

Figure 5-3 Exploded View of the TeleMon Monitor

Before You Begin

Before you begin, please keep in mind that the M2636B TeleMon is a carefully engineered, complex measuring instrument, even though compact and easy to use. It should be treated with care. Use a flexible work surface. Do not drop or shove the assemblies aside. Refrain from placing fluids where they can be accidentally spilled onto TeleMon's electronic components.

Pay special attention to inserting and removing assemblies and to deploying the fasteners. Never force an assembly. During reassembly, tighten the screws only until they are snug. If you are tightening a set of screws, proceed in sequence to opposite sides; for example, if 1, 2, 3 and 4 are at the four corners of a square, tighten in the sequence, 1, 3, 2, 4. This practice helps to prevent misalignment and breakage.

Repair

Caution

Your monitor contains components that will be damaged if ESD precautions are not observed.

The Battery

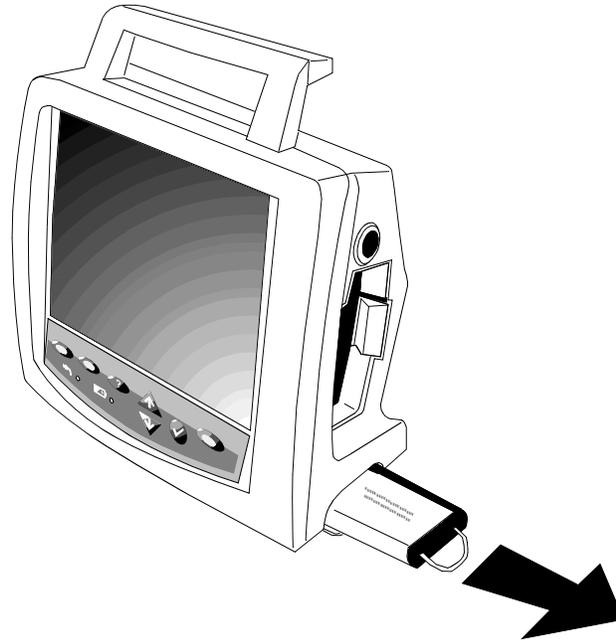


Figure 5-4 Removing the Battery

Removal of Battery

- Step 1.** Open the battery door on the lower right side of the monitor.
- Step 2.** Pull the battery straight out by the battery strap.

Replacement of Battery

Note—Installing the battery in the monitor is the last step of any reassembly. Do not install the battery in a partially disassembled monitor.

- Step 1.** Stand the fully assembled monitor upright.
- Step 2.** Insert the battery with the battery name down. Make sure that it is all the way in.
- Step 3.** Close the battery door.
- Step 4.** Turn the power switch to the “ON” position. The self-test display should appear, followed by the standard display.
- Step 5.** Check the battery gauge to verify the charge state of the battery.
- Step 6.** Perform operational and safety tests as applicable.

The Front Panel Assembly

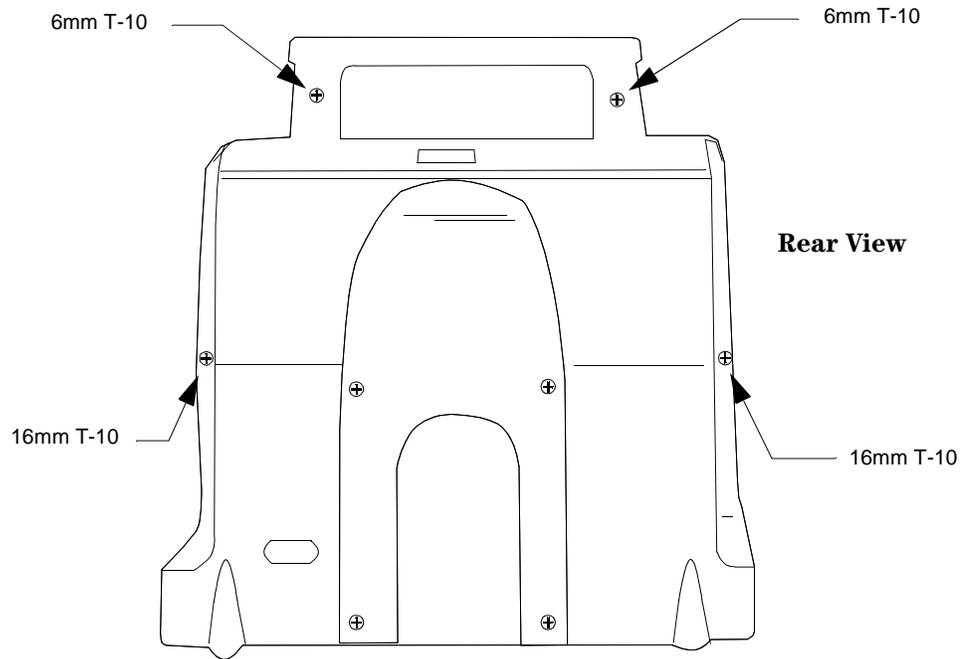


Figure 5-5 Unfastening the Front Panel Assembly

Removal of Front Panel

- Step 1.** Place the monitor face-down on a clean, soft surface.
- Step 2.** Remove the two 6mm T-10 screws in the handle and the two 16mm T-10 screws near the base. You may have to invert the monitor to drop out the screws.
- Step 3.** Placing the monitor on its back, open the front panel from the top and slide it toward the top of the unit, uncovering the Keyboard-to-Main Cable.

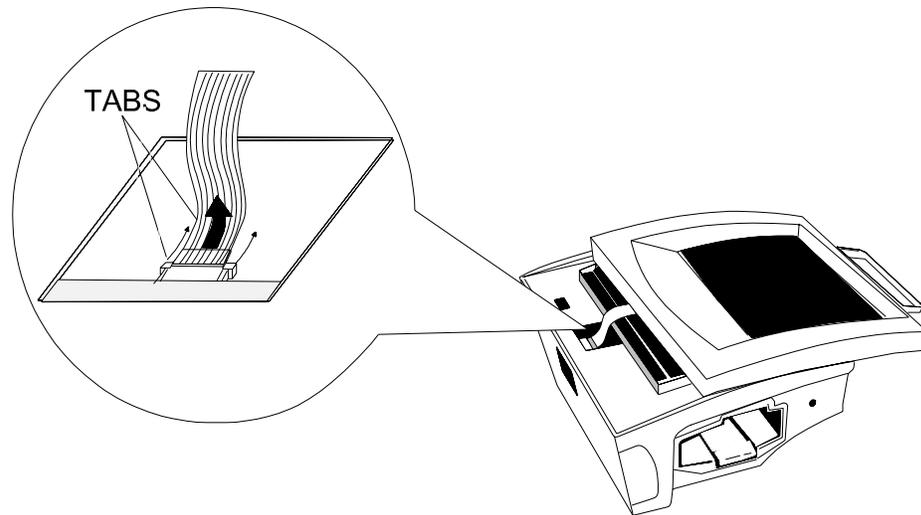


Figure 5-6 Disconnecting the Keyboard-to-Main Cable

- Step 4.** Lift the tabs on the monitor connector to the Keyboard-to-Main Cable to unlock the cable. Pulling the cable out, lift off the Front Panel Assembly.

Installation of Front Panel

Note—The monitor must be completely assembled except for the Front Panel Assembly. Only the Monitor Assembly, the Front Panel Assembly and the fasteners should remain loose on hand.

- Step 1.** Place the Monitor on its back on the work surface.
- Step 2.** On the Front Panel, to remove dust that can be trapped in the display area, wipe the LCD screen and anti-glare panel with a lint-free cloth moistened with isopropyl alcohol.
- Step 3.** Position the Front Panel Assembly over the Monitor, with the Keyboard-to-Main Cable closest to the bottom of the monitor.
- Step 4.** The cable connector is visible through an opening in the bottom front of the Chassis Assembly. Make sure the side tabs are fully up.
- Step 5.** Insert the loose end of the cable into the top of the connector and lock by sliding the tabs down.
- Step 6.** Slide the Front Panel Assembly toward the bottom of the unit and snap it in place. The Keyboard-to-Main cable assumes an S shape.

Note—The Front Panel must contain the plastic film for ESD and water protection. It is suggested you begin closure at the handle and push the film under the front panel at the bottom.

- Step 7.** Holding the Front Panel tightly to the Rear Assembly, turn the monitor over and secure the Front Panel Assembly with two 6mm T-10 screws in the handle and two

16mm T-10 screws in the housing. Be sure to tighten in a sequence of opposite corners.

The Chassis Assembly

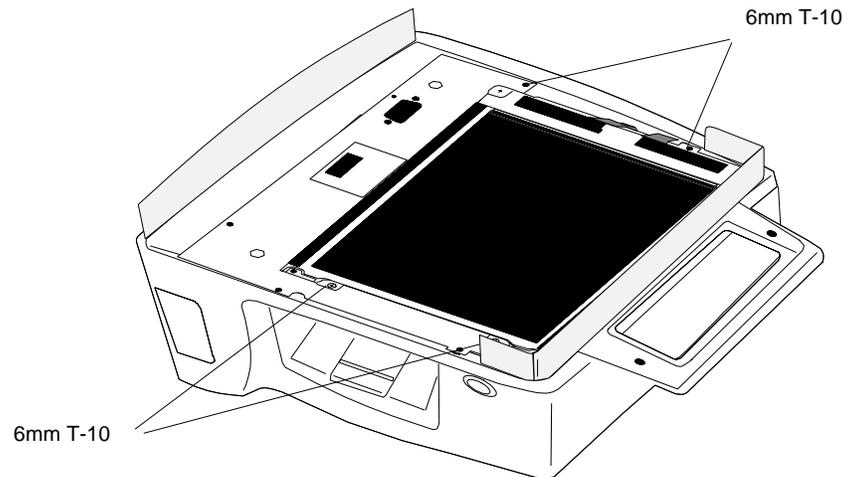


Figure 5-7 Detaching the Chassis Assembly

Removal of Chassis Assembly

- Step 1.** Place the monitor on its back.
- Step 2.** Remove the four 6mm T-10 screws holding the Chassis to the monitor.
- Step 3.** Stand the monitor up. Carefully lift out the Chassis Assembly, right side first, so that you can pass the power switch through its opening on the left side of the Rear Housing.

Note—The assembly remains tethered to the monitor by four cable connections and a tubing connection.

Repair

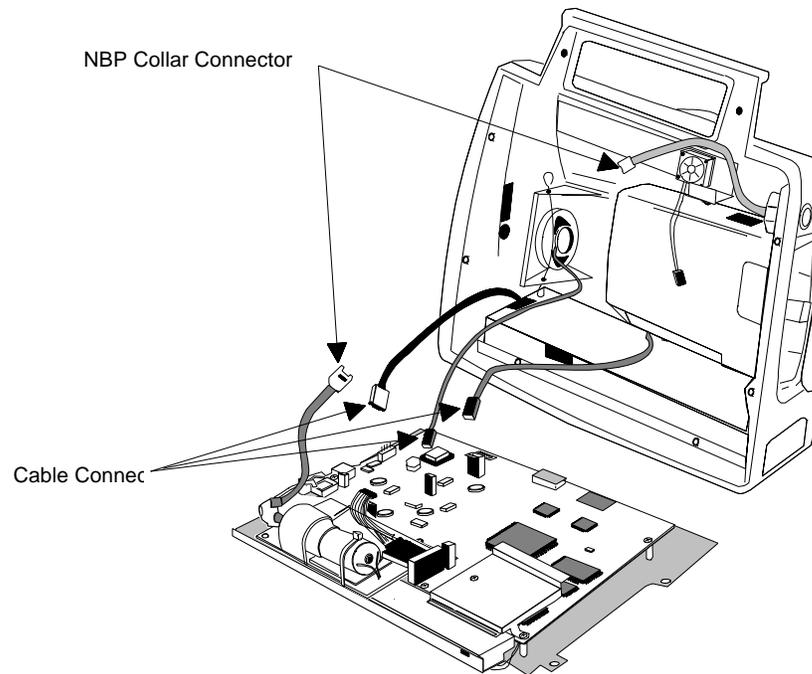


Figure 5-8 Chassis Assembly Cables

- Step 4.** Unhook the NBP tubing from behind the Speaker Clip. Twist the NBP Tubing Collar Connector to separate the tubing.

Note—Half the tubing remains attached to the Rear Housing Assembly and half to the NBP Board.

- Step 5.** Gently pull on the Fan-to-Main Cable connector at the Main Board to release the cable. It remains attached to the fan.
- Step 6.** Squeeze the spring tab on the Speaker-to-Main Cable Connector at the Main Board to release the cable. It remains attached to the Speaker.
- Step 7.** Squeeze the spring tab on the Transmitter Power Cable at the Main Board to release the cable. It remains attached to the Transmitter Bay Assembly.
- Step 8.** Gently pull on the Battery-to-Main Cable connector from the Main Board. The cable remains connected to the Battery Compartment.

Note—The order of disassembly at this point depends of which units attached to the Chassis Assembly, or to the Rear Housing Assembly, you wish to replace.

Installation of Chassis Assembly

Note—The Chassis Assembly and the Rear Housing Assembly must be completely assembled. Make sure the films are in position on the top of the Rear Housing and on the bottom of the Chassis.

Note—All the connectors on the Main Board are keyed to the appropriate cable connector. Do not force a connector. If it does not easily fit, it is the wrong connector.

- Step 1.** Stand the Rear Housing Assembly up on the work surface, facing you.
- Step 2.** Align the Chassis Assembly flat on the work surface before the Rear Housing Assembly, with the Main Board up and the NBP Board closest to you.
- Step 3.** Fit the flange on the bottom front of the Battery Compartment between the Chassis and the Main Board.
- Step 4.** Press the connector of the Transmitter Power Cable into the keyed connector on the Main Board.
- Step 5.** Press the connector of the Speaker-to-Main Cable into the keyed connector on the Main Board. You may have to tilt the Chassis Assembly up a little.
- Step 6.** Tilting the Chassis Assembly up, press the Battery-to-Main Cable connector into the keyed connector at the left side of the Main Board.

Caution

Make sure that when the Chassis Assembly is tilted into place, the cable folds into the pocket formed by the fold in the battery connector film (attached to the Speaker Housing).

- Step 7.** Twist the two halves of the NBP Tubing Collar Connector together until they snap-lock into place. Hook the tubing behind the top of the Speaker Clip.
- Step 8.** Running the Fan-to-Main Cable over the **top** of the NBP Tubing, press the connector into the keyed connector on the Main Board.
- Step 9.** Holding the Chassis Assembly, lay the Rear Housing Assembly on its back on the work surface.
- Step 10.** Starting from the left side, so that you can insert the power switch on the Main Board into the appropriate opening in the Rear Housing Assembly, insert the Chassis Assembly into the Rear Housing Assembly.

Note—With your finger, insure that the Fan-to-Main Cable bows to the left, out of the way of the transmitter optical path.

- Step 11.** Aligning the screw holes in the Chassis with the screw mounts on the Rear Housing Assembly, fasten the Chassis Assembly to the Rear Housing Assembly with four 6mm T-10 screws.

Hint—Place the most accessible screws first.

- Step 12.** Be sure no ribbon cable protrudes beyond the Display on the left side of the Monitor Assembly, adjusting the position of the cable and/or Chassis Assembly, if necessary.

Repair

The NBP Board

Remove the NBP Board either to replace it or to access the Inverter Board or the Display. The Main Board can have been removed or it can be in place.

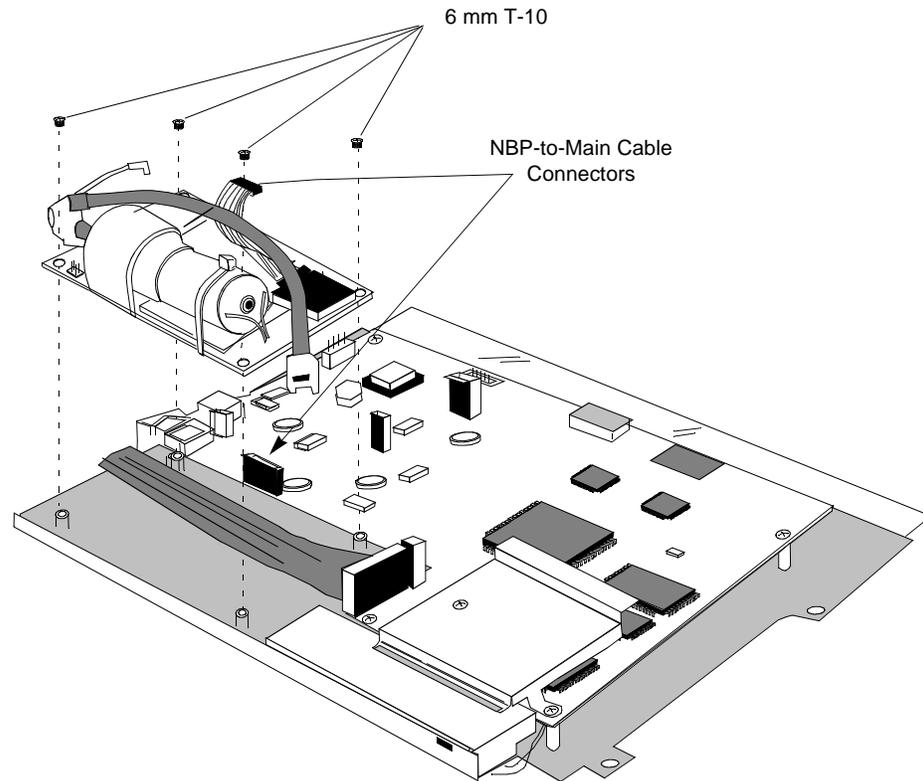


Figure 5-9 Removal of the NBP Board

Removal of NBP Board

Step 1. If necessary, press the spring tab on the NBP-to-Main Connector and disconnect the NBP-to-Main Cable from the Main Board.

Note—If the Main Board has been removed from the Chassis, this cable may already have been disconnected.

Step 2. Remove the four 6mm T-10 screws holding the NBP Board to the Chassis and lift the board from the Chassis.

Installation of NBP Board

The Display and Inverter Board with shield must be in place and must be connected. The Inverter-to-Main and Display-to-Main Cables will run under the NBP Board and must be in place now.

Step 1. Place the NBP Board on the Chassis with the pump facing up and on the outside edge. The holes in the board should match the mounts on the chassis. Be sure the two cables are under the board, and that one screw mount divides the ribbon cable.

Step 2. Secure the board to the Chassis with four 6mm T-10 screws.

Step 3. Make sure the NBP-to-Main Cable is attached to the connector on the NBP Board.

Step 4. If the Main Board is in place, press the connector of the NBP-to-Main Cable into the keyed connector on the Main Board. If the Main Board is not in place, perform this step when you mount the Main Board.

The Inverter Board

Remove the Inverter Board to replace it or to access the Display. Before removing the Inverter Board, remove the NBP Board. The Main Board can have been removed or can be in place.

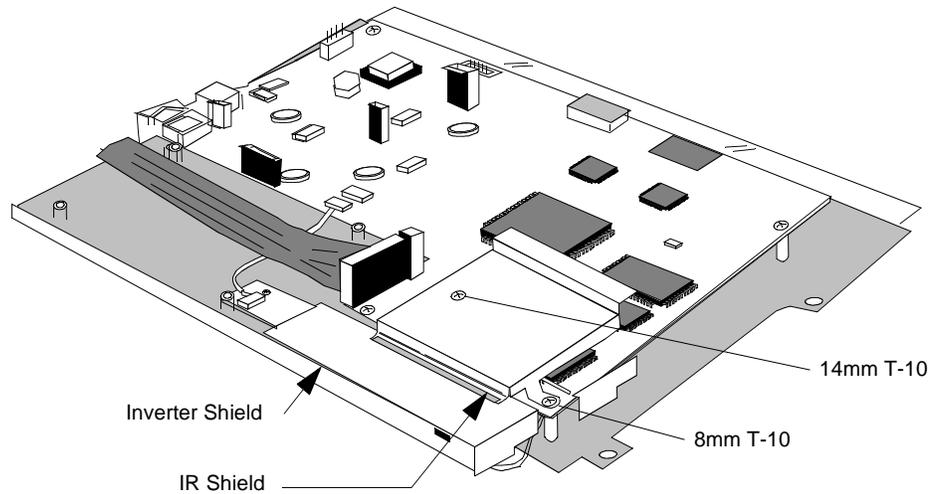
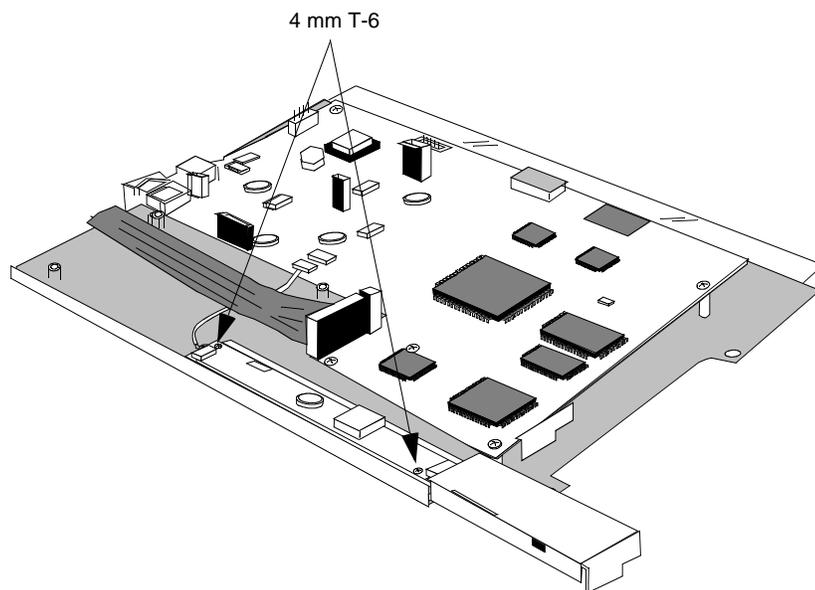


Figure 5-10 The Inverter and IR Shields

Removal of Inverter Board

Step 1. If necessary, remove the 14mm and 8 mm T-10 screws holding the IR Shield to the Main Board and take off the shield.

Note—If the Main Board has been removed, the IR Shield has been removed already.



Repair

Figure 5-11 Removing the Inverter Shield

- Step 2.** Using the T-10 screwdriver, remove the two 4mm T-10 screws holding the Inverter Shield to the Chassis.
- Step 3.** Lift and slide out the Inverter Shield.

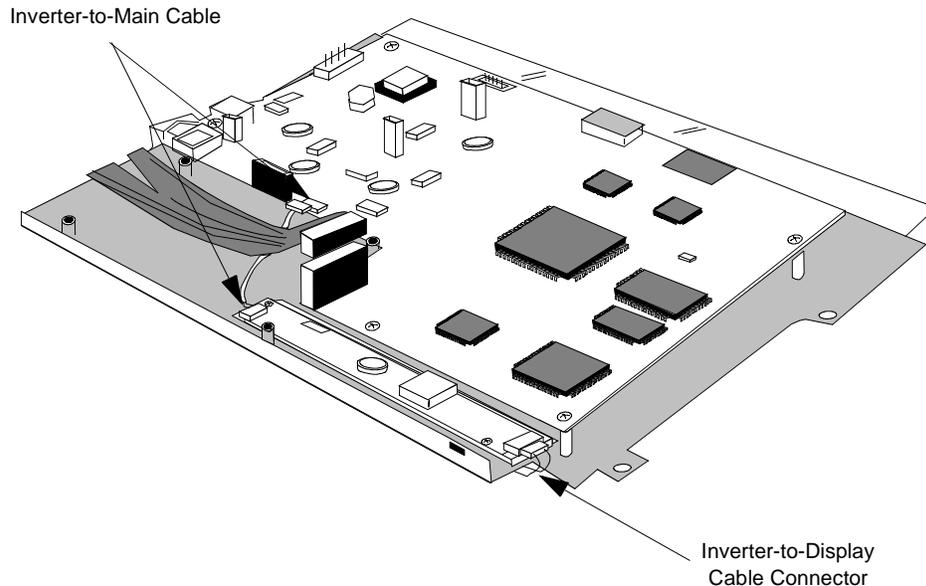


Figure 5-12 Inverter Board Connections

- Step 4.** If necessary, detach the Inverter-to-Main Cable connector from the Inverter Board by using fingernails on the two edges of the connector to work it loose. Do not pull on the wires or use a screwdriver.
- Caution*—Take extra care, as excessive force can damage the connector.
- Step 5.** Detach the Inverter-to-Display connector from the Inverter Board.
- Step 6.** Remove the two 4mm T-6 screws holding the Inverter Board to the Chassis. Lift off the board.

Installation of Inverter Board

The Display must be in place and must be connected. The NBP Board must have been removed. If the Main Board is in place, the IR Shield must have been removed.

- Step 1.** Place the Inverter Board on the Chassis with the large connector on the right. The screw holes in the board should match the screw mounts on the Chassis. If the large square aperture is farthest from you and the ribbon cable is on the left, the Inverter Board will be on the side closest you and to the right.
- Step 2.** Fasten the Inverter Board to the Chassis with the two 4mm T-6 screws.
- Step 3.** On the right side, gently press the connector of the Inverter-to-Display Cable into the large connector of the Inverter Board.
- Step 4.** On the left side of the Inverter Board, press the Inverter-to-Main Cable into the keyed connector.

Note—This cable will run under the NBP Board and must be in place, regardless of whether the Main Board is present. Take it off the Main Board, if necessary.

Step 5. If the Main Board is present, connect the Inverter-to-Main Cable to the small keyed female connector on the side of the Main Board closest to the future position of the NBP Board.

Step 6. Slide the Inverter Shield over the Inverter Board from the right. Make sure that the positioning tab on the shield is lined up with the corresponding slot of the projection on the Chassis, and that the screw holes are aligned with the mounts.

Note—The tab does not have to be in the slot.

Note—No wires should be showing under the right side of the shield.

Step 7. Fasten the shield to the Chassis with the two 4mm T-10 screws.

Step 8. If the Main Board is present, fasten the IR Shield to the Main Board. The 14mm T-10 screw goes on the inside. The other is an 8mm T-10.

The Display

The LCD has a half-life of approximately two years. It should be replaced when it loses its brightness.

Removal of the Display requires prior removal of the Inverter Shield and Board, which in turn require prior removal of the NBP Board. The Main Board may be in place.

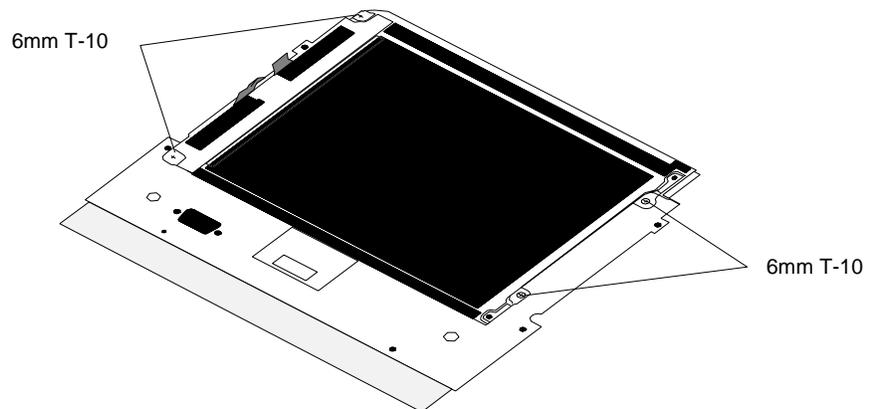


Figure 5-13 The Display

Removal of Display

- Step 1.** Detach the Display-to-Main Cable connector from the Main Board Connector by pulling.
- Step 2.** Holding the Chassis upright, remove the four 6mm T-10 screws from the Display.
- Step 3.** Lift off the Display.

Installation of Display

- Step 1.** Hold the Chassis on its edge with the board side facing away from you. If no board is present, the board side is the one with the tall screw mounts. The large square aperture should be at the bottom. The ESD film should be over the yellow strip on the bottom of the board side.

Repair

- Step 2.** Start two 6mm T-10 screws in the screw mounts on the right of the chassis.
- Step 3.** Position the Display in front of the Chassis with the ribbon cable to the left (Display-to-main) and the dark side toward you. Insert the slots on the right side of the display under the two screws that were started.
- Step 4.** Start the screws on the left side of the Display and tighten all four 6mm T-10 screws.
- Step 5.** Place the Chassis flat on the work surface with the Display down.
- Step 6.** Bend the Display-to-Main Cable over the edge of the Chassis so that one half of the cable falls on each side of the screw mounting post.
- Step 7.** If the Main Board is present, connect the cable to the female connector on the Main Board by pushing down.

The Main PC Board

Remove the Main Board only to replace it. The NBP Board, Inverter Board and Display can remain in place.

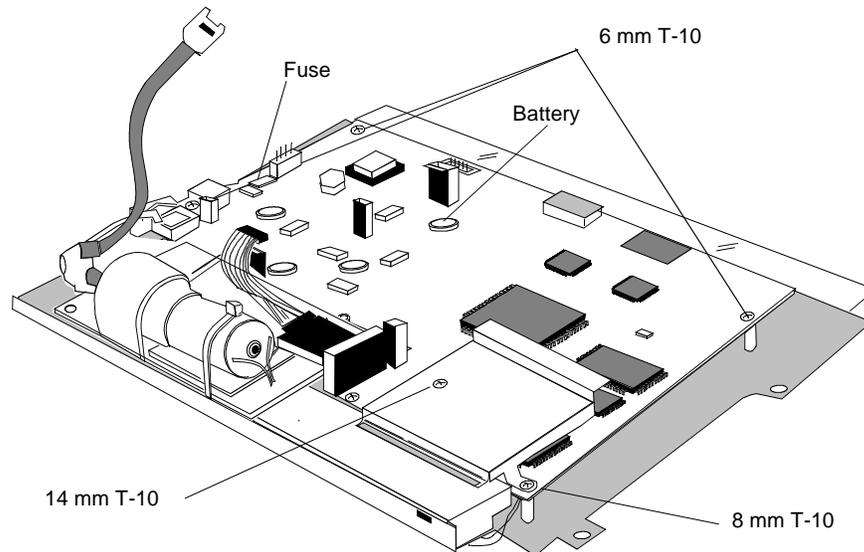


Figure 5-14 Main PC Board

Removal of Main Board

- Step 1.** If necessary, disconnect the Display-to-Main cable from the Main Board.
Note—If the Display has been removed, the cable may not be connected to the Main Board. If present, it is the ribbon cable that runs under the NBP Board.
- Step 2.** If necessary, disconnect the Inverter-to-Main Cable from the Main Board.
Note—If the Inverter Board Assembly has been removed, the cable may not be present. If present, it is the other cable that runs under the NBP Board.
- Step 3.** If necessary, disconnect the NBP-to-Main Cable from the Main Board.
Note—If the NBP Board has been removed, the cable may not be present. It is the large and obvious cable connected to the top of the Main Board.

Step 4. Remove the three 6mm T-10 screws holding the Main Board to the Chassis.

Step 5. Lift the Main Board off the Chassis.

Installation of Main Board

Step 1. Place the Chassis face down on the work surface. The face is the side that features the short screw mounts, to which the Display is attached.

Step 2. Align the Main Board on the mounting posts, face up.

Step 3. If necessary, connect the Inverter-to-Main Cable to the Main Board. The connector on the board is the small one nearest to the location of the NBP Board.

Note—If the NBP Board is in place, connecting the cable before fastening the board permits you to maneuver the board. However, if the Inverter Board is not in place, the cable may not yet be available.

Step 4. Fasten the Main Board to the mounting posts with three 6mm T-10 screws. Leave the holes for the IR Shield empty.

Step 5. If necessary, connect the Display-to-Main Cable to the board.

Note—If the NBP Board is in place, this ribbon cable runs under it. If the Display is not in place, the cable may not yet be available.

Step 6. If necessary, connect the NBP-to-Main Cable to the Main Board.

Note—If the NBP Board is not in place, the cable may not be available.

Step 7. Fasten the IR Shield to the Main Board with a 14mm T-10 screw nearest the Display-to-Main connector and an 8mm T-10 screw on the other side.

Replacing the Main Board Fuse or Battery

The main board contains fuses and a battery. Refer to the following diagram for the locations and specifications of these components. Both components are field replaceable.

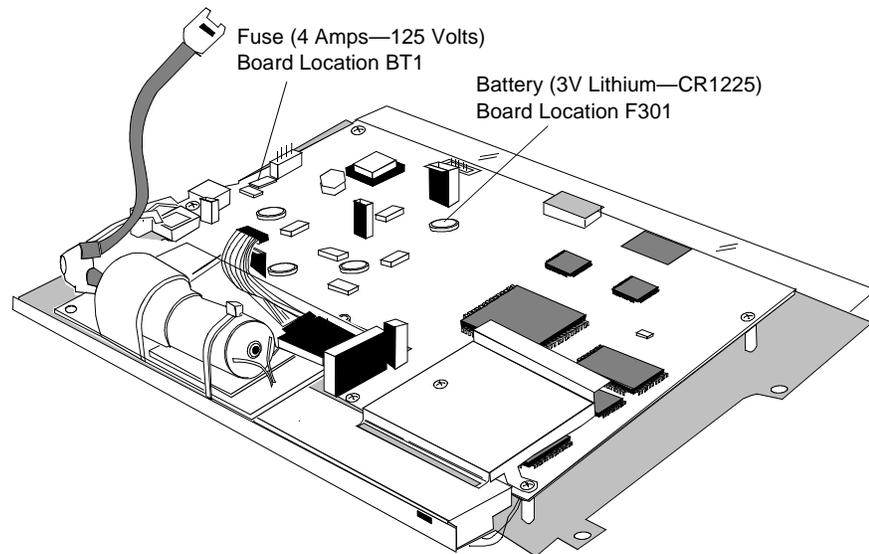


Figure 5-15 Main PC Board

Repair

The Speaker

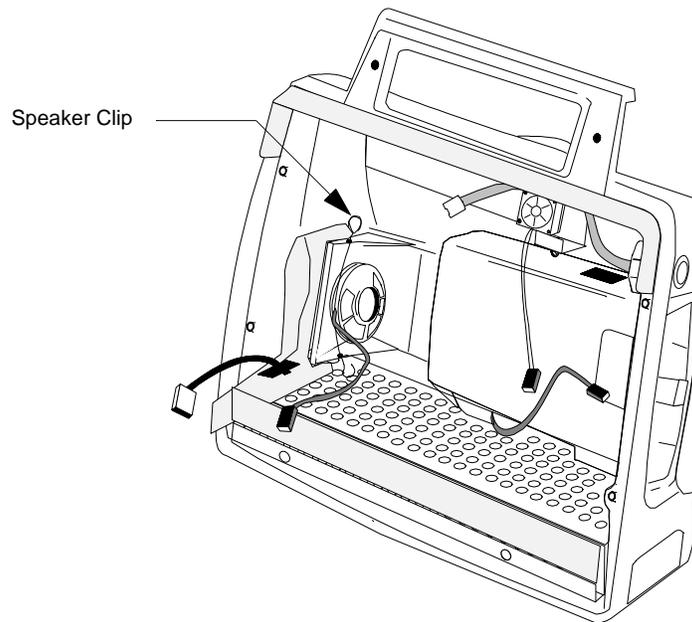


Figure 5-16 The Speaker

- | | |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Removal of Speaker | Step 1. Inside the Rear Housing, remove the Speaker Clip holding the Speaker to the mount.
Step 2. Twist and pull out the Speaker. |
| Installation of Speaker | Step 1. Position the Speaker against the mount, making sure the Speaker-to-Main Cable is on the outside. Slide the rim of the Speaker under the prongs provided.
Step 2. Insert one end of the Speaker Clip into the slot on the bottom of the mount, bend it over the outside rim of the speaker, and insert the other side into the slot on the top of the mount.

<i>Caution</i> —The clip must follow the notch in the outside rim of the speaker. Placing it across the center will create a path for ESD between the clip and the cable connector. |

The Battery Compartment

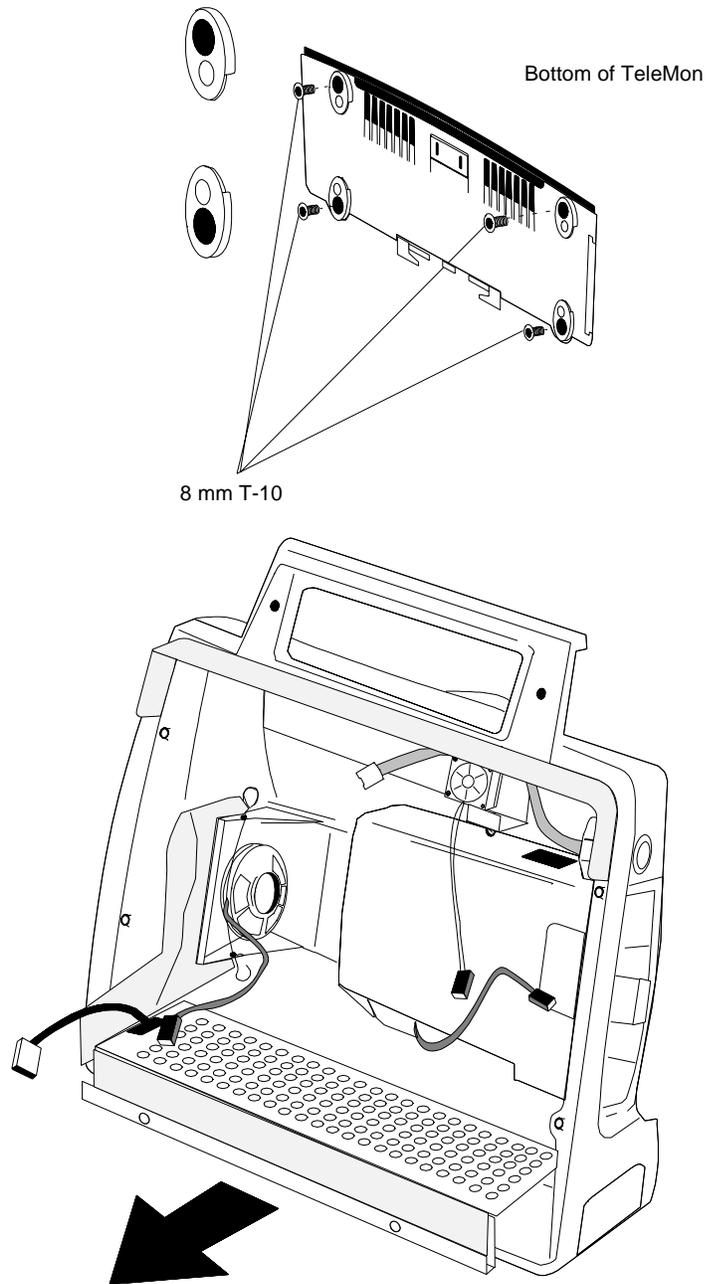


Figure 5-17 Removal of the Battery Compartment

Removal of Battery Compartment

- Step 1.** Remove the four 8mm T-10 screws holding the four feet to the bottom of the Rear Housing and pull the feet off.
- Step 2.** Slide the Battery Compartment out of the open front of the Rear Housing.

Repair

Hint—The Battery Door must be open, and the serial port door must have been removed.

Step 3. Remove the pin holding the Battery Connector to the compartment.

Installation of Battery Compartment

Step 1. Stand the Rear Housing up with the open side facing you.

Step 2. Open the battery door on the housing, if necessary.

Step 3. Attach the Battery Connector to the Battery Compartment with the pin. Make sure that the wires face up.

Step 4. Place the Battery Compartment in the bottom of the Rear Housing through the front, making sure the cable is on the left. The left side of the film pocket must go over the left side of the Battery Compartment.

Step 5. Place the Rear Housing on its back.

Step 6. Fasten the four feet to the bottom of the case with four 8mm T-10 screws. The cut-outs in the feet must face the inside.

Caution—Tighten the screws only until snug. Do not overtighten.

The Battery Door

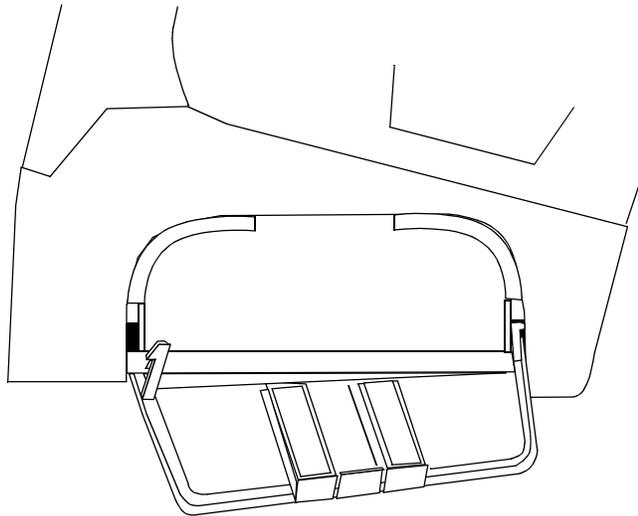


Figure 5-18 The Battery Door

Removal of Battery Door

Step 1. Make sure the Battery Door is open and is in a horizontal position.

Step 2. Push the Battery Door post closest to the open side of the Rear Housing. The door falls out.

Installation of Battery Door

Step 1. Placing the Battery Door in a horizontal position under the battery port, hook the door post closest to the back of the TeleMon into the slot provided.

The Transmitter Dock

Step 2. Snap the other door post into its slot, pushing up from the bottom.

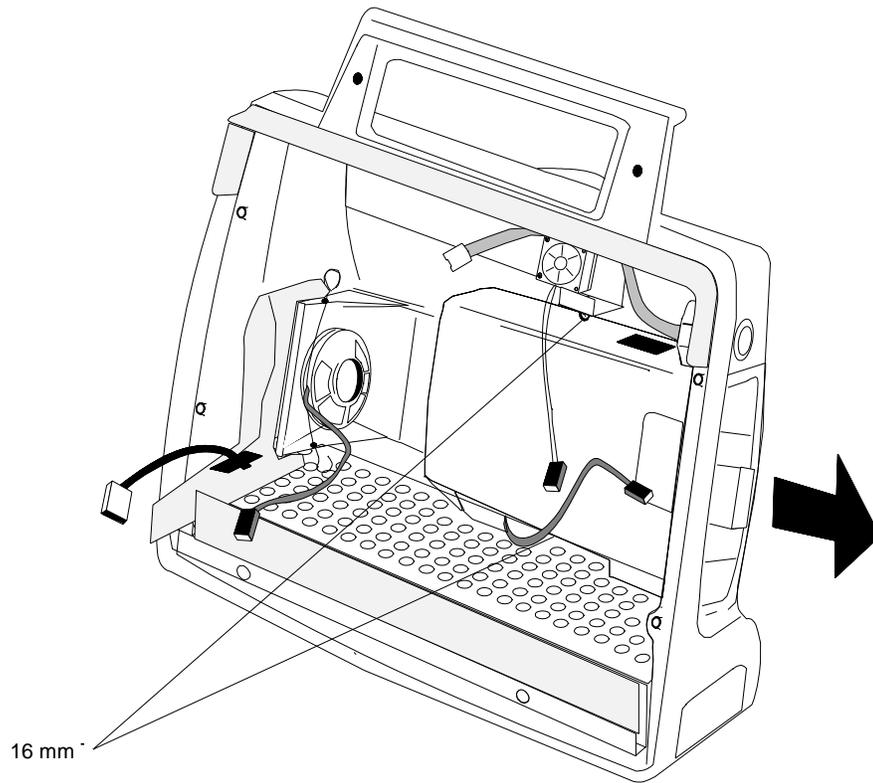


Figure 5-19 The Transmitter Dock

Removal of Transmitter Dock

- Step 1.** Remove the two 16 mm T-10 screws holding the dock to the case.
- Step 2.** Lift and slide the dock part way through the docking opening.
- Step 3.** Thread the connector of the Transmitter Power Cable (attached to the bay) through the bottom of the docking port and finish removing the Transmitter Bay Assembly. Rocking the assembly facilitates removal. The three component pieces come apart in your hand.

Installation of Transmitter Dock

- Step 1.** Holding the three component pieces of the dock together, insert the top rear into the docking port. The cable should be at the bottom.
- Step 2.** Thread the connector of the Transmitter Power Cable through the bottom of the port.
- Step 3.** Push the dock fully in.
- Step 4.** Fasten the dock to the case with the two 16mm T-10 screws.

Repair

Note—Before you insert the fasteners, make sure the Fan-to-Main Cable and the NBP Tubing run outward over the top of the dock.

The Fan Assembly

Removal of Fan Assembly

- Step 1.** If the NBP Tubing is in place, remove it from the supporting channel of the Speaker Mount.
- Step 2.** Remove the two 14 mm T-10 screws from the top of the fan housing and the one 6 mm T-10 screw from the exhaust conduit.
- Step 3.** Lift and slide the Fan Assembly out over the reflective surface of the Speaker Mount.

Note—Do not attempt to pry the fan housing from the exhaust conduit, to which it has been bonded.

Installation of Fan Assembly

- Step 1.** With an alcohol swab, wipe away any dust or lint that have accumulated on the Rear Housing or vent.
- Step 2.** Insert the Fan Assembly over the top of the reflective surface of the Speaker Mount and hold it so that the holes are aligned with the screw mounts.
- Step 3.** Fasten Fan Assembly to the screw mounts with two 14 mm T-10 screws through the top of the fan housing and one 6 mm T-10 screw through the exhaust conduit.

Hint—Replace the 6mm screw first.

- Step 4.** Replace the NBP Tubing in the supporting channel of the Speaker Mount.
- Step 5.** Insure that the Fan-to-Main Cable runs over the **top** of the NBP Tubing.

The Splash Guard

The splash guard helps protect the internal components of the TeleMon.

Removing the Old Splash Guard

If necessary, remove the old splash guard by carefully pulling the guard away from the TeleMon housing. You should do this with no other components attached to the rear housing.

Installing the New Splash Guard

- Step 1.** Remove the adhesive protector from the middle portion **ONLY** of the guard.
- Step 2.** Align edge of adhesive with top edge of rear housing and press into place. Note that the plastic extends beyond the housing. No adhesive, however, should be exposed beyond the housing.

Caution

The adhesive on the splash guard is very strong. Therefore, be very careful when installing it. Do not reposition the splash guard. If you make a mistake when installing the splash guard, remove it and install a new one.

Step 3. Remove the other adhesive protectors and press the guard into the corners. There should be no gaps between the rear housing and the splash guard.

