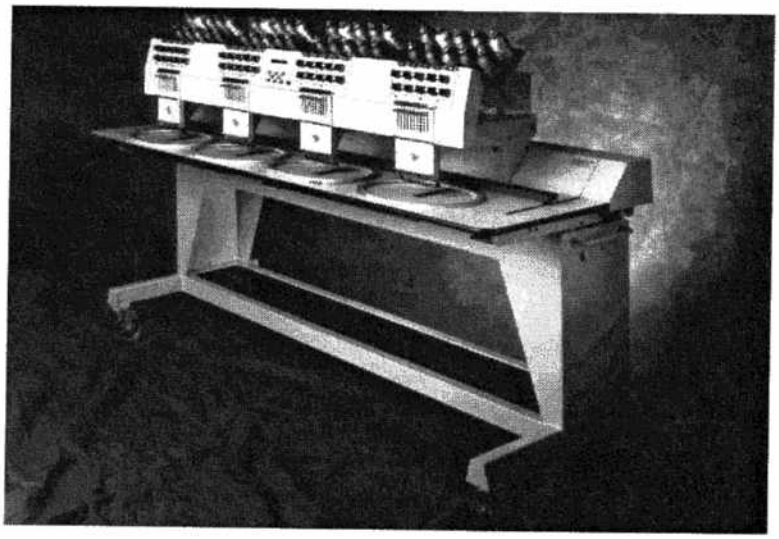
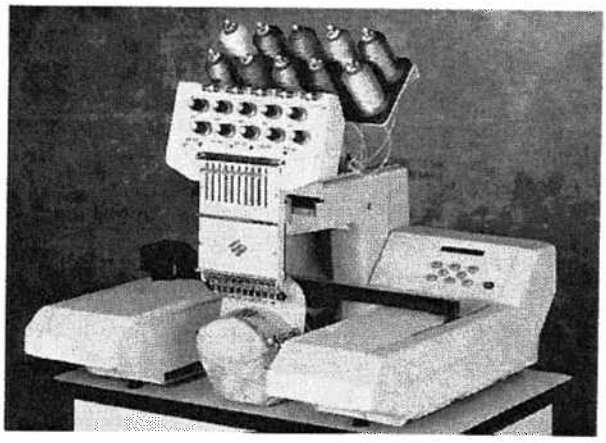
Operation Manual for the EMC 10 & EMC 10/4 embroidery peripherals





- Single-Head and Four-Head Embroidery Peripherals

Melco
Embroidery Systems

A Saurer Group Company

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1. EMC 10 or 10T Installation

The EMC 10 and EMC 10T embroidery peripherals are single-head machines which attach to the Melco EDS System. If you have the EMC 10 /4 or EMC 10/4T, please refer to Chapter 2 for installation instructions. The EMC 10T includes the automatic trimmer option. Figure 1-1 shows a typical embroidery peripheral installed with the cap frame option set up for embroidering a cap.

Operator Safety

Never let untrained personnel operate the embroidery peripheral. Operators should avoid wearing clothing with loose sleeves that may become caught in the machine. Long hair should be tied back or kept under a cap. Loose jewelry should be avoided. Safe operation practices will reduce the chance of injury.

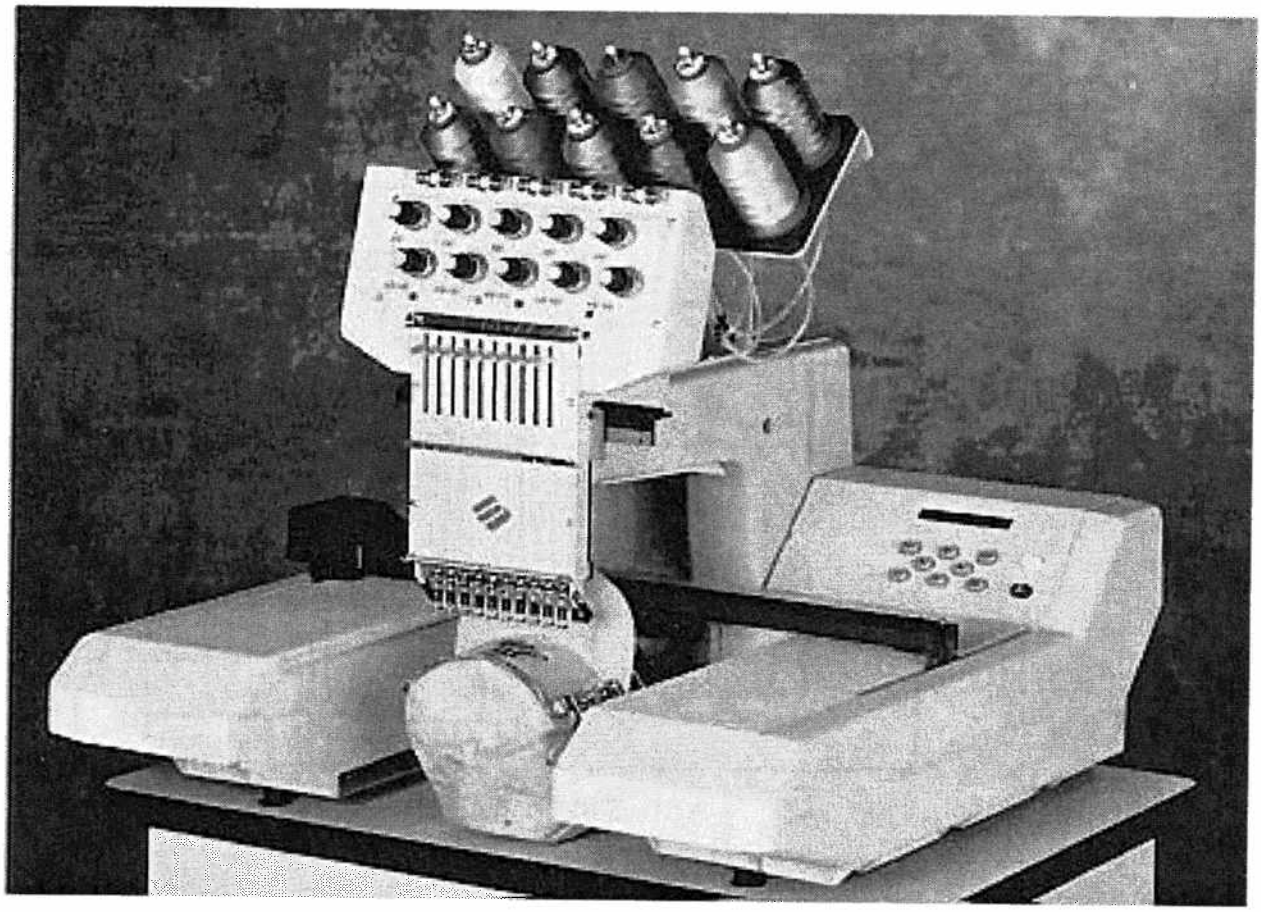


Figure 1-1 EMC 10 & EMC 10T (Single-Head)

Avoiding Static Electricity

The same static electricity created when walking across carpet can damage the sensitive electronics in these machines.

Static protection products are available at computer stores. To prevent possible damage, follow these additional suggestions as illustrated in Figure 1-2:

- Maintain a relative humidity between 45% and 75% in the shop.
- Avoid placing the system in a carpeted area.
- Use static control mats connected to a common ground with the equipment.

If a static control mat is not used and there is carpeting, periodically spray your work area with an anti-static spray. Spray frequently during periods of low humidity.

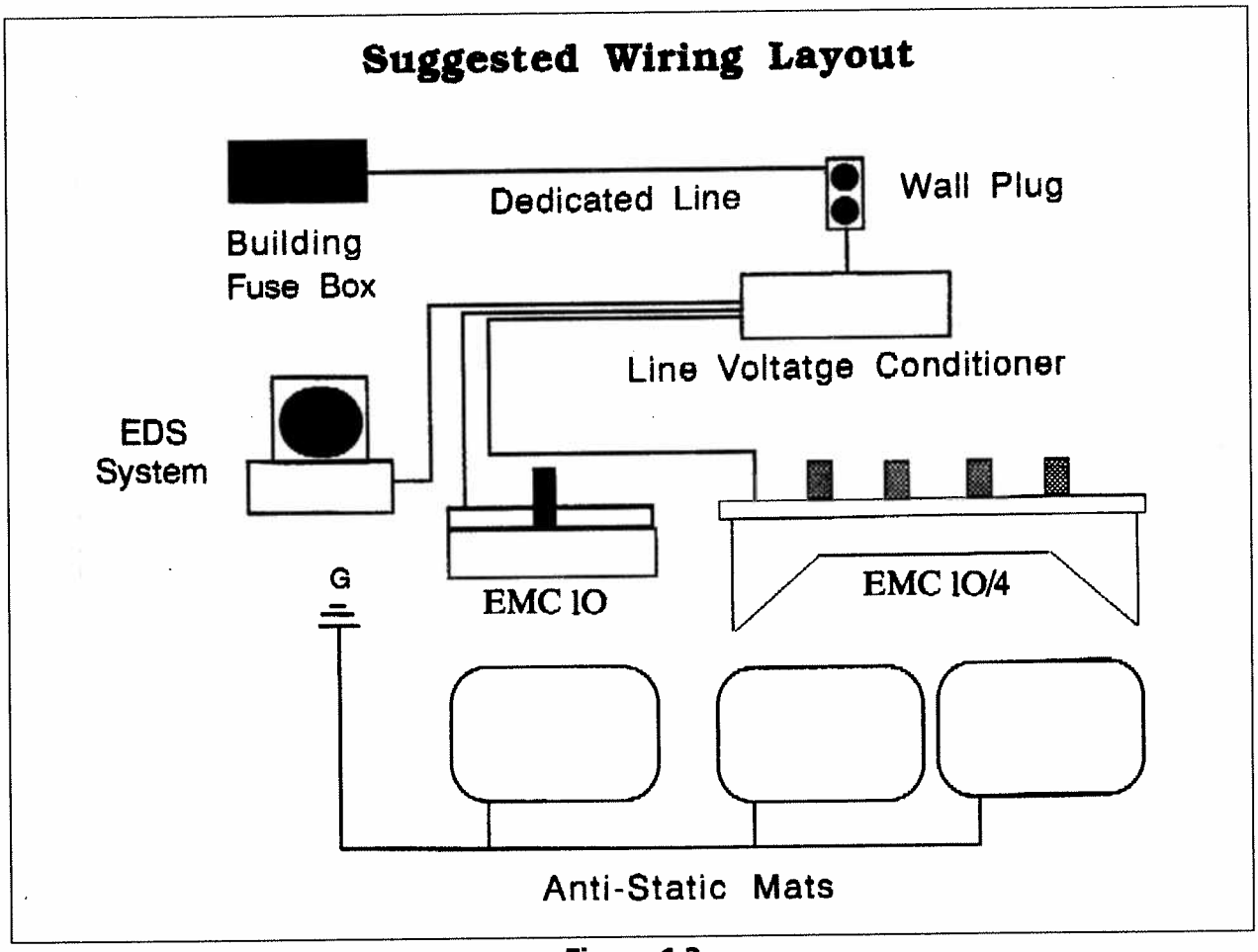


Figure 1-2

Attaching Cables

Power Cable

Attach the power cable to the rear of the unit as shown in Figure 1-3.

Power Requirements

Melco suggests using a dedicated power line with a surge protector. The 115V - 220 voltage selector switch is at the right of the ON/OFF switch as shown in Figure 1-3. Set the selector switch to the proper setting for the voltage in your area.

Attaching The Peripheral To The Computer

Referring to Figure 1-3, install the network cable between the computer and the embroidery peripheral. If only one peripheral is attached to the computer, install the terminator cable to the embroidery peripheral as the figure shows. If more than one peripheral is attached to the computer, the terminator cable must be installed on the last peripheral of the series. All the peripheral units are linked to the computer through a "daisy chain" arrangement of network cables.

When all the cables are installed between the peripheral and the computer, install the power cords from the computer, the monitor, and the embroidery peripheral to the power source outlet.

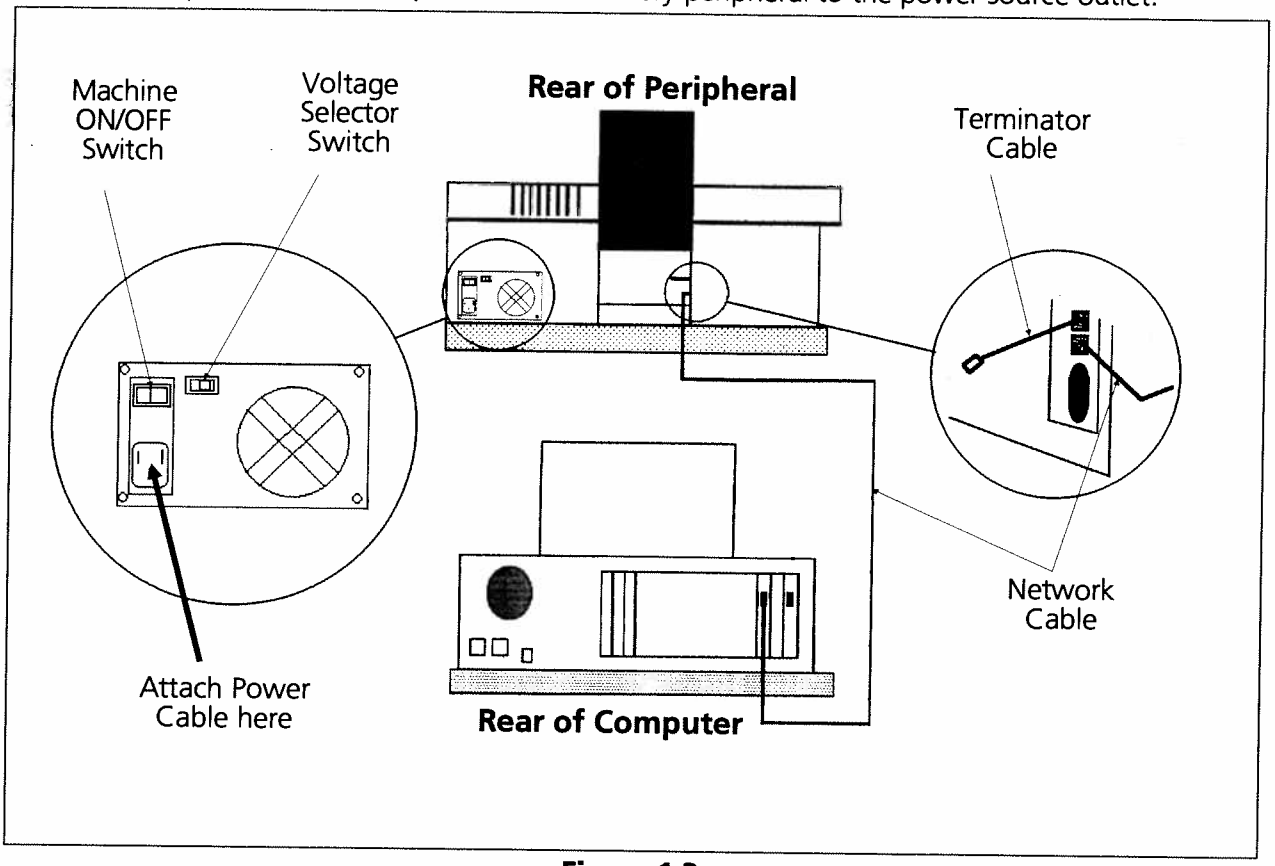


Figure 1-3

Configuring The EMC 10

The first time the EMC 10 or EMC 10T is turned on and before it can be used, you must configure it. That means to supply it with the following information:

- Peripheral Program
- Unit Number
- Language

The machine stores the data in its memory. After configuration the machine retrieves the data from its memory each time it is turned on. You will need to re configure if you wish to change the unit number, peripheral language, install a new PCB, or as part of a recovery process.

The Peripheral Program

The CPU's printed circuit board (PCB) in the EMC 10 is used by several Melco embroidery peripherals but functions differently on each one. The peripheral program is set at the factory so the board will know which peripheral it is in. If the program is not set properly you can reset it by following the instructions below. If the peripheral is not configured with the correct Peripheral Program, the machine will not run properly, resulting in possible damage to the embroidery peripheral.

Configure the embroidery peripheral according to these steps and referring to Figures 1-3 and 1-4:

1. Before you turn on the EMC 10, locate the keyboard on the right side of the peripheral (shown in Figure 1-4).

2. Do the following simultaneously:

   * press and hold the [ALT] key, the [⇑] key, and the [⇓] key, **and**
   * turn ON the power switch shown in Figure 1-3.

3. Continue to hold the keys until the machine beeps.

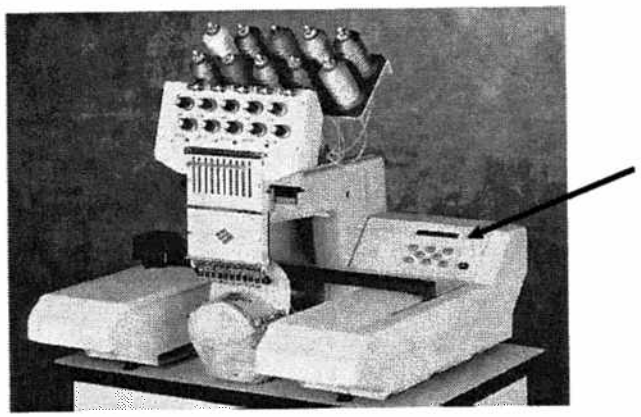


Figure 1-4

4. Release the three keys.
5. For the EMC 10 display should read **EMC 10;** for the EMC 10T the display should read **EMC 10T**. If this is not the case, press the [⇑] or [⇓] keys to scroll to the correct program name.
6. Press the [ENTER] key and the Peripheral Program is set.
7. Press the [⇑] or [⇓] key until you reach the unit number you want.
8. Press the [ENTER] key to set the unit number.
9. Press the [⇑] key until the language you want is displayed.
10. Press the [ENTER] key to set the language.

The Thread Tree

The thread tree is assembled at the factory, with the thread cone rods pushed down for shipment. Reach behind the thread tree and push the rods up into position to hold the thread cones.

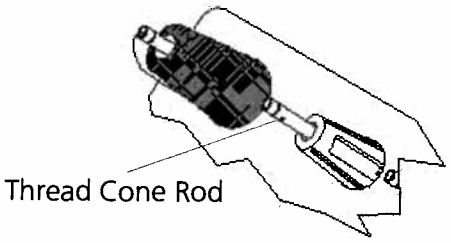


Figure 1-5

2. EMC 10/4 or 10/4T Installation

The EMC 10/4 and EMC 10/4T embroidery peripherals are four-head machines which attach to the Melco EDS System. If you have the EMC 10 or EMC 10T, please refer to Chapter 1 for installation instructions. The EMC 10/4T includes the automatic trimmer option. Figure 2-1 shows a typical embroidery peripheral installation ready to attach hoops for flat bed embroidery.

Operator Safety

Never let untrained personnel operate the embroidery peripheral. Operators should avoid wearing clothing with loose sleeves that may become caught in the machine. Long hair should be tied back or kept under a cap. Loose jewelry should be avoided. Safe operation practices will reduce the chance of injury.

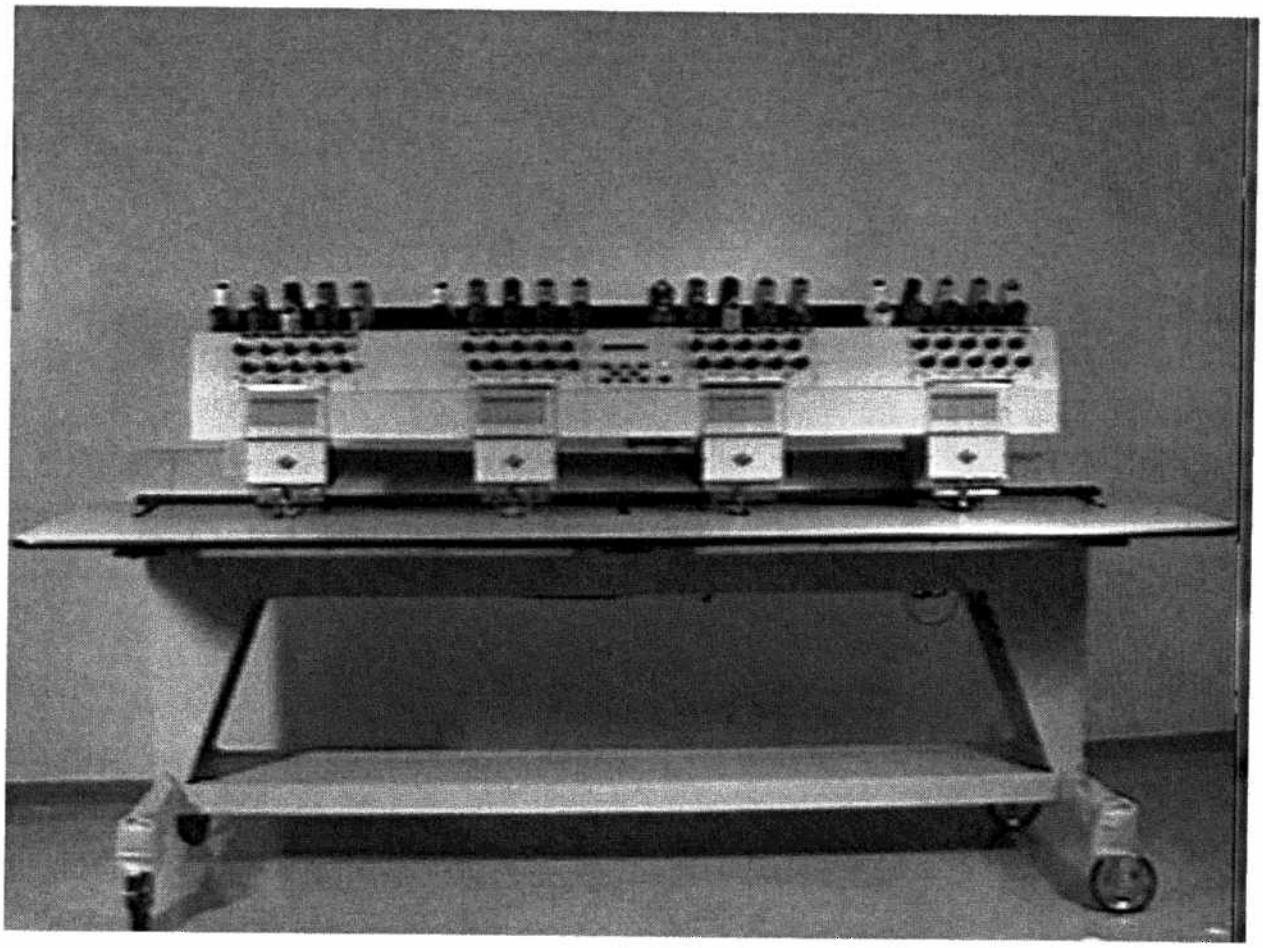


Figure 2-1 EMC 10/4 & EMC 10/T (Four-Head)

Installing the Covers

The five rear covers are attached to the peripheral frame with plastic tabs in the front and screws in the back. The covers must be installed in a specific sequence because some of the cover's edges overlap.

Follow these instructions to install the covers; reverse the order to remove them (see Figure 2-2).

1. Slide cover #1 into place and attach the screws in the back.
2. Slide cover #2 into place and attach the screws in the back.
3. Slide cover #3 into place and attach the screws in the back.
4. Slide cover #5 into place and attach the screws in the back.
5. Slide cover #4 into place and attach the screws in the back.

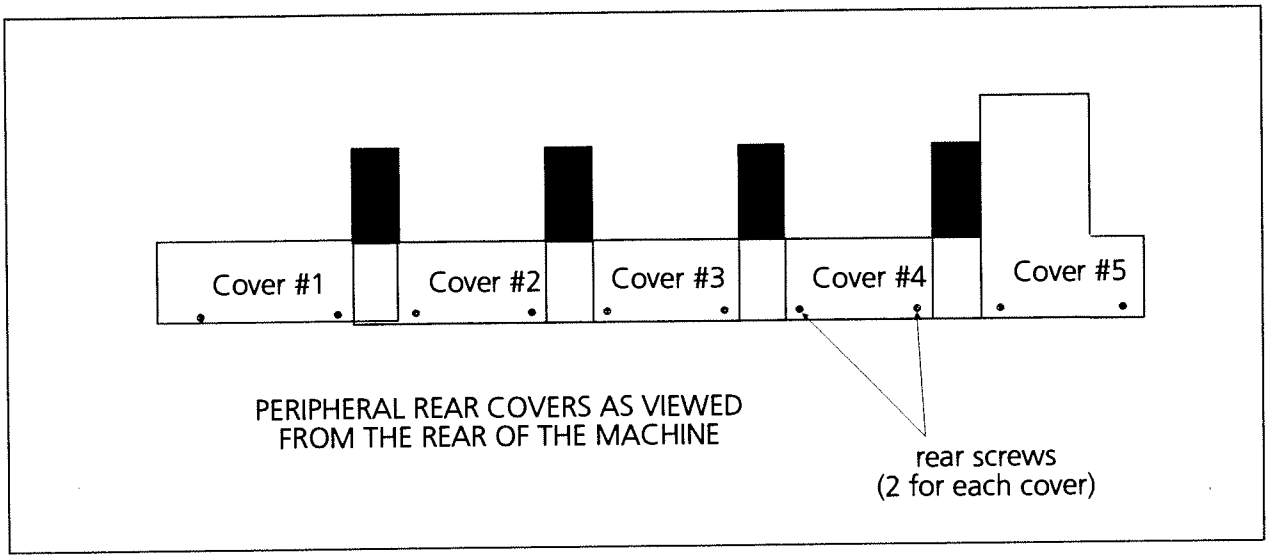


Figure 2-2

Installing the Table Tops

There are five table top sections (see Figure 2-3). The two ends and the center section bolt to the table as shown in Figure 2-3. The remaining two sections slide into place as shown in Figure 2-4. This design provides an easy way to remove the table tops around the embroidery heads to attach the cap frame driver or perform maintenance.

1. Using four thumb screws on each part, loosely attach the right, left, and center sections to the metal channels on the table. The screws are inserted from the underside of the table.
2. Tighten all thumb screws installed in step 1.

3. There is a 2-section shelf and a covering mat that comes with the table top assembly (see Figure 2-3). Place the shelf pieces on top of the brackets located in the base of the table and lay the mat on top of the shelf pieces.

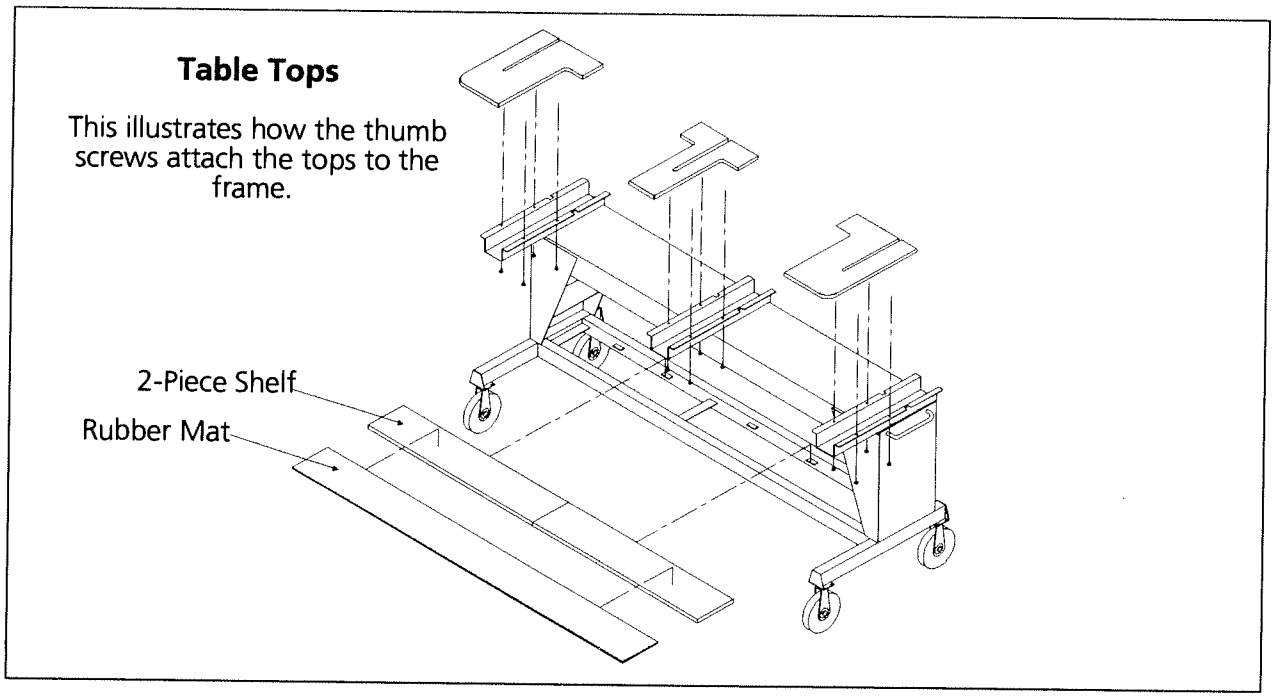


Figure 2-3

4. Slide the last two tops into place (see Figure 2-4). They fit on the guide rails of the end and center sections.

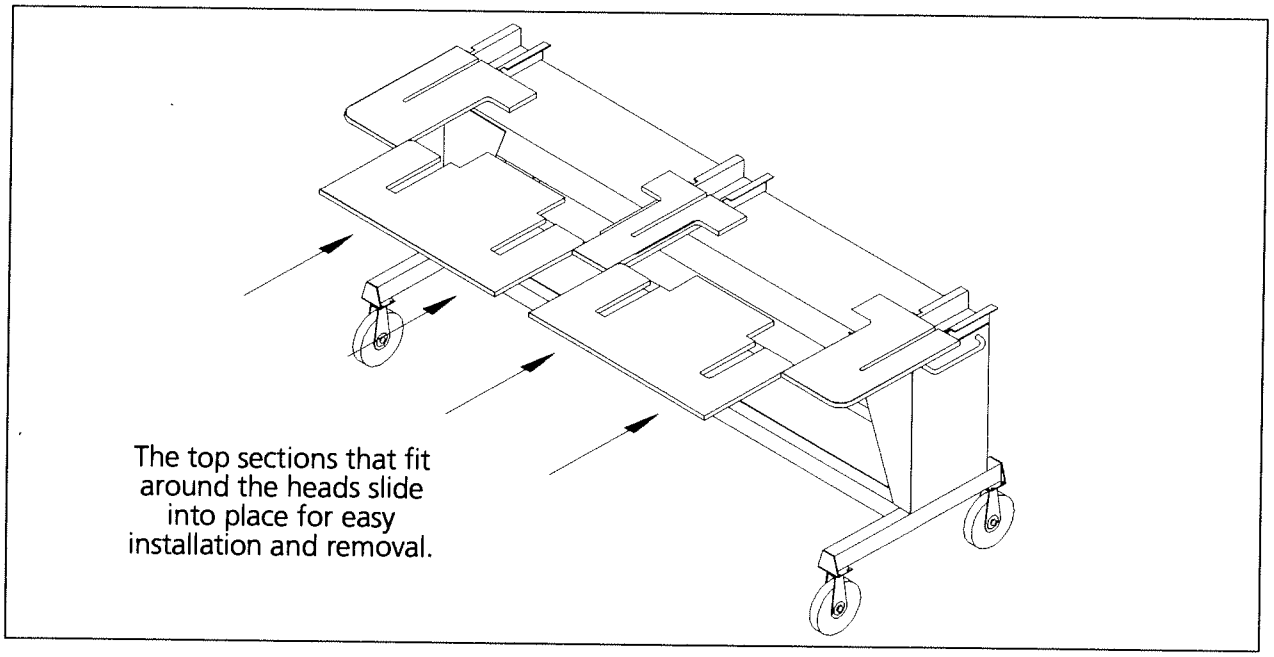


Figure 2-4

Avoiding Static Electricity

The same static electricity created when walking across carpet can damage the sensitive electronics in these machines.

Static protection products are available at computer stores. To prevent possible damage, follow these additional suggestions as illustrated in Figure 2-5:

- Maintain a relative humidity between 45% and 75% in the shop
- Avoid placing the system in a carpeted area
- Use static control mats that are connected to a common ground with the equipment

If a static control mat is not used and there is carpeting, periodically spray your work area with an anti-static spray. Spray frequently during periods of low humidity.

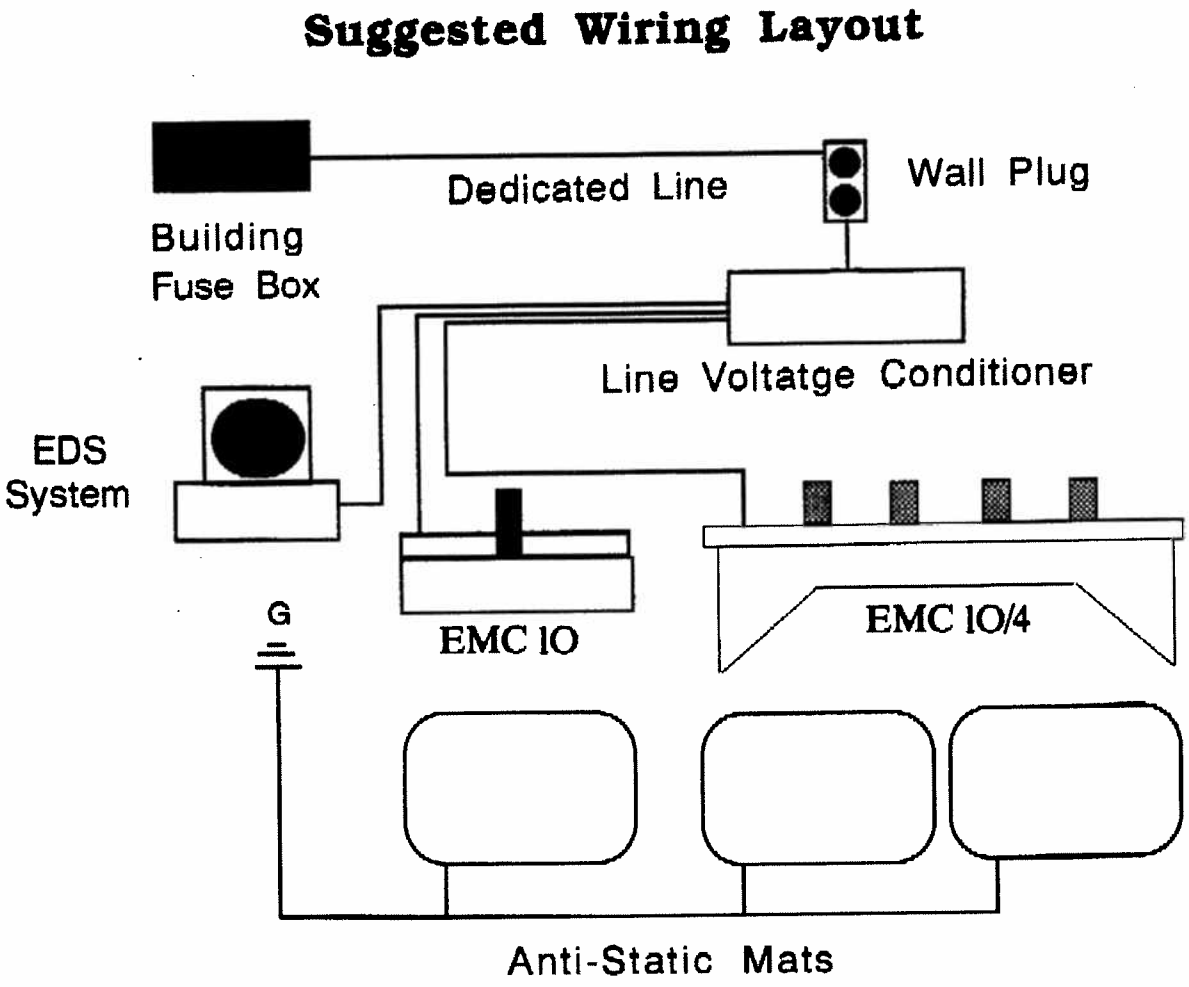


Figure 2-5

Attaching Cables

Power Cable

Attach the power cable to the receptacle on the inside of the right leg of the chassis as shown in Figure 2-6.

Power Requirements

Melco suggests using a dedicated power line with a surge protector. The 115V -220V voltage selector is at the left of the power receptacle on the inside right leg of the chassis as shown in Figure 2-6. Set the selector switch to the proper setting for the voltage in your area.

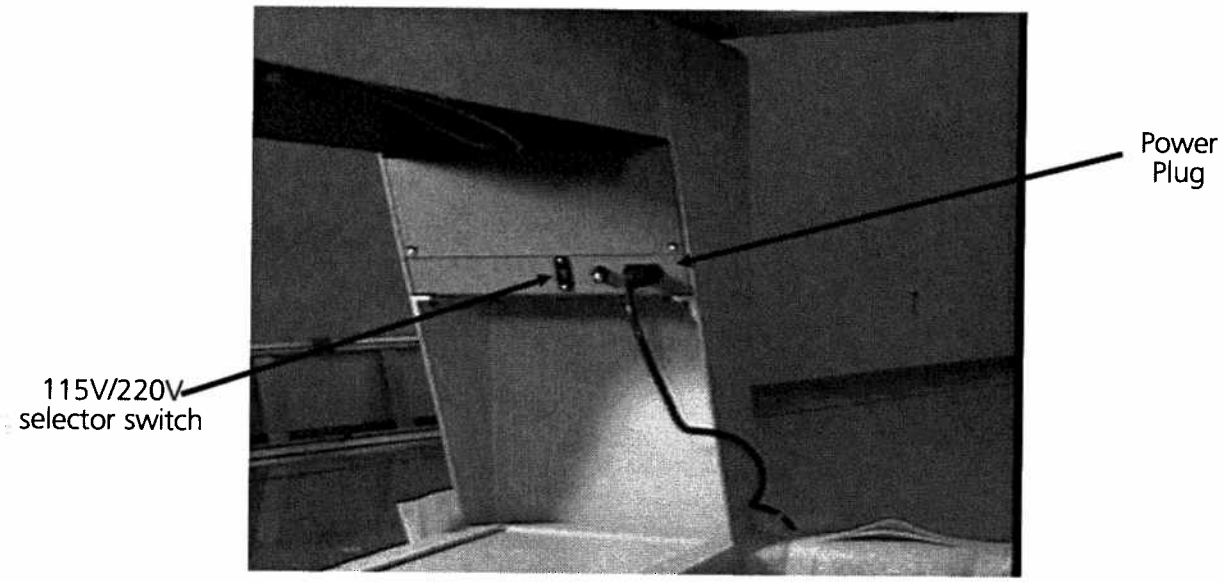


Figure 2-6

Attaching the EMC 10/4 to the Computer

Install the network cable between the computer and the EMC 10/4. If you only have one peripheral device attached to the computer, install the terminator cable to the machine as shown in Figure 2-7. If more than one peripheral device is attached to the computer, the terminator cable must be installed on the last peripheral of the series. All the rest of the peripheral units are linked to the computer in a daisy-chain arrangement of network cables.

When all the cables are installed between the peripheral and the computer, install the power cords from the computer, the monitor, and the embroidery peripheral to the power source outlet.

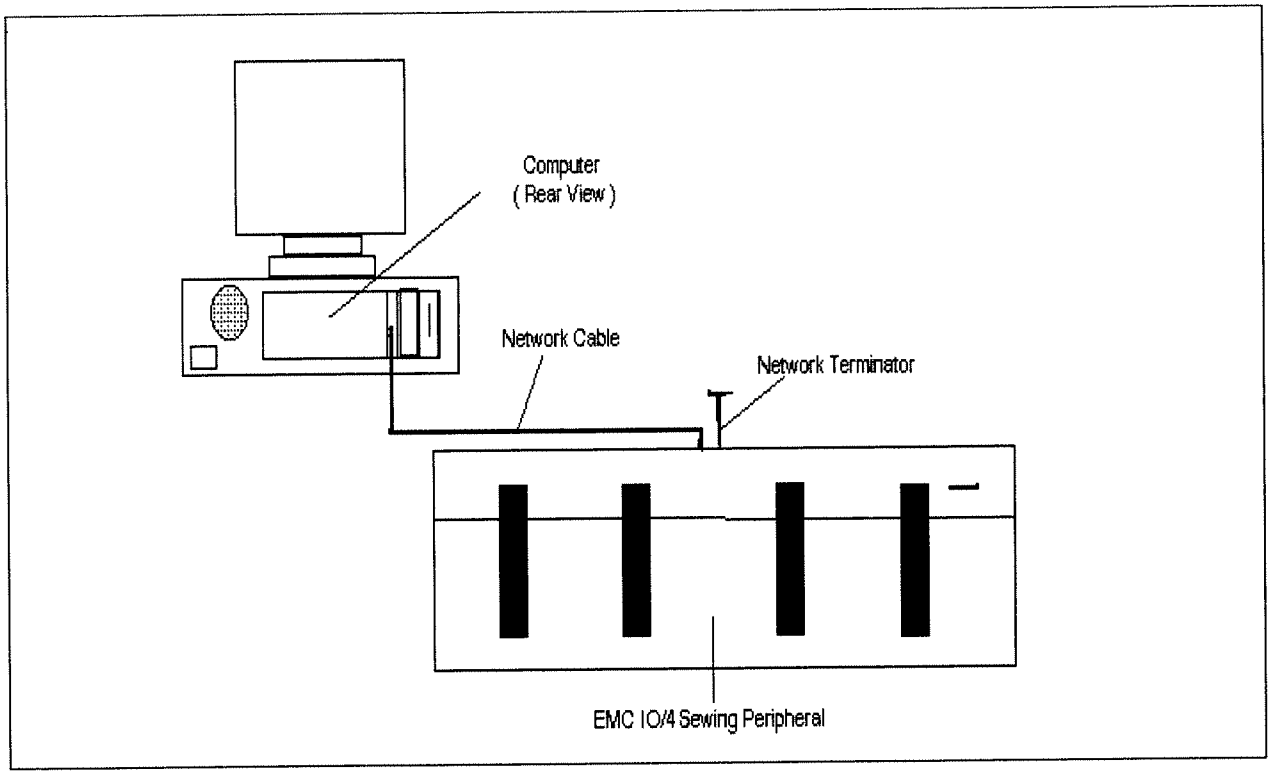


Figure 2-7

Configuring The EMC 10/4

The first time the machine is turned on, you must configure it with a peripheral program, unit number, and display language. The information is stored in memory and retrieved during each power up. Reconfiguration may be necessary if you are changing the unit number, changing the language, or installing a new PCB.

The peripheral program defines the type of machine you are using. It is set at the factory, but verify that it is still set correctly and reset it if necessary. If the embroidery peripheral is not configured with the correct Peripheral Program, it will not run properly, possibly resulting in damage to the embroidery peripheral.

The unit number is a unique address for each machine that the computer uses in transferring designs. If more than one machine has the same unit number, transfer errors will occur. EDS II uses unit numbers 1 to 16. EDS III and other Melco applications use unit numbers 1 to 64. The unit number must also be enabled on your computer as explained in your EDS operation manuals.

To configure the EMC 10/4 and the EMC 10/4T:

1. Turn ON the red power switch located on the right leg of the machine shown in Figure 2-8.
2. Move to the keyboard. Ignore any message flashing on the LCD.
3. Press and hold the [ALT], [⇑], and [⇓] keys at the same time.

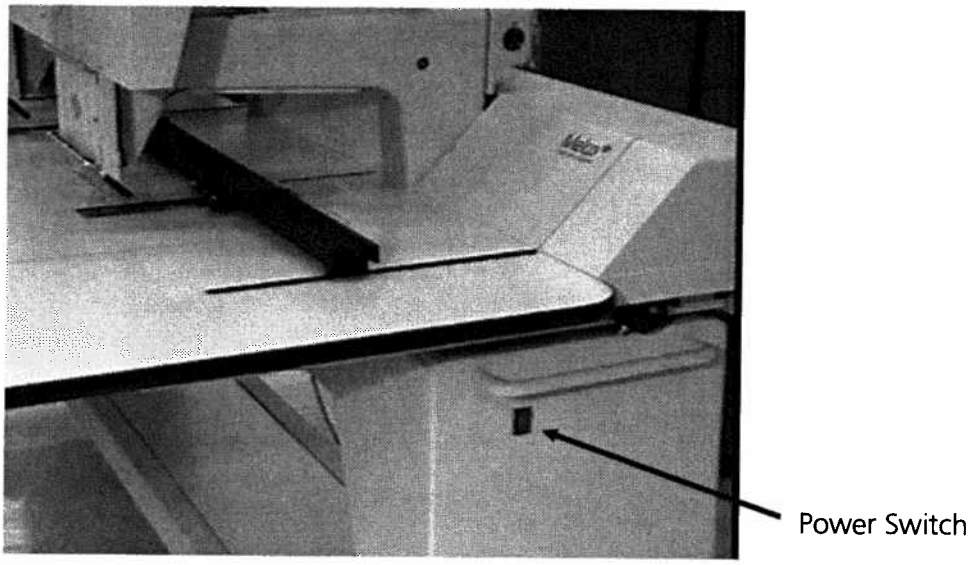


Figure 2-8

4. Continue to hold the keys until the machine beeps, then release them.
5. The LCD should display: **EMC 10/4,** or **EMC 10/4T** for the trimmer option. If not, press the [⇑] or [⇓] key to scroll to the correct program name.
6. Press the [ENTER] key and the Peripheral Program is set.
7. Press the [⇑] or [⇓] key until you reach the unit number you want.
8. Press the [ENTER] key to set the unit number.
9. Press the [⇑] key until the language you want is displayed.
10. Press the [ENTER] key to set the language.

The Thread Tree

The thread tree is assembled at the factory, with the thread cone rods pushed down for shipment. Reach behind the thread tree and push the rods up into position to hold the thread cones.

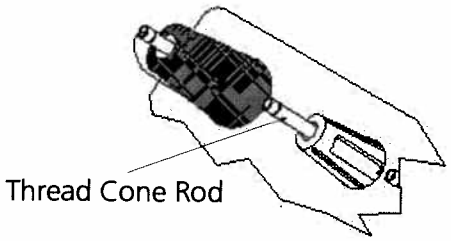


Figure 2-9

3. Getting Started

This manual contains useful facts and safety tips and should be read in its entirety prior to any embroidery.

Physical Layout

All the embroidery peripherals have common sections differentiated only by quantity, size, or slightly different layout. These sections include: the Controller, the Embroidery Heads, the Thread Tree, the Keyboard, the Table, and the Pantograph. See Figures 3-1 and 3-2.

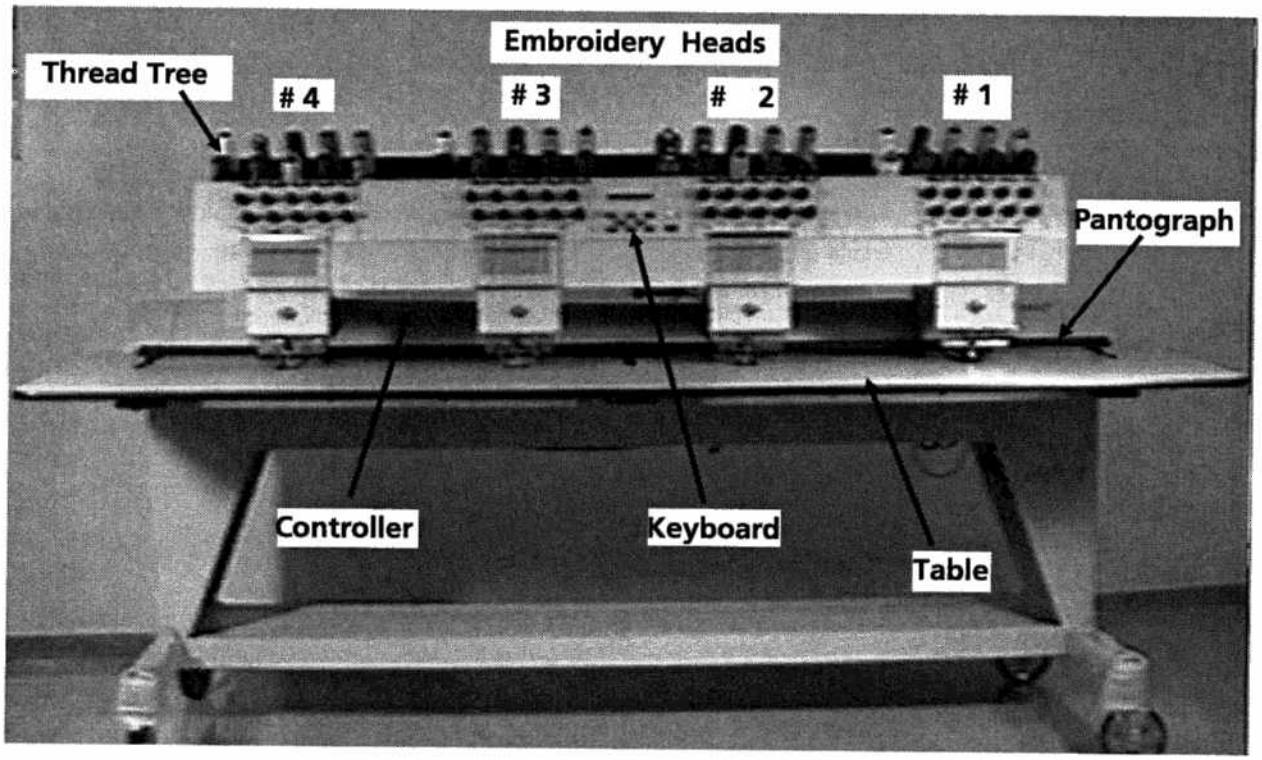


Figure 3-1 EMC 10/4 & EMC 10/T (Four-Head)

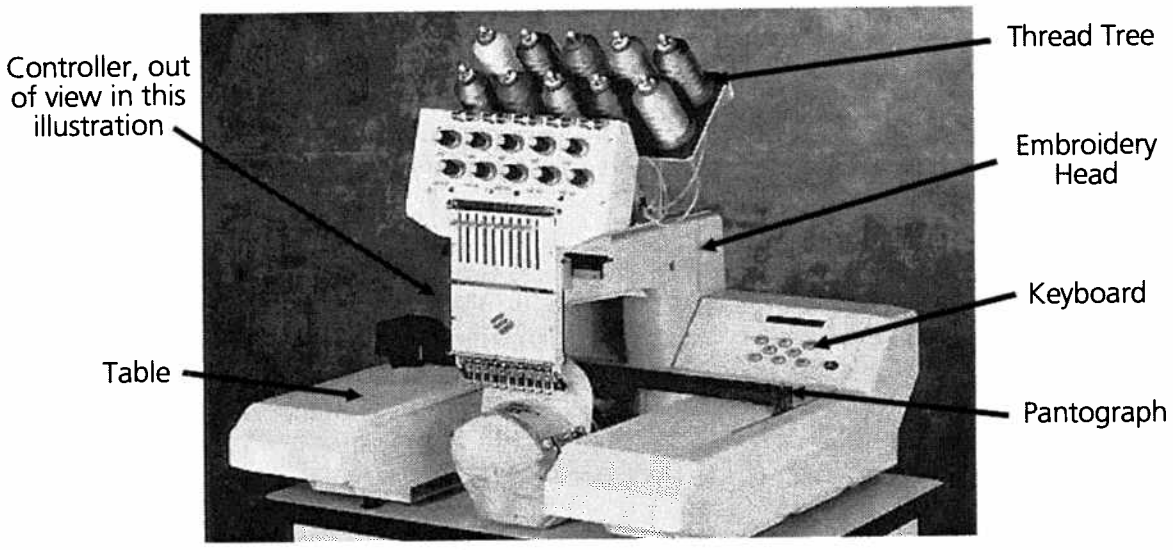


Figure 3-2 EMC 10 & EMC 10T (Single-Head)

Operator Safety

The embroidery peripheral is a powerful machine capable of sustaining personal injury to anyone operating it in an unsafe manner. Never let untrained personnel operate the embroidery peripheral. Avoid wearing clothing with loose sleeves that may become caught in the machine. Tie long hair back or keep it under a cap. Do not wear loose jewelry. Safe operation practices will reduce the chance of injury.

Quick Start

This section is a brief overview that provides the basic information for embroidering a design. More detailed information may be found in following chapters.

Threading

The embroidery peripherals arrive from the factory threaded. To install new thread, tie the ends of the new thread to the existing thread and pull the existing thread through the head. Perform this threading method for each needle position. Ensure the ends of the new thread are then inserted into the eyes of the needles, pulled through the bottoms of the presser feet, and pulled into the spring in front of the needle case. Do not change the thread tensions from the factory settings.

Bobbins

The bobbin cases will already be loaded with spools of bobbin thread. Make certain the spools have plenty of thread remaining on them to allow you to embroider the initial design.

Set Home

WARNING! Sudden Pantograph movement may result during the Set Home function. Ensure that the table top is clear of all materials prior to setting home. Do not rest hands or any other appendage on the table top or bodily injury may occur.

Press the [MENU] key until the display reads HOME, then press [ENTER]. The display will read SET HOME. Press the [ENTER] key again to initiate the set home function. After any movement of the pantograph the display will read GO TO HOME.

Select Hoop

While still in the HOME menu, press the [⇓] key until Select Hoop appears on the display. Press [ENTER] and arrow up or down to select your hoop size.

Hooping

Load some scrap fabric and backing into a hoop, making certain the fabric is taut. Attach the hoop to the pantograph.

Position the Hoop

By pressing the arrow keys on the embroidery peripheral keypad, move the hoop until it is approximately centered under the selected needle in the needle case.

Send a Design to the Peripheral

At the EDS system, select a design to send to the embroidery peripheral by clicking the Transfer command at the Peripheral menu. In the Transfer File to Peripheral dialog box, select the proper peripheral number and the filename you want to embroider, then Click OK.

Select a Design at the Peripheral

At the embroidery peripheral keypad press the [MENU] key until the display reads DESIGN MENU and press [ENTER] to display the name of the design sent to the peripheral from the EDS system. Press [ENTER] again and the design is selected. The display shows the next menu, COLOR MENU.

Color Change Sequence

With the Color menu on the display press [ENTER] to accept the default color change sequence.

Orientation

When the ORIENTATION menu appears on the display press [ENTER] to accept the default orientation and go to the RUN DESIGN menu. Press [ENTER] one time to get into the run mode.

Trace the Design Outline

Press the [MENU] key until the display reads: TRACE, then press [ENTER]. Press the [⇓] key to display TRACE OUTLINE, then press [ENTER]. Press [START] to initiate the trace function. The hoop will move along the outline of the design without embroidering. During this time, check that at no place during the tracing function will the needle come close enough to contact the hoop.

Start Embroidering

After the tracing function is finished, press [ENTER] to get directly back to the run mode again. Press [START] on the embroidery peripheral keypad and the machine will move to the beginning of the design. Press [START] again and the peripheral will begin to embroider the design you have selected. The embroidery will stop when the job is complete and the display reads: END OF DESIGN. If you need to stop the embroidery process before the design is complete, simply press [STOP] on the peripheral keypad. To continue after a stop or thread break repair, press [START] again.

Embroidery Speed

While the design is being embroidered you may change the speed of the machine by pressing [ALT] plus [⇑] or [⇓] on the peripheral keypad.

Finishing

When the peripheral stops embroidering and displays the END OF DESIGN message, you may remove the hoop and examine your first embroidery job.

4. Mechanical Functions

This chapter contains instructions and illustrations that will assist in producing the highest quality embroidery on your embroidery peripheral. Some of the topics discussed in this chapter are:

- Threading
- Installing the needle
- Hooping flat garments
- Thread break components
- Head mode switch
- Other miscellaneous mechanical operations

Threading the Head

The Thread Tree

1. Put a cone of thread on any position of the thread tree above the head (see inset in Figure 4-1).

2. Insert an inch or two of thread into the center of the thread guide tube.

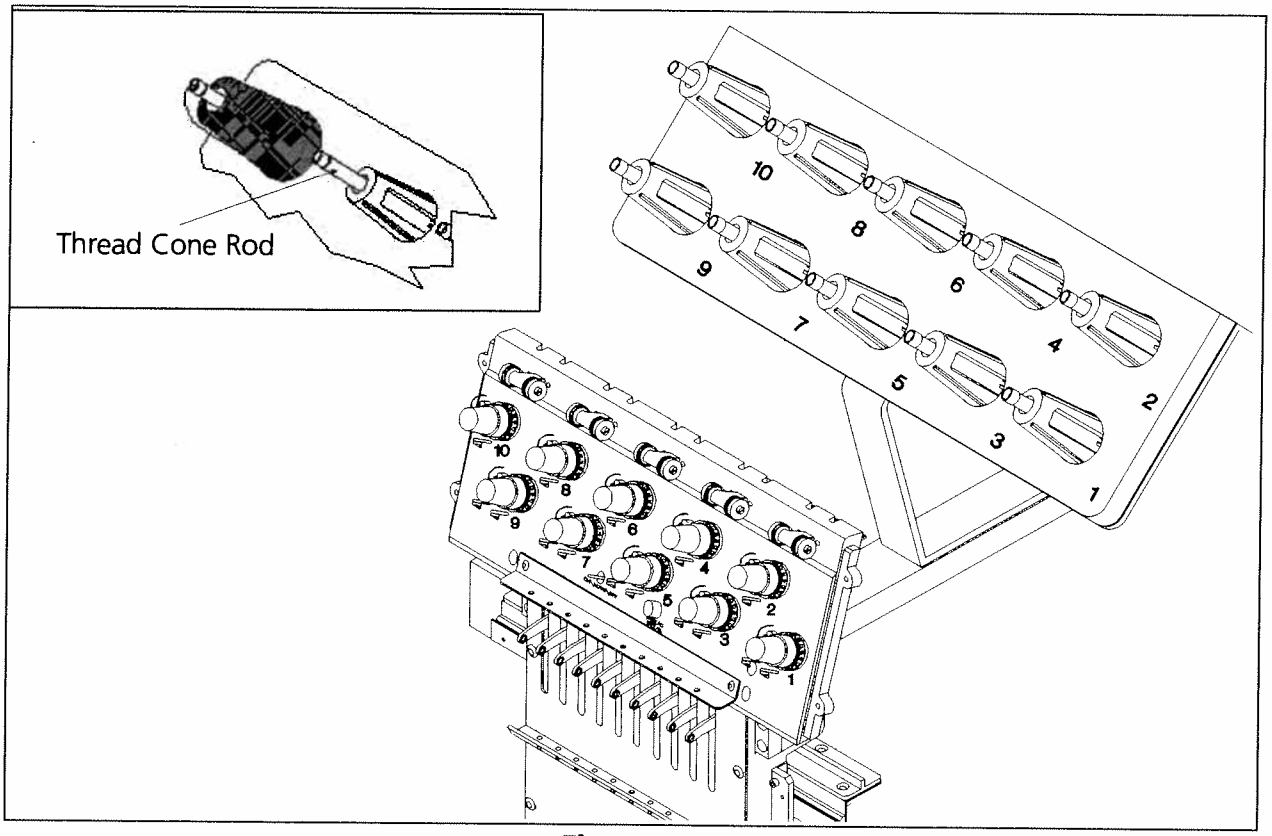


Figure 4-1

3. Using a can of compressed air, shoot a short burst of air into the tube as shown in Figure 4-2. The compressed air will force the thread through the tubing, exiting above the pretensioner.

Note: An alternate threading method is to use the piece of monofilament included in your starters kit as a thread hook. Push the monofilament through the thread path, hook the thread in the notch toward the end, and pull the thread through the path.

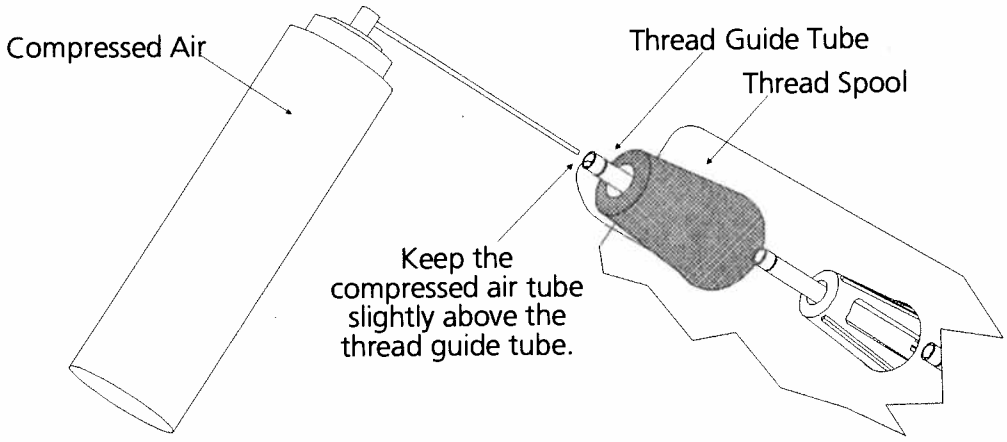


Figure 4-2

The Thread Path

Each thread position has its own pretensioner, tensioner, and thread guides. Pretensioners are located at the top of the tensioner bracket and help remove any kinks from the thread while providing an even flow to the tensioner. Finish threading the machine using the following instructions which are numbered in Figure 4-4 and detailed in Figures 4-3, 4-5, and 4-6.

1. Pull the thread from the guide hole down between the pretensioner disks.
2. Route the thread down to the tensioner, between the two metal wheels of the disk as shown in Figure 4-3.
3. Wrap the thread around the disk clockwise, 1 and 1/2 times.
4. Route the thread through the take-up spring. When you tug on the thread, the take-up spring should move and break contact with the thread break sensor post.

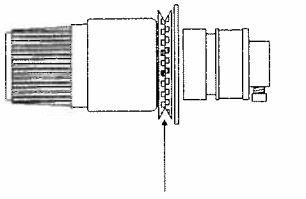


Figure 4-3

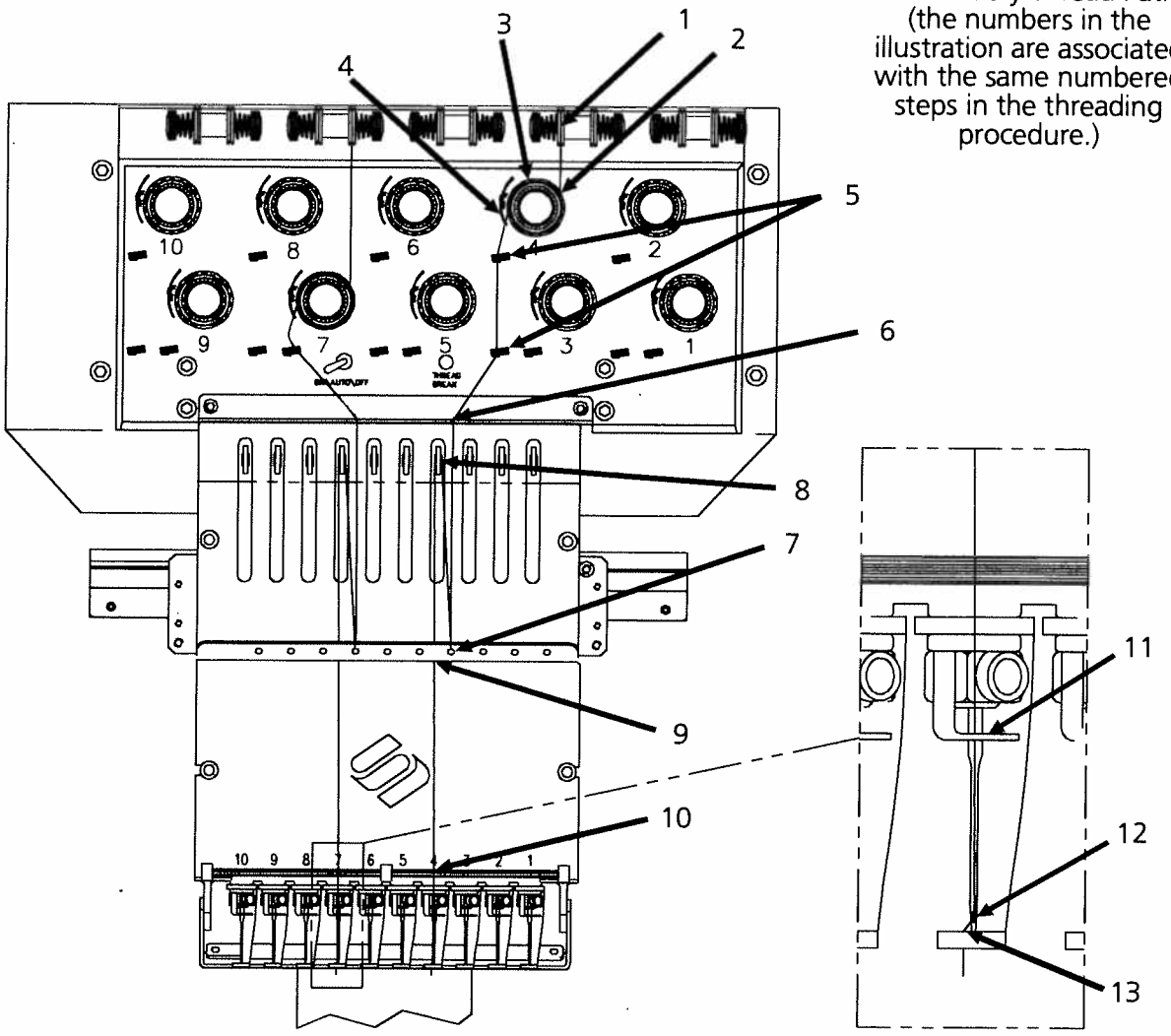


Figure 4-4

5. Route the thread down through the thread guide post(s). Threads using the top tensioners have two posts; threads using the lower tensioners have one. See Figure 4-5.

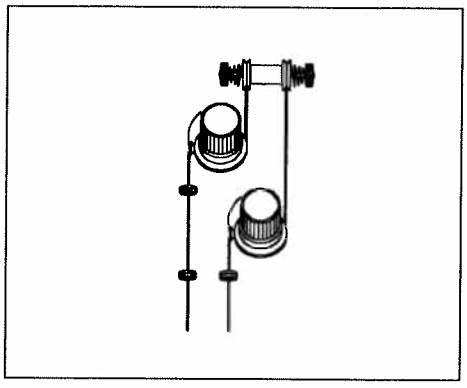


Figure 4-5

6. The upper thread guide is just above the take-up levers as shown in Figure 4-6. Route the thread through the hole.

7. The middle thread guide is an L-shaped bracket below the take-up levers with holes on both its surfaces. Route the thread through the hole facing outward, from back to front.

8. Bring the thread up to the take-up lever and pass it, right to left, through the eye in the lever.

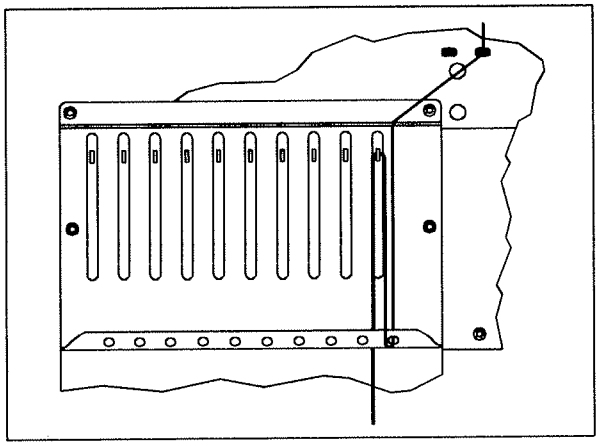


Figure 4-6

9. Route the thread straight down to the middle thread guide, through the hole facing downward.

10. The lower thread guide is just above the presser foot. Route the thread down through it.

11. Slip the thread behind the thread guide on the needle clamp.

12. Make sure the thread has a clean-cut, unfrayed end and the eye of the needle is clean, then thread the needle from front to back.

13. Route the thread down through the encircling hole in the presser foot.

14. Pull on the thread until you feel the tensioner pressure.

15. Fasten the thread to the retainer spring on the front of the lower thread guide and trim the thread to about an inch.

16. Repeat this procedure until all the needles on all heads are threaded.

Installing a Needle

Each needle has a needle clamp set screw holding it in place similar to the one in Figure 4-7.

Using the small, flat-blade screw driver from the operator's tool kit:

1. Turn the set screw counterclockwise until the needle can slide down and out of the needle bar.

2. With the scarf of the new needle toward the rear of the head, slide the needle into the needle bar and tighten the set screw.

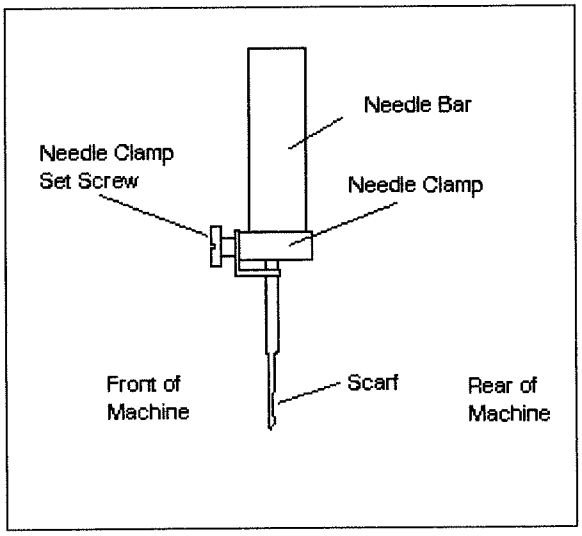


Figure 4-7

Tension Adjustments

Embroidery tensions are controlled on both the upper thread and bobbin thread. The following table describes situations that may require adjusting these tensions.

SITUATION	PROBABLE CAUSE
Bobbin thread showing on top of garment	Top tension too tight and/or bobbin tension too loose.
More than 1/3 of column showing bobbin thread on back of garment	Bobbin tension too loose.
Less than 1/3 of column showing bobbin thread on back of garment.	Bobbin tension too tight.
Design puckering.	Top and/or bobbin tension too tight
Top thread loose in design.	Top tension too loose.

Pretensioners

The pretensioners (Figure 4-8) hold the thread taut when it enters the main tensioners, and it is seldom necessary to change their tensions. Experienced operators may occasionally adjust a pretensioner to fine tune the embroidery on certain kinds of fabrics, but generally no adjustments are necessary. Pretensioners are tightened by turning them clockwise and loosened by turning them counterclockwise.

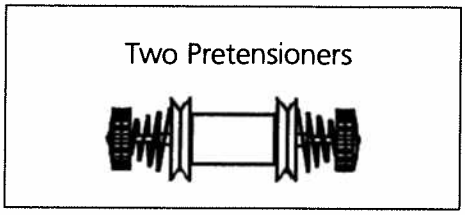


Figure 4-8

Main Tensioners

At the main tensioners (see Figure 4-9) is where the primary upper thread tensions are performed. Preliminary adjustment may be performed by following these steps:

1. Create a capital **I** as a text design on your computer using FULL BLOCK alphabet and 2 inch height.
2. Send the design to the peripheral.
3. Embroider the **I** design.
4. Check the quality of the embroidery. The proper tension settings will produce an embroidered piece with:
   - taut thread
   - no bobbin thread showing through on the top of the **I**
   - no pulling or puckering of the **I**
   - about the middle 1/3 of the column showing bobbin thread on the back of the **I**.

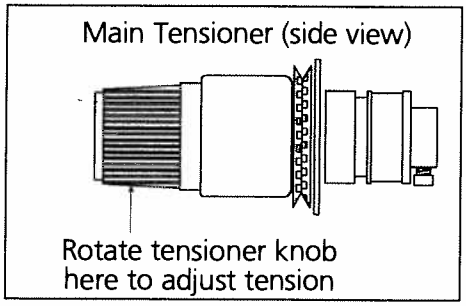


Figure 4-9

5. If your embroidery does not look this way, the tensions may need to be adjusted. Tighten the top tension by turning it clockwise. Loosen the top tension by turning it counterclockwise.

Bobbin Tension

The bobbin tension is adjusted manually by rotating a set screw on the bobbin case.

1. Locate the bobbin case inside the rotary hook under the needle area.
2. Remove the bobbin from the machine.
3. To see how the bobbin spool fits into the bobbin case, remove it and replace it as illustrated in Figure 4-10. When looking at the bobbin from the thread side, it should rotate **clockwise** within the case when you pull on the thread.

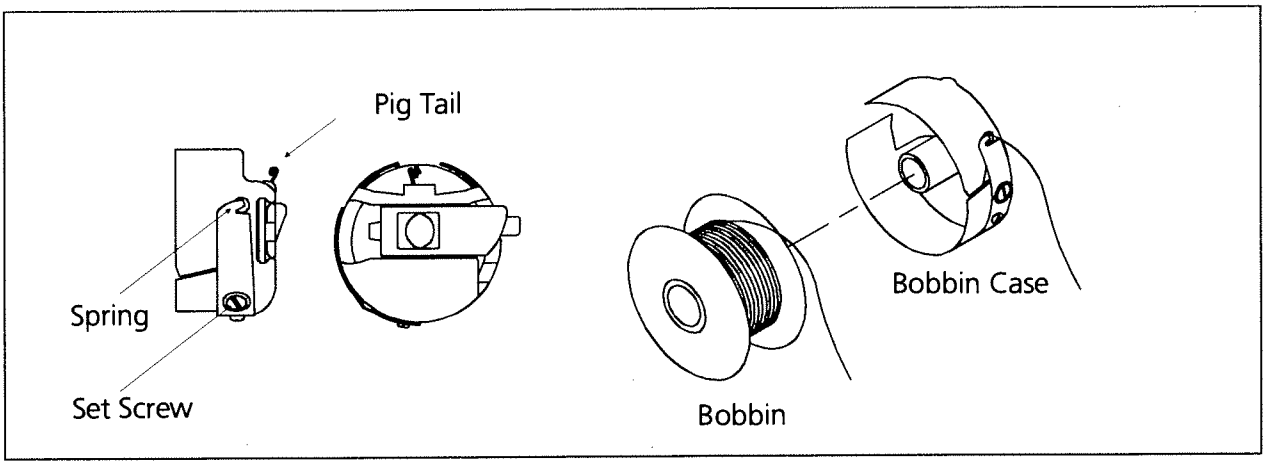


Figure 4-10

4. Using a small, flat-blade screw driver, turn the set screw until you feel a slight resistance when the thread is pulled from the bobbin. Set the tension so that when you hold the bobbin case suspended by its thread:
   - No thread feeds out when you are not moving it
   - About an inch of thread feeds out when you jiggle it slightly
5. With the bobbin tension adjusted, pass the bobbin thread through the bobbin case pig tail.
6. Re-install the bobbin case in the hook assembly.
7. If working with a four-head embroidery peripheral, repeat this procedure on each head.
8. After you adjust the tensions, embroider the **"I"** again and check your embroidery. If necessary, repeat the tensioning procedures until you are satisfied with the results. As discussed earlier, there are factors other than tensions that affect embroidery quality, but tensions are extremely important.
9. Repeat as needed for each needle on each head.

Hooping Flat Garments

To embroider a professional looking product, material must be hooped with the following in mind:

- Hooped so the design will be embroidered with the proper orientation
- Hooped without any folds in the material
- Hooped as taut as possible without permanently stretching the fabric out of shape, being extra careful with stretch knits, jerseys, and other loosely woven fabrics

Follow these steps for proper hooping:

1. Select a hoop that allows the complete design to fit inside with a comfortable margin of blank fabric around the inside edge. Refer to the Trace menu to make sure you have the correct hoop size.

2. Loosen the adjusting screw on the outer hoop by turning it counterclockwise. See Figure 4-11.

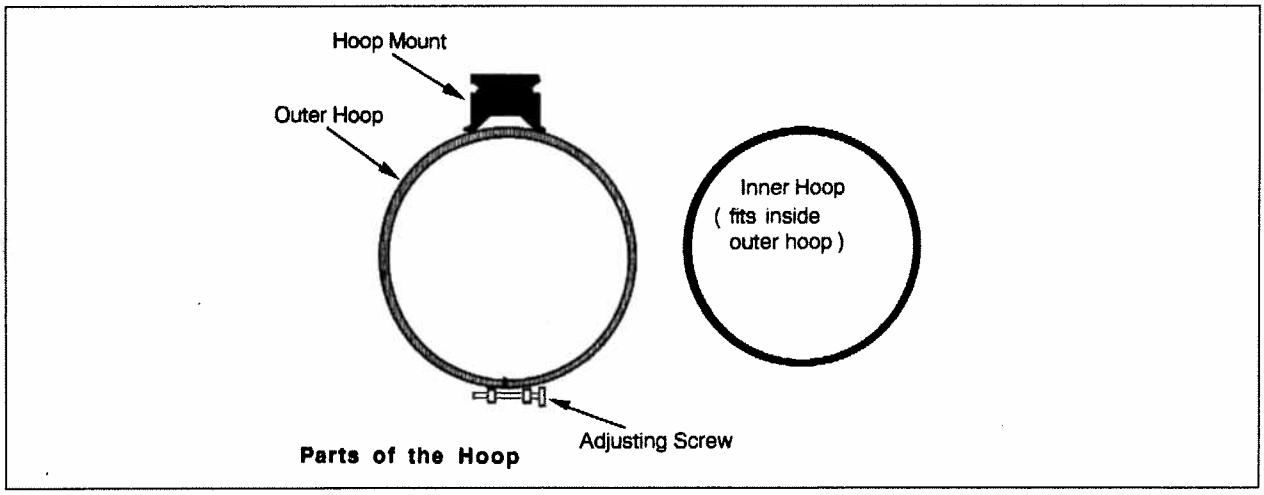


Figure 4-11

3. Place the outer hoop on a clean, flat surface with the mounting bracket on the side that is up and away from the flat surface. See Figure 4-12 .

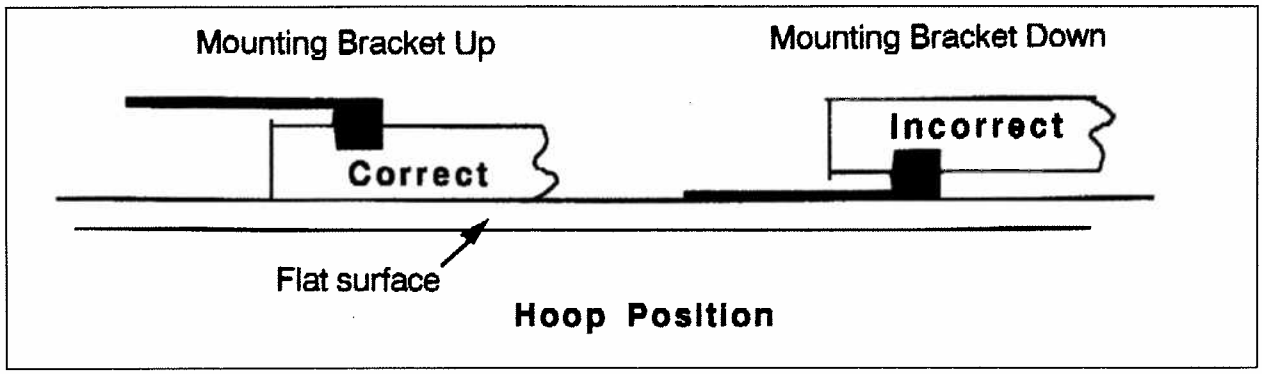
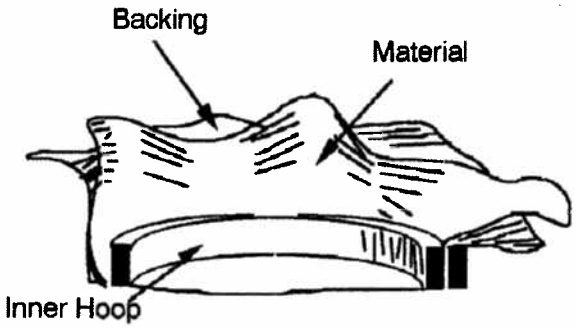


Figure 4-12

4. On top of the outer hoop, place enough backing material to cover the hoop with an extra inch on all sides.

5. Place your material on top of the backing.

6. Press the inner hoop into the outer hoop with the fabric and backing between them as shown in Figure 4-13. Pull the outside edges of the material inward, toward the center of the hoop. This tightens the material inside the hoop without popping the hoop apart.



Material in the Hoop

Figure 4-13

7. When the material is hooped properly, tighten the outer hoop adjusting screw. Tightening this screw will not tighten the fabric, it simply secures it, but tightening it too much can "burn" a permanent circle in your material.

8. Repeat the hooping procedure for each head on a four-head peripheral.

Loading The Hoop

To attach the hoop to the carriage:

1. Slide a notch of the hoop mounting bracket around the carriage pin as shown in Figure 4-14.

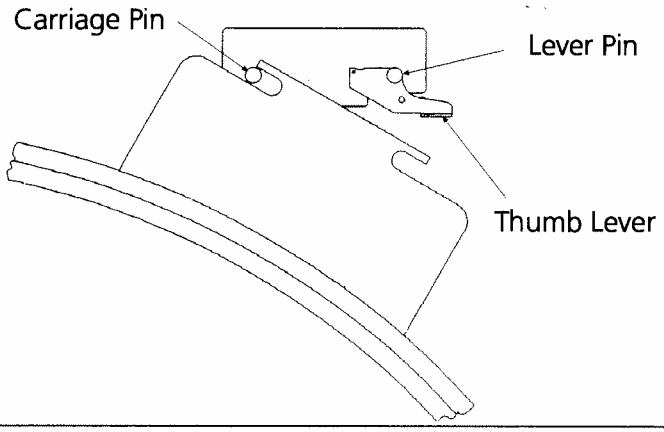


Figure 4-14

2. Press the thumb lever towards the rear of the carriage.
3. Push the hoop bracket up to the lever pin and release the pin into the notch on the bracket.
4. Repeat the hoop loading procedure for each head on a four-head peripheral.

Thread Break Sensor

Each tensioner has a U-shaped take-up spring on its left side. This spring serves two puposes; it tightens the stitch and acts as a thread break sensor. Just above the spring is a brass post shown in Figure 4-15. In normal embroidery the spring touches and then is pulled away from this post. If there is no thread being pulled through the tensioner, the spring rests against the post. The machine recognizes this as an upper thread break, and in response it:

- Stops embroidering and backs up a few stitches
- Displays the error message, THREAD BREAK

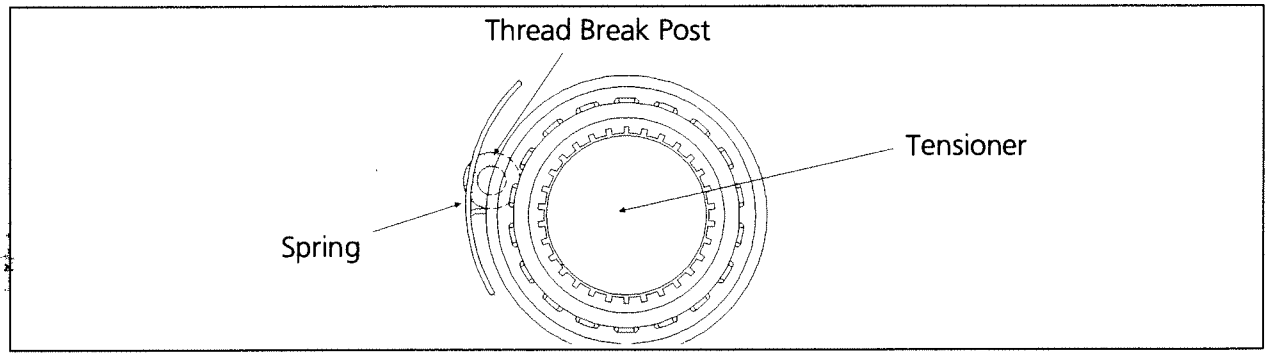


Figure 4-15

- Turns on the thread break warning light:

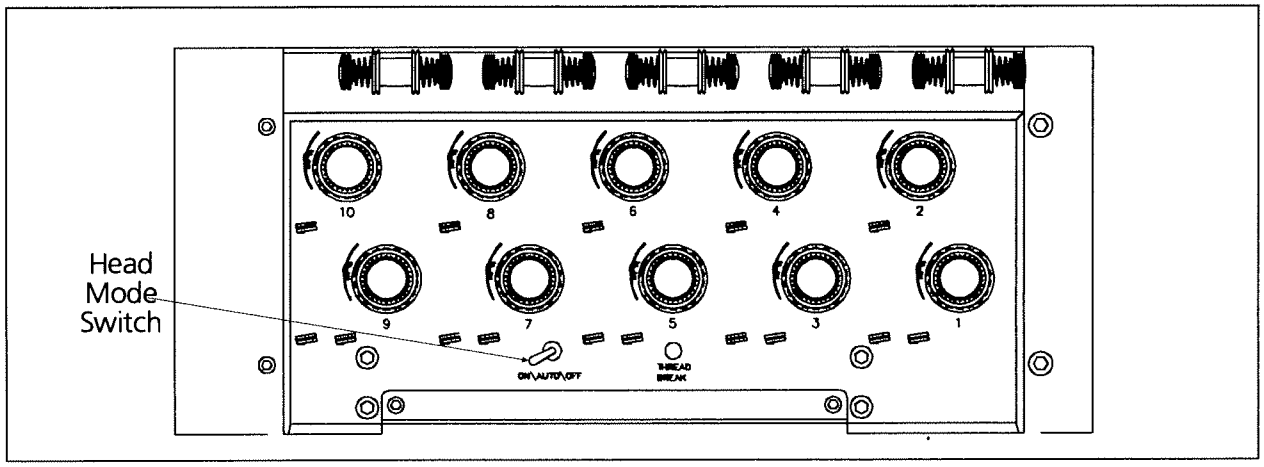


Figure 4-16

Head Mode Switch

The embroidery heads have a head mode switch below the tensioners with ON, AUTO, and OFF positions (see Figure 4-16). The switch is useful in thread break recovery and during framing when you are fixing minor embroidery errors. It is also useful during various head servicing and adjustment procedures.

When working with a single-head embroidery peripheral, as the machine detects a thread break, the head stops and backs up a few stitches. The operator repairs the break then presses the [START] key. If the switch is set to AUTO, the head embroiders those stitches again. The switch should be left in the AUTO position unless you have a specific reason to change it.

When working with a four-head embroidery peripheral, as the machine detects a thread break in one head, all heads stop and back up a few stitches. The operator repairs the break then presses

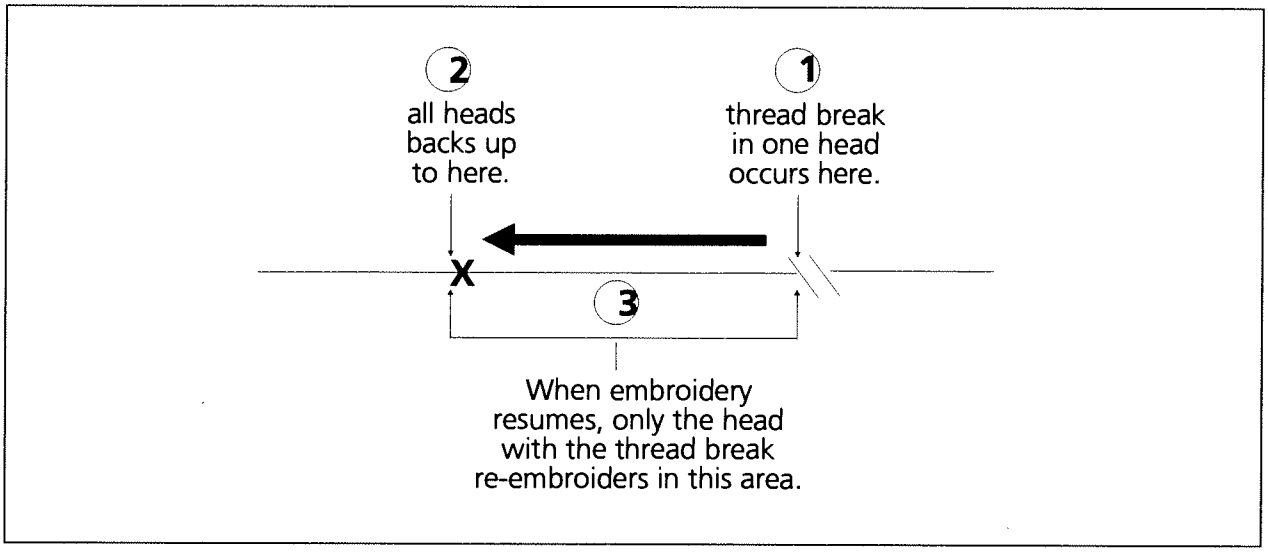


Figure 4-17

the [START] key. If all switches are set to AUTO, only the head with the thread break re-embroiders those stitches. The heads that did not have a thread break continue stitching only upon reaching the thread break point. This prevents double stitching on garments that embroidered correctly the first time. Refer to Figure 4-17 for a graphic illustration of the thread break recovery of a four-head embroidery peripheral with the switch set to AUTO.

The switch provides for automatic control of the head stitching operation during a thread break situation. It also provides constant stitching regardless of the thread break situation and allows you to completely disable head stitching operation if desired.

If the switch is set to ON, the head embroiders during thread break recovery whether or not it had the thread break. You might do this to re-stitch a problem area or to recover from a thread break that the machine did not recognize.

If the switch is set to OFF, the head is completely disabled. With a four-head embroidery peripheral, this allows you to take a head out of production temporarily.

The table below summarizes the head mode switch settings:

Setting	Result
ON	Embroiders during thread break and framing recovery. ON allows you to fill in or re stitch an area.
AUTO	Heads with no thread break do not embroider during thread break recovery. Heads do not embroider while framing. AUTO should be used for normal operation.
OFF	Disables the head. Use OFF to take head out of production.

Locking the Needle

There may be times when you want to mechanically prevent the needle from moving down while the rest of the head is moving. Such a situation may be to provide a safety measure while you work in the hook area.

Use the mechanical jump stitch lever to lock the needle. This lever is on the left side of each head, directly behind the needle case as shown in Figure 4-18. Figure 4-19 demonstrates how the lever can engage the jump stitch solenoid by pushing against it. When engaged, the solenoid prevents that needle from moving, but allows the head to rotate.

When a head has the head mode switch set to OFF, locking the needle can be used as an additional safety measure to insure the needle does not come down.

Mechanical Jump Stitch Lever

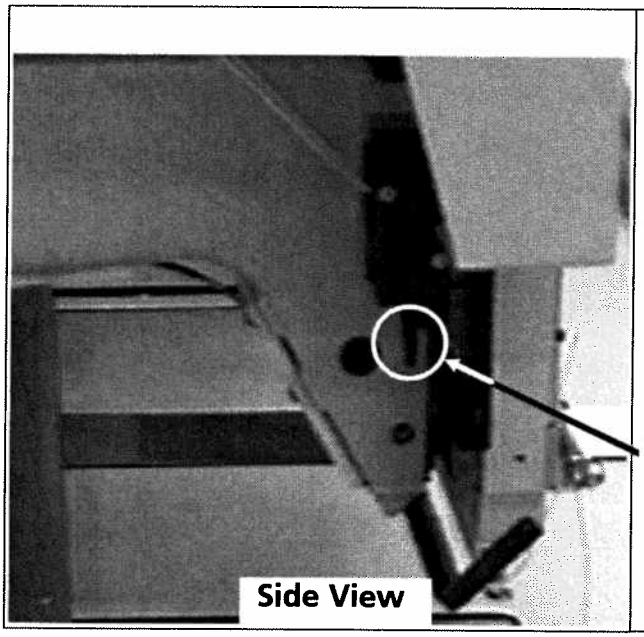


Figure 4-18

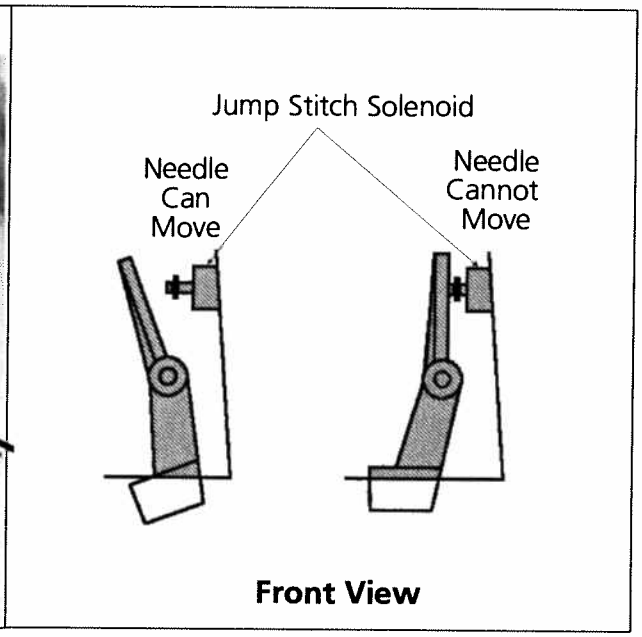


Figure 4-19

Color Change Cam

Access to the color change cam is located just behind the needle case on the left side of the head (head #4 on four-head peripherals). When a color change command is sent to the peripheral, the cam rotates, moving the needle case(s). This moves the new needle selection into embroidery position. If this movement does not complete properly one or more of the following situations may result:

- The cam is in a position referred to as *off index*
- No needle is positioned directly over the hole in the needle plate
- The machine will not embroider
- The red, color change light comes ON
- The error message, OFF COLOR INDEX displays

If this happens, check the Error Message Appendix for recovery instructions. If the recovery requires repositioning the cam manually, follow these steps and see Figure 4-20:

1. Locate the opening in the cover for the color change cam shaft. It is on the left side of the head (the furthest one on the left in four head peripherals).

2. Insert a flat-blade screwdriver into the opening until you feel it fit into the slot on the end of the cam shaft.

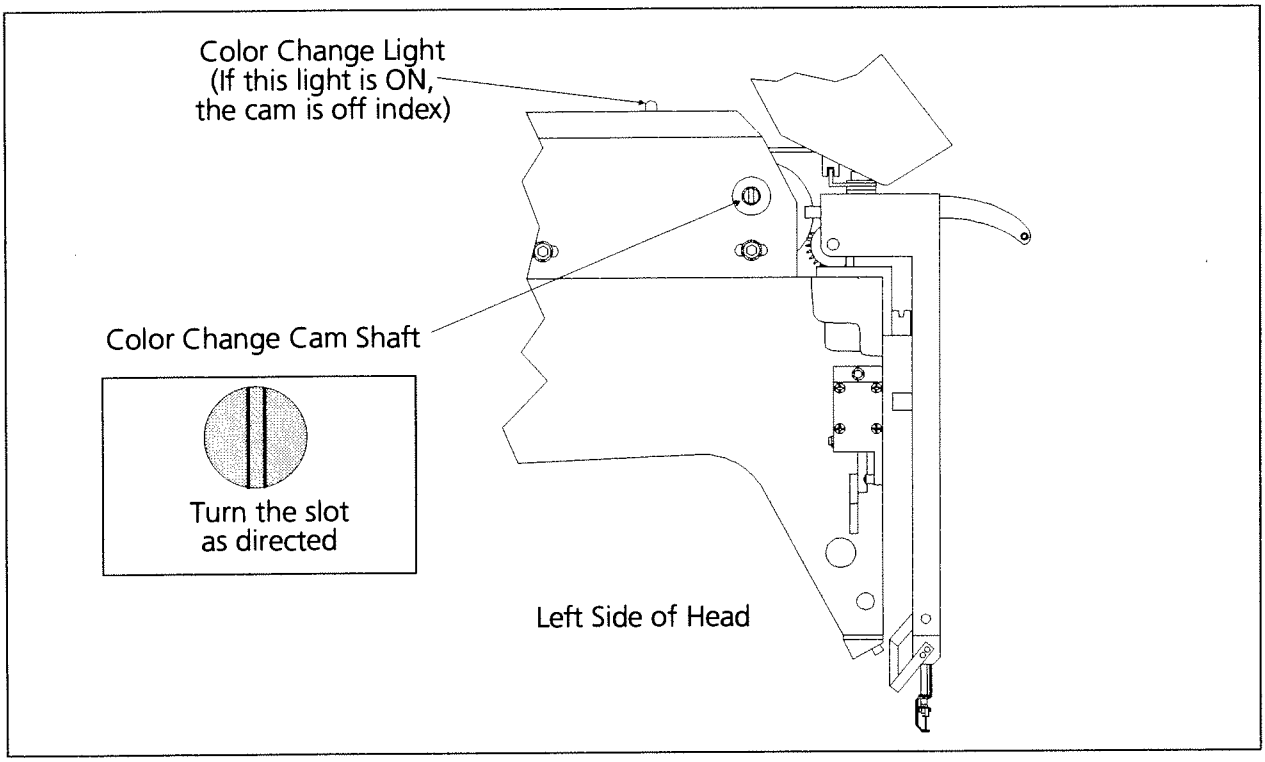


Figure 4-20

5. Operational Functions

Peripheral Keypad

The keypad has ten keys and a display window called a **L**iquid **C**rystal **D**isplay (LCD as shown in Figure 5-1. The LCD displays menus of options and other messages. The keys allow you to move between menus, enter commands, and select settings. Following is a brief description of the keys and their functions as they are used in the main menus and the idle menus. Some of the keys take on special functions in sub-menus which are discussed later.

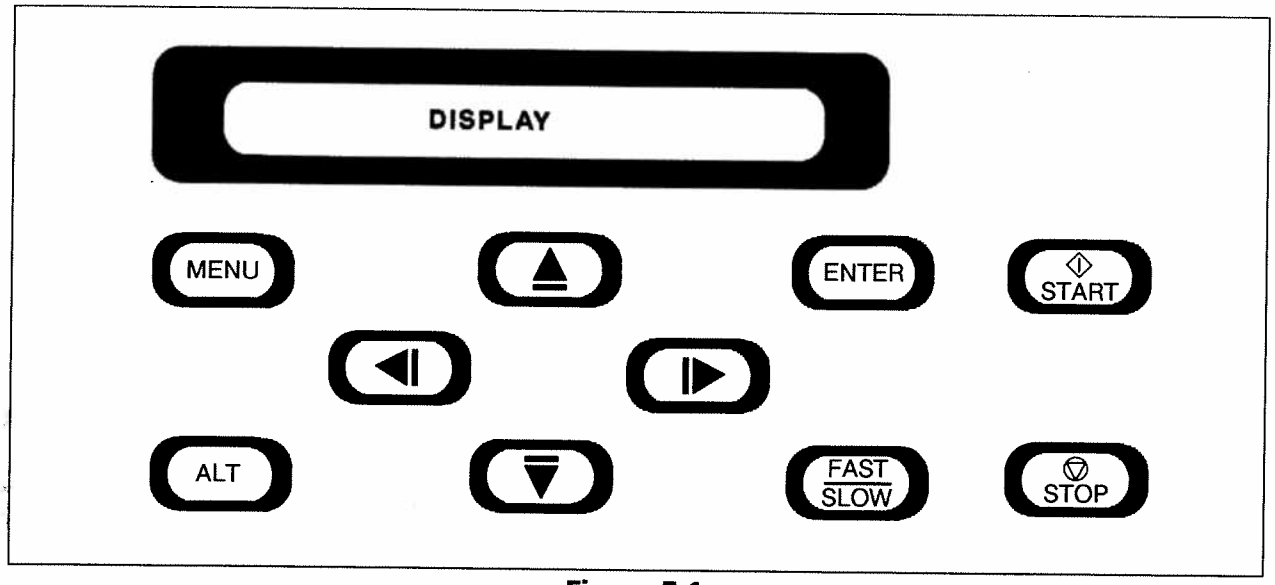


Figure 5-1

The Keys and Their Functions

Key Name	Key Function
[MENU]	Moves from one menu to the next. After the last menu displays, it wraps back to the first menu.
[ALT]	Is never used alone. It is held down while pressing another key, allowing the other key to take on an *ALT*ernate function. For example, pressing [ALT] plus [MENU] scrolls through the menus in reverse order. You can go back to a menu without scrolling all the way through.
[ENTER]	Makes a selection. It is similar to clicking on the OK button in Windows or pressing the[ENTER] key on your computer keyboard.
[FAST/SLOW]	Toggles the hoop carriage speed fast or slow.

Key Name	Key Function
[⇒] or [RIGHT ARROW]	Moves the needle position to the right in the embroidery field (hoop moves left). It is also used to select values for sub menu options.
[⇐] or [LEFT ARROW]	Moves the needle position to the left in the embroidery field (hoop moves to the right). It is also used to select values for sub menu options.
[⇑] or [UP ARROW]	Moves the needle position back in the embroidery field. It also scrolls up a menu list. It is also used to change sub menu values.
[⇓] or [DOWN ARROW]	Moves the needle position down in the embroidery field. It also scrolls down a menu list and is used to change sub menu values.
START	Starts the machine embroidering. It is also used to start the TRACING function.
STOP	Stops any job. It is also used to "frame forward" or "frame backward" in idle or in the FRAME menu.

Key Combinations

Keys	Combination Functions
[ALT][MENU]	Displays the previous menu.
[ALT][ENTER]	Exits any sub menu and displays the idle menu, even when the machine is embroidering.
[ALT][⇒]	Moves to the right one needle position when the machine is idle.
[ALT][⇐]	Moves to the left one needle position position when the machine is idle.
[ALT][⇑]	Increases the maximum embroidery speed in increments of 50 spm (stitches per minute) up to the maximum speed. The maximum speed for flat goods embroidery is 1000 spm with the Four-Head and 900 spm with the Single-Head. The maximum speed when using the cap frame is 800 spm with both products.
[ALT][⇓]	Decreases the embroidery speed in increments of 50 spm when the machine is embroidering. The minimum is 400 spm.

Sending a Design

These embroidery peripherals may be used with either the EDS II or EDS III systems. The following steps are individualized instructions for EDS II and EDS III users. Refer only to the instructions that apply to your system.

For **EDS II** users:

1. Press **F10: Peripherals** in the main menu.
2. From the Peripherals menu, press **F2: Send Design**.
3. Type the file name of the design, a space, and the EMC 10 unit number. For example, to send the design "SHIP" to peripheral #1, type SHIP 1.
4. Press the Enter key.

For **EDS III** users:

1. Click on the File menu in the application or layout window, and a drop-down menu displays.
2. Click on Send.

More information is available in the EDS II and EDS III operation manuals. For more information, consult the sections about sending designs from the computer to the peripheral.

Menu Overview

In a computer program, a *menu* is a list of options. The embroidery peripheral menus allow you to make choices about what and how you are going to embroider. Because of the size limitation of the display, the options are usually displayed one at a time. The arrow keys are used to scroll through the rest of the list. Enter your selections by pressing various keys and key combinations. The following are examples of the options available in the menus:

- Selecting the design to be embroidered
- Establishing the embroidery orientation of the design
- Determining color sequence
- Choosing the maximum embroidery speed
- Operating machine functions for maintenance and error recovery

All of the embroidery peripheral menus are listed below with a brief description of their functions.

DESIGN MENU
Lists all the designs in the embroidery peripheral design buffer, in the order that they were sent. It also allows you to select a design for embroidering or to delete a design from the buffer.

ORIENTATION MENU
Allows you to turn a design in one of eight directions.

COLOR MENU
Sets the color sequence for your design.

RUN DESIGN
Puts the selected design and color sequence into the run buffer. This menu also allows the design to embroider after you Set Home.

FRAME MENU
Sets the direction, either forward or backward, to move through a design to correct embroidery errors. With this menu it is possible to make precise corrections.

TRACE MENU
Traces the outline of a design so you can make sure the design fits into the hoop.

HOME MENU
Sets the HOME POSITION, selects hoop sizes, and provides power fail rescue functions.

MOVE MENU
Moves the design a precise distance within the embroidery field.

HEAD TIMING MENU
Enables you to set, correct, or adjust the Needle Depth and Hook Timing.

TRIM MENU (on the EMC 10T and EMC 10/4T)
Sets the trimmer options.

BOBBIN MENU
Sets the under thread control options.

RESET MENU
Clears stitch counts and clears the run buffer without turning off the machine. You do <u>not</u> delete a job from this menu. It is used to do a "hard reset" which restores any altered parameters to their default settings.

IDLE MENU
Is not a functional menu, but displays information about the current design. It is accessed by pressing [ENTER] while the machine is embroidering or by pressing [ALT][ENTER] while in any menu or submenu.

The Setup Menus

The Design, Orientation, Color and Run Design menus are explained in detail in this section. These are the menus you will use for every design. The other menus are covered in the section called The Customizing Menus. The Head Timing menu is covered in the maintenance chapters.

Design Menu

When you send a design from your computer to the embroidery peripheral, it is stored in a design buffer. The Design menu displays the buffer contents, and allows you to select a design for embroidering or to delete. To access the Design menu, the embroidery peripheral must be powered up and running.

Selecting a Design

To select a design after it has been sent to the embroidery peripheral, follow these steps:

1. Press the [MENU] key until the display reads DESIGN MENU.
2. Press the [ENTER] key and the first design is displayed.
3. Use the [⇓] key to scroll forward or the [⇑] key to scroll backward through the designs in the buffer.
4. Scroll through the menu until you reach the design you want.
5. Press the [ENTER] key and the design is selected. The display shows the next menu.

Deleting a Design

The embroidery peripheral can store up to sixteen different designs, depending on their size. If you are not using the AutoDelete option on your computer, the design stays in the buffer as long as there is space available. When you want to delete a design from the buffer, follow these steps:

1. Scroll through the menus until the display reads DESIGN MENU.
2. Press the [ENTER] key.
3. Use the [⇑] or [⇓] keys to scroll to the design you want to delete.
4. Press the [ALT][⇓] key. The display reads KILL design name?
5. Press the [⇑] key for YES, or the [⇓] key for NO.
6. Press the [ENTER] key. This completes the deletion.

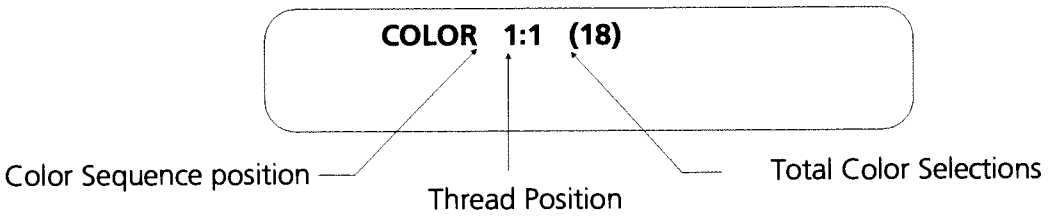
Color Menu

Color Sequence

The embroidery peripheral can embroider up to 10 colors in a single design without switching thread cones and rethreading needles. The number of colors used and the order in which they embroider is called the color sequence. If a design is embroidered using red, then blue thread, it has a color sequence of two with one color change. The Color menu is used to set the thread positions in the color sequence.

1. Press the [MENU] key until the display reads COLOR MENU.

2. Press the [ENTER] key and the display shows the color sequence as shown below:



The **color sequence position** is the color number within the design that is currently at the thread position. The 1 in this position means that it is the first color (needle) used in the design, before any color change commands. A six in this position means that this is the sixth color used in the design, and there have been five color change commands. The sequence is not changed directly by the operator. The sequence size is automatically increased or decreased as entries are added or deleted to the thread position. The last number is one greater than the total color selections. Acceptable numbers in this position are 1 through 99.

3. Press the [⇒] key to advance to the desired sequence number. Press and hold the key to scroll.

4. Press the [⇐] key to return to a desired sequence number. Press and hold the key to scroll.

The **thread position** refers to the thread cone number on the thread tree and the associated needle number in the needle case. Acceptable numbers in this position are 1 through 10, and the special characters: **–**, **0**, and **P**. The following is a brief explanation of these special characters:

- **–** Embroiders using the previous color selection.

- **0** Stops the machine at this color change but does not move the needle case to the next needle. Press [Start] to resume embroidering.

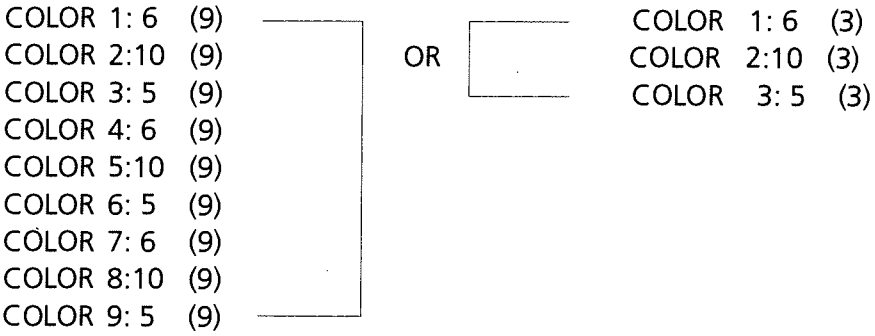
- **P** Pauses the machine at each subsequent color change after moving to the next needle. Press [Start] each time to resume embroidering.

5. Press the [⇑] key. The thread number increases. Press and hold the key to scroll.

6. Press the [⇓] key. The thread number decreases. Press and hold the key to scroll.

7. To add or delete a thread position, change the character in the thread position to a blank using the [⇑] or [⇓] keys as described in steps 5 and 6..

The **total color selections** refers to the number of thread positions used before the color sequence wraps back to the first color position. For example, if you had a design with three flowers, each to be embroidered in green (cone 6), blue (cone 10), and yellow (cone 5), you may set the Color menu in two ways:



In the above example on the left, each individual color selection is set, resulting in a total color selections value of 9. In the example on the right, the total color selections is set at 3, forcing the color sequence to wrap after the third color change command.

Acceptable numbers in total color selections are 1 through 99, with a default of 10. As you insert or delete color sequence positions, the total color selections is increased or decreased.

8. Press and hold the [⇒] key until you reach color sequence position 11. Notice that the total color selections value is still 10.

9. Press the [⇑] or [⇓] key to select a thread position. The total color selections value is now 11. If you are not at the last color sequence, press [ALT] [⇑] to insert a color selection.

10. Press the [ALT] [⇓] key to delete a sequence number. The total color selections value returns to 10. You should delete all sequence numbers that are not being used in the current design.

11. When you are finished setting the Color menu, press the [ENTER] key or the [MENU] key.

The color sequence is retained when the machine is turned off and back on. However, a hard reset or reconfiguration will reset all the Color menu values to their default settings - color sequence position 1 through 10 with matching thread positions 1 through 10. The default total color selections is 10.

Change Now

This option allows you to change the color sequence of either the job that is currently embroidering or the next job in the run buffer. To use this option:

1. Scroll to the COLOR MENU. You can do this while the machine is embroidering.
2. Press the [ENTER] key and the current color sequence displays.
3. Reset the color sequence using the normal Color menu commands:
   Press the [⇒] or [⇐] keys to move through the color sequence.
   Press the [⇑] or [⇓] keys to change the thread selection.
4. When you finish resetting the color sequence, press the [ALT][⇒] keys. The display shows the message CHANGE NOW?
5. Press the [⇑] key for YES, or the [⇓] key for NO.
6. Press the [ENTER] key. If you responded with YES, the new color sequence takes effect at the next color change in the current design. If you responded NO, the new color sequence takes effect in the next design in the run buffer.

Orientation Menu

You can scroll through the top level menus, or press [MENU] from the COLOR Menu to reach the ORIENTATION Menu.

The ORIENTATION Menu gives you the ability to embroider a design in any of the positions shown in Figure 5-2. For example, because of the way a cap mounts into the cap hoop, you would probably want to embroider it like the third example.

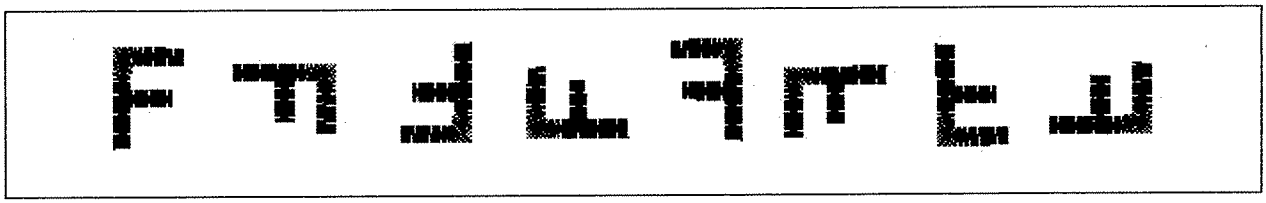


Figure 5-2

Setting Orientation

1. Press the [MENU] key until the display reads ORIENTATION MENU.
2. Press the [ENTER] key. The display will show an **F** in the current orientation.
3. Press the [⇑] or [⇓] key to scan through the eight orientation choices.
4. When you reach the orientation you want, press the [ENTER] key.

Run Design Menu

Scroll through the top level menus, or press the [ENTER] key from the ORIENTATION Menu to reach the RUN DESIGN Menu.

1. Press the [ENTER] key. If this is the first job since the machine was turned on, you must Set Home before you can embroider. If you do not, the display prompts you with SET HOME NOW?

2. When the display asks SET HOME NOW?, press the [ENTER] key.

When the Set Home function is completed, the display will show the selected design name and the embroidery speed

3. Press [START]. The machine starts embroidering. It stops embroidering when the job is complete and the display reads END OF DESIGN.

The Idle Menu

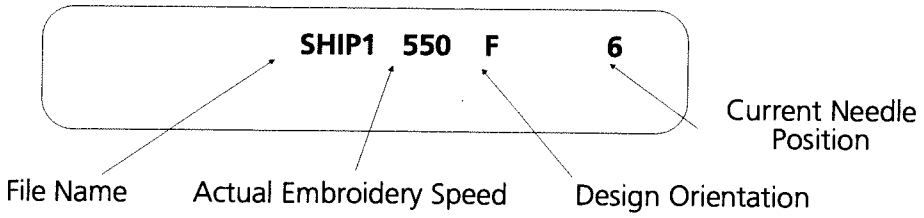
The function of the Idle menus is to display information about the currently selected design, whether or not it is embroidering. It is selected differently than the other menus. To activate the idle menu:

Press [ENTER} when a design is embroidering.

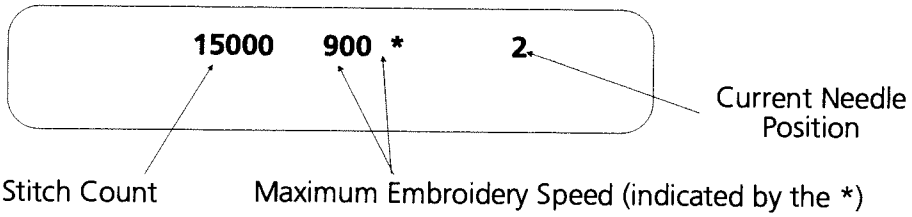
OR

Press [ALT][ENTER] when you are in any other menu or sub menu.

An example of the first Idle menu is:



An example of the second Idle menu is:



The Customizing Menus

The customizing menus are the: Frame, Trace, Home, Move, Trim, Bobbin, and Reset menus. Each menu in this section may not be used every time you embroider, but you may reference this section as needed.

Frame Menu

Framing provides a stitch-by-stitch movement through a design loaded in the embroidery peripheral. It allows you to accurately position the needle location in the design for correcting embroidery errors. After you have framed to the exact stitch you want, you can begin embroidering again from that point. As you frame past any color change, the machine will move to the correct needle.

Setting the Type of Framing and Framing Direction

The Frame menu is used to set the type and direction of framing.

Note: The Frame menu is not used to start or stop framing through a design. The [START] and [STOP] keys are used for this purpose.

There are 7 different types of framing functions:

- Frame Forward 1 stitch at a time
- Frame Forward 20 stitches at a time
- Frame to Next CC (color change)
- Frame Back 1 stitch at a time
- Frame Back 20 stitches at a time
- Frame to Last CC (this function will frame back to the start of the current color which is being embroidered)
- Return to Origin

FRAME BACK 1 is the most common setting, allowing you to back up to part of a design which has just been embroidered. Select FRAME BACK 20 or FRAME FORWARD 20 if you wish to frame back or forward several stitches. Select FRAME TO LAST CC to move back to the start of the current color. FRAME TO NEXT CC is used to go to the next color in the design. The RETURN TO ORIGIN function is used to move to the starting point in the design.

To select the desired framing direction and type, refer to the following steps:

1. Press the [MENU] key until the display reads FRAME MENU.
2. Press the [ENTER] key. The display shows the default setting of FRAME BACK 1 or the last frame type and direction selected in the current design.

3. If you wish to frame backward in the design press the [⇐] key once to select BACK as the framing direction, then press the [⇑] or the [⇓] keys to select FRAME BACK 1, FRAME BACK 20, FRAME TO LAST CC or RETURN TO ORIGIN.

4. If you wish to frame forward in the design press the [⇒] key once to select FORWARD as the framing direction, then press the [⇑] or the [⇓] keys to select FRAME FORWARD 1, FRAME FORWARD 20, FRAME TO NEXT CC or RETURN TO ORIGIN.

5. When you have selected the type and direction of framing you want, press the [ENTER] key to exit the Frame menu.

After you select a framing type and direction, framing will be performed using those parameters as long as you continue to work within the current design or until another type of framing is selected. Each time a new design is loaded the Frame menu is automatically set to FRAME BACK 1.

Framing in a Design

This section describes the steps to follow in performing the various framing functions selected above. Some general rules for framing include:

- The machine must be stopped in a loaded design before you can frame.
- You cannot frame back through a design that has finished (the design is finished when the display reads END OF DESIGN).
- If the beginning of the design is reached during Frame Back 1, Frame Back 20, or Frame To Last CC the beam will move to the first stitch of the design and framing will automatically stop; pressing the [START] key will restart embroidery.
- If the end of the design is reached during Frame Forward 1, Frame Forward 20, or Frame to Next CC the beam will move to 1 stitch before end of design and framing will automatically stop; you can still frame back by selecting Frame Back 1, Frame Back 20, or Frame Back to Last CC in the Frame menu or pressing the [START] key to finish embroidering the design.
- When the display reads END OF DESIGN no more framing may be done in the design.

Frame Back 1, Frame Forward 1

With FRAME BACK 1 or FRAME FORWARD 1 selected press the [STOP] key until the beam moves BACK or FORWARD 1 stitch. Release the [STOP] key to stop framing.

OR

Press and hold the [STOP] key until the beam moves several stitches. Release the [STOP] key to stop framing.

OR

Press and hold the [STOP] key for several seconds, the beam will move several stitches and then go into automatic framing. Notice that framing in automatic mode is much quicker.

Note: When automatic framing begins you must release the [STOP] key so it can be pressed a second time to stop the automatic framing. The beam will continue moving (framing) 1 stitch at a time repeatedly until you press the [STOP] key a second time to stop automatic framing.

Frame Back 20, Frame Forward 20

The peripheral will only frame 20 stitches at a time while in automatic framing mode. To enter automatic framing mode, press and hold the [STOP] key for several seconds. The beam will move several stitches (1 stitch at a time) and then go into an automatic framing mode. In the automatic framing mode the movement will begin to be 20 stitches at a time.

Note When automatic framing begins you must release the [STOP] key so it can be pressed a second time to stop the automatic framing. The beam will continue moving (framing) 20 stitches at a time until you press the [STOP] key a second time to stop automatic framing.

Frame to Last CC, Frame to Next CC

Press and hold the [STOP] key for several seconds. The beam will move several stitches (1 stitch at a time) and then go into automatic framing. While in automatic framing the beam will stop moving until the peripheral calculates the last or next color change move. During calculation the display reads CALCULATING. When the CALCULATING message appears on the display, release the [STOP] key.

When the peripheral is finished calculating the move (from one to several seconds) the beam will move to the start of the current color (during FRAME TO LAST CC) or next color (during FRAME TO NEXT CC).

The peripheral will beep and the display reads COLOR CHANGE after a Frame to Last CC or Frame to Next CC is performed. The COLOR CHANGE message will not be displayed if the beginning of the design is reached or if 1 stitch before the end of design is reached.

Return To Origin

This feature returns the beam and carriage all the way to the starting point, or ORIGIN, of the currently loaded design.

1. If the machine is embroidering, press [STOP].
2. Press the [MENU] key until the display reads FRAME MENU.
3. Press the [ENTER] key. The display reads FRAME BACK or FRAME FORWARD.
4. Press the [⇓] key. The display reads RETURN TO ORIGIN.
5. Press the [ENTER] key.

6. Press the [START] key. The beam and carriage will move back through the design and stop at the origin. When the machine stops, the display reads FRAME FORWARD 1.

7. Press the [ALT][ENTER] keys to return to the Idle menu.

8. Press the [START] key. The machine starts to embroider at the beginning.

Trace Menu

The TRACE MENU allows you to make sure the design fits within the hoop by tracing the outline of the design with the needle.

If you move to needle 1 or 10 it may be easier to keep track of the pattern as it is traced. Do NOT lower the presser foot for this purpose; you could hit the hoop and cause serious damage.

1. Install the hooped garment or cap.

2. Press the [MENU] key until the display reads TRACE MENU.

3. Press the [ENTER] key. The display reads CENTERING OFF.

4. Press the [⇒] key to turn the centering function ON. Press the [⇐] key to turn it OFF.

   When centering is ON, the beam and carriage stop at the calculated center of the traced design. When centering is OFF, the needle stops at the outside edge of the design outline, or at its starting point. Turning centering ON is helpful when a design is going to be repeated. This helps to align successive hoops more quickly.

5. Press the [⇑] key. The display reads TRACE OUTLINE.

6. Press the [ENTER] key. The design's center is now being calculated. The display may read CALCULATING for a few seconds before it displays TRACE *filename*. The beam and carriage assemblies do not move.

7. Press the [START] key. The beam and carriage assemblies move to indicate the outline of the design, then return to the center of the design.

8. If the needle position appears that it will contact the hoop or beeps with a "rack limit error" during the trace function, you must correct the the problem before embroidery begins. Some of the corrections you may wish to try are changing the hoop position, rehooping the garment to locate the embroidery area differently in the hoop, or changing to a larger hoop. Keep in mind that using an excessively large hoop may produce low quality embroidery.

9. When you have made any necessary corrections, press the [START] key and the design will be retraced. You can do this as many times as necessary.

10. Press [ENTER] to return to the IDLE Menu.

11. Press the [START] key to begin embroidering.

Home Menu

The HOME MENU allows you to set the home position, select hoop sizes, and recover from a power loss. The machine will not embroider until you SET HOME.

The Set Home process moves the beam and carriage assemblies to the center of the embroidery field and then rapidly returns to the starting position. Make sure to keep your hands clear of the pantograph during this operation. This home position remains the reference point for all machine calculations until the machine is turned off.

Set Home

CAUTION! To prevent damage to equipment or material, do not SET HOME if a large or heavy garment is hooped and attached to the Pantograph or if all needle bars and presser feet are NOT in the UP position.

1. Use the direction keys to position the needle at the design starting point. You may attach an empty hoop to the beam if you find that helpful.
2. Press the [MENU] key until the display reads HOME MENU.
3. Press the [ENTER] key. The display reads SET HOME.
4. Press the [ENTER] key. Set Home is activated.
5. If you try to Set Home while there is a design in the run queue, pressing the [ENTER] key now produces the error message MACHINE RUNNING. If that happens:
   Press the [MENU] key until the display reads: MOVE MENU.
   Press the [ALT][MENU] keys. The display reads: HOME MENU.
   Press the [ENTER] key. The display reads SET HOME.

Go To Home

6. Press the [⇑] or [⇓] key until the display reads GO TO HOME.
7. Press the [ENTER] key. The pantograph moves to the home position.
8. If home position was not previously set, the display reads HOME NOT SET.

Select Hoop

9. Press the [⇑] or [⇓] key until the display reads SELECT HOOP.
10. Press the [ENTER] key.
11. Press the [⇑] or [⇓] to scroll through the hoop options.

12. When the desired size displays, press the [ENTER] key. The display reads HOOP LIMITS ON and the beam will move to the center of the embroidery field for that hoop size.

Hoop Limits On/Off

13. Press the [⇑] or [⇓] key until the display reads HOOP LIMITS ON or OFF. The [⇐] key toggles OFF, the [⇒] key toggles ON. For normal operation, the HOOP LIMITS should always be turned **ON**. You may, however, turn LIMITS off in you reach a rack limit in a design but are absolutely certain the design will fit within the hoop. **Always** turn LIMITS ON after you are past that point in the design.

Define Hoop

Defining A New Hoop

This procedure is used to define customized hoop limits for any given hoop.

Note: Home must be set on the machine before defining a custom hoop. Follow the Set Home procedure on the previous page to set home.

1. Place a scrap piece of material in the hoop you wish to define. Measure and record the X and Y lengths of a rectangular or oval hoop, or the diameter of a circular hoop.

Note 1: When measuring a hoop the X length refers to the distance across the hoop from left to right when the hoop is attached to the pantograph. The Y length refers to the distance from the top to bottom.

Note 2: When determining the X and Y lengths or diameter, measure on the inside of the hoop.

2. Make a mark on the scrap material to indicate the hoop center. Install the hoop on the pantograph.

3. Press the [MENU] key or the [ALT+MENU] key combination repeatedly until the display shows HOME MENU.

4. Press the [ENTER] key. The displayed message is SET HOME.

5. Use the [⇑] or [⇓] key until the display shows DEFINE HOOP.

6. Press [ENTER]. The displayed message is CUSTOM HOOP 1.

7. Use the [⇑] or [⇓] key to scroll through the list of available hoop numbers (1-8).

Note: Any hoop numbers that have already been defined will have an "*" following the custom hoop number. As an example, if CUSTOM HOOP 2 has already been defined the display will show CUSTOM HOOP 2 *. If you are changing the parameters of an exiting custom hoop, go to step 2 in the next section entitled Redefining An Existing Custom Hoop, otherwise continue with step 8 in this section.

8. When the desired undefined custom hoop number is reached press the [ENTER] key. The displayed message is RECTANGLE.

9. Use the [⇑] or [⇓] key to scroll through the list of available hoop types: RECTANGLE, CIRCLE, OVAL, and CAP.

10. When the desired hoop type is reached press the [ENTER] key. The initial X dimension is displayed: X LENGTH 01.00IN.

    Note 1: The minimum dimension for a hoop is 1.00 inch or 3.00 centimeters.

    Note 2: The X dimension is the only dimension required when defining a circular hoop.

11. Press the [⇑] key to increase the value by 0.01 in or 0.01 cm. Press the [⇓] key to decrease the value by 0.01 in or 0.01 cm.

    Note 1: If either the [⇑] or [⇓] key is held down the dimension value continues to increase or decrease. The longer the key is held down the faster the value will change.

    Note 2: Press the [ALT]+[⇓] key combination at any time to return to the minimum value.

12. Once the desired value for the X LENGTH is reached press the [ENTER] key. The display will now show Y LENGTH 01.00IN.

    Note: If the hoop type selected is a circle Y LENGTH will not be displayed skip to step 14.

13. Repeat step 11 to set the desired Y LENGTH.

14. Once the desired length values are reached press the [ENTER] key. The display will now show DEFINE CENTER.

15. Identify the currently selected needle then use the arrow keys (and the [FAST/SLOW] key) to move the hoop until the needle is located above the center of the hoop as marked in step 1.

16. When the center of the hoop is established press the [ENTER] key. The display will now show SAVE HOOP?.

17. Perform step a or b below:

    a) If you are satisfied with the definition of this hoop press the [⇑] key to display a **Y** at the far right of the display. Next, press the [ENTER] key to save this hoop to memory. The display will now show SELECT HOOP. If you want to embroider using this hoop you must select it. (See the Select Hoop function in this manual).

    b) If you are not satisfied with the definition of this hoop press the [⇓] key to display an **N** at the far right of the display. Press the [ENTER] key and the program will return to the list of custom hoops. Repeat steps 1 - 16 if desired.

Redefining An Existing Custom Hoop

1. To change the parameters of an existing custom hoop, perform steps 1 through 7 of the previous section entitled Defining A New Hoop in preparation for defining a new hoop. After performing those first seven steps, return to step 2 below.

2. When scrolling through the list of custom hoops, the hoop numbers that have already been defined will have a "*****" following the custom hoop number. As an example, if CUSTOM HOOP 2 has already been defined the display will show CUSTOM HOOP 2 *.

3. When the desired custom hoop number is reached press the [ENTER] key. The displayed message will be OVERWRITE?.

4. Perform step a or b below:

   a) If you would like to continue redefining this hoop press the [⇑] key to display a "**Y**" at the far right of the display. Next, press the [ENTER] key. The display will show RECTANGLE. Follow the instructions in steps 9 through 17 of the previous section entitled Defining A New Hoop to redefine the selected hoop.

   b) If you do not wish to redefine this hoop press the [⇓] key to display an "**N**" at the far right of the display. Press the [ENTER] key and the program will return to the next custom hoop number in the list.

Special instructions regarding custom hoops

1. Information for custom hoops is stored in a section of memory that retains its data when power is turned off. However, there are operations that will clear this memory such as reconfiguring the machine (changing unit number, for example), upgrading RSA software, etc. For these reasons, keeping a written record of the custom hoops defined on the machine is advised.

2. When redefining an existing hoop, if the hoop type is the same as the previous definition (rectangle, circle, etc.), the previous dimensions will initially be displayed.

   Note: Due to mathematical round off, when calculating hoop dimensions, the initial dimension may be off by 0.02 inches (0.02 cm) from the previously defined dimension.

3. Once a custom hoop is defined it must be selected using the same procedure as the predefined hoops (see the Select Hoop section). Custom hoops will be displayed at the end of the list of predefined hoops. The "ALL SEWING FIELD" selection is the beginning of the list of hoops, pressing the [⇑] key from the "ALL SEWING FIELD" selection will display the last custom hoop. The following are two examples of how custom hoops will look in the list of available hoops:

Example 1: Custom Hoop 2 is defined as an oval hoop 6.5 inches in the Y direction and 9 inches in the X direction. When selected, the display will read (2) OVAL 6x9 IN.

Example 2: Custom Hoop 7 is defined as a circle hoop 8.5 inches in diameter. When selected the display will read (7) CIRC 8.5 IN.

4. Only custom hoops that have been defined as a CAP will be in the hoop list if a cap driver is installed. Otherwise, all custom hoops are displayed.

5. It is highly recommended that the operator trace a design on a custom hoop before embroidering (see the Trace Menu section of this manual).

   It is possible to define a hoop with the defined limits outside the machine's mechanical embroidery limits. If the design being embroidered approaches the custom defined limits, one of these two errors will occur: LIMIT ON X RACK or LIMIT ON Y RACK. If one of these errors occurs during the embroidery process, continued embroidery of the design is impossible.

   Performing a trace function will display these errors warning the operator of the problem before embroidering. While tracing the design verify that the defined limits are set correctly so the needle will not hit the hoop. Incorrectly setting the hoop dimension or hoop center position may cause the needle to hit the hoop before any error message is displayed.

Power Fail Rescue

Power Fail Rescue allows you to resume embroidering a design after the machine has a power loss. A power loss might happen if you encounter an error that requires turning the power switch OFF and then back ON for recovery, or if you have a simple power failure. In either case, follow these steps to regain your position in the design and continue embroidering.

1. If large garments are installed, remove them from all heads while the power is OFF.

2. Turn the power ON. Wait for the machine to download and power up.

3. Scroll through the menus until the display reads HEAD TIMING MENU.

4. Press the [ENTER] key. The display reads HEAD TIMING ON.

5. Press the [ALT][⇑] keys until the display reads GO TO HEADUP.

6. Press the [ENTER] key.

7. Scroll through the main menus until the display reads DESIGN MENU.

8. Press the [ENTER] key. Make sure your design is in the design buffer. If it is not there, reload it from the computer (or the optional disk drive, if that is what you are using).

9. Scroll through the menus until the display reads HOME MENU.

10. Press the [ENTER] key.

11. Press the [⇑] or [⇓] key until the display reads POWER FAIL RESCUE.

12. Press the [ENTER] key. The beam and carriage assemblies will move to find home, then return to the next to last stitch embroidered before the power failure. This may take a minute or so if it is a large design.

13. Reinstall any large garments that you removed in step 1.

14. Press [START]. The embroidery peripheral will continue to embroider the design.

Move Menu

The MOVE MENU allows you to relocate the pantograph to an exact position. The center of the embroidery field is at location 00.00. **X** refers to movement left or right; **Y** refers to movement up or down as explained here:

X Positive = Right of center.

X Negative = Left of center.

Y Positive = Above center.

Y Negative = Below center.

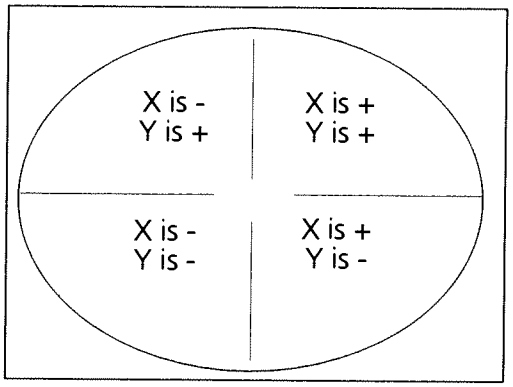


Figure 5 - 3

To use the Move menu, follow these instructions:

1. Press the [MENU] key until the display reads MOVE MENU.

2. Press the [ENTER] key, the display reads MOVE X +00.00 IN.

   Note: The value displayed after the prompt is either the last number entered or the default value of +00.00.

3. To change the value:

   Press the [⇑] key to increase the value by 0.01 inches.
   Press the [⇓] key to decrease the value by 0.01 inches.
   If you press and hold either of the keys, the values continue to increase or decrease. The longer the keys are held down, the faster the value changes.

   Press the [⇒] key to make the value positive.
   Press the [⇐] key to make the value negative.

4. When you have the X value you want, press [ENTER]. The display reads MOVE Y +00.00 IN.

5. Set the Y value using the same directions given for X.

6. Press the [ENTER] key.

7. Press the [START] key and the pantograph moves to the new location.

   Note: Pressing the [ALT] [⇓] keys from any setting resets that X or Y value to +00.00 IN.

When to Use The Move Menu

The MOVE MENU allows the operator to make precise placement of a design by repositioning the embroidery area under the needle.

In Figure 5-4, the machine has already embroidered a Three Letter Monogram on the lower left side of the embroidery field.

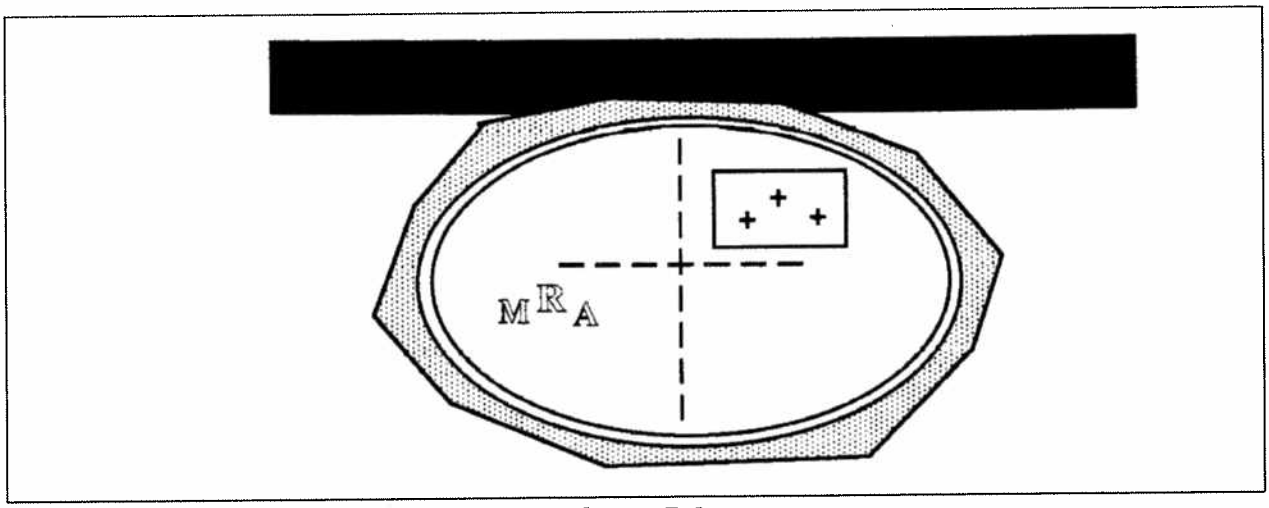


Figure 5-4

The dashed lines show the center of the embroidery field The box with three small plus signs (+) in the upper right shows where we want to embroider the design again. You can embroider any design in the design buffer, as long as it fits in the embroidery field.

1. After the first design is finished embroidering, the display reads END OF DESIGN.

2. Press the [MENU] key to scroll to the MOVE MENU.
   The display reads MOVE MENU.

3. Press the [ENTER] key one time. The display reads MOVE X +00.00 IN.

4. If necessary, press the [⇒] key to make the value positive.

5. Press and hold the [⇑] key and the value increases rapidly. Stop at +2.00.
   The display now reads MOVE X +02.00 IN.

   Note: The X movement of the carriage is in reference to the needle position. That means for the needle position to move to the right in the embroidery field, the carriage must move to the left.

6. Press the [ENTER] key. The display reads MOVE Y +00.00 IN.

7. If necessary, press the [⇒] key to make the value positive.

8. Press and hold the [⇑] key. The value increases rapidly. Stop at +2.50. The display now reads MOVE Y +02.50 IN.

This Y MOVE positions the needle at the top of the embroidery field. If the value was negative, the Y Move would position the needle at the bottom of the embroidery field.

9. Press the [ENTER] key.

10. Press the [START] key. The machine moves in both the X and Y axes to reposition the hoop.

Now that you have used the MOVE MENU to reposition your design, use the TRACE MENU to see if your design fits in the embroidery field.

If this is the only job in the run buffer, and if AutoDelete is turned OFF at the computer, the current job can be embroidered again and again. However, the MOVE MENU must be used each time a design's location needs to be repositioned.

Note: If the message MACHINE RUNNING is displayed, either a job is in progress and must be canceled (see RESET MENU); or a move has been entered but not executed using the [START] key.

Trim Menu (for the EMC 10T and EMC 10/4T)

When designs are created, trim and color change commands are included as part of the design file. When the trim function is enabled, the embroidery peripheral will trim when it encounters:

- A color change command
- A trim command
- The start and the end of a design
- The number of consecutive jump stitches set in the Jump Count option.
- A Trim Immediate selection, if the machine is not embroidering
- A Change Thread or Change Now

The TRIM Menu can only be used when the machine is idle. If you try to enter the TRIM Menu while the machine is embroidering, you will receive the error message, MACHINE RUNNING. The TRIM Menu options are discussed below.

Trim Enabled/Disabled

1. Press the [MENU] key until the display reads TRIM MENU.

2. Press the [ENTER] key.

3. Press the [⇓] key until the display reads TRIM ENABLED or TRIM DISABLED.

4. Press the [⇐] key to change to ENABLE or press the [⇒] key to change to DISABLE.

Trim Immediate

This option can be used to make a one-time, immediate thread trim. This is especially useful when removing a hoop after pressing the [STOP] key. It can also be used to test whether a "Trimmer Not Home" error has been corrected.

1. Scroll to the TRIM Menu and press {ENTER}.
2. Press the [⇓] key until the display reads TRIM IMMEDIATE.
3. Press the [ENTER] key to activate the trimmer. Trim Immediate can only be activated if the heads are STOPPED.

Jump Count

This option allows you to decide how many consecutive Jump Stitches are needed to force an automatic trim. When that number of jump stitches occurs, the machine trims before making the stitches, eliminating a trail of thread across the jump path.

1. Scroll to the TRIM Menu and press [ENTER].
2. Press the [⇓] key until the display reads JUMP COUNT.
3. Each press of the [⇒] key will increase the count by 1
   Each press of the [⇐] key will decrease the count by 1.
4. Press the [ENTER] key when you reach the desired number.

The default jump count is 8. Acceptable values are 0 through 15, but a value of 0 disables the function. For example, if the jump count is 8, and you want to change it to 3, press the [⇐] key five times. That decreases the count to 3 jump stitches.

Bobbin Menu

The BOBBIN MENU allows you to manage the Under Thread Control (UTC) sensor. The UTC sensor recognizes the absence of the bobbin thread. When the embroidery peripheral embroiders a certain number of stitches with no bobbin thread the UTC causes the machine to stop, back up that number of stitches, and display the error message, CHECK BOBBIN.

This process prevents your design from being embroidered without bobbin thread and consequently ruined. It also allows the machine to resume embroidering from the point where the bobbin thread ran out. Once the bobbin thread is restored, you can press the [START] key to continue embroidering. For instructions on installing and testing the UTC sensor, refer to the "Under Thread Control (UTC) Adjustments" section in the *Operator Maintenance* chapter.

Bobbin Ctrl On/Off

This option allows you to turn the UTC sensor ON and OFF. You can turn the sensor OFF if it is malfunctioning and preventing the machine from embroidering when it could do so successfully.

1. Press the [MENU] key until the LCD displays: **BOBBIN MENU**
2. Press the [ENTER] key.
3. Press the [⇑] key until the LCD displays: BOBBIN CTRL ON.
4. Press the [⇒] key to turn the sensor OFF. Press the [⇐] key to turn the sensor ON again.
5. Press [ENTER] to leave this option.

The sensor will stay off until you reconfigure or perform a hard reset.

Bobbin Ctrl Test

This option allows you see if the UTC sensor is operational.

1. Remove the needle plate.
2. Press the [MENU] key until the LCD displays: **BOBBIN MENU**
3. Press the [ENTER] key.
4. Press the [⇑] key until the LCD displays: BOBBIN CTRL TEST.
5. Gently move the UTC sensor arm shown in Figure 5-5. If the sensor is functional, it will beep. (This is not a test for UTC adjustment.)
6. Replace the needle plate.

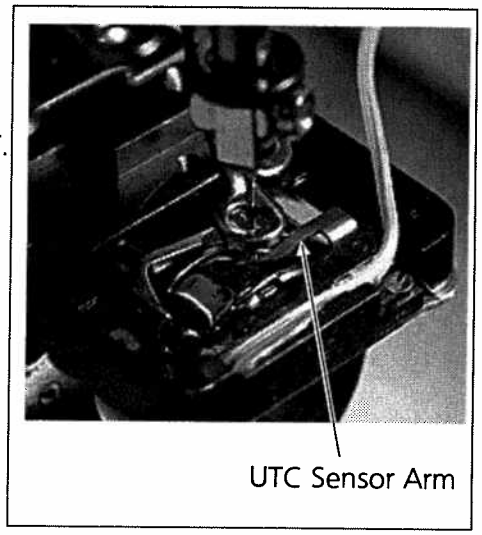


Figure 5-5

Bobbin Count

This option allows you to select the number of stitches the machine can embroider without bobbin thread before the UTC stops the machine. The default and recommended setting is 5.

1. Press the [MENU] key until the LCD displays: **BOBBIN MENU**
2. Press the [ENTER] key.
3. Press the [⇑] key until the LCD displays: BOB. COUNT: X
   X represents the number of stitches.

4. Press the [⇒] key to increase the value or press the [⇐] key to decrease the value.

5. Press the [ENTER] key when the desired value is reached.

Reset Menu

In the RESET Menu you can perform two options:

System Reset	Clears only the Run buffer.
Hard Reset	Clears all operator set parameters. Returns all menu settings to default values. Clears the Run buffer.

System Reset

Performing a "System Reset" clears the run buffer, which has all your currently selected designs. It does not clear the design buffer, which holds all the designs that have been loaded from the computer. For a system reset:

1. Press the [MENU] key until the display reads RESET MENU.

2. Press the [ENTER] key. The display reads SYSTEM RESET.

3. Press the [ENTER] key. The display reads **RESET**.

Hard Reset

A HARD RESET returns all operator selected values to their default settings and clears the run buffer. You must Set Home before you can embroider again.

1. Use the [MENU] key to scroll to the RESET MENU. Press the [ENTER] key to display the SYSTEM RESET message.

2. Press the [⇑] or [⇓] key. The display reads HARD RESET.

3. Press the [ENTER] key. The display reads **RESET**.

4. After a short pause press the [ENTER] key. The display reads MEMORY CLEARED.

The embroidery peripheral memory has

- Cleared the stitch count
- Reset operator supplied parameters to default values in the MOVE, TRACE, HOME, COLOR, ORIENTATION, TRIM, and BOBBIN Menus

6. Cap Frames

Because a cap is not flat, it cannot be stretched tightly in a flat hoop. And, as stated earlier, if a garment is not hooped properly, it will not embroider well. To solve this problem, a special device called a cap frame has been created that can hoop a cap's curved shape.

There are three parts to a cap frame:

- The cap hoop which holds the cap
- The cap frame driver which attaches the cap hoop to the machine
- The two mounting brackets attached to the arm of each head which hold the cap frame driver firmly in place

Installing the Cap Frame

Attach the cap frame by following these steps and consulting Figures 6-1 and 6-2.

1. Remove the table top insert from the embroidery area. This gives you access to the cap frame mounting brackets under the bed of the head.

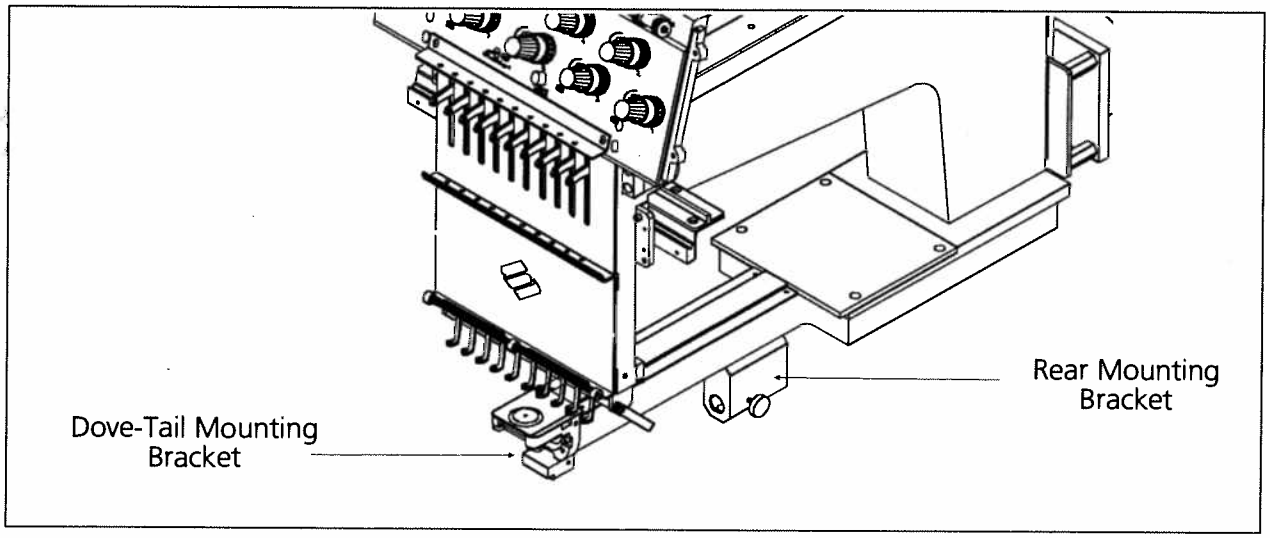


Figure 6-1

2. Center the carriage assembly in both X and Y directions using the arrow keys.
3. Under the cylinder arm, locate these two cap frame mounting brackets:
   - A dove-tail bracket under the needle area
   - A bracket with a round hole at the rear of the head.
4. Loosen the thumb screw on the rear mounting bracket.
5. Loosen the thumb screw on the dove tail bracket on cap frame.

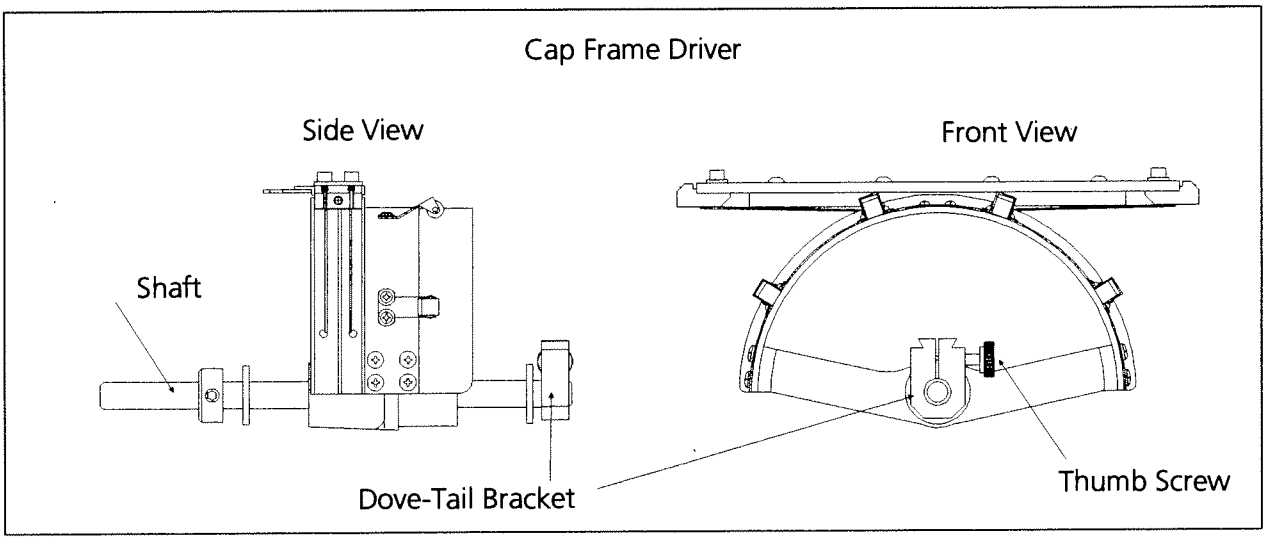


Figure 6-2

6. The cap frame driver has a hoop bracket on top of it. Pulling the cap frame shaft towards you, attach the hoop bracket to the carriage. It attaches just like a regular hoop.

7. Guide the cap frame shaft into the hole in the rear mounting bracket. At the same time, insert the dove-tail bracket into the dove-tail mount.

8. Push the cap frame shaft into the bracket hole as far as it will go.

9. Tighten the thumb screw on the rear bracket

10. Tighten the thumb screw on the dove-tail bracket.

11. Repeat this procedure for each head on a four-head peripheral.

Using the Cap Hoop Gauge

When you work with a regular hoop, you can lay it down and hoop on any flat surface. But the cap hoop is curved and difficult to control on a flat surface. The cap hoop gauge clamps to the edge of any table and resolves this problem. After the gauge is clamped, you can snap the cap hoop into it and hoop a cap with both hands free. Refer Figure 6-3 and follow these steps:

1. Place the square spacer between the table and the clamp.

2. Tighten the clamp until the gauge holds firmly.

3. Snap the cap hoop onto the gauge. Locate the slots in the cap frame under the nylon rollers in the gauge.

4. Hoop the cap following the instructions on the next page.

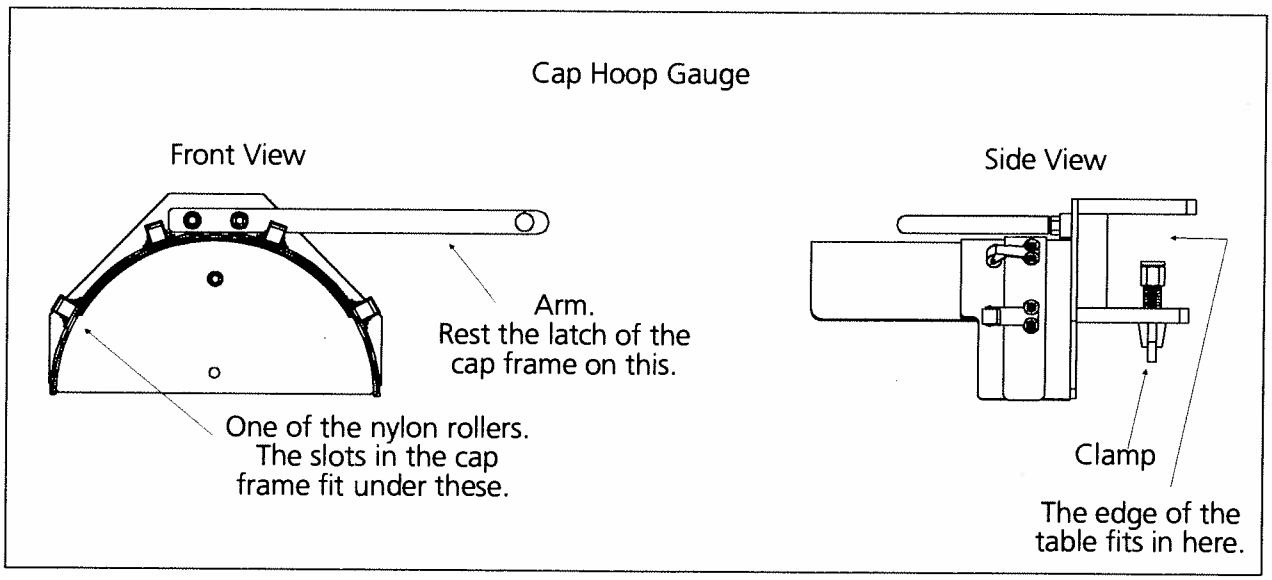


Figure 6-3

Hooping a Cap

To hoop a cap, follow these steps and see Figure 6-4

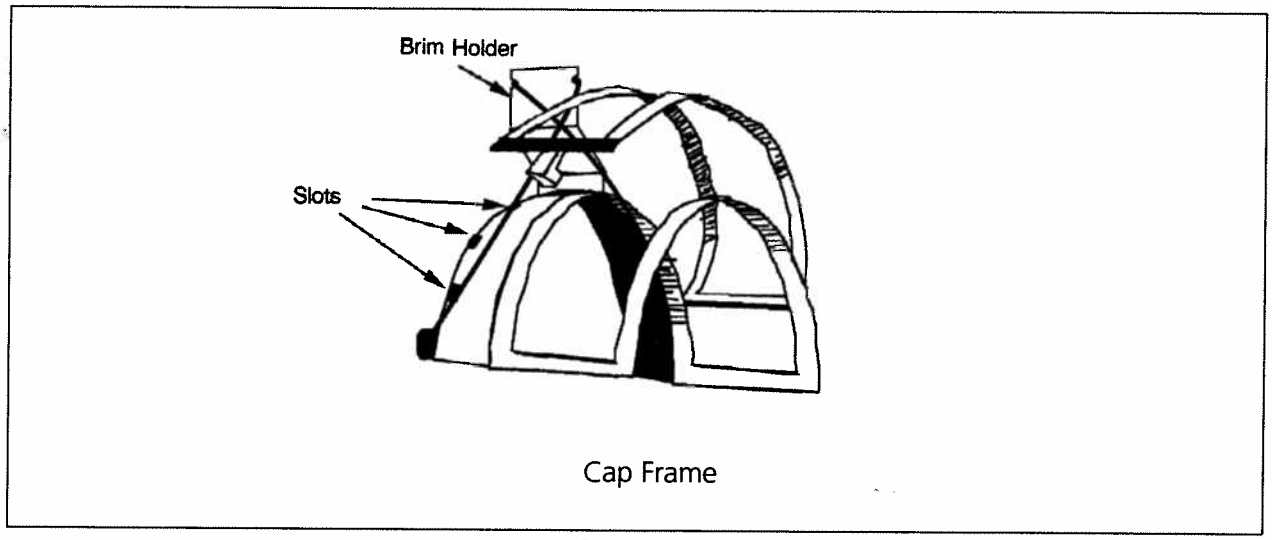


Figure 6-4

1. With the latch on the left side, open the cap frame and rest the cover on the arm of the gauge.
2. Remove any cardboard or packing material from the cap.
3. If the cap has a sweat band, pull it to the outside.
4. If you are using backing, place it inside the cap.

5. Slide the cap on the hoop frame so that:
    - The brim of the cap is away from you
    - The front of the cap is up
    - The sweat band is under the square retainer at the center of the frame
    - The sides of the cap are inside the outer arms of the cap frame
6. Push the cap onto the cap frame until the embroidery field is centered. Since caps come in different styles and sizes, you will have to determine how far forward the cap should be.
7. Hook the wire of the hoop latch over the catch, but do not fasten it.
8. Pull the cap as straight, fold free, and taut as possible.
9. Use your right hand to grasp the cap securely from underneath while you fasten the frame latch with your left hand.
10. Pull the elastic cord of the frame over the brim of the cap to secure it.
11. Snap the hoop out of the frame gauge.
12. Install the cap frame on the cap frame driver by aligning the frame and the driver, then snapping the frame slots under the roller clamps on the driver.
13. Repeat this procedure for each head on a four-head peripheral.

Using a Raised Needle Plate

Cap embroidery may be improved by using the raised needle plate. When the cap frame is attached, the curve of the frame leaves extra space between the needle plate and the cap. This sometimes creates poor embroidery quality.

To eliminate this space, you can switch to a raised needle plate on each head that is embroidering with a cap frame driver. When you embroider with this needle plate, you must also put extra shims around the needle bar in the needle case. The shims raise the presser foot to compensate for the height of the raised needle plate. This must be done on each head.

When you return to embroidering flat goods, switch the heads back to the normal needle plate and remove the extra spacers.

7. The Sash Frame

The sash frame, shown in Figure 7-1, is an option available on the EMC 10/4 and EMC 10/4T Embroidery Peripherals only. It is an aluminum rectangle that attaches across the full length of the pantograph, using the table tops for support. With the sash frame you can hoop a single piece of fabric to be embroidered by all four heads instead of using four individual hoops. The material is held in place by fabric clips that are included with the sash frame. The sash frame has a maximum embroidery field per head of 10 inches by 16 inches. This is reflected in the Select Hoop option, *SASH FRAME 10x16*.

Sash Frame

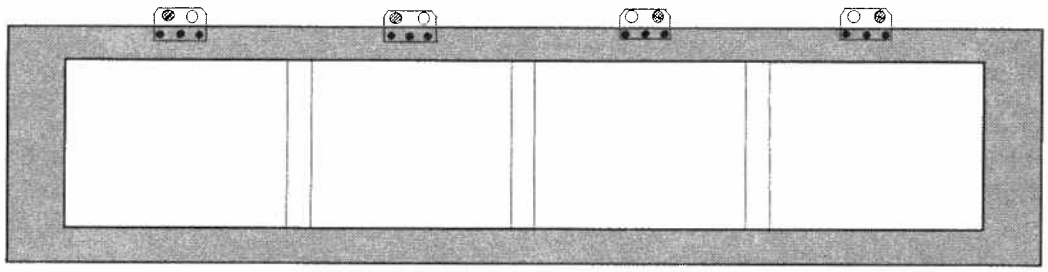


Figure 7-1

Often, only the backing material is hooped in the sash frame, and several smaller pieces of fabric are fixed on top of the backing with a non-permanent fabric adhesive. This procedure reduces hooping time and permits a high rate of production on parts of preassembled garments like labels, patches, collars, and pockets. This is a widely accepted industry practice, but appropriate caution must be used to align and fix the small pieces on the backing.

You can leave the sash frame attached to the EMC 10/4 and still use special individual hoops called spider hoops. These round hoops attach to the sash frame and nest inside one another to create a variety of sizes listed in Appendix A. Spider hoops are sold as a separate option.

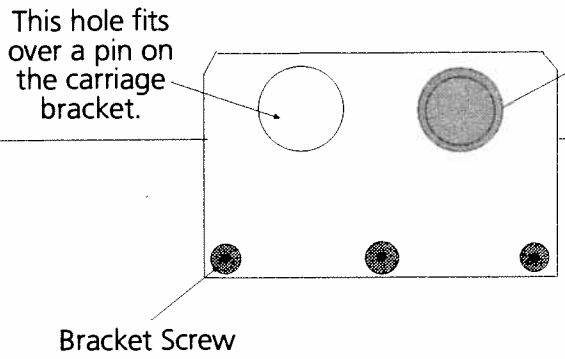
Installing the Sash Frame

The sash frame is assembled at the factory with the mounting brackets left slightly loose. This allows easier alignment of the sash frame on the pantograph. The first time you install the sash frame, you will tighten the bracket screws after it is in place. Follow these instructions and consult Figures 7-2 and 7-3.

1. Before installing the sash frame, make sure the table tops are in place. Without support from the table tops, it is possible to damage or bend the sash frame.

2. Guide the sash frame under the heads with the brackets toward the pantograph.

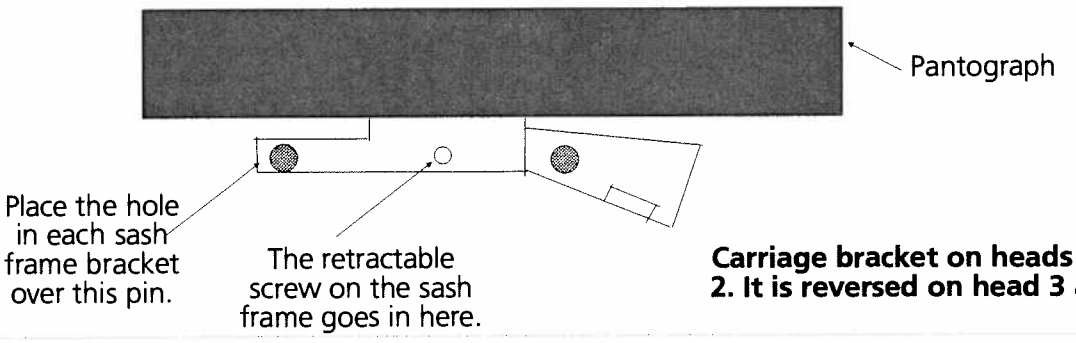
3. Fit the sash frame bracket holes over the fixed pins in the carriage brackets.



A sash frame bracket for heads 1 and 2. The brackets for heads 3 and 4 have the positions of the retractable screw and pin hole reversed.

Figure 7-2

4. Insert the retractable screw on each sash frame bracket into the corresponding hole on the pantograph. As you align each screw with the hole, tighten it manually.



Carriage bracket on heads 1 and 2. It is reversed on head 3 and 4.

Figure 7-3

5. After all the retractable screws are in place, finish tightening each one using a flat-blade screw driver. **Do not overtighten these screws**.

6. This step is **only done the first time** you install the sash frame. Locate the three bracket screws shown in Figure 7-2. Tighten all the screws on each of the four brackets--a total of 12. Use the 2 mm hex wrench that comes with the sash frame assembly.

Storing the Sash Frame

The sash frame will not operate properly if it is becomes bent or warped. Store it carefully when not in use. If possible hang it up, suspended from one of its long sides.

Hoop Selection

Before you embroider with the sash frame, be sure to set the Select Hoop option in the Home menu to either the sash frame or one of the spider hoops, depending on which you are using. Failure to do so may damage the machine.

Hooping on the Sash Frame

The basic rules of hooping apply to the sash frame. The fabric must not have any folds or creases, and it must be pulled tight across the frame as shown in Figure 7-4.

The sash frame, hooped and installed on the EMC 10/4

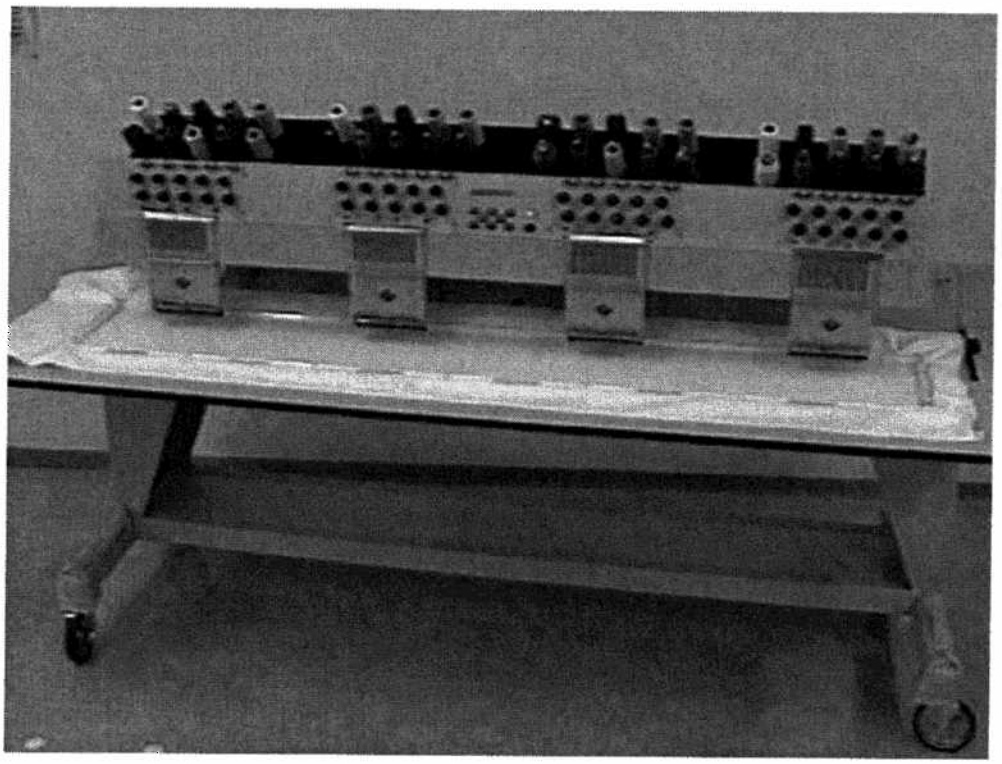


Figure 7-4

When hooping on a sash frame that is not attached to the machine, place it on a flat, well supported surface. When the sash frame is attached to the machine, make sure the table tops are in place.

1. Lay all layers of fabric over the sash frame as straight and smooth as possible.

The fabric is held in place by clips that snap over the fabric and the rounded inner edge of the sash frame as shown in Figure 7-5. The clips come in two sizes, the long ones are used across the front and back of the sash frame, the short ones are used on the ends.

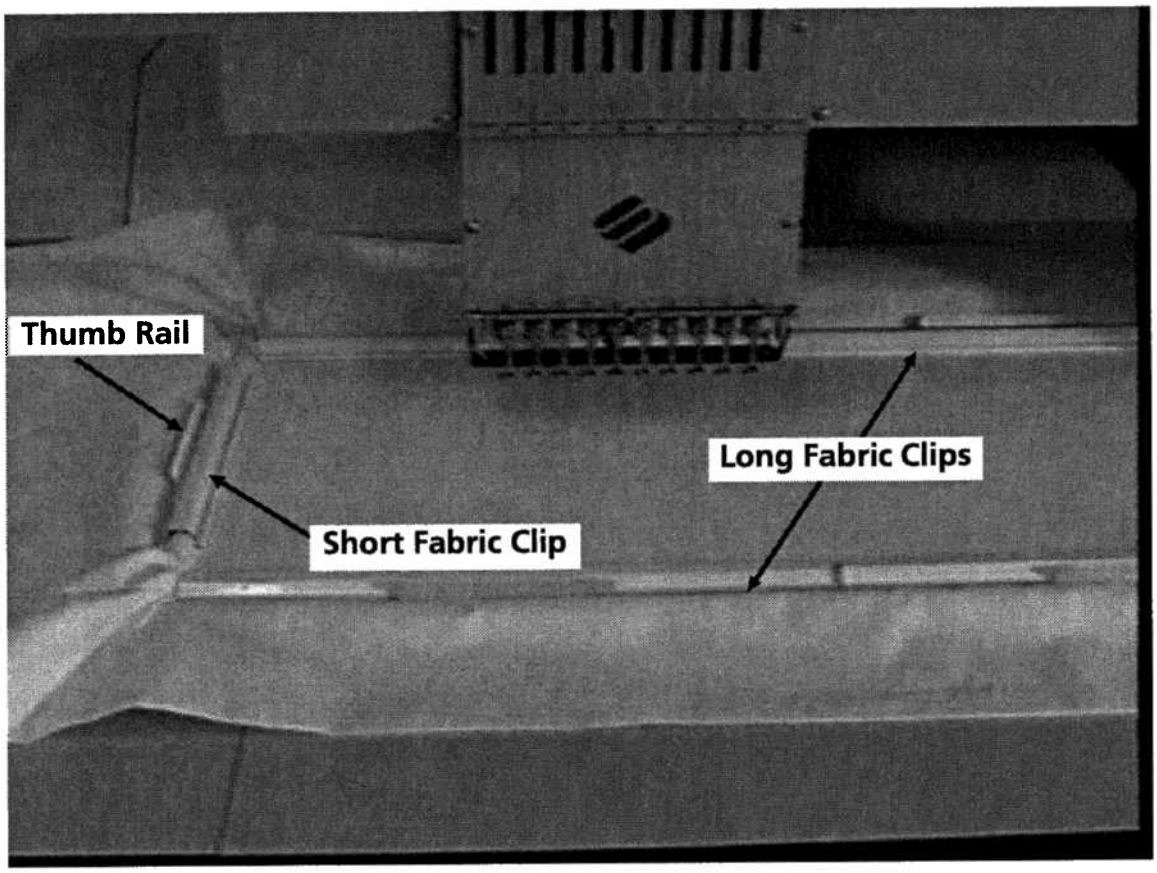


Figure 7-5

2. Attach the first clip on the back (the side that attaches to the pantograph) of the sash frame near one of the corners. The thumb rail on the clip always goes on the outside.

3. Keeping the fabric straight and smooth, continue attaching clips across the back of the frame. Six clips will fit across the back of the frame.

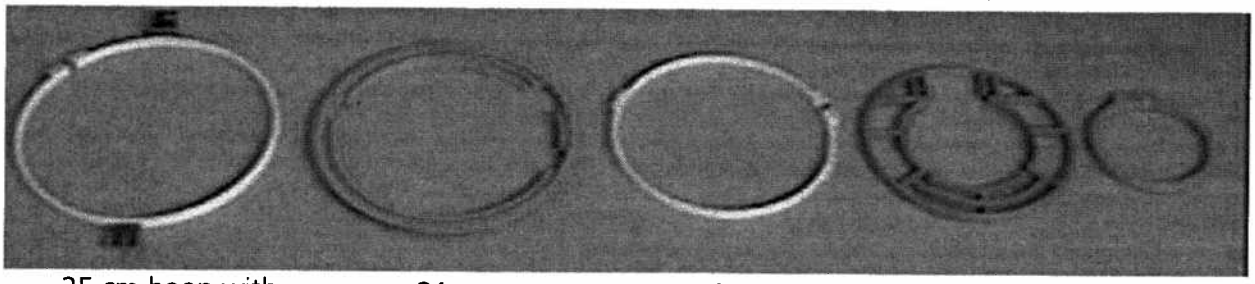
4. Stretching the fabric tight and keeping it fold free, attach a clip at one corner on the front. Continue attaching clips across the front of the frame.

   Note: Do not pull the fabric so tight that it rises above the bottom of the sash frame or lifts any of the fabric clips out of place. This could result in poor embroidery quality.

5. Attach a short clip on each end of the sash frame.

Spider Hoops

A spider is a hoop or ring that holds another hoop. Spider hoops fit on the sash frame and allow you to hoop garments individually without removing the sash frame. The outermost hoop has brackets that attach to the sash hoop. The other hoops nest inside each other. Figure 7-6 shows one possible assembly of a set of spider hoops. Notice the brackets on the hoop on the left:



25 cm hoop with brackets that attach to the sash frame | 21 cm Spider | 21 cm Hoop | 9 cm spider | 9 cm Hoop

Figure 7-6

To install spider hoops, follow these instructions and refer to Figures 7-6 and 7-7.

1. With the sash frame installed, attach the thumb screws for the spider hoop into the sash frame, but do not tighten them.

2. The 25 cm hoop has two slotted brackets. One slot opens directly away from the hoop (A in Figure 7-7), the other opens to the side (B in Figure 7-7). Slide slot A under the front thumb screw with the hoop tilted to the side.

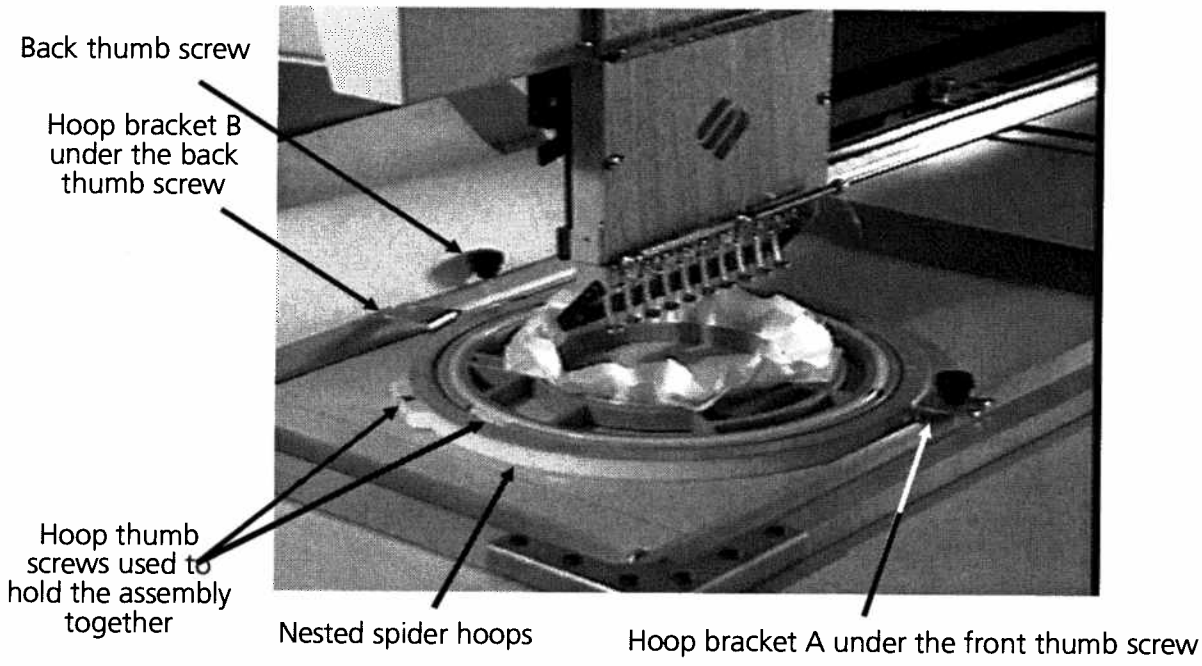


Figure 7-7

3. Swing the hoop so that slot B slides under the other thumb screw.
4. Tighten the thumb screws.
5. Repeat the procedure on all heads.
6. The hoop can be removed and reinstalled without removing the thumb screws. Just loosen the screws and slide the hoop out, then back in place and re-tighten the thumb screws.
7. When you resume embroidering with the full sash frame, remove all the spider hoop thumb screws. You cannot hoop fabric properly on the sash frame with these screws in place, and you might hit a screw with part of the head.

The following steps describe how to assemble the hoops pictured in Figure 5-6:

8. Push the 21 cm spider down into the 25 cm hoop as far as it will go.
9. Nest the rest of the hoops in the order shown.
10. The hoop assembly is held together by tightening the thumb screws on the outer edge of the hoops.

Replacing the Pads

Twelve felt pads are attached to the bottom of the sash frame to reduce friction and noise, and an extra set of pads is included. When the pads begin to show wear, pull off the old pads and clean the area with a solvent such as rubbing alcohol. Attach the new pads by peeling the paper away from the sticky surface and pressing them into place. Make sure you replace the entire set so the sash frame will ride evenly on the table tops. Additional sets of pads may be ordered from your Melco representative.

8. Operator Maintenance

The embroidery peripheral is designed to perform reliably for years. To keep the machine running at peak efficiency, several maintenance procedures must be performed on a regular basis.

As with any electronic equipment, when you are working inside the embroidery peripheral, use caution and follow the instructions carefully. Do not touch or remove parts unless directed to do so.

Cleaning the Embroidery Peripheral

The proper cleaning and lubrication of your embroidery peripheral will reduce wear on parts and reduce your down time due to mechanical problems.

In this section you will learn the correct way to lubricate embroidery heads and other mechanical assemblies. Follow the lubrication schedules and cleaning instructions presented in this section, and your machine will give you many hours of productive embroidery.

The Machine's Exterior Surfaces

Clean outer plastic surfaces with a soft, clean cloth, a mild detergent and water. Wring out the cloth before wiping the surfaces. Do not get water or any other fluids inside the machine or on any of the working mechanical surfaces.

NOTICE: In the event of an accidental spill, mop up the excess fluid with a clean dry cloth and allow the machine to dry completely before turning the power on. If the fluid gets inside the plastic covers, you must remove the covers to access the interior. You may need to call your Melco representative for advice.

✱ The Rotary Hook Area ✱

1. Turn the machine power OFF.
2. Remove the 2 screws holding the needle plate and lift it off.
3. Clean the exposed area with the brush supplied in the operator's kit.

The Thread Break Posts

The thread break post is the brass cylinder just above the spring on each tensioner as shown in Figure 8-1. When the tensioner spring rests against the thread break post, it is a signal to the machine that a thread break has occurred. Lint or dust on the post may interfere with this signal. To make sure this does not happen, keep the posts free of any debris. If necessary, you can wipe them off with a soft cloth and rubbing alcohol.

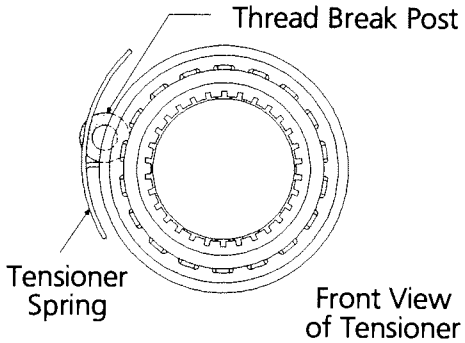


Figure 8-1

Lubricating the Embroidery Peripheral

Packed in the tool pouch is a bottle of light duty sewing machine oil and a small tube of grease for lubricating the embroidery peripheral. Using a lubricant as directed will prolong the productivity of your machine, but it should be used sparingly. Too much lubrication can cause mechanical and quality problems. For example, over-lubricating the needle bar can cause oil to drip onto the fabric you are embroidering. Over-lubricating the rotary hook assembly can cause oil deposits on the bobbin thread which is transferred to the fabric. It can also cause a build-up of dust and lint that may bind the bobbin shaft.

The Embroidery Head

The areas in the embroidery head that need lubrication are the needle bar, the needle bar driver, the upper and lower section of the connecting rod, and the rotary hook. Some of these lubrication points are in small dark areas, so use a flashlight to make it easier to see what you are doing.

The table below is a lubrication schedule for areas of the embroidery head.

Embroidery Head Lubrication Schedule		
LUBRICATION POINT	LUBRICANT	FREQUENCY
Rotary hook	Sewing Machine Oil	Every 4 operating hours
Upper needle bar	Sewing Machine Oil	Every 80 operating hours
Lower needle bar	Sewing Machine Oil	Every 80 operating hours
Needle bar driver	Sewing Machine Oil	Every 80 operating hours
Connecting rod, upper section	Sewing Machine Oil	Every 40 to 80 operating hours
Connecting rod, lower section	Sewing Machine Oil	Every 200 operating hours
V-rail	Sewing Machine Oil	Every 80 operating hours
Color Change Cam	Grease	Every 3 months
Y-rail	Sewing Machine Oil	Every 3 months

The Rotary Hook

1. Slide out the table insert to gain access to the rotary hook area.
2. Remove the bobbin case and bobbin from the hook assembly.
3. Turn the embroidery peripheral ON.
4. After the embroidery peripheral program downloads, press the [MENU] key until the display reads HEAD TIMING MENU.
5. Press the [ENTER] key.

6. Press the [ALT][⇓] keys 2 times. This rotates the hook assembly to the position required for lubrication.

NOTE: The display will say "NEEDLE DEPTH." However, performing just steps 5 and 6 **will not** move the machine to the "needle depth" position. See the Head Timing section of this manual if you wish to set Needle Depth.

7. Place one drop of oil at the location on the hook assembly shown in Figure 8-2. Oil this area every four hours.

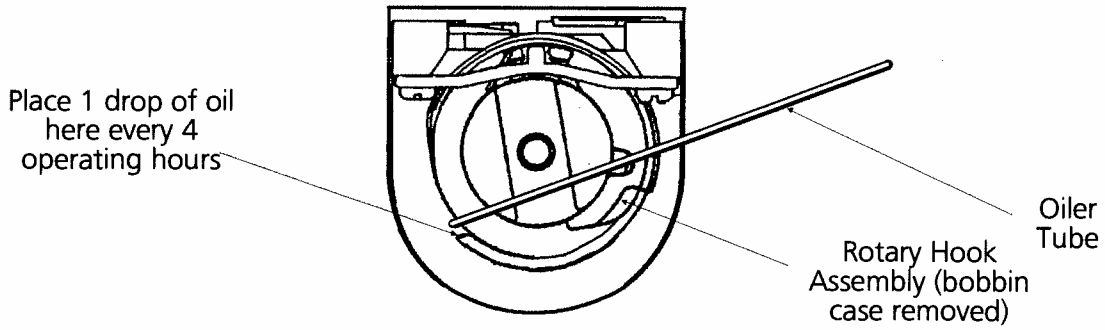


Figure 8-2

The Needle Bars

The needle bars are accessed from the front of the needle case and must be lubricated at both their upper and the lower ends as shown in Figure 8-3

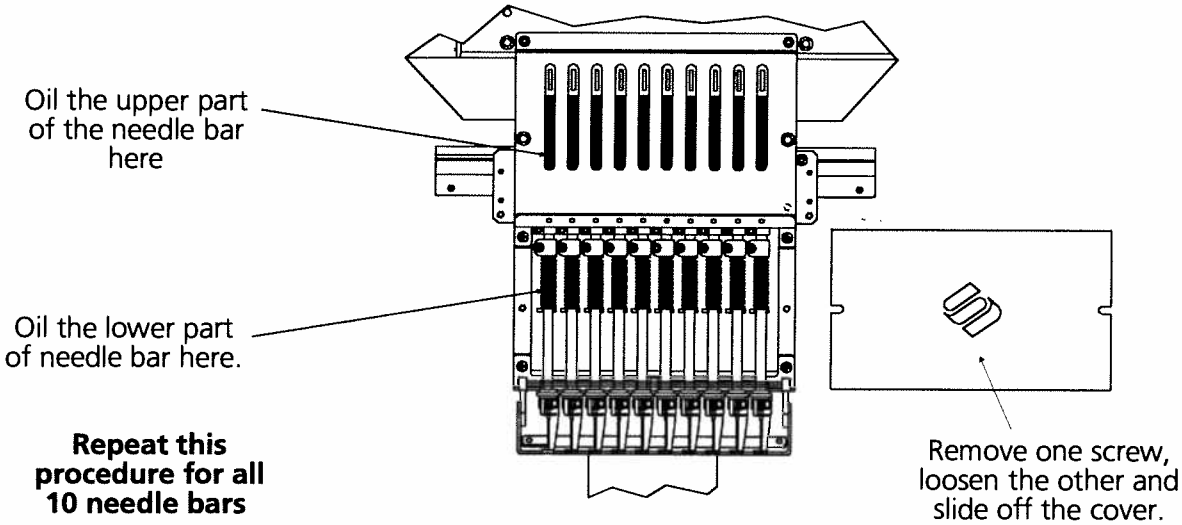


Figure 8-3

Lower Needle Bar

The lower needle case cover must be removed to oil the lower needle bars. The cover is held on by two screws. Remove either one of the screws and loosen the other one. Then, you can slide the cover to the side and off the machine. The needle bars have coiled springs around them. Place the oiler tube through the spring, near the bottom of the first bar. Place 1 to 2 drops of oil on each bar every 80 operating hours. Replace the needle case cover.

Upper Needle Bar

The take-up lever slots are in the upper needle case cover. Look inside one of the slots, and you can see the upper part of the needle bar. Place the oiler tube through the slot and the spring around the needle bar. Place 1 to 2 drops of oil on each bar in the location indicated every 80 operating hours.

The Needle Bar Driver

The needle bar driver is lubricated by placing oil in the take up lever guide rail. Move to needle 1 or 10 to access the oil reservoir in the rail. Put 3 to 5 drops of oil in the reservoir as shown in Figures 8-4 and 8-5. The entire needle bar driver will be lubricated as it moves up and down. Lubricate this area every 80 operating hours.

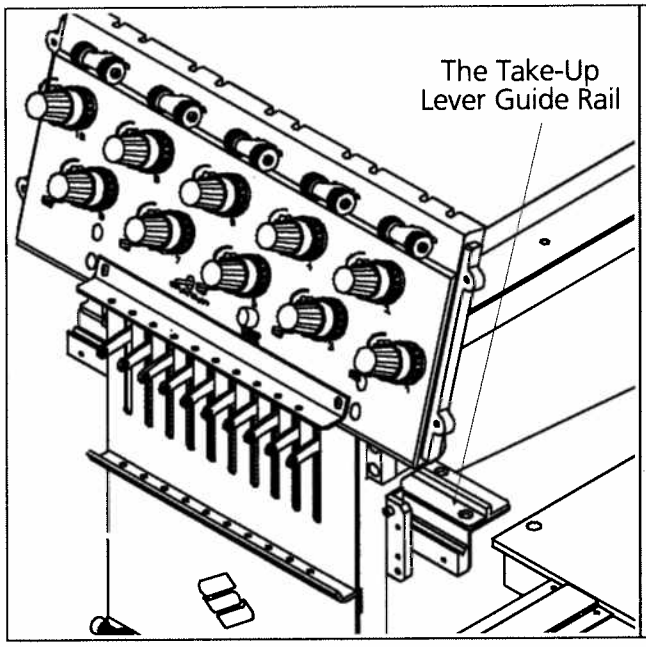


Figure 8-4

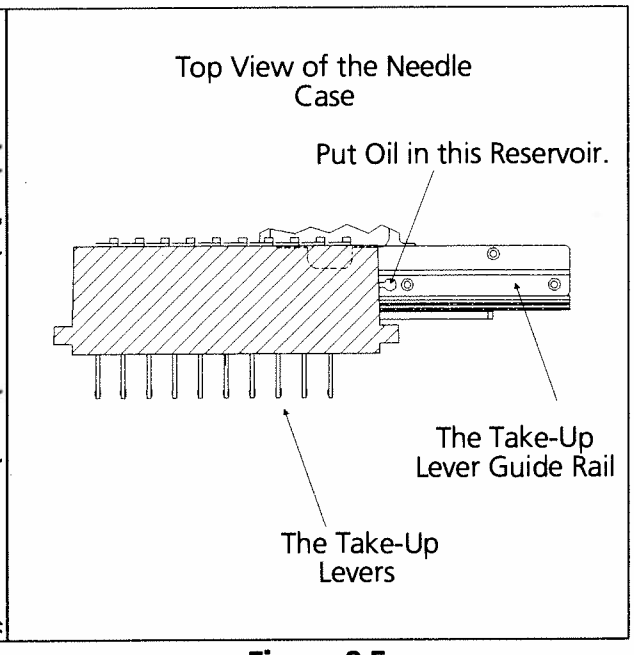


Figure 8-5

The Upper Connecting Rod

The upper connecting rod is accessed near the lower right side of the needle case, follow these steps and refer to Figure 8-6.

1. Move to needle 1.
2. To the right of the needle case, locate the front arm cover.
3. Loosen both screws.

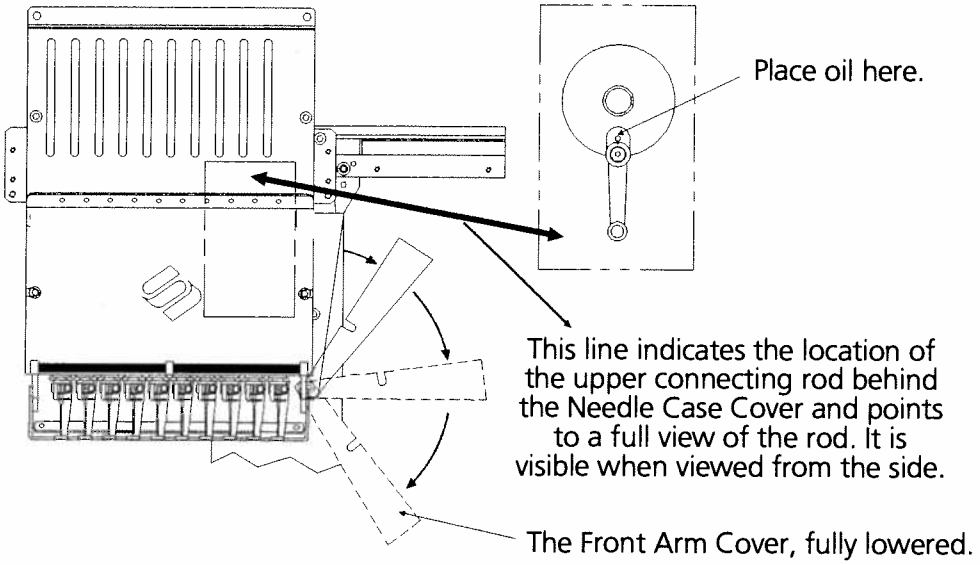


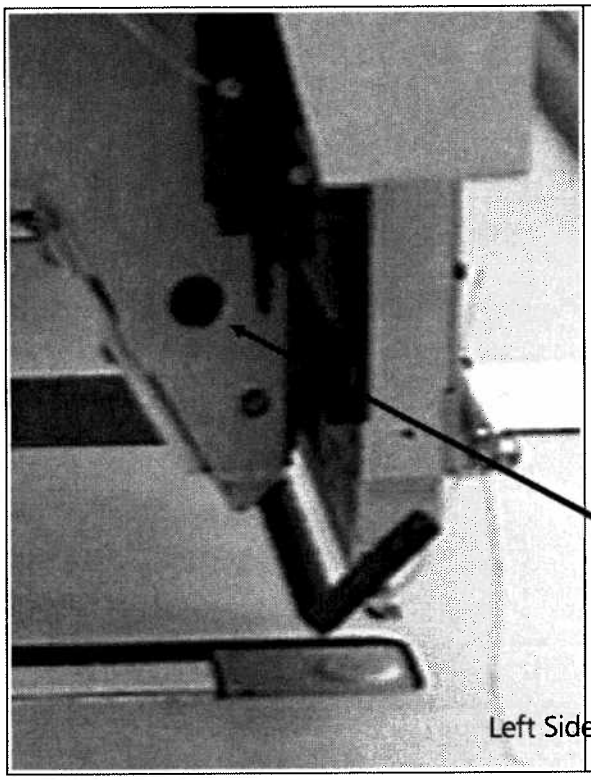
Figure 8-6

4. Swing the cover down and to the right.
5. On the keyboard, scroll to the Head Timing menu.
6. Press the [ENTER] key. The LCD displays: HEAD TIMING
7. Press the [ALT][⇑] keys one time. The LCD displays: GO TO HEADUP
8. Press the [⇓] key. The LCD displays: NEEDLE DEPTH. Now you can see the connecting rod as shown in Figure 8-6.
9. Put 1 to 3 drops of sewing machine oil in the hole at the top of the connecting rod. Do this every 40 to 80 operating hours.
10. Replace the front arm cover securely.

The Lower Connecting Rod

The lower connecting rod is accessed on the left side of the head. Follow these steps and refer to Figures 8-7 and 8-8:

1. Press the [MENU] key until the LCD displays Head Timing Menu.
2. Press the [ALT][⇑] keys.
3. Press the [ALT][⇓] keys.
4. Press the [⇒] key.
5. Put the oiler tube through the access hole marked with a red ring.
6. Put 1 to 3 drops of sewing machine oil on the lubricating point of the rod. Do this every 200 operating hours.



Left Side of Head

Figure 8-7

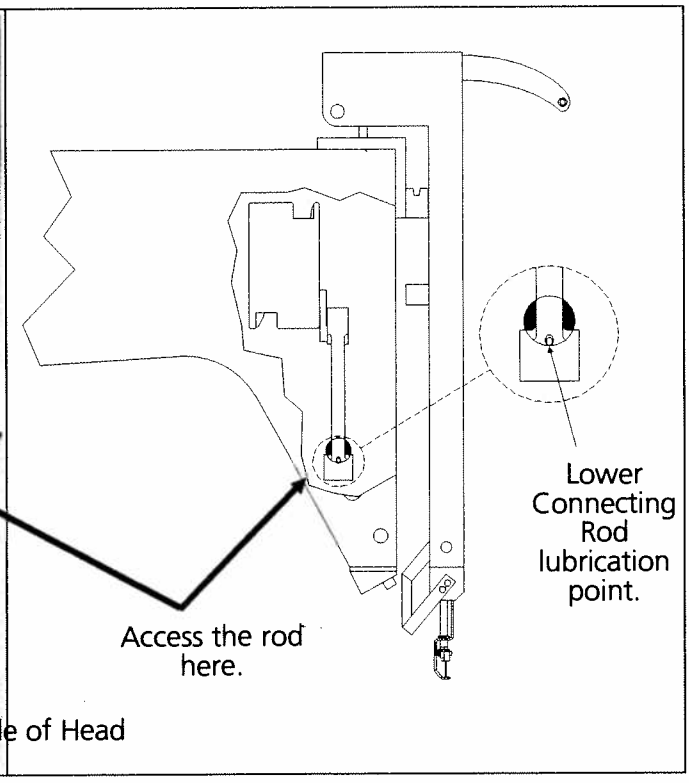


Figure 8-8

The V Rail

When the needle case moves, it glides along the V rail shown in Figure 8-9. Lubricate the V rail every 80 hours by following these steps:

1. Move the needle case to needle 1.
2. Place 1 drop of sewing machine oil in the groove every 80 hours.

Do not over lubricate because dust and lint will accumulate, and the rail must be kept clean.

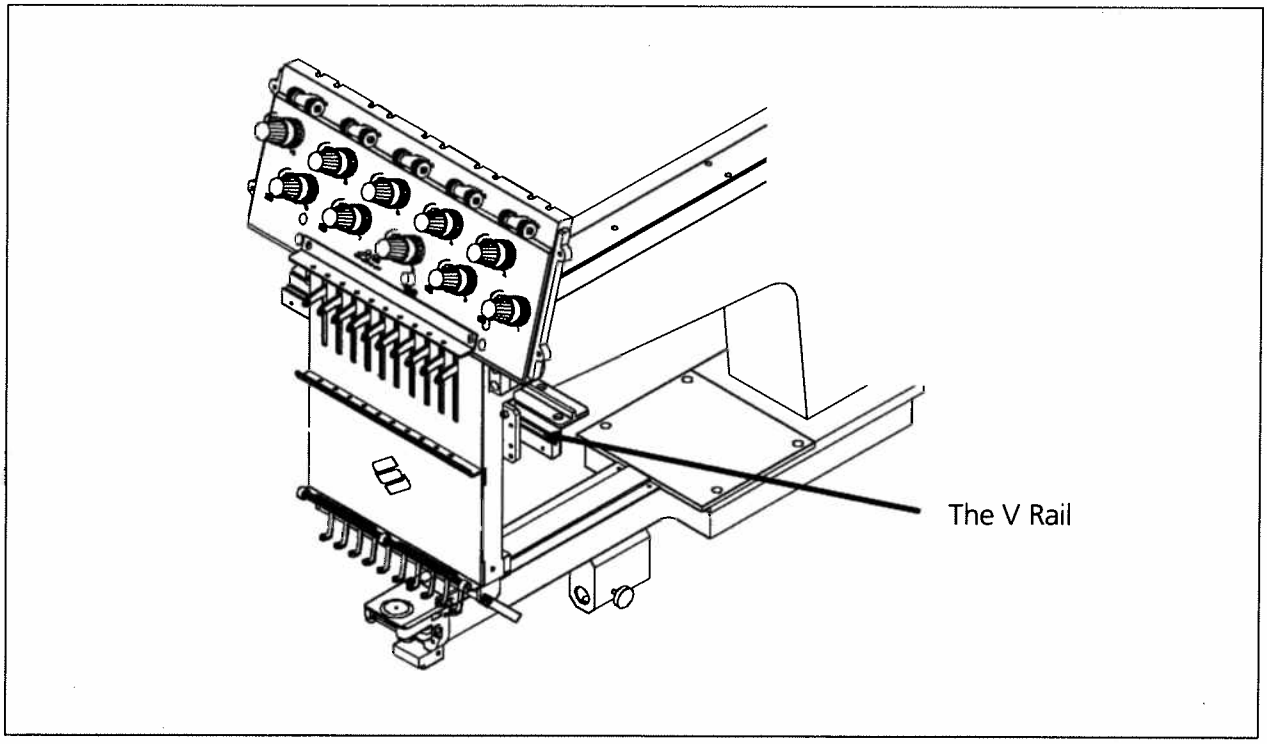


Figure 8-9

The Color Change Cam

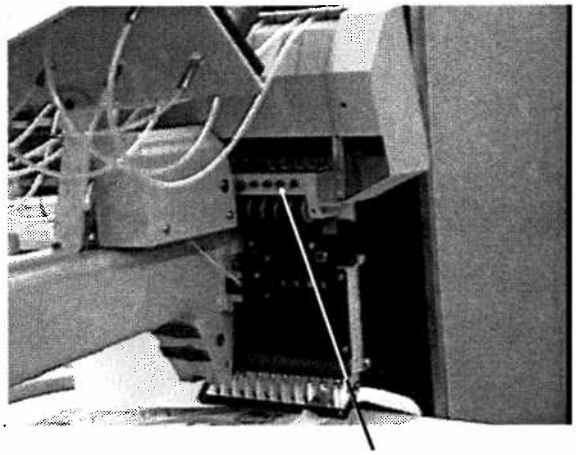
The color change cam moves the needle case during a color change. The easiest way to lubricate it is to grease the pins that come in contact with it when the needle case moves. Five of these pins are accessible when the needle case is on needle 1 as shown in Figures 8-10 and 8-11. Follow these steps:

1 Move the needle case to needle 1.

2. Locate the pins on the back of the needle case.

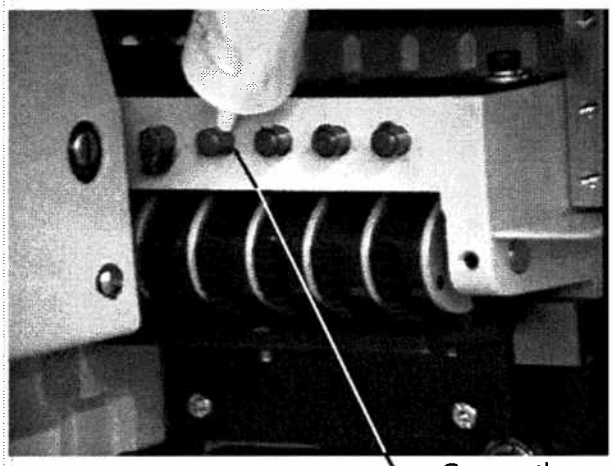
3. Place a small dab of grease on the accessible pins. **Do not over-grease this area!** An excessive amount of grease on the pins may interfere with the color change PCB electronics.

4. Move the needle case from needle 1 to needle 10 four or five times to transfer the grease to the cam.



Location of the pins on the back of the needle case

Figure 8-10



Grease these five pins.

Figure 8-11

The Pantograph (Four-Head Peripherals ONLY)

There are Y-rails at both ends of the pantograph, and they should be lubricated every 40 to 80 operating hours. The rails are normally covered by the table top, but are accessible through slots in the tops as shown in Figures 8-12 and 8-14. Figure 8-13 shows the rail when the table top is removed.

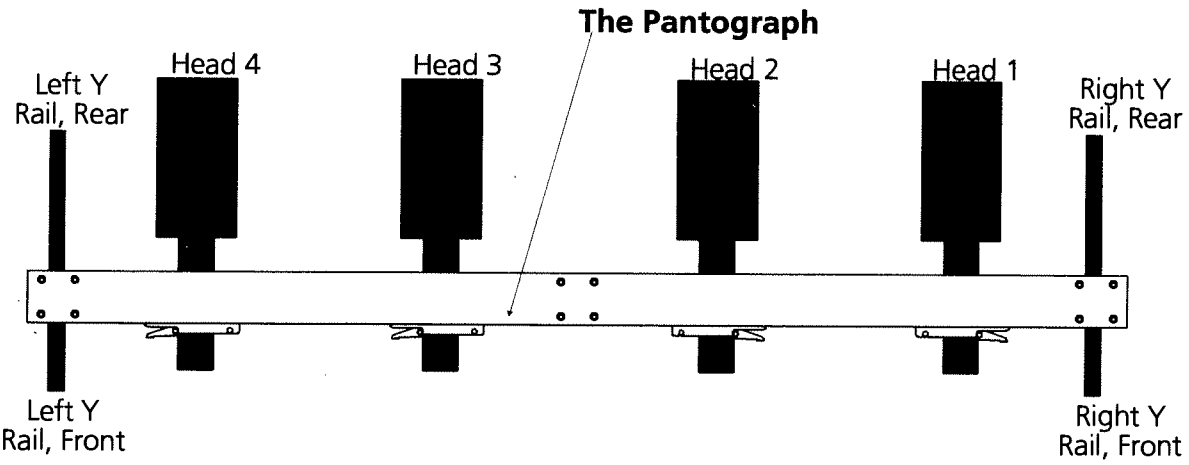
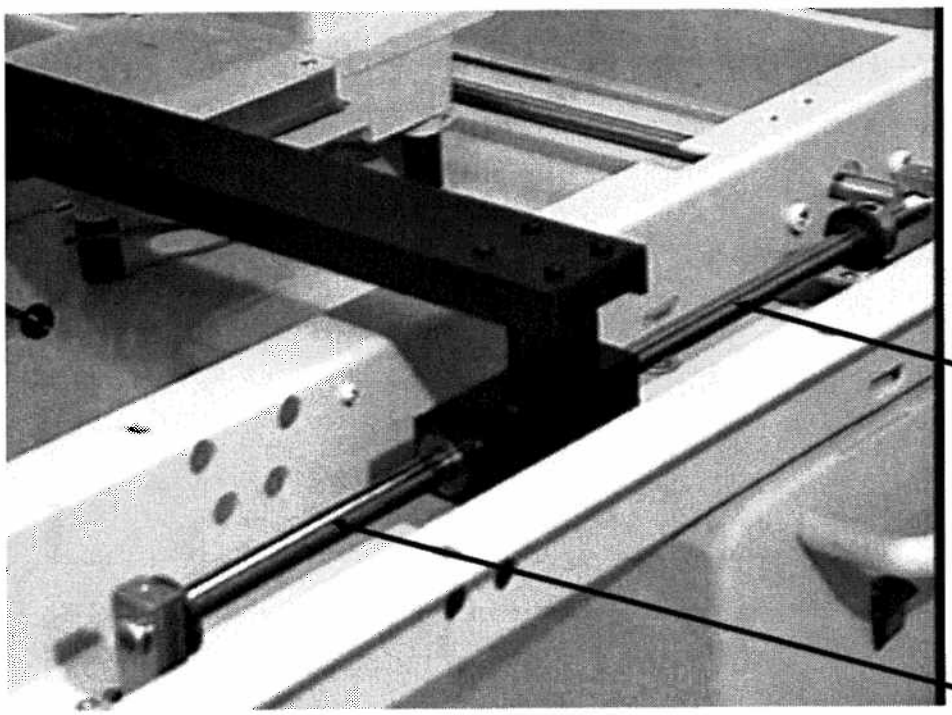


Figure 8-12

1. Locate the right Y-rail slot.
2. Insert the oil bottle tube through the slot and place one to two drops of oil on the front and on the back of the of the Y-rail.
3. Locate the Y-rail slot on the left end of the machine.
4. Insert the oil bottle tube through the slot and place one to two drops of oil on the front and on the back of the Y-rail.
5. Move the pantograph back and forth four or five times to distribute the oil. You can do this manually if the machine is OFF, or using the keyboard if the machine is ON.

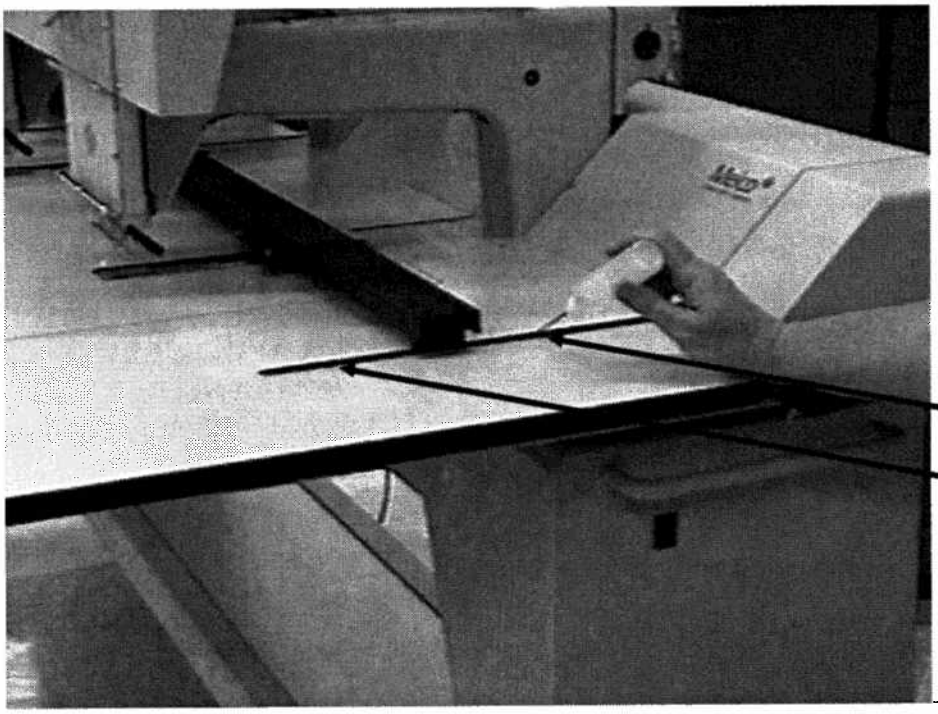


The right end of the pantograph with the table top removed.

The right, rear Y-rail.

The right, front Y-rail.

Figure 8-13



The Y-rail can be lubricated with the table top in place by inserting the oiler tube through the slot.

Place 1 to 2 drops of oil on both the front and rear of the Y-rail. Repeat on the left Y-rail.

Figure 8-14

The Trimmers (on the EMC 10T and EMC 10/4T)

The optional trimmer assembly is located under the embroidery head bed as shown in Figure 8-15. It trims the thread at color change and trim immediate commands. The trimmer assembly must be lubricated on the schedule given below:

Trimmer Lubrication Schedule		
LUBRICATION POINT	LUBRICANT	FREQUENCY
Moveable Frame Rollers	Sewing Machine Oil	Every 480 Operating Hours
Trimmer Knife Arm Front Pin	Sewing Machine Oil	Every 480 Operating Hours
Trimmer Knife Drive Arm	Sewing Machine Oil	Every 480 Operating Hours
Trimmer Picker Base Shaft	Sewing Machine Oil	Every 480 Operating Hours

The Rear of the Trimmer

1. Remove the rear bed cover shown in Figure 8-15.

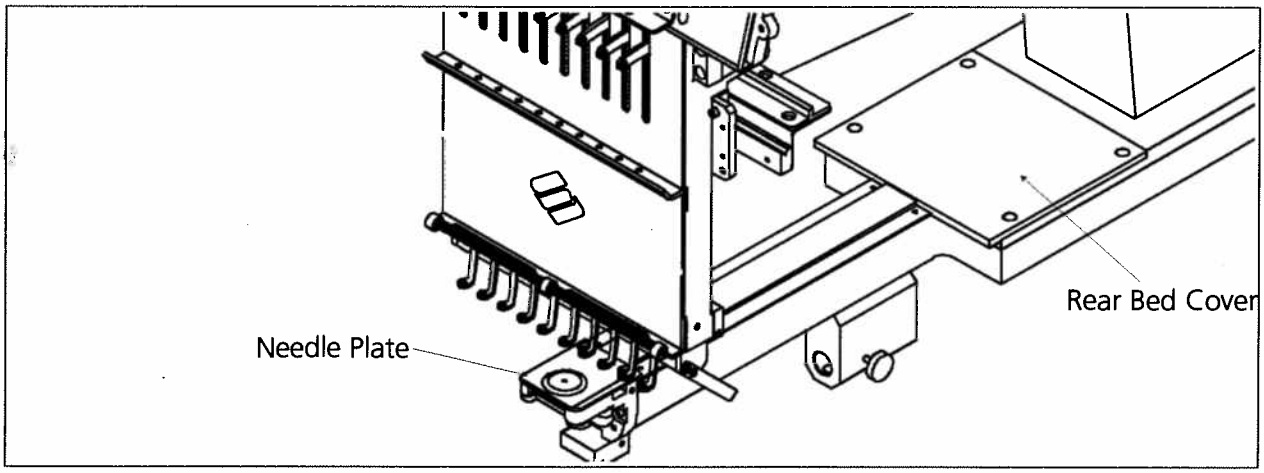


Figure 8-15

2. Place a drop of sewing machine oil at these points shown in Figure 8-16:
   Trimmer knife arm, rear pin
   Movable frame rollers, four places

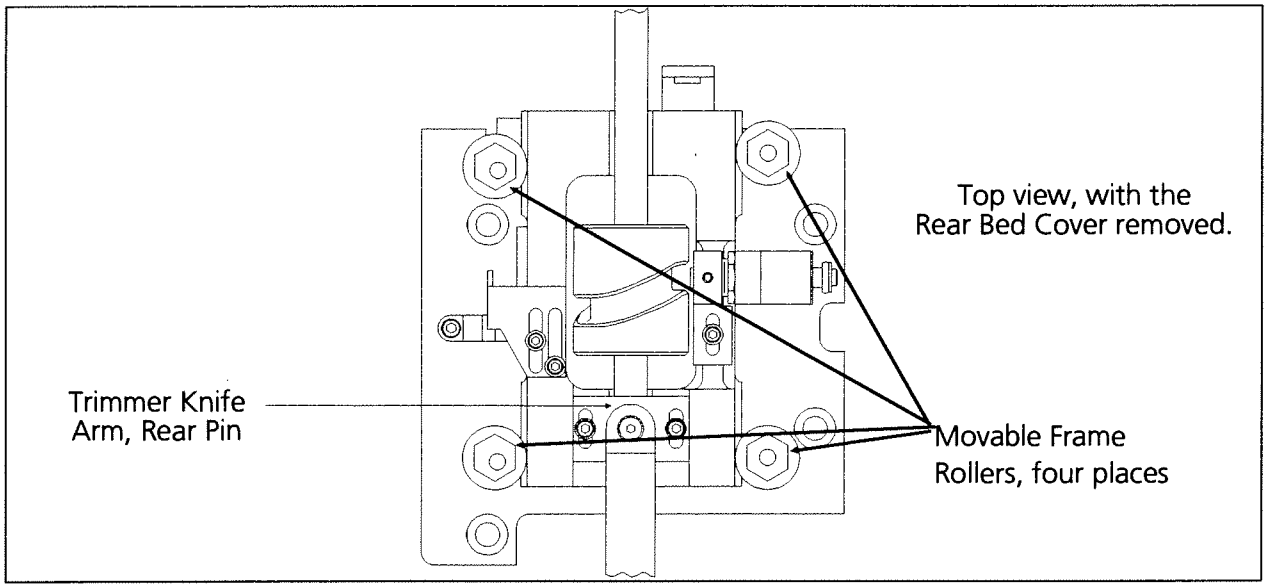


Figure 8-16

The Front of the Trimmer

Remove the needle plate to access the trimmer areas shown in Figures 8-17, 8-18, and 8-19. Lubricate these areas by placing one drop of sewing machine oil in each of the indicated locations every 40 operating hours.

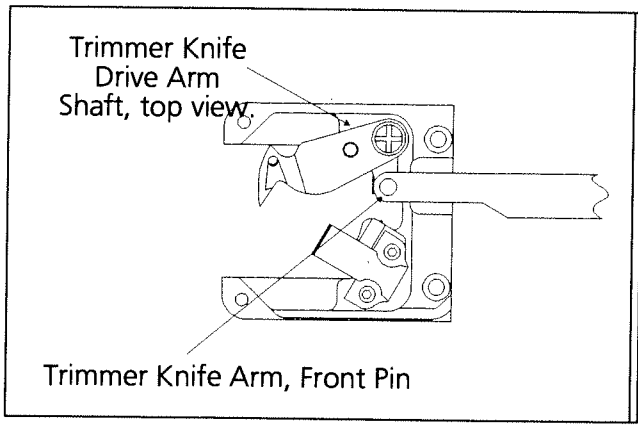


Figure 8-17

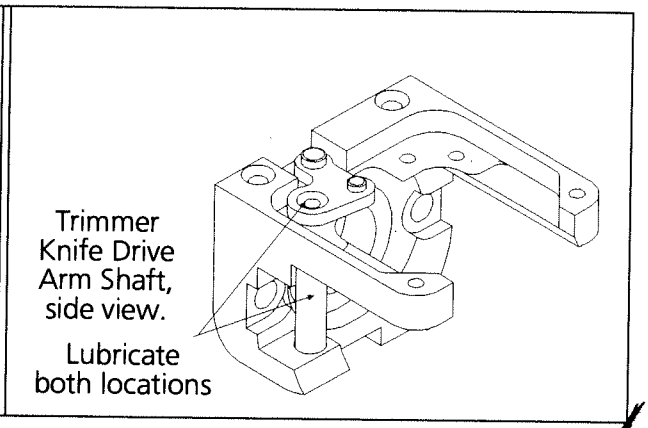


Figure 8-18

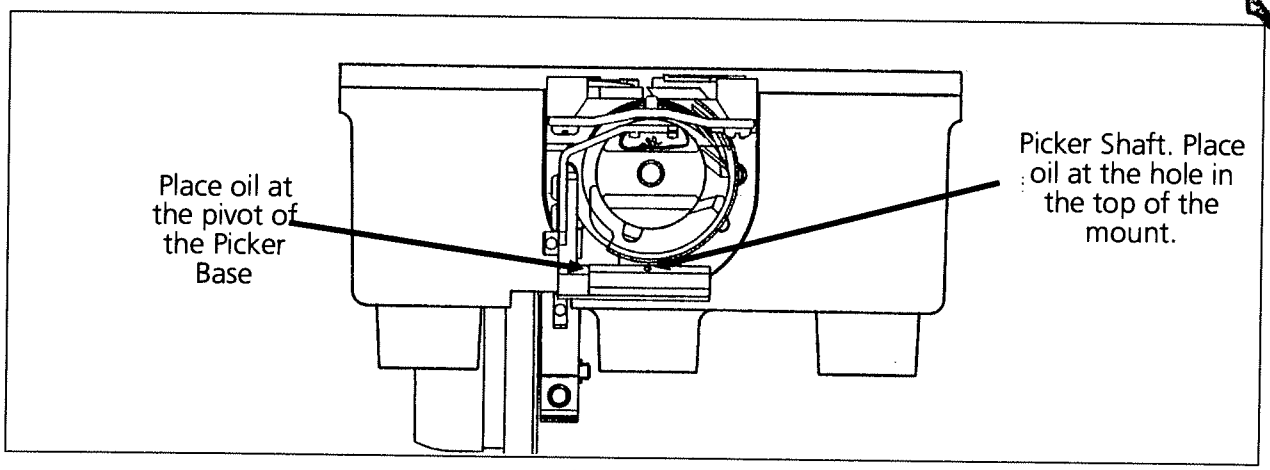


Figure 8-19

Head Timing

Head Timing covers these related topics.

- Head Up
- Needle Depth
- Hook Timing
- Hook Gap

To make a stitch, the point of the rotary hook (the container that holds the bobbin case), passes behind the needle just as the needle is beginning to rise from it lowest point. As the needle rises, a small loop of thread is created behind it as shown in Figure 8-20. When the hook passes behind the needle, it catches the loop and wraps the thread around the bobbin case, capturing the bobbin thread. When the needle pulls the thread above the fabric, a stitch has been made. In order for all this to happen, the needle and rotary hook must be adjusted very carefully.

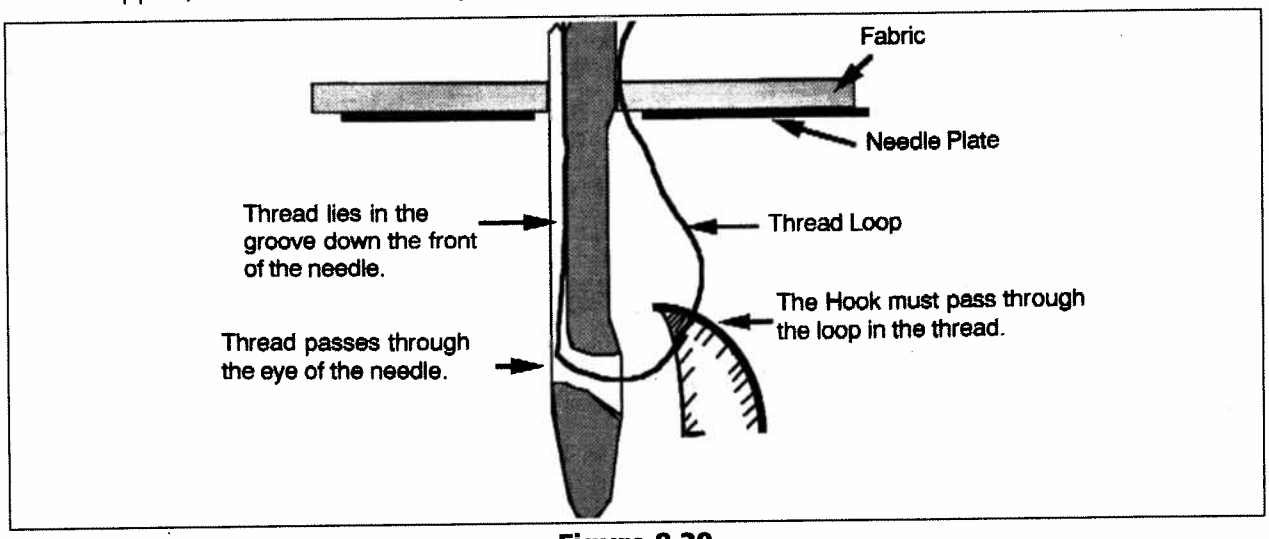


Figure 8-20

Timing adjustments should be checked if the needle or presser foot hits a hoop. Also, the hook gap must be set when the rotary hook is removed and reinstalled as you sometimes do to clear away excess thread.

Machine Out of Timing

It is rare for the machine to become out of proper timing adjustment, but the most frequent cause is spiking the hoop. Spiking means the needle strikes or is embedded in the hoop while embroidering. When this happens the machine stops abruptly, jarring the mechanical parts.

Just because the hoop was spiked does not necessarily mean the head went out of timing. If you encounter a quality problem, check the following **before** adjusting the head timing:

- Tension settings (upper and lower)
- Needle condition, size, and type of point
- Lubrication of hook assembly and head
- Nicks in the presser foot or needle plate
- Presser foot height
- Stitch density
- Proper embroidery technique for the material, backing and thread
- Material improperly hooped
- Needle Bar depth too low or too high

Even if the machine does not go out of timing, spiking the hoop will likely break, or at least dull the needle. It is a good idea to change the needle, whether or not it is broken.

If the presser foot and the hoop collide, the presser foot may be bent enough that it rubs the thread or needle and causes thread breaks.

Setting Timing

This is an overview of Head Timing. Detailed illustrations and instructions for each procedure follows:

- Adjust the Needle Depth if necessary. The correct needle depth is that point where the needle reaches the lowest point in its cycle and approximately 1/2 of the eye of the needle is visible inside the bobbin cavity of the rotary hook.
- Adjust the Hook Timing if necessary. The hook timing position is correct when:
  - the hook point rotates through the scarf area of the needle, just above the eye.
  - there is a space about the thickness of a thread between the needle and the hook.
- Adjust the UTC if it was loosened or removed. The tab of the UTC must set in the indentation of the rotary hook far enough to keep the inner basket from rotating. At the same time, it must leave enough space for thread to pass between the UTC and the hook. The UTC must also be positioned so that the sensor can function correctly.
- Check your adjustments. Because timing is so critical, you should always visually check your adjustments again before embroidering resumes.

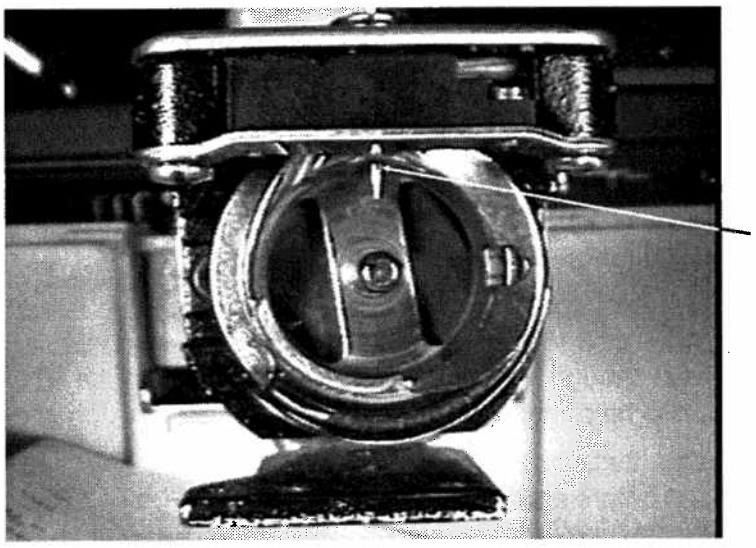
Start Here →

Needle Depth Check/Adjustment

Setting needle depth is one of the basic operator adjustments required to achieve good embroidery quality. The needle depth setting is the relationship between the eye of the needle and the hook when the needle is at its lowest point. Because of the wide range of acceptable needle types, the distance between the blunt end and the eye of the needle may vary enough to cause missed

stitches or cut threads if the needle depth is not absolutely correct. Follow these steps to adjust the needle depth:

1. Remove one screw and loosen the other one on the needle case cover, then rotate the cover to one side.
2. Remove the table top insert from the peripheral.
3. Remove the bobbin case from the rotary hook assembly.
4. With the machine ON and ready for operation, press the [MENU] key at the peripheral keyboard until the LCD displays HEAD TIMING MENU.
5. Press the [ENTER] key and the LCD displays HEAD TIMING ON.
6. Press the [ALT][⇑] keys. The head rotates to the "Head Up" position and the LCD displays GO TO HEADUP.
7. Next press the [ALT][⇐] keys. The head rotates one revolution. The LCD displays ONE REVOLUTION. The needle bar should be down with the presser foot about 1/4 inch from the needle plate.
8. Press the [ALT][⇓] keys. The head rotates to the "needle depth" position and the LCD displays: NEEDLE DEPTH. The needle has reached its lowest point. See Figures 8-21 and [redacted]



Check for the eye of the needle here, It is also shown in Figure 8-23.

Figure 8-21

9. Look directly into the hook assembly and check the location of the needle's eye compared to Figure 8-22.

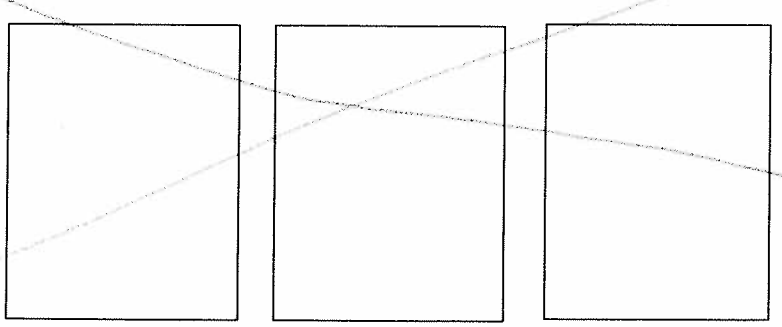


Figure 8-22

If zero to 1/4 of the needle's eye is showing in the bobbin cavity, no adjustment is required. You may skip steps 10 through 16.

If the needle's eye is not in the acceptable range, adjustment is required as described in the next steps.

10. Loosen the needle bar clamp screw shown in Figure 8-23.

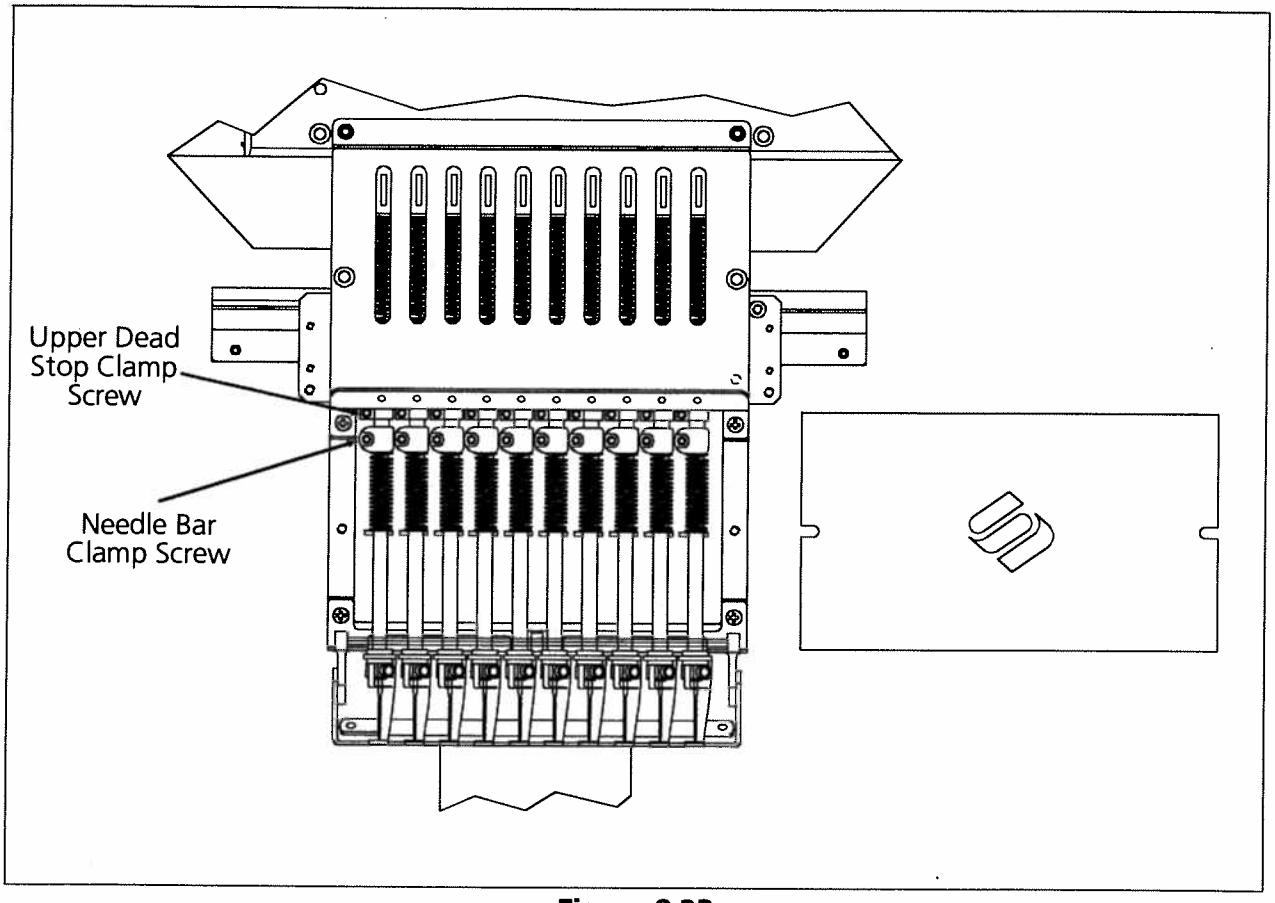


Figure 8-23

11. Slide the needle bar up or down until you can see 1/8 of the needle's eye in the bobbin cavity. If you twisted the needle bar, return it to its original rotation before continuing.

12. Retighten the needle bar clamp screw.

13. Press the [⇒] key 9 times. Each time the LCD displays 10 STEPS FORWARD.

14. Loosen the black screw on the upper dead-stop clamp.

15. Press the [⇒] key again. This finishes rotating the head to full needle up.

16. Slide the clamp against the upper stop bumper and tighten the screw on the upper-dead-stop clamp. The screw must be positioned straight outward. If it is rotated, it may rub the plastic guide plate or catch the needle bar next to it.

17. Again, press the [ALT][⇑] keys. The head rotates to HEAD UP.

18. Repeat the needle depth adjustment for the remaining needles.

Hook Timing

The Hook Timing adjustment should not change when adjusting the needle depth position, but it would be a good idea to check it and make sure. Figures 8-25 and 8-26 show the proper hook/needle relationship.

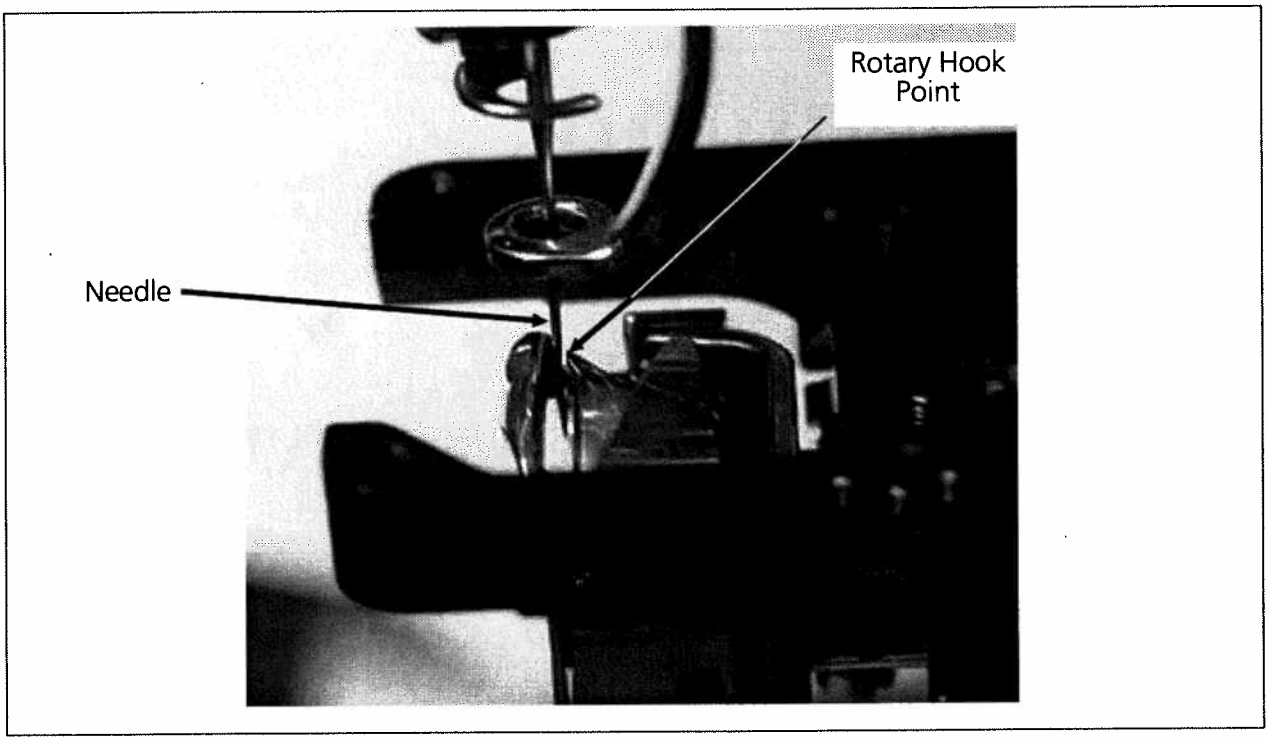


Figure 8-24

The hook point is not fully drawn in Figure 8-26, but its position is indicated. In order for the hook point to catch the loop of thread, it must pass through the needle scarf area approximately 1/8 inch (3.175 mm) above the eye, when the needle has risen 3/32 inch (2.38 mm).

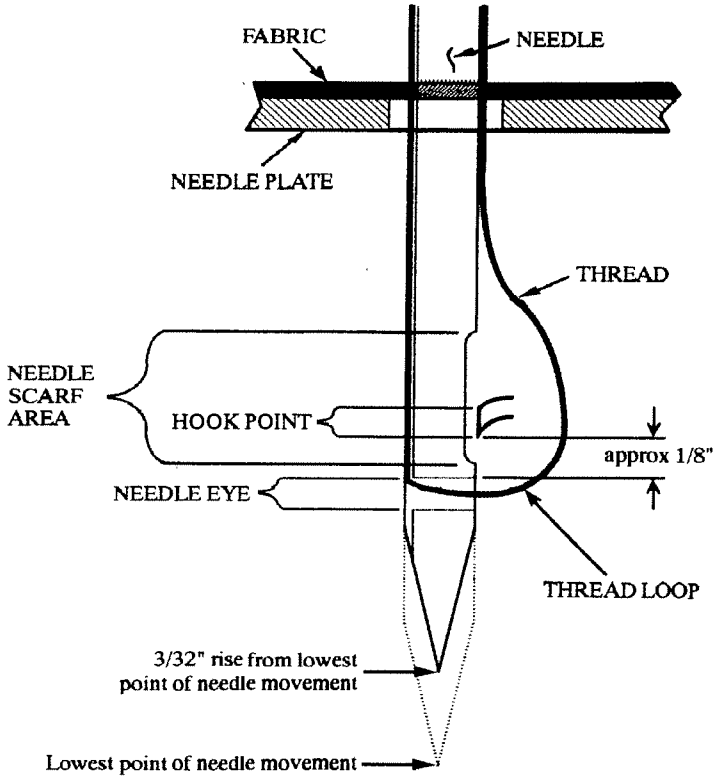
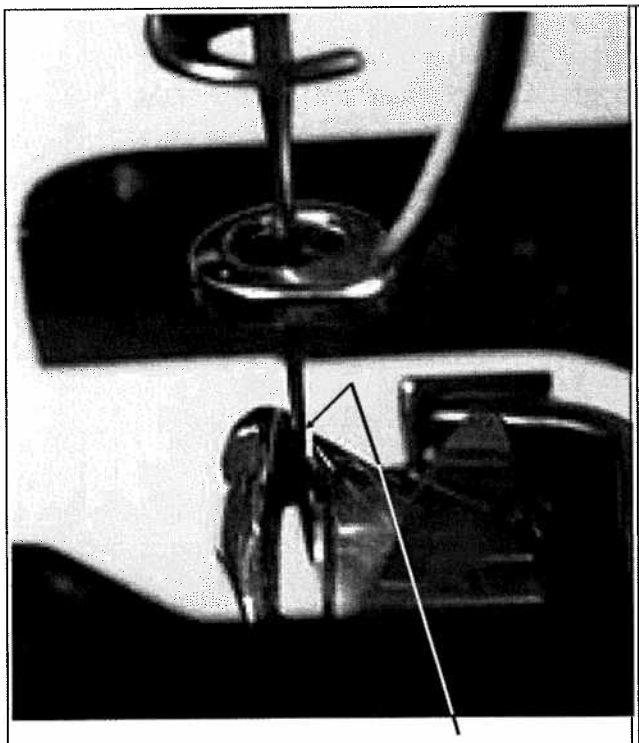


Figure 8-25

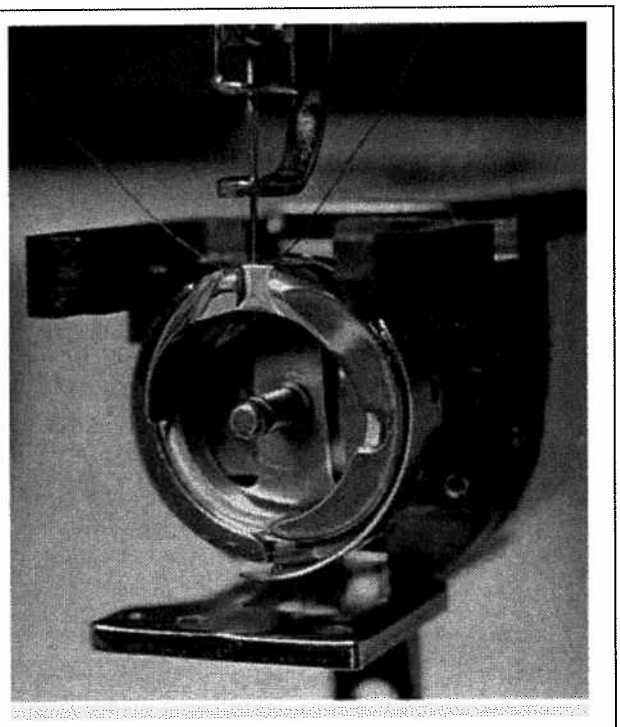
Checking Hook Timing

1. Install a new needle, so the needle/hook point positioning can be better evaluated.
2. Remove the table top insert, bobbin case, and needle plate.
3. Turn "ON" the embroidery peripheral and scroll to the HEAD TIMING MENU.
4. Press [ENTER]. The LCD displays HEAD TIMING ON
5. Press the [ALT][⇐] keys. This takes you to Head Up without engaging the jump stitch solenoid, so the needle will come down in the next step. The LCD displays ONE REVOLUTION
6. Press the [ALT][⇓] key combination to cycle the head to the full needle down position. The LCD displays NEEDLE DEPTH.
7. Press the [ALT][⇒] keys and the LCD displays HOOK TIMING.



The gap between the hook point and the needle should be about the thickness of a thread.

Figure 8-26

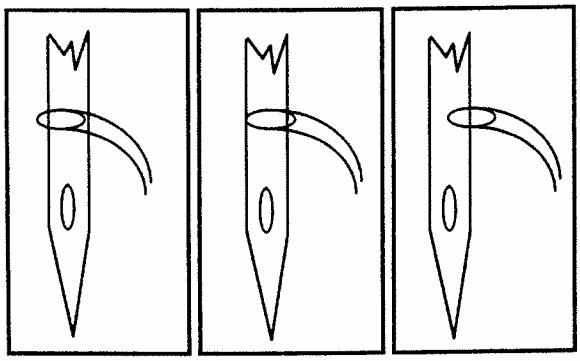


When a thread is pulled between the needle and the hook, it should barely catch.

Figure 8-27

The hook point, as shown in Figures 8-27, 8-28, and 8-29, should:

- Have a gap between it and the needle approximately the thickness of the thread. The gap can be checked by positioning a length of thread below the hook, between it and the needle. Lift the thread slowly by both ends. It should pass through the gap between the needle and the hook, just slightly catching between the two. If the gap needs to be adjusted, hook timing may also be required.
- Be directly behind the needle. If this is not the case, the hook timing must be adjusted.

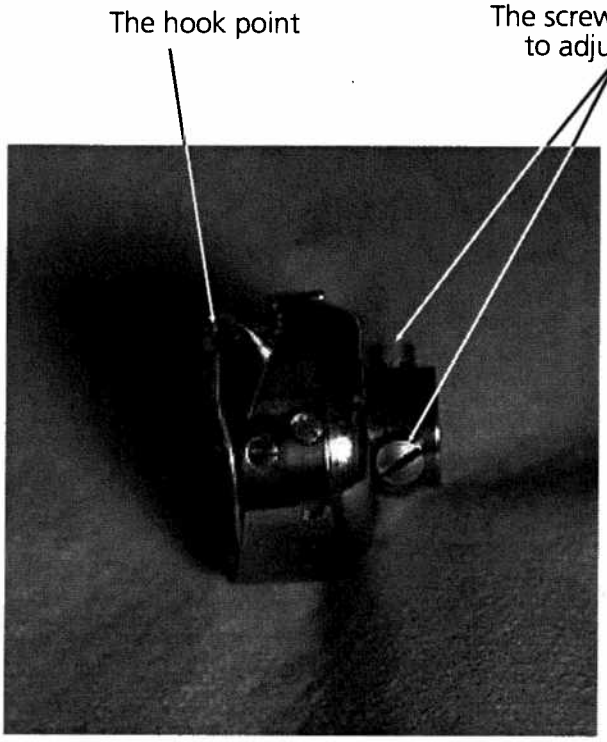


All three positions are correct

Figure 8-28

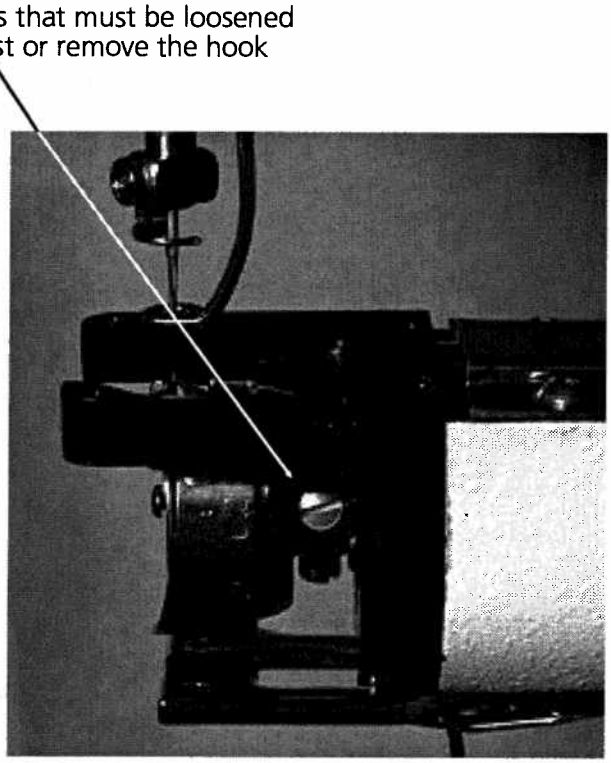
Adjusting Hook Timing

Hook timing may be misadjusted if the needle depth is incorrect, so always check needle depth first. The following steps presume that the rotary hook is installed in the approximate position for embroidering. See Figures 8-30 and 8-31. If you have not already done so, remove the table top, needle plate, and bobbin case. The adjusting procedure begins with step 1 below.



The Rotary Hook Assembly

Figure 8-29



The Rotary Hook Installed

Figure 8-30

You may occasionally remove the hook to clear away a birdsnest of thread or for some other reason. When the hook assembly has been removed, slide it back on the shaft in the approximate position for embroidering and tighten one of the screws. Attach the UTC so the retaining tab is holding the inner basket of the hook assembly, and go to step 3.

1. Loosen, but do <u>not</u> remove the most accessible screw. The easiest one to access will depend on the type of screwdriver you are using and whether you are right or left handed.

2. While in the Head Timing menu, press the [⇒] key 3 to 5 times to move the second screw to the same position, and loosen it.

3. Press [ALT][⇑] to go to Head Up.

4. Press [ALT][⇓]to go to Needle Depth.

5. Press [ALT][⇒]to go to Hook Timing.
6. Grasp the needle clamp and manually pull down the needle.
7. Loosen the last screw.
8. Check to make sure the UTC retaining tab is still securing the inner basket of the rotary hook as shown in Figures 8-32 and 8-33. If the inner basket moves, it may break a needle or damage a hook.

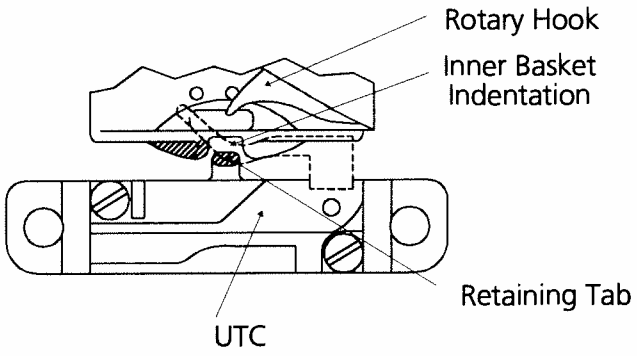


Figure 8-31

9. Position the hook point directly behind the needle as shown in Figures 8-33 and 8-34. The indentation for the UTC retaining tab should be directly in front of the needle. Hold the hook in this position as you proceed.

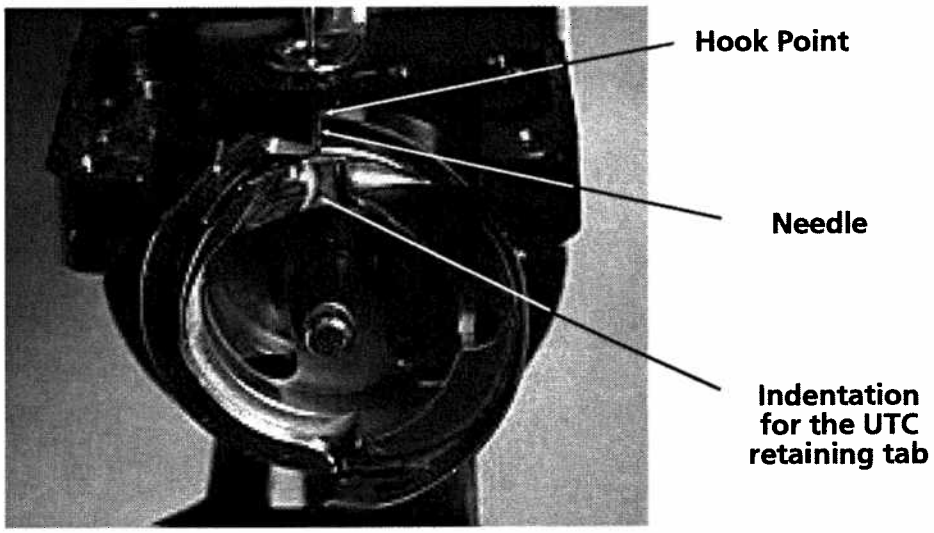


Figure 8-32

10. Slide the hook assembly forward or backward until you have a gap about the thickness of a thread between the hook point and the needle as described earlier. Maintain the hook position behind the needle as you do this. You may have to tighten one of the screws slightly and check the gap a few times before it is correct.
11. When the gap is correct, tighten all the screws. You can press the [⇒] key to move the rotary hook to make the screws more accessible. Use care not to let the hook position move when tightening the screws.

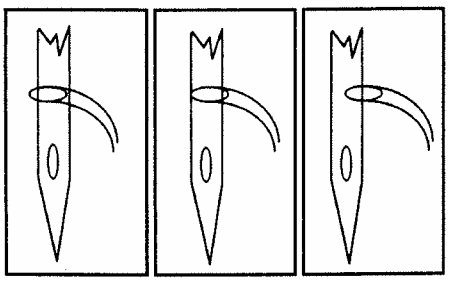


Figure 8-33

12. Press [ALT][⇑] to go to Head Up.

13. Press [ALT][⇐] to go to One Revolution.

14. Press [ALT][⇓] to go to Needle Depth.

15. Press [ALT][⇒] to go to Hook Timing.

16. Check all your adjustments and repeat any if necessary.

17. Replace the needle plate, making sure the needle is centered in the needle plate hole. Press the [⇑] key to move the needle down through the hole one step at a time. When the needle is centered, tighten the needle plate completely.

Adjusting the UTC Retaining Tab

If you loosened or removed the UTC during the hook timing and hook gap adjustments, now you must re-adjust it. The UTC has:

- A retaining tab that prevents the inner bobbin basket from rotating
- A sensor arm that detects when the bobbin thread is missing

Detailed instructions for adjusting the UTC are in the following section. It is very important that you follow these instructions every time the UTC is loosened or moved. When the UTC is adjusted properly, the retaining tab will automatically be in the correct position shown in Figure 8-32. The retaining tab should:

- Be in the groove far enough to keep the inner basket from rotating
- Leave a space large enough for thread to pass through

Installing the Needle Plate

When the needle plate is installed, it is possible for the needle to strike it when it embroiders. To insure this does not happen, follow these steps to center the needle in the hole of the needle plate:

1. Attach the needle plate securely, but do not completely tighten the screws.

2. In the Head Timing menu, press the [⇑] key to move the needle down one step at a time until it is in the hole of the needle plate.

3. Position the needle plate to center the needle in the needle plate hole.

4. Tighten the needle plate all the way.

5. Recheck the centering of the needle.

Under Thread Control (UTC) Adjustments

The primary purpose of the UTC, shown in Figures 8-35 through 8-36, is to signal an absence of bobbin thread. It has a mechanical arm that is bumped by the bobbin thread at every stitch. When the sensor is not bumped for several consecutive stitches, the machine stops, backs up, and beeps. The LCD displays the message: CHECK BOBBIN. The number of stitches can be set with the Bobbin Count option of the Bobbin Menu. The default is five.

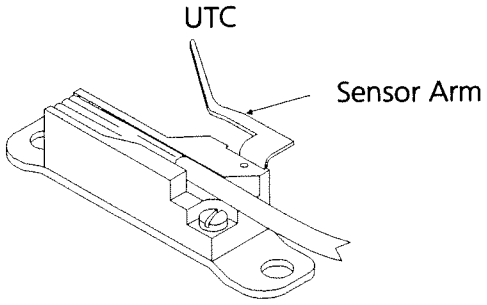


Figure 8-34

Two screws attach the UTC to the underside of the needle plate bracket as shown in Figure 8-36. The UTC only needs to be adjusted forward and backward. If the UTC is too far toward the front of the machine, it is unable to detect the bobbin thread and will give you false CHECK BOBBIN messages. The UTC may also perform unreliably if it is too far toward the back of the machine.

The UTC has a retaining tab that fits into a slot on the rotary hook. This tab prevents the inner basket of the hook from turning. The UTC should be mounted with its tab in the indentation of the inner basket as shown in Figures 8-37 and 8-38.

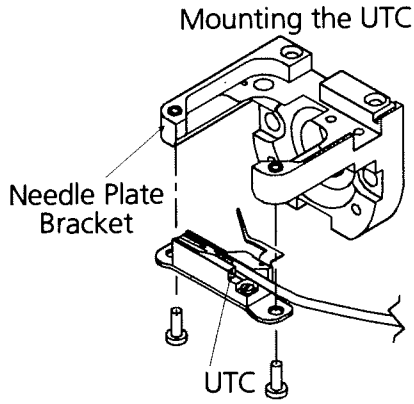


Figure 8-35

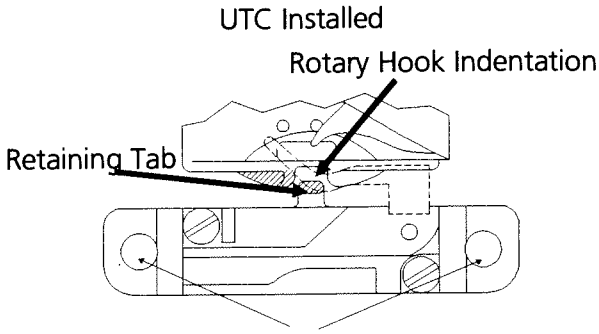


Figure 8-36

Install and adjust the UTC using Figure 8-38 and these instructions:

1. If the UTC is not already installed, attach it to the needle plate bracket. Set the UTC retaining tab in the inner basket indentation with a 0.020 gap between them. Use the .020 feeler gauge in the operator's kit.

2. Tighten the screws on the UTC.

3. Reinstall the needle plate if necessary, centering the needle in the hole.

4. If the machine is OFF, turn it ON and wait for it to download.

5. Install the bobbin. Make sure the bobbin tension is adjusted correctly, or the UTC will not be able to function properly.

6. Test the UTC installation by embroidering the UTCTEST design in EDS III\designs at 750 spm. Make sure the UTC:
   - *detects an absence of bobbin thread.* To test this, wrap a foot or so of thread around a bobbin and embroider out all the thread. Repeat until the thread runs out while embroidering both forward and backward. If the UTC does not detect the lack of thread, move the sensor away from the needle.
     Make sure the UTC retaining tab stays in the rotary hook indentation.
   - *does not give invalid CHECK BOBBIN messages.* Embroider the test design for at least 4000 stitches. If invalid CHECK BOBBIN messages display, move the sensor toward the needle.

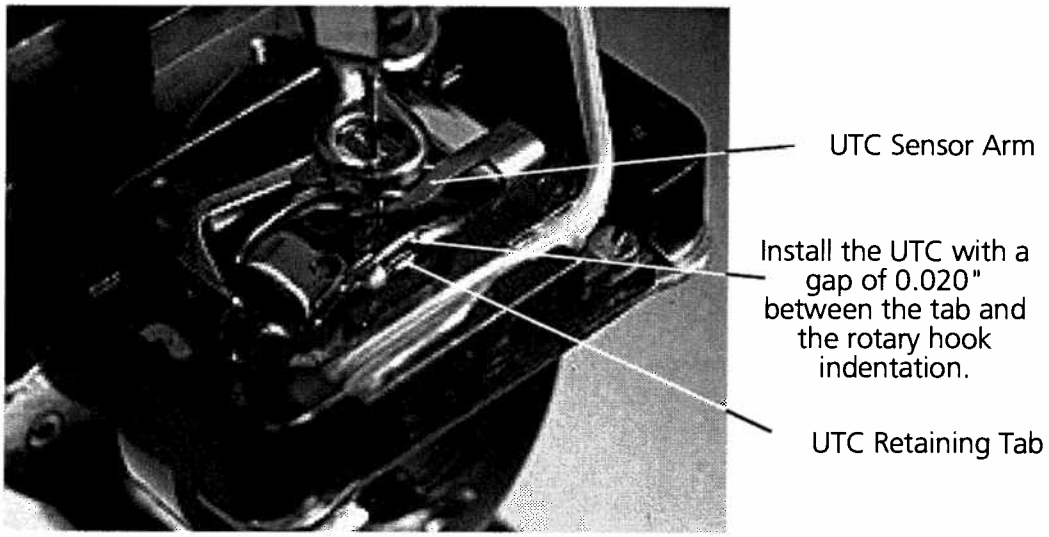


Figure 8-37

9. Error Messages

When the EMC 10, EMC 10T, EMC 10/4, or EMC 10/4T encounters a problem or needs to give you a status update, an Error Message is displayed on the LCD and the machine beeps.

There may be an error in procedure. For example, an error message is displayed if you press the [START] key before a design is loaded into the Run buffer. You would respond by loading a design.

It could be a mechanical a problem. For example, an error message is displayed if the Y beam reaches its limit before the design finished sewing. You might need to use a larger hoop.

You may have a sewing problem. For example, an error message is displayed when there is a thread break. You would rethread the machine and continue.

The following pages of this section contain an alphabetized list of the EMC 10, EMC 10T, EMC 10/4, and EMC 10/4T error messages. (The EMC 10T and 10/4T may display error messages that are only associated with the trimmer.) If your machine ever displays an error message that is not listed here, or if you do not know how to respond to a message that is listed here, contact your Melco service representative for assistance.

Application Run

Means that the peripheral did not download properly. The machine must be turned OFF, then turned ON again. Call your Melco service representative if this message occurs often.

Bad CC Encoder

Means the machine has a bad color change PCB or some other electrical malfunction. Call your Melco service representative for assistance in ordering a new color change PCB.

Bad Design Name

The machine could not find the design name when the [START] key was pressed. If AutoDelete is ON at the computer, the design is automatically deleted when it finishes sewing. If AutoDelete is OFF, the design was manually deleted from the Design Menu. Reload the design and continue.

Bad Keyboard Code

The machine was unable to read input from the keyboard. Turn the machine OFF and back On, then do a Power Fail Recovery. If that does not fix the problem, reconfigure the machine. When you reconfigure, all parameters will be reset to default values, and your design must be started from the beginning. If that fails, call your service representative for help.

Bad PFR PTR

When you set the Power Fail Rescue (PFR) function on the machine, a pointer called a PTR is inserted into the design program to mark where the last stitch was made. This message means an error was detected while the pointer was being saved. To correct this problem:

1. Activate Return To Origin
2. Frame through the design to the stopping point
3. Press the [START] Key.

If that doesn't work, turn the power OFF and then back ON.

Bad Z Creep Func

Means the Z axis command in the Head Timing Menu was slow in getting to the CPU. Wait a few seconds and try again.

CC Head Up Error

Means a color change command was encountered when the machine was not at HeadUp. Scroll to the Head Timing Menu, press the [ENTER] key, press the [ALT][⇑] key, then press the [START] key. You may have to position the color change mechanical system manually to "index" (rotate the color change cam until the color change light goes out) before the Head Timing menu will function properly.

CC Move Timeout

See CC Timeout.

CC Timeout

Means the machine did not complete a color change within 5 seconds. This is usually caused by a mechanical bind in the color change assembly which can be corrected by locating and freeing the bind. If there is no bind, use the following instructions to check for an electrical or motor failure:

1. Go to the Idle menu
2. Press the [ALT][⇐] keys or the [ALT][⇒] keys to move the needle case.
3. If the error message clears, press the [START] key and continue sewing.

If the problem is still not corrected, call your Melco service representative for help.

CC Tracking Err

This error message means the color change motor is not tracking (or moving) the needle case as commanded by the color change axis controller software. Repeated occurrences of this message may indicate a mechanical bind in the needle cases or an electrical problem. To recover from this error try to move the needle case using the [ALT] [Left] or [ALT] [Right] arrow keys or pressing the [START] key if the error occurred during a color change while sewing a design.

Cap Driver In

Means you have tried to activate SET HOME, GO TO HOME, or POWER FAIL RECOVERY while the cap frame drive is installed. Remove the cap frame driver before activating these functions.

Check Rack Limit

This error message means the physical X axis rack limit or the physical Y axis rack limit was reached while sewing a design. Check Select Hoop in the Home Menu to see if you a using a hoop size that is too small for the design, or the design start point is not positioned correctly in the hoop. Select a larger hoop size, or move the start point to fit the design into the hoop and start over. If the hoop is centered correctly try to Frame Back a few stitches then resume sewing by pressing the [START] key. Repeated occurrences of this message (with the design positioned correctly in the hoop) may indicate an electrical problem.

Color Change

The embroidery peripheral will stop after all color changes after the character **P** is read in the color sequence. The embroidery peripheral will stop one time after the character **0** is encountered in the color sequence.

Color List Full

You cannot increase the color sequence to a value greater than 99.

Cutter Limit!

Means the drive circuit of the cutter trimmer solenoid has detected excess power. This is caused by a malfunction of the cutter solenoid or electronics. Turn the machine OFF, then back ON to recover. If this error occurs more than once during a design, call your representative for assistance.

Delete Failed

The machine was unable to delete the design due to the same design currently running or another design is being downloaded. Wait 20 seconds and try again. This may also be caused by the design being queued in the RUN DESIGN Menu. If this is the case, perform a "system reset," then delete the design.

Design Not Found

This message displays during a Power Fail Recovery if the machine cannot find the last design that was sewing in the design buffer. Resend the last design from the computer or disk drive option and try power fail recovery again.

Found End Of Design

An End Of Design message was encountered before the true EOD. Once an EOD is "seen" by the machine, the design is stopped. You must start over, beginning with resending the design from the computer. This message might occur after a power failure. If this message is displayed frequently, there may be a problem with the CPU, and you should call your service representative.

Grabber Not Home

Means the thread grabber is not fully retracted to its home position. The grabber may be caught, perhaps in the thread or the Velcro strip. Free the grabber and retract it manually if necessary. Press the [START] key and resume sewing.

Home Not Set

Trying to do a GO TO HOME function without the HOME POSITION being set. Set Home and continue.

Home Was Not Set

Home Position was not set in the center of the cap frame sewing field by the Set Home command in the Home Menu. Remember that the Home Position must be set before using any other peripheral function for the first time, even if you do not use any other Home function. Go to the Home Menu, Set Home and continue.

Illegal Sequence

In the Color Menu you must have at least one valid thread number in the Color Change Sequence. Valid numbers are 1 to 10 and zero. You cannot exit from the Color Menu without correcting the sequence.

Job Buffer Full

Means that no more information may be stored in the peripheral's job queue. This will usually be seen in the Run Menu.

Limit On X Rack

See Limit On Y Rack.

Limit On Y Rack

This error message means the physical Y axis rack limit was reached while sewing a design. Check Select Hoop in the Home Menu to see if you are using a hoop size that is too small for the design, or the design start point is not positioned correctly in the hoop. Select a larger hoop size, or move the start point to fit the design into the hoop and start over. If the hoop is centered correctly try to Frame Back a few stitches then resume sewing by pressing the [START] key.

Loading Try Again

Means that the design has not completed reloading during a Power Fail Recovery. Wait a few seconds and try again.

Machine Running

You have tried to activate Trace, Move, Bobbin, Trim, or Head Timing while the machine is sewing. Stop the machine and try again.

MC Buffer Full

The motor command buffer is full. You may have created more Move commands or Head Timing commands than the buffer can hold. To clear the MC buffer, turn the power OFF, then back ON. If AutoSend is ON at the computer, it will reload the Design Buffer after a few seconds. If you are running with AutoSend OFF, you must reload the designs. If cycling the power does not clear the screen message, there may be an error in the CPU. Call your Melco service representative for assistance.

Missed Headup

The Z axis controller missed a Head Up signal. The machine waits for another 150 degrees of rotation; and if the signal still hasn't been seen, stops sewing. Activate the GO TO HEADUP option in the Head Timing menu to cycle the head back to Headup, then continue sewing. If this happens frequently call your Melco service representative for help.

No Designs Found

Means you are in the Design menu and there are no designs loaded. Either no designs have been sent from the computer or they have been automatically or manually deleted. The AutoDelete option may be ON at the computer.

No Design Qued

Means you are trying to do a Power Fail Recovery but there is no design in the run buffer. Use the Design menu to select a design and try again.

Not At Headup

Means you are trying to do a Power Fail Recovery when the sewing head is not at Head Up. May also mean you are trying to jog (move the beam) in the X or Y axis without the sewing head at headup. Cycle the head to the Head Up position with the Head Timing Menu function GO TO HEADUP.

Off Color Index

Means the machine tried to do a color change, or you tried to use a Head Timing function while the color change cam was off index. Go to the Idle menu and press the [ALT][⇐] or [ALT][⇒] keys to move the color change cam on index. If this does not resolve the problem, try manually resetting the cam. If the problem still exists, call your Melco representative.

Picker Limit

This means the drive circuit of the picker trimmer solenoid has detected excess power caused by a malfunction of the picker trimmer solenoid or electronics. Turn the machine OFF, then back ON to recover. If this error occurs more than once during a design, call your Melco representative.

PR Job Error

Trying to do a Power Fail Recovery but the design was already finished.

Rack Limit???

If the X or Y motion is not within the sewing field limits when the machine is running, the peripheral will stop and give this error. If performing Frame Forward or Frame Back functions, this error message will be displayed when you reach the limits of rack movement. If not in the Frame Menu, then go to the Home Menu and check the Hoop Limits submenu. You may be using a hoop size that is too small for the design, or the design start point is not positioned correctly. Try selecting a larger hoop size, or moving the design start point so the whole design fits into the hoop, then start over.

Reload

An error was found when the computer was loading a design while running in Auto Send. Delete the design and reload it from the computer. Frequent occurrences indicate a system memory problem, or a bad link in the network. Check the terminator to be sure that it is plugged in all the way or not missing. If this does not fix the problem call your service representative for help.

Run Job Error

Means that no design was selected before pressing the [ENTER] key in the Run Design Menu to begin sewing. Unless you have color changes in your design, you need only the Design Menu and Run Design Menu to sew out jobs.

Thread Break

The thread broke, and the machine stopped, then backed up 5 stitches. Make sure the thread path is clear, there is bobbin thread, and the needle is installed correctly. Rethread the needle and press the [START] key.

Too Fast To Trim

The Z axis speed has exceeded 150 RPM during a trim. Press the [START] key to recover. If this happens more than once during a design, call your Melco representative.

Trim Inactive

This means you tried to perform a Trim Immediate while the trim function is disabled. Go to the Trim menu and Enable the trim function, then proceed.

Trimmer Not Home

This message is displayed when the machine tries to sew after a trim, but finds the cutting blade is not in its home position. Try executing the Go to Headup option in the Head Timing menu to recover, then continue sewing. If this does not fix the problem, call your Melco representative.

X Axis Limit

This message means that the drive circuit of the X axis motor has detected excess power. This is caused by a jammed X axis motor or beam or a malfunction of the X axis motor or electronics. Turn the machine OFF, then back ON to recover. If this error occurs more than once during a design, call your representative for assistance.

X Command Error

This means an invalid command sequence was detected in the X axis motor controller software functions. The machine must be turned OFF, then back ON. If this error occurs more than once during a design, call your Melco representative for assistance.

X Home Timeout

See Y Home Timeout.

X Jog Limit

See Y Jog Limit.

X Move Timeout

See Y Move Timeout.

X Rack Not Done

See Y Rack Not Done.

X Thd Remove Err

See Y Thd Remove Err.

X Tracking Err

See Y Tracking Err.

Y Axis Limit

This message means that the drive circuit of the Y axis motor has detected excess power. This is caused by a jammed Y axis motor or beam, or a malfunction of the Y axis motor or electronics. Turn the machine OFF, then back ON to recover. If this error occurs more than once during a design, call your representative for assistance.

Y Command Error

This means an invalid command sequence was detected in the Y axis motor controller software functions. The machine must be turned OFF, then back ON. If this error occurs more than once during a design, call your Melco representative for assistance.

Y Home Timeout

This error message means the Y rack did not complete its commanded move when trying to Set Home or Go To Home in the Home Menu. Repeated occurrences of this message may indicate a mechanical bind in the racks or an electrical problem. To recover turn the machine power OFF then back ON and try to set home again.

Y Jog Limit

This error message means the physical Y axis rack limit was reached while manually jogging the racks with the arrow keys. To recover manually jog the racks in the opposite direction.

Y Move Timeout

This error message means the Y rack did not complete its commanded move in the Move Menu. Repeated occurrences of this message may indicate a mechanical bind in the racks or an electrical problem. To recover from this error exit the Move Menu, manually jog the Y rack using the arrow keys, then try the move again.

Y Rack Not Done

This means the needle is trying to enter the cloth before the X or Y motion is complete. It is caused by a combination of a dense fill stitch and sewing speed. Try reducing the sewing speed to allow the needle time to clear the fabric and prevent broken needles and damaged fabric.

Y Thd Remove Err

This error should only occur during a trim (thread removing function) and means the Y rack did not complete its commanded move. Repeated occurrences of this message may indicate a mechanical bind in the racks or an electrical problem. To recover from this error you must turn the machine power OFF then back ON. If a design was sewing before the error try a Power Fail Rescue to resume sewing the design.

Y Tracking Err

This error message means the Y axis motor is not tracking (or moving) as commanded by the Y axis controller software. This error can occur during sewing, trims, tracing, framing and during moves in the Move Menu. Repeated occurrences of this message may indicate a mechanical bind in the racks or an electrical problem (check for mechanical binds). The machine will stop sewing when this problem occurs. To recover from this error when sewing try to Frame Back a few stitches then press the [START] key to continue sewing. If this doesn't work turn the machine power OFF then back ON and try a Power Fail Rescue. If this error occurs during tracing, framing or moving functions try the function again.

Z Command Error

This error message is software related, and means that an invalid "read" or "write" command sequence was detected in the Z controller software functions. This can be caused by sewing at too high a sewing speed. Reduce the speed and continue or go to the Head Timing Menu and choose GO TO HEADUP command. Then press the [START] key to continue.

Z Timeout Error

This error message means that the Z axis was commanded to move, but did not complete the move in the allowed time. The message can occur during normal sewing or most functions in the Head Timing menu. To recover, execute the Go To Headup option in the Head Timing menu.

Repeated occurrences of this message may indicate a mechanical bind in the sewing head, for example, thread gathered in the hook area. Locate and correct the problem. If you cannot locate the problem or if this message continues to occur often, call your Melco service representative .

Z Tracking Err

This means the Z axis motor is not tracking as commanded by the Z axis controller software. Execute the Go to Headup option in the Head Timing menu. Exit the Head Timing menu and press the [START] key to continue sewing. If the message does not clear, call your Melco representative for assistance.

10. Hoop Sizes

The following table lists the hoop sizes available on the EMC 10 and 10/4.

Non-Metric Hoop Sizes	Metric Hoop Sizes
2.5 in Circle	6.3 cm Circle
3 in Circle	7.6 cm Circle
5 in Circle	12 cm Circle
6 in Circle	15 cm Circle
8 in Circle	20 cm Circle
10 in Circle	25 cm Circle
5 x 9 in Oval	12 x 22 cm Oval
8 x 13 in Oval	20 x 33 cm Oval
11 x 16 in Oval	27 x 40 cm Oval
2.4 X 4 in Rectangle	6.1 x 10 cm Rectangle
3 x 5 in Rectangle	7.6 x 12 cm Rectangle
2.5 in Spider	6.3 cm Spider
3.1 in Spider	8 cm Spider
4.4 in Spider	11 cm Spider
5.6 in Spider	14 cm Spider
6.25 in Spider	16 cm Spider
7.75 in Spider	19.5 cm Spider
SASH FRAME 10x16 in (required for full sash frame sewing)	SASH FRAME 25x40 cm (required for full sash frame sewing)
ALL SEWING FIELD (no set limits other than the size of the sewing field)	ALL SEWING FIELD (no set limits other than the size of the sewing field)
5.6 x 2.6 in CAP FRAME SEWING	14.2 x 6.6 cm CAP FRAME SEWING
5.6 x 2.75 in OPT CAP FRAME	14.2 x 6.985 cm OPT CAP FRAME

Appendix A. EMC Disk Drive Option

The Melco EMC Disk Drive Option replaces the need for the EDS System Controller in operating embroidery peripherals, thus converting an individual embroidery peripheral into a standalone embroidery device. These two components (the EMC Disk Drive Option and the specific embroidery peripheral) work together as a system to produce the same high quality embroidered goods that otherwise required the EDS System Controller. The option attaches directly to the embroidery peripheral for compactness and convenience. The EMC Disk Drive Option will attach to the EMC 1, EMC 10, EMC 10T, and the Advantage 18 single head peripherals; and the EMC 10/4 and EMC 10/4T four head peripherals. This option gives the Melco embroidery peripheral product line additional functional versatility.

Scope Of This Appendix

This appendix describes how to install and operate the EMC Disk Drive Option. The appendix is divided into two sections.

Section One contains introductory information on how the EMC Disk Drive Option fits into the Melco EDS Embroidery System. This section also provides information for installing the option.

Section Two guides the user through the operational functions of the option, and then explains the added keyboard commands for operating the embroidery peripheral.

System Overview

Basic Description

An EMC Disk Drive controlled embroidery peripheral is a standalone, read only disk system that will allow the user to embroider designs that are in the following formats: DOS 1.44MB, DOS 720K, Melco Expanded, Tajima, Barudan FMC, Barudan FDR, and ZSK, expanded only. This option does not support condensed format designs.

The operating program is loaded from a 3 1/2 inch "boot" disk when the peripheral is powered up. Once loaded, the operating program disk is removed and the disk drive is used for loading designs into the peripheral design buffer. The designs are loaded into the peripheral by the disk drive rather than sent through an EDS System network. An embroidery peripheral with the EMC Disk Drive Option is, however, also capable of being connected to an EDS System network. When connected to the network, the embroidery peripheral will boot from the network, and designs can be loaded from both the network and the disk drive.

The EMC Disk Drive controlled embroidery peripheral is capable of storing up to 16 designs consisting of a total of about 900,000 stitches in its memory. Once the designs are in the peripheral's design buffer the operator may perform all the various functions as usual, such as selecting the sequence for embroidering the designs and selecting the hoop limits. If power fails for any reason, the EMC Disk Drive operated embroidery peripheral also has a power fail recovery system.

All of the embroidery peripheral features are described in full detail in the Operation Manuals associated with the particular embroidery peripheral that is being used. For information on that unit please refer to the appropriate manual.

Physical Arrangement

The EMC Disk Drive Option attaches to the single head peripheral at the Controller Section Cover on the left side of the unit as shown in Figure A-1. On the four head peripheral the option mounts into the Keyboard Cover at the far right side as shown in Figure A-2.

Inside the respective sections the cables run from the option to the various locations for getting power to the disk drive and reading data from the disk drive to the CPU.

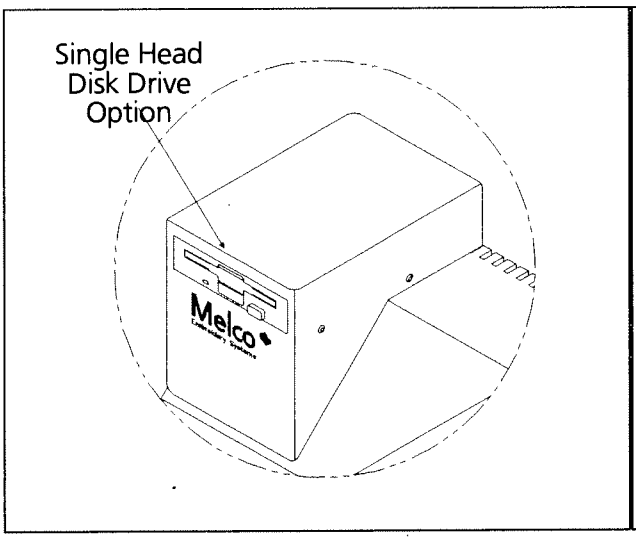


Figure A-1

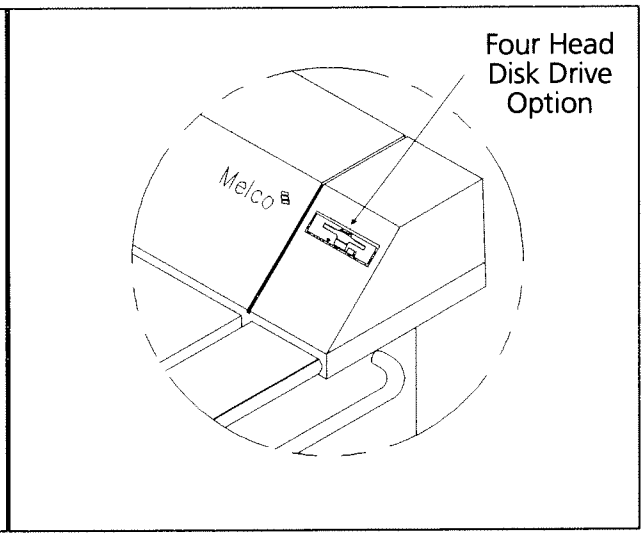


Figure A-2

System Installation

The information in this section is written for installing the EMC Disk Drive Option. The option installs onto a single head peripheral different from a 4 head peripheral, therefore, there are separate installation procedures included in this section.

Power Requirements

When installing the EMC Disk Drive Option, you need not be concerned with any additional power needs beyond the requirements of the peripheral itself.

Unpacking The Option

When unpacking your EMC Disk Drive Option be careful if opening the box with a knife not to damage the contents inside. Please inspect the parts for any damage that may have been apparent from the condition of the shipping box or to the option housing itself. Contact the shipper to report any damage.

Installing The Disk Drive On Single Head Peripherals

1. Turn off the embroidery peripheral and disconnect the power cord from the power source.
2. Remove the existing Controller Cover on the left side.
3. Locate the New Controller Cover with the EMC Disk Drive and position it at the embroidery peripheral directly above the Controller Section.
4. While holding the cover and drive assembly with one hand, plug the data ribbon cable into its mating connector on the top of the CPU PCB (see Figure A-3). Also, plug the disk drive power cable into its mating connector on the top of the CPU PCB next to the data cable connector.

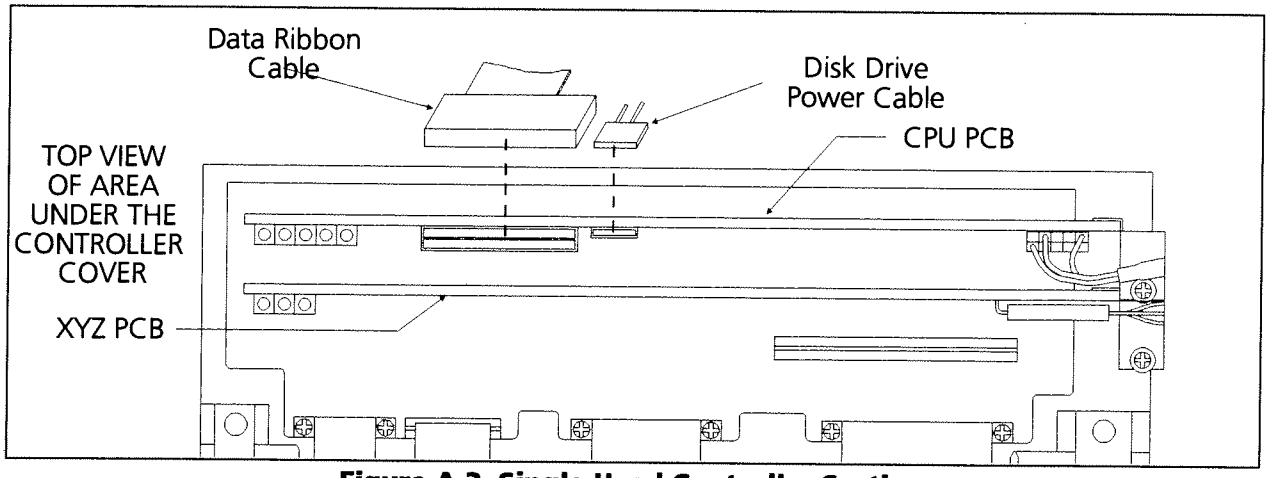


Figure A-3 Single Head Controller Section

5. Using care not to pinch any cable wires, install the new Controller Cover with EMC Disk Drive. Guide the disk drive data and power cables up into the cover as the cover is lowered to the chassis.
6. Reinstall the power cord from the embroidery peripheral to the power source.

Installing The Disk Drive On A Four Head Peripheral

1. Turn off the embroidery peripheral and disconnect the power cord from the power source.
2. Move to the rear of the machine and remove the screws from each of the 5 rear covers (11 screws total). Remove all the covers in the order below:

   a) First remove the cover which is located second from the right end of the machine, as viewed from the rear of the machine.

   b) Next, remove the cover which is on the far right end, again viewed from the rear of the machine.

   c) Continue to remove the remaining covers in sequence.

3. Locate the "new" cover that came with the Disk Option kit. This cover will have the disk drive installed. (see Figure A-4)

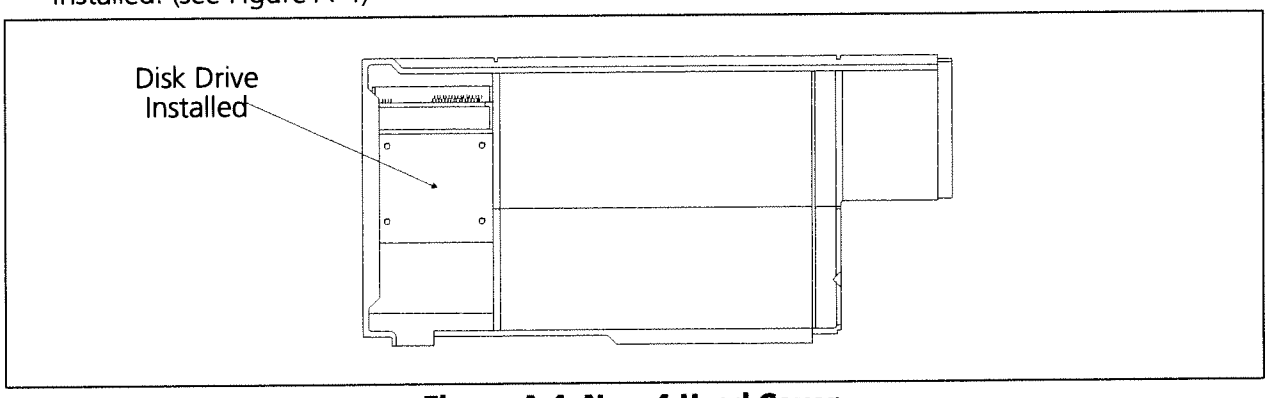


Figure A-4 New 4-Head Cover

4. Remove the 6 screws and cover to the Electronics Box located between the right 2 heads (from the rear). (see Figure A-5)

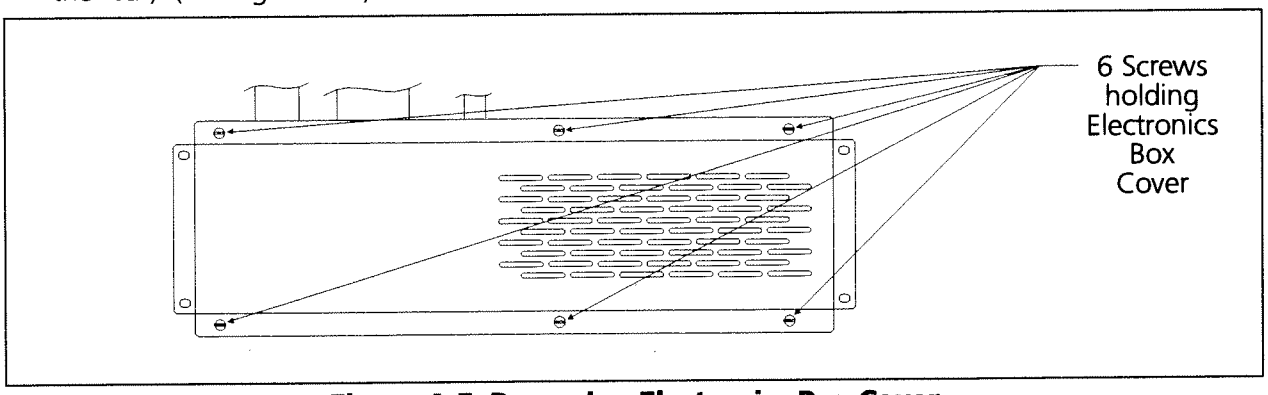


Figure A-5 Removing Electronics Box Cover

5. Route the end of the Disk Drive Data cable containing the keyed connector into the Electronic Box through the opening in the front of the Electronics Box. (See Figure A-6)

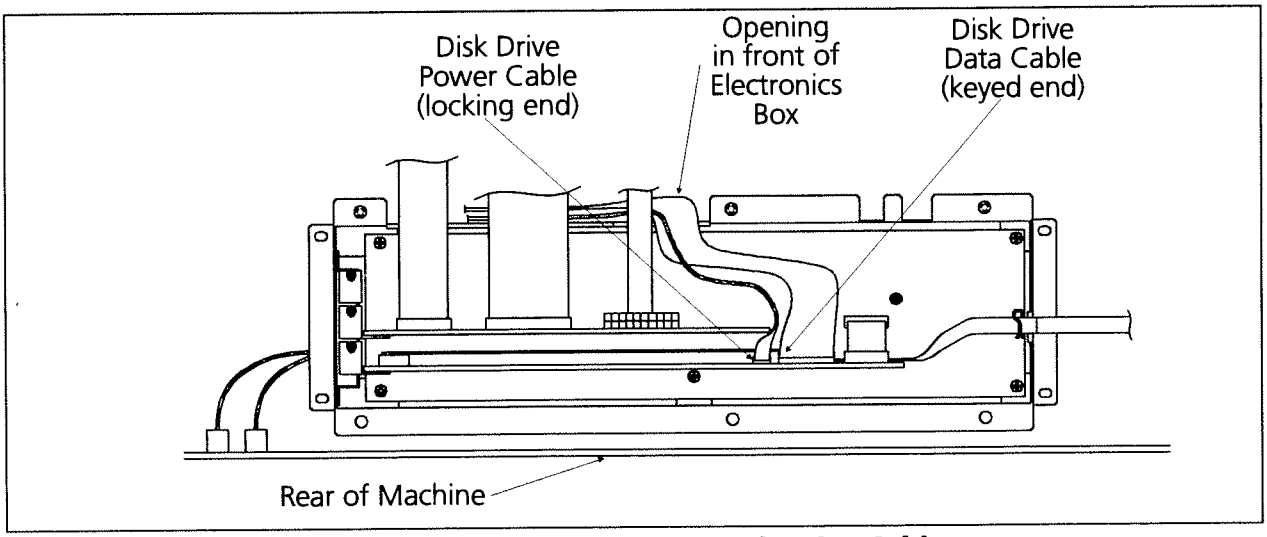


Figure A-6 Electronics Box w/Disk Drive Cables

6. Direct the cable to the top of the CPU and connect it to the proper connector as shown in Figure A-6.

7. Next, route the locking end of the Disk Drive Power cable into the Electronics Box through the same opening as you did the data cable.

8. Also, as shown in Figure A-6, install this cable to the proper connector at the top of the CPU.

9. Reinstall the Electronic Box Cover and secure it with the 6 screws.

10. Now route the two Disk Drive cables along the rear cover mounting channel between the motors and the channel toward the other end of the machine.

11. Locate the new cover with the EMC Disk Drive and position it upside down at the end of the embroidery peripheral in the area where the cover is to be installed.

12. While holding the cover and drive assembly steady with one hand, plug the data ribbon cable into its mating connector at the rear of the disk drive as shown in Figure A-7. Also, plug the disk drive power cable into its mating connector at the rear of the disk drive next to the data cable connector. When installed properly, the red wires (pins 1) of each cable will be adjacent to each other.

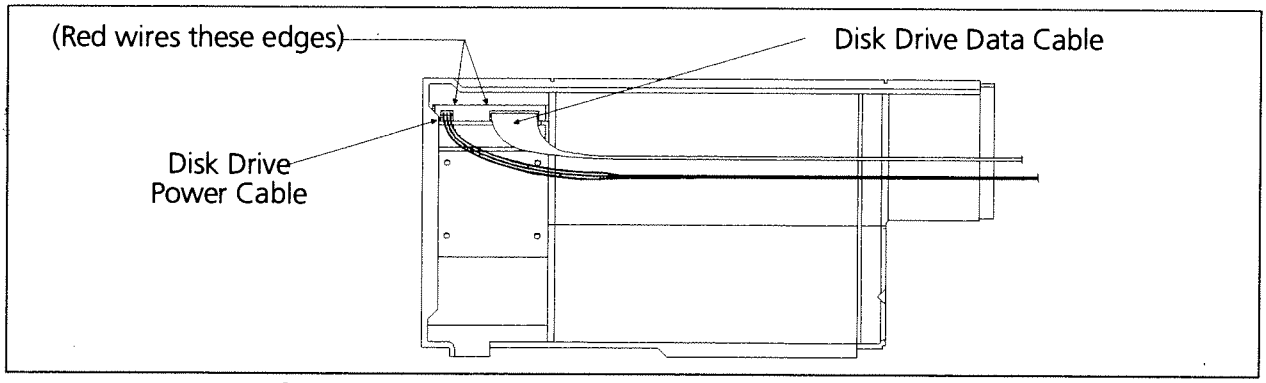


Figure A-7 New Cover w/Disk Drive Option Installed

13. Install the new cover containing the EMC Disk Drive. Guide the disk drive data and power cables out of the way of the cover and any moving carriage parts as the cover is lowered to the chassis.

14. Reinstall the remaining rear covers.

15. Reinstall the power cord from the embroidery peripheral to the power source.

Install .RSA Files Into EDS System Controller

If your embroidery peripheral is part of an EDS System, and you intend to "boot" the peripheral using the network, you will need to install the proper operating program (.RSA files) into the EDS System Controller. To install the .RSA files, put the "boot" disk into the EDS Controller disk drive then type:

a:install (or b:install if the disk drive is the "B" drive)

and press the [Enter] key. The operating program or .RSA file for each of the embroidery peripherals that supports the disk drive option will automatically load into the EDS Controller.

Configuring The EMC Disk Drive Controlled Unit

When an EMC Disk Drive Option is installed on an embroidery peripheral, no configuration changes are required. Follow the instructions given in the specific Operation Manuals that apply to your embroidery peripheral.

Keep in mind that, if you are operating from an EDS network as well as using the disk drive, you must install the correct .RSA files as previously indicated and follow the rules of the network when assigning "Unit Numbers" to peripheral devices. Specifically, after setting the Peripheral Program, the Unit Number must be set different for each peripheral attached to a single EDS System Controller.

If no network is attached to the EMC Disk Drive controlled embroidery peripheral, it truly is a "standalone" embroidery machine; and you can set the Unit Number to any number between 1 and 16.

CAUTION! To prevent possible damage to diskettes, do not set them on the area just in front of the disk drive and behind the Beam Assembly. The Beam moves very quickly during the SET HOME function and may strike any material located in its path.

Operation

Your EMC Disk Drive controlled embroidery peripheral provides you with features that will enhance your overall embroidery capabilities. The information given in this User Guide pertains only to the EMC Disk Drive Option and the additional enhancements that the option provides to the embroidery peripheral operation.

If you are upgrading an existing embroidery peripheral on an EDS system, you should already know how to operate the embroidery peripheral from reading the Operation Manual that accompanied the unit when you purchased it.

If this is your first embroidery system, you must refer to your embroidery peripheral Operation Manual to understand the operation of that particular unit, in addition to reading and understanding the features in this User Guide.

Booting The Peripheral

You may "boot" (or download the operating program needed to bring the embroidery peripheral to operation) by one of two methods. If the embroidery peripheral is properly "configured" and attached to an EDS System containing the .RSA file that supports the disk drive option, you will "boot" from the network when the embroidery peripheral is turned on.

If the embroidery peripheral is not connected to an EDS System, or if the system is not turned on and operating in EDS, the embroidery peripheral will attempt to "boot" from the disk drive. If a "boot disk" is installed in the disk drive, the embroidery peripheral will "down load" its operating program and become a standalone, operational embroidery peripheral.

If a "boot disk" is not located in the disk drive, the message: INSERT BOOT DISK will show on the display. Insert the "boot disk" and press **and hold** the [Enter] key for a moment. The embroidery peripheral will "download" its operating program.

New Menus

With the installation of the EMC Disk Drive Option, two Menus are added to the embroidery peripheral that you may not be familiar with. These Menus are: the FORMAT MENU and the DIRECTORY MENU. The Menus are only present in the embroidery peripheral list of Menus if the Disk Drive is installed.

Loading A Design

Through The Network

After the embroidery peripheral is booted, or "downloaded," either by the EDS System network or by the EMC Disk Drive option, you can load designs into the embroidery peripheral buffer. If you are loading designs through the network, please refer to the EDS System Operation Manual for a detailed explanation of sending designs from the computer to the peripheral.

By Disk

If you desire to load a design from the disk drive, refer to the procedure that follows:

Once the embroidery peripheral is properly booted, either by the EDS System network or the disk drive "boot disk," you can begin the process of loading designs.

DIRECTORY MENU

1. Press the [Menu] key on the embroidery peripheral to enter into the menu list of the peripheral. The first Menu that appears is the DIRECTORY MENU. If you know that the design format setting at the FORMAT MENU is correct , then proceed to the next step. If you need to set the format, refer to the "Format Menu" section before you go to the next step.

2. Ensure that the diskette containing the design you wish to load is inserted in the disk drive, then press the [Enter] key on the embroidery peripheral.

   The disk drive light will come on for the time it takes to read the directory of the diskette. When the directory is read, the name of the first design in the directory will show on the embroidery peripheral display.

3. If the design name showing on the display is the one you wish to load, simply press the [Enter] key again to load that design. If the design name showing on the display is not the design you wish to load, press the [Up Arrow] and/or [Down Arrow] keys until the desired design name is showing on the display, then press the [Enter] key.

   When the [Enter] key is pressed, the disk drive light will come on as the design is loaded into the embroidery peripheral design buffer. While the design is being loaded, the display will show the name of the design and that it is "loading." When loading is complete, the display will go to the DESIGN MENU. Information for operating the embroidery peripheral Design Menu is found in the specific embroidery peripheral Operation Manual.

Selecting The Format

There are six formats of embroidery designs that can be loaded into the embroidery peripheral by the EMC Disk Drive option. These formats are: DOS, MELCO, TAJIMA, BARUDAN FMC, BARUDAN FDR, and ZSK.

FORMAT MENU

If you are ready to load a design, but need to change the format selection, you will need to enter into the FORMAT MENU of the embroidery peripheral list of menus. To do this, follow these simple steps:

1. Once the embroidery peripheral is downloaded, press the [Menu] key on the embroidery peripheral to enter into the list of menus.

2. The Menu that will first appear is the DIRECTORY MENU. To change to the FORMAT MENU, press and hold the [Alt] key while you then press the [Menu] key. The FORMAT MENU will now show on the display.

3. Press the [Enter] key and the currently selected format will then show on the display. To change the selected format, press the [Up Arrow] and/or [Down Arrow] keys until the correct format is showing in the display.

4. When the desired format is showing in the display, press the [Enter] key to choose that format.

5. Press the [Enter] key again, and the embroidery peripheral list of menus will go back to the DIRECTORY MENU.

CAUTION! To prevent possible damage to diskettes, do not set them on the area just in front of the disk drive and behind the Beam Assembly. The Beam moves very quickly during the SET HOME function and may strike any material located in its path.

Other Embroidery Peripheral Menus

The information in this appendix is limited to only that which is particular to the EMC Disk Drive Option. If you require an overview of the other Menus that appear when using the MENU key on the embroidery peripheral, you must turn to the specific Operation Manual for that particular embroidery peripheral.

ERROR MESSAGES

DESIGN NOT FOUND

Tried to do power fail recovery from disk but unable to find correct design on current diskette.

DUPLICATE DESIGN

The operator tried to load a design into the peripheral design buffer that is already loaded or has the same name.

DIRECTORY FULL

The operator tried to load another design into the peripheral design buffer after already having 16 loaded. The buffer only allows a maximum of 16 designs, regardless of size.

DISK DIR ERROR

Disk error detected when trying to perform a disk directory, either the wrong format is selected, there is a defective disk drive, or a bad diskette.

DISK LOAD ERROR

Disk error detected when trying to load a disk design. Caused by either a defective disk drive or a bad diskette.

NO DESIGNS FOUND

Tried to read a directory on a blank diskette.

NO FORMAT SELECT

Default format is DOS, yet somehow the format selected was set to "zero." This message may indicate a memory problem.

NO FREE MEMORY

Not enough room in the design buffer to accept any more designs. The buffer allows for only 16 designs, but also has a total limit of 825,000 bytes of information, regardless of the number of designs.

BOOT READ ERROR

Unable to read the boot disk. Usually indicates a defective disk drive or diskette.

NOT BOOT DISK

Indication that a non boot disk is installed in the disk drive. Install the boot disk and press the [Enter] key to continue.

Appendix B. Glossary of Embroidery Terms

A

ACTIVE WINDOW
The window that you are currently using. Also called the current window.

ALPHABETS
Lettering styles that are ready to use for embroidery. Alphabets can also be designs that are brought to the screen using letters of the alphabet. An example of this would be Sports Symbols.

APPLICATION WINDOW
The first window to appear when EDS III is opened. The Application Window has three menu bar items; File, Peripheral, and Help.

APPLIQUE
The art of using fabrics to enhance a design or to reduce the stitch count.

ARTWORK
A design or cartoon used to digitize.

AUTO DELETE
An option that automatically deletes designs from the sewing peripheral after the design has sewn once.

AUTO RUN
An option that automatically sends a design to the beginning of the job queue, allowing you to sew without making any selections from the peripheral menus.

AUTO TRIM
An option that automatically inserts a trim command between each alphabet letter used in a design.

ARC ANGLE
The center of lettering sewn on a circle. This position is given in degrees, 0° at the top of the circle,180° at the bottom.

ARC FROM CENTER
When the position of the needle prior to sewing is at the center of the circle. The distance from the center of the circle to the bottom of the lettering is the radius.

ARC NORMAL
When the position of the needle prior to sewing is on the circumference of the circle.

ASD
The file extension given by EDS III to a design that is sent to the peripheral.

B

BACKING
Fabric used for stabilizing that is added to the back of a garment to be embroidered.

BEAN STITCH
A form of running stitch where the stitch is made forward, then back to the original needle penetration point, then forward again. Also known as a triple run.

BIRD NEST
A tangled mass of thread that gets jammed in the needle plate. Sometimes it is caused by improper tensions.

BIT PAD
Another name for a Digitizing Tablet.

BLOCK
A designated group of stitches that can be scaled, rotated, repositioned, deleted, cut, copied and pasted.

BLOCK EDIT
The term used for changing a defined group of stitches.

BOBBIN
The reel or spool that holds the under thread of machine sewing. The under thread itself.

C

CENTER DESIGN
Positing the design in the center of the sewing field.

CHAIN STITCH
A stitch used to outline and detail a chenille design.

CHENILLE
A form of embroidery with a deep pile that uses heavy yarns and has no bobbin thread. Commonly used for high school letter jackets.

CLICK
Pressing and releasing a mouse button in one quick motion.

CLIPBOARD
A temporary storage area in the computer's memory. Data in the storage area can be copied to another place.

CND
The three letter extension given to a Condensed file. See Condensed Format for more information.

COLUMN FILL
An option to turn wide column or satin stitches into a series of shorter stitches.

COLUMN STITCH
A stitch formed with one needle penetration on either side of a column. Also referred to as a satin stitch or a steil stitch.

COLUMN WIDTH
The width of the actual side-to-side needle penetrations in a column or satin stitch. In EDS III, the width can be increased or decreased in increments of 10% from 90% to -90%.

COMPLEX FILL
A method for digitizing fills where the computer automatically determines the various independent segments that are required in making the complete fill of an irregular shape.

CONDENSED FORMAT
A coding format that includes only the data for the Mk entries and function commands created during digitizing. This format allows you to scale the design up or down as well as change the density and stitch length of the design.

COPY
A command that keeps the design in the current window and also stores it in a temporary memory called the clipboard.

CURSOR
An icon used to indicate your position on the computer screen.

CUT
An editing function used to take selected stitching out of a design and store it in the clipboard. From there it may be pasted to a different place.

D

DATASET
A basic set of instructions to produce an embroidery design.

DEFAULTS
Values that are automatically used unless you override them with different values.

DENSITY
The vertical distance between two lines of stitching, measured in points.

DESIGN FILE
Any design stored on your hard disk or floppy disk. A file name can have up to eight letters, a period, and a three letter extension.

DIALOG BOX
A box displayed on your computer screen that prompts you to give information, such as a selection from a list of options, or a file name.

DIGITIZING
Converting artwork into a series of commands that can be read by an embroidery machine with the use of a special device.

DIGITIZING TABLET
A board used to communicate with a computer or an embroidery machine while creating a design.

DIGITRAC
The original Melco computerized digitizing system which uses an exceptionally large surface and its own vertical stand.

DIRECTORY
A named group of computer files stored on one of your computer drives. The hard drive of your computer is usually the C directory. Floppy diskettes are inserted into the A or B drive.

DISK
A computer data storage device which is accessed in the hard drive or one of the floppy drives.

DISKETTE FORMAT
The manner in which a disk has been prepared to accept information.

DITHERED COLORS
A combination of a solid color and a pattern.

DOUBLE CLICK
Pressing the mouse button quickly two times.

DRAG
Holding down the mouse button while moving the mouse. This is usually done to move an object on the screen or to highlight text.

DROP-DOWN MENU
A list of available commands that displays when you click on a menu option. Commands displayed in black are accessible, commands that are displayed in gray or half tone are not.

E

EDIT
Changing a design file by adding, deleting or moving Mk points, or by inserting and deleting functions.

EMBROIDERY POINT
A unit of measure equal to one tenth of a millimeter or 1/254th of an inch.

EXP
The three letter extension given to an Expanded file.

EXPANDED FORMAT
A coding format that includes the data for every stitch in the design.

EXPORT
Copying a design from the computer to a non-DOS format diskette or paper tape.

EXTENSIONS
The last part of a file name after the period. It can be up to three characters long and is used to identify the type of file.

F

FILE
A related collection of information, named and often stored on a disk.

FILE NAME
The unique identifier given to a design that is stored on a computer. The file name can have up to eight characters, a period, and an up to three letters extension.

FILL STITCH
A series of running stitches used to cover large areas.

FORMAT
Preparing a disk to receive information. All new disks must be formatted, but reformatting a disk destroys any information stored on it.

FUNCTION
An action caused by a command in a design such as Trim, Color Change, Needle Up, etc.

G

GRAPHICAL ROTATION
Angling a design in the Layout window using the mouse to click and drag the rotation box around the object.

GRAPHICAL SCALING
Making a design larger or smaller in the Layout window using the mouse in a click and drag motion.

GROUP OBJECTS
Objects that have been locked together on the screen.

H

HARD DISK
A sealed area in your computer with a read/write head and auxiliary memory.

HOOP
A device made of wood, metal, or plastic used to hold a garment or fabric taut during the embroidery process.

HORIZONTAL SPACING
Additional spacing that may be added between Alphabet letters.

I

ICON
A small graphic representation of something larger.

IMPORT
Bringing a design file into the EDS III program from a non-DOS formatted diskette or paper tape.

INSERT
Adding additional information to an existing design.

J

JUMP STITCH
A frame movement without a needle penetration. It function allows you to make a stitch longer than the maximum stitch length of your machine.

L

LAYER BY COLOR
Used to show specific colors of a design on the computer screen.

LAYOUT WINDOW
The screen in which you can digitize designs, open files on the hard disk, import designs from floppy disks, export designs, modify designs, and create lettering.

LETTER WIDTH
The overall width of each letter, NOT the column width. In EDS III changes to letter width can be made in increments of 10% from +30% to -30%.

LINE CENTER BOTTOM
When lettering is centered horizontally and above the position of the needle prior to sewing.

LINE CENTER MIDDLE
When lettering is centered horizontally and vertically from the position of the needle prior to sewing.

LINE NORMAL
When the bottom left of the lettering is the needle position prior to sewing. The sewing will stop at the bottom right and will *not* return to the original position.

LINE SPACING
Adding space between lines of lettering. Line space is determined by adding the letter height to the amount of blank space you want between the lines.

LIST BOX
A box, usually with a scroll bar, that appears within a dialog box and displays available options.

LOAD FILL
Accessing a fill pattern for inspection or changes.

LOCK GROUP
One or more objects that have been joined together.

LOCK STITCH
Three or more stitches placed closely together to prevent the embroidered stitches from pulling out. Also know as a tie-off stitch.

M

MAXIMIZE
The small button to the right of the Title Bar with the up arrow. Used to enlarge a window to its fullest extent.

MAXIMUM STITCH LENGTH
The longest stitch your embroidery machine is capable of sewing before performing a jump stitch. The maximum stitch length for Melco is 127 pts.

MINIMIZE
The small button on the right of the Title Bar with the down arrow. Used to reduce a window to an icon.

MODIFY MK BUTTON
An option that changes the position of a Mk point or changes the Mk to a different type of Mk.

MOSS STITCH
The "loopy" part of a chenille design. The height of the loop is controlled by the height of the needle.

MULTIHEAD
An embroidery machine with more than one sewing head.

N

NEEDLE UP
A command used to move from one part of a design to another without stitching.

NON-DOS FORMATS
Any disk format other than DOS that is supported by EDS III, such as: Melco, Tajima, Barudan, ZSK.

NORMAL STITCH
A command that resets the stitching to a regular running stitch. It also brings the needle down to the sewing position after a needle-up function is performed.

O

OBJECT
Any design from a disk, paper tape, or lettering brought in to the Layout window. Several objects can be in one window at one time.

OBJECT FILE
A code format where each object has its own separate set of parameters. Condensed, expanded and lettering designs can all be saved together as an Object File.

OBJECT ORDER
A list showing the sewing order of a group of objects.

OBJECT PARAMETERS
A dialog box which allows you to change the scale, rotation, orientation, or lock status of an object.

OFM
The three letter extension that identifies an Object file.

ORIENTATION
The direction that a design will sew. Melco uses an "F" to designate a normal sewing position.

ORIGIN
The point at which a design will start. Most designs will have x and y coordinates of 0,0; meaning that the design will start in the center and end in the center.

P

PAPER TAPE
An older form of computer information storage in which the information is stored as a series of holes on a reel-to-reel paper tape.

PARTITION LINE SEQUENCE
Determines where the needle will penetrate on each line of stitching in a fill stitch.

PERIPHERAL
Any device that is attached to or run by the computer: Embroidery Machines, Paper Tape Punches, Digitizing Tablets, Printers, or Plotters.

PERIPHERAL SETUP
A dialog box that allows you to select Embroidery Peripherals in your network.

PERIPHERAL STATUS
A dialog box that displays information about a particular peripheral.

POINT EDIT WINDOW
One of the windows that is used to edit designs.

R

RADIUS
The distance from the center to the circumference of a circle. The value of the radius controls the amount of curve in an arc.

REGENERATE
A command to redraw a design, used to see modifications in the current design.

RESET STITCH
See Normal Stitch.

RETURN TO ORIGIN
A command used to move the pantograph back to the origin of the design.

RUBBER BANDING
A command to view an edited portion of a design without regenerating the entire design.

RUNNING STITCH
A line of equally spaced stitches that are used to outline, underlay or add detail to a design.

S

SATIN STITCH
A stitch formed with one needle penetration on either side of a column. Also called a column stitch or steil stitch.

SAVE
A command to overwrite a previously saved file without prompting you for a new filename.

SAVE AS
A command to store a design for the first time, or to store a modified design with a new name to prevent destruction of the original design.

SAVE FILL
A command to allow you to define fill information while digitizing.

SCALING
The process of changing the size, density or stitch lengths in a design.

SCROLL BAR
A bar that appears at the far right or bottom edge of a window or list box whose contents are not fully visible. Clicking on the arrows of the bar moves the viewing portion of the screen.

SEND DESIGN
A command that loads a design in the active window into one or more peripherals. The design can be a condensed, expanded, or object file.

SHORT STITCHES
Computer generated stitches that do not go all the way across a column at a curve or angle to prevent an excess of stitches at one point.

SLANT ANGLE
A command that slants lettering in one degree increments up to fifteen degrees, positive or negative.

SPECIAL STITCH
A user defined stitch that is digitized and stored temporarily in the computer memory. A Special Stitch is limited to 30 Mks or commands.

STATUS BAR
The area at the bottom of the computer screen that displays information about the active window or selected command.

STITCH
One needle penetration made by the embroidery machine.

STITCH COUNT
The number of stitches in a design.

STITCH LENGTH
The length of the running stitches in a design. Measured in points.

STITCH LIST (condensed)
Information showing the Mk points and functions that make up a design.

STITCH LIST (expanded)
Information showing the actual stitches and functions that make up a design.

STITCH PROCESSOR
An EDS III option that changes the size, densities, or stitch lengths of an expanded design.

STORED SYMBOL
A portion of a design that is digitized as a separate piece to be used multiple times within the same design. An example of this would be a leaves on a tree. You would digitize one leaf as a stored symbol then use that same leaf and place it on the tree at various different sizes and angles. This eliminates redigitizing the same design.

T

TIE OFF
See Lock Stitch.

TILE
Allows you to put up to nine windows in the Application Window.

TOOL SET
The commands and options on the left side of the window represented by icons.

TRANSFER DESIGN
A command that sends Expanded or ASD files to the Peripheral.

U

UNDERLAY
Stitches used to stabilize fabric and/or prepare the area for top stitching.

UTC
UTC is the Under Thread Control. It is a sensor mounted to the needle plate bracket that recognizes the absence of the bobbin thread. When the machine sews a certain number of stitches without bobbin thread, the UTC causes the machine to stop, back up that number of stitches, and display the error message, CHECK BOBBIN. The UTC also has a retaining tab that holds the inner basket of the rotary hook.

V

VERTICAL SPACING
A command that stair steps your lettering up (positive value), or down (negative value).

W

WINDOW
A rectangular area on your screen in which you view and work on designs.

Z

ZOOM
A command that enlarges or reduces a portion of a design in the current Layout window, allowing you to edit with more precision. This command does not affect the sewing size of the design.

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Quick Reference Guides

The following are Quick Reference Guides for the EMC 10 and EMC 10/4 Embroidery Peripherals. It may be helpful to post a copy that is visible from the peripheral. Feel free to remove the guide from this manual or make copies of it.

Quick Reference Guide

for the

EMC 10

Melco
Embroidery Systems

Part Number 110234-01, Rev. A

EMC 10 QUICK REFERENCE

Setting Home

Do this every time you turn the machine on.

1. Press the [MENU] key until the display reads: **HOME MENU**
2. Press the [ENTER] key.
   The display reads: SET HOME
3. Press the [ENTER] key.

Selecting a Hoop Size

1. Press the [MENU] key until the display reads: **HOME MENU**
2. Press the [ENTER] key.
   The display reads: SET HOME
3. Press the [⇑] key.
   The display reads: HOOP LIMITS ON
   If not, press the [⇒] key until it does.
4. Press the [⇑] key.
   The display reads: SELECT HOOP
5. Press the [ENTER] key.
6. Press the [⇑] or [⇓] keys to scroll to right the hoop size.
7. Press the [ENTER] key.

Resetting Designs

1. Press the [MENU] key until the display reads: **RESET MENU**
2. Press the [ENTER] key.
   The display reads: SYSTEM RESET
3. Press the [ENTER] key.
   The display reads **RESET**

Running a Design

1. Press the [MENU] key until the display reads: **DESIGN MENU**
2. Press the [ENTER] key.
3. Press the [⇑] or [⇓] key to scroll to the design you want.
4. Press the [ENTER] key
   The display reads: **COLOR MENU.** Press [ENTER].
5. Press the [⇐] or [⇒] key to select the sequence.
6. Press the [⇑] or [⇓] key to select the color.
7. Press the [ALT][⇓] key to delete a sequence.
8. Press the [ENTER] key.
   The display reads: **ORIENTATION MENU**
9. Press the [ENTER] key.
10. Press the [⇑] or [⇓] key to scroll to the orientation you want.
11. Press the [ENTER] key.
    The display reads: RUN DESIGN
12. Press the [ENTER] key.
    First the display reads: MACHINE READY, then shows the *design name*.
13. Press the [MENU] key until the display reads: **TRACE MENU**
14. Press the [ENTER] key.
    The display reads: CENTERING OFF
15. Press the [⇑] key.
    The display reads: TRACE OUTLINE
16. Press the [ENTER] key.
    First the display reads: CALCULATING, then shows the *design name*.
17. Press the [START] key.
    The trace function begins.

You may repeat the Trace function by pressing the [START] key again.

18. When ready to sew, first press the [ENTER] key, then press the [START] key.

Changing the Sewing Speed

When the machine is sewing:

1. Press the [ALT][⇑] keys to increase speed.
   Press the [ALT][⇓] keys to decrease speed

Bringing Up the Needle

1. Press the [MENU] key until the display reads: **HEAD TIMING MENU**
2. Press the [ENTER] key.
3. Press the [ALT] [⇑] keys.
   The needle comes up.
4. Press the [MENU] key to exit the Head Timing Menu.

Deleting a Design

1. Press the [MENU] key until the display reads: **DESIGN MENU**
2. Press the [ENTER] key.
3. Press the [⇑] or [⇓] key to scroll to the right design file.
4. Press the [ALT][⇓] keys.
   The display reads: KILL FILENAME ?
5. Press the [⇑] key for YES or the [⇓] key for NO.
6. Press the [ENTER] key.

Trim on Command

1, Press the [MENU] key until the display reads: **TRIM MENU**
2. Press the [ENTER] key.
3. Press the [⇑] or [⇓] key until the display reads: TRIM IMMEDIATE
4. Press the [ENTER] key. The pantograph moves and a trim is performed.

Quick Reference Guide

for the

EMC 10/4

Melco
Embroidery Systems

Part Number 110234-01, Rev. A

EMC 10/4 QUICK REFERENCE

Setting Home

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2. Press the [ENTER] key.
   The display reads: SET HOME
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Selecting a Hoop Size

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2. Press the [ENTER] key.
   The display reads: SET HOME
3. Press the [⇑] key.
   The display reads: HOOP LIMITS ON
   If not, press the [⇒] key until it does.
4. Press the [⇑] key.
   The display reads: SELECT HOOP
5. Press the [ENTER] key.
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7. Press the [ENTER] key.

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When the machine is sewing:

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2. Press the [ENTER] key.
3. Press the [⇑] or [⇓] key to scroll to the design you want.
4. Press the [ENTER] key
   The display reads: **COLOR MENU**
5. Press the [⇐] or [⇒] key to select the sequence.
6. Press the [⇑] or [⇓] key to select the color.
7. Press the [ALT][⇓] key to delete a sequence.
8. Press the [ENTER] key.
   The display reads: **ORIENTATION MENU**
9. Press the [ENTER] key.
10. Press the [⇑] or [⇓] key to scroll to the orientation you want.
11. Press the [ENTER] key.
    The display reads: RUN DESIGN
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    The display reads: CENTERING OFF
15. Press the [⇑] key.
    The display reads: TRACE OUTLINE
16. Press the [ENTER] key.
    First the display reads: CALCULATING, then shows the *design name*.
17. Press the [START] key.
    The trace function begins.

You may repeat the Trace function by pressing the [START] key again.

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2. Press the [ENTER] key.
   The display reads: SYSTEM RESET
3. Press the [ENTER] key.
   The display reads **RESET**

Bringing Up the Needle

1. Press the [MENU] key until the display reads: **HEAD TIMING MENU**
2. Press the [ENTER] key.
3. Press the [ALT] [⇑] keys.
   The needle comes up.
4. Press the [MENU] key to exit the Head Timing Menu.

Deleting a Design

1. Press the [MENU] key until the display reads: **DESIGN MENU**
2. Press the [ENTER] key.
3. Press the [⇑] or [⇓] key to scroll to the right design file.
4. Press the [ALT][⇓] keys.
   The display reads: KILL FILENAME ?
5. Press the [⇑] key for YES or the [⇓] key for NO.
6. Press the [ENTER] key.

Trim on Command

1, Press the [MENU] key until the display reads: **TRIM MENU**
2. Press the [ENTER] key.
3. Press the [⇑] or [⇓] key until the display reads: TRIM IMMEDIATE
4. Press the [ENTER] key. The pantograph moves and a trim is performed.