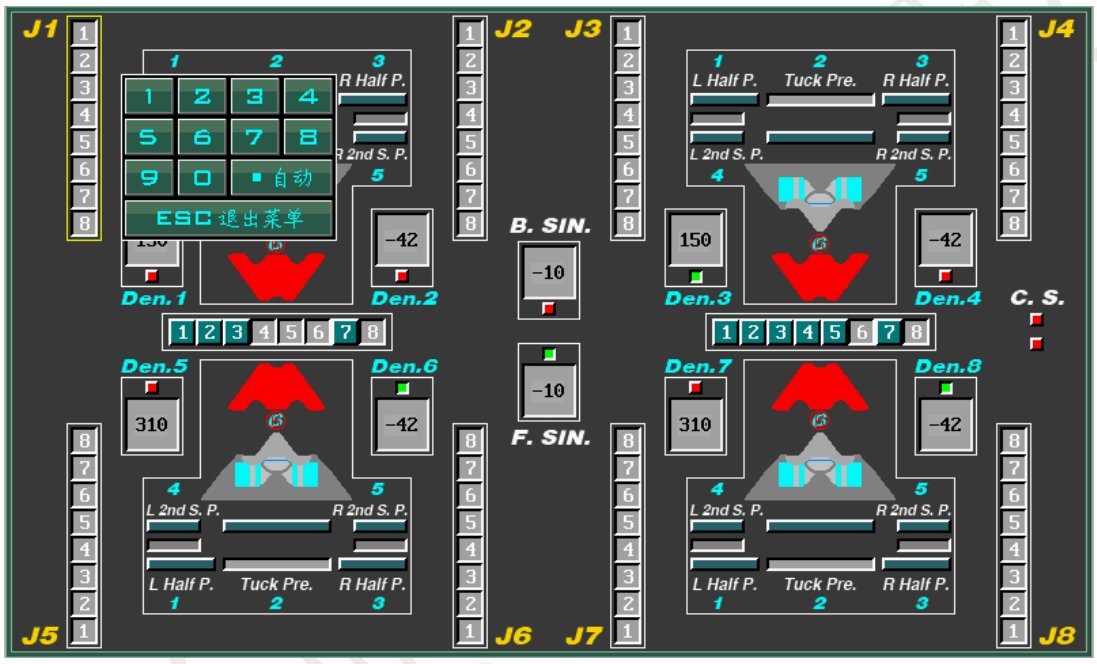
Completely and partly test the state of the carriage knitting system.

Keystroke: press "↑" or "↓" to choose carriage testing (Shortcut Key "1"), and press Enter to the carriage testing interface.

Touch: click or double click the carriage testing character area with touch pen and enter the carriage testing interface.

Main tests of the interface:

The carriage knitting part controls the cam (left and right receiving, tucking and transferring), needle selector, stitch motor, sinker motor, shuttle-changing electromagnet and knitting direction sensor, etc.


**For the installation and debugging of the new machine, the carriage knitting system is subject to the integrity testing.**

During the operation, in case any problems with the carriage knitting system is found, targeted testing can be performed against the problems so as to find out the fault points.

## Quick view of items

| Testing items | | Description |
|---|---|---|
| | J1-J8 Needle selector (bidirectional 8-section and unidirectional 6-section) | 4 forward and backward for each system |

| | | |
|---|---|---|
| | Den1-Den8 (Stitch motor) | 4 forward and backward for each system |
| | Operating magnet | 12 (6*2) systems forward and backward |
| | Yarn feeder magnet | 8 forward and backward for each system |
| | Sensor testing of carriage operating direction "needle selection stitch resetting cam (needle lifting)" | 1 for left course of the carriage and 1 for right course of the carriage |

| Other testing items | Description | |
|---|---|---|
| | Sin(Sinker motor) | 2 forward and backward |

**Needle selector testing**


Move the cursor box to the needle selector testing item and press corresponding number key to start testing.
The pendulous plate of the needle selector has two states (upward and downward) and the icon of the testing item will appear in concave or convex states (shown by different colors) according to the states of the pendulous plate.

| Icon state | Selection jack | Knitting description |
|---|---|---|
| Concave (dusty grey) | Upward | Provided with needle selector |
| Convex (blackish green) | Downward (default) | Not provided with needle selector |

| Number key | Selection jack |
|---|---|
| 1-8(1-6) | The tested needle selector is put through independent testing |
| 9 | All tested needle selectors pendulate upward |
| 0 | All tested needle selectors pendulate downward |

The testing number of pendulous plate is set according to the system parameter --- the value set by the number item of the selector blade.
The testing serial No. of the pendulous plate (1-8 (1-6)) corresponds to the selection jack of the front needle bar from the bottom up (the back needle bar and the front needle bar form the mirror symmetric relation).

Needle selector auto testing

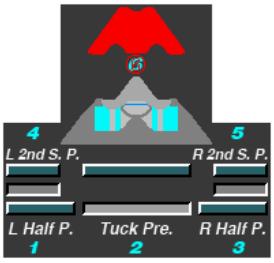
| | |
|---|---|
| Keystroke | Press the decimal point key on the operation panel and the selected pendulous plate of the needle selector will automatically swing up and down circularly according to the order of 1-8 (1-6), and press the decimal point key again or press the Esc to stop testing. |
| Touch | Click the auto key on the soft keyboard with touch pen. |

Operating magnet testing

Test the knitting cam actuating mechanism controlled by the bidirectional magnetic holding electromagnet.

Presser mechanism

Transferring mechanism




Keystroke: move the cursor box to the operating magnet testing item which has 6 testing sub-items.

Touch: use touch pen to click the operating magnet testing item, press the corresponding number key on the soft keyboard or directly click the testing icon.

| Key for testing | Name | Icon state | Function |
|---|---|---|---|
| 1 | Left receiving presser (half presser) | Concave and convex | Retractable type; it will retract and stop functioning when tucking instruction is input. |
| 2 | Tucking presser | Concave and convex switch upwards and downwards | Pendular type; the presser generally acts on Position H and will swing to above A position and stop functioning when instructions like loosening No. 2 stitch is input. |
| 3 | Right receiving presser (half presser) | Concave and convex | Same as the left receiving presser |
| 4<br>5 | Left No.2 section stitch presser<br>Right No.2 section stitch | Concave and convex switch upwards and downwards | Pendular type; the presser generally does not function when placed above A position and will swing to A position and start functioning when No. 2 stitch instruction is input. The No. 2 section stitch presser is |

| | | | |
|---|---|---|---|
| | presser | | lower than other pressers. |
| 6 | Transfer | Concave and convex switch upwards and downwards | Loop transfer |

### Operating magnet auto testing

Keystroke: Press the decimal point key on the operation panel and the operating magnet will automatically perform up and down swing testing and retractable testing according to the order of 1-6, and press the decimal point key again or Key Esc to stop testing.

Touch: Use touch pen to click the auto testing key on the soft keyboard and click the auto key again or other testing boxes to stop testing.

### Needle selection instruction and type

- Needle selection instruction and type
- Knitting and transferring mechanism

## Yarn feeder magnet testing

Test the yarn changing mechanism controlled by the bidirectional magnetic holding electromagnet.

Default: yarn feeder no-knitting

Keystroke: move the cursor box to the yarn feeder electromagnet testing item and press Key (1-8) to perform corresponding testing.

Touch: use touch pen to click the yarn feeder electromagnet testing item, press the corresponding Key (1-8) on the soft keyboard to perform corresponding testing.


Press the same number key continuously and the icon will change between concave and convex states (shown by different colors).

| Icon state | Yarn feeder magnet | Description |
|---|---|---|
| Concave (grey) | No-knitting | Yarn feeder no-knitting (the shuttle-changing spindle retracts) |
| Convex (red) | Enabled | Yarn feeder enabled (the shuttle-changing spindle falls) |

| Number key | Yarn feeder magnet |
|---|---|
| 1-8 | The tested yarn feeder magnet is put through independent testing |
| 9 | All tested yarn feeder magnets are no-knitting |
| 0 | All tested yarn feeder magnets are enabled |

Yarn feeder magnet auto testing

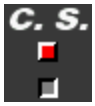
| | |
|---|---|
| Keystroke | Press the decimal point key on the operation panel and the selected yarn feeder magnet will automatically perform enabled and no-knitting tests circularly in the order of 1-8, and press the decimal point key again or Key Esc to stop testing. |
| Touch | Use touch pen to click the auto testing key on the soft keyboard and press the auto testing key again or click other testing items to stop testing. |

Operating direction sensor testing (needle selection stitch resetting cam)

Manually move the carriage back and forth and observe if the front and back direction signal icon in the testing interface changes with the operating direction.

The left shift or right shift distance of the carriage should be more than 2" (50mm).

- When the carriage is on the right course, the level of the front panel sensor is high (the indicating light is off) and the level of the back panel sensor is low (the indicating light is on)
- When the carriage is on the left course, the level of the front panel sensor is low (the indicating light is on) and the level of the back panel sensor is high (the indicating light is off)

| Right course | Left course |
|---|---|
|  |  |
| Front high and back low | Front low and back high |

Sinker motor testing

Test the sinker cam mechanism (normally open type sinker control structure) controlled by the stepping motor.

The cursor stays at the position of any testing item.

| Motor position | Key for testing | Description |
|---|---|---|
| Sinker motor | 1 | Left course knitting position |
| Sinker motor | 2 | Right course knitting position |
| Sinker motor (zero) | 3 | The front and back sinker motors of the carriage return |

| | | |
|---|---|---|
| | | to zero |

## Needle Selection Principle

Needle selection structure

There are respectively several sets of needle selectors at the front and back of the carriage. The number of the needle selectors is based on that of the knitting systems. Generally, one system have four sets of needle selectors at the front and back respectively.

Each set of needle selectors is equipped with 8 pendulous plates (or 3, 5, 6).

Needle selection instruction and type

| **Knitting instructions are divided into A position needle selection and Position H needle selection instructions** | |
|---|---|
| A position needle selection | Knitting/loop transfer instructions |
| Position H | Tucking/tucking No. 2 stitch/loosening No. 2 stitch instructions |

No selecting

The selector blade swings downwards, acts on the needle butt of the selection jack and press the needle jack into the needle bar.

If the selection jack is not raised by the needle lifting cam or the guide cam thereof and the needle selection stitch is not acted on thereby, the selection jack will stay at the no-knitting position B.

## Knitting Mechanism

Name of working needles on needle bar

| No | Name |
|---|---|
| 1 | Knitting needle |
| 2 | Stitch |
| 3 | Needle selection stitch |
| 4 | Selection jack (3, 5, 6, 8 sections, etc.) |

**Position A**

When the needle selection stitch is at position where it is not acted on by the presser, it can move on the needle bar. If the stitch is lifted to the knitting position, the knitting needle will also be lifted to the knitting position.

Position H

When the needle selection stitch is at position H, after the stitch is lifted to the tuck position, the tuck presser will act on the needle selection stitch and press it into the needle bar, and the knitting needle works at the tuck position.

Position B

When the needle selection stitch is at position B, the no-knitting fixed presser will press the needle selection stitch into the needle bar, the stitch will also sink into the needle bar and the knitting needle does not move (no knitting).

Loop transfer mechanism

**Ordinary loop transfer**

The front needle bar transfers towards the back needle bar

Position H needle selection

Position H needle selection

Receiving: Position H needle selection
Transfer cam functions, cardigan cam closes, receiving cam acts on the stitch, meanwhile, the left and right receiving pressers (half presser) act on position H and the position H stitch (needle) is lifted to the receiving position.

Loop transfer: position A needle selection Transfer cam functions and cardigan cam closes. Haft presser and tuck presser act on position H. Position A stitch (needle) is lifted to the loop transfer position which is slightly higher than the knitting position.

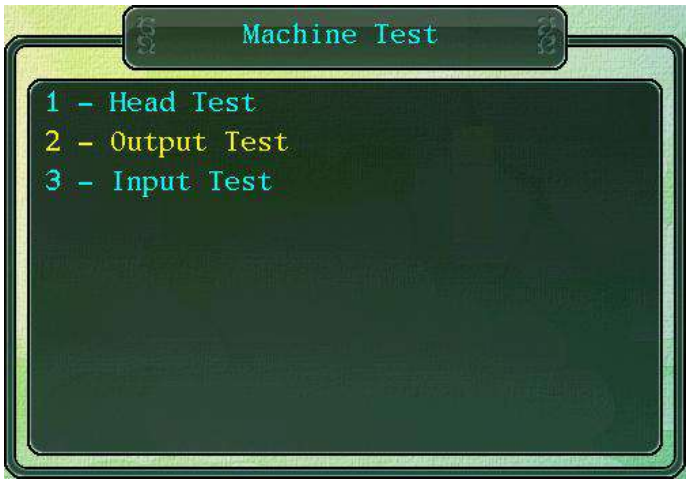
The transfer elevating height is higher than the knitting elevating height.

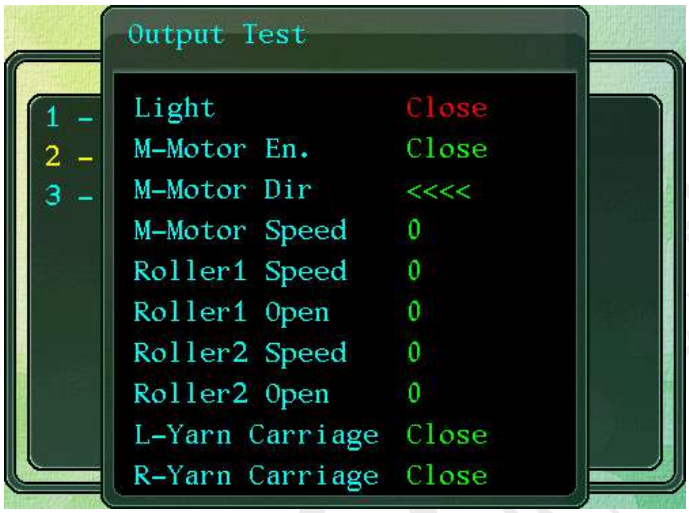
## 5-2 Output Test( Machine Output Test)

### Output item testing of control system

Keystroke: press “↑” or “↓” to choose output testing (Shortcut Key “2”), and press Enter to the output testing interface.

Touch: click or double click the output testing character area with touch pen and enter the machine output testing interface.




### Light[Status indicating light]

Keystroke: switch the status by pressing Enter and observe whether the color of the indicating light is consistent with the status prompt or not.

Touch: click the character area to switch the status.

Default: off

Red light (failure shutdown mode), the alarm buzzer will go off

Green light (normal knitting mode, the pull rod starts)

Yellow light (operation preparation mode, the pull rod stops)

### M-Motor En[Servo enabling signal]

Servo enabling testing of main motor

Keystroke: switch the status by pressing Enter and manually move the carriage to the

deadlock status after the enabling is turned on.

Touch: click the character area with touch pen to switch the status.

Off: no-knitting

On: enabled (deadlock)

When mounting and dismounting the synchronous pulley of the main motor, the enabling can be turned on to facilitate the mounting and dismounting.

### M-Motor Dir[Running direction of carriage]

Test the correctness of the running direction of the carriage (direction setting of the main motor servo)

Keystroke: press the left or right direction key for testing.

Left key: the carriage is on the left course, and shown by left direction arrow.

Right key: the carriage is on the right course, and shown by right direction arrow.

Touch: use touch pen to click the arrow area and the direction setting window will pop up, then choose left or right running direction.

Before testing the running direction of the carriage, the running speed of the carriage must be set first, which is generally set between 5 and 30, preferably 5 - 10.

### M-Motor Speed[Carriage running speed]

Carriage running speed setting

Keystroke: press Enter to display the yellow font with white subscript, input by the number keys and press Enter to end.

Touch: click with touch pen the character area of the item and the soft keyboard will pop up, input the value, and click Enter to end.

Range: 0-30

Speed setting when testing the running direction of the carriage

### Roller1 Speed[Batching speed of main roller]

Test the positive rotation batching speed of the main roller and whether the batching direction is correct or not (stepping high level roller or torque roller).

Keystroke: press Enter to display the yellow font with white subscript, input by the number keys, press Enter to observe whether the main roller motor rotates and turns or not and whether the rotation speed changes with different values.

Touch: click with touch pen the character area of the item and the soft keyboard will pop up, input the value, and click Enter to end.

Range: 0-100

### Roller1 Open[Opening range of main roller]

Test the reversal opening range of the main roller and whether the open direction is correct or not.

Keystroke: press Enter to display the yellow font with white subscript, input by the number keys, press Enter to observe whether the main roller motor opens reversedly or not and whether the range changes with different values.

Touch: click with touch pen the character area of the item and the soft keyboard will pop up, input the value, and click Enter to end.

Range: 0-500

### Roller2 Speed[Batching speed of sub-roller]

Test the positive rotation batching speed of the sub-roller and whether the batching speed is correct or not (torque roller).

Keystroke: press Enter to display the yellow font with white script, input by the number keys, press Enter to observe whether the sub-roller motor rotates and turns or not and whether the rotation speed changes with different values.

Touch: click with touch pen the character area of the item and the soft keyboard will pop up, input the value, and click Enter to end.

Range: 0-100

### Roller2 Open[ Opening range of sub-roller]

Test the correctness of the reversal direction of the sub-roller.

Keystroke: press Enter to display the yellow font with white subscript, input by the number keys, press Enter to observe whether the sub-roller motor opens reversely or not and whether the range changes with different values.

Touch: click with touch pen the character area of the item and the soft keyboard will pop up, input the value, and click Enter to end.

Range: 0-100

### L-Yarn Carriage[Left yarn feeding output]

Test the correctness of the running direction of the left torque yarn feeder.

Keystroke: press Enter to switch between the operation and the shutdown status.

Touch: click with touch pen to switch between the operation and the shutdown status.

### R-Yarn Carriage[Right yarn feeding output]

Test the correctness of the running direction of the right torque yarn feeder.

Keystroke: press Enter to switch between the operation and the shutdown status.

Touch: click with touch pen to switch between the operation and the shutdown status.

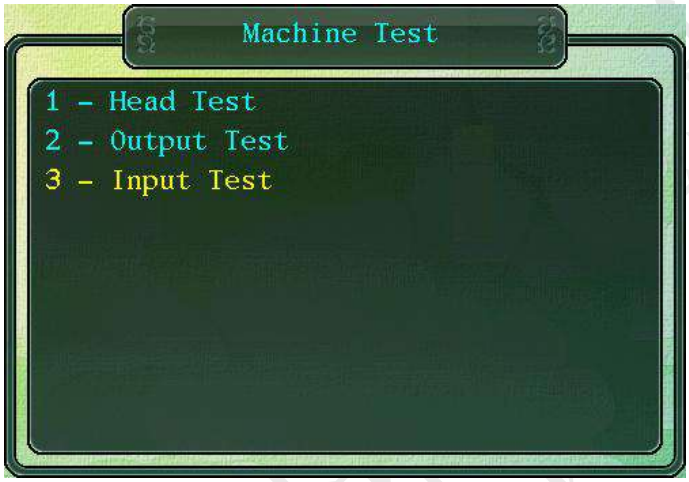
## 5-3 Input Test( Machine Input Test)

Input item testing of control system

Keystroke: press "↑" or "↓" to choose input testing (Shortcut Key "3"), and press Enter to the input testing interface.

Touch: click or double click the testing character area with touch pen and enter the testing interface.

The contents displayed on the interface below are subject to the configuration of machine manufacturers.





### Notice for input testing item

#### Main Motor Fault[Failure signal of main motor]

Back-testing of failure signal after starting up of the main servo motor

0: Normal

1: Failure

Main Motor Ready[Ready signal of main motor]

Back-testing of ready signal after starting up of the main servo motor

0: Normal

1: Failure

Rack Motor Fault[Failure signal of rocking motor]

Back-testing of failure signal after starting up of the rocking servo motor

0: Normal

1: Failure

Rack Motor Ready[Ready signal of rocking motor]

Back-testing of ready signal after starting up of the rocking servo motor

0: Normal

1: Failure

Drag Fast[Fast-motion signal of pull rod]

Fast-motion signal testing of pull rod

Move the pull rod manually to the fast-motion position (turn it clockwise to the maximum position) and observe whether the fast-motion signal displays status "1".

Drag Stop[Stop signal of pull rod]

Stop signal testing of pull rod

Move the pull rod manually to the stop position (turn it counterclockwise to the maximum position) and observe whether the stop signal displays status "1".

Drag Slow[Slow-motion signal of pull rod]

Slow-motion signal testing of pull rod

Move the pull rod manually to the slow-motion position (turn it clockwise to the middle position) and observe whether the slow-motion signal displays status "1".

Emergency[Emergency stop signal]

Emergency stop button signal testing

Press the emergency stop button to the emergency stop position manually and observe whether the signal displays status “1”.

### Left Bound[Left limit signal of carriage]

Test the maximum left stroke of the carriage and the left limit signal (stop position of the carriage when reset).

Use a small hardware (film scraper, screw driver, etc.) to contact the upper part of the left limit detecting head or move the carriage and observe whether the signal displays status “1”.

### Right Bound[Right limit signal of carriage]

Test the maximum right stroke of the carriage and the right limit signal

Use a small hardware (film scraper, screw driver, etc.) to contact the upper part of the right limit detecting head or move the carriage and observe whether the signal displays status “1”.

### Rack Zero[Zero position signal of rocking]

Zero position signal testing of rocking

Use a small thin iron metal sheet to contact the inner side of the groove type opto-coupler or the induction place of the Hall switch and observe whether the signal displays status “1”.

Generally, after the flat knitting machine finishes resetting, as the induction iron sheet has contacted the detecting head, the signal status then should be status “1”.

### Left Draw[Left take-up signal]

Left take-up signal testing of flat knitting machine

Manually pull the left thread take-up spring externally to the alarm iron wire position and observe whether the signal displays status “1”.

### Right Draw[Right take-up signal]

Right take-up signal testing of flat knitting machine

Manually pull the right thread take-up spring externally to the alarm iron wire position and observe whether the signal displays status “1”.

### Yarn Break[Yarn breakage signal of antenna platform]

Yarn breakage signal testing of antenna platform

Manually pull the left thread take-up spring of antenna platform upward to the yarn breakage alarm position and observe whether the signal displays status “1”.

### Yarn Kink[Yarn knot signal of antenna platform]

Yarn knot signal testing of antenna platform

Manually pull the yarn knot induction sheet of antenna platform forward to the yarn breakage alarm position and observe whether the signal displays status “1”.

### Big Yarn Kink[Severe yarn knot signal of antenna platform]

Severe yarn knot signal testing of antenna platform

Manually pull the severe yarn knot induction sheet of antenna platform forward to the yarn breakage alarm position and observe whether the signal displays status “1”.

Applicable to antenna platform device provided with severe yarn knot alarm.

### Bad Drop[Undesirable cropping signal]

Undesirable cropping signal testing

### Bump alarm[Strike signal of front needle bar]

Strike signal testing of front needle bar

Knock different positions of the upper part of the needle plate with a wood hammer or the hand hold of the screw driver and observe whether the signal displays status “1”.

### Bump alarm[Strike signal of back needle bar]

Strike signal testing of back needle bar

Knock different positions of the upper part of the needle plate with a wood hammer or the hand hold of the screw driver and observe whether the signal displays status “1”.

### Needle Zero[Zero position signal of needle]

Zero position signal testing of needle

Manually move the carriage back and forth on the left side of the flat knitting machine and make it fixed at the zero position signal place of the magnetic steel induction needle on the carriage (magnetic Hall) and observe whether the signal displays status “1”.

The zero position of needle is an important needle reading signal of the system. The zero position detecting head and the induction magnetic steel must be installed in a stable and reliable manner.

### M-Motor Encoder[Main motor encoder]

Testing of main motor encoder

### Rocking motor encoder

Testing of rocking motor encoder

### Key[Key code]

Test the correctness of the code of the operation panel keys.

### Right emergency door alarm

Testing of right emergency door alarm signal

### Left emergency door alarm

Testing of left emergency door alarm signal

### Before back roll of stepping roller

Signal testing before back roll of stepping roller

### After back roll of stepping roller

Signal testing after back roll of stepping roller

### Sub-roller back roll signal

Testing of sub-roller back roll signal

### Undesirable batching of sub-roller

Undesirable batching signal testing of sub-roller

### Opening signal of main roller

Opening signal testing of main roller

Use thin magnetic steel bar to touch the magnetic Hall sensing place and then leave the place and observe the signal status.

Touch: 1

Leave: 0

### Opening signal of sub-roller

Opening signal testing of sub-roller

### Left yarn feeding alarm signal

Testing of left yarn feeding alarm signal

### Right yarn feeding alarm signal

Testing of right yarn feeding alarm signal

## Operating Parameter Setting of PAT

After selecting the new pattern to be input into the system memory, reasonable editing and setting of the operating parameters for the pattern knitting should be conducted.

Pattern operating parameters depend on pattern document name (local parameter). The saving

format of the suffix name of the system internal document is *.SAV, among which * represents the name of the pattern.

Generally, different document names of pattern have different operating parameter settings. But in some circumstances, the operating parameter setting of different document names of pattern is basically the same and only local modification is needed. To reduce modification, the operating parameter copy function among patterns provided by the system can be used.

The system is set with default operating parameters according to the input new pattern and clients should modify accordingly to satisfy the demand of knitting process.

Press relevant shortcut key in the operation monitoring interface or click with touch pen the parameter display area (see Main Menu_1- Operation Diagram) to pop up the parameter setting of the current selected operating pattern.


Operating parameter setting items of pattern

| Number key | Description | Section and team | Parameter range |
|---|---|---|---|
| 1 | Working stitch amendment | 32 sections | 0-649 |
| 2 | Main roller edit | 32 sections | 0-100 |
| 3 | Sub-roller edit | 32 sections | 0-100 |
| 4 | Retractable roller edit | 32 sections | 0-100 |
| 5 | Motor speed edit | 32 sections | 0-100 |
| 6 | Yarn feeder stop point edit | 8 teams | 0-30 |

## 1- Work Stitch(Working stitch amendment)

Set the stitch value of the carriage (when knitting)

Stitch material decides the size of circle, namely, stitch decides the degree of the knitting needle to pull downwards.

Keystroke: press Shortcut Key “1” in the operation monitoring interface to pop up the working stitch amendment window.

Touch: use touch pen to click the X display area (see Main Menu_1- Operation Diagram)

Set number of section: 32 sections

Value range: 0-649 (pulse)

The window interfaces popped up differ according to the types of the knitting system of the flat knitting machine.

When the set value is directly proportional to the size of the circle (loose or tight), the greater the value, the larger the circle (loose), otherwise, the smaller the circle (tight).

Knitting systems of the flat knitting machine supported by the system:

- System 1 (single system)
- System 2 (default)
- System 3

The numerical symbols with "#” are the markers of process section

Keystroke: press “↑” “↓” “←” “→” to locate the section to be set and press “←” “→” to locate the working stitch to be modified. The stitch code where the cursor stops displays red font. Press Enter to modify and the set stitch is of yellow font with white subscript. Input by pressing the number keys and press Enter to end.

Press Esc to exit stitch setting

Touch: click with touch pen the value bar of section, modify after the soft keyboard pops up and click Enter to end.

Click with touch pen the prompt bar to exit the working stitch amendment form.

Shortcut key for copy and paste of section

Keystroke:

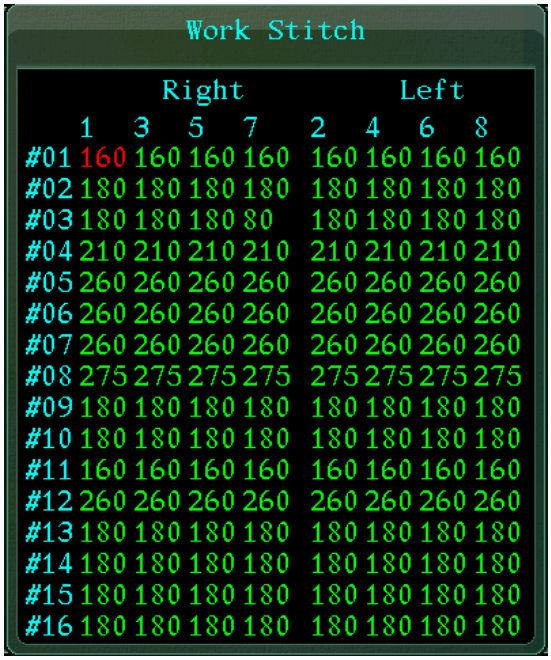
If the stitch values on the left and right rows of the set section are the same, press Key “C” on the panel for copy and paste of entire section row.

Touch:

Click with touch pen the prompt area of segment No. (e.g. #01) for copy and paste of entire section row.

Process section specified in the system

| | |
|---|---|
| **#23** | **The plate making system has not set transfer stitch** |
| #24 | Stitch of null row and no-knitting system |




The picture above is the working stitch amendment interface of System 2 Definition of stitch setting code

The definition of the system is based on the left side of the knitting cam of the carriage.

1 System definition

| | | |
|---|---|---|
| Rear stitch cam | **1** | **2** |
| Front stitch cam | 3 | 4 |

2 System definition

| | | | | |
|---|---|---|---|---|
| Rear stitch cam | **1** | **2** | **3** | **4** |
| Front stitch cam | 5 | 6 | 7 | 8 |

3 System definition

| | | | | | | |
|---|---|---|---|---|---|---|
| Rear stitch cam | **1** | **2** | **3** | **4** | **5** | **6** |
| Front stitch cam | 7 | 8 | 9 | 10 | 11 | 12 |

Stitch material is the material that most influences the knitting condition of the carriage and

the handfeel of the fabric, therefore, please make sure to input the correct value.

Generally, the stitch of rib structure is smaller than that of single-sided structure.

## 2- Main Roller Setup(Main Roller Edit)

The instruction for the main roller to pull the fabric downwards when the carriage is knitting (pulling force)

Batching material refers to the pulling material for pulling fabric under the needle bar in order to prevent fabric from floating on the needle bar.

Applicable to the roller control mechanism of the stepping motor and the torque motor.

Keystroke: press Key "2" to enter the setting window of the main roller team.

Touch: use touch pen to click the display box of the main roller (see Main Menu_1-Operation Diagram).

Set number of section: 32 sections

Value range: 0-100

Stop torque: set automatically stopped and maintained pulling force when the carriage stop running (torque motor).

Value range: 0-100

Set the batching pulling data according to the knitting structure and the knitting width.

The instruction is continual

The set value is directly proportional to the pulling force. The greater the value, the faster the rolling and the greater the pulling force.

The numerical symbols with "[ ]" are the marker of process section

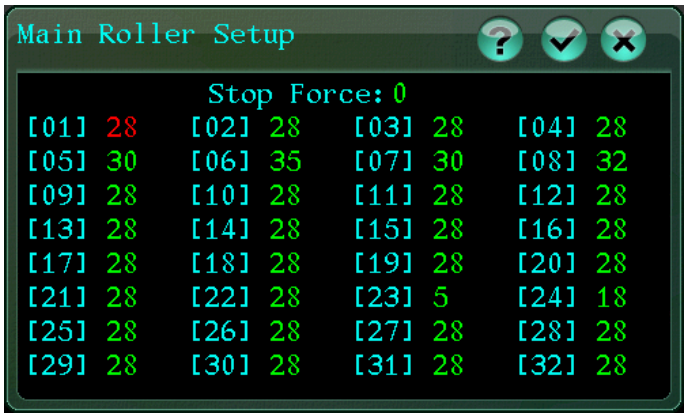
Keystroke: press "↑" "↓" "←" "→" to locate the section to be set. The main roller value where the cursor stops displays red font. Press Enter to modify and the set value is of yellow font with white subscript. Input by pressing the number keys and press Enter to end.

Touch: click with touch pen the value display area of the set section to pop up the soft keyboard, input relevant number and click Enter to end.

Shortcut key for copy and paste of all sections

Keystroke: if the values of the set section and other sections are the same, press Key "C" on the panel for copy and paste of all sections.

Touch: click with touch pen segment No. of the set section marker.




When using the roller control mechanism of the stepping motor ("high level roller"), the roller can be set to be opened reversely, the reverse setting conditions are as follows.

Generally, the roller is set to be opened reversely for application above the transfer row or in special knitting row.

| Roller setting | Retractable roller setting | Description |
|---|---|---|
| 0 | 0 | Main roller stops |
| 0 | >0 | Main roller opens<br>The value is directly proportional to the opening range. The greater the value, the greater the reversely opened range. |

Process section specified in the system

| | |
|---|---|
| **#23** | **The plate making system has not set batching when transferring** |
| #24 | Null row |
| #32 | Advance row selection after reset |

### 3- Sub-roller Setup(Sub-roller Edit)

The instruction for the sub-roller to pull the fabric downwards when the carriage is knitting (pulling force)

Applicable to roller batching controlled by torque motor

Keystroke: press Shortcut Key "3" on the operation monitoring interface to pop up the sub-roller editing window.

Touch: use touch pen to click the display box of the sub-roller (see Main Menu_1- Operation Diagram)


Set section: 32 sections

Value range: 0-100

The instruction is continual

The set value is directly proportional to the pulling force. The greater the value, the faster the rolling and the greater the pulling force.

Shortcut key for copy and paste of all sections

Keystroke: if the values of the set section and other sections are the same, press Key "C" on the panel for copy and paste of all sections.

Touch: click with touch pen segment No. of the set section marker.

Process section specified in the system

| | |
|---|---|
| **#23** | **The plate making system has not set sub-batching when transferring** |
| #24 | Null row |
| #32 | Advance row selection after reset |

## 4- Open&Close Roller Setup(Retractable Roller Edit)

Set the retractable roller edit when the carriage is knitting

Applicable to the retractable range setting of the roller mechanism of the torque motor and the stepping motor.

Keystroke: press Shortcut Key 4" on the operation monitoring interface to pop up the retractable roller editing window.

Touch: click with touch pen the help icon and select the character area of the retractable roller.


Set number of section: 32 sections

Value range: ±100

The instruction is continual

Notes for value setting:

| | |
|---|---|
| **Stepping main roller** | **The set value is directly proportional to the opening range of the roller. The greater the value, the greater the opening range.** |
| Torque retractable roller | The set value is inversely proportional to the opening range of the roller. The greater the value, the smaller the opening range. |

Shortcut key for copy and paste of all sections

Keystroke: if the values of the set section and other sections are the same, press Key "C" on the panel for copy and paste of all sections.

Touch: click with touch pen segment No. of the set section marker.

| |
|---|
| **Main roller adopts roller mechanism of stepping motor: to control retracting** |
| Retractable roller adopts roller mechanism of torque motor: to control retracting (main roller and sub-roller use torque motor for control) |

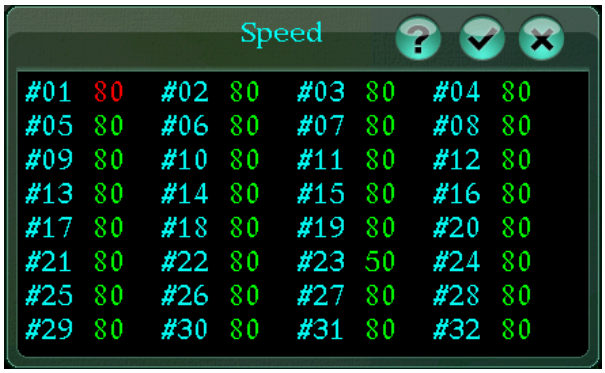
## 5- Speed(Motor Speed Edit)

Speed instruction is used for controlling the movement speed of the carriage at knitting.

Please input appropriate value

Keystroke: press Shortcut Key "5" on the operation monitoring interface to pop up the motor speed editing window.

Touch: click with touch pen the display area of main roller (see Main Menu_1- Operation Diagram) to pop up the motor speed editing window.




Set number of section: 32 sections

Value range: 0-100

The instruction is continual

The set value is directly proportional to the knitting speed. The greater the value, the faster the knitting.

Shortcut key for copy and paste of all sections

Keystroke:

If the values of the set section and other sections are the same, press Key "C" on the panel for copy and paste of all sections.

Touch:

Click with touch pen the segment No. prompt area of the modified section value (e.g. #01) to complete copy and paste of all sections.

Process section specified in the system

| | |
|---|---|
| **#23** | **The plate making system has not set the speed when transferring** |
| #24 | Idle stroke (null row) |

Rows with following instructions maintain the low speed -1

- The first row that executes the starting operation and the row with end instruction
- The first row that uses the pull rod to restart after automatic shutdown

## 6- Yarn Position Setup(Yarn Feeder Stop Point Edit)

Yarn feeder micro-adjustment material is used for adjusting the stopping position of the knitting area of the yarn feeder when the carriage is knitting.

Keystroke: press Shortcut Key "6" on the operation monitoring interface to pop up the yarn feeder stop point editing window.

Touch: use touch pen to click the display box of the yarn feeder (see Main Menu_1-Operation Diagram)

Horizontal coordinate: [Team 1] – [Team 8] are the yarn feeder stop point teams and are set in plate making.

Longitudinal coordinate: #1 - #8 yarn feeder

Set team: 8

Set yarn feeder: 8

Value range: 0-30

Notes for the left and right stop points under the teams

Left value: left stop point

Right value: right stop point

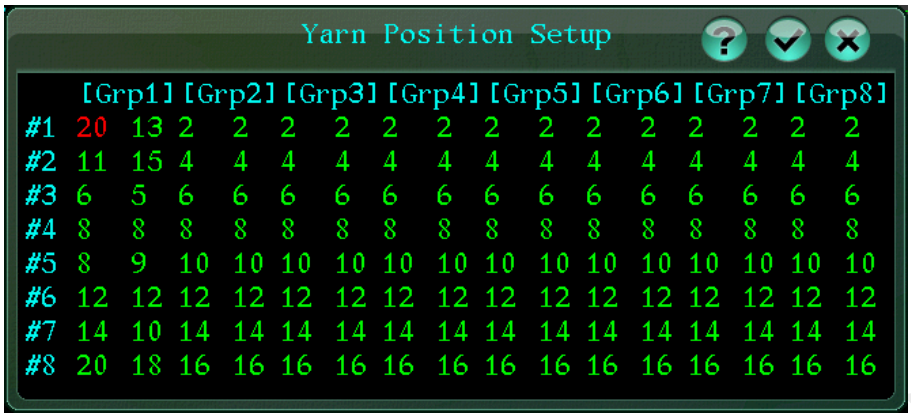
The greater the value set at the stopping position is, the farther the feeder is from the knitting area.

Keystroke: press "↑" "↓" "←" "→" to locate the position to be modified. The position where the cursor stops displays red font. Press Enter to modify and the set value is of yellow font with white subscript. Input by pressing the number keys and pressing Enter to end or pressing Esc to cancel the operation.

Touch: click or double click with touch pen the value display area of the set team to pop up the soft keyboard, input relevant number and click Enter to end.

As the knitting speed of the carriage has relatively great influences on the yarn feeder stop point, the setting of the relation between the yarn feeder stop point and the knitting speed is added in the system. Please make sure to amend the form of relation between the yarn feeder stop point and the knitting speed first when debugging a new machine. Thus, the system will automatically amend the influence of the carriage knitting speed on the stop point according to the set value in the edit form of the yarn feeder stop point.

See "Setting of comparison form for yarn feeder stop point and carriage speed" for details




## Circular Set(Loop Instruction)

Set the data loop when knitting (economy)

When the same knitting method is used, the economy instruction can be used to economize control and pattern material.

To coordinate with the travel direction of the carriage, please set the time of economy material to be an even number.

The system supports minor and major loop nest, but minor loops must be contained within major loops.

Keystroke: press Key "C" in the operation monitoring interface to pop up the loop setting window.

Touch: click with touch pen the loop display area (see Main Menu_1- Operation Diagram) with the touch pen


Set section: 10

Value range: 1-1000

When the pattern input into the system memory is provided with the economy file (*.PRM) set in the pattern preparation, select the pattern and press Key "C" or click with touch pen the loop display area to enter the loop setting form and view the economy content set in the pattern preparation.

The loop setting form may be added, edited or deleted, etc. according to knitting need.

### Loop modification

Keystroke: press "↑" or "↓" to locate the loop setting segment to be modified, press "←" or "→" to locate the field to be modified (start row, end row and cycle time), enter Enter and the modified content will display in the yellow font with white subscript, input relevant number and press Enter to end.

Touch: locate with touch pen the loop segment value bar to be modified, click the value bar of the start number, end number and cycle time to be modified to pop up the soft keyboard, input modified setting value and click Enter to end.

### Loop addition

Keystroke: press "↑" or "↓" to locate the start row of the next space segment (0, 0, 0) of the set loop segment, press Enter to input the loop start row number, press Enter again to end the start row setting and press "→" to set the loop end row and the cycle time.

Touch: click with touch pen the start line value bar of the next space segment (0, 0, 0) of the set loop segment to pop up the soft keyboard, enter the setting value and click Enter to end. End line and cycle time can be input in the same manner.

The loop segment must be added in a manner so that the segment No. is continuous, namely, the segment No. must be arranged in the order of #01, #02….

Intelligent limit of downwards moving of system cursor:

For the existing loop segment setting form, when adding new loop segments, the downwards moving of cursor can only locate the first space segment (0, 0, 0) and further downwards moving of the cursor will not be executed.

For space loop form, the cursor is located at segment #01 and downwards moving of cursor will not be executed. Only after finishing the setting of segment #01, can the cursor be moved downwards to segment #02.

### Loop delete

Keystroke: locate the "↑" or "↓" to the loop segment to be deleted and press Key "D" to delete it. If there are several segments in the form and the deleted segment No. is not the end No., the loop segment No. will reorder automatically.

Touch: click with touch pen the prompt area of the loop segment No. (e.g. #04) to pop up confirmation selection window.

If there are several loop segments, after delete the loop setting of a segment, the loop form will reorder.

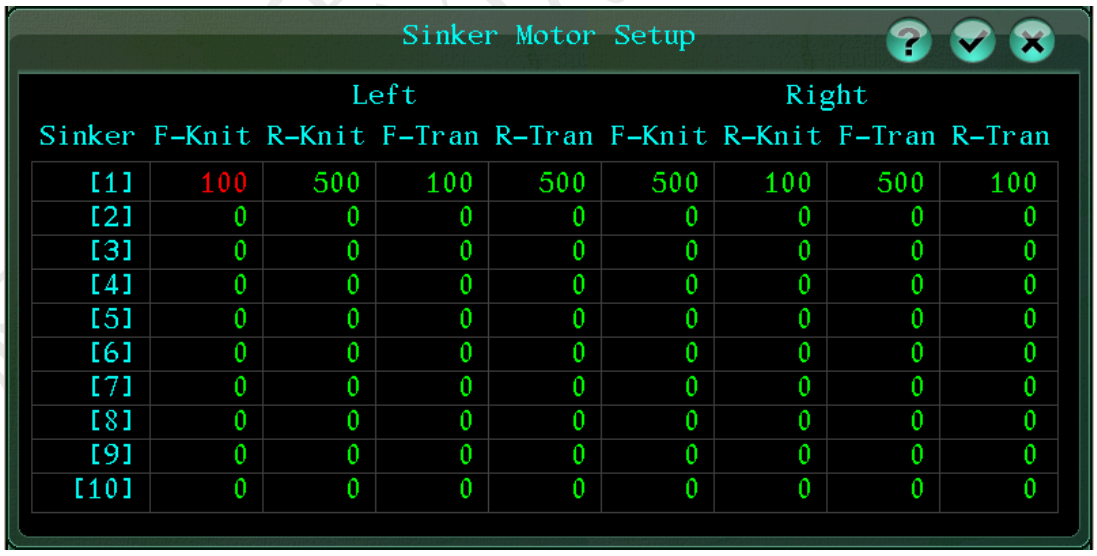
| For loop modification, addition must conform to the following rules: |
|---|
| The start row must be odd number (1, 3, 5…)<br>The end row must be even number (2, 4, 6…) |
| Sorting rule of loop form: |
| Take start row as the first sorting basis and the end row as the second sorting basis<br>The row No. of start line is sorted in the order from low to high<br>The row No. of end line is sorted in the order from low to high<br>For example: if the row No. of start line is the same, sort according to the row No. of end row from low to high (major and minor loop nest) |
| Due to the economy setting limit of Picasso plate making, the maximum cycle time can only be set to be 199. If the cycle time needs to be set over 199, please modify by the system loop form after inputting the economy file. |

## Sinker Motor Setting

Position setting of sinker in Sinker mechanism controlled by stepping motor

Keystroke: press Key "⏩" in operation monitoring interface to enter Sink motor setting form.

Touch: click the sinker display space (see Main Menu_1- Operation Diagram) with the touch pen




The corrected parameters are of system global setting, i.e. they are available for all the knitting patterns.

Unit: pulse.

Range: 0-650.

Number of sections: 10.

Keystroke operation:

Position upper and lower cursors to the required section and press "←" and "→" to the location to be corrected. The text where the cursor stops is red. Press Enter to correct. The value is set with white subscript and the font shows yellow. Input figures, and then press Enter to complete, or press Esc to cancel above operations.

Touch operation:

Use touch pen to click the segment value bar to be amended, alter the values after popping up the soft keyboard, and finally press Enter.

While operating the table, please change the effective setting items of Sinker into open mode in the system parameter setting of parameter setting of the main menu.

| **Description of Sinker Motor Setting** | |
|---|---|
| Setting during plate-making | Set Sinker section in the first of 218 function lines of instructions column for Picasso plate-making. Apply abc2.exe and abc3.exe by Hengqiang Technology to compilation. |
| No setting during plate-making | Execute in line with the first section of Sinker Motor setting form. |

As for the Sinker mechanism without the control of stepping motor, please change the effective setting items into closed mode in the system parameter setting of parameter setting of the main menu, otherwise, the return to zero failure of Sinker motor appears during reset of the carriage.

## Yarn Feeder stop Point & Carriage Speed

Set the comparison table between yarn feeder stop point and the waving speed of the carriage (additional functions)

Keystroke: press left and right keys in operate monitoring interface to enter the yarn feeder point and carriage speed comparison edit window.

Touch: click the Help button with touch pen to enter Help window, and click or double click the yarn feeder point and speed character area.

The corrected parameters are of system global setting, i.e. they are available for all the knitting patterns.


Range of speed correction: 1-100

Number of speed correction sections: 20

Accuracy of speed correction: 1-100, averagely every section of 5 D-values

Range of placing correction: ±10 (needles)

| Description of plus and minus | |
|---|---|
| + | - |
| Plus means to correct within the knitting area. | Minus means to correct outside the knitting area. |

Notes for applying the correction table

During the application of this correction table, please transfer the setting item of "carriage shift-out enable" into open mode in the system parameters setting of parameter setting of the main menu.

The width of the tested patterns is less than 100 needles (E12 for reference), and the tested patterns is arranged within the effective knitting breadth of needle bar [starting needle= (total needles – width of patterns)/2].

### Keystroke Operation:

Press "↑" "↓" "←" and "→" to the position to be corrected. The text where the cursor stops is red. Press Enter to correct. This moment the value is set with white subscript and the font shows yellow. Enter fingers, and then press Enter to complete, or press Esc to cancel above operations.

### Touch Operation:

Click or double click the speed character area to be corrected, call out the soft keyboard, enter

the corrected values and press Enter to complete.

## 0- Multi-Picec (Multi-chip Knitting Setting)

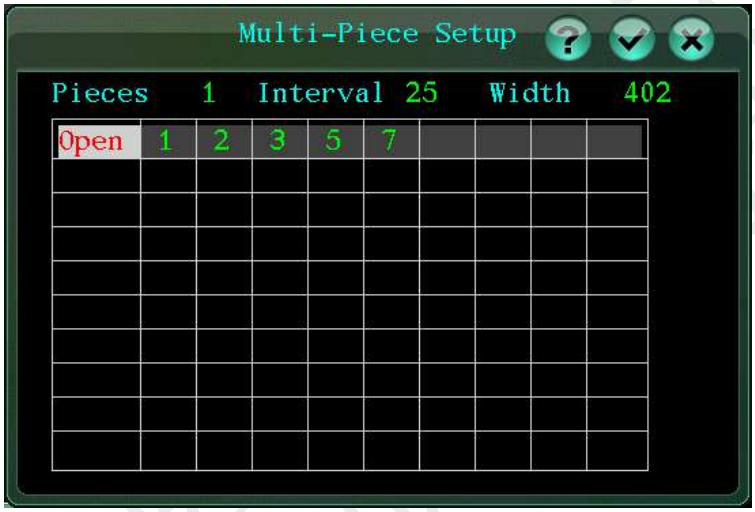
### Single-chip multi-knitting function

Keystroke: press Key "0" in operate monitoring interface to enter the multi-chip knitting setting table.

Touch: click the Help button with touch pen to enter Help window, and click or double click the multi-chip knitting setting character area.

When the knitted patterns are of smaller breadth and the yarn feeders are applied seldom, apply multi chips to knit one patterns in a flat knitting machine so as to promote the knitting efficiency.

Conduct reasonable setting according to the total needles, width of patterns and number of yarn feeders of the flat knitting machine.




Set in the readiness mode for knitting operation.

Numbers at the left of the window are the numbers of chips for multi-chip knitting setting.

The maximum chips of the System are 10 (1-10).

Default: 1

### Standard chip of chip knitting yarn feeder

The first chip is the standard chip of yarn feeder defaulted by the System. Numbers of yarn feeders (the same as yarn feeder inspection) used in action document will be displayed automatically within the right table.

If the standard chip has been exchanged or replaced by the yarn feeders, the number of replaced yarn feeder will be displayed in the Window.

Based on the chip number set by the chip knitting, set the correspondence with yarn feeder used for stand chip 1.

Multi-chip knitting number should be set according to the order of 2-10.

Description of function setting keys

| Function keys | Function | Description |
|---|---|---|
| F1 | Open | Operate the chip knitting |
| F2 | close | Close the chip knitting |
| F3 | Set the number of knitting chips | |
| F4 | Set the number of interval needles | |

### Setting guide

1. Number of knitting chips

Keystroke: press Key “F3", the font of chip number is changed from green into yellow with white subscript. Press number keys to set the chip number and press Enter to complete (the font is green.)

Touch: click the character tip area of “knitting chip number” with touch pen, call out the soft keyboard, enter the chip number and press Enter to complete.

When the chip number is set, the set sign will transfer from the default closed mode to open mode automatically (corresponding to the set chip number) so as to set the correspondence with yarn feeders.

2. Number of interval needles

Keystroke: press Key “F4", the font of the number of interval needles among chips is changed from green into yellow with white subscript. Press number keys to set the number of interval needles and press Enter to complete (the font is green.)

Touch: to click the character tip area of “number of interval needles” with touch pen, call out the soft keyboard, enter the chip number and press Enter to complete.

When the number of interval needles has been entered, the knitting breadth will be calculated automatically.

3: Chip knitting yarn feeder

Keystroke: press “↑" "↓" "←" and "→" to the positions corresponding to the yarn feeder, press Enter, then input fingers and press Enter again to complete.

Touch: click the position corresponding to the standard chip of the yarn feeder with touch pen, call out the soft keyboard, enter the chip number and press Enter to complete.

The program will automatically check whether there are repeated yarn feeder numbers in one

chip, if so, tips of "yarn feeders are repeated" and "please reset yarn feeder" will be popped up in case of repeated yarn feeder numbers.

The System supports each knitting chip yarn feeder to share the same yarn feeder number with the standard chips. But it is necessary to notice the number of interval needles which will be generally large (according to the structure of shuttle box).

The program will smartly check whether the knitting breadth surpasses the total needles set by the System after the setting of pattern starting pin, the knitting chip numbers and the number of interval needles. If surpassing, an alarm tip will be popped up. Clients may adjust the setting of above parameters.

If holes or similar problems are discovered on a chip and it is not necessary to continue knitting, pull rod in stopping space and enter the window of setting chip knitting. Move the cursor to a chip, press "F2" to close the knitting state of such chip (standard chip can also be closed), and the system will automatically adjust the needles, yarn feeders and knitting stroke.

## 7-Page-Jump(Skipping Row Setting)

Set the skipping-row knitting function of carriages.

Keystroke: press shortcut Key "7" in operation monitoring interface to enter skipping row setting window.

Touch: click current row display area (see Main Menu_1- Operation Diagram) with touch pen, call out soft keyboard, set the required row number and press Enter to prepare for skipping row.

Keystroke: the font is yellow with white subscript, input the skipping row number, press Enter to complete and startup the pull rod.

Touch: click the soft keyboard with touch pen, input the number, and then click Enter to complete.

The System will automatically enter the operating state of "return to zero reset" (click F1 icon to shift into the reset state of the machine). After resetting (click F1 icon to shift into knitting preparation state of the machine), startup the pull rod and start the skipping-row knitting.

It is available to skip at arbitrary rows without distinguishing the odds and evens. Please pay attention to the position of yarn feeder after row-skipping.

When the skipping row number surpasses the max row number of the pattern, the System will not execute such skipping-row operation (F1 icon will remain the knitting preparation state.)

## 8-Yarn Checking(Yarn Feeder Check)

Check the yarn feeder application number of current pattern and the initial arrangement position (left or right side).

Keystroke: press shortcut Key "8" in operation monitoring interface to enter the window of "yarn feeder check" and press Esc to exit.

Touch: click the display area of yarn feeder number (see Main Menu_1- Operation Diagram) with touch pen to the window of "yarn feeder check" and click tip column to exit.


Highlight the used yarn feeder number with yellow color.

L: display of left yarn feeders.

R: display of right yarn feeder.

## 9- Yarn Exchange(Yarn Feeder Exchange)

Set yarn feeder exchange and yarn-folding setting functions.

Keystroke: press shortcut Key "9" in operation monitoring interface to enter the window of

yarn feeder exchange.

Touch: click the display area of yarn feeder number (see Main Menu_1- Operation Diagram) with touch pen to enter the window of "yarn feeder exchange".

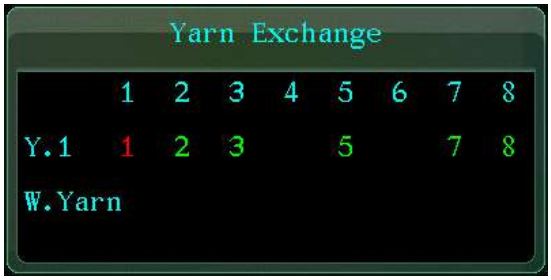



Figure 1


Figure 2

## Yarn Feeder Exchange (Figure 1)

The green fingers in the window are the yarn feeder numbers used in the patterns (the second row).

Keystroke: press "←" and "→" to position the yarn feeder numbers to be exchanged (displayed by red fingers), press Enter to show yellow fingers with white subscript, input the yarn feeder numbers to be exchanged, and press Enter to complete or Esc to exit from the setting window.

Touch: click the value bar of yarn feeder number with touch pen, call out the Soft Keyboard, input the yarn number and click the Enter to complete.

Yarn feeder exchange is available for the yarn feeders in use or to be used.

No identical numbers are allowed in the exchange of yarn feeders, otherwise, when press Esc or click Enter with touch pen, the system will display "Yarn feeder of No. {*} is defined repeatedly."

Yarn-Folding Setting (figure 2)

Keystroke: when wide yarn feeder is not applied to patterns (plaiting yarn feeder), it should be added temporarily during knitting. Press Key "F1" in the popping-up window and then the wide yarn feeder setting turns up (the third row). Press direction keys to move to the position required to set the wide yarn feeder (displayed by red fingers). Press Enter and display the yellow fingers with white subscript. Input wide yarn feeder number and press Enter to complete or Esc to exit from the setting window.

Touch: click the tip characters of wide yarn feeder with touch pen. Value "0" will turn up under the original yarn feeder number. Click the value to be set. The soft keyboard pops up. Input the set number and press Enter to complete.

When it is required to cancel the wide yarn feeder, please press "F1" in the popping-up window and delete the setting.

Click the tip characters of wide yarn feeder with touch pen to delete the setting,

Overview of yarn folding:

Yarn folding is a way of knitting with two yarn feeders in one system.

It is available to knit reversible fabrics or add elastomeric yarns into reversible organization to produce elastic fabric.

The feeding point of yarn feeder specialized for yarn folding is higher than that of standard one, therefore, when the specialized yarn feeder and the standard one are used together, the yarns will be of different heights thus the folded yarns are formed.

Description of yarn feeder exchange:

Yarn feeder exchange will not modify the one in the action document. When such patterns are output to U Disk, the exchange information will not be brought out.

## Yarn Delivery Speed Setting

Set the yarn delivery speed with the auxiliary of moment motor (rotary speed of motor).

Keystroke: press shortcut Key "PgUp" in operation monitoring interface to enter the table for yarn delivery speed setting.

Touch: click the Help button with touch pen to enter Help window, and click the character area for yarn delivery speed setting.



Keystroke: press "↑" "↓" "←" and "→" to the sections to be set. The font of fingers where the cursor stops is in red. Press Enter to modify, at the moment, the set values are of yellow font with white subscript. Input fingers and then press Enter key to complete.

Touch: click the area displaying the set section number with touch pen to call out the Soft Keyboard, input the required fingers and click the Enter to complete.

When the set speed value is higher than 90, the moment motor will operate in full wave mode (full speed).

As required, the System will support the separate controls of left yarn delivery and right delivery (open and close).

### Keystroke Operation:

| **Description of functional keys** | |
|---|---|
| Open or close the left yarn delivery | Open or close the right yarn delivery |
| F3 | F4 |

### Touch Operation:

Open or close the character area for switchover with touch pen.

## Page-Stop[Specified Row Stop (Additional Function)]

Specified row stop setting.

If there is such instruction, the carriage will stop at the rotating position of the set row.

During the trail knitting, it is necessary to check the knitting conditions on the specified row. It is available to set such instruction to stop the carriage.

Then apply ultra-low speed of speed display to check the knitting conditions.

When the carriage is stopped under such instruction and a tip will pop up in the screen; please press Esc to cancel the tip or reverse the pull rod to the stop position.

Keystroke: press shortcut Key "F" in operation monitoring interface to enter the window for specified row stop setting.

Touch: click the Help button with touch pen to enter Help window, and click the character area for specified row stop setting.


Keystroke: enter number of required stopping row and press Enter to complete.

Touch: enter required row number by soft keyboard and click Enter to complete.

Cancel the specified row stop setting.

Get into the specified row stop input window again, re-input "0", and press Enter or click Enter with touch pen to cancel the original specified row stop setting.

## Joystick and Speed Switch Icon Portfolio Description

Joystick can be rotated back and forth and it will return to the original position when you hand off.

The System is equipped with three position sensors around the joystick to separately control the stop, slow movement (low speed) and fast movement (high speed).

The control modes of sensors: normally open and normally closed.

| | |
|---|---|
| Closed | When the joystick rotates back, the carriage stops moving. |
| Low–speed running | When the joystick turns to the operator, buzzer ticks once, the joystick returns to the original position and the carriage operates in low speed mode. |
| High–speed running | When the joystick completely turns to the operator, buzzer ticks twice, the joystick returns to the original position and the carriage operates in high speed mode. |

| Combination | Position of pull rod | Icon | Classification of speed combinations | Remarks |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| 1 | Position of fast movement |  | Carriage is at high speed. | Pull rod moves fast + kangaroo |
| 2 | Position of fast movement |  | Carriage is at intermediate speed. | Pull rod moves fast + turtle |
| 3 | Position of slow movement |  | Carriage is at low speed -2. | Pull rod moves slowly + kangaroo |
| 4 | Position of slow movement |  | Carriage is at low speed -1. | Pull rod moves slowly + turtle |

## Key Lock (Protection)

It is used to prevent the careless modifications of information setting during the knitting:

Press “decimal point” + Key “0” at the same time, thus no information will be modified during knitting including touch operations. Follow suit in the application of key unlock.

## Power Failure Backup (Continue to Knit After Power Failure)

As for power failure during the knitting, it holds the function of continuing to knit after power resumption.

Sign of power recovery and continuous knitting:

 F1 icon shows the normal knitting

If data used after power failure fails to save for some reason, the system will return to zero automatically after power resumption.

 F1 icon displays the operation of returning to zero

NOTICE Notice

Do not move the carriage manually when power off, otherwise, it is impossible to recover knitting.

The System is not compatible for the power failure backup when the needle bar is of shaker action.