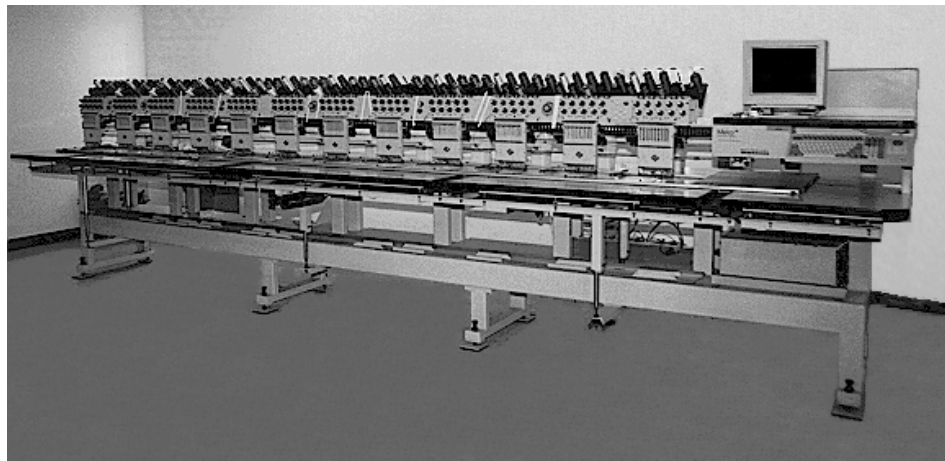


Installation, Operation, and Maintenance Manual for the EMC 10/12 embroidery peripheral



- Twelve-Head Embroidery Peripheral

European Compliance version

Part Number 110268-01, Revision C

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Multi-Head Embroidery Peripheral EMC 10/12 Specifications

Maximum embroidery speed

1000 stitches per minute, 800 stitches per minute on caps

Number of Heads

12

Number of needles

10 per sewing head

Dimensions

238.8" w X 60.3" h X 47.5" d
6.06meter X 1.53meter X 1.20meter

Weight

3,960 lbs
1,800 kg

Shipping weight

4,224 lbs
1,920 kg

Power consumption

220V/230V/240V/single phase/50/60Hz

Noise level and test conditions

Equivalent continuous A weighted sound pressure level at 1.0 meters from the floor is 84db.

The peak C weighted instantaneous sound pressure level is 84db.

The noise level was measured sewing a test design at 750 spm.

Recommended power conditioning equipment

Power line conditioner

Embroidering field size

11" x 16"
28cm x 41cm (per head)

Intended use

The EMC 10/12 is designed to embroider on textile products which are placed easily in a Melco embroidery hoop. The machine should not be used on thick leather, wood, plastic, or other dense material.

Safe Operating Principles

The EMC 10/12 will embroider stitches in a safe and controlled manner when used as outlined in this manual.

Thread break sensors stop the machine automatically when a fault is detected. The machine will stop at the end of each design.

- Operators/maintenance personnel must be trained to Melco approved standards.
- No untrained persons are permitted within the designated working area around the machine.
- Keep the table top area clear during operation.
- Do not interfere with moving machine parts during operation.
- Intervention is permitted during embroidery once the operator stops the machine.
- Keep the working area clean.

Read the entire manual prior to operation.

Explanation of Symbols



Caution!



Indicates a machine component will move. Keep clear!



Shock hazard. No user replaceable parts behind this label. Do not open!



Pinch point, Keep clear!



Pinch point, Keep clear!



Pinch points, Keep clear!



Use a fork lift.

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1. Installation

Machine Working Environment

The EMC 10/12 peripheral must be positioned on a hard dry flat surface capable of supporting a machine weight of 3,960 lbs (1,800kg). A working corridor of 1.5m must be provided around the machine's perimeter for operation and maintenance. The area surrounding the machine should have adequate lighting, and the ambient room temperature should not fall below 55 degrees F (13 degrees C).

Moving the Crated Machine

Do not attempt to manually lift or move the EMC 10/12. Use a fork lift to move the crated machine. Place the lifting forks as diagrammed on the crate.



Removing the Crate

The crate is constructed as illustrated in Figure 1-1. Disassemble according to steps in Figure 1-1. When fully dismantled, the crate, packing material, and wrapper should be disposed of safely. LEAVE THE MACHINE ON THE PALLET.

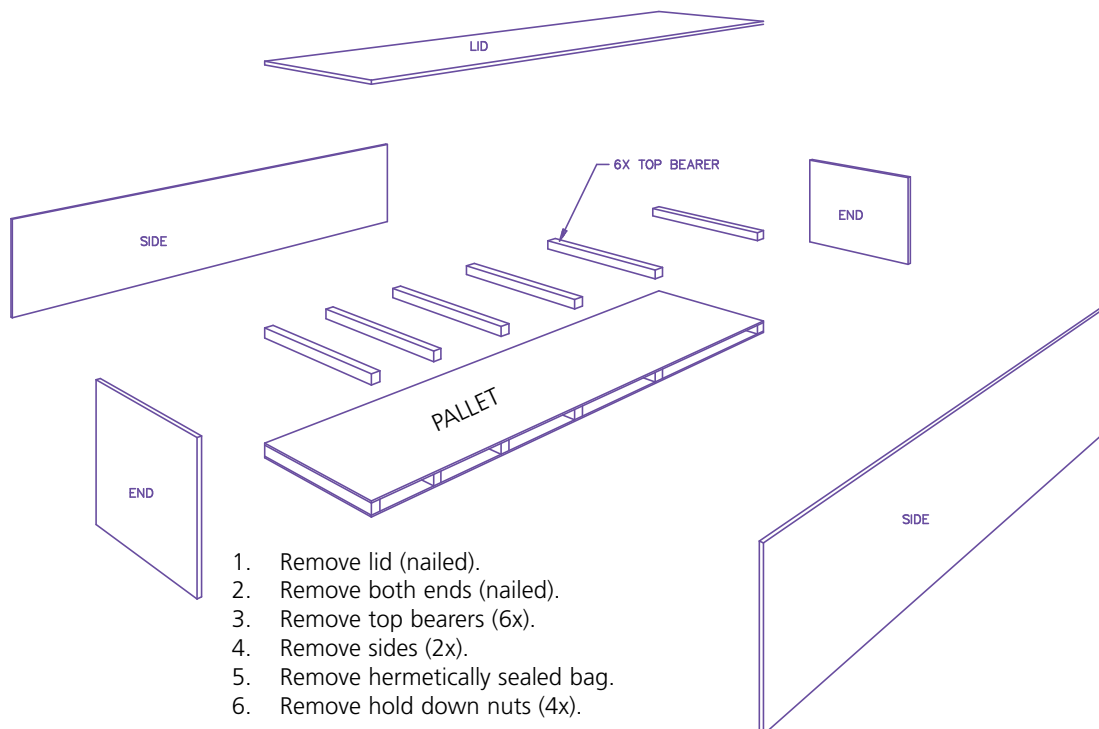


Figure 1-1

Positioning the Machine

The operator's kit contains 8 M20 jacking screws and nuts. Screw each nut onto a screw until the nut contacts the head of the screw. Each nut should be finger-tight. Place one nut/screw assembly into each machine leg (8) until the screw contacts the pallet.

Position the fork lift as shown in Figure 1-2. Lift the machine clear of the pallet and move to its designated area. Ensure 1.5m access to all sides of the machine, then lower gently to the floor.

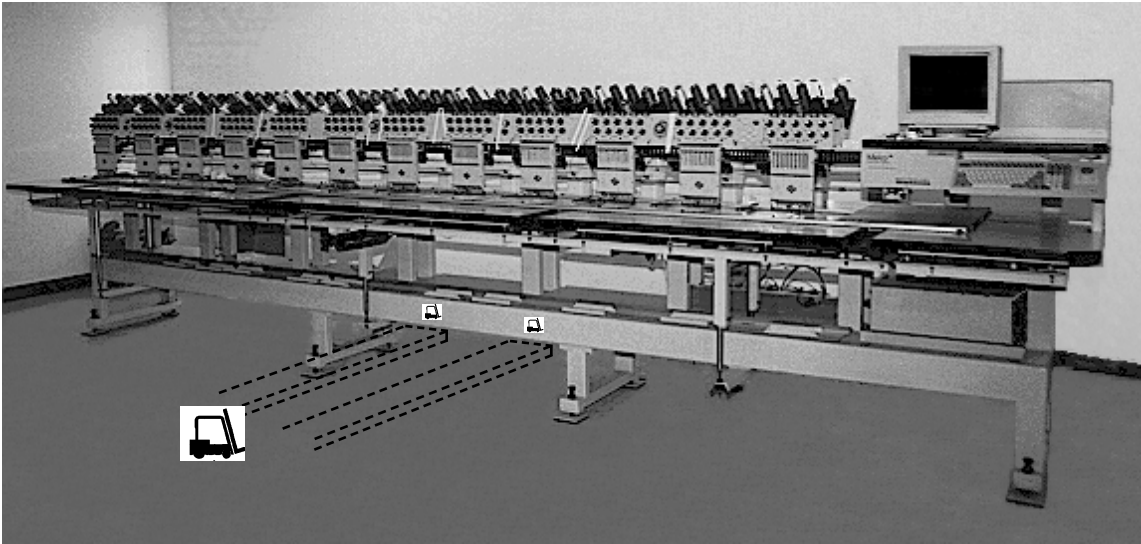


Figure 1-2

Retrieve the 8 machine floor pads from the operator's kit. Lift the machine 2" (5cm) off the floor with the fork lift. Place one floor pad rubber-side down under each machine leg. Adjust each jacking screw down to the dimple in the center of the pad. Lower the machine and remove the fork lift.



The machine must be leveled in the X and Y plane. Use a level on the main chassis to measure each plane. Adjustments are made by turning the jacking screws. Jacking screws should not protrude more than 0.47" (1.2cm) below the machine leg (see Figure 1-3). When the machine is level, tighten the nuts down to the machine leg with a wrench.

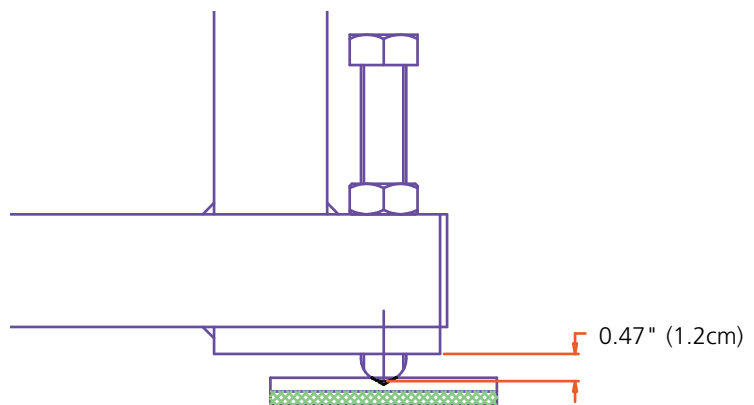


Figure 1-3

DO NOT ATTEMPT TO RAISE OR LOWER THE LIFT TABLE.



Removing the Shipping Clamp

Remove the shipping clamp affixed to the color change housing (see Figure 1-4) by unscrewing the 4 cap head screws. Attached to the clamp is a pack with 2 button-head screws; affix these screws to the color change housing. Retain the clamp and screws; always use the clamp when the machine is transported.

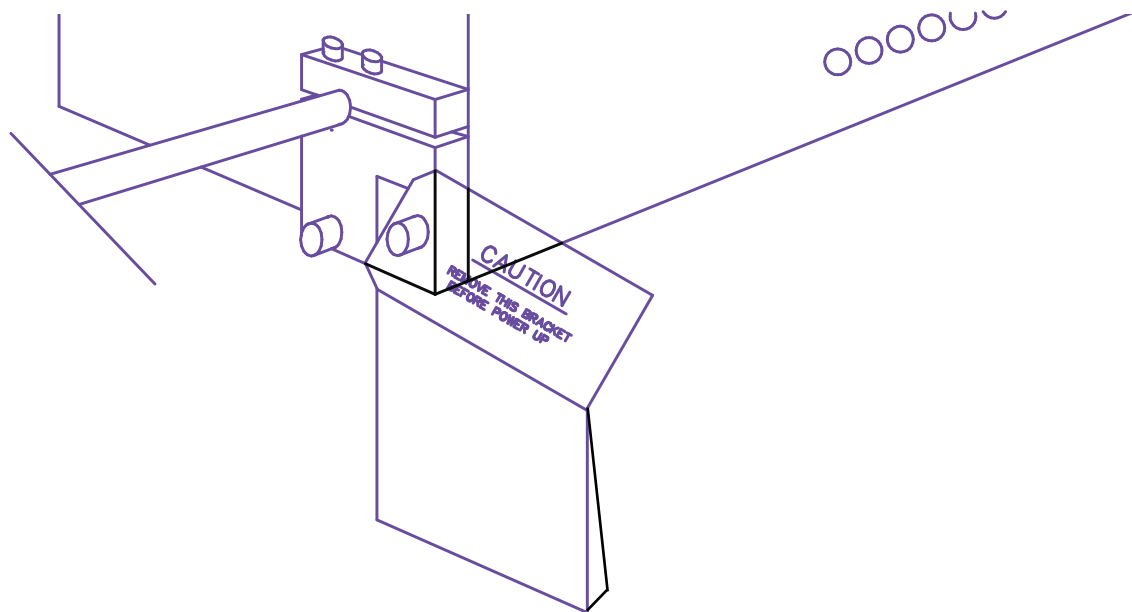


Figure 1-4

Connecting the Monitor and Keyboard

The following step must be performed by a qualified electrical engineer. DO NOT connect the main power supply now. Always use anti-static wristbands when working with printed circuit boards.

The monitor ships in a separate carton. The power leads for the monitor and keyboard are connected to the machine. The video lead is connected to the monitor. The keyboard is securely taped to its base at the right-hand side of the machine. Refer to Figure 1-5 and follow these steps to connect the monitor and keyboard.

1. Locate the monitor's power cable protruding from the hole in the logic box.
2. Carefully remove the tape and protective wrapping from keyboard.
3. Unpack the monitor and place on the machine table above keyboard.

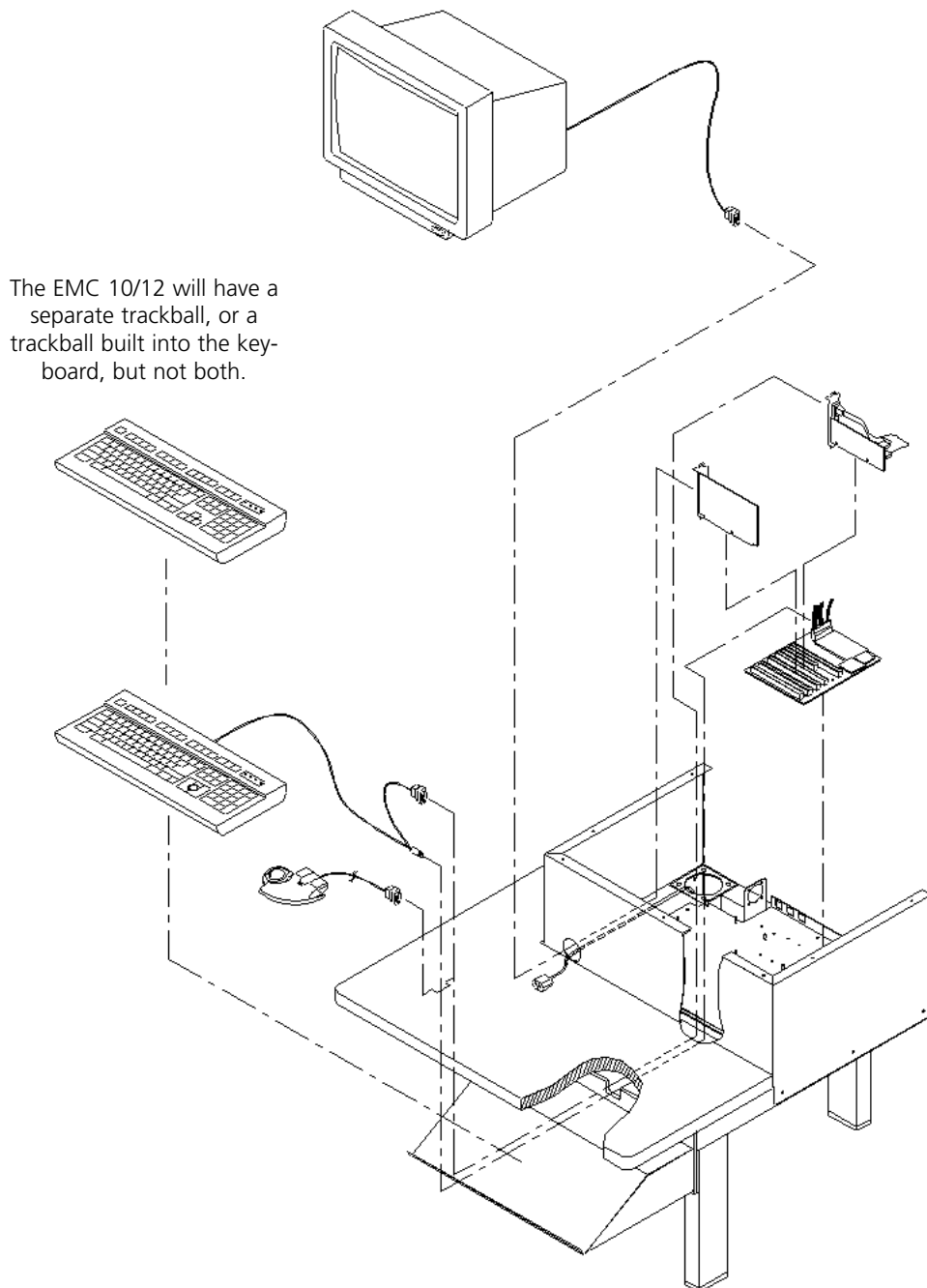


Figure 1-5

4. Remove the logic box top casing.
5. Connect the monitor power cable to the monitor.
6. Pass the video cable from the monitor through the hole in the logic box casing and connect to the video card. Secure with the terminal screws.
7. Replace the logic box casing top.

Connecting Power Cables

1. Assure the power switch is in the OFF position.
2. Connect the power cord to the power socket.

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2. Operation

This chapter outlines machine operation; in addition, operators must attend a Melco approved training course prior to operating the machine.

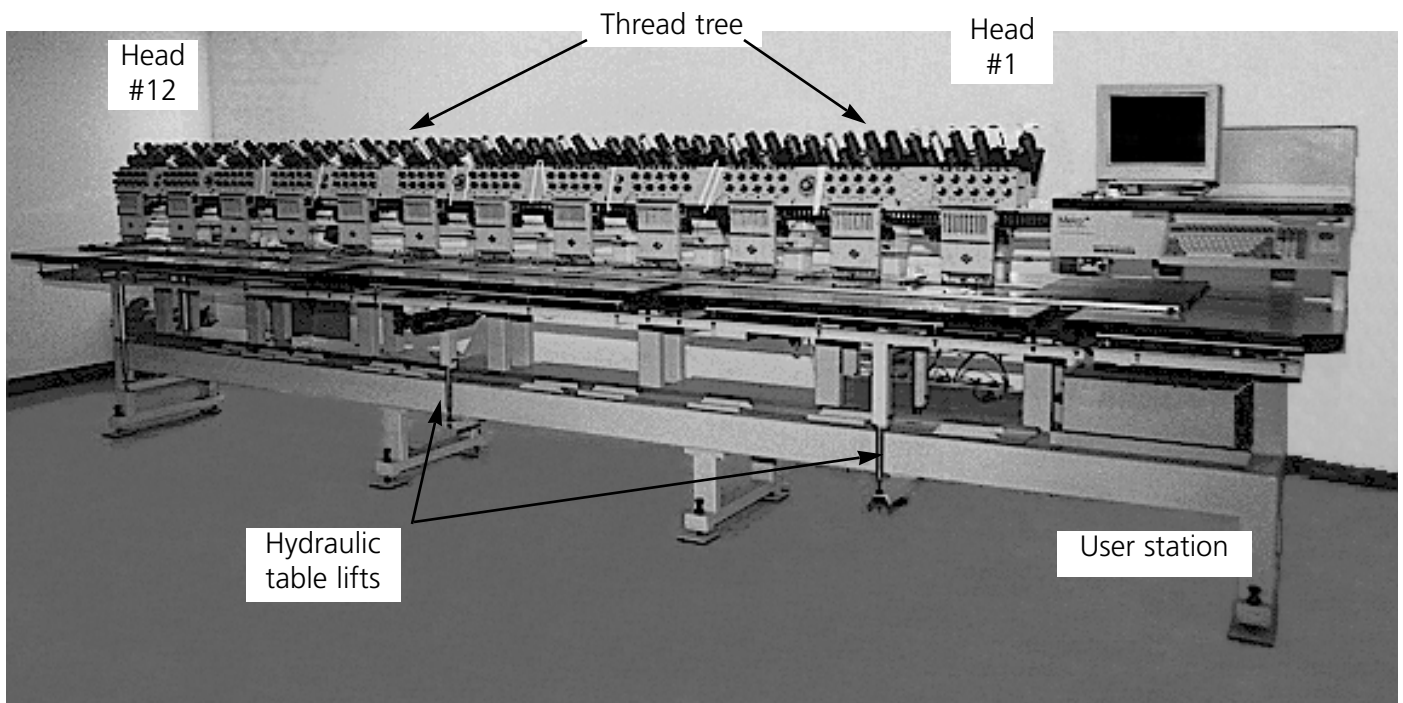


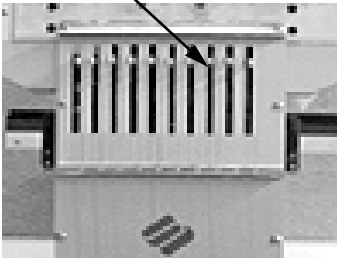
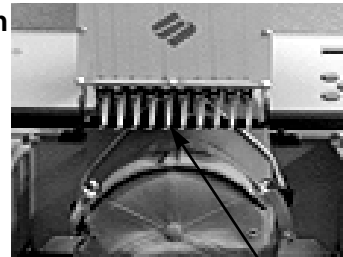
Figure 2-1

 **Hazards of Operation**

Caution! Below are risk areas or danger points encountered during operation. Always wear eye protection while operating the machine to prevent injury in the event of a needle break.

Needles During Operation

Do not place body parts or other foreign objects under the needles during operation.

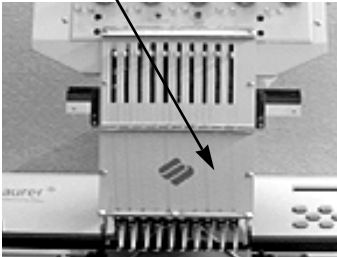
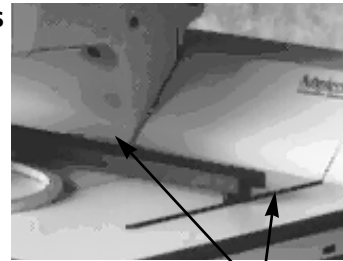


Take-up Lever Oscillation

Do not touch the take-up levers during operation

Pinch Points

Do not rest hands or other objects on the table top during operation. Do not reach behind needle case during operation with or without table top in place.

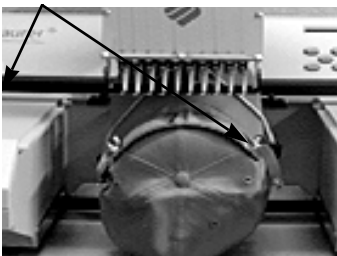
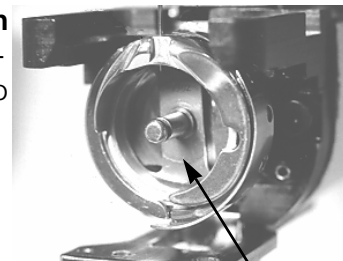


Needle Case Movements

Do not place hands or other objects on or around the needle case during operation.

Rotary Hook Rotation

Do not attempt to change bobbin thread during operation. Do not place hands or other objects in the rotary hook area during operation.



Cap Frame Pinch Points

Do not touch the cap frame, driver, or driver bar during operation.

Threading

Refer to Figure 2-2 and follow the steps on the next page to thread the EMC 10/12. Keep clear of the user station to avoid inadvertently starting the machine.

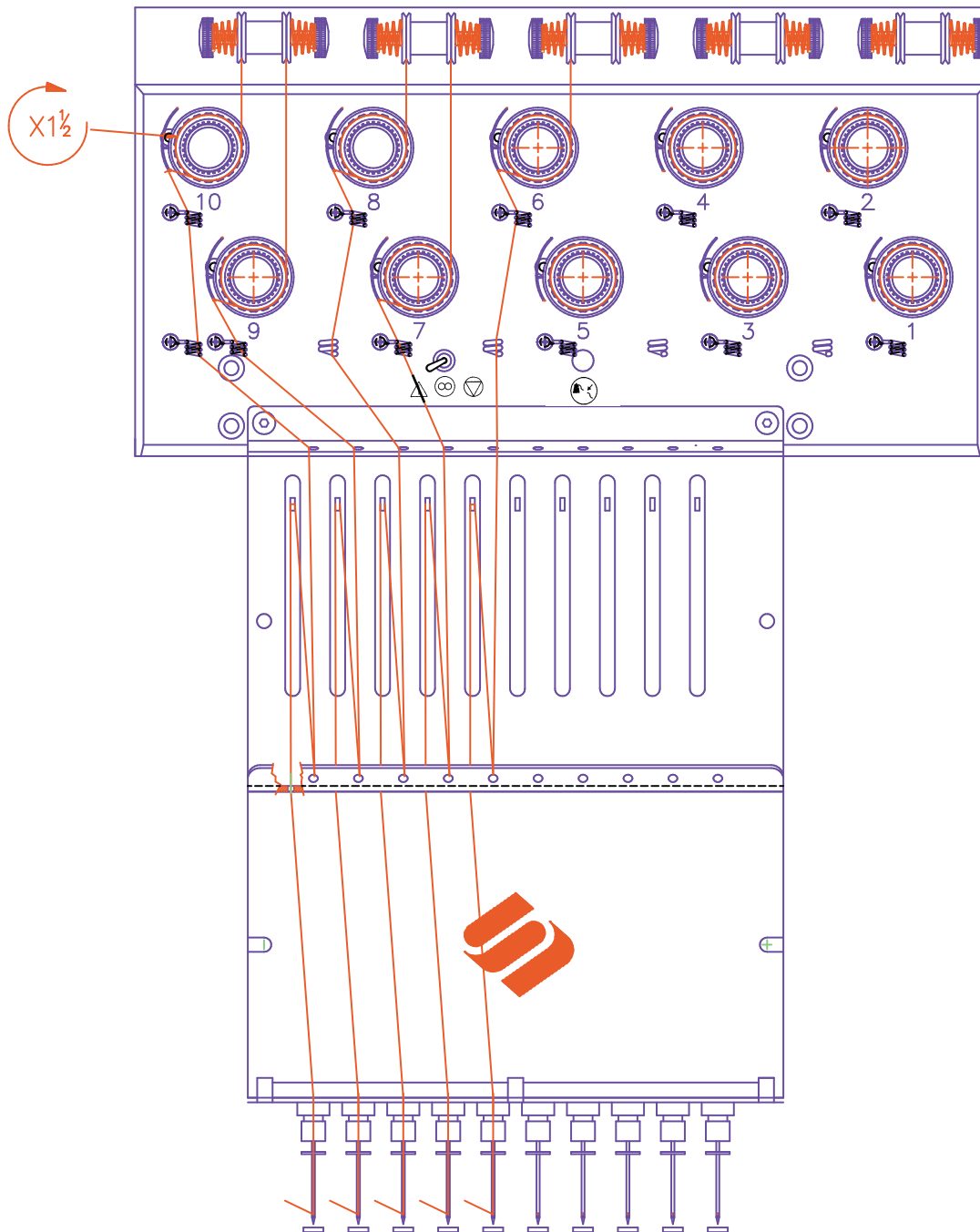


Figure 2-2

The EMC 10/12 arrives with thread routed through the proper thread path. The easiest way to add new thread cones is to place the new thread on the thread tree, and tie the new thread to the old thread in a square knot. From the needle end, carefully pull the new thread into the thread path.

To start new, push the thread tubes up from the bottom of the thread tree, and remove the magnetic strips from the front of each head. Place a cone of thread onto the stand and push the first few inches of thread into the supply tube. Use a can of compressed air to blow the thread through the supply tube. Do not aim compressed air at other personnel.

If compressed air is unavailable, use the monofilament provided in the operator's kit. Push the monofilament up through the supply tube, then "hook" the thread on the cut in the monofilament and pull the thread through the tube.

The following procedure outlines threading a single needle. Repeat as needed. Refer to Figure 2-2.

1. Pull the thread from the guide hole down between the pretensioner disks (see Figure 2-3).
2. Route the thread down to the main tensioner wheel (see Figure 2-4).
3. Wrap the thread around the wheel clockwise 1 and 1/2 times.
4. Route the thread over the tension check spring.
5. Route the thread down through the thread guide post(s). Threads using the top tensioners have two posts, threads using the bottom tensioners have one post.
6. The upper thread guide is just above the take-up levers. Route the thread through it.
7. The middle thread guide is just below the take-up levers. Route the thread through the hole facing outward, from back to front.
8. Bring the thread through the take-up lever eye, from right to left.
9. Route the thread straight down to the middle thread guide, through the hole facing downward. Pull on the thread and observe the check spring; it should move up and down to break contact with the thread break sensor.
10. Drop the thread through the lower guide, just above the presser foot.
11. Slip the thread behind the thread guide on the needle clamp.
12. Run the thread through the eye of the needle, from front to back.
13. Pass the thread through the center of the presser foot.
14. Pull on the thread until you feel tensioner pressure.
15. Fasten the thread to the retainer spring and trim the end to about an inch in length.
16. Set the tension to equal 80-120 grams required to pull the thread at the needle end.

Tensions

Embroidery tensions are controlled on both the upper and bobbin thread. The following table outlines when to adjust tensions.

Problem	Solution
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 in design loose	Top tension too loose

Top Tensions

Pretensioners

The purpose of the pretensioner is to hold the thread taut for the main tensioner. As long as thread pulls easily through the pretensioners, they generally do not need adjustments.

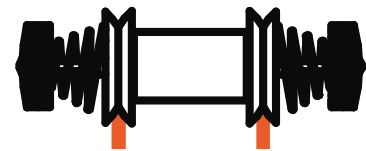
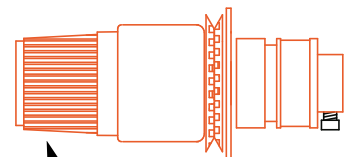


Figure 2-3

Main tensioners

Sets the upper tension. Tighten tension by turning the knob clockwise. Loosen by turning counterclockwise.



Rotate to adjust tension

Figure 2-4

Bobbins

Leave 2-3 inches (5-7.5cm) of thread hanging free. Insert the bobbin and case with the pigtail facing up.

Set the tension at approximately 7-14 ounces (20-40 grams) required to pull thread from the bobbin. **Never attempt to remove or insert the bobbin while the machine is operating.**

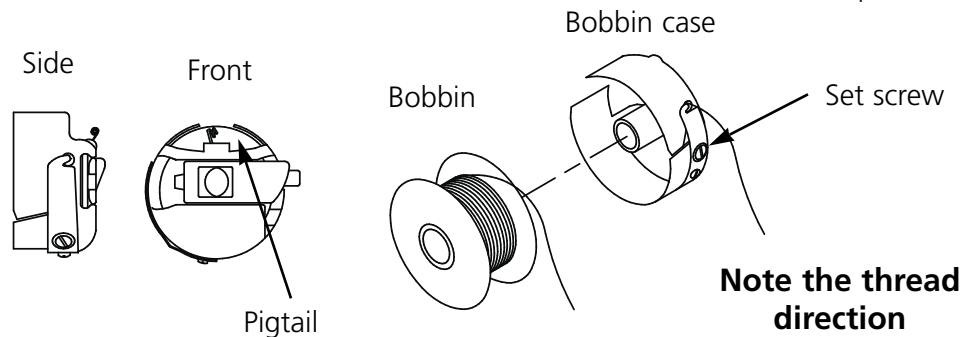


Figure 2-5

Keypad



Any one of three emergency stop buttons stop all sewing motion immediately. To reset, twist slightly to the right and the button snaps back into place.



Starts embroidering.



Stops machine motion. Machine remains stopped until  is pressed.



Used to “frame forward” or “frame backward” when machine is stopped.



Toggles the hoop carriage speed fast or slow.



Moves the needle position to the right in the embroidery field (hoop moves left).



Moves the needle position to the left in the embroidery field (hoop moves to the right).



Moves the needle position back in the embroidery field.



Moves the needle position down in the embroidery field.



A rack enable switch; hold down and use the arrow keys to position the rack.



A color change enable switch; hold down and use the left and right arrow keys to move the needle case for a color change.

Control Panel

Turn the power ON, and the Melco logo appears on the monitor, then the control panel appears.

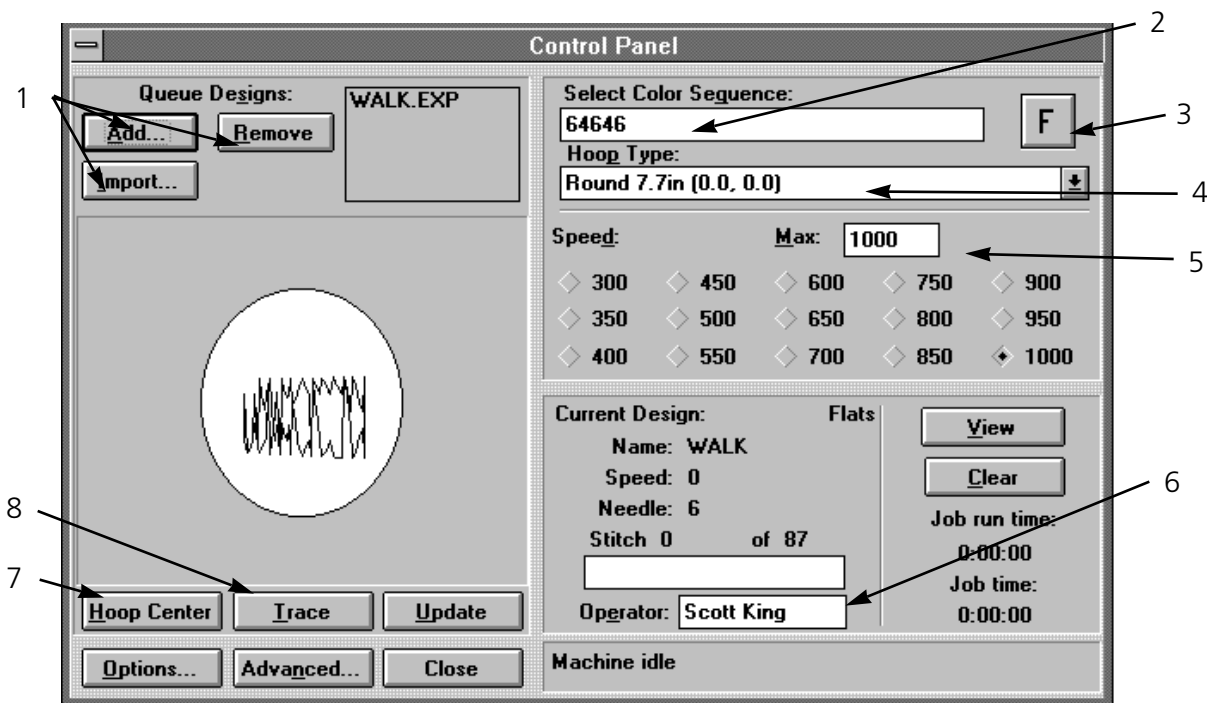



Figure 2-6

Refer to Figure 2-5 and the steps below to follow the normal process for embroidery. Each step refers to the corresponding number in Figure 2-6.

1. Add a design to the sewing queue by clicking on Add. Delete a design from the sewing queue by clicking on Remove. Click on Import to import a design in another format (i.e., Tajima, Barudan, etc.). See the Importing Designs from Other Formats section in this chapter for more information.
2. Select the desired color sequence (this may also be done during embroidery). See the Color Selection section in this chapter for more information.
3. Set the sewing orientation. Each time this button is clicked, the **F** rotates clockwise, indicating how the design will be sewn. Click on the Update button to update the design in the display window. See the Design Orientation section in this chapter for more information.
4. Hoop a piece of fabric, then click on the appropriate hoop size from the drop-down menu.

5. Change the sewing speed if desired. Speed defaults to the last value entered until changed again. Choose a preset speed or type the value into the box in increments of 10. Sewing speed may be changed at any time (even while embroidering). Maximum speed is 1000 stitches per minute (spm).
6. Enter the operator's name to store statistical information such as stitches sewn and thread breaks.
7. Click on the Hoop Center button to move the rack to the center of the selected hoop.
8. Click on Trace to trace the design before sewing to make sure it will fit in the selected hoop.



Ensure the table top and all sewing heads are unobstructed then press . The machine beeps several times to alert all personnel to stay clear and begins embroidering.

Loading A Design

You may retrieve a design from any directory or subdirectory within either the C: drive (hard disk) or the A: drive (external floppy disk).

Previewing A Design

There are two ways to preview a design; one is by looking at the outline only, the other is by using EDS III software. Both methods are explained below:

To look at the outline of a design:

1. Go to the Control Panel to add designs to the sewing queue.
2. Scroll through the design list and click on a design to highlight it.
3. Click on Update.

The outline of the design will be shown in the Display Window.

To look at the complete design:

1. From the Control Panel, click on Close.
2. Go to File and click on Open.
3. Scroll through the design list and double-click on a design.

The complete design will be shown on the screen.

Viewing the Design While it Sews

As a design sews, you can watch it being created on the screen by following these instructions:

1. Click on the View button in the Control Panel and the design is displayed stitch by stitch.
2. Return to the Control Panel by pressing any key.

Viewing the Design Without Sewing

To see the design or part of the design without sewing:

1. Click on Advanced... and a dialog box will appear.
2. In the bottom-left corner is a button labeled Move Now. Below that are two boxes for X/Y coordinates (explained in detail later in this Chapter) and below those is a grayed-out box for Stitch Number.
3. Click on the Stitch Number box and the label will change to solid black lettering. The X/Y coordinate boxes will become grayed-out.
4. Type in a stitch number. If you want to see the entire design, type in the last stitch number. For example, if a design has 9137 stitches, type in 9137. The rack will move to that stitch.
5. Press [ENTER] or click on Exit.
6. Click on View in the Control Panel. The design displays up to the stitch number you entered.
7. Press any key to return to the Control Panel.
8. Reset the stitch count before sewing by clicking on Clear.



Importing Designs From Other Formats

You have the option of importing designs that are not in the DOS format. When you import other designs, their format is automatically translated.

From the Control Panel, click on Import (refer to Figure 2-6). A dialog box appears (shown in Figure 2-6), giving you the option to change drives and choose from a variety of common formats.

Once you find the design you want click on the filename and then click on OK, or double-click on the filename and the design will be loaded into the Design Queue.

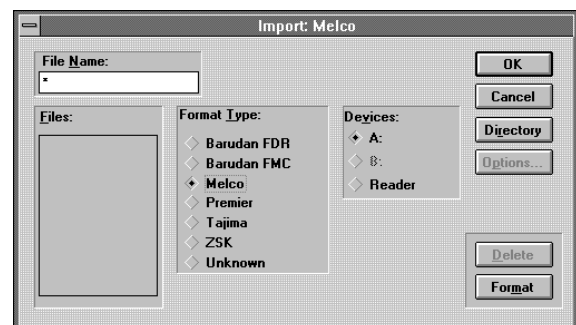


Figure 2-7

Creating New Hoop Sizes

Assuming you have proper security privilege, you may create new hoop sizes and types. Click on Advanced..., then click on Service, followed by Hoop Setup (see Figure 2-8).

You may specify a hoop as cap, round, oval, square, or rectangular. You can provide the height and width in inches, as well as the center location in inches.

NOTE: The unit of measurement will be in inches if the Windows Control Panel is set for English units. If Metric units are selected, the display will be in centimeters.

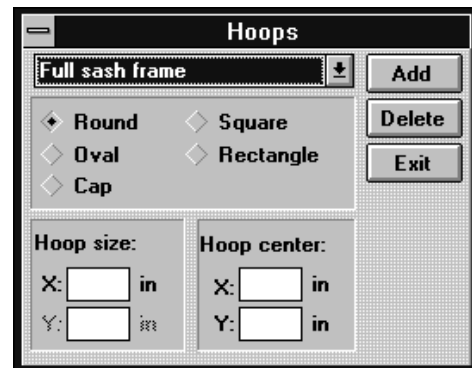


Figure 2-8

Once you have set up the new hoop, click on Add to include it on the "standard" list.

If there is a user-specified hoop you want to delete, highlight it and click on Delete. The hoop specification will disappear from the list. The exceptions to this are the Cap Frame and Full Sash Frame, which cannot be deleted.

When finished specifying new hoops, click on Exit.

Using the Trace Function

Once sewing has begun, it is extremely difficult to re-hoop the garment and keep it positioned at the set center. The Trace function allows you to trace the outline of a design within the hoop before actually sewing. This provides an opportunity to replace or adjust the hoop, if needed. Using the Trace function can prevent unnecessary handling of hoops and materials, as well as preventing damage to the hoops themselves.

1. Load a garment into a hoop and attach the hoop to head #1.
2. From the Control Panel, select the appropriate hoop size.
3. Select a design and add it to the design queue.
4. Click on the Trace button.

The sash frame moves the hoop to trace the outline of the design beneath the currently selected needle.



Changing the Design Orientation

Design orientation allows you to sew sideways, upside-down, or even backwards. On the Control Panel is a small button with a capital "F". Click once on this button. The "F" will rotate 90 degrees clockwise, indicating that the design will be stitched sideways. Clicking again will rotate the "F" another 90 degrees clockwise, indicating the design will be sewn upside-down. After two more clicks, the "F" is upright again, but mirror-imaged (i.e., facing backwards). Subsequent clicks will rotate this mirror-imaged "F" in a counterclockwise manner. After a total of eight clicks, the "F" will once again be normally oriented. Figure 2-9 shows all of the possible orientations.

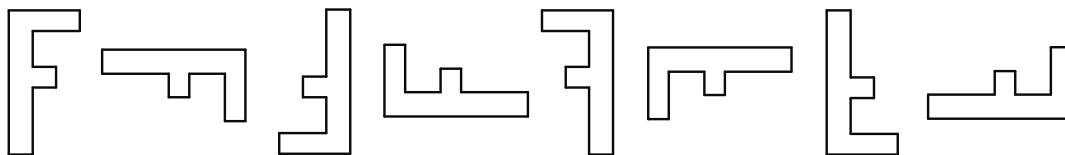


Figure 2-9

Job Status

The lower-right area of the Control Panel displays the status of the current design, as shown in Figure 2-10. It lists the design name, the total number of stitches in the design, the current stitch count, the selected hoop type, the sewing speed, the current needle, and the percentage sewn. The job time displays the total time since the design started sewing (including all stops), while the job run time displays only the amount of sewing time.

Current Design:		Flats	<input type="button" value="View"/>
Name:	WALK		<input type="button" value="Clear"/>
Speed:	0		Job run time:
Needle:	6		0:00:00
Stitch	0	of 87	Job time:
	<input type="text"/>		0:00:00
Operator:	Scott King		

Figure 2-10

Color Selection

You may set the colors (up to 99) and sequence for each design. To do this, find the Color Sequence box (refer back to Figure 2-6) in the Control Panel. Click once on the box and you will see a blinking editing bar. You can use the Backspace key to back up and delete any existing numbers or enter a color combination of your own.

For example:

Needle #1 would be used first, then needle #4, then needle #6, and so on. Note that Needle #10 is represented by zero. Every time the design calls for a color change, the next needle number in sequence would be chosen. You may select any number of color changes from 1 to 99. Insert a "P" to pause between colors awaiting operator restart.

If all of the color changes are deleted, an "L" will be displayed in the color queue to indicate Learn Mode. The EMC 10/12 will pause at each color change and "prompt" the operator for a new color to be set manually. Refer to Figure 2-11 for an example of the Select Next Color dialog box. As each color is entered, it will be added to the color sequence table for this design.

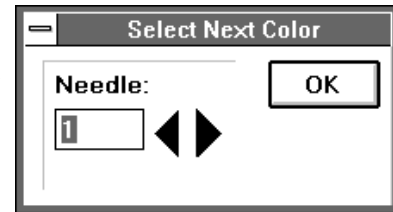


Figure 2-11

Changing the Run Speed

The speed at which the machine sews is referred to as the run speed. Speed is adjustable from 300 spm minimum to 1000 spm maximum in increments of 10 or 50 spm (refer to Figure 2-11). To change speed, click on a preset speed or type in the desired speed. If you alter the speed while a design is sewing, the change will take place immediately.

NOTE: The EMC 10/12 will sew at the maximum set speed when possible; however in some instances, the EMC 10/12 may sew at a slower speed.

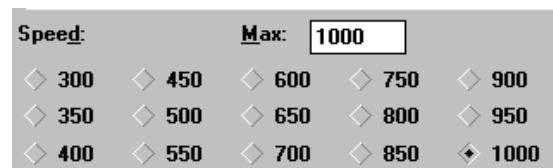




Figure 2-12

Stopping in Mid-Run

You may stop sewing at any time by pressing . This will not affect the stitching, nor will it affect the "stored" copy of the design. Restart sewing by pressing .

Step and Repeat

If you want to sew the same design several times on a single garment, use the Step And Repeat function.

From the Control Panel, click on Advanced.... At the top of the Advanced Functions dialog box is a button labeled Step/Repeat, as shown in Figure 2-13.

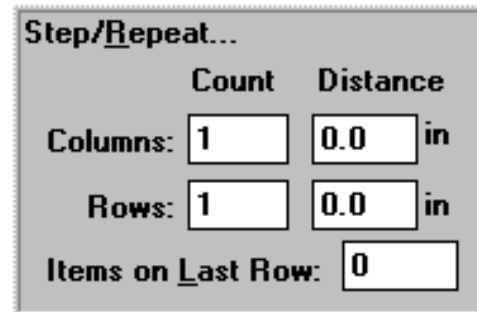


Figure 2-13

The following example demonstrates how the Step And Repeat function works (see Figure 2-13). Assume you have a logo design measuring two inches wide and one inch high, and you want two rows with five logos in each row, a third row with only two logos, and half an inch between each logo (remember metric units are also possible).

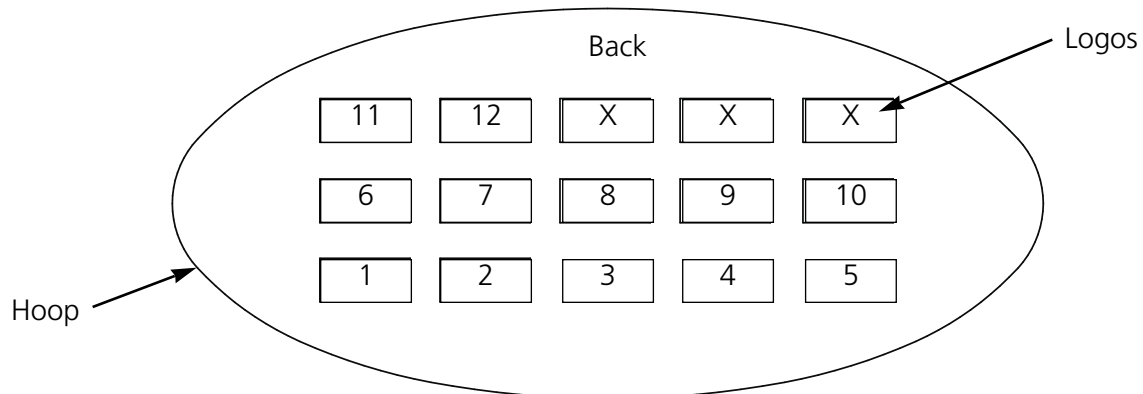


Figure 2-14

Follow these steps to duplicate this pattern:

1. Under Count, enter 5 for Columns and 3 for Rows.
2. Under Distance, enter 2.5 for rows and 1.5 for Columns.
3. Enter 2 in the Items on Last Row box.
4. Return to the Control Panel and click on Hoop Center.
5. Go to Options and select Enable Center Design.

The result will be the same as shown in Figure 2-14, with the layout centered in the middle of the hoop. You can use the Step and Repeat function with any design and duplicate it as many times as will fit within the defined hoop.

Security

Permits restricted access to certain areas of the operation software. Click on Advanced..., then click on the Security button. Figure 2-15 shows the Security dialog box.

To set the security level, enter the password (provided when the EMC 10/12 was installed), and press Enter. Move the cursor arrow to the option that you want to be available and click once, then either press Enter or click on the OK button.

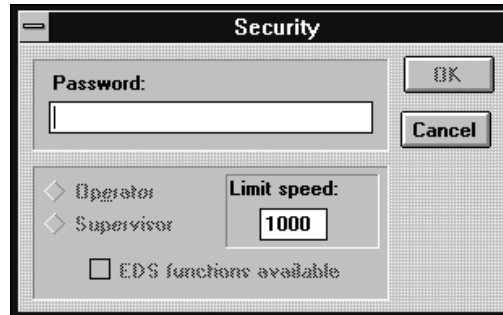


Figure 2-15

Operator limits the features to those needed for sewing only. Service functions are not available in this mode.

Supervisor enables all functions to be utilized. Additionally, you can also lock or unlock the EDS III design functions and set the maximum sewing speed.

Options

The Options dialog box (Figure 2-16) allows access to several different operation settings. To access the Options box, click the Options button from the control panel (Figure 2-6). A description of the options follows. To enable or disable any option, click on the box next to each item.

Enable frame limits

This option will prevent the machine from sewing through a hoop (also called spiking a hoop) by checking the frame limits. Default is On.

Enable thread trimmer

To trim the thread manually, disable the thread trimmers; the machine stops for each trim, allowing the operator to trim the thread. This function also disables the thread grabbers. Thread trimmers default to On.

Automatic return to origin

When enabled, this feature returns the machine to the origin when sewing is completed. Default is On.

Accumulate needle ups

When needle is up (after a trim) and the design has jump stitches (or moves to a new point in the design) the machine makes those stitches into one X/Y motion. Default is On.

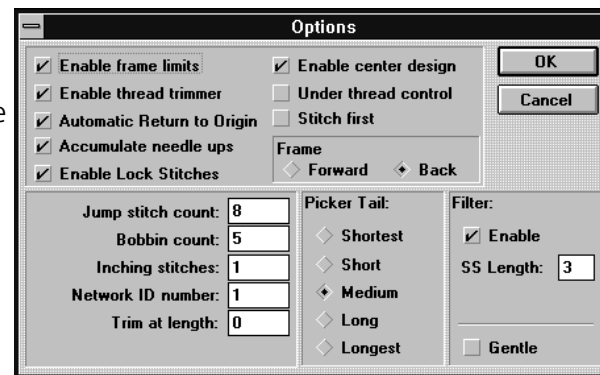


Figure 2-16

Enable lock stitch

When sewing starts and the thread is out of the fabric, a lock stitch is performed. Default is On.

Enable center design

Makes the current needle position the center point for sewing. When enabled, the center of the design becomes the center point. Default is On.

Under Thread Control


When enabled, detects the absence of bobbin thread and stops the machine automatically. Default is On.

Stitch first

Depending on how the design is punched, may cause lock-stitches to sew outside of the design area. ON (stitch-n-move) forces the needle into the cloth at that point. OFF (move-n-stitch) changes the first stitch into a move, then sews on the next stitch. Default is Off.

Frame forward



Holding  down allows the operator to Frame Backward (move backward stitch by stitch); when Frame Forward is enabled, holding the button frames forward. Default is Back.

Jump stitch count

The amount of consecutive jump stitches that will force an automatic trim. The machine performs the trim before the jump stitches are made. Default quantity is 8. Allowed quantity is 0-20 (0 disables the function).

Bobbin count

The number of stitches the machine will make after detecting the absence of bobbin thread. Default is 5. Allowed quantity is 0-50 (0 disables the function).

Inching stitches

The quantity of "slow stitches" the machine will make at the beginning of sewing before it goes to full speed. Default quantity is 1. Allowed quantity is 1-20.

Network ID number

If you are using a network server to operate several embroidery peripherals, this enables you to assign a separate identification number to the EMC 10/12. The assigned number must match the peripheral number in the EDS III server. Allowed number is 1-64.

Trim at length

A function of the Filter. Sets automatic trims at stitches as long or longer than specified here.

Picker tail

Allows you to select the length of thread tail left after a trim.

Filter

Converts jump stitches into a single stitch. Use Trim at Length to insert automatic trims.

SS length

Sets the shortest stitch length allowed when the Filter is enabled.

Gentle

Reduces the maximum stitch length permitted at a given speed. Permits slower rack movements, but yields better embroidery. Analogous to the "gentle cycle" of a washing machine.

Statistics

The EMC 10/12 records a wide variety of information about its operations. From the Control Panel, click on Advanced..., then click on Statistics. This opens the Statistics dialog box, shown in Figure 2-17.

The log file tracks:

- When the machine is started or stopped
- The names of designs sewn
- The number of thread breaks
- Total operation time
- Total sewing time
- Total down time
- Amount of time between designs
- Amount of time spent backing up and redoing stitches
- An average count of stitches per minute

You can display the information in the following formats:

Separate by Shift: You can separate all of your statistics to see the production time vs. down time for each shift or operator.

Separate by Design: You can view the amount of production time vs. down time for each different design that was sewn.

Today: This will list only the information compiled during the current day.

Last Week: This will list all of the information compiled during the last seven days.

Last Month: This will list all of the information compiled during the last 30 days.

You can clear the statistic tables by clicking on Delete.
Click on Exit to return to the Advanced Features dialog box.

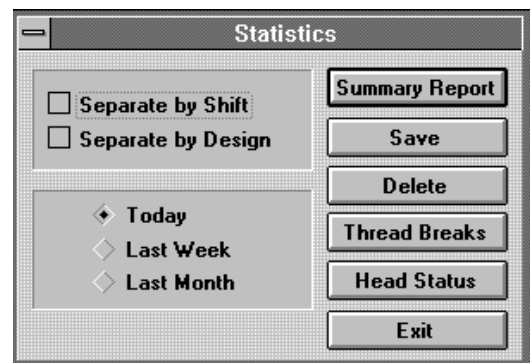


Figure 2-17

Move Now

The sash frame (also known as the rack) may be moved with the keypad or via the Move Now option (see Figure 2-18).

From the Control Panel, click on Advanced...; in the bottom-left corner is a button labeled Move Now. Below that are two boxes for X/Y coordinates. With this you can specify the exact location that you want the sash to move to.

To return to the Control Panel, click on Exit.

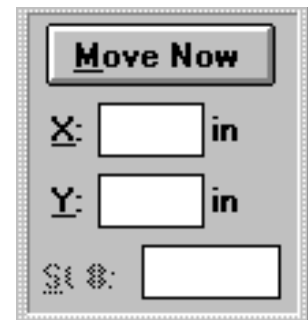


Figure 2-18

Miscellaneous Advanced and Service Functions

Certain functions within Advanced Functions, such as Thread Grabber, Test Mode, etc., will not apply to daily sewing operations. This Chapter will, however, offer a brief explanation of those functions.

Thread breaks

Normally used for maintenance operations. It displays which needles experienced thread breaks, the number of breaks, etc.

Thread grabber

Used during maintenance operations. It allows a variety of functions required to test the thread grabber's operation. Refer to the EMC 10/12 Technical Manual for further information.

Test mode

Used during maintenance operations. Refer to the EMC 10/12 Technical Manual for further information.

Trim

Used if the normal sewing operations are interrupted and you want to make an immediate trim.

Reset machine

Resets the machine to its default settings.

Head timing

Used mainly during maintenance operations and routine lubrication procedures. Refer to the EMC 10/12 Technical Manual for further information.

Origin

Moves the rack immediately to the origin of the design currently being sewn.



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3. Hoops and Frames

Preparing the Material

Whether you are sewing flat goods, tubular goods (such as sweatshirts), or caps, you must first place your material into an appropriate hoop. The EMC 10/12 has the same hooping versatility as all of the sewing peripherals in the Melco line of embroidery equipment.

Flat Goods Hooping

Whenever you hoop material, make sure that it is straight, fold-free, and stretched tightly. Follow these steps for proper hooping.

1. Use the right size hoop for the job. The design should fit inside the hoop with a small margin of space between it and the hoop, but without a lot of extra material.

NOTE: The Trace function allows you to check if a design will fit in the hoop. Refer to Chapter 2 for more information.

2. Place the outer hoop on a flat surface with the hoop's mounting bracket facing up. Refer to Figure 3-1.



Figure 3-1

3. Loosen the adjusting screw on the outer hoop.
4. Place some backing material on top of the outer hoop. Make sure that you have enough backing to cover the entire hoop area.
5. Place your material on top of the backing with the finished side facing up.

NOTE: Many people prefer to make a practice sewout before embroidering the garment. Although this is not essential, making a practice sewout of any design is an excellent way to prevent problems.

6. Press the inner hoop into the outer hoop with the fabric and backing between them. Tighten the material by pulling the outside edges of the material slightly.

NOTE: When sewing on knits and jersey materials, do not overstretch the material. These materials will stretch out of shape and distort the resulting sewout.

7. Tighten the adjusting screw on the outer hoop. Tightening this screw will not tighten the fabric, it simply secures it. Tightening the screw too much can "burn" a permanent circle in your material.

The Sash Frame

The sash frame consists of aluminum beams attached to the drive motors. Most garment hoops will attach to this sash assembly, but for oversize materials and cap frames, a different sash arrangement must be used (which is explained in more detail later in this section).

Attaching Hoops To The Sash Frame

To attach hoops to the sash frame, simply lay the hoop with the brackets on the frame, align the mounting holes with the holes in the brackets, and install the thumb screws snugly. Never attempt to attach hoops to the sash frame while the machine is operating.

Do not use pliers or other tools to tighten these screws, or damage may result. Use a coin to loosen the screws if they are too tight to loosen by hand.

The hoops fit together as shown in Figure 3-2.

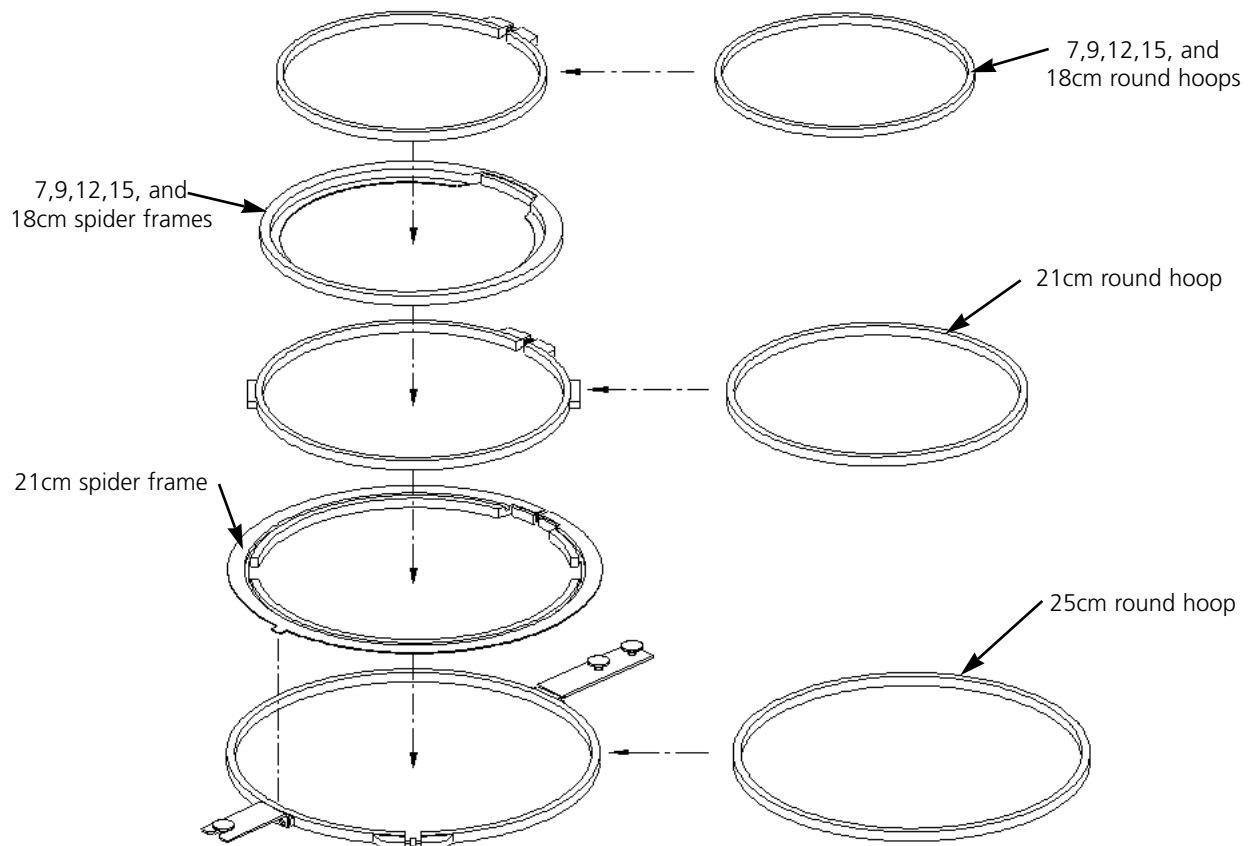


Figure 3-2

Disconnecting the Sash Frame

In order to attach cap frames, sew tubular goods, or perform certain types of service adjustments, you must disconnect the sash frame before lowering the sewing table. Only qualified operators or maintenance personnel should perform this task.

1. Remove all hoops.
2. Using the keypad, press the [DOWN ARROW] key until the lower edge of the sash frame is at the forward part of the sewing table and far enough to the right to expose the #1 Y-drive on the drop table.



3. Referring to Figure 3-3, remove the six socket head cap screws labeled "A" from the sash frame (located below the User Station). Do not loosen or remove any other screws or nuts.

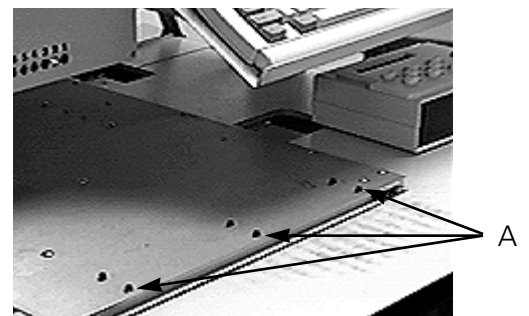


Figure 3-3

4. Referring to Figure 3-4, remove the two socket head cap screws labeled "B" from the Y-axis bearing supports. Do not loosen or remove any other screws in this area. Repeat this step at all four Y-axis bearing support locations.

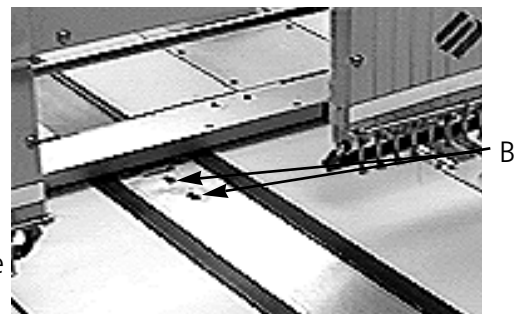


Figure 3-4

5. Referring to Figure 3-5, remove the two socket head cap screws designated as "C" at the far end of the sash frame (located below sewing head #12). Do not loosen or remove any other screws in this area.

6. Slide the loose part of the sash frame to the left and to the front until it sits only on the front and left end of the drop table. Do not remove the sash from the table. The table may be lowered with the sash frame still on the table top without interfering with cap or tubular frames.

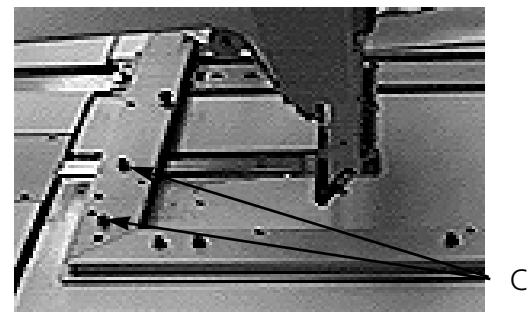


Figure 3-5

Lowering the Table

A crank-type handle is underneath the table, located at about the mid-point. Unfold the handle and rotate in a counter-clockwise direction to lower the table. If the table does not move freely, check for an obstruction. Keep rotating until the table stops at the full down position, then fold the handle back underneath.



Oversize Flat Goods

Designs that are too large to fit into a standard hoop can be sewn using the full sash frame. Figure 3-6 shows a portion of the maximum sewing area. With the full sash frame you can stretch bulk material across the width of the frame.

NOTE: The sewing table must be in the full up position.

1. To install the full sash frame, remove all hoops, tubular goods arms, and cap frames.
2. The clip supports consist of four sections of aluminum. Install the shorter clip support at the left end of the sash frame and secure it with the screws used for standard hoops.

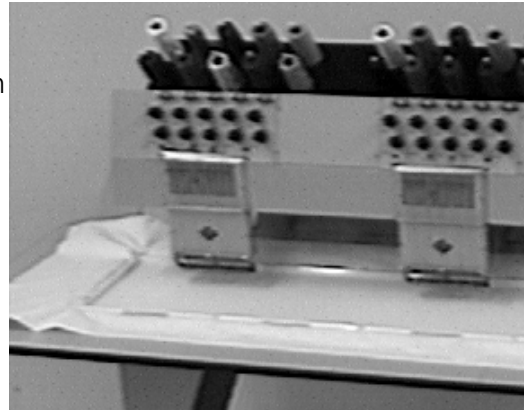


Figure 3-6

3. Attach the rear clip support to the rear of the sash frame aligning the holes used to attach standard hoops. Secure it with the screws used for the standard hoops.
4. Attach the front clip support to the front of the sash frame. It will attach like the rear clip support. Refer to Figure 3-6.
5. Lay the fabric across the sash frame centered between the clip supports and the individual sewing heads.

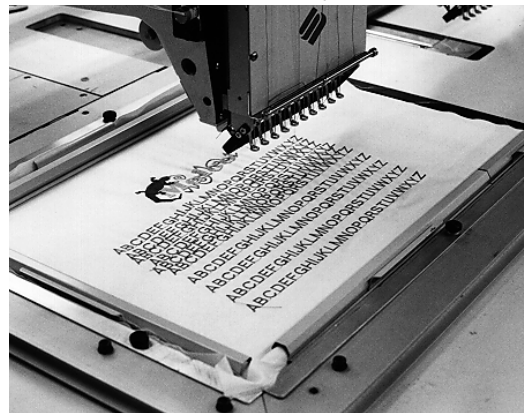


Figure 3-7

6. Beginning in the rear, push the clamps down over the rear clip support. Make certain the lifting tabs face away from the sewing field (refer to Figure 3-7).
7. Pull the fabric taut and push the clamps over the front clip support bar. Make sure the lifting tabs face away from the sewing field. With the clamps in place, the fabric should be taut and free of any wrinkles. Once the clamps are in place, you can begin sewing.

Tubular Goods

For tubular garments (pillow cases, jacket sleeves, etc.), use the tubular frame.

NOTE: Remove the sash frame and lower the sewing table below the cylinder arm.

1. Using the keypad, center the sash frame between the sewing heads.
2. Disconnect the front portion of the sash frame and lower the sewing table (refer to the previous section).
3. Attach the tubular frame support arms to the rear portion of the sash frame. Use four thumb screws for each support arm (refer to Figure 3-8).
4. Insert the hoop frames by sliding the side brackets underneath the spring clips on the support arms. The bracket with the open-ended slot goes on the right side (refer to Figure 3-9). Make certain that the slot engages with the pin in the support arm, and that the brackets are fully seated beneath the spring clips.

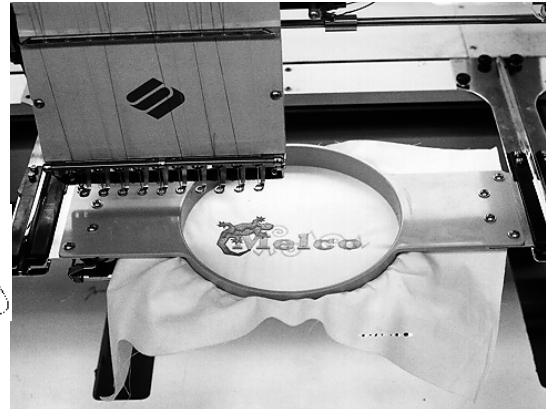


Figure 3-8

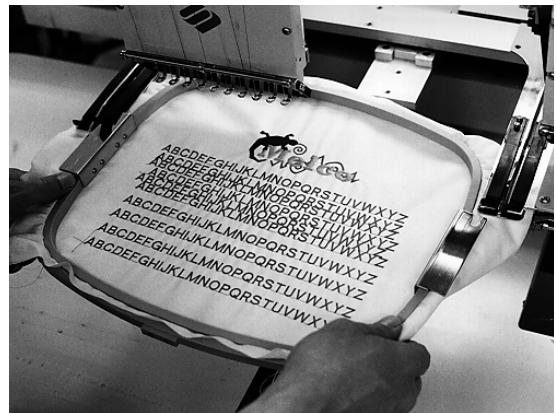


Figure 3-9

Caps and Visors

Follow these steps to properly hoop a cap or visor.

NOTE: The sewing table must be completely down.

1. Insert the cap frame into the cap gauge.
2. Open the cap frame cover with the latch on the frame's left side and lift so that it rests on the stop on the right side of the gauge.

NOTE: If you use backing, place it in the cap before loading the cap into the frame.

3. Slide the top of the cap around frame. Keep the sides of the cap inside the frame's outer edges. Push the cap onto the frame as far as possible. On most caps, you will need to turn the sweat band inside-out. If there is a braided rope trim across the bill, pull it to the back of the cap and out of the sewing area.
4. Snap the bill holders (the bungy cords) over the bill. Pull the cap front tight on the frame.
5. Close the frame's cover. Keep the cap as straight, fold-free, and tight as possible.

Attaching Cap Frames

There are three parts to a cap frame:

- The cap hoop (holds the cap)
- The cap frame driver (attaches the cap hoop to the machine)
- The two mounting brackets attached to each cylinder arm of the EMC 10/12 (hold the cap frame driver firmly in place)

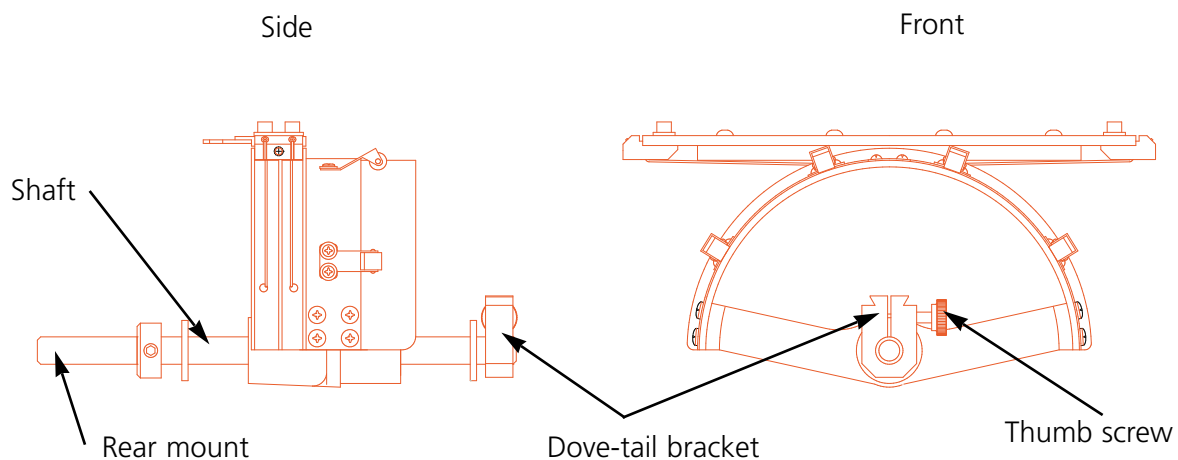


Figure 3-10

1. Center the sash frame assembly in both X and Y directions using the arrow keys on the keypad.
2. Disconnect the standard sash frame (refer to the Flat Garments section) and lower the sewing table to its lowest position to gain access to the cap frame mounting brackets.
3. Under the #1 cylinder arm, locate two mounting brackets:
 - A dove-tail bracket under the needle area.
 - A bracket with a round hole at the rear of the cylinder arm.
4. Loosen the thumb screw on the rear bracket.
5. Loosen the thumb screw on the dove-tail bracket.
6. Insert the cap frame shaft into the hole in the rear mounting bracket. At the same time, guide the dove-tail mount into the dove-tail bracket.
7. Push the cap frame shaft into the bracket hole as far as it will go. Refer to Figure 3-11.
8. Tighten the thumb screws on both the rear mounting bracket and the dove-tail bracket.
9. At the rear of the cap frame is the driver bracket. This bracket fits over the holes used to attach a standard hoop and is secured using the same thumb screws. Make certain that the screws are tight.
10. Repeat this procedure on all the heads that will be sewing caps.

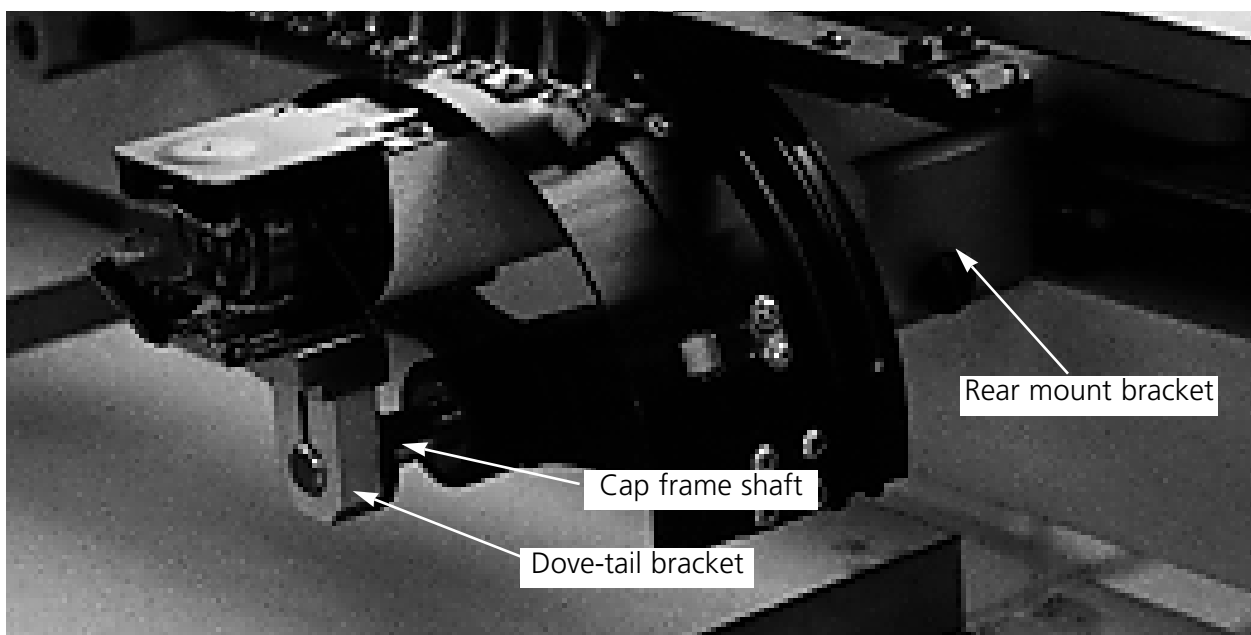


Figure 3-11

Raised Needle Plates

Raised needle plates may improve embroidery quality on caps. When cap frames are attached, the curve of the frame leaves extra space between the cap and the needle plate. To eliminate the space and ensure high-quality embroidery, a qualified operator or maintenance person should install raised needle plates as described below. See Figure 3-12.

NOTE: When using a raised needle plate, use spacers to raise the presser foot.

1. From the Control Panel, click on Advanced..., then click on Head Timing, then Go To Headup.
2. Turn the machine power OFF.
3. Disconnect the sash frame and lower the sewing table.
4. Remove the two screws that attach each standard needle plate and replace the standard plates with the raised plates. Use the same screws to attach the raised needle plates.
5. Remove the lower cover on the front of each head. It is not necessary to remove any thread.
6. Using a small flat-bladed screwdriver, push the standard spacer up to the top of the presser foot driver assembly (see Figure3-12).
7. Shim spacers come in two thicknesses: 0.020" and 0.040". Each shim spacer has five holes, which will cover half of the needles in each sewing head. The raised needle plates are 0.090" higher than a standard needle plate, so you should add two 0.040" spacers to both sides of each sewing head.

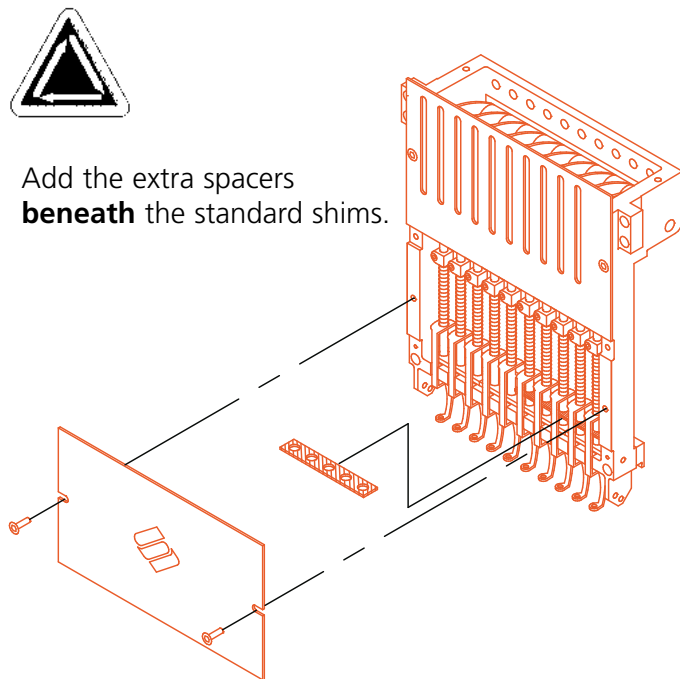


Figure 3-12

8. The spacers must be cut on one side with a pair of scissors prior to installation. Refer to Figure 3-13 for the correct areas to cut.
9. Slide the spacer (with the cut side facing upward) in between the presser foot bars and the needle driver bars (beneath an uncut spacer, if possible). Use a small flat-bladed screwdriver to push the spacer over the needle driver bars.

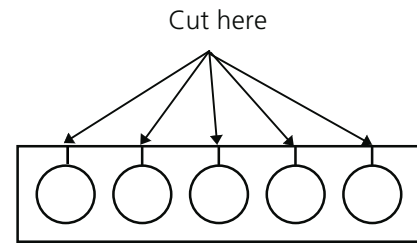






Figure 3-13

10. Turn the power back ON when spacers are installed on all of the sewing heads. 
11. Use the keypad to move the needles to needle #3. 
12. From Advanced Features, click on Service, Head Timing, then Bottom Dead Center. 
13. Check to verify the presser foot is clearing the needle plate by 0.030 to 0.050". If needed, add or remove the necessary combination of the 0.020 or 0.040 spacers to achieve the appropriate clearance.

NOTE: Overcompression of the presser foot springs may damage the springs and impair the quality of the embroidery.

14. Click on Advanced..., then Head Up. Use the keypad to move the needles to needle #8, then repeat steps #12 and #13. 
15. Replace the lower needle case covers when all of the presser foot drivers have been correctly shimmed.




When you return to sewing flat or tubular goods, reverse the above procedure to remove the raised needle plates and the extra spacers.

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4. Recovery Methods

This chapter provides information on how to recover from broken threads, missed stitches, mechanical failures, and power outages. Operators and maintenance personnel must attend a Melco approved training course prior to operating or maintaining the machine.

Thread Break Switch

Each head has a thread break switch below the tensioners with  (ON),  (AUTO), and  (OFF) positions (see Figure 4-1). The switch controls whether the individual head stitches as it moves through a design. The table below summarizes the functions of the switch.

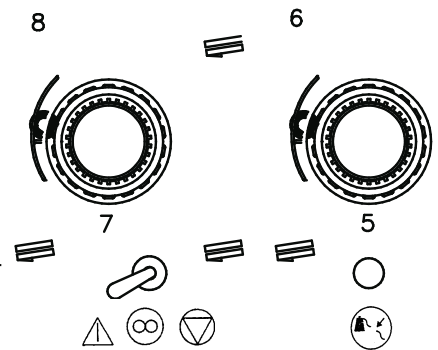





Figure 4-1


Setting	Result
	Sews during thread break and framing recovery. Use to restitch an area.
	Only heads with thread breaks will sew during thread break recovery or framing. Should be used for normal operation.
	Disables the sewing head.

Thread Break Indicator LED

Next to each Thread Break Switch is a yellow LED that signals a thread break (refer to Figure 4-1). When a thread break is detected, the LED on that particular head will be illuminated to show where the break is located. A blinking LED indicates an under-thread break while a steadily glowing LED indicates an upper-thread break.


Frame Function

Frame Back or Frame Forward allows movement back or forward through the current design.



Change the framing direction in the Option menu. When the machine is stopped, use  as described below to frame through the design.

Press  until the beam moves FORWARD or BACK one stitch. Release the key






OR

Press and hold  until the beam moves several stitches. Release the key.

OR

Press and hold  for about five seconds, then release it. The rack will move until  is pressed again.

If stitches need to be reewn only on head 2, you would:

1. Frame back to the area that needs to be reewn.
2. Set the thread break switch on head 2 to .
3. Leave all other heads set to .
4. Press  and reew the problem area.
5. When you reach the point where you pressed  all the heads will sew.
6. Reset the thread break switch on head 2 to .

Power Failure Recovery

The Power Failure Recovery function allows sewing to resume after the machine has suffered a loss of power. Follow these steps to resume sewing:

1. Turn the main power switch to ON and wait for the software to fully load.
2. If you see a status bar message that says "Off color index," use the keypad to move the needle cases until the needle in use when the power went off is the selected needle again. If the keypad does not move the needle cases, you must move the cases manually. Refer to the Manual Color Index Adjustment procedure later in this chapter.



3. If the color index is set correctly, but you see a status bar message that says "Not at headup," click on Advanced..., then Go To Headup.
4. Click on Advanced..., then Power Failure Recovery.
5. The machine should return to the last stitch made before the power loss and allow you to resume sewing from that point.



NOTE: To maximize your ability to recover from a power loss, designs should be stored on the hard drive, and daily setup should include Hoop Center, Enable Center Design, and Automatic Return To Origin. Although they are not a part of Power Fail Recovery, these three steps will enable you to perform a "manual" recovery if the above procedure fails.

6. If the Power Fail Recover option does not work:

Select Hoop Center, then reload your design. Use the Frame Forward procedure until you reach the last stitch sewn before the power loss and restart at that point. If you know the stitch number, use the Go To Stitch function.



Manual Color Index Adjustment

If the message "Off color index" appears and moving the needle cases with the keypad has no effect, adjust the color index manually. A special tool is provided in the tool kit for this purpose.

1. With the machine power ON and stopped, insert the index adjustment tool into the hole in the right side of the color change box (refer to Figure 4-2).
2. Slowly rotate the tool back and forth while watching the LEDs on the front.
3. When one of the LEDs lights up, you are on the color index.

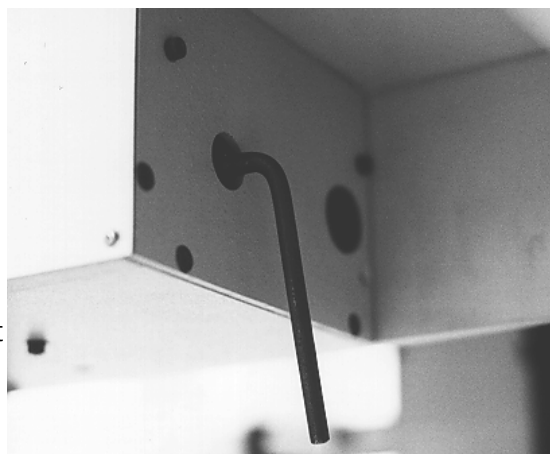


Figure 4-2

Installing a Needle

Each needle has a needle clamp set screw holding it in place as shown in Figure 4-3. Use the small flat-blade screw driver from the tool kit and follow these steps to replace a needle:

- 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 as far as it will go, and re-tighten the set screw.

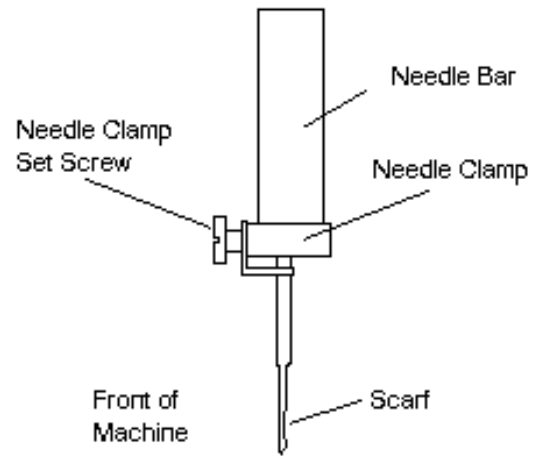


Figure 4-3

5. Maintenance

This chapter outlines machine maintenance; in addition, maintenance personnel must attend a Melco approved training course prior to maintaining the machine.

Cleaning

Exterior Surfaces

Clean outer plastic surfaces once per month 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.

NOTE: If an accidental spill occurs, turn the machine off then wipe up excess fluid with a clean dry cloth and allow the machine to dry completely before turning the power on.

The Rotary Hook Area

1. Clean this area once per week with the machine power OFF.
2. Remove the 2 needle plate screws and needle plate.
3. Clean the exposed area with the brush supplied in the operator's kit.

Trimmer Assemblies

1. Clean the trimmer areas once per week with the machine power OFF.
2. Remove the 2 needle plate screws and needle plate.
3. Use a small brush to clear away thread and dust.

Genius Trackball

The trackball in the computer keyboard must be cleaned periodically to ensure maximum performance. Follow these steps to clean the trackball.

1. Put your fingernails into the grooves on the plastic ring surrounding the ball, and turn counterclockwise 45 degrees. The ring will loosen.
2. Turn the trackball upside-down. The ball and ring should come out. Set them aside.
3. Blow out any dirt or lint from the opening using canned air.
4. Use a cotton swab soaked with isopropyl alcohol to clean the rubber rollers.
5. Clean the ball with alcohol and replace it in the housing. Reinstall the ring to secure the ball.

Lubrication

Follow this lubrication schedule to prolong the life of your machine. Any tools or supplies needed are provided in the operator's kit. Do not attempt to lubricate the machine while it is in operation.

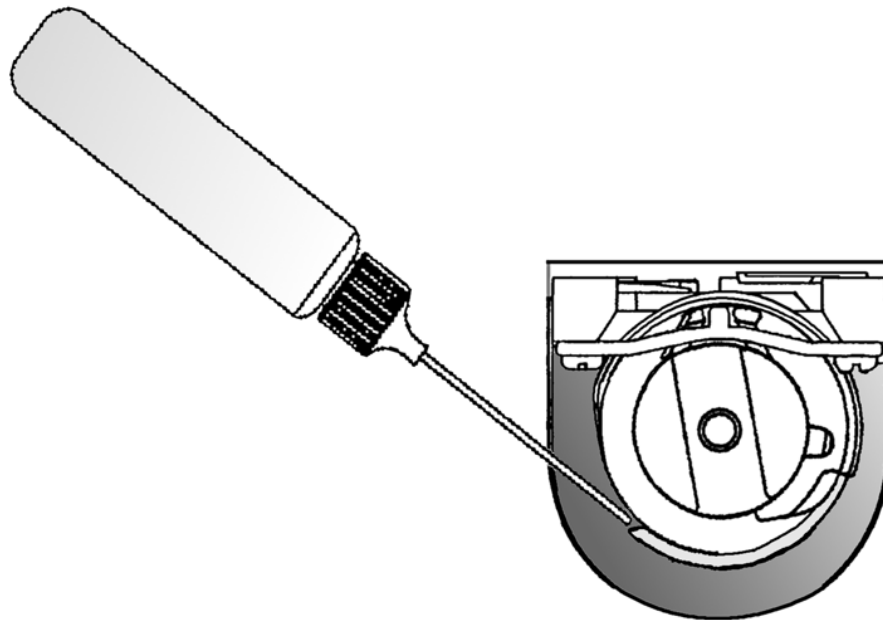
LUBRICATION POINT	LUBRICANT (AMOUNT)	PAGE NUMBER
Every 4 hours		
Rotary Hook	Sewing machine oil (1 drop)	5-3
Every 80 hours		
Connecting rod, upper section	Sewing machine oil (1-3 drops)	5-5
Upper needle bar	Sewing machine oil (2-3 drops)	5-4
Lower needle bar	Sewing machine oil (2-3 drops)	5-4
Needle bar driver	Sewing machine oil (3-5 drops)	5-5
Connecting rod, lower section	Sewing machine oil (1-2 drops)	5-6
Every 480 hours		
Cap frame shaft	Sewing machine oil (1-2 drops)	3-6
Trimmer knife arm front pin	Sewing machine oil (1 drop)	5-7
Trimmer knife drive arm	Sewing machine oil (1 drop)	5-7
Trimmer picker base shaft	Sewing machine oil (1 drop)	5-7
Every 960 hours		
Trimmer cam mechanism	Grease	See Technical Manual
Linear bearing	Sewing machine oil (1 drop)	5-6

Rotary Hook Lubrication

1. With the machine stopped, look under the sewing bed to gain access to the rotary hook area.
2. Remove the bobbins and bobbin cases from the hook assemblies.
3. Click on Advanced..., then Service.
4. Click on **1 Rev or To Headup**, then **Bottom Center** to put the needle at full depth. This moves the rotary hook assembly into the correct position for lubrication.
5. Oil the hook as shown in Figure 5-1.
6. Click on Headup.
7. Replace the bobbins and bobbin cases to the hook assemblies.



Caution! If you use a spray lubricant, do not get any oil on the UTC assembly over the hook or the UTC may not function properly.



Needle Bar Lubrication

The needle bars must be lubricated at both the upper and lower ends. The needle bars for each sewing head are accessed from the front of the needle case. Observe the slots for the take-up levers. Look inside the slots, just to the right, and you will see the needle bars. Do not attempt to lubricate unless the machine is stopped.

1. To lubricate the upper area, place the oiler tube through the slot and place one or two drops of oil onto each needle bar in the location shown in Figure 5-2. Repeat for all twelve sewing heads.

NOTE: A slight bend in the oiler tube makes it easier to reach the needle bars.

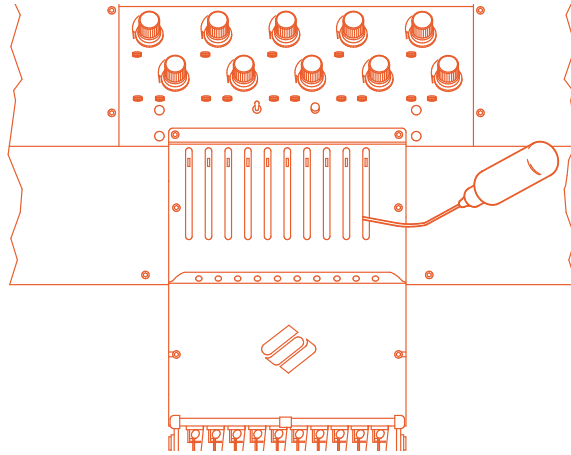


Figure 5-2

2. To lubricate the lower area, use the keypad to move the needle cases to needle #10.
3. From behind the needle case, place one or two drops of sewing machine oil onto needle bars one through six in the location shown in Figure 5-3. Repeat for all sewing heads.



4. Use the keypad to move the needle cases to needle #1.
5. From behind the machine, place one or two drops of sewing machine oil onto needle bars seven through ten. Repeat for all sewing heads.

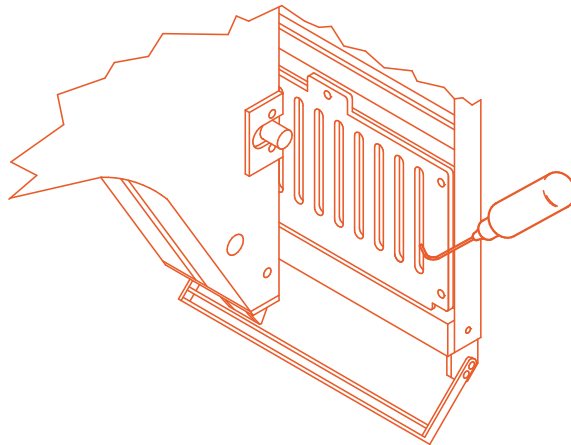



Figure 5-3

Needle Bar Driver Lubrication

Do not attempt to lubricate the machine unless it is stopped.

1. Use the keypad to move the needle cases to needle #1. 
2. Access the puddle slot through the holes with red bushings on the panels between each head.
3. Locate the puddle slot on the top, right side of the linear bearing guide. Place three to five drops of sewing machine oil in the slot at sewing heads 1-12.
4. Using the keypad, move the needle cases to needle #10.
5. Locate the puddle slot located on the top, left side of the linear bearing guide. Place three to five drops of sewing machine oil in the slot at sewing heads 1-12.

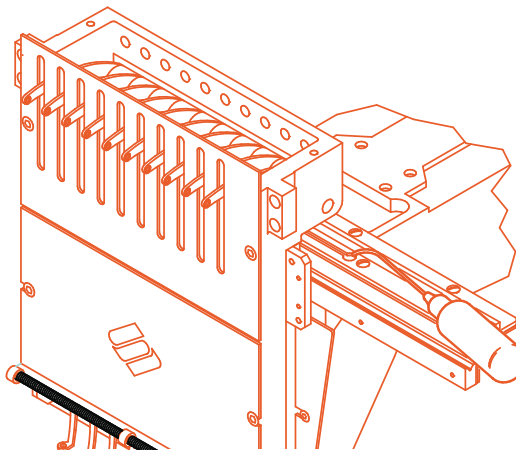




Figure 5-4

Upper Connecting Rod Lubrication

1. Using the keypad, move the needle cases to needle #1. 
2. Figure 5-5 shows the lubrication hole inside the machine. To access this hole, insert the oiler through the hole with the red bushing on the front of the panel. Use a flashlight if needed.
3. Click on Advanced..., then Service, then **1 Rev or to Headup**, then **Bottom Center to Hook Timing**. This rotates the Z-axis into the proper position for access to the lubrication hole. 
4. Using a small flashlight you should be able to see the lubrication hole.

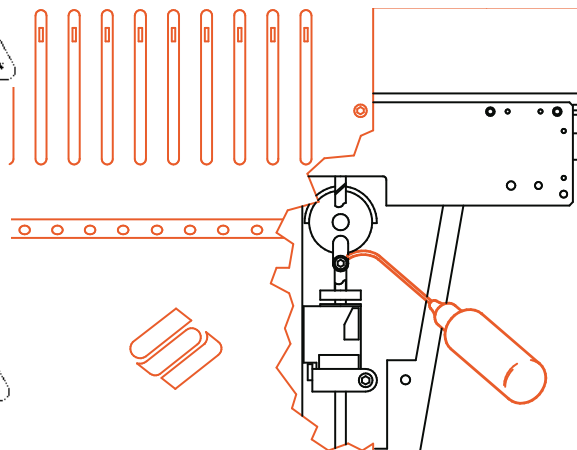


Figure 5-5

Lower Connecting Rod Lubrication

Do not attempt to lubricate the machine unless it is stopped.

1. Using the keypad, move the needle cases to needle #10.
2. Click on Advanced..., then Service, then **1 Rev or To Headup**, then **Bottom Center**. This rotates the Z-axis into the correct lubrication position.
3. At the far left end of the machine (head #12, the furthest from the workstation), use a small flashlight to look through the red-lined hole. Confirm that the lower lubricating hole is properly aligned (refer to Figure 5-6).
4. Repeat for all sewing heads.

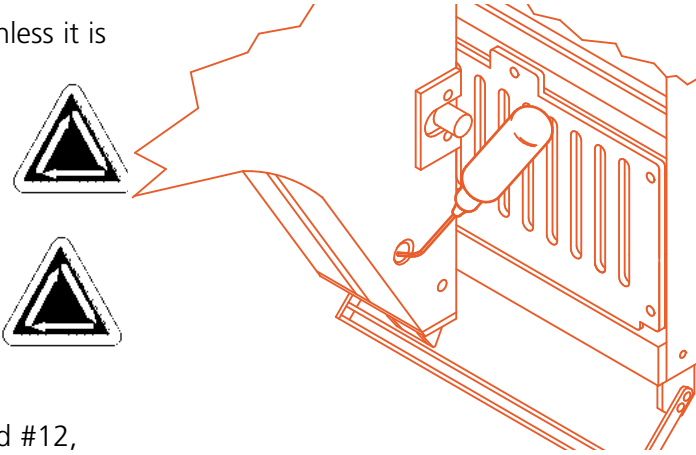


Figure 5-6

Linear Bearing Lubrication

1. Using the keypad, move the needle cases to needle #1.
2. Figure 5-7 shows the bearing track with the panels removed. Insert the oiler through the hole with the red bushing to access this track.
3. Place one drop of oil on the linear bearing track. Repeat for all sewing heads.
4. Using the keypad, move the needle case to needle #10.
5. Place one drop of oil on the linear bearing track. Repeat for all sewing heads.

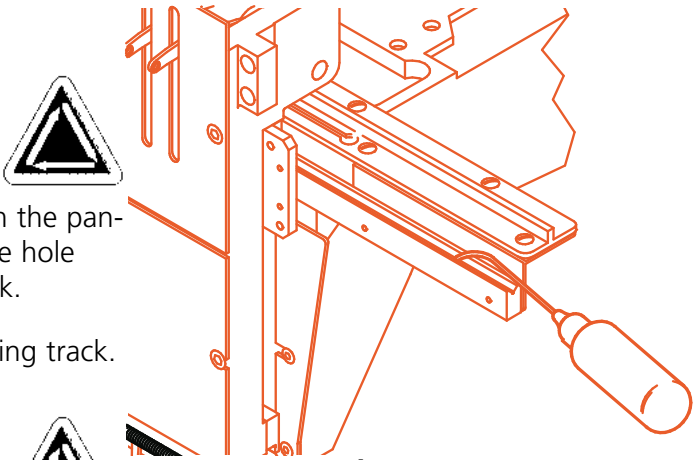


Figure 5-7

Front of the Trimmer

With the power OFF, remove the needle plate to access the trimmer areas shown in Figures 5-8, 5-9, and 5-10. Lubricate these areas by placing one drop of sewing machine oil in each of the indicated locations every 40 operating hours.

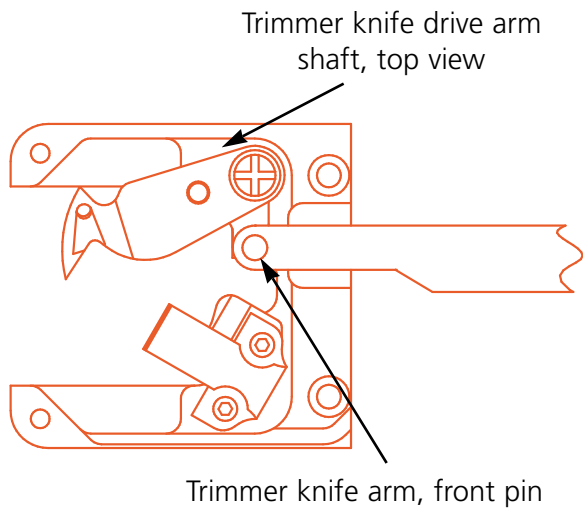


Figure 5-8

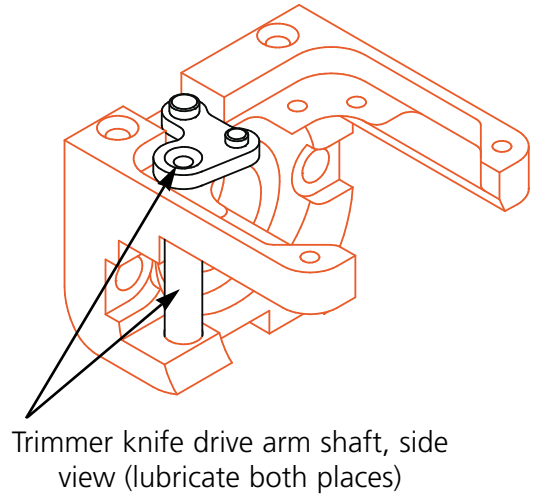


Figure 5-9

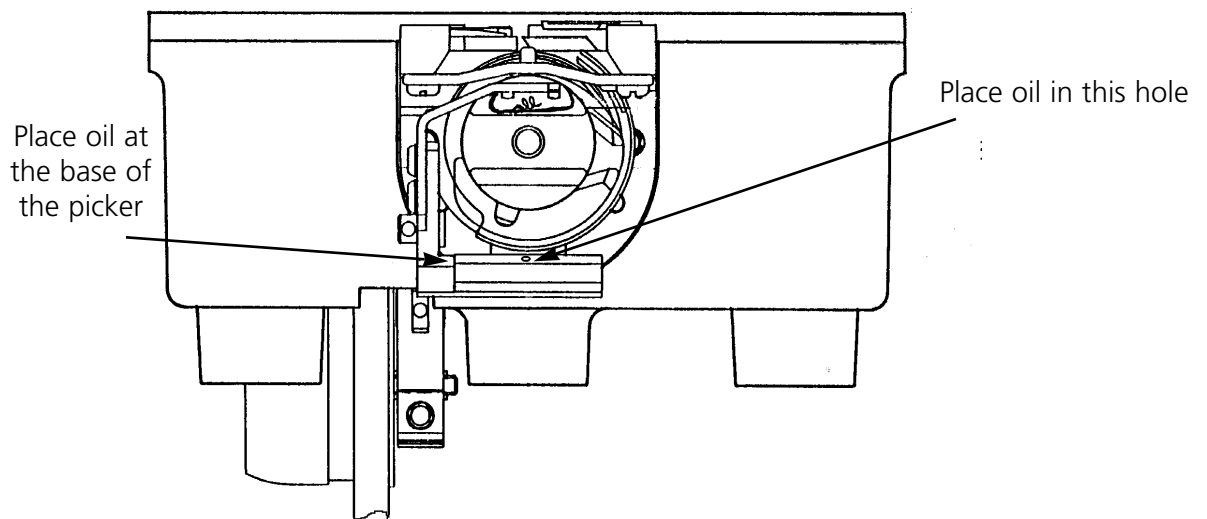


Figure 5-10

Trimmer Cam Assembly

The trimmer cam assembly should be lubricated every six months. Refer to the EMC 10/12 technical manual for access to the trimmer cam assembly.

Adjustments

Needle Depth Adjustment

The needle depth setting is the relationship between the eye of the needle and the rotary hook when the needle is at its lowest point. Because of the wide range of acceptable needle types, the distance between the needle point and the eye of the needle may vary enough to cause missed stitches or cut threads if the needle depth is incorrect. Follow these steps to adjust the needle depth:

1. Determine which sewing heads require needle depth adjustment and remove all threads from the needles.
2. Remove the sash frame and lower the table.
3. Remove the two screws and the needle plate.
4. Move to needle #1 on head #1. With the needle bar raised, replace needle #1 with the Needle Depth Pin (from the tool kit). Fit the beveled end up.
5. Remove the bobbin case from the rotary hook assembly.
6. Click on Advanced..., then Service, then **1 Rev or To Headup**, then **Bottom Center**. This moves the needle to its lowest point.
7. Remove the needle case cover.
8. Insert Needle Depth Gauge into the rotary hook basket.
9. Use a 2.5mm hex driver to loosen the needle bar connecting stud.
10. Slide the needle bar up or down until the tip of the Needle Depth Pin just touches the Needle Depth Gauge. If the needle bar was twisted, return it to its original rotation.
11. Hold the needle bar in place and retighten the needle bar clamp screw (see Figure 5-11)
12. Replace the needle; remove the Needle Depth Gauge and reinstall the bobbin case.
13. Repeat this procedure on other needles in need of adjustment.



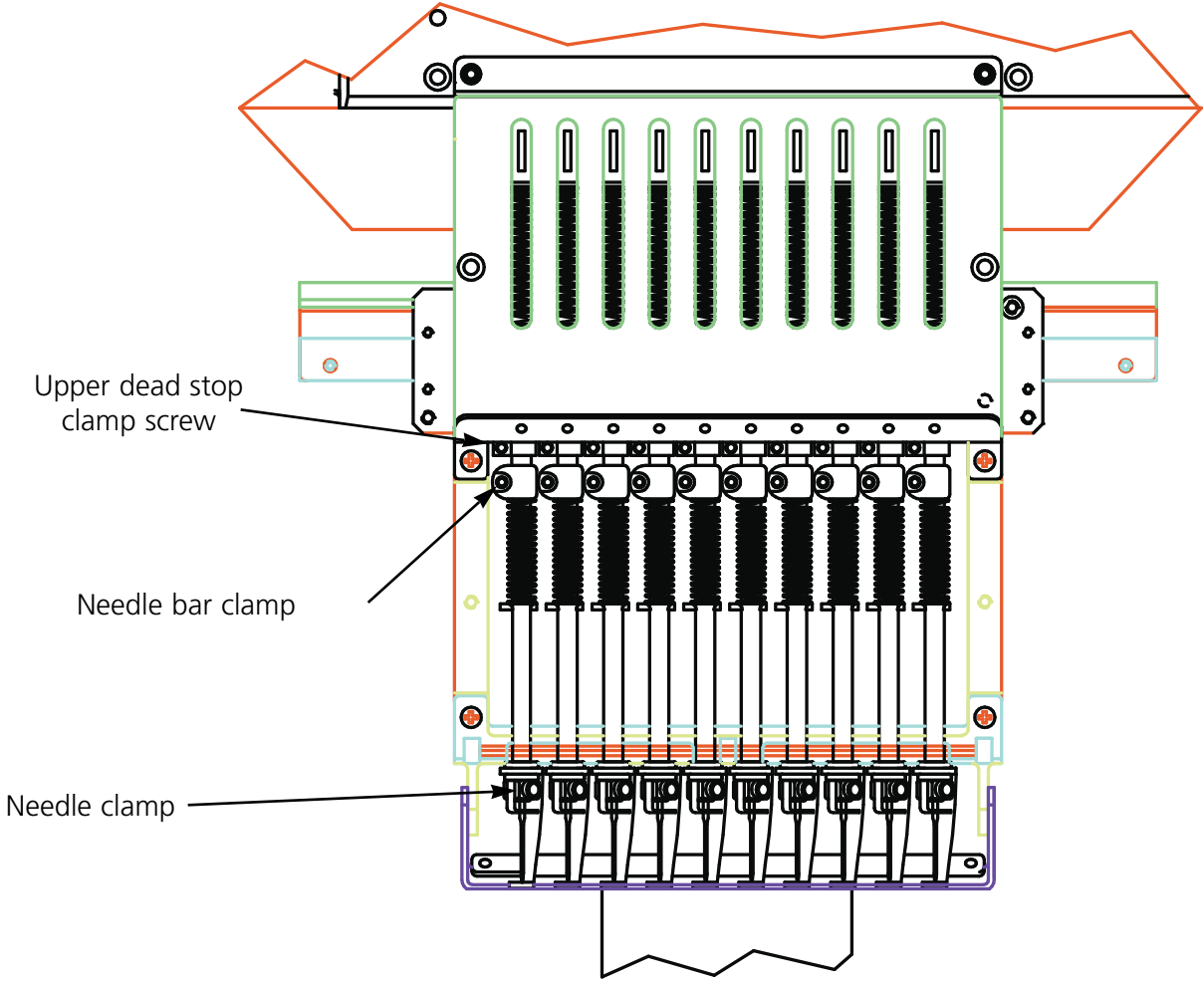


Figure 5-11

Checking Hook Timing

1. Install a new needle so that the needle/hook point positioning can be better evaluated.
2. Remove the two screws and the needle plate.
3. Click on Advanced..., the Service, then **1 Rev or To Headup**.
4. Click on **Bottom Center**, then click on **Hook Timing**. Verify that degrees equal 201 on the screen.

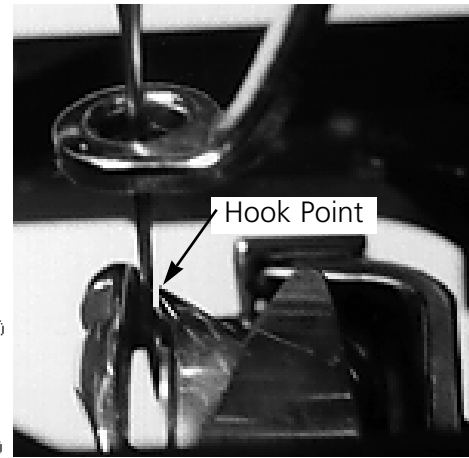


Figure 5-12

The hook point must align directly behind the needle with a 0.002 to 0.008" gap (refer to Figure 5-12).

Hook Timing Adjustment

If hook timing needs adjustment, follow these steps and refer to Figures 5-12 and 5-13.

1. Click on Advanced..., then Service. Click on **Hook Timing** three times. Loosen the first screw on the right side. Click on **Hook Timing** three times again and loosen the second screw on the right side.
2. Click on **1 Rev or To Headup**, then **Bottom Center**. All 12 heads must have a needle down. If not, repeat until they do. **Hook timing must be set on all the heads at the same time.**
3. Loosen the third mounting screw (now accessible from the right) and leave finger tight.
4. Check to make certain the retaining tab is still securing the inner basket of the rotary hook as shown in Figure 5-13. If the inner basket moves, it may cause a broken needle or a damaged hook.
5. Position the hook point directly behind the needle. The indentation for the retaining tab should be directly in front of the needle. Hold the hook in this position.

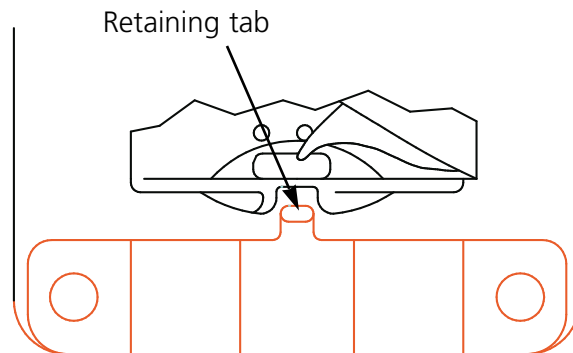


Figure 5-13



6. Slide the hook assembly forward or backward until you have a 0.002 to 0.008" gap between it and the needle (as described previously).
7. When the gap is correct, tighten the screws. Use the Hook Timing command as explained in steps one and two in order to access all the screws.
8. Click on **1 Rev or To Headup**.
9. Click on **Bottom Center**, then **Hook Timing**.
10. Check all of your adjustments and repeat any steps if necessary.
11. Replace the needle plate, making certain the needle is centered in the needle plate hole. When the needle is centered hold the plate in position, and tighten completely.



Adjusting UTCs

1. Click on **Bottom Dead Center**.
2. Set the UTC retaining finger 0.8mm away from the sewing hook basket and center the retaining finger to the needle. Tighten the UTC fastener screws.
3. Using the UTC adjusting screws, position the UTC sensor arm 0.020" (0.5mm) from the needle.
4. Manually disengage the needle bar from the reciprocator.
5. Disconnect the linkage to the movable knife arm pivot.
6. Position the movable knife across the sensor arm. There should be 0.004" (0.1mm) clearance.
7. Reattach the linkage to the movable knife arm pivot.
8. Place the needle plate on the hook support. Looking from the front, see if the UTC sensor arm touches the needle plate. If it touches, support the lowest section of the sensor arm with a flat-blade screwdriver, then push down the sensor arm while maintaining the clearance over the knife.



Check Spring

To set the check spring tension, Follow these steps:

1. Slightly loosen the set screw in the top of the tensioner mounting bracket (see Figure 5-14).

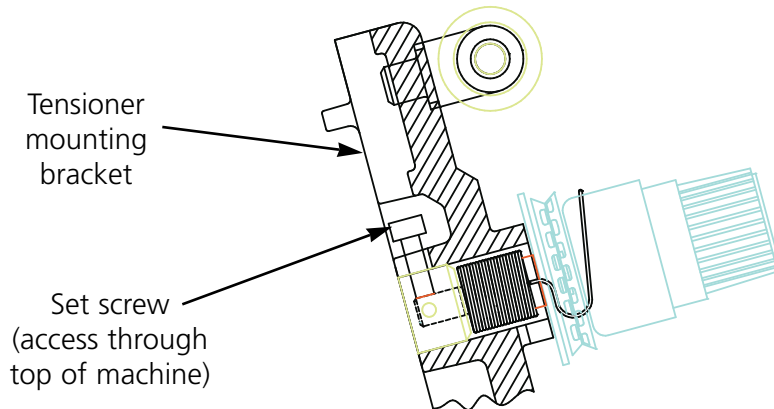


Figure 5-14

2. Rotate the thread tensioner to the position where the check spring is just touching the left side of the thread break contact (brass post).
3. Rotate the thread tensioner clockwise at least the distance of the diameter of the contact post, not to exceed 1/4 turn.
4. Tighten the set screw in the top of the thread tensioner bracket.

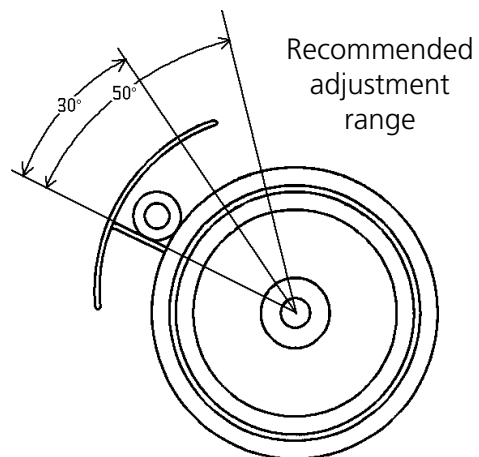


Figure 5-15

Replacement Parts

Fuses

There are 4 operator-replaceable fuses. If a fuse must be replaced, use this chart for appropriate fuse ratings. Do not use a fuse with any rating other than what is listed here:

Rating: 5A/250V	Fuses are all SLO-BLO.
0.5A/250V	
20A/250V	
1.5A/250V	

Tool Kit

The tool kit contains the following items and is included in the operator's kit:

6-piece metric ball hex set	Phillips offset screwdriver	Tool extension
12-piece standard ball hex set	Right angle screwdriver	1/16" ball allen wrench
Phillips #2 screwdriver	Short straight screwdriver	9/64" ball allen wrench
Straight small screwdriver	Tool handle	5/23 ball allen wrench

Operator's Kit

Following is a list of the items contained within the operator's kit:

PART NUMBER	DESCRIPTION
005408-01	HOOP, RND, 18CM
005409-01	HOOP, RND, 15CM
007535-01	HOOP SET, 21CM ROUND, W/ARM
006795-01	MONOFILAMENT
008294-01	NEEDLE, ORGAN, DB X K5, 75/11
005413-01	FRAME, SPIDER NET, HOOP, 18CM
005407-01	FRAME, SPIDER NET, HOOP, 15CM
006793-01	HOOP, SPIDER, 21CM
761002-01	BOBBIN, WHITE
007729-01	KIT, TOOL, EMC 10/12
008374-01	SCREW/NUT, JACK, ASSY
008162-01	PADS, SCREW, JACK
008177-01	CLIP, BORDER, FRAME, 300MM
007598-01	CLIP, BORDER, FRAME, 220MM
008454-01	BOTTLE, OIL, W/CAP, 1 LITRE
008429-01	HOOP, SASH, RND, 25CM, ASSY
008297-01	HOOP, SASH, 36CM X 30CM, ASSY
008499-01	BOBBIN, ALUMINUM
008490-01	CASE, BOBBIN
008298-01	FIXTURE, NDL DEPTH
008299-01	FIXTURE, NDL HEIGHT

Spare Parts

To help reduce down-time, Melco suggests keeping certain spare parts on hand for easy replacement and maintenance. Following is a list of the suggested parts for the EMC 10/12.

PART NUMBER	DESCRIPTION
001528-01	CLAMP, NDL, ASSY
001532-01	BAR, NDL
001535-01	SPRING, PRESSER FT
001537-01	SPRING, HLDNG, NDL BAR
008395-01	SOLENOID, JUMPSTITCH
001828-01	SCREW, SET, NDL CLAMP
001840-01	CLAMP, STOP, NDL BAR
001858-01	SHAFT, GUIDE, NDL BAR
008484-01	LEVER, TAKE UP, ASSY
001990-01S	ASSY, RECIPROCATOR
002637-08	SCREW, SKT HD CAP, M5 X 8 MM
003452-01	SOLENOID, PICKER, EMC6/4M, ASSY
004643-01	SCREW, NDL PLATE
007353-01	SENSOR, UTC, ASSY
005518-01	PCB, DSP188, ASSY
005523-01	PCB, CONTROL I/F, ASSY
005526-01	PCB, CLR CHNG, ENCODER, ASSY
005531-01	PCB, THREAD BREAK, ASSY
005535-01	PCB, HOME/LIMIT, ASSY
005546-01	PCB, LV DRIVER, ASSY
005577-01	BUMPER, WASHER
005600-01	KNIFE, SPRING, FIXED
005615-01	PICKER
005617-01	KNIFE, MOVABLE
005702-01	GUIDE, THD, THD TREE
005704-01	TUBING, 0.125 ID X 0.187 OD
007080-01	KNOB, ADJ, PRETENSIONER, PLASTIC
006452-01	PCB, REMOTE KEYPAD, ASSY
006520-01	PLATE, NEEDLE, UTC
006671-01	PRESSER, UNDER THREAD
007503-01	PLATE, GUIDE, NDL
007505-01	SHIM, NDL CS

PART NUMBER	DESCRIPTION
007506-01	FELT, NDL CS
007507-01	RAIL, GUIDE, T/U LEVER
007547-01	TENSIONER, THREAD, MAIN, BLACK, A
007591-01	DAMPER, NDL CLAMP,
007621-01	ASSY, CUTTER SOLENOID
007671-01	AMPLIFIER, SERVO
007803-01	PCB, E STOP CONTROL, ASSY
007823-01	FUSE, 15 AMP, 3AB SLO-BLO, CERAMI
007824-01	FUSE, 20 AMP, 3AB SLO-BLO, CERAMI
007825-01	FUSE, 3AG SLO-BLO, GLASS, 5 AMP
007826-01	FUSE, 3AG SLO-BLO, GLASS, 5 AMP
007924-01	FOOT, PRESSER, ASSY
008039-01	PIVOT, TRMMR, DRV
008043-01	BLADE, GRABBER
008069-01	BRUSH, CONTACT, THD BRK
008104-01	BELT, 5MM, HTD, GRV
009000-01	HOOK, ROTARY, SM BOBBIN
344924-01	STRAP, WRIST, STATIC
008490-01	CASE, BOBBIN
008471-01	VELCRO, GRABBER, FLARRED

6. Troubleshooting Guide

Thread breakage

PROBLEM	POSSIBLE CAUSES	SOLUTIONS
Design	Stitches are too short and/or too dense	Check the design for short and/or dense stitches, and edit the design to remove them
Needles	Incorrect needle for thread size being used	Replace with a compatible needle
	Needle is bent, damaged, or dull	Replace needle
	Needle position is incorrect	Install the needle correctly (see needle installation)
	Needle scarf and/or needle eye is burred	Replace needle
Thread	Incorrect thread size for the needle being used	Replace with a compatible needle
	Poor quality thread	Replace with a high quality thread or spray silicone on thread cone
	S-twist (right twist) thread being used	Replace with a Z-twist (left twist) thread
	Improper threading	Thread correctly (refer to threading section)
Upper/bobbin tension	Upper/bobbin tension too tight	Loosen upper/bobbin tension
	Ratio of upper thread to bobbin thread incorrect	Adjust upper and/or bobbin tension (see tension section)
	Incorrect check spring tension/stroke	Adjust/replace check spring (see check spring adjustment section)
Fabric and hoops	Fabric is hooped loosely	Tighten fabric in the hoop (see hooping section)
	Inadequate backing allows fabric to pull into needle plate hole	Increase number of backing pieces
Rotary hook	Hook timing is incorrect	Adjust hook timing (see hook timing adjustment section)
	Rotary hook does not rotate smoothly	Clean, oil, or replace
	Gap between the UTC retaining tab and the rotary hook is too narrow	Widen the gap (see UTC adjustment section)
Bobbin	Bobbin is damaged	Replace bobbin
	Bobbin thread feeds poorly	Repair or replace bobbin
Thread path	Scratches or burrs on thread path	Remove scratches with emery cloth
Needle depth	Needle depth is incorrect	Adjust needle depth (see head timing adjustment section)

Skipped Stitches

PROBLEM	POSSIBLE CAUSES	SOLUTIONS
Needles	Needle is bent or damaged	Replace needle
	Incorrect needle for the thread size being used	Replace with a compatible needle
	Needle is installed incorrectly	Install needle correctly (see needle replacement section)
Needle depth	Needle bar lowest dead point is incorrect	Adjust needle depth (see head timing adjustment section)
Rotary hook	Hook timing is incorrect	Adjust gap (see hook timing adjustment section)
	Hook point is dull	Replace hook
Upper/bobbin tension	Bobbin thread does not feed out smoothly	Replace the bobbin and/or bobbin case
	Upper thread does not feed out smoothly	Adjust the upper tensions
Presser foot	A weak or broken presser foot prevents the needle from coming out of the fabric smoothly	Replace or strengthen the spring (refer to the technical manual)
Thread	Thread twist is too tight	Use the appropriate thread or consult the service department for suggestions
	Thread is too elastic to form an adequate loop	
Check spring	The check spring stroke is too high	Adjust the check spring stroke (see the check spring adjustment section)
	The check spring tension is too high	Decrease the tension

Needle breaks

POSSIBLE CAUSES	SOLUTION
Needle is bent	Replace needle
Needle installation is incorrect	Install correctly (see needle replacement section)
Needle strikes the rotary hook	Adjust hook timing (see hook timing adjustment section)
Poor needle quality	Replace needle
Dull needle tip	Replace needle
Needle is too small for the fabric	Replace with compatible needle
Needle strikes the needle plate	Adjust position of the needle case (refer to the technical manual)

Loose Stitches

POSSIBLE CAUSES	SOLUTIONS
Upper thread tension too low	Adjust the upper thread tensions (see tension section)
Bobbin tension too low	Adjust the bobbin case set screw
Uneven thread size	Replace with quality thread
Upper tension inconsistent	Clean tensioner parts
Rotary hook timing is incorrect	Adjust hook timing (see the hook timing adjustment section)
Inadequate rotary hook lubrication	Lubricate the rotary hook (see the rotary hook lubrication section)
Design density too tight	Decrease density (refer to the EDS manual for design editing)
Gap between UTC retaining tab and hook too wide	Adjust gap (see the UTC adjustments section)

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7. Status Messages

Control Panel Messages

Frame Forward/Backward: The machine is currently framing forward or backward.

In test mode: The test mode (set via the Test Mode dialog box) is active.

Machine error: This is a general error message - the specific error will be displayed on the status bar message area.

Machine Idle: The machine is ready, but not currently sewing.

Machine Running: The machine is currently operating.

Stopped -- bobbin break, head #: The machine has stopped sewing due to a bobbin thread break at a specified head.

Stopped -- color change: The machine is waiting for a manually-specified color.

Stopped -- thread break, head #: The machine has stopped sewing due to a thread break at a specified head.

Stopped -- waiting for start key: The machine has been stopped during sewing and is waiting to resume.

Status Bar Messages

Color change time out: The color change did not occur within the software-specified time limit. Reset the color index.

Controller memory cleared: After a manual reset, this confirms that the controller has been reset and is ready to sew.

End of design: The sewout is finished.

Fault intr, no bits set: Internal error - call Customer Service for advice.

Grabber not home: The grabber is not in home position, or not retracted completely.

Insufficient memory for the requested operation: The operator has tried to load a design that is too large for the system memory.

Learn color change: The machine is waiting for a manually-specified color.

No design ready: You must load a design before pressing the start button.

Not at headup: Z-axis is not at the Headup position. Go to the Head Timing menu and reset the Headup position manually.

Off color index: This may occur during initial power up. See Section 6, Recovery Methods, for an explanation of how to reset the color index.

Outside of hoop: The design loaded is too large for the specified hoop, or the sash has been manually moved past the hoop limits.

Sign on completed: The machine and controller are ready to sew.

Thread break: A thread has broken - refer to the Control Panel message area.

Thread grabber time out: The thread grabber did not function within the software-specified time limit. Free the grabber and retract it. If this does not work, call for factory advice.

Trimmer disabled: The trimmer has been disabled in the Options dialog box.

Trimmer not home: The trimmer is not in its home position, or has not retracted completely.

X motor fault: Check motor driver card or call for factory-authorized service.

X over current: Check motor driver card or call for factory-authorized service.

X over voltage: Check motor driver card or call for factory-authorized service.

X under voltage: Check motor driver card or call for factory-authorized service.

XY home not set: The operator tried to move the sash without home being set.

XY rack limit error: The sash has been moved past the normal X/Y limits.

XY racks not done: The X or Y cycle was not completed. Press start to reset.

Y motor fault: Check motor driver card or call for factory-authorized service.

Y over current: Check motor driver card or call for factory-authorized service.

Y over voltage: Check motor driver card or call for factory-authorized service.

Y under voltage: Check motor driver card or call for factory-authorized service.

Z timeout error: This may indicate either the Z timing cycle was not completed, or that the Z motor may be failing. If sewing does not resume after pressing the Start button again, call for factory advice.

Z motor fault: Check motor driver card or call for factory-authorized service.

Z over current: Check motor driver card or call for factory-authorized service.

Z over voltage: Check motor driver card or call for factory-authorized service.

Z tracking error: Internal error - call Customer Service for advice.

Z under voltage: Check motor driver card or call for factory-authorized service.

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8. 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. Its 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 known 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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