MACHINE SETUP INSTRUCTIONS

TMAR-KC TYPE-2
TMAR-VC

[Important]

To handle the machine correctly and safely, perform operations according to the procedure described in this manual.

Original Instructions
M-SETUPTMAR17-E
(2018. 07)

User’s Manual / Parts List

User’s manual / Parts list are stored as the PDF file in the accessory CD. Please read the contents thoroughly and then use the machine or the optional device.

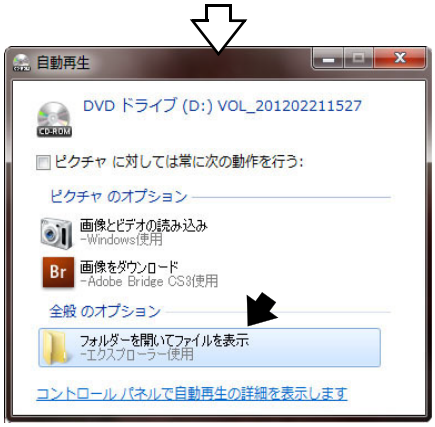
To see the PDF file, "Adobe Acrobat Reader" is necessary.

User’s manual, parts list of the optional devices you have not purchased are included in this CD. Please note beforehand.

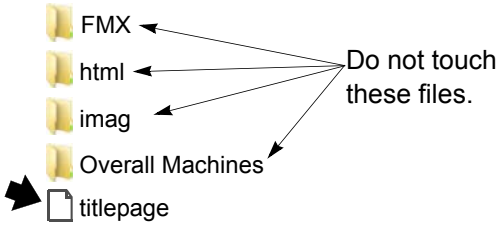
[How to open the CD]

1. Insert a CD into the personal computer.

Since the following pop-up window will be displayed automatically, select "Open folder to view files" (indicated by the arrow).



2. Double-click left “ titlepage”.



3. Select displaying language.

4. Select "User’s Manual" or "Parts List", and then select the title you desire.

The figure above is an example selecting " English (Multiple Languages) in the above 3.

Foreword

This manual introduces the procedure for setup of TAJIMA embroidery machine TMAR-KC TYPE-2, TMAR-VC.
Read this manual thoroughly, understand the contents, and then use the machine.

This manual may contain discrepancies in detailed specifications as compared with the actual production models.
If you have any questions about this manual, consult your TAJIMA distributor.

Regarding optional devices, refer to the USER'S MANUAL for the device (separate volume) .

Please keep this manual with care near the machine for quick reference.

Tokai Industrial Sewing Machine Co., Ltd.

Important safety instructions

To prevent any harm or damage to the person who use this product or other person, we describe items that must be surely followed as below.

Indicates that there is a lot of danger of death or serious injuries [*1] if handled by mistake.

Indicates that there is a likelihood of death or serious injuries [*1] if handled by mistake.

Indicates a potentially hazardous situation which may result in minor or moderate injury [*2] or property damage if handled by mistake.

*1: A condition caused by electric shock, injury, fracture of a bone, etc., that leads to aftereffects, or an injury that necessitates hospitalization or visits to a hospital over a long period.

*2: An injury that does not necessitate hospitalization or visit to a hospital over a long period.


: Prohibited items


: Items that may cause electric shock if not observed


: Items that must be followed carefully to ensure safe operation

Chapter 1 Carrying

Chapter 2 Detaching, attaching

Chapter 3 Level adjustment

Chapter 4 Connection of power cord

Chapter 5 Checking

Chapter 6 Adjustment

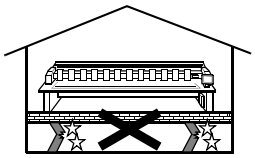
Chapter 1 Carrying

1. Installation environment

CAUTION

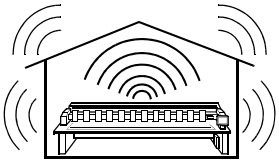
- Install the machine on a sturdy floor.

  The floor structure must be strong enough to bear the machine weight (indicated on the spec. plate). If the floor is supported by steel frames, place the machine stand on the steel beams as long as possible.



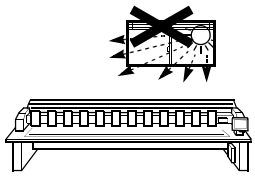
- Control the operation noise in the environment.

  This machine is designed to reduce noise during operation. To improve the sound insulation performance in the factory still more, use the interior finish materials which show high sound insulating performance for the walls, ceiling, and floor of the factory.



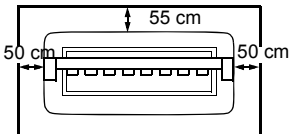
- Avoid direct sunlight.

  If the machine is exposed to direct sunlight over an extended period of time, the machine body may be discolored or deformed. Put curtains or shades to the sight to prevent the machine from direct sunlight.



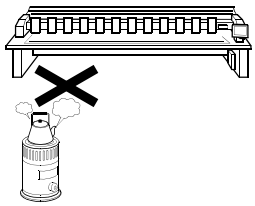
- Provide enough space for maintenance.

  Taking account of operability when maintaining and inspecting the machine, provide working space of 50 cm or more to right and left, and 55 cm or more to rear directions for the machine against obstacles such as walls.



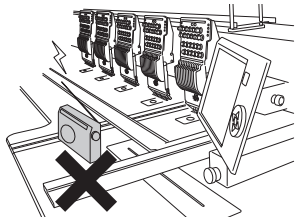
- Avoid dust and moisture.

  Since dust and moisture lead to dirt and rust on the machine, use the machine in an environment of facility of air conditioner, and clean the working place periodically. Use caution not to expose the machine to direct wind from the air conditioner so that embroidery threads do not become disheveled.
  Degree of pollution: 2 or less
  Humidity: 30 to 95%RH (relative humidity) without condensation
  Ambient temperature: 5 to 40°C (during operation), -10 to 60°C (during storage)



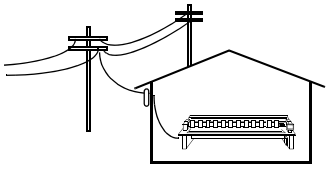
CAUTION

Pay attention to interference of radio wave.



Although the machine is designed not to apply radio wave to other equipment, there could be cases where it causes radio wave interference depending on operation environment and type of equipment. If such problems arise, install the equipment as apart from the machine as possible.

Pay attention to power supply style.



When supplying the power, meet the following requirement.

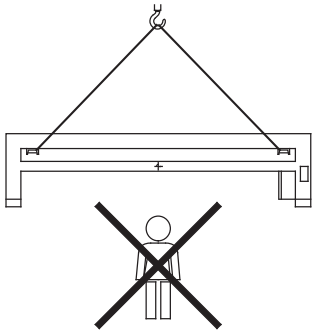
- Excess voltage category: III

2. How to carry

2-1. When using a crane

DANGER

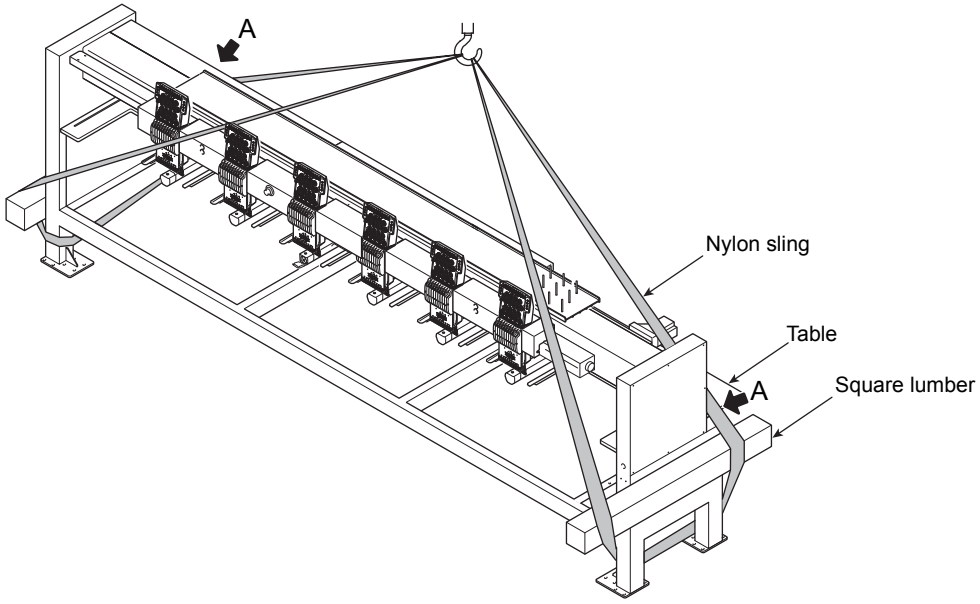
When suspending (lifting) the machine, make sure that there is no person standing in the danger area around the machine, especially under the machine.



WARNING

TMAR-KC TYPE-2

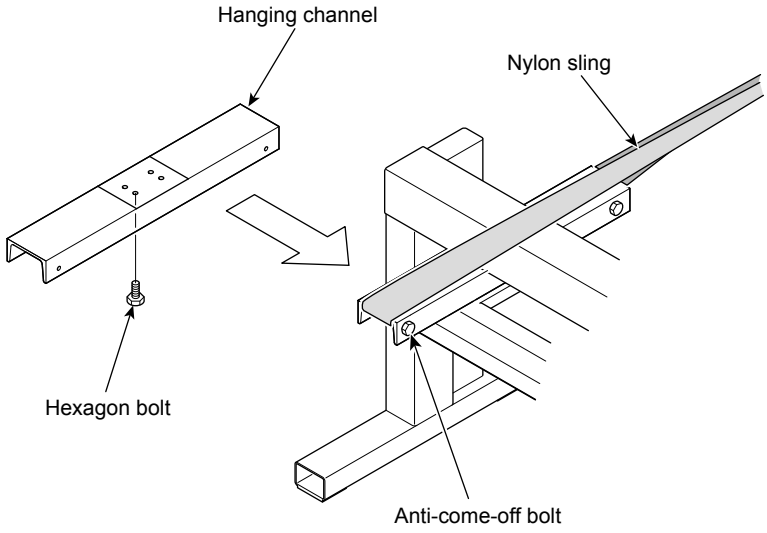
When suspending the machine, use the square lumbers as shown in the figure below, and make sure that the nylon sling does not touch the table. (section A)



WARNING

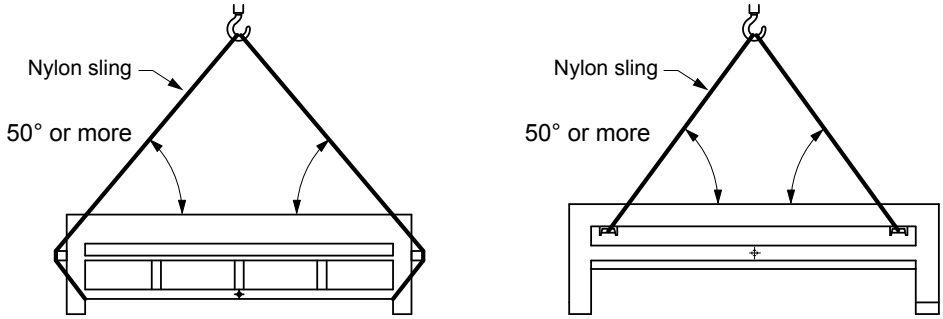
TMAR-VC

When suspending the machine, attach the hanging channel to the machine and fix it with hexagon bolts. pass the nylon sling through the hanging channel, and attach the anti-come-off bolts.



WARNING

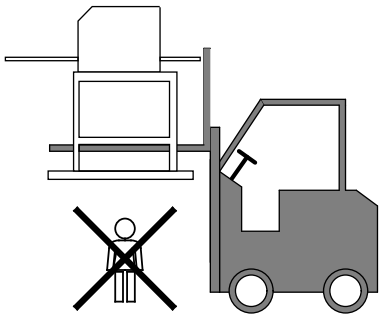
When suspending the machine, use a nylon sling that is long enough to provide a sling angle of 50° or more so that the nylon slings do not touch the table.



2-2. When using a forklift

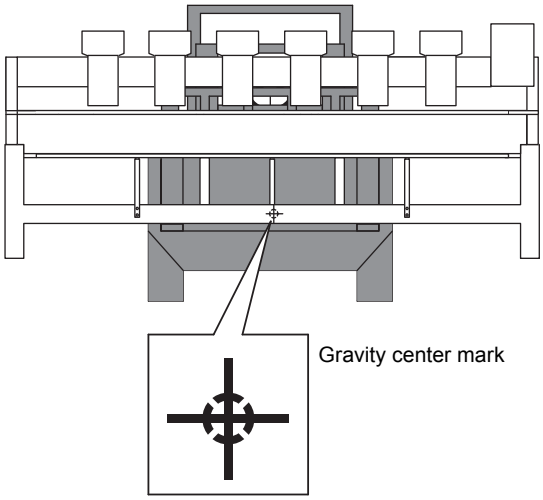
DANGER

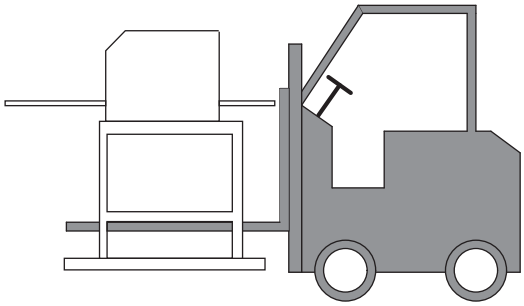
To lift the machine, check if there is no person around the dangerous zone of the machine, especially below the machine. Then, start working.



WARNING

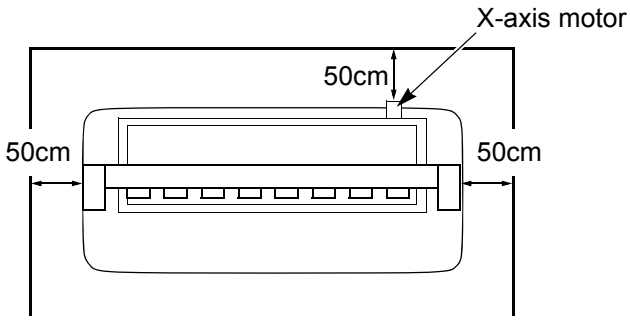
When you use a forklift, pay enough attention not to drop the machine. Move the forklift to lift the machine with reference to "Gravity center mark" that shows right and left balance of the machine.





3. Installation

When installing the machine, provide space of 50 cm or more in the left, right and rear directions so as not to interfere with the operation of the emergency stop switch and the movement of frame.

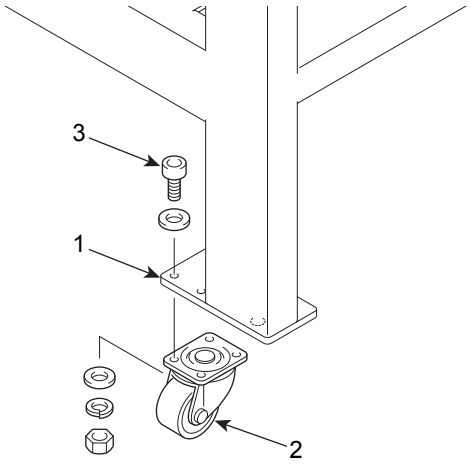


3-1. TMAR-KC TYPE-2 (2-head 500P model, 4-head 360P model)

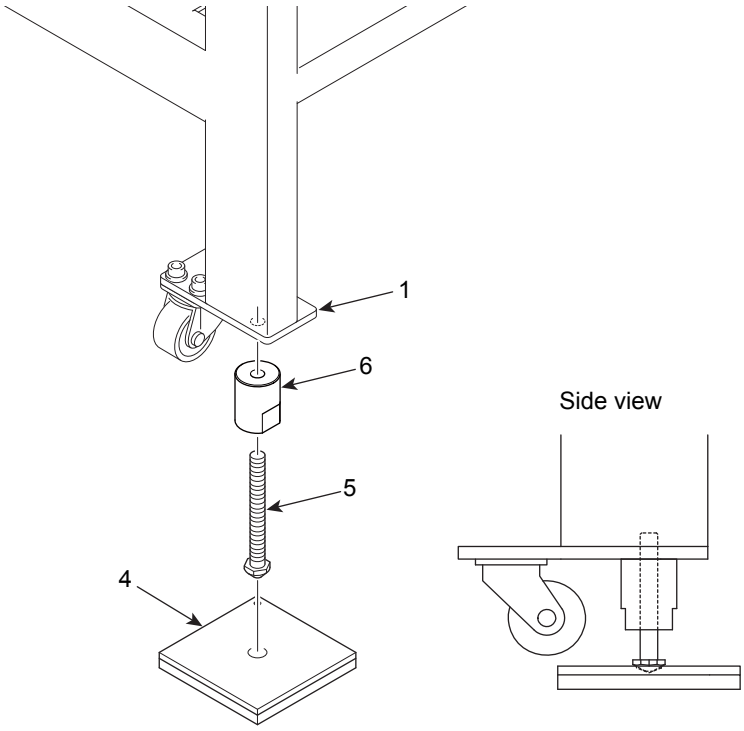
WARNING

Workers should understand the procedure thoroughly, and then start working. Unexpected action could cause injury.

(1) Attach the caster 2 to the machine 1 with the screw 3.

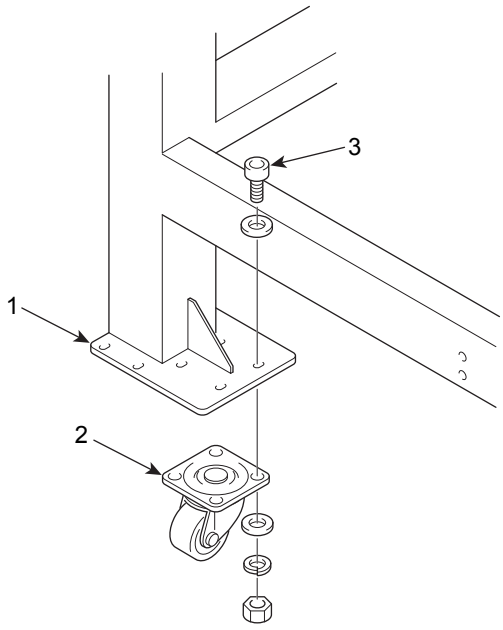


(2) Put the vibration-preventive base 4. Attach the leveling bolt 5 and the leveling block 6 to the machine 1. Fix the leveling block 6 by another working.(→p.15)

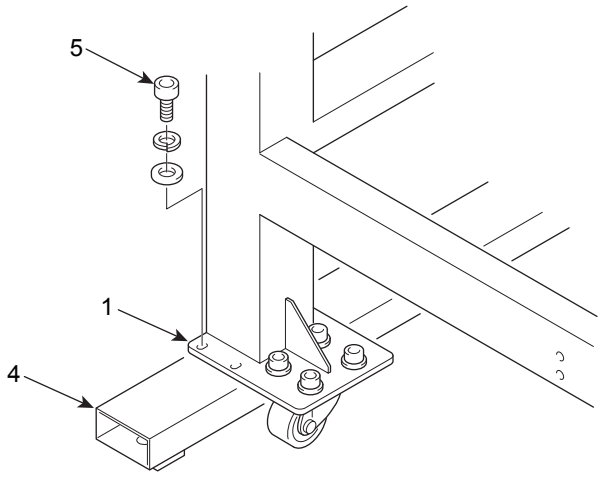


3-2. TMAR-KC TYPE-2 (4-head 500P model, 6-head 360P model)

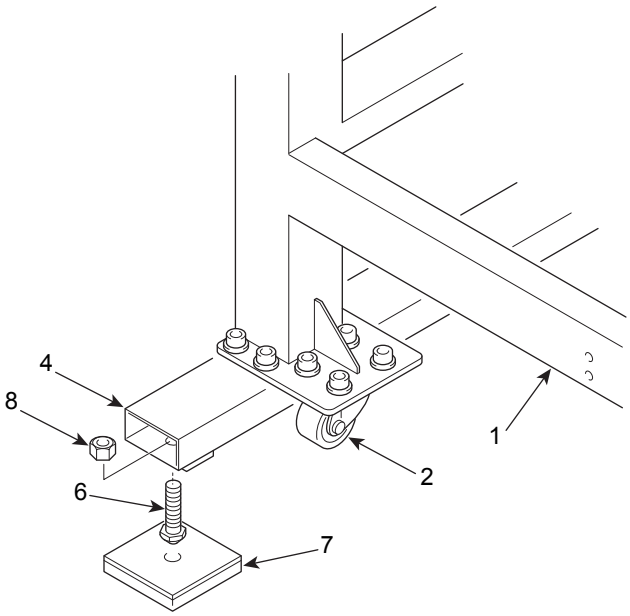
(1) Attach the caster 2 to the machine 1 with the screw 3.



(2) Attach the stand base 4 to the machine 1 with the screw 5.

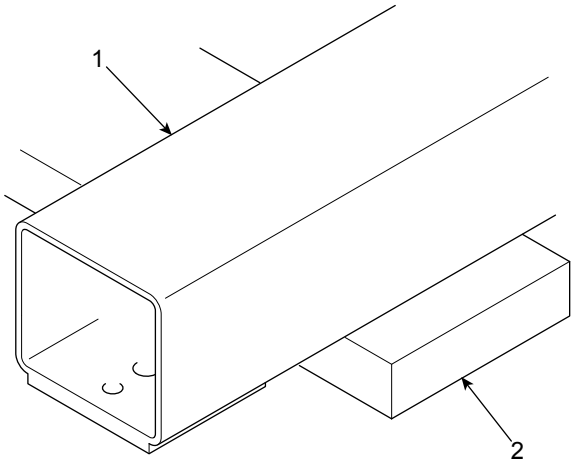


(3) Attach leveling bolts 6 (4 pieces in total) to the stand base 4. Put the machine 1 on the vibration-preventive base 7 as it is. Adjust each leveling bolt 6 so that the caster 2 is lifted. Fix the nut 8 in another working.(→p.15)

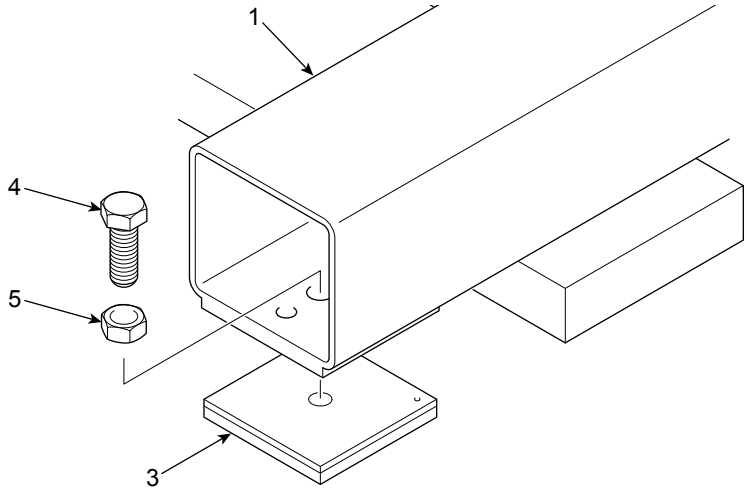


3-3. TMAR-VC

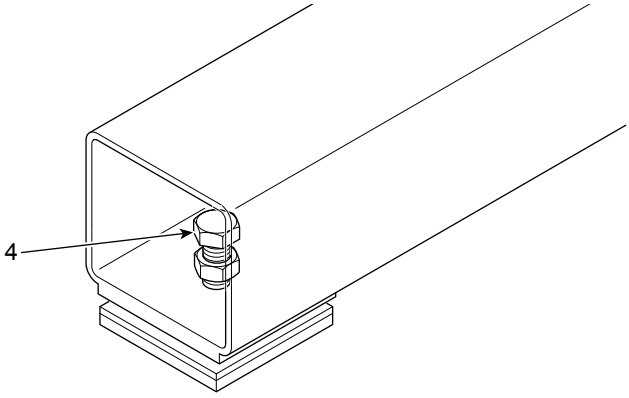
(1) Place the machine 1 on the square lumbers 2 of several centimeters thickness.



(2) Lay the vibration-preventive base 3, and screw the leveling bolt 4 and nut 5 into the machine 1.



(3) Also screw the leveling bolt 4, and remove the square lumbers.

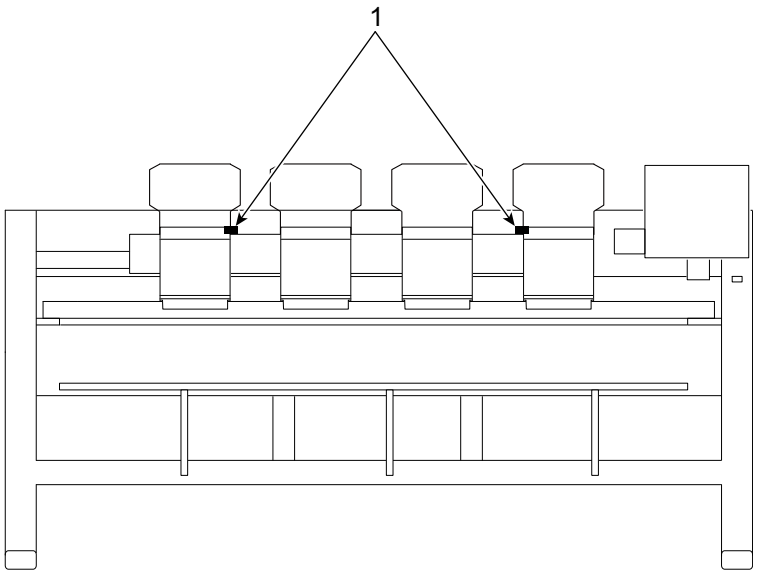


Chapter 2 Detaching, attaching

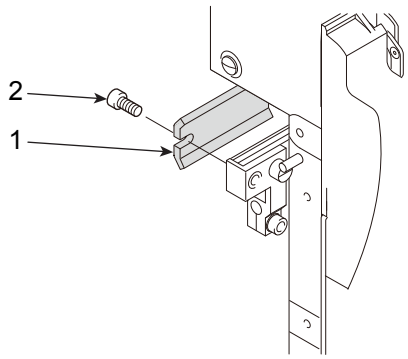
1. Detaching

1-1. Stopper

(1) Check the attaching position of the stopper 1, and remove it.



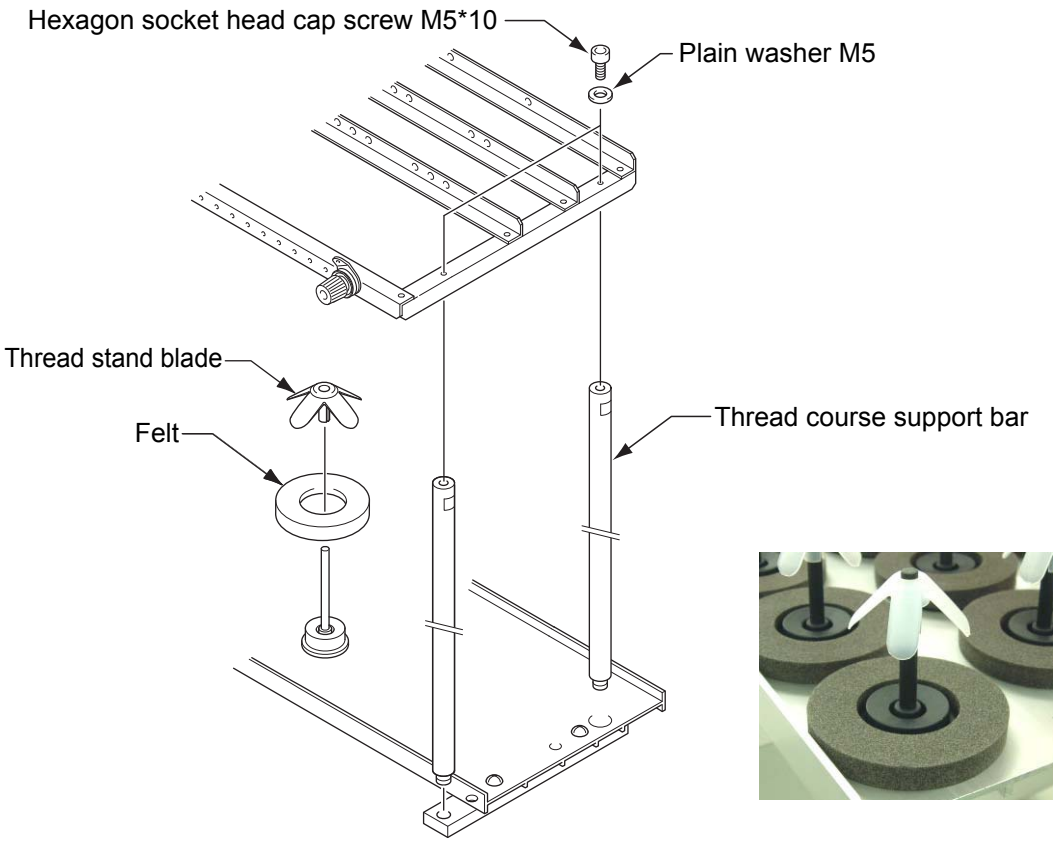
(2) Detach the screw 2 to remove the stopper 1.



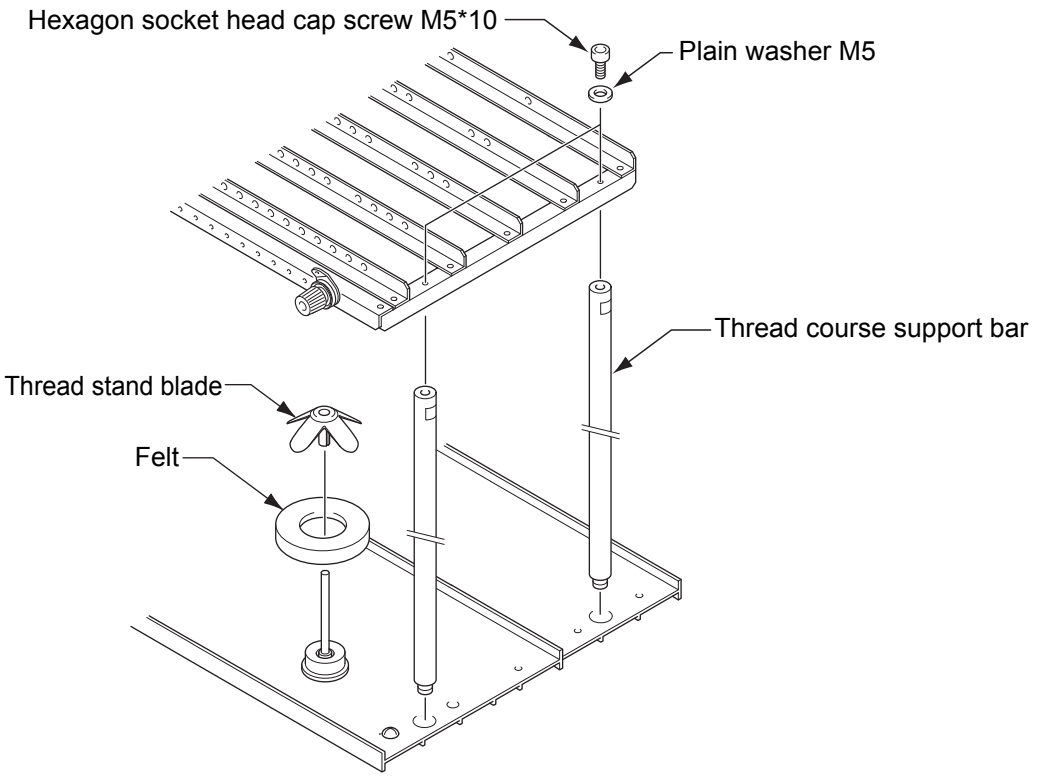
2. Attaching

2-1. Thread course

Assemble the thread course according to the figure below. (Example of TMAR-KC TYPE-2)

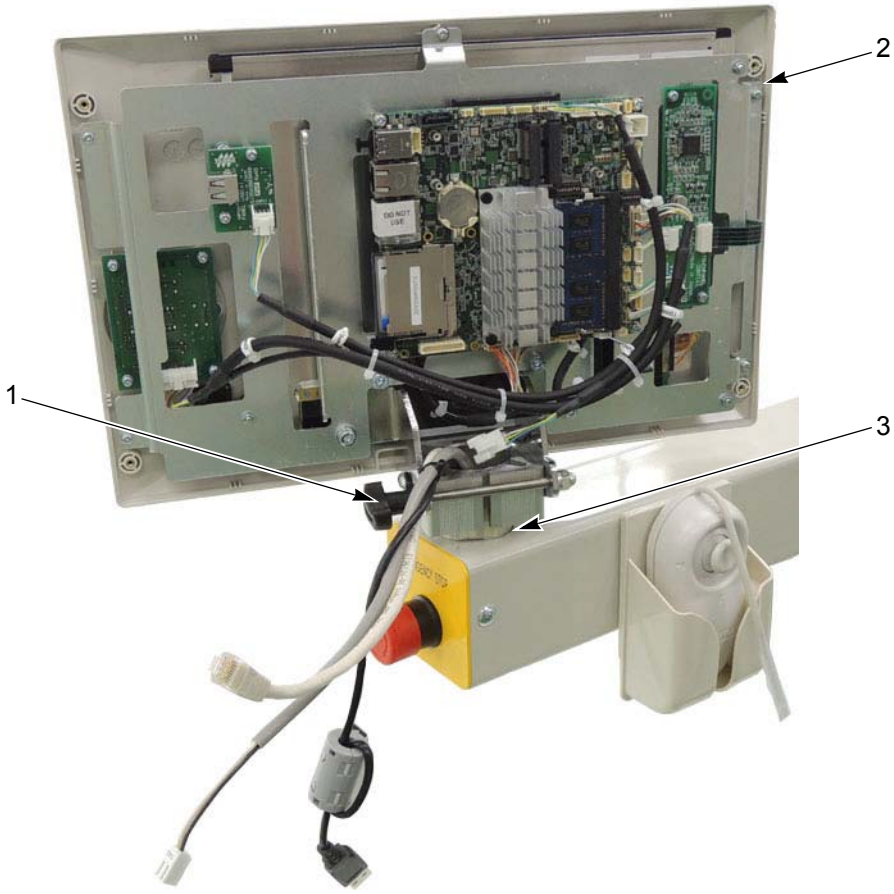


AN EXAMPLE OF 15-NEEDLE MACHINE



2-2. Operation panel

(1) Loosen the knobbed screw 1, and install the operation panel 2 on the pipe 3.



(2) Connect the harness 1 and harness 2 to CPU card 3. (For Connecting destination, refer to the chart A.)
Connect the harness 4 and connector 5.

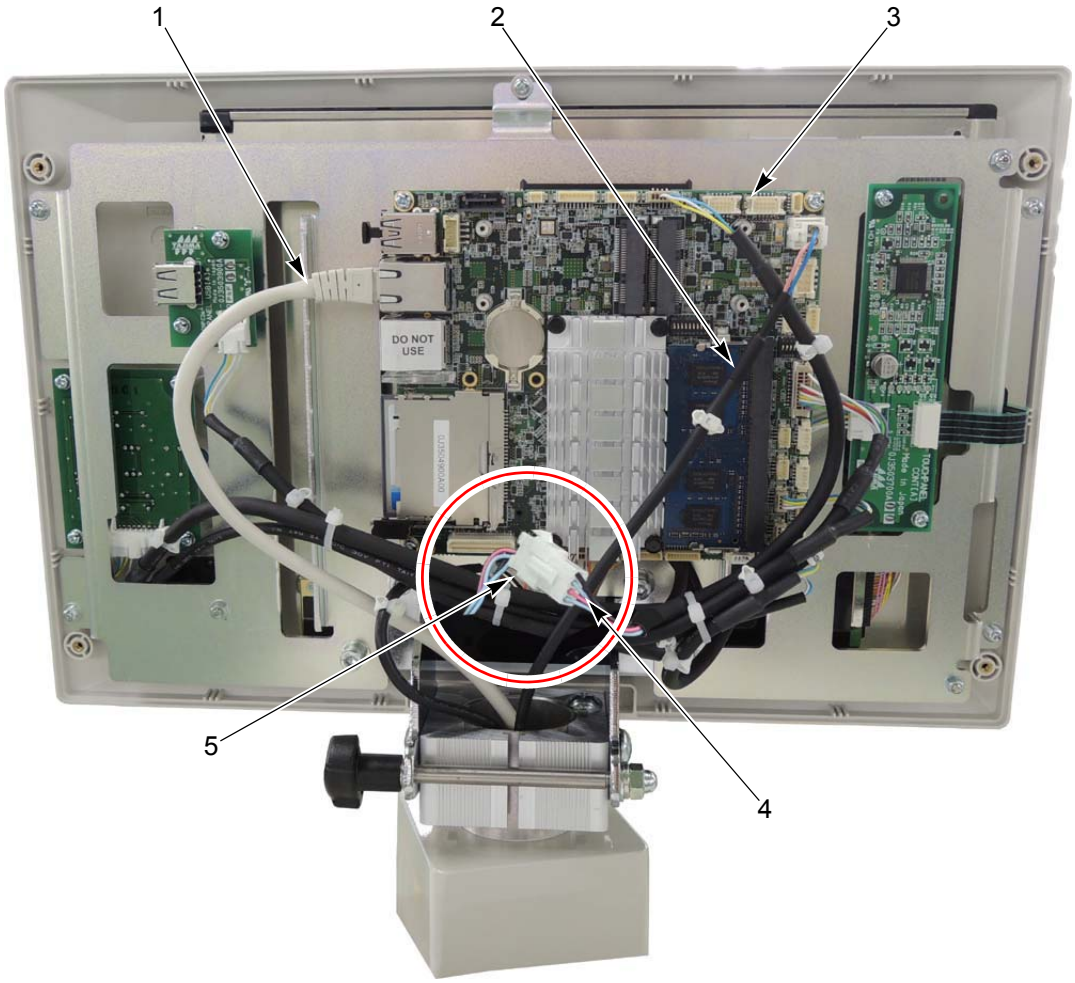


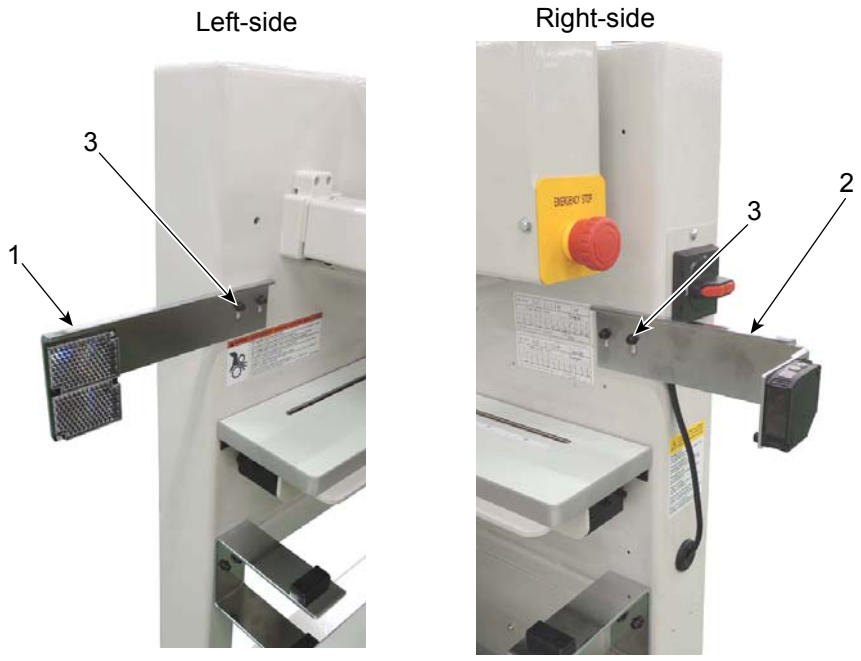
Chart A

Harness	Name	Connecting destination
1	Harness :LAN cable	CPU card [CN2701]
2	HARNESS :OPERATION PANEL POWER SUPPLY :DC5V 12V	CPU card [CN4101]
4	HARNESS :SERIAL COMMUNICATION :OPERATION PANEL :RELAY	HARNESS :SERIAL COMMUNICATION :OPERATION PANEL [CPUJNT]

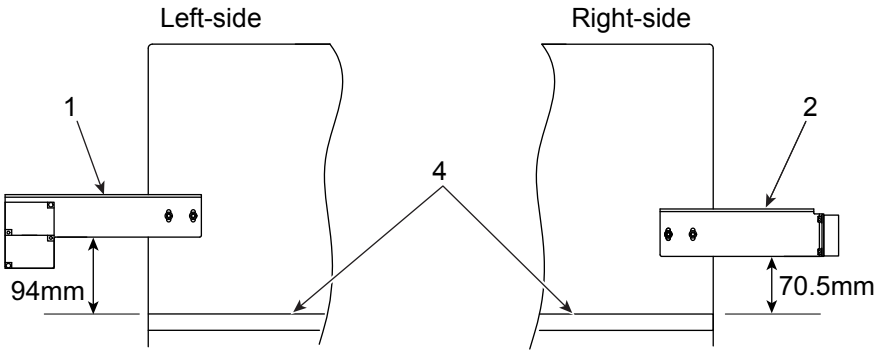
2-3. Beam sensor

The presence or the absence of the beam sensor depends on the specification.

Attach the reflector 1 and the beam sensor 2 by using screws 3 (hexagon socket head cap screw M4*8, spring washer M4 and plain washer M4).



Attach the reflector 1 and the beam sensor 2 to the height of the following figure based on the upper surface 4 of the table.



Chapter 3 Level adjustment

1. How to use level gauge

Adjust level by using a level gauge in the state of no slant or contortion of the machine. There are four spots for measuring.

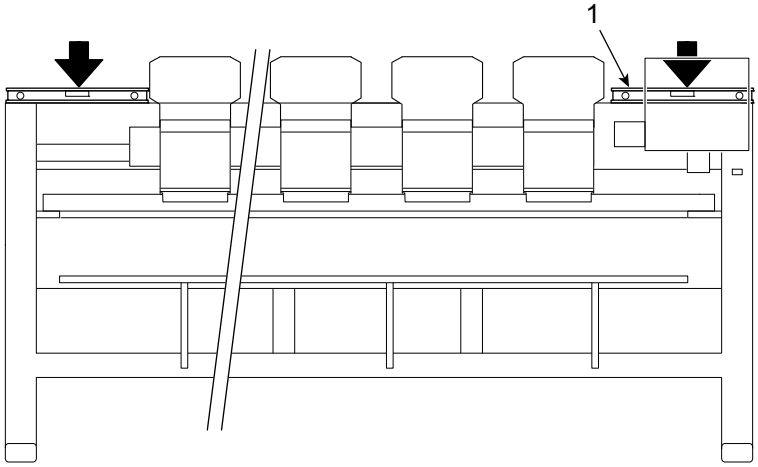
Level gauge

Use the level gauge of 60 cm length or longer and sensitivity within 0.5 mm/m.

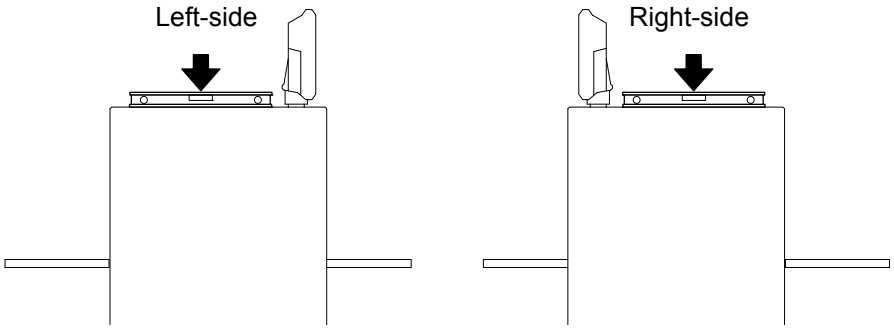
1-1. TMAR-KC TYPE-2

Place the level gauge 1 on the square pipe.

Level adjustment in right and left direction



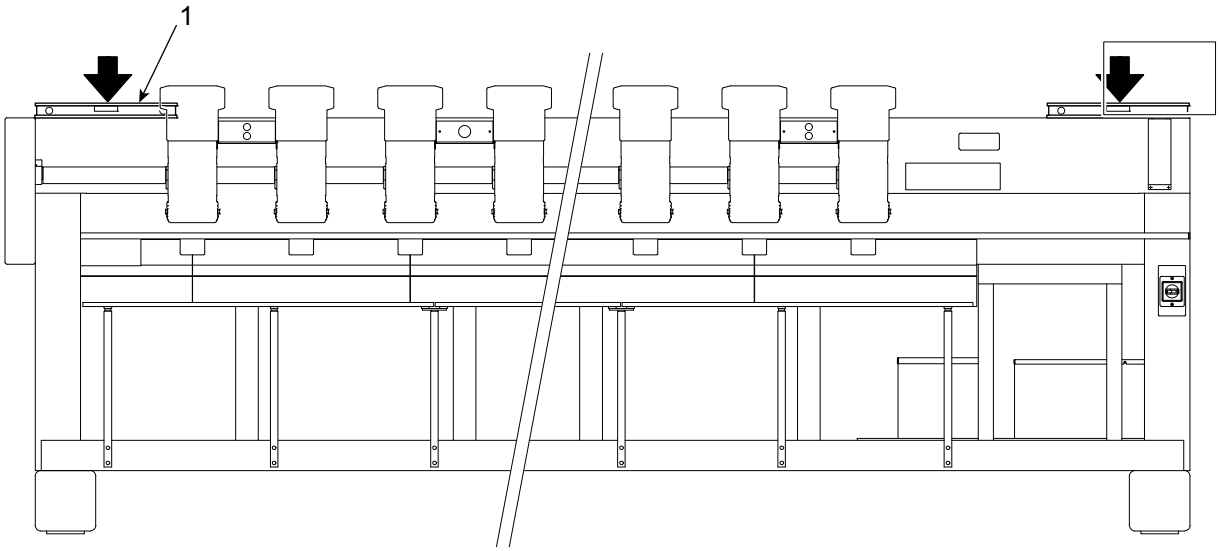
Level adjustment in front and rear direction



1-2. TMAR-VC

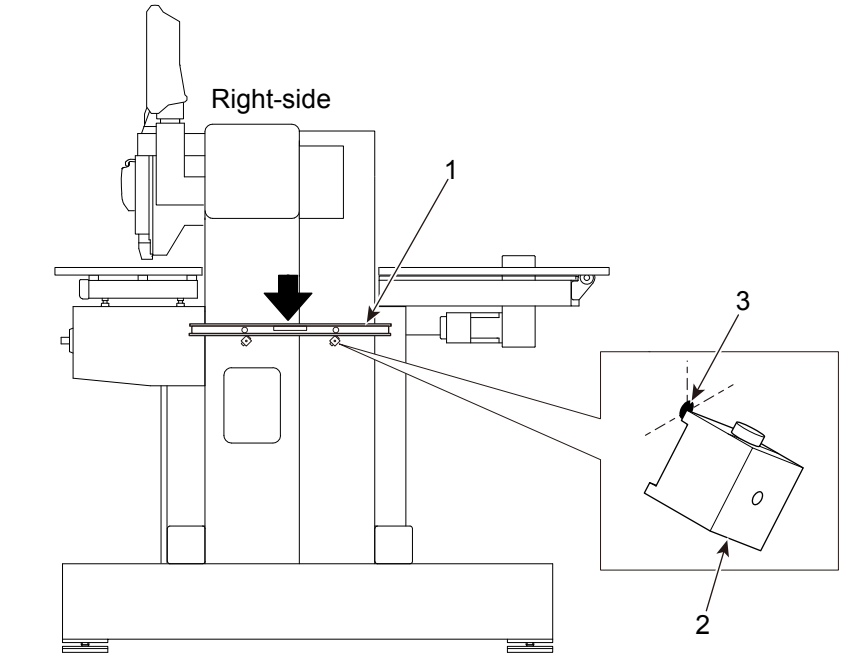
(1) Level adjustment in right and left direction

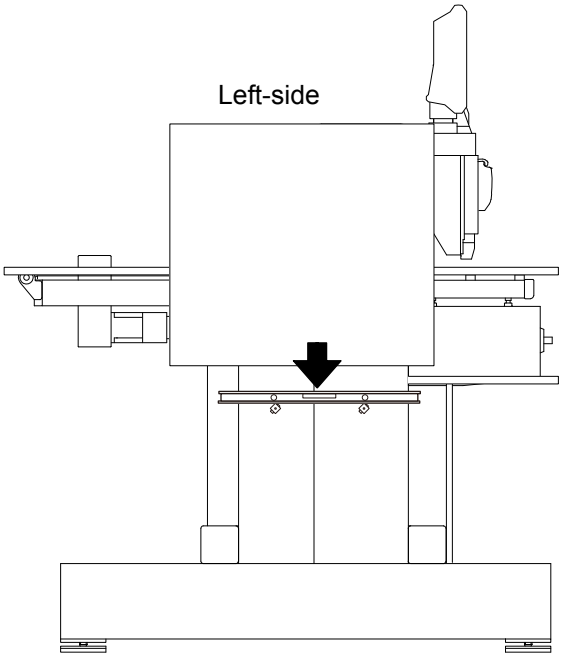
Place the level gauge 1 on the square pipe.



(2) Level adjustment in front and rear direction

Attach the magnet holder 2 so that its corner comes to the center of the punching mark 3. Place the level gauge 1 on the magnet holder 2.

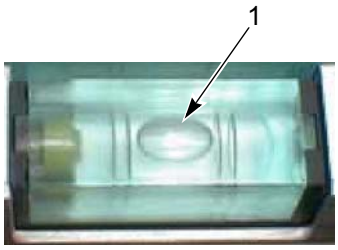


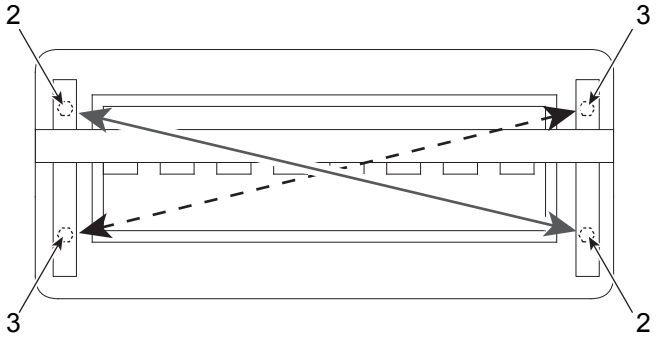


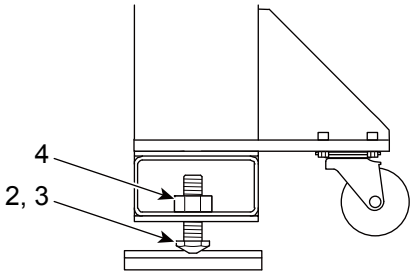
2. Level adjustment

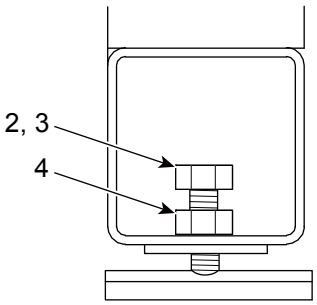
Adjust the leveling bolt 2 (2 places) on a diagonal line while checking bubble 1 of the level gauge, then tighten the nut 4 after adjusting the remaining the leveling bolt 3 (2 places). At this time, perform tightening so that equal load is applied to four pieces of hexagon bolt.

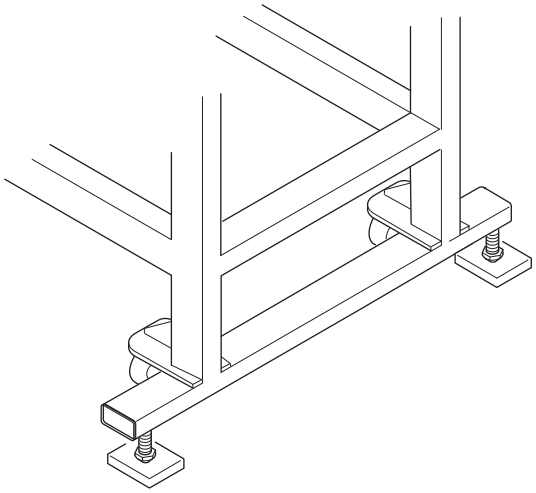
If a bubble is set within the range (inner lines) of a level gauge with its sensitivity of 0.5 mm/m, the degree of level becomes "±0.5 degrees".

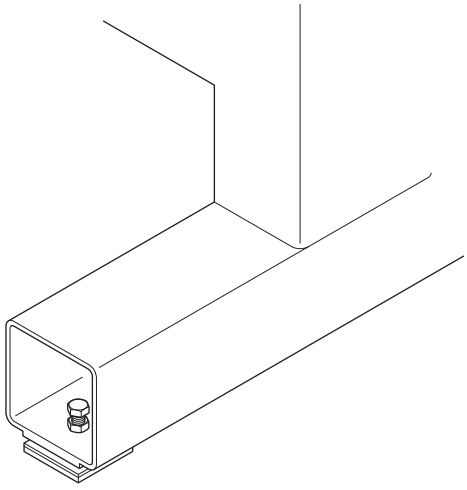












3. Attaching of center support (limited model)

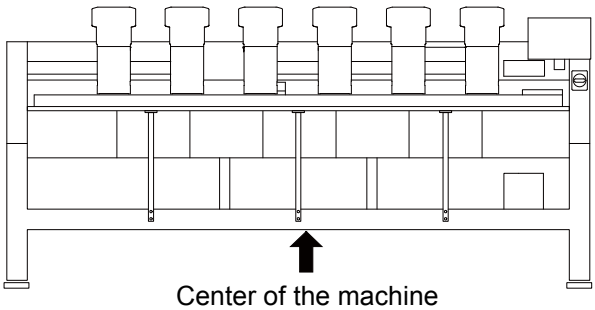
CAUTION

Do not lift the center support too much. Lifting too much would change the needle bar lower dead point and the needle locating position, which could affect sewing badly.

(1) Attach the center supports to the following positions (indicated by the arrow).

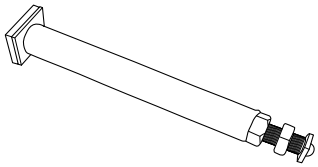
TMAR-KC TYPE-2: 2 pieces

Applicable model: 6-head 500P model, 8-head 360P model, 8-head 500P model



Center of the machine
(Two spots in front and rear)

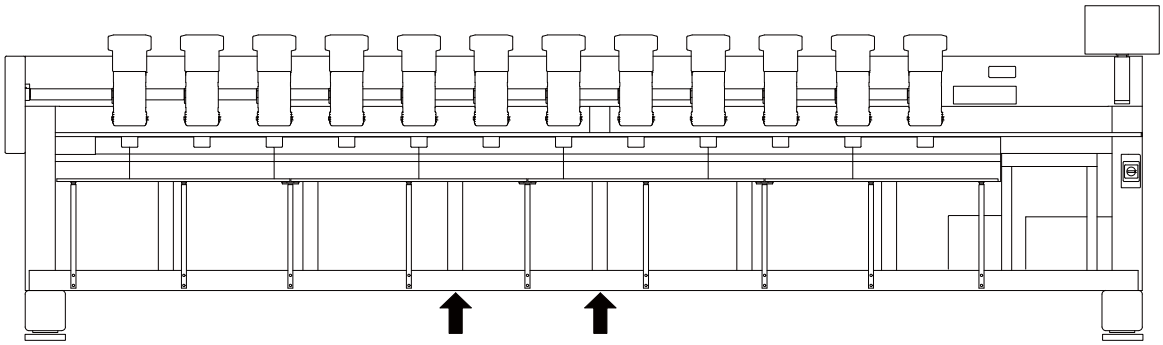
Center support (accessory)



TMAR-VC

In case of the border frame spec.: 4 pieces

In case of other than the border frame spec.: 2 pieces

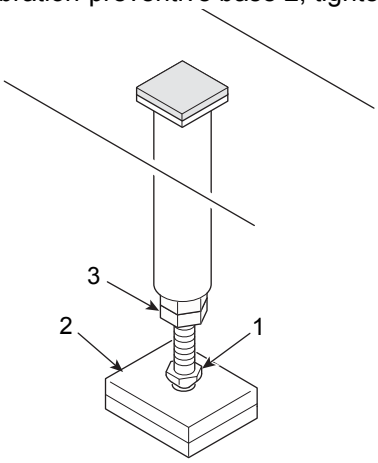


*1 Center of the machine
(Two spots in front and rear)

*1 Rcommended position (just under the vertical beam, two spots in front and rear) of the additional center supports in the border frame spec.

In case of the border frame spec., vibration may occur in the front table depending on the installation situation of the machine. In such a case, please change the attaching position so that the vibration can be settled.

(2) After performing 1/4 turn with the wrench from the position where the adjusting bolt 1 touches the dent of the vibration-preventive base 2, tighten the nut 3.

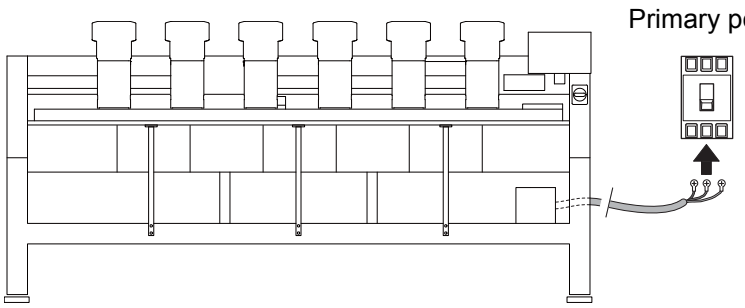


Chapter 4 Connection of power cord

1. Important safety instructions

DANGER

When you connect the power cord, be sure to turn "OFF" the primary power supply. There could be a danger of electric shock, burning or death. In addition, check if the voltage of the voltage indicating label that is attached to the power cord fits to voltage spec. on your side, and then connect the power cord to the primary power supply.



If the machine needs to be connected to an external power supply, the power supply cable connection must be done only by the service personnel assigned and trained by TAJIMA or qualified technician.

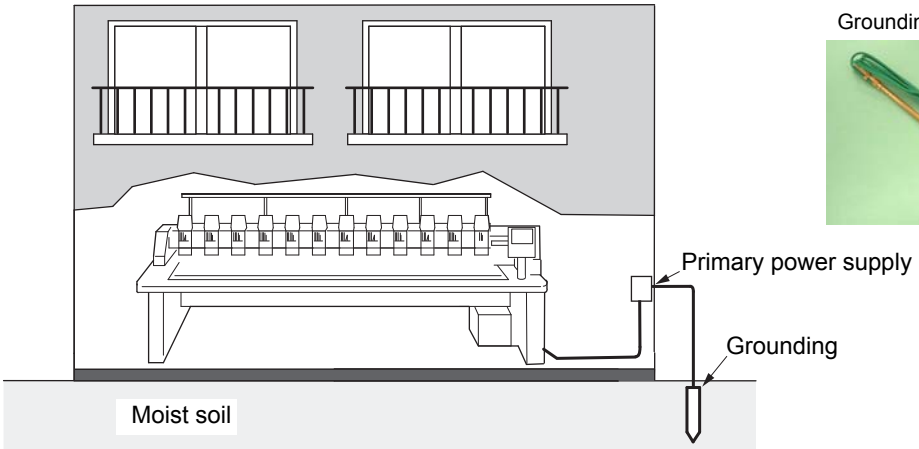
WARNING

- When supplying the power, conform to excess voltage category "III".
- Connect the machine to the power supply line that is not connected to machines subject to large load fluctuation such as elevators and presses so that the machine can operate in stable conditions.
- Check if power voltage is enough for operating the machine by using a multimeter.
  Voltage: Within ±10% of the rated voltage
- The power supply cable must be laid out of the operator s moving area so that the operator does not step on the cable.

WARNING

Insert the power cable plug fully. If a metallic part etc. touches a blade in the plug, it may cause fire and/or electric shock.

Since there is the danger of electric shock due to leak current, be sure to connect the grounding wire. In addition, degree of grounding should be type D or higher (grounding resistance 100 ohms or less).



Grounding bar (accessory)

CAUTION

In addition to full-time leak current, leak electric current generated by harmonics and surge flows in the power cable of the machine. For this reason, if selection and installation of breaker of leak current and leak current relay used for the factory are not correct, malfunctioning of the machine may occur.
Regarding connection of power cord, observe the following items.

Use a breaker of electric current leakage and leak current relay for which measures are taken against harmonics and surge. If such a breaker and a relay are not available, select conventional breaker and relay with sufficient leak current capacity to absorb leak current caused by harmonics and surge. (In this case, constant leak current must be controlled satisfactorily.)

Regarding capacity of electric current leakage for breaker of electric current leakage and leak current relay per machine, please consult your local TAJIMA distributor.

For actual product names of breaker of electric current leakage and leak current relay for which measures are taken against harmonics and surge, please consult your local TAJIMA distributor or electric engineers.

To prevent the machine from property damages, one embroidery machine should be connected to one no fuse breaker. Property damages include a drop of output of the main shaft motor, etc., stop position error and color change error caused by the stop position error, design displacement, etc.

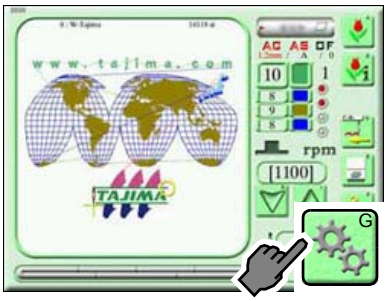
Chapter 5 Checking

1. Needle locating position

To lower the needle bar, follow the procedure below.

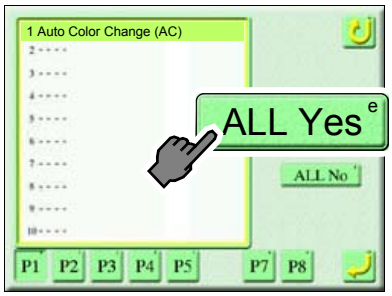
(1) Set "Main shaft brake" to "No" by the following operation.

1. Icon G

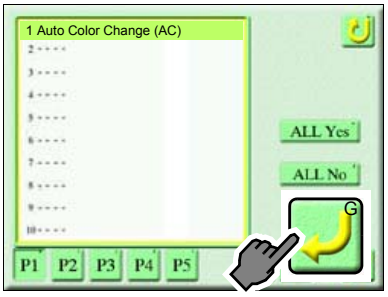


After that, cancel the functional limit level. For details, refer to the chapter for "Parameter" in the user's manual.

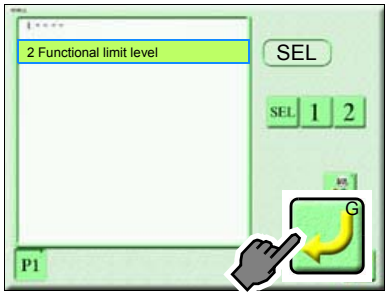
2. ALL Yes



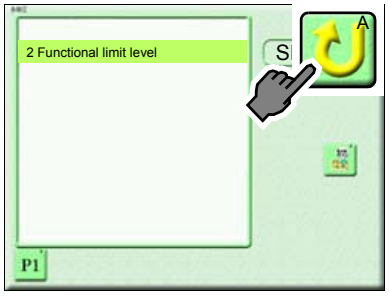
3. To set



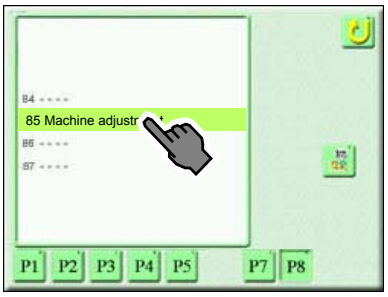
4. To set



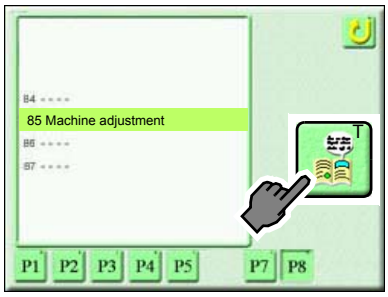
5. Icon A



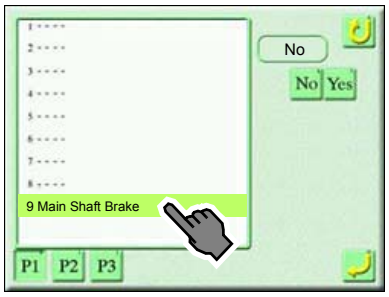
6. 85 Machine adjustment



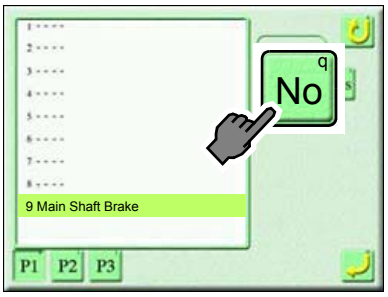
7. Icon T



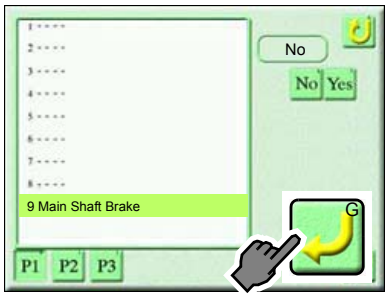
8. 9 Main Shaft Brake



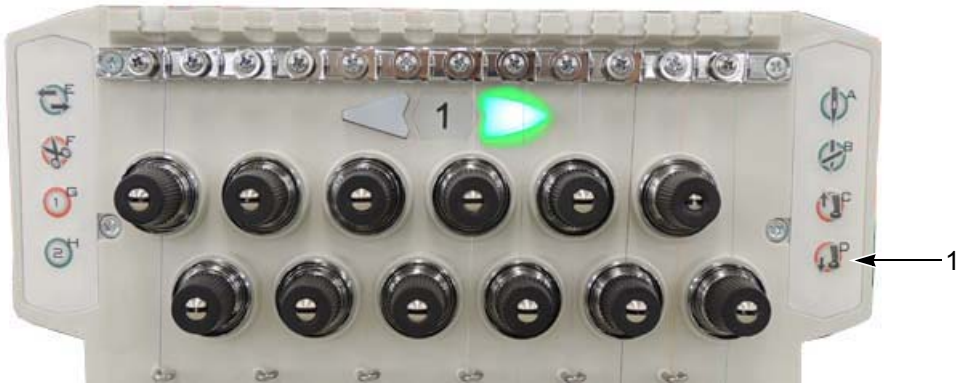
9. No



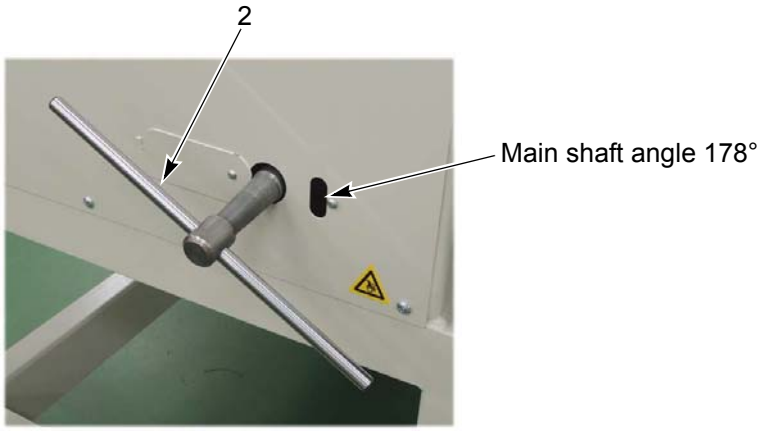
10. To set



(2) Press D switch 1 on the tension base of the head which starts working from now. The presser foot will move down.

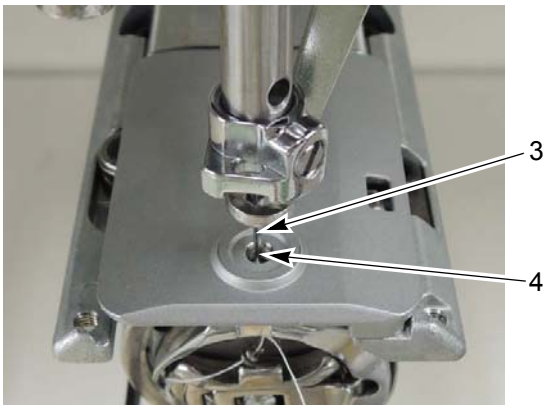


(3) Insert the main shaft handle 2 into the left-side box, and turn the main shaft handle 2 counterclockwise to set the main shaft angle to 178°(needle bar lower dead point).



(4) Lower the needle bar by hand.

(5) Check if the needle 3 is located in almost the center of the needle hole 4.



Adjust right and left positions of needle bar case. If the needle locating position is misaligned between the first needle and the last needle, allocate the misalignment so that the needle location comes to the center as much as possible.

(6) To finish working at 1st needle, set the main shaft angle to 100°, and press C switch of the tension base. The needle bar and the presser foot will move up.

(7) Check the needle locating position of the last needle in the same procedure by sliding the needle bar case.

2. Parameter setting

A parameter list is attached to the back of the operation panel. Check setting values. At this moment, check also version of the software.

"Parameter setting chart" at shipment from the factory is attached.

Setting of parameter is targeted for functional limit. For the detail, refer to the user's manual of the machine or consult the distributor.

Regarding information about the latest version of software and how to obtain the software, consult the distributor.

3. Absolute origin search

CAUTION

When performing this operation, do not put your hands, etc. on the machine table. You could be injured by moving frame.

This function makes the machine memorize the absolute origin. Perform this operation under the following conditions.

When setting up the machine

When installing software

When replacing the frame, the embroidery frame might be moved with the power turned OFF.

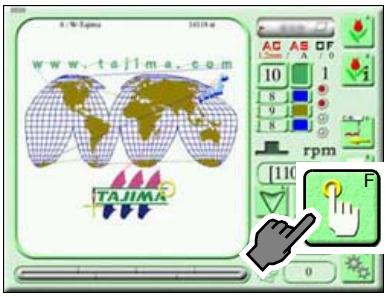
Absolute origin is an anchoring point that calculates the current frame position. If the calculation is wrong, the following troubles will occur.

Frame coordinates are not displayed correctly.

The frame does not return to the interrupted position even after performing power resume operation.

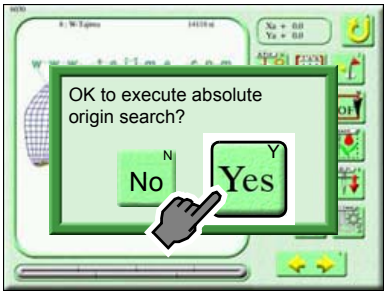
Execute absolute origin search by the following operation.

(1) Icon F



(2) Icon O

(3) Yes (Completed)



After Frame Travel, the frame will return to the previous position.

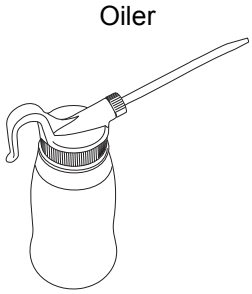
4. Lubrication

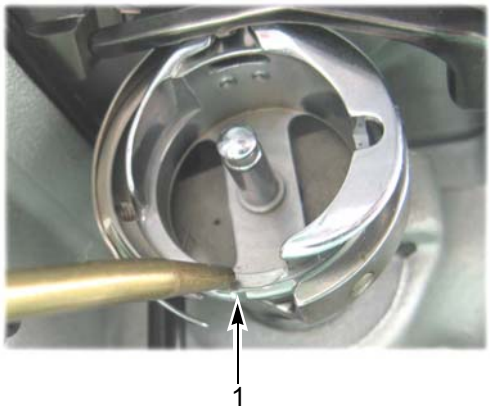
CAUTION

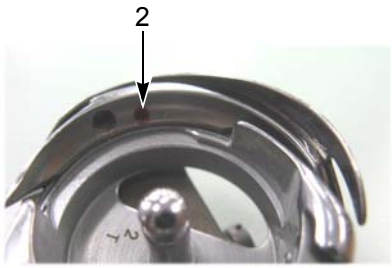
- When performing lubrication, use only Tajima s genuine TF oil (packed with the machine). If you use other oil than this by necessity, select oil equivalent to ISO viscosity grade: VG20.
- After the working, attach all covers that were detached.

4-1. Rotary hook

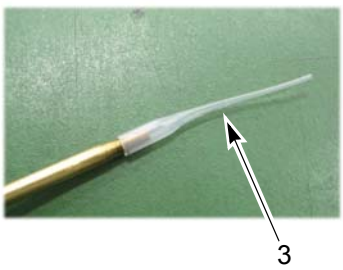
To lubricate, use the oiler (accessory). Lubricating spots are raceway 1 and lubrication hole 2.



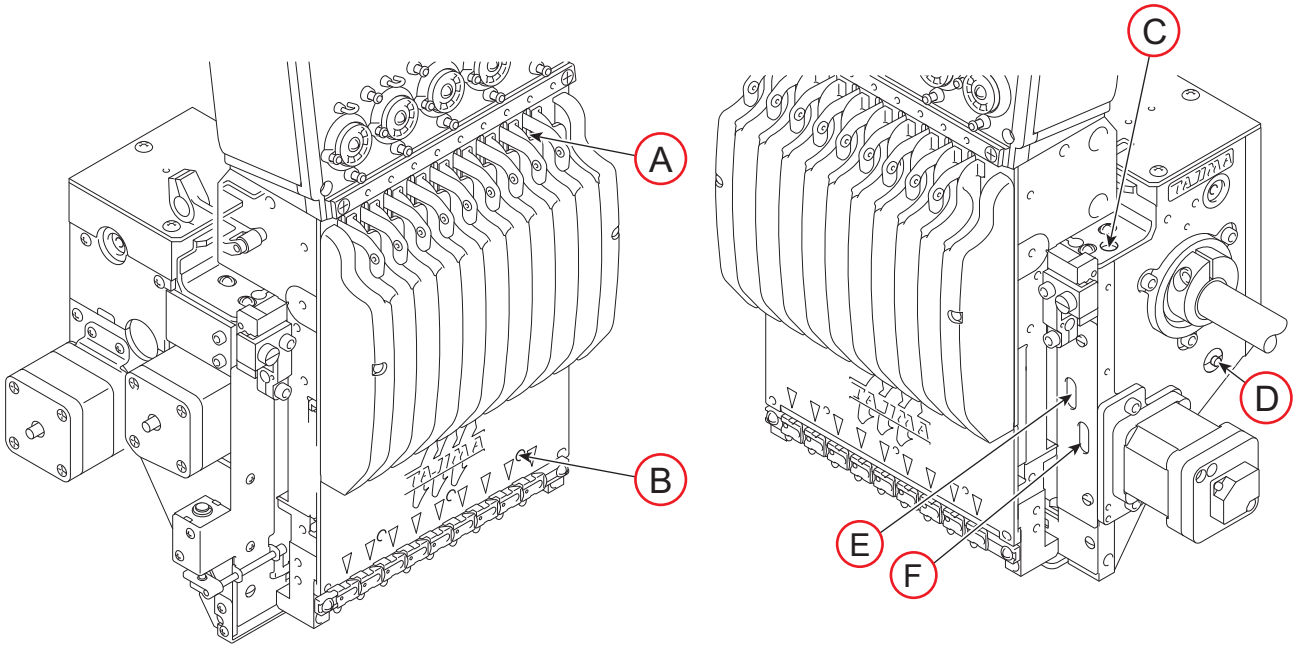


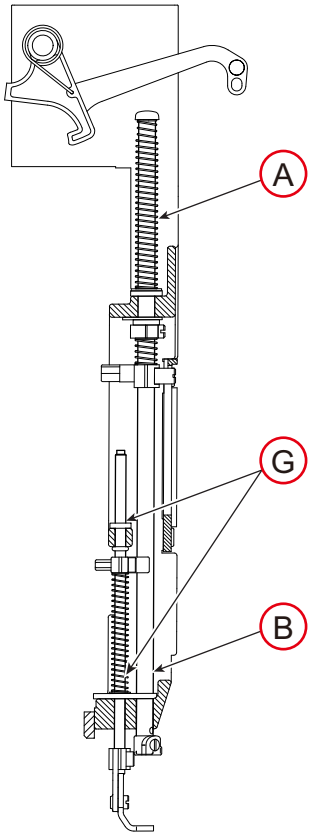


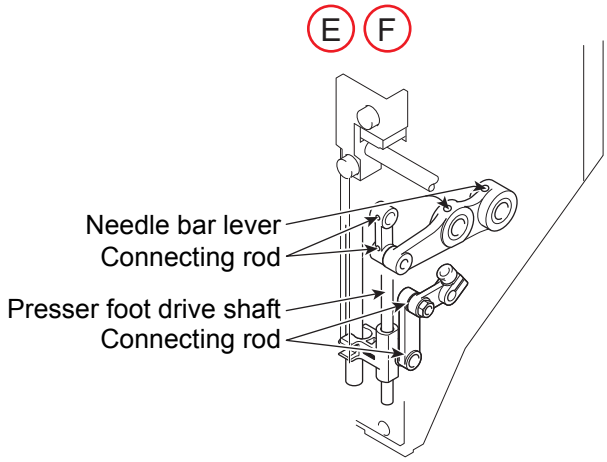
To lubricate lubrication hole, attach the nozzle 3 (accessory) to the tip of the oiler.



4-2. Inside of arm



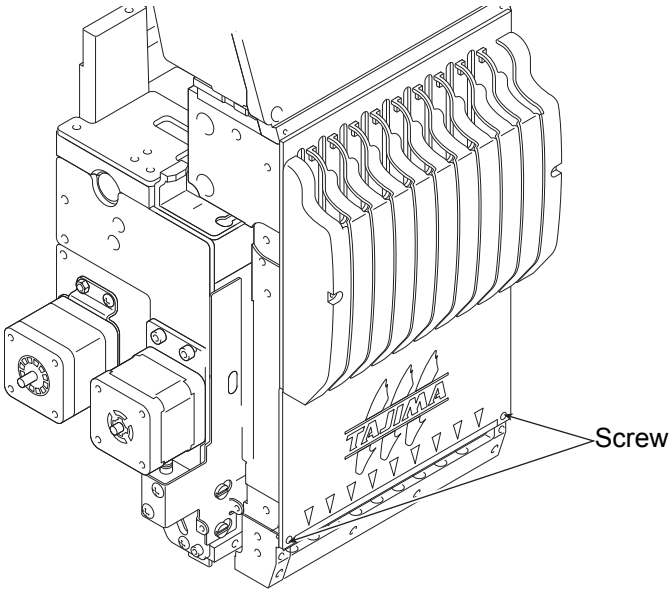




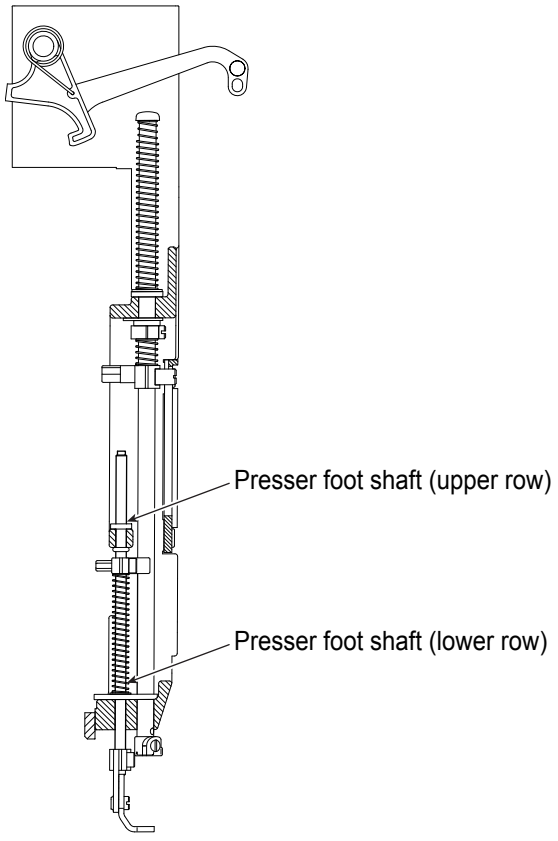
Lubricating spot
A: Needle bar
B: Needle bar
C: Needle bar drive shaft
D: Wick of stepped pin
E: Needle bar lever, presser foot drive shaft, connecting rod
F: Connecting rod
G: Presser foot shaft(→p.30)

[How to lubricate presser foot shaft]

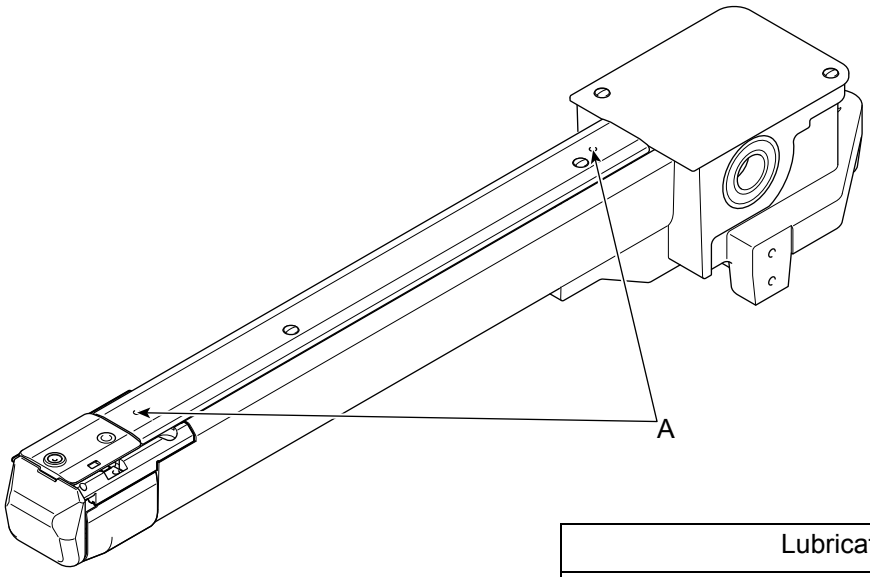
a. Remove screws at two spots.



b. Lubricate the presser foot shaft (upper row, lower row).



4-3. Slim cylinder bed



Lubricating spot
A: Rotary hook shaft

5. Idling, jump

CAUTION

- When operating the machine, check if there is no person around moving section and all covers are attached to prevent accident resulting in injury or death.
- Keep on idling until antirust applied on rotary hook is completely removed. If antirust remains, it could cause thread breakage.

(1) Set "Upper thread breakage detection" and "Under thread breakage detection" to "not to detect" in parameter setting.

(2) Execute the data set of the design data containing jump codes.

(3) Start the machine to perform idling. At the beginning, start the machine with about 250 rpm or so and increase the speed up to 650 rpm while checking running condition of the machine. Spare time for 20 to 30 minutes for operation. Check if no misjumping occurs using design data that includes jump codes.

When misjumping occurs, it is necessary to adjust the position of the upper dead point stopper (→p.43)

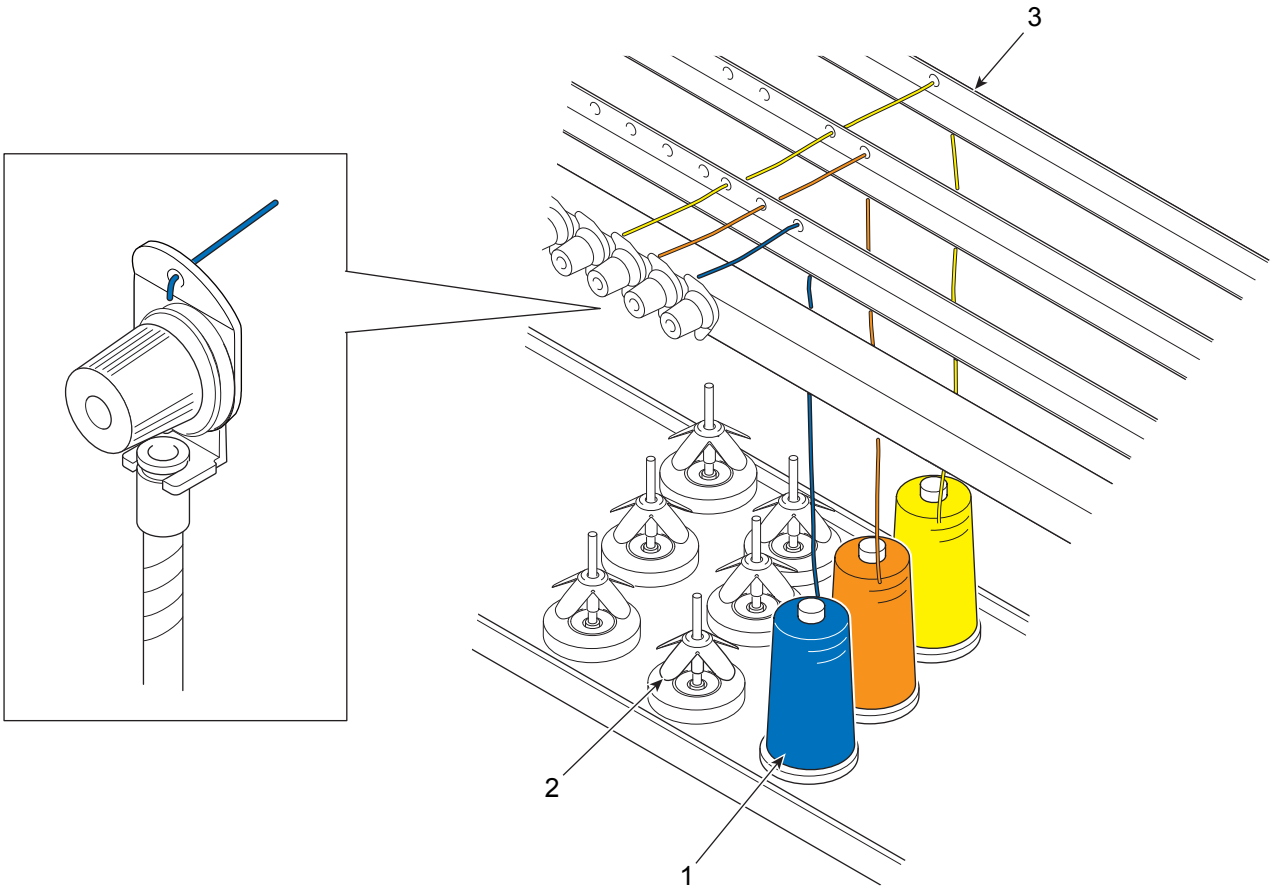
(4) After the working, check if no heat occurs from the side part of the arm, the needle bar drive shaft, etc.

6. Threading

If the thread does not pass to each section correctly, it could cause trouble such as the deterioration of embroidery or the thread breakage, etc. Pass the thread correctly referring to the figure below.

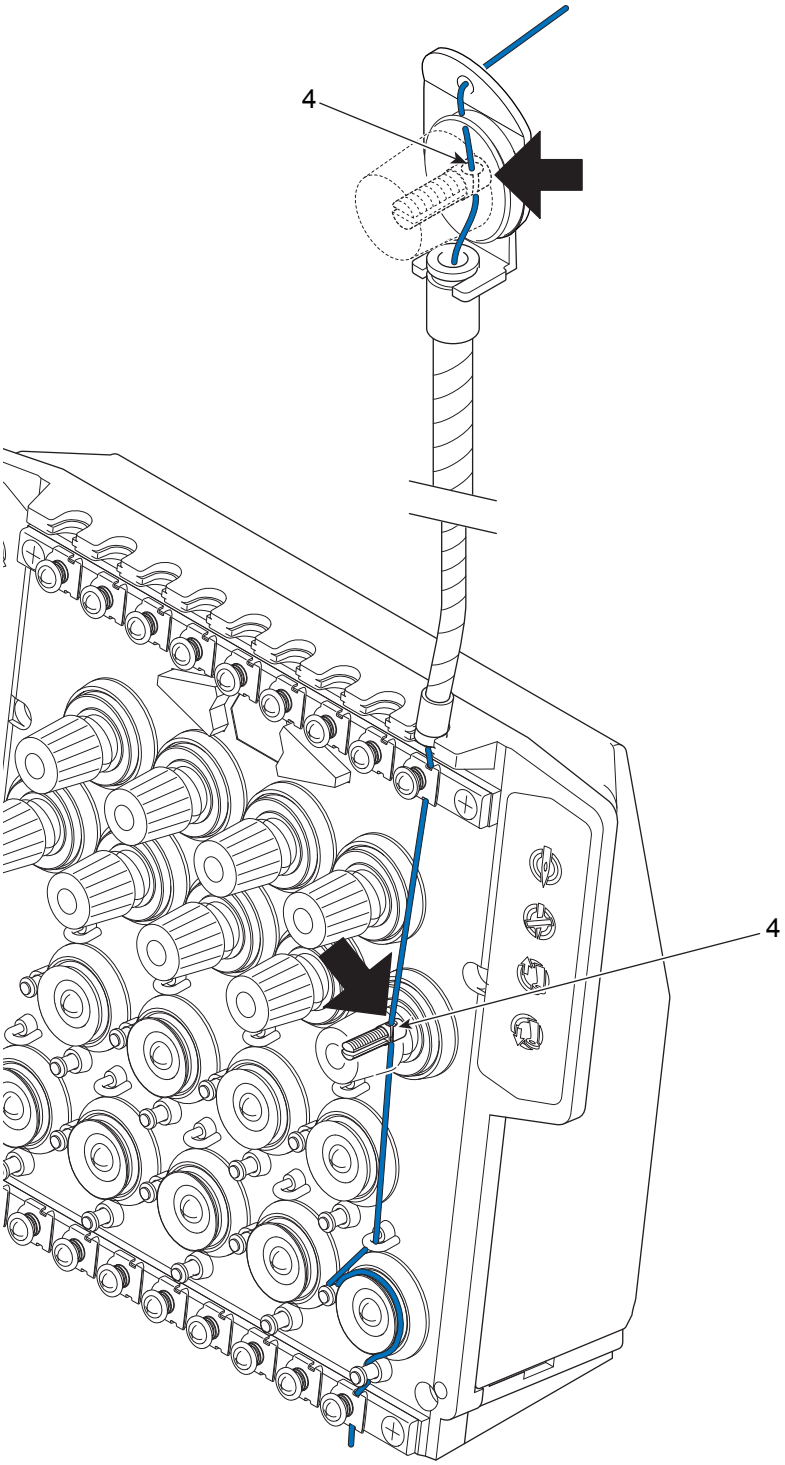
(1) Place the thread cone 1 on the thread stand blade 2.

(2) Thread through the thread course 3.

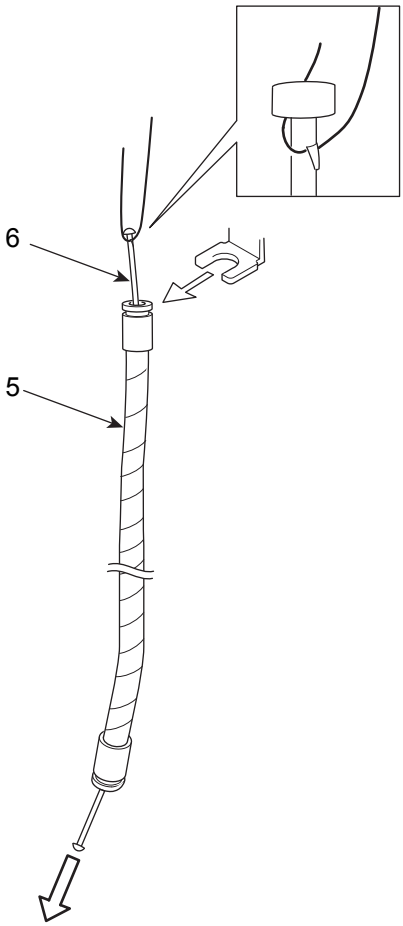


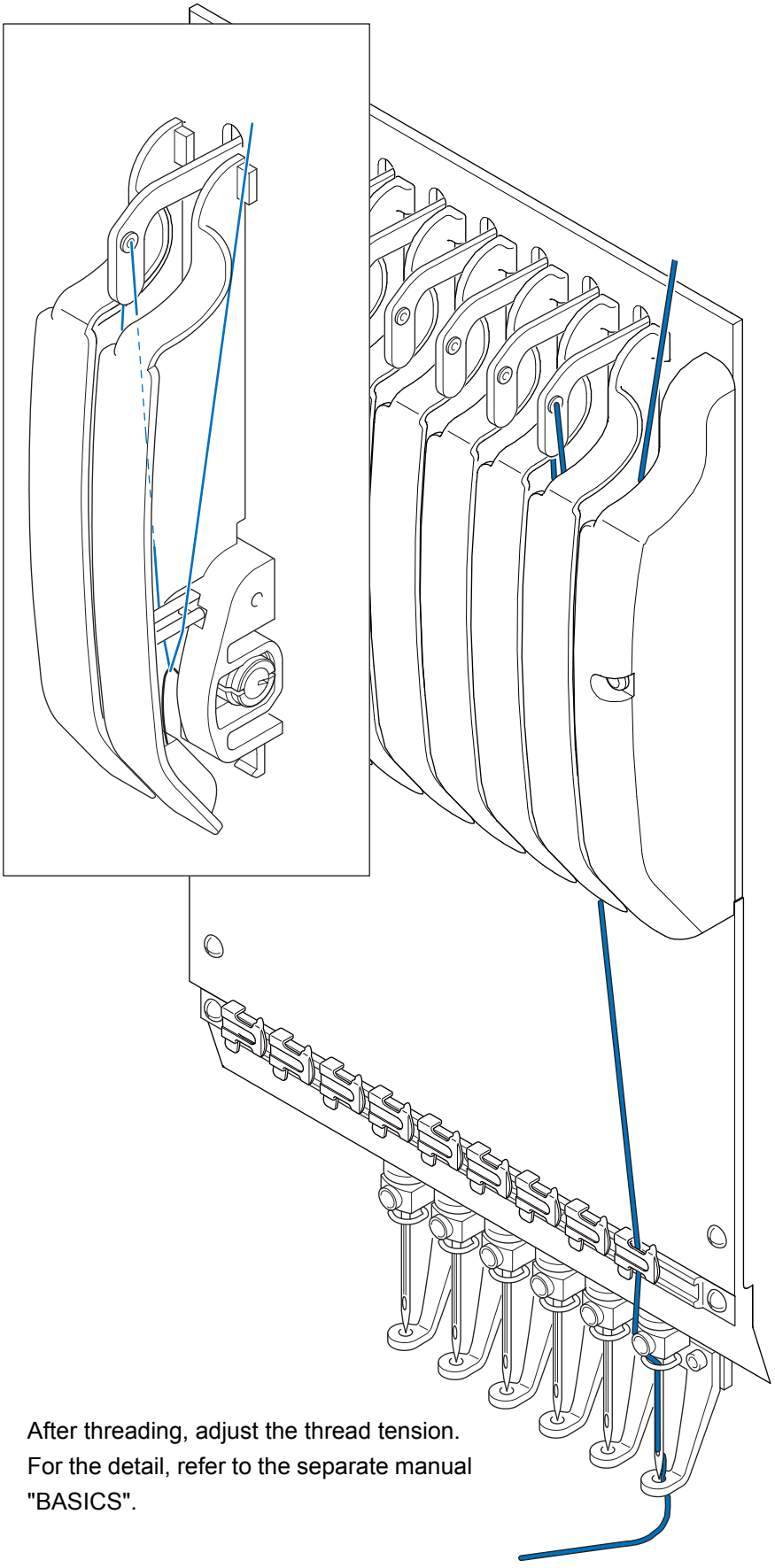
(3) Put the thread into the groove 4 of the tension stud. (Indicated by an arrow)

(4) To perform threading through the spiral tube 5, use the threader 6 (accessory).



Threading through spiral tube 5





It is possible to perform threading easily by just hooking the thread here.

After threading, adjust the thread tension. For the detail, refer to the separate manual "BASICS".

7. Test sewing

CAUTION

For long life machine operation, operate the machine with about 70% of the maximum speed as "Operation for total fitting" for about two weeks after installation. By performing operation for total fitting, life of the machine will become longer, which will be useful to avoid unexpected troubles.

(1) Check each movement such as color change, manual ATH, etc.

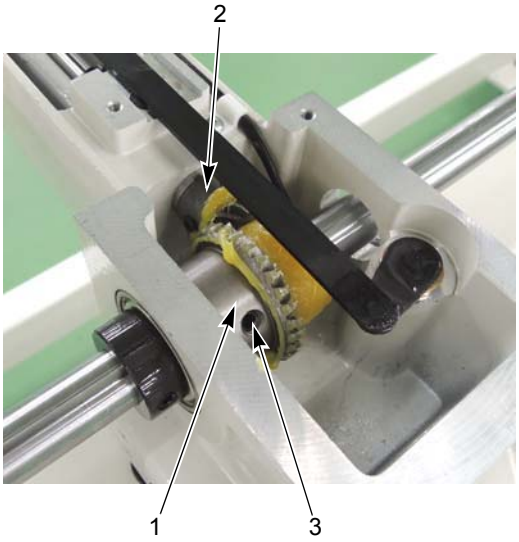
(2) Adjust the tension of the upper thread and the under thread, and perform test sewing. For adjusting method, refer to the separate volume "BASICS".

Chapter 6 Adjustment

1. Bevel gear

Check play of the bevel gear 1 and the bevel gear 2 at all heads. It is normal if the bevel gear 2 moves slightly (0.1 to 0.2 mm).

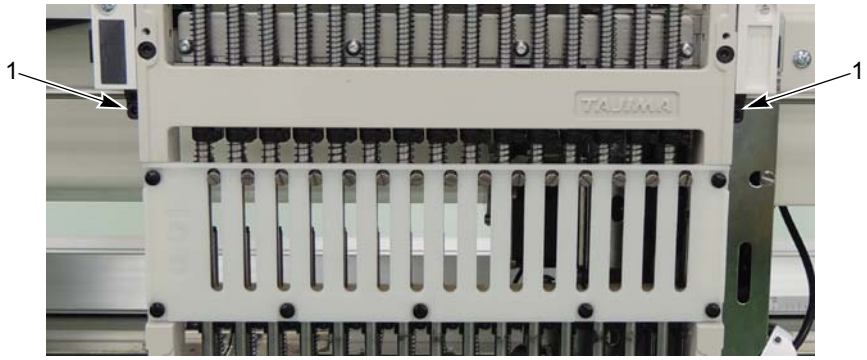
If there is no "Play", loosen the set screw 3 of the bevel gear 1 to adjust the position of the bevel gear 1.

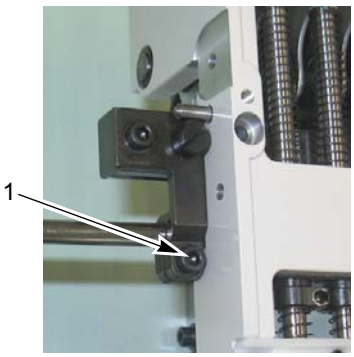


2. Needle locating position

(1) To adjust needle position of a certain head, adjust its needle bar case.

To adjust a certain head, loosen the screw 1 (right and left two spots) to slide the needle bar case right and left.





(2) When all heads are misaligned by about the same degree, perform adjustment on the screen of parameter setting [P8] →[85. Machine Adjustment] → [7. Display of Needle Pos. Angle].
(Refer to the user's manual of machine)

Refer to the value 2 described on the label.

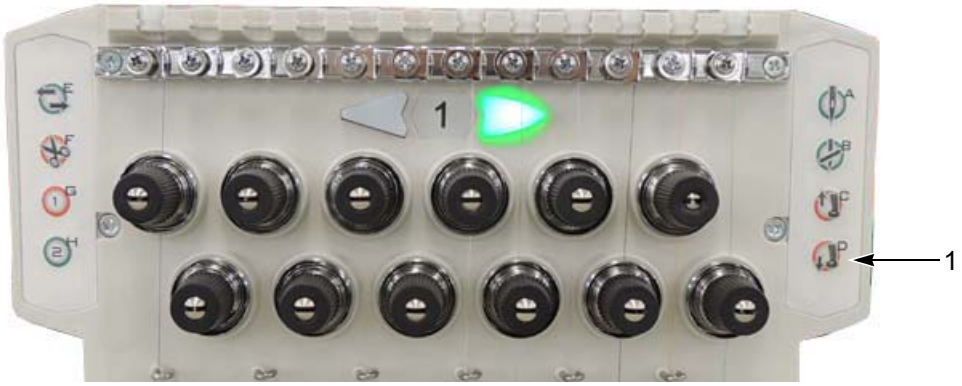
3. Lower dead point

This working checks from the 1st needle to the last needle (all needle bars) of all heads. For the 1st needle, use the accessory lower dead point gauge to check the lower dead point. For the 2nd and later needle, use the needle bar connecting stud gauge to check it.

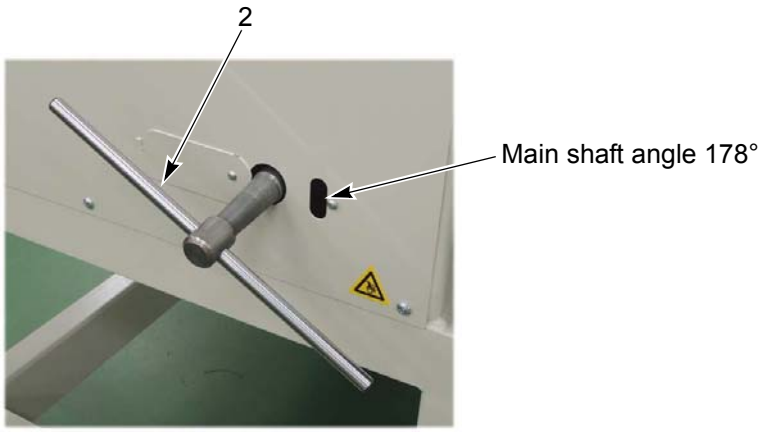
Lower dead point gauge (accessory)

(1) Set "Main Shaft Brake" to "No" by operation on the operation panel.(→p.23)

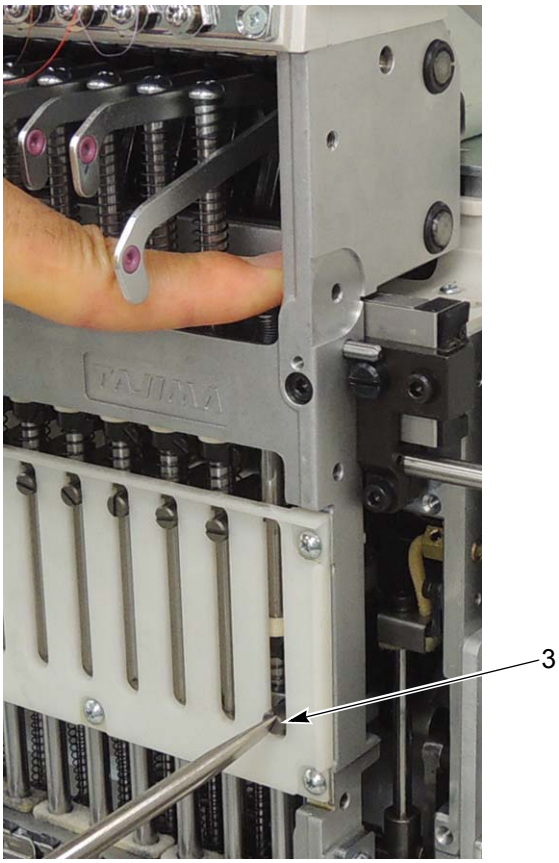
(2) Press twice D switch 1 on the tension base of the head which starts working from now. The presser foot will move down to the lower dead point.



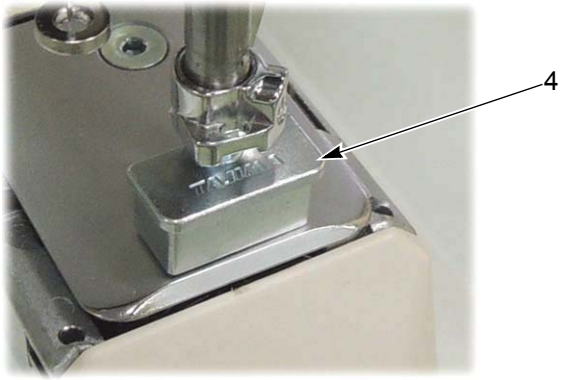
(3) Insert the main shaft handle 2 into the left-side box, and turn the main shaft handle 2 counterclockwise to set the main shaft angle to 178°(needle bar lower dead point).

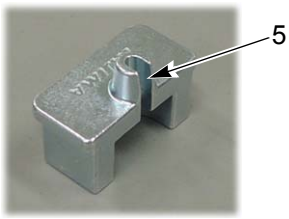


(4) Lower the needle bar by hand, and loosen the screw 3.

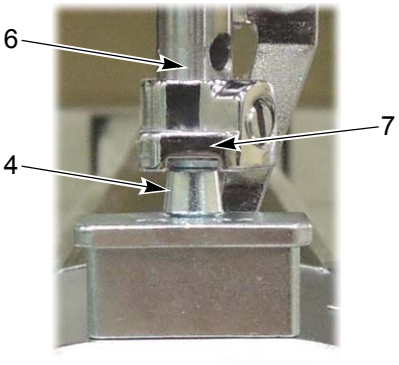


(5) Put the lower dead point gauge 4 so that the needle comes into the groove 5.

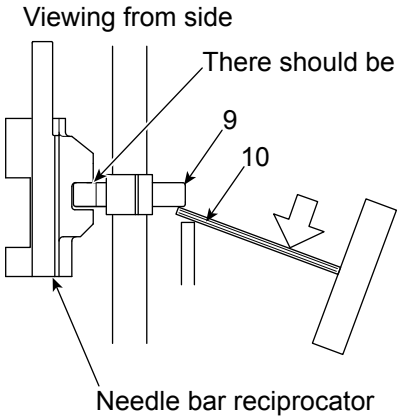


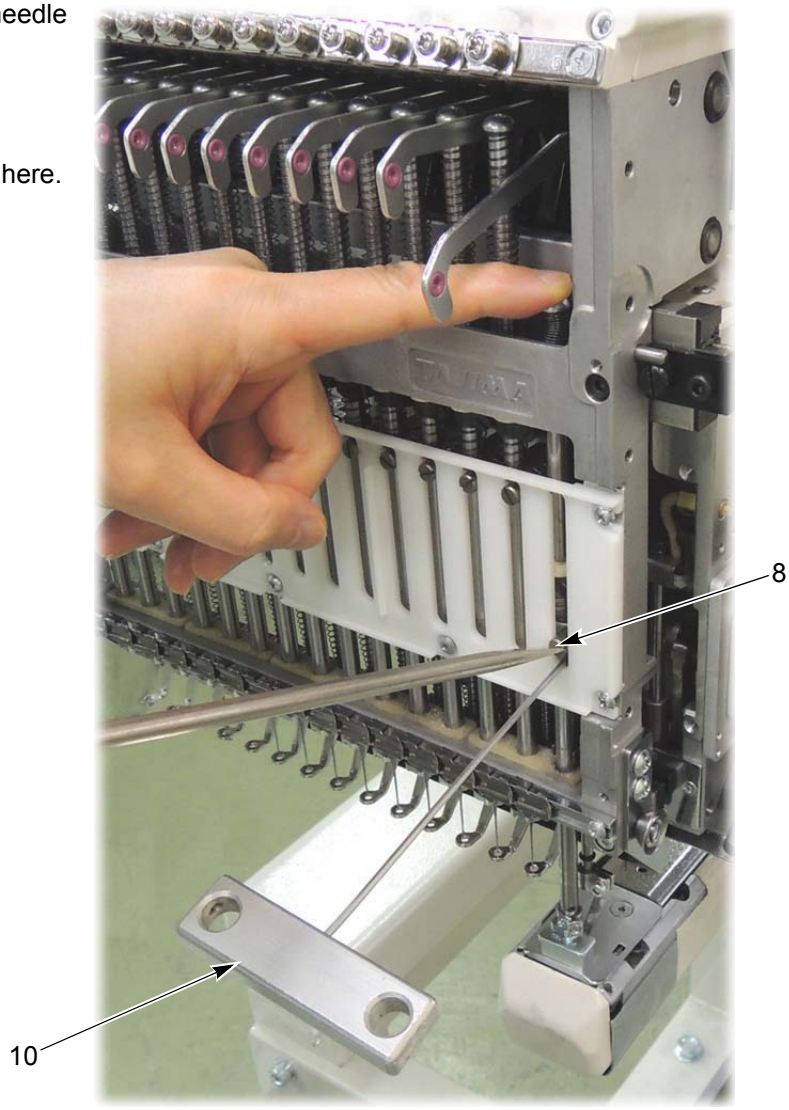


(6) Tighten the screw 8 in the state that there is no gap between the needle bar 6 and the lower dead point gauge 4 and the flat side 7 of the needle clamp faces the front.



Tighten the screw 8 in the state that the needle bar connecting stud 9 is lifted up.
In this example, the wrench 10 is used.





(7) Detach the lower dead point gauge 4.

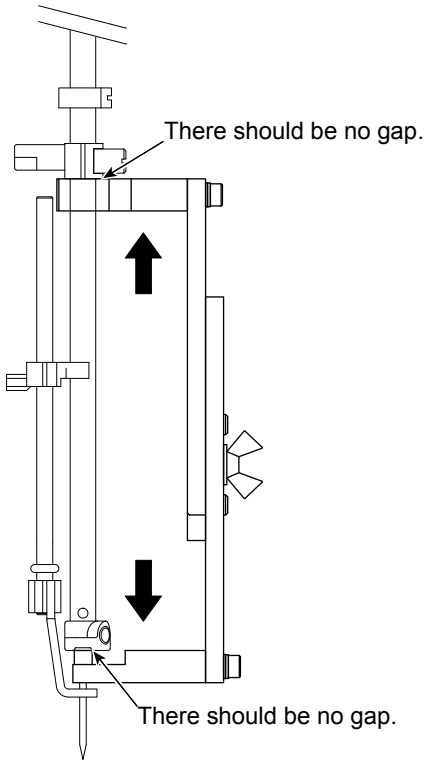
(8) Follow the procedure below.

a. Turn the main shaft to set the main shaft angle to 100° (Stop position).

b. Press C switch of the tension base. The presser foot will move up.

c. Set the main shaft brake to "Yes".

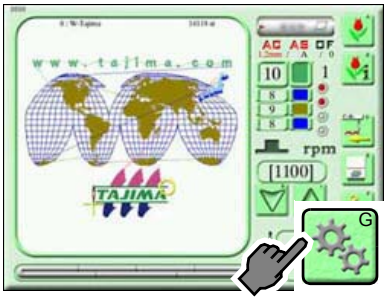
(9) Use the lower dead point adjusted for the 1st needle as the reference position, and check the lower dead point for the 2nd and subsequent needles by using the needle bar connecting stud gauge 11. Perform also adjustment of upper dead point at the needle bar of which lower dead point has been adjusted by this work(→p.43).



4. Upper dead point

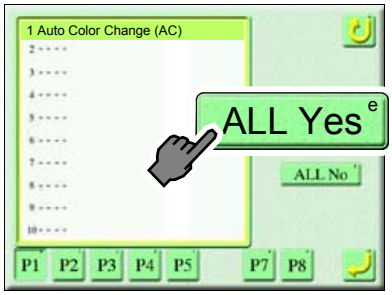
Select "Needle bar upper dead point adjustment" by the following operation.

(1) Icon G

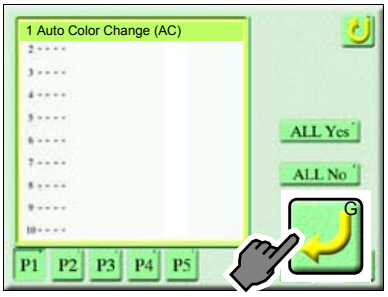


After that, cancel the functional limit level. For details, refer to the chapter for "Parameter" in the user's manual.

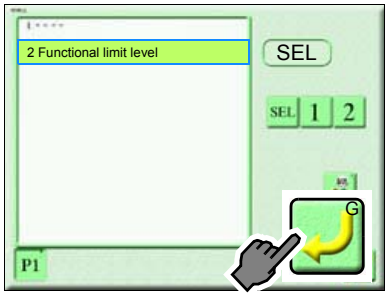
(2) ALL Yes



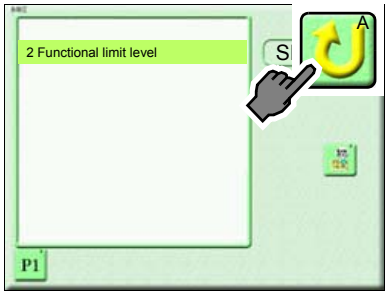
(3) To set



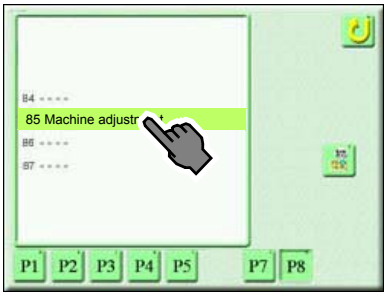
(4) To set



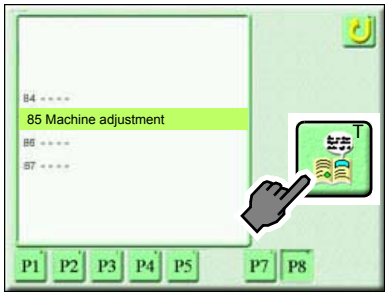
(5) Icon A



(6) 85 Machine adjustment

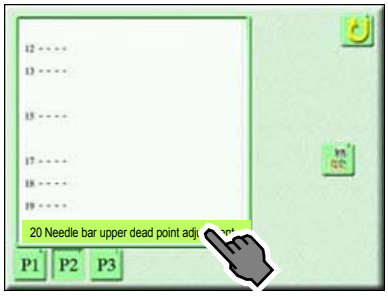


(7) Icon T

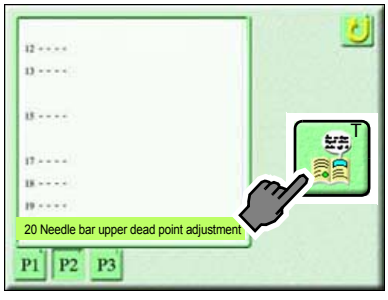


(8) P2

(9) 20 Needle bar upper dead point adjustment



(10) Icon T



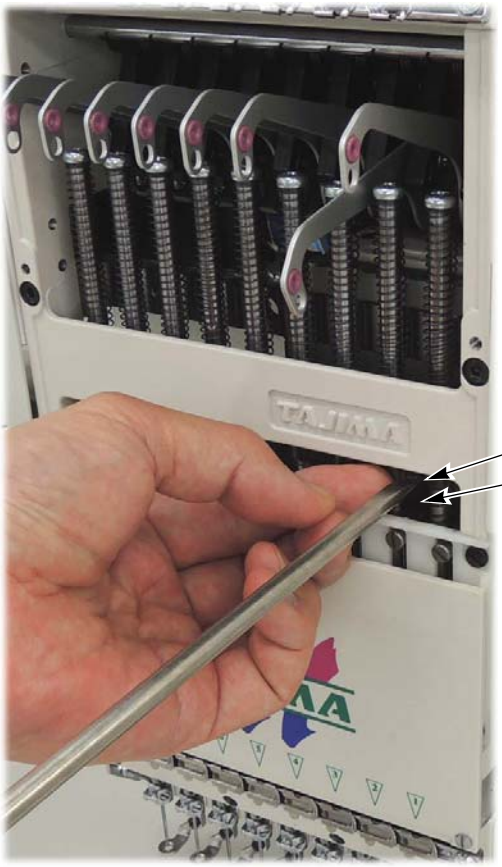
(11) Start the machine. The machine will perform the following operations (a to c).

a. The needle bar case will move to the next needle bar.

b. The presser foot will move down.

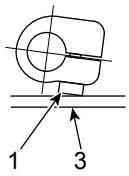
c. The main shaft will turn to the upper dead point (0°).

(12) Loosen the screw 1 of the upper dead point stopper. The screw 1 will be held upward by the force of the spring 2. Therefore, tighten again the screw 1 in the state that 1 faces front.



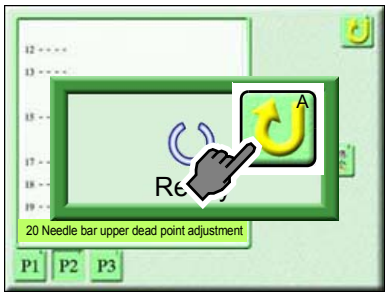
Viewing from top

The screw 1 should not touch the needle bar guide 3.



(13) When you start the machine, the operation "a to c" described above will be performed after moving to the next needle bar. Adjust the upper dead point in the same way.

(14) After the working, press icon A. The main shaft will return to the fixed position (100°).

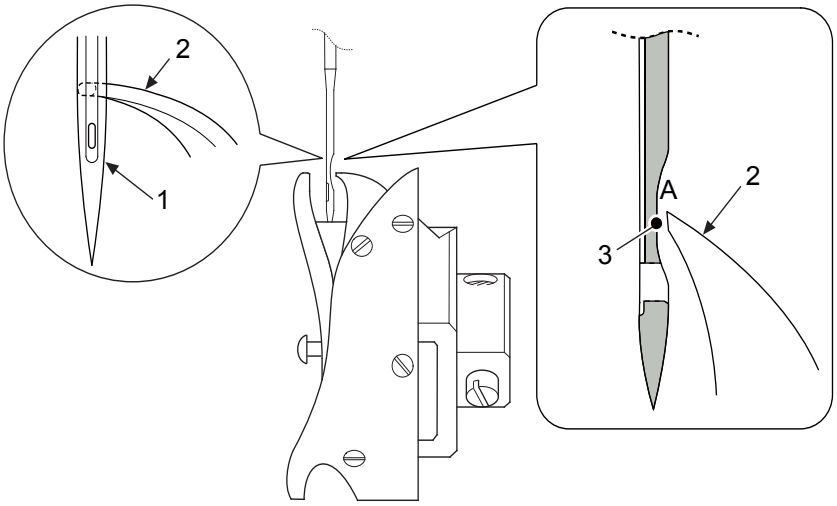


5. Needle and rotary hook

This working checks the first needle and the last needle of all heads.

(1) Turn the main shaft clockwise to set to the position where the tip 1 of the needle meets the hook point 2 of the rotary hook (198° to 204°) while lowering the needle bar.

(2) Check if the gap (A) between the scarf 3 of needle and the hook point 2 of rotary hook is 0.1 to 0.3 mm.



Push the needle lightly using a flat head driver.

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