KAUOHENG

KH-6D

OPERATION MANUAL

電腦橫編織機 KH

COMPUTERIZED FLAT KNITTING MACHINE

Dear customer :

Welcome to be an owner of KH-6D, 6-color strapping machine as Kauo Heng endeavors.

To maintain a high standard of this machine, we also plead your cooperation to make the machine to serve you longer by reading this operator manual carefully before commencing your production.

Yours sincerely,
Kauo Heng Precision Machinery Industrial Co., LTD.

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Specification of your machine

Model : KH-6D

Gauge : ____ G

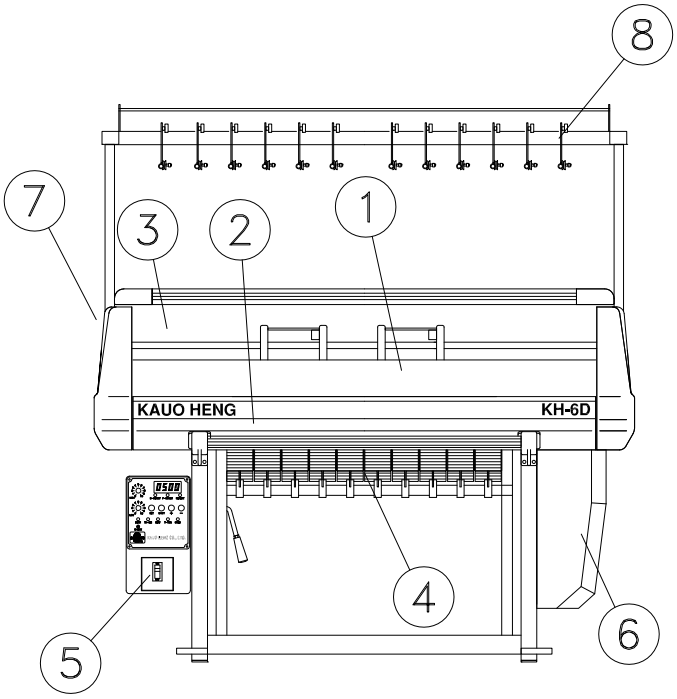
Knitting width : ____ Inch

Serial No. : ____

Date : ____

Power : ____ Ø , ____ V

OVERVIEW OF KH-6D

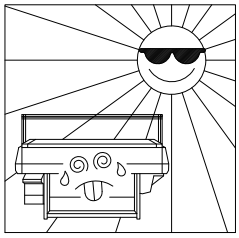


1. Carriage
2. Operation bar
3. Main cover
4. Fabric take-down roller
5. Controller
6. Main motor
7. Top tension
8. Side cover

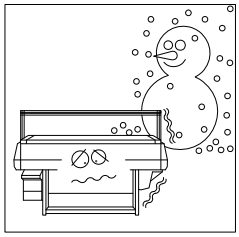
Contents

1. Points to observe

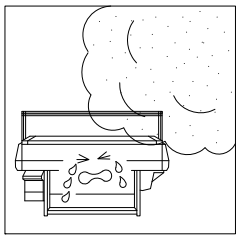
1) Installation Environmental Conditions
PLS install the machine as below instructions in order to use this machine in the best condition for a long period of time.



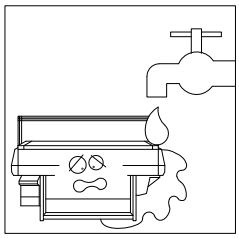
Do not install the machine at a place subject to direct sunshine and/or adjacent to a heat generating source such as a furnace/oven.



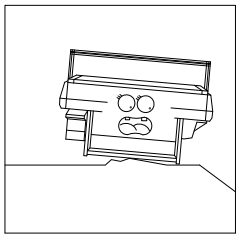
Do not install the machine at a place subject to rapid temperature changes.
The temperature should be 0°C to 35°C



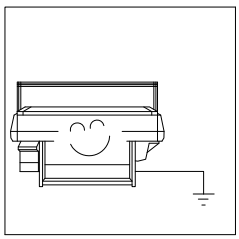
Do not install the machine at a place where there is a lot of dust and dirt, or a location affected by chemical gases, sea breeze etc.



Do not install the machine at a place subject to excessive moisture.
The humidity should be 30 % ~ 80 %



Do not install the machine on a slope or unstable place.



Please connect the electric power and make sure the ground wire is connected correctly.

2 Fig.1.1 illustrates the correct position of jacking while moving the machine. It is very important when moving the machine. The yarn carrier rail shall never be used to push the machine since it will distort the rail.

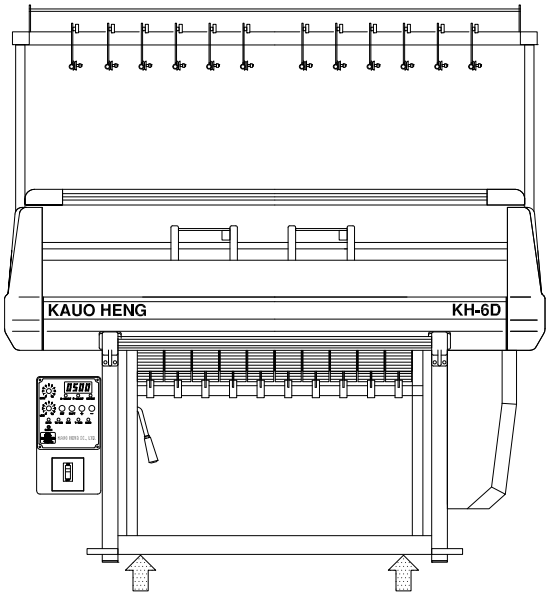


Fig.1.1Correct position of jacking the machine

3) When connecting the electric power, attention must be paid to the correct voltage. And make sure the ground-wire connected.

2. Installation

1) After unpacking and locating the machine in the factory, it must be leveled carefully with a spirit-level to avoid machine distortion in running. We recommend the machine to be leveled with rubber peddings for best result. Remove grease from the polished parts before starting to operate the machine. About the moving parts must be lubricated according to the following instruction.

Lubrication points	Lubricant	Frequency
Carrier rail	#10 oil	Daily
Carriage rail	#10 oil	Daily
Needle bed	#10 oil	Daily
Driving parts	Hi-temp grease	Weekly

Table 2.1 Lubrication

2) Raise the yarn stand till the end of the tubes is leveled with the base plate, tighten the screws and connect the plug of stop motion situated at the left rear end.

3. Operation

3.1 Power switch

As Fig.3.1 front sideof controller, easily find two switches. Filp upward is "ON" and downward is "OFF".

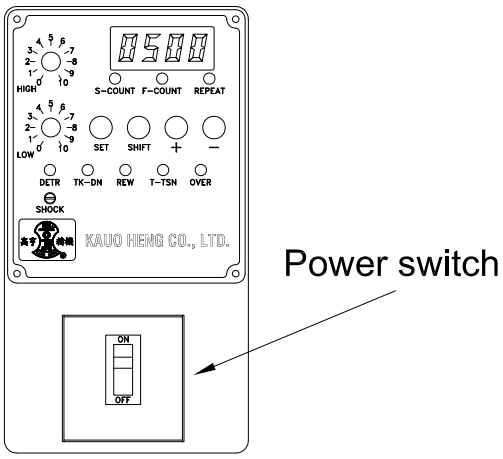


Fig. 3.1 Front side of controller

3.2 Operation bar

3.2.1 Inching : When turning forward of the operation bar, machine operates slowly and stops when you loosen.

3.2.2 Starting : When turning backward of the operation bar, machine starts. Machine starts from slow speed and runs in preset speed when reaching the first terminal sign.

3.2.3 Stop : When the machine is running, you can turn operation bar in any direction to stop machine.

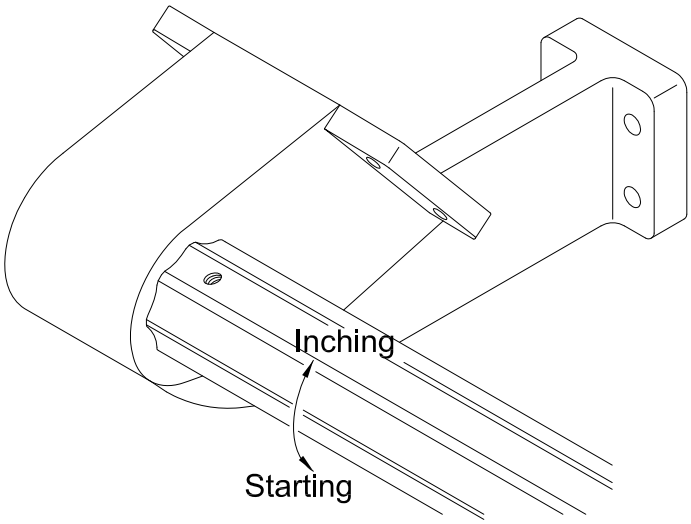


Fig. 3.2 Starting operation bar

3.3 Yarn feeder

The position of carrier is adjusted according to the desired knitting width, correctly make yarn feeder beside the end working needle by 10mm. The yarn feeder must be in the central position between front and rear needles, also check its height refer to Fig.3.3.1.

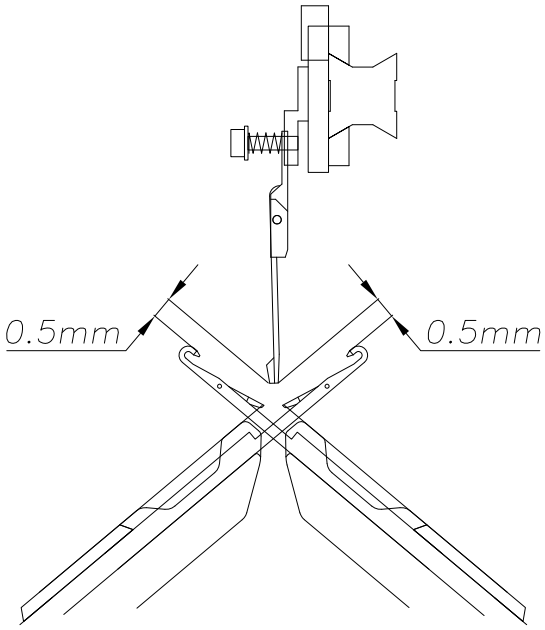


Fig. 3.3.1 Position of yarn feeder

Fig. 3.3.2 Yarn feeder move to up-position to make yarns through easily.

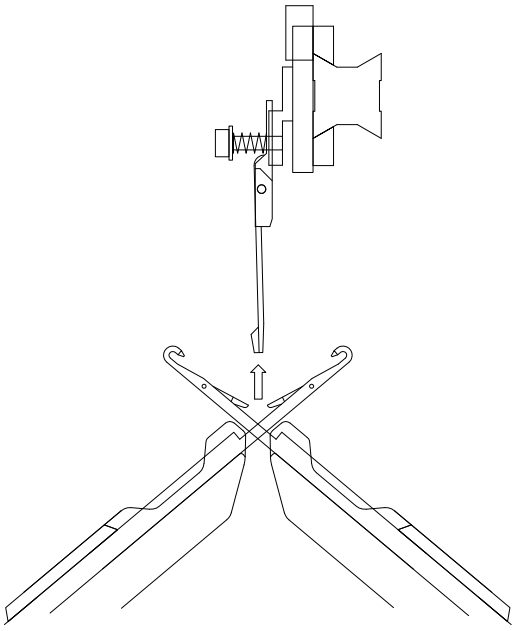


Fig. 3.3.2 Up-position of yarn feeder

Yarn carriers on rail should adjust be easy movement as Fig. 3.3.3

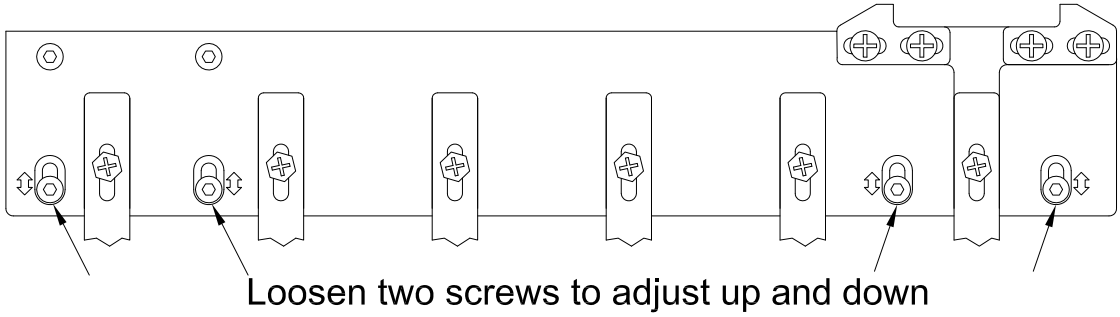


Fig. 3.3.3 Adjustment of carrier

3.4 Top tension

Top tension springs should have the correct tension, the opening of the knot-catcher must be set according to the yarn count that is being knit-ted.

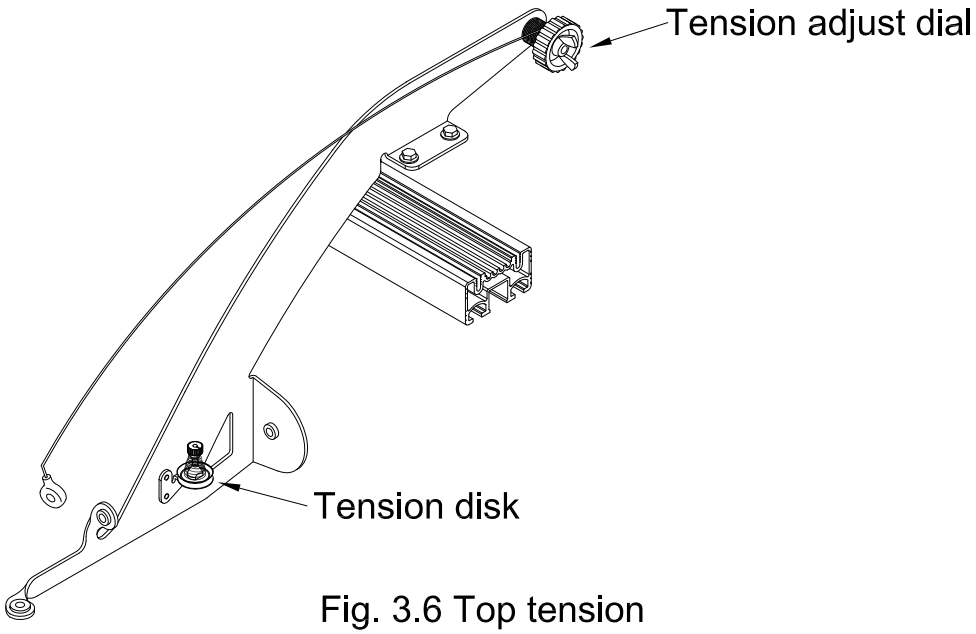


Fig. 3.6 Top tension

3.5 The latch brush

Latch brush is important to prohibit the needle latch to close in knitting, the correct brusk setting is illustrated in Fig.3.6.

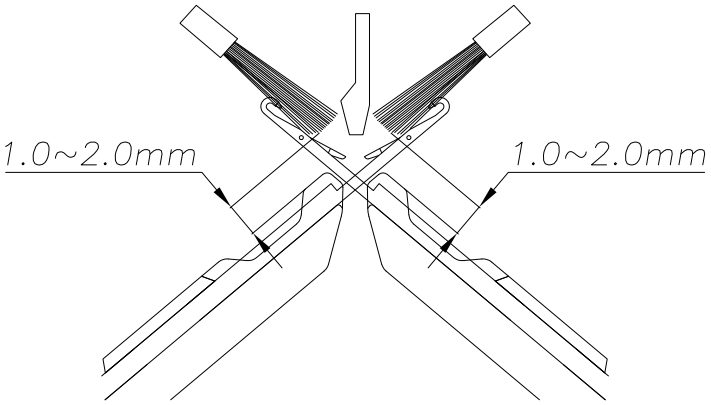
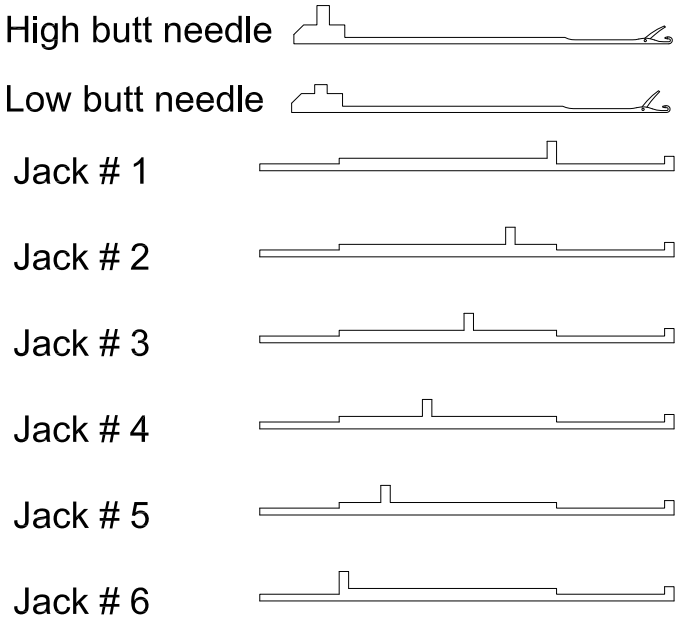


Fig. 3.5 Correct position of brush

4. Needle bed

The constructions of front and rear needle beds are different. High butt needle are used in the front needle bed and in the rear bed are used both high and low butt needles.



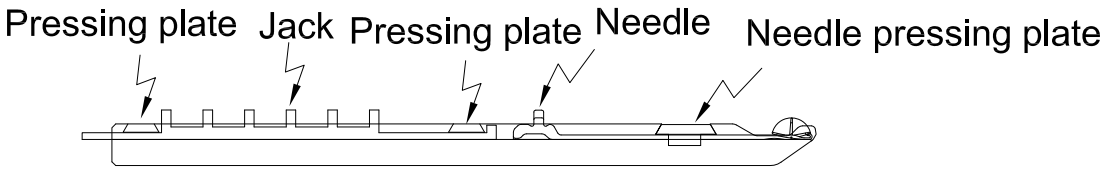


Fig. 4.1 Construcution of front and rear needle bed

5. Cam plate distance

The distance between cam plate and needle bed is maximum 0.15mm, Fig.5.1 shows how to check and adjust.Please check it by every 3 months, loosen the stepped screw and turn the bearing pin to adjust the distance, make sure to tighen the stepped screw after adjustment.

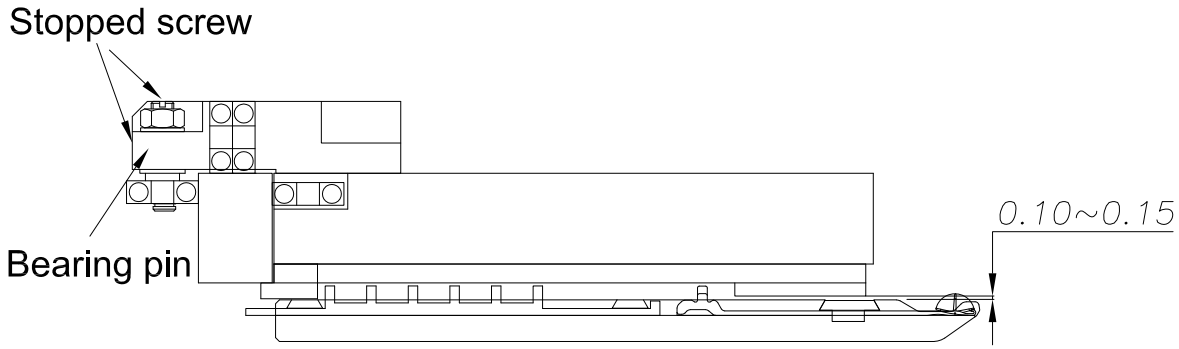


Fig. 5.1 Adjust cam plate distance

6. Remove of carriage

When it becomes necessary to remove the carriage, it can be remove from the left hand side or the right hand side. The procedures are as following:

1) Turn off the power firstly.
2) Remove the side cover.
3) Remove the lock as shown in Fig. 6.1 and remove carriage carefully.
4) After replacing the carriage, it must be confirmed that the plugs, and lock are all completely connected, then start machine.

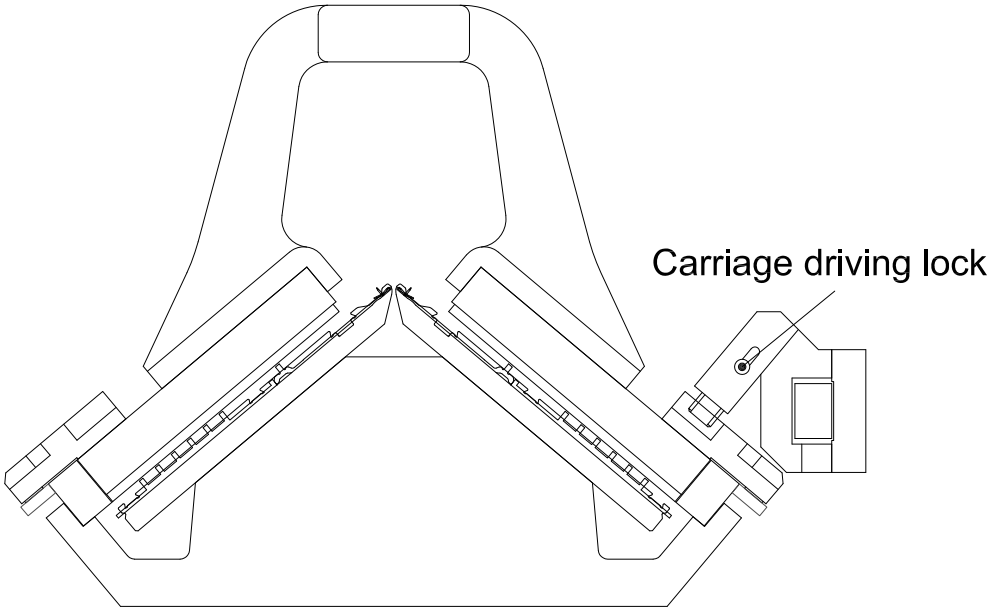


Fig. 6.1 Remove the carriage

7. Fabric take-down system

In principle of the take-down tension strength must be small and average. The take-down system is controlled by torque motor. There are two important things to adjust the take-down tension strength.

First method is the two speeds No.1 and No.2 as Fig.7.1 adjust each with turning knob and set the speed, the tension strength is larger and the speed is faster. You input the numeric in program to select the speed you want.

Second method is the roller. Each roller can be adjusted individually. The pressure of roller gets larger and the speed of fabric take-down gets faster.

⊙To detect fabric falling or wraparound, there is equipped with a press-off detector in the front of roller and a fabric roll-up detector in the back of roller. The machine will stop automatically when the fabric happens fall or wraparound.

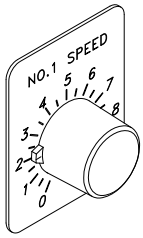


Fig. 7.1 Micro adjustment of torque motor

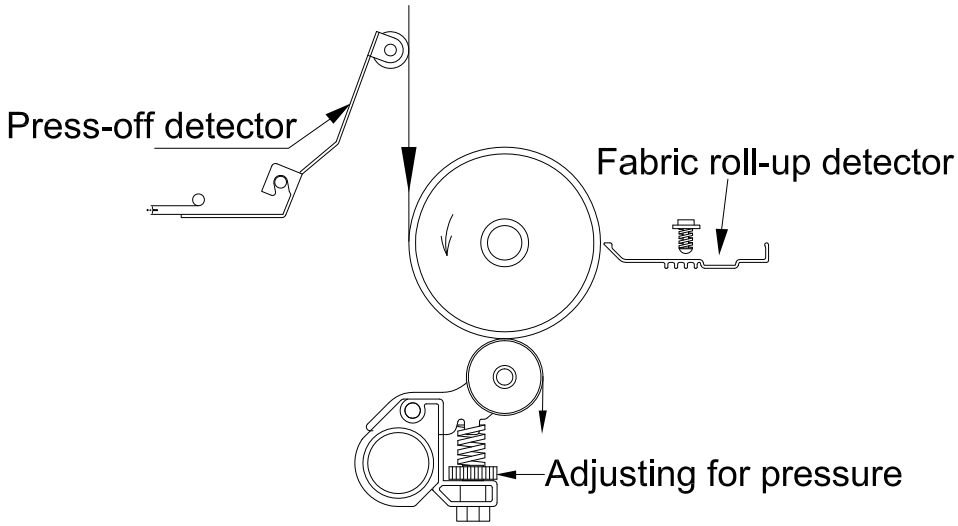


Fig. 7.2 Fabric take-down system

8. Cam system

The cam system of front and rear needle bed are different as shown of Fig. 8.1& 8.2.

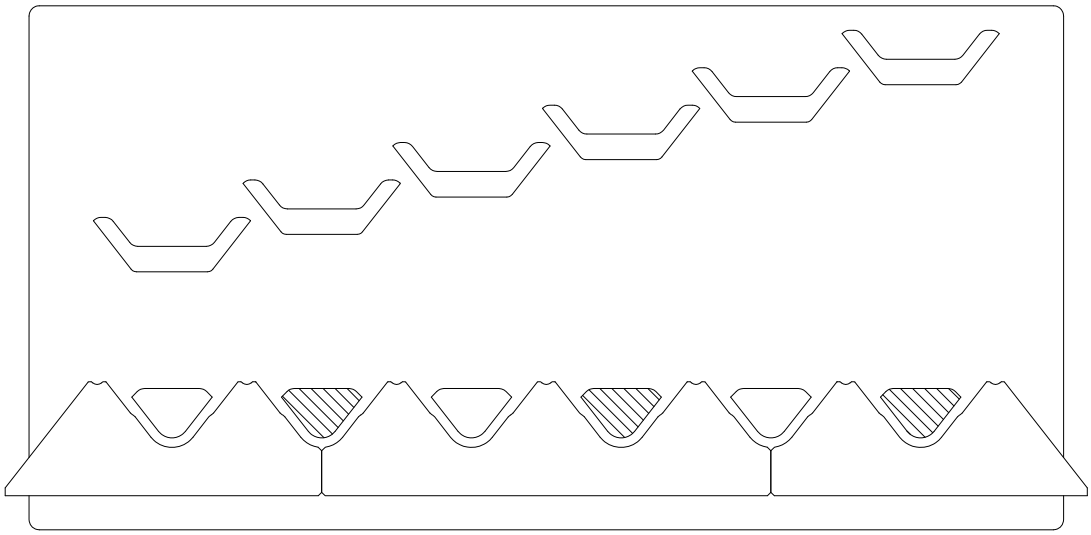


Fig. 8.1 Rear cam system

A. Bridge cam

B. Bridge cam

C. Needle raising cam

D. Jack raising cam

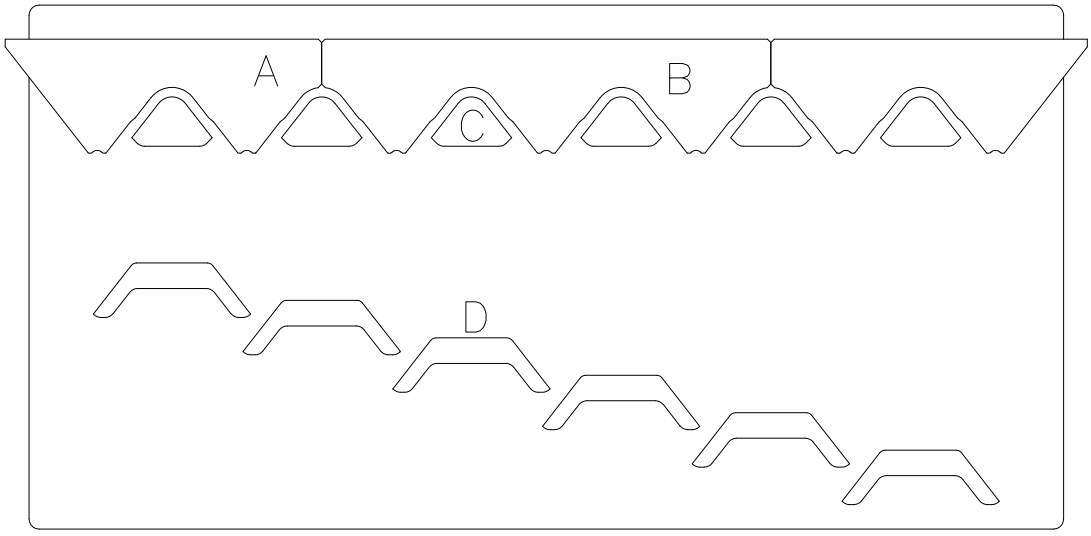


Fig. 8.2 Front cam system

9. Cam action

In graphs shows the usual kinds of cam active situation. "ARROW " means the carriage knitting direction. Cam with SLANT-LINE area is in half raising position, low butt MISS and high butt KNIT.
Following figures are with drawing description according to action.

9.1 Cam usual setting

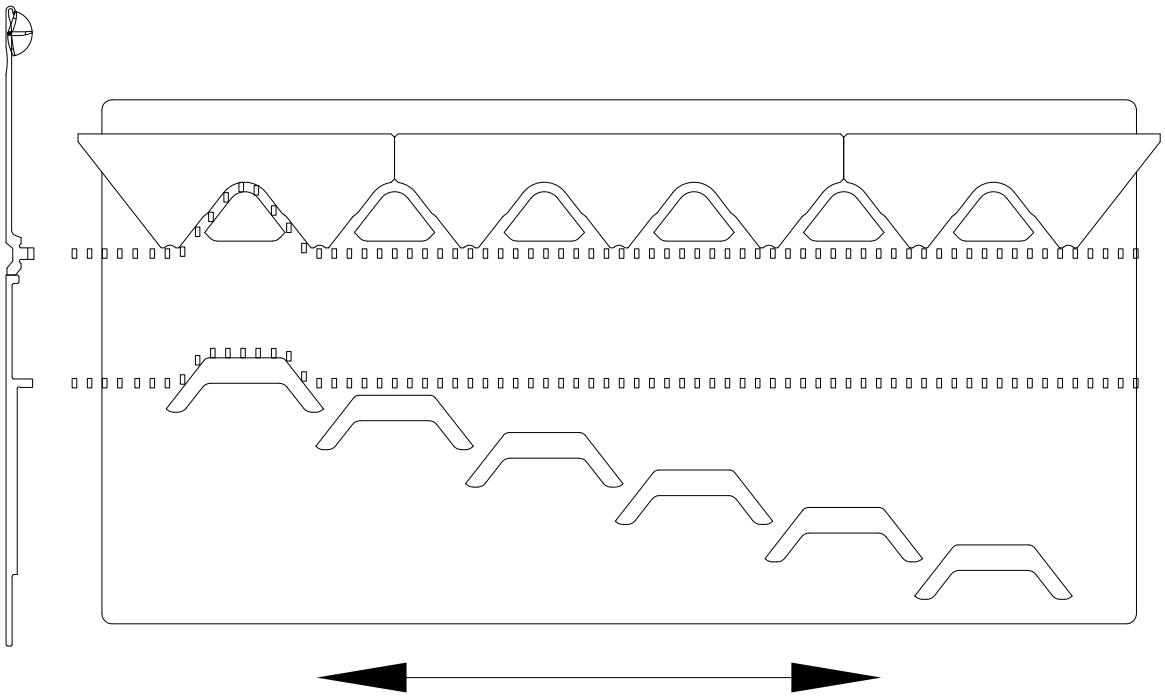


Fig. 9.1.1 Jacks # 1 : KNIT

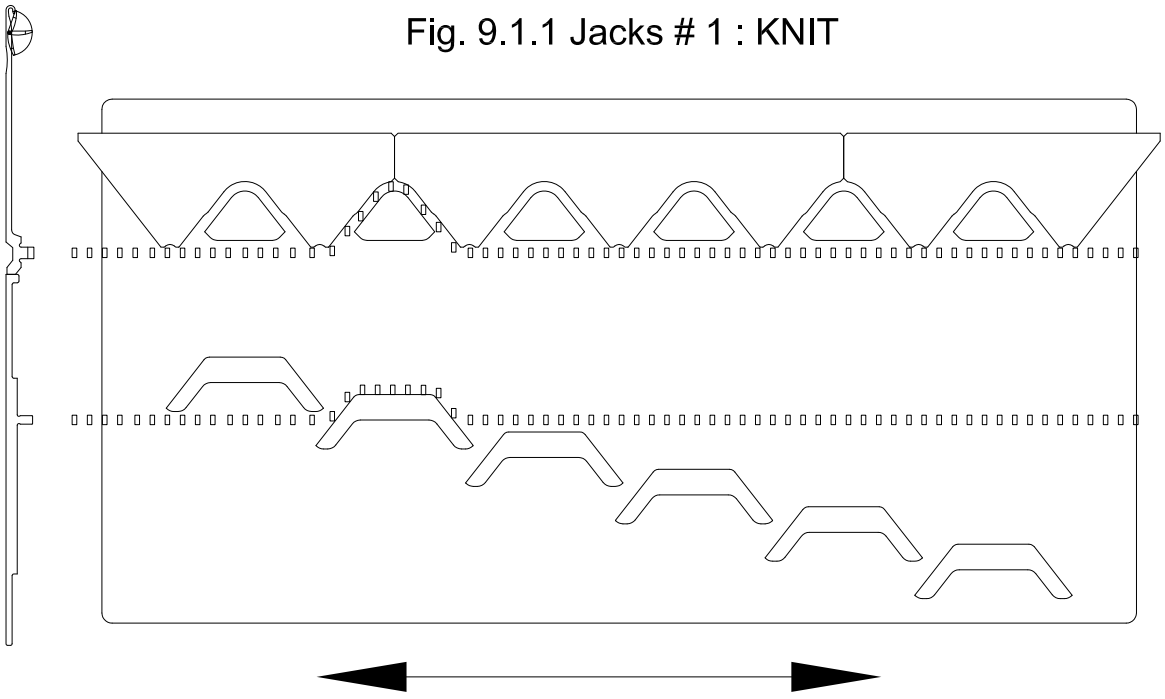


Fig. 9.1.2 Jacks # 2 : KNIT

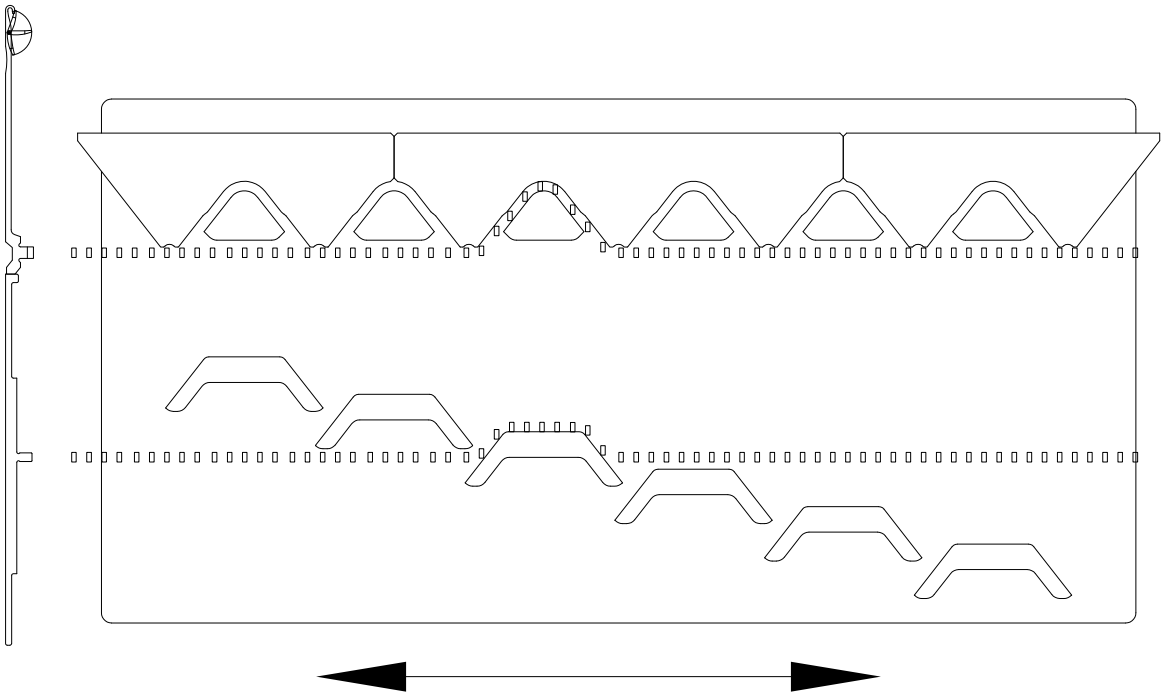


Fig. 9.1.3 Jacks # 3 : KNIT

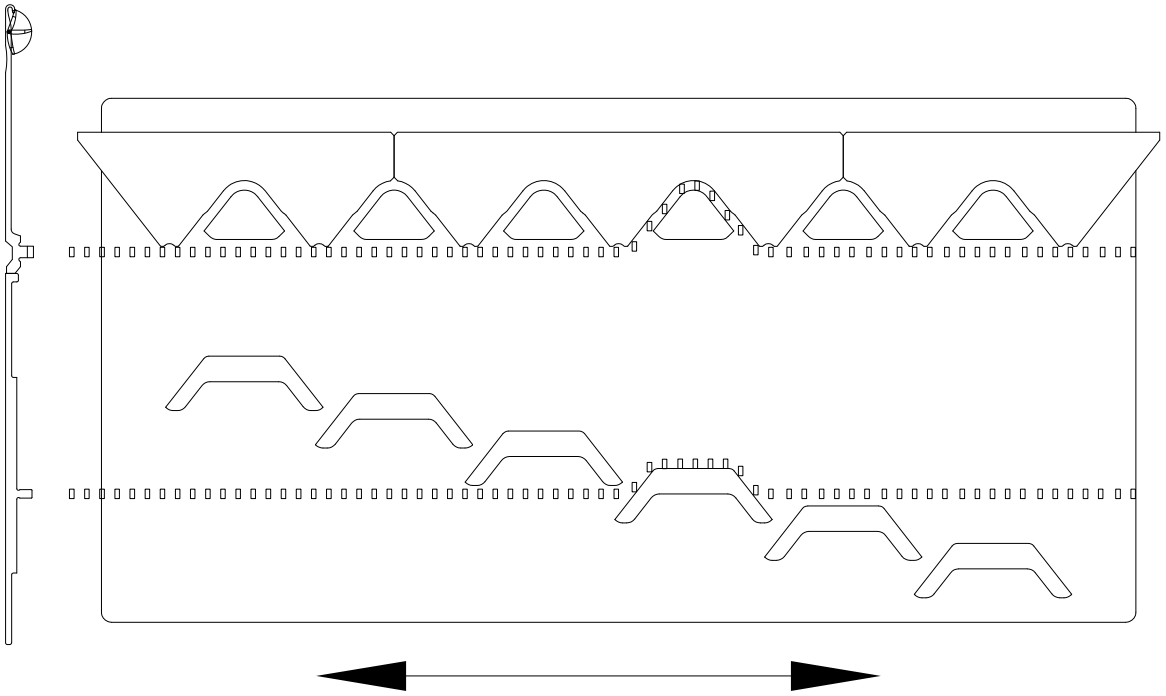


Fig. 9.1.4 Jacks # 4 : KNIT

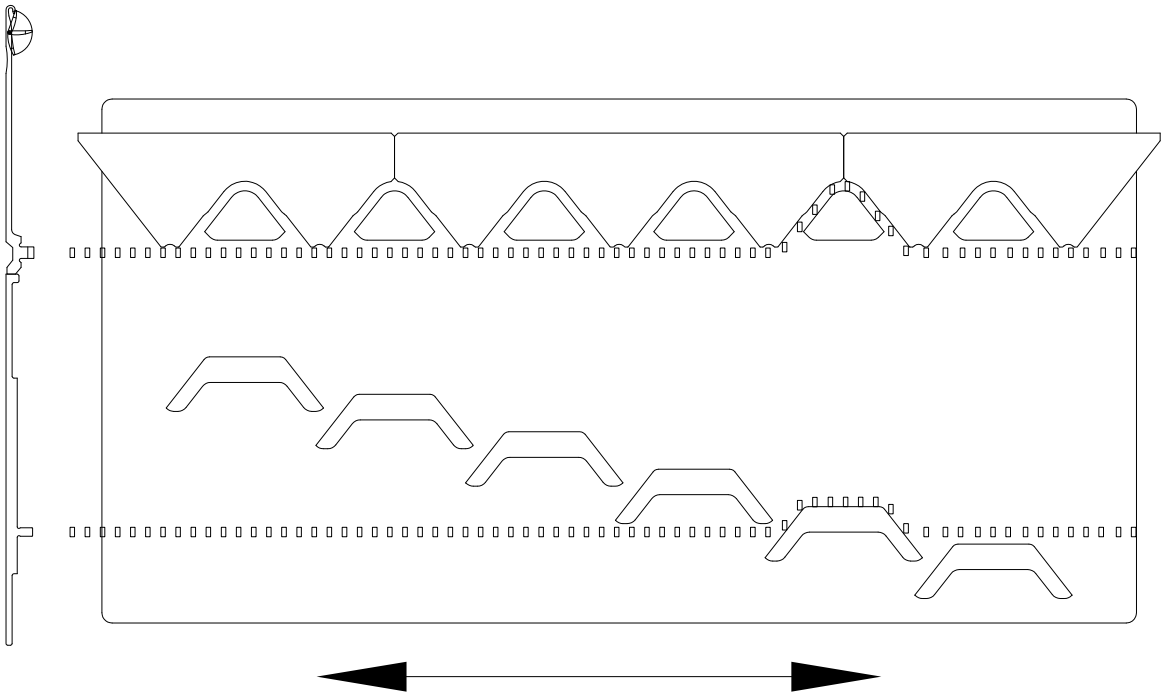


Fig. 9.1.5 Jacks # 5 : KNIT

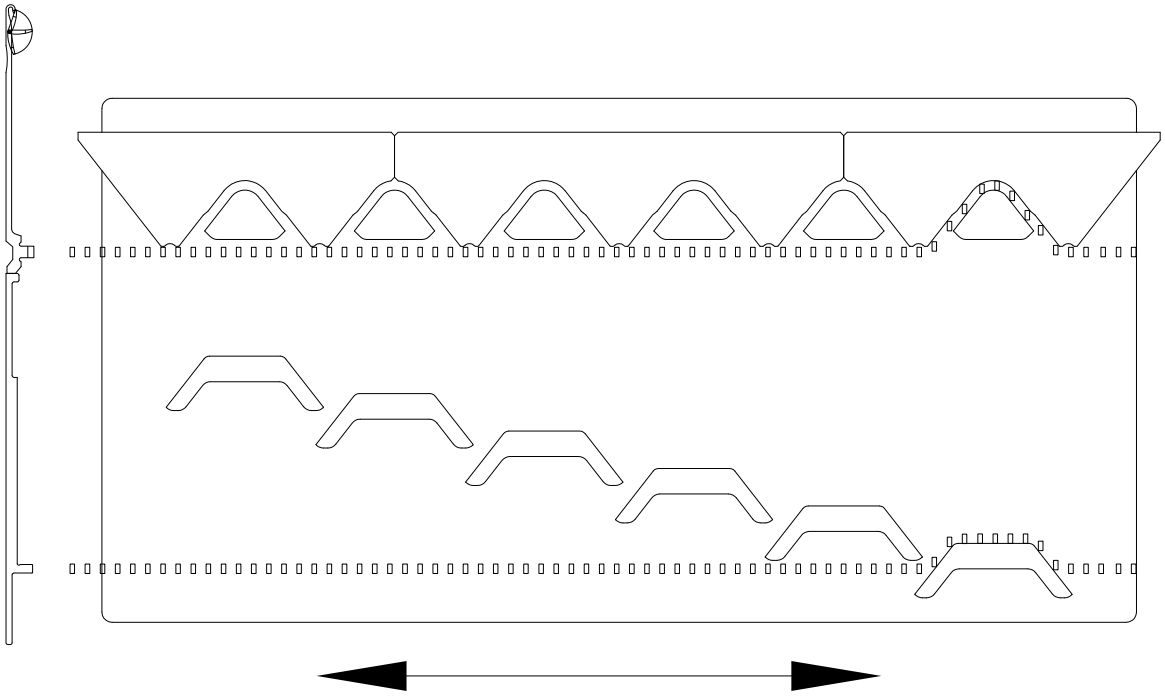


Fig. 9.1.6 Jacks # 6 : KNIT

9.2 Cam special setting

KH-6D its rear cam system the raising cams of jack # 2, jack # 4 and jack # 6 can be in half raising position (needle high butt needle, needle low butt tuck) or in raising position by different knitting direction. It's by change setting of connection plateas shown Fig.9.2.1 & 9.2.2 to make jack high butt raising jack low butt raising or miss. As shown in Fig. 9.2.3 ~ 9.2.5 make different knittings with different arrangement.

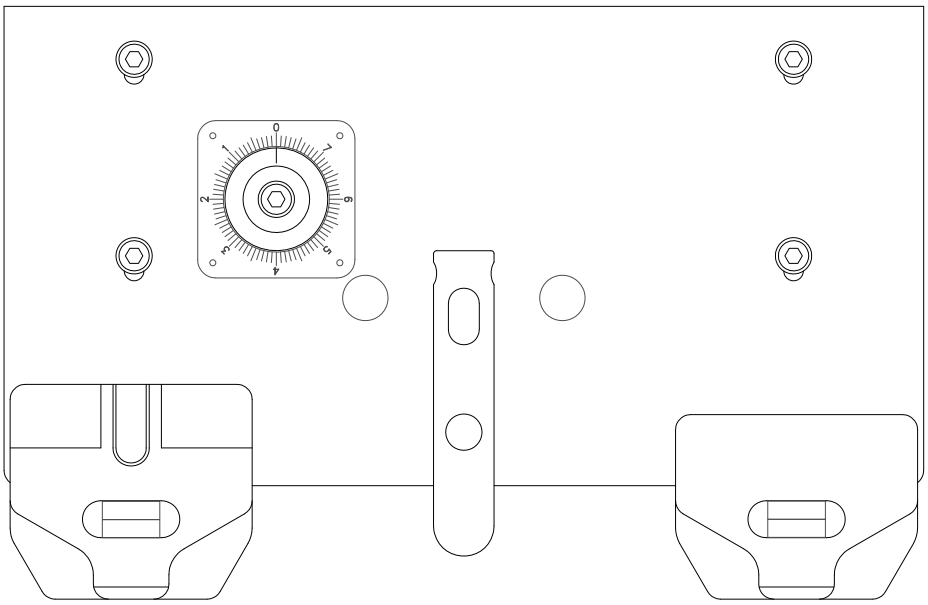


Fig. 9.2.1 No setting

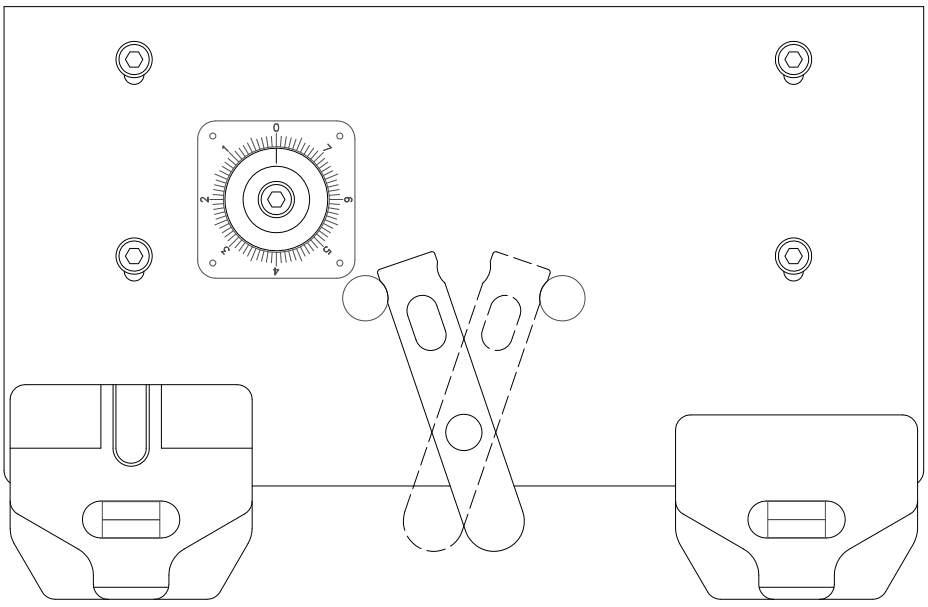


Fig. 9.2.2 Change knitting with different knitting direction

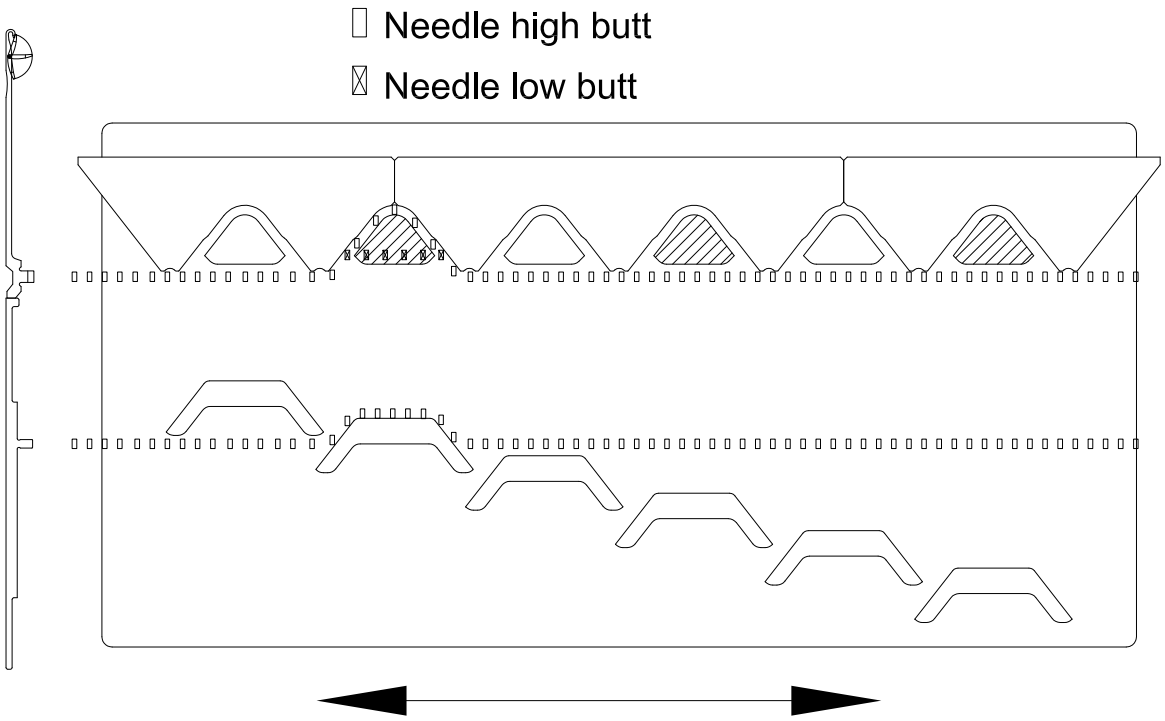


Fig. 9.2.1 Needle high butt KNIT, needle low butt TUCK

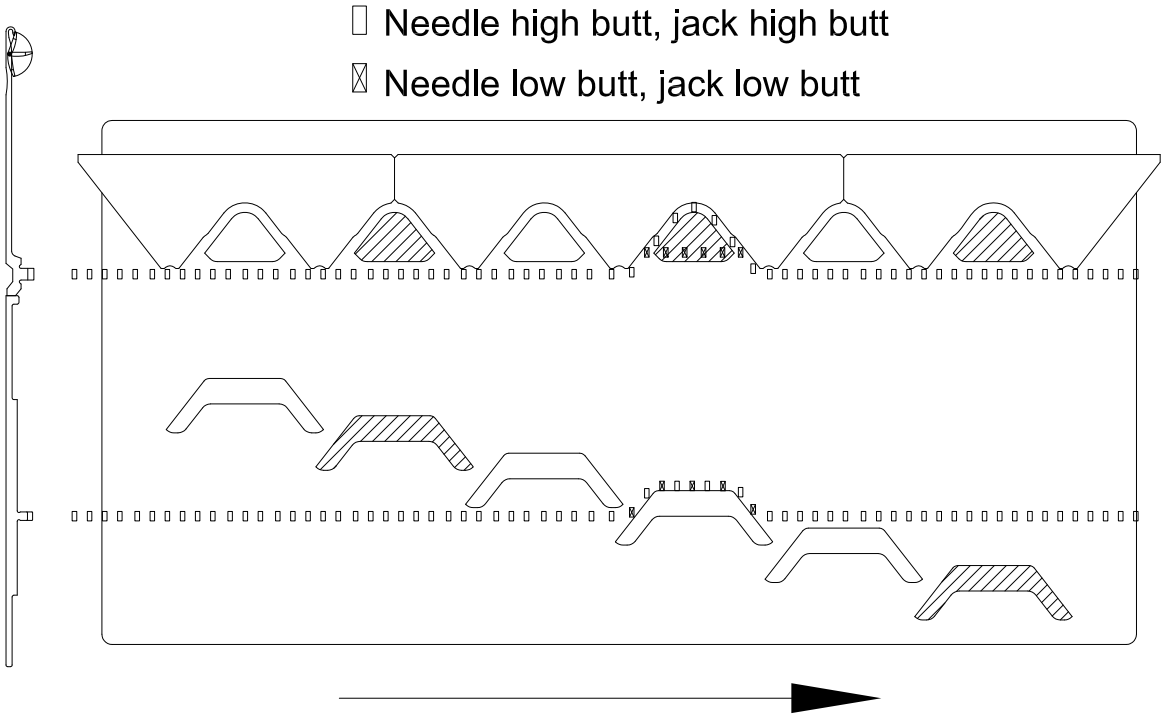


Fig. 9.2.2 Needle high butt + jack = KNIT
Needle low butt + jack = TUCK

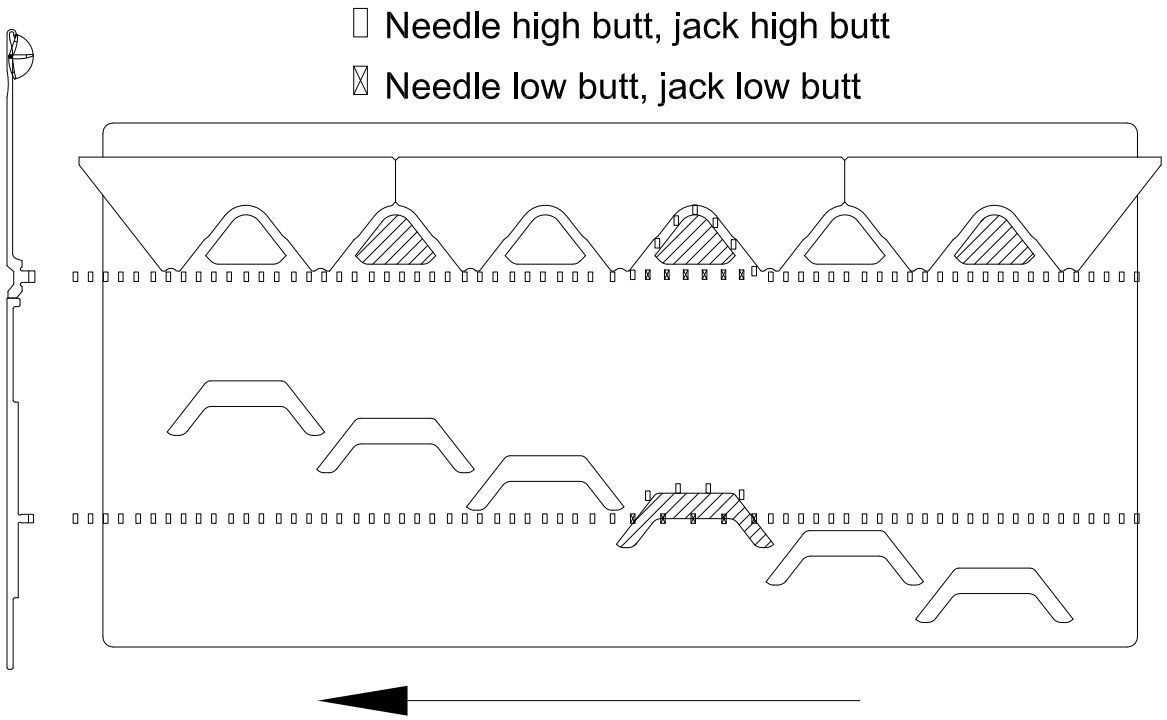


Fig. 9.2.3 Needle high butt + jack high butt = KNIT
Needle low butt + jack low butt = MISS

9.3 Cam stitch setting

1) Loosen screw A firstly.
2) Turn screw B clockwise, then complete cam plate gets down-forward and stitch is larger. Turn screw B counter-clockwise, then complete cam plate gets up-forward and stitch is smaller.
3) Set 0~1 as 1mm, each small one is 0.1mm.

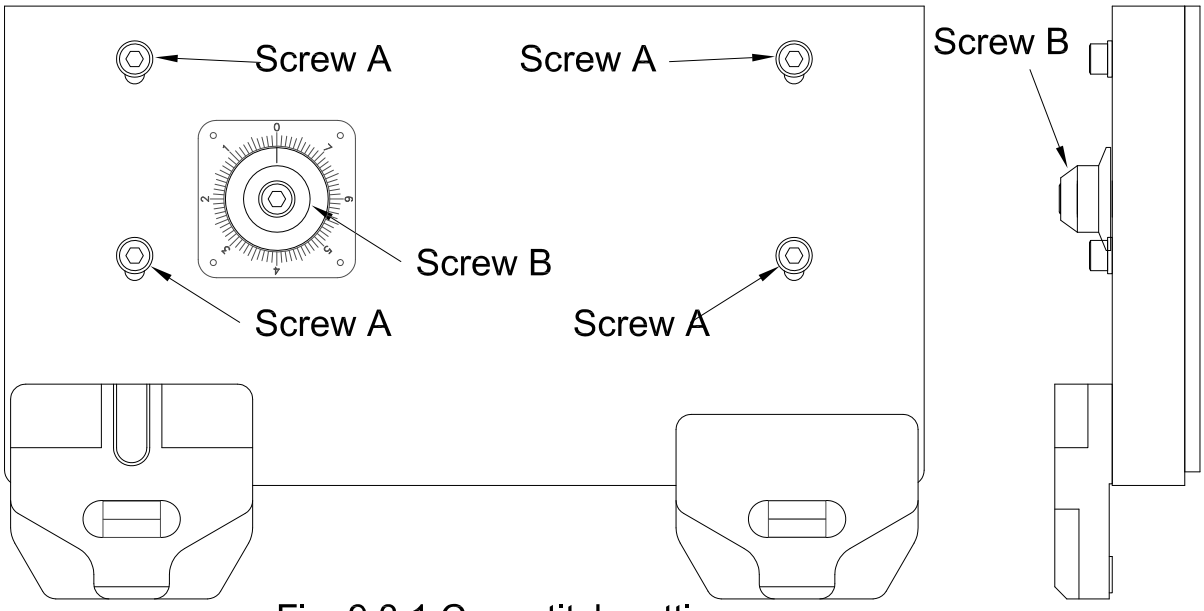


Fig. 9.3.1 Cam stitch setting

4) Tighten screw A after adjustment.

10. Driving system

The knitting width is adjustable which you can adjust the pully right behind the machine as Fig. 10.1.

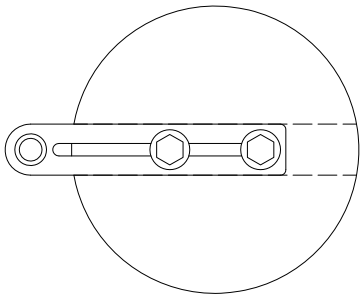


Fig. 10.1

1) Knitting width is larger, adjust connecting plate can be extended to outer.

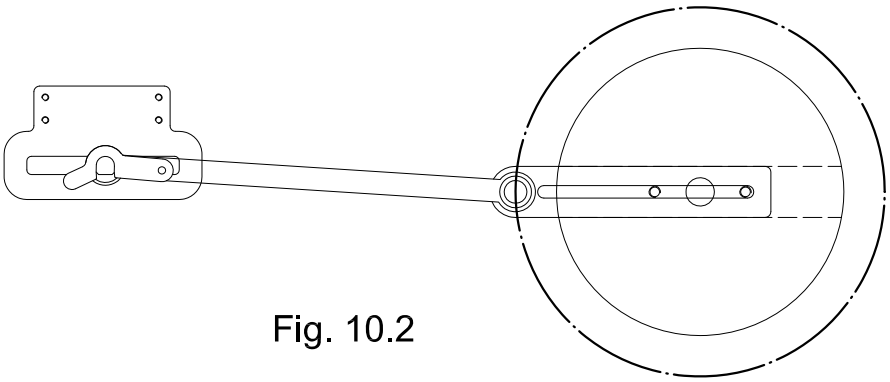


Fig. 10.2

2) Knitting width is smaller adjust connecting plate can be shorten to inner.

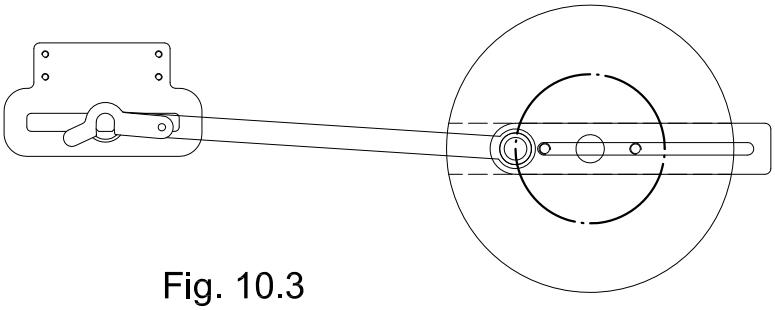


Fig. 10.3

11. Attentions of operation

1) Stitch value varies according to different yarns. Test knitting starts larger stitch then adjust stitch by checking the loop of strapping.
2) Make sure the position of feeders, start-needle and end-needle before runnung. Operator should check them again during running and make sure the take-down speed and tension of rollers. No slip between roller and strapping, otherwise it is easy to grind the rubber.
3) Test knitting starts slow knitting speed.
4) Remove the unworked jacks.
5) Adjust stitch value.
6) Do not move needles and jacks beyond normal working position.
7) Use same needles of same brand to machine.
8) Everything is OK, then start running.

11.1 Knitting

Set start-needle and end-needle and set knitting stroke by the width of arranged jacks ref. Fig. 11.1.

X : Needle high butt, jack high butt
O : Needle low butt, jack low butt

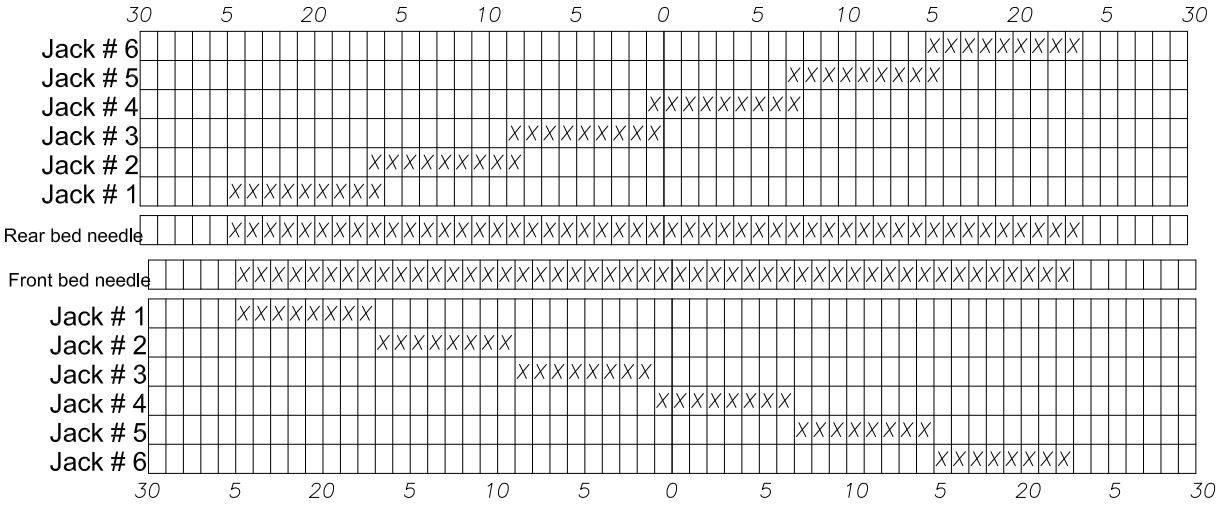
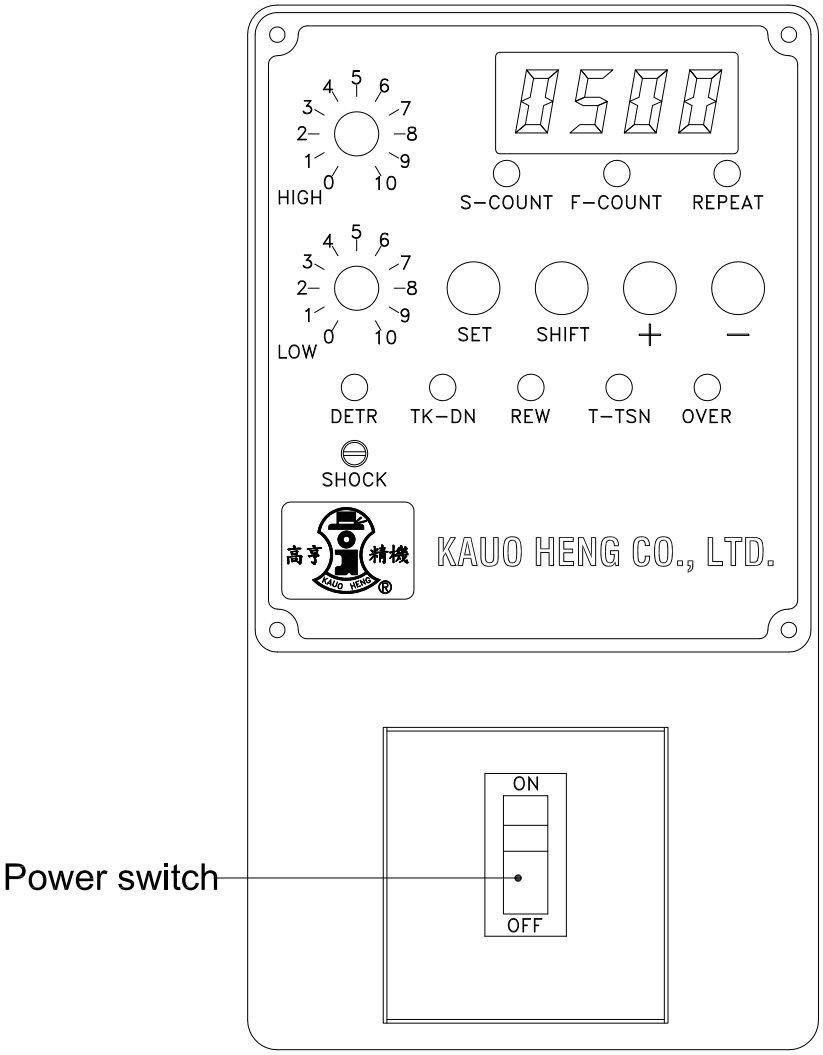


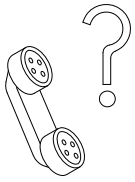
Fig. 11.1

12. Controller panel



HIGH : Adjust high speed
LOW : Adjust low speed
S-COUNT : Finished unit
F-COUNT : Set unit (0001~9999)
REPEAT : Set unit course (1 unit = 1~255 course)
SET : Set display mode
SHIFT : Display parameter movement
+ : Display parameter +
- : Display parameter -
DETR : Detector, shock-sensor
TK-DN : Fabric fall
REW : Fabric roll-up
T-TSN : Tension, safety cover
OVER : Overload
SHOCK : Adjust sensitivity of shock-sensor.

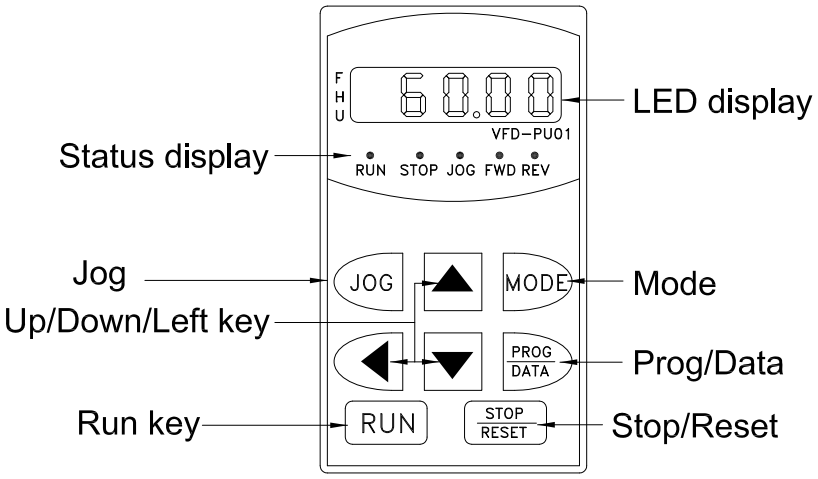
13. Troubleshooting A

<table>
<tr><th>Signal</th><th>Fault</th><th>Solution</th><th>Remark</th></tr>
<tr><td>T-TSN</td><td>Yarn break.
Tension loose.
Cover is opened.</td><td rowspan="5">After solution, turn the operation bar to clear, restart the operation bar and go on knitting.</td><td rowspan="6"> 
PLS contact our agent or service dept. if you still can't solve the problems.</td></tr>
<tr><td>DETR</td><td>Needle break.
Fabric rise.</td></tr>
<tr><td>TAKE</td><td>Fabric fall.</td></tr>
<tr><td>REW</td><td>Fabric roll-up.</td></tr>
<tr><td>F-COUNT</td><td>Finish course.</td></tr>
<tr><td>OVER</td><td>Inverter overload.</td><td>Switch off power and switch on after 30 sec.

Switch off power to check power in correct then switch on.</td></tr>
</table>

Fig. 13.1 Machine stop

14. Description of digital keypad



Operation steps of the digital keypad with selecting mode MODE

Key	Explanation	Settings
MODE	Setting Frequency	F H U 60.00
MODE	Actual Frequency	F H U 50.00
MODE	User-defined Unit	F H U 1800.0
MODE	Input Current	F H U A 3.0
MODE	FWD	F H U -Frd-

When the situation is unusual, please press STOP RESET

15. Summary of parameter settings

Parameter	Explanation	Factory Setting	Settings
00－02	Parameter Reset	00	10 : Reset parameter to factory setting
00－07	Password Decode	01	Keypad Lock Release
00－08	Password input	01	Keypad Lock
00－09	Control methods	02	02 : Vector Control
01－00	Maximum Output Freq. (Fmax)	60.0	HZ
01－09	Accel Time 1	1.0	Sec
01－10	Decel Time 1	0.4	Sec
02－00	Source of First Frequency Command	01	Digital Keypad Input
02－01	Source of First Operation Command	01	Digital Keypad Input
02－03	PWN Carrier Frequency	10	KHZ
02－04	Motor Direction Control	01	Disable Reverse Operation
04－02	AVI Input Gain	70	%
04－19	AVI Analog Input Delay	0.01	Sec
06－06	Electonic Thermal Characteristic	00	Standard Motor
07－01	Motor No-Load current	24	%
07－02	Torque Compensation	3.0	
07－04	Number of Motor Poles	6	POLES 6
07－06	Motor Line-to-line Resistance R1	15328	Ω
08－00	DC Braking Current Level	50	%
08－02	DC Braking Time during Stopping	0.3	Sec

Example of setting machine speed :
(Parameter 00-02 : Change 00 to 10)

1. Note:
   1) Input power is AC 220V Single, 3-phase.
   2) Parameters are not allowed to change by user except technicians.
   3) The value of frequency is higher, the speed is faster. On the contrary, the lower is the value, the slower speed.
   4) PLS operate by setting instruction. Turn off the power and turn it on after disappearance of LED display if you make wrong setting during operation.
2. Setting Instruction:
   1) Stop machine and turn off the power and turn it on after disapperance of LED display.
   2) Press keys for setting as below steps.

Operation key	Display content	Display example
PROG DATA	Set the parameters	01-
PROG DATA	Parameter 01-02	01-02
◀	Shift data	01-02
▼	Modify data 00-02	00-02
PROG DATA	Parameter 00-02	00
◀	Shift data	00
▼	Modify data 10	10
PROG DATA	Modified data save	-End-
	Data error	-Err-
MODE	Return parameter 00-02	00-02
MODE	Return the selecting mode	60.00

16.Troubleshooting B

1) Motor:
   When motor rotation reverses or doesn't rotate, please check voltage output terminals T1,T2, T3 (U.V.W.) if correct.
2) Inverter:
   When controller overload the warning LED lights on to show error messages as situation as following:
3) Faults can be cleared by a reset from the keypad or Input Terminal.

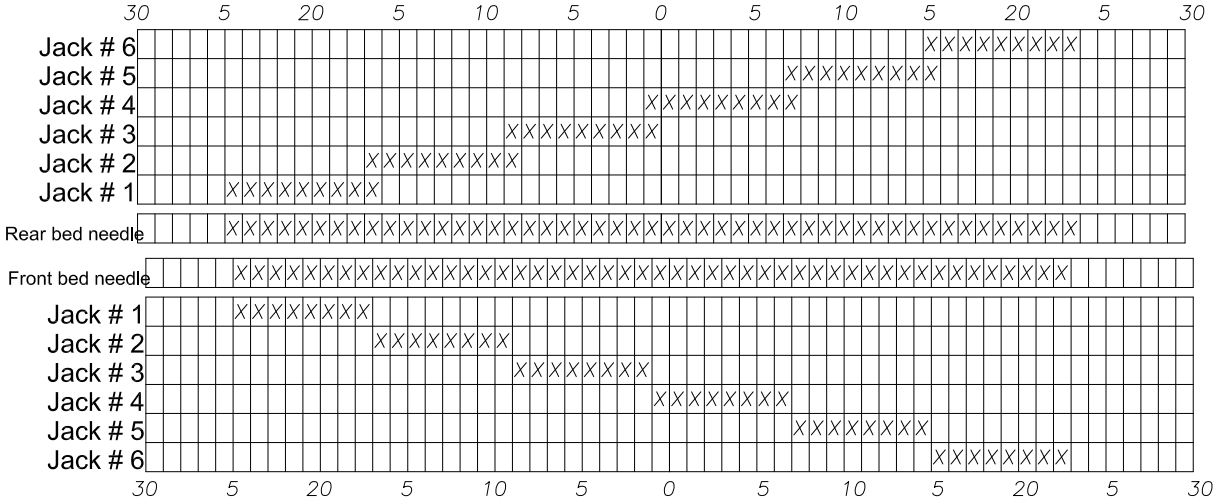
Fault Name	Fault Descriptions	Corrective Actions
oc	The AC drive detects an abnormal increase in current.	1. Check whether the motors horsepower corresponds to the AC drive output power. 2. Check the wiring connections between the AC drive and motor for possible short circuits. 3. Increase the Acceleration time. 4. Check for possible excessive loading conditions at the motor. 5. If there are any abnormal conditions when operating the AC drive after short-circuit being removed, it should be sent back to manufacturer.
occ	IGBT protection	
ou	The AC drive detects that the DC bus voltage has exceeded its maximum allowable value.	1. Check whether the input voltage falls within the rated AC drive input voltage. 2. Check for possible voltage transients. 3. Bus over-voltage may also be caused by motor regeneration. Either increase the decel time or add an optional braking resistor. 4. Check whether the required braking power is within the specified limits.
oH	The AC drive temperature sensor detects excessive heat.	1. Ensure that the ambient temperature falls within the specified temperature range. 2. Make sure that the ventilation holes are not obstructed. 3. Remove any foreign objects on the heat sinks and check for possible dirty heat sink fins. 4. Ensure that the ambient temperature ventilation.
Lu	The AC drive detects that the DC bus voltage has fallen below its minimum value.	Check whether the input voltage falls within within the rated AC drives input voltage.
oL	The AC drive detects excessive drive output current. Note: The AC drive can withstand up to 150% of the rated current for a maximum of 60 seconds.	1. Check whether the motor is overloaded. 2. Reduce torque compensation setting as set in Pr.7-02. 3. Increase the AC drive output capacity.

Fault Name	Fault Descriptions	Corrective Actions
oL 1	Internal electronic overload trip	1. Check electronic thermal overload 2. Check electronic thermal overload setting. 3. Increase motor capacity. 4. Reduce the current level so that the drive output current does not exceed the value set by the Motor Rated Current pr.7-00.
oL 2	Motor overload. Check the parameter settings (Pr.6-03 to Pr.6-05)	1. Reduce the motor load. 2. Adjust the over-torque detection setting to an appropriate setting (Pr.06-03 to Pr.06-05).
HPF	Hardware protection failure	Return to the factory.
oc A	Over-current during acceleration: 1. Short-circuit at motor output. 2. Torque boost too high. 3. Acceleration time too short. 4. AC drive output capacity is too small.	1. Check for possible poor insulation at the output line. 2. Decrease the torque boost setting in Pr.7-02. 3. Increase the acceleration time. 4. Replace the AC drive with one that has a higher output capacity (next HP size).
oc d	Over-current during deceleration: 1. Short-circuit at motor output. 2. Deceleration time too short. 3. AC drive output capacity is too small.	1. Check for possible poor insulation at the output line. 2. Increase the deceleration time. 3. Replace the AC drive with one that has a higher output capacity (next HP size).
oc n	Over-current during steady state operation: 1. Short-circuit at motor output. 2. Sudden increase in motor loading. 3. AC drive output capacity is too small.	1. Check for possible poor insulation at the output line. 2. Check for possible motor stall. 3. Replace the AC drive with one that has a higher output capacity (next HP size).
EF	The external terminal EF-GND goes from OFF to ON.	1. When external terminal EF-GND is closed, the output will be turned off. (Under N.O. E.F.) 2. Press RESET after fault has been cleared.
EF 1	Emergency stop. When the multi-function input terminals (MI1 to MI6) are set to emergency stop, AC drive stops any output.	Press RESET after fault has been cleared.
cF 1	The AC drive detects an abnormal increase	1. Return to the factory. 2. Check the EEPROM on the control board.

Fault Name	Fault Descriptions	Corrective Actions
cF2	Internal memory IC can not be read.	1. Return to the factory. 2. Reset drive to factory defaults.
cF3	Drive' s internal circuitry abnormal.	Return to the factory.
GFF	Ground fault: The AC drive output is output terminal is grounded (short circuit current is 50% more than the AC drive rated current), the AC drive power module may be damaged. The short circuit protection is provided for AC drive protection, not for user.	Ground fault: 1. Check whether the IGBT power module is damaged. 2. Check for possible poor insulation at the output line.
bb	External Base Block. AC drive output is turned off.	1. When the external input terminal (B.B) is active, the AC drive output will be turned off. 2. Disable this connection and the AC drive will begin to work again.
cFA	Auto accel/decel failure	Don't use the function of auto acceleration/deceleration.
cE-	Communication Error	1. Check the connection between the AC drive and computer for loose wires. 2. Check if the communication protocol is properly set.
codE	Software protection failure	Return to the factory.
AnLEr PGErr	AnLEr: analog feedback error or ACI open circuit PGErr: PG feedback signal error	1. Check both parameter settings and wiring of Analog/PG (Pr.10-00). 2. Check for possible fault between system reaction time and the feedback signal detection time (Pr.10-08).
PHL	Phase Loss	Check Power Source Input
cEF	EF when preliminary count value attained.	1. Check counter trigger signal 2. Check Pr.03-09, Pr.03-11 setting
AUE	Auto Tuning Error	1. Check cabling between drive and motor 2. Retry again
Lc	Low Current	1. Check Load Current 2. Check Pr.06-12 to Pr.06-15 setting

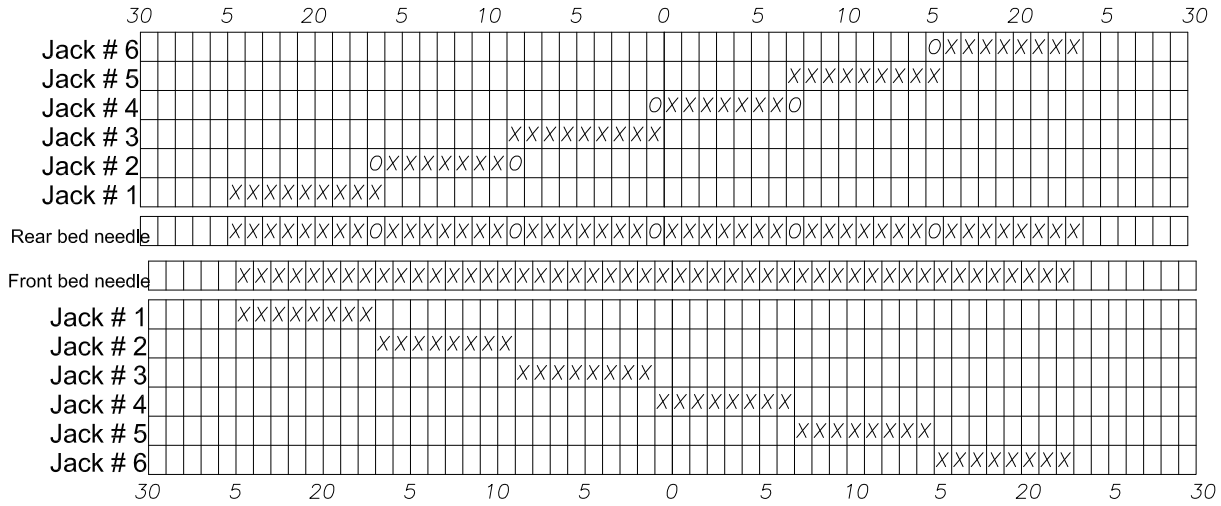
Example 1 :

X : Needle high butt, jack high butt
O : Needle low butt, jack low butt



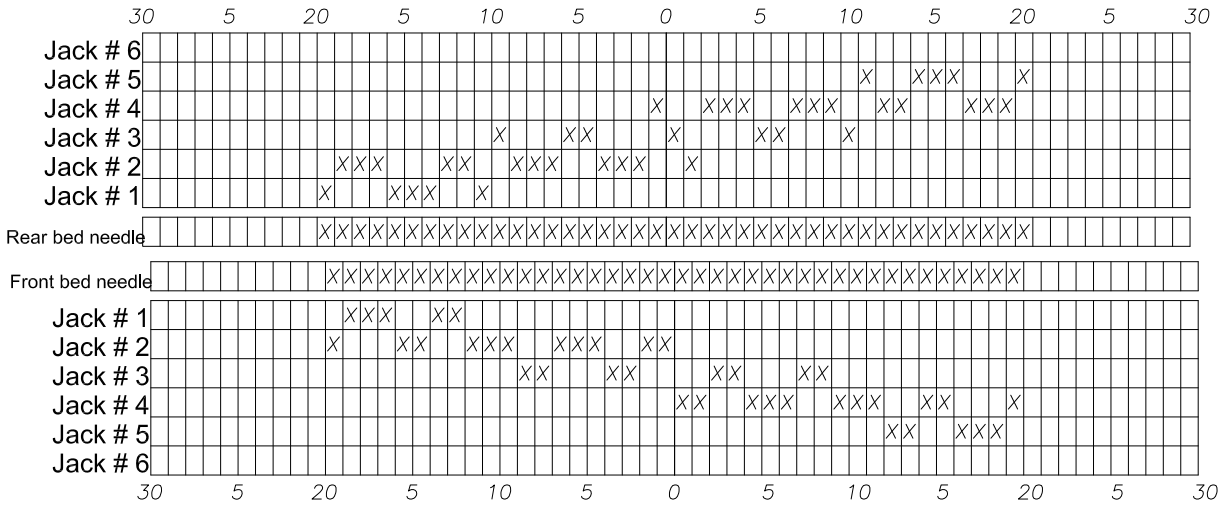
Example :

X : Needle high butt, jack high butt
O : Needle low butt, jack low butt

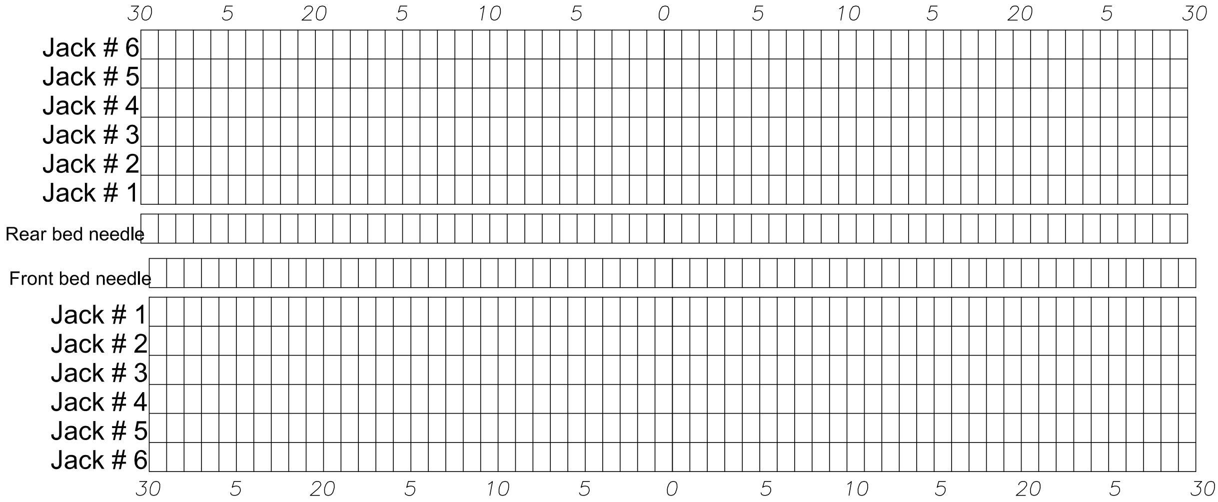


Example :

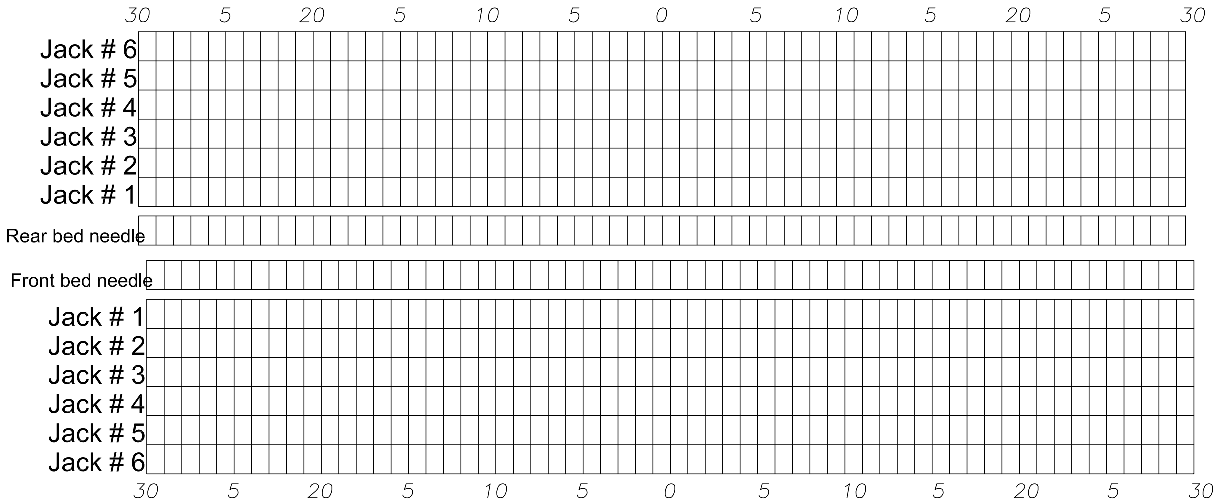
X : Needle high butt, jack high butt
O : Needle low butt, jack low butt



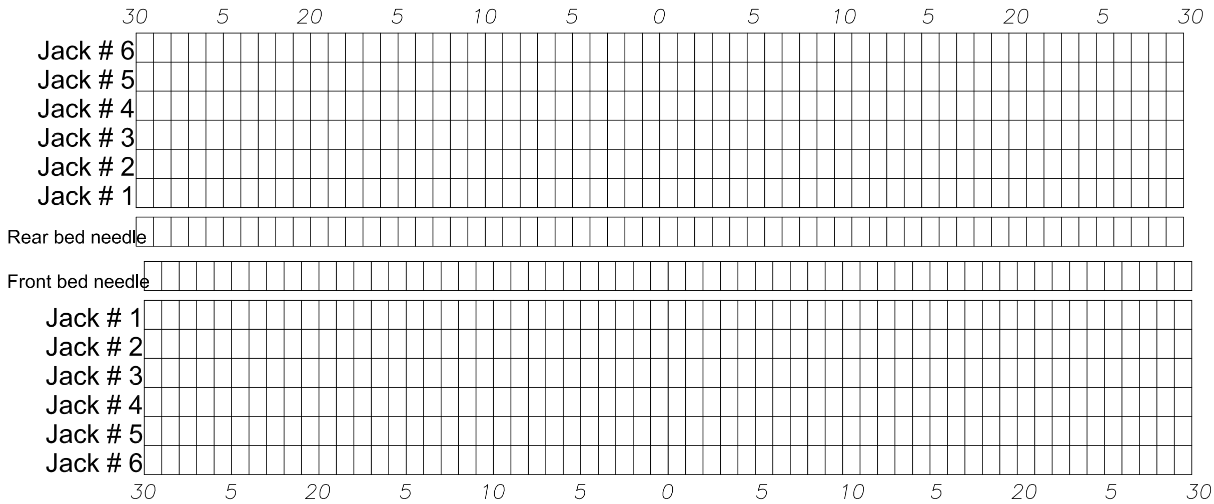
X : Needle high butt, jack high butt
O : Needle low butt, jack low butt



X : Needle high butt, jack high butt
O : Needle low butt, jack low butt



X : Needle high butt, jack high butt
O : Needle low butt, jack low butt



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針數 Gauge	
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機器編號 Machine S/NO.	

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