

Vital Signs Monitor 300 Series

Service Manual



Model 53XXX

WelchAllyn[®]

Advancing Frontline Care[™]

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1 - Safety Summary

This safety summary, and all additional specific warnings and cautions located throughout the documentation, must be read and understood by all users of the Vital Signs Monitor Series 300 monitor.



Caution

End-user software service tools used for previous models of the VSM **must not be used** with the VSM Model 300 Series. This includes the “Custom Repair Software”, part number 130S29E, and any other RS232 utility other than the Welch Allyn Monitor Service Utility (840-0676-XX). Use of any tool other than this service utility may set the monitor in an undefined and unrecoverable state.

United States federal law restricts this device to sale, distribution, or use by or on the order of a licensed medical practitioner.

General Safety Considerations

Always consider the following safety points when using the monitor:

- Place the monitor and accessories in locations where they cannot harm the patient should they fall from a shelf or mount.
- Do not connect more than one patient to a monitor.
- Do not connect more than one monitor to a patient.
- Do not use the monitor in an MRI suite or hyperbaric chamber.
- Do not autoclave the monitor.
- Accessories can be autoclaved only if the manufacturer’s instructions clearly approve it. Many accessories can be severely damaged by autoclaving.
- Inspect the power adapter cord periodically for fraying or other damage. Replace the adapter as needed. Do not operate the monitor from mains power if the adapter, the adapter cord, or the cord plug are damaged.
- Frequently check all cables, both electrically and visually.
- To avoid explosion, do not operate the monitor in the presence of flammable anesthetics.
- To ensure patient safety, use only accessories recommended or supplied by Welch Allyn. (See the *Products and Accessories Guide*, part number 810-0409-XX.) Always use accessories according to your facility’s standards and according to the manufacturer’s recommendations and instructions. Always follow the manufacturer’s directions for use.

Product Configurations

Model numbers for the configurations are as follows:

Model Number	Monitoring Parameters	Serial Number Prefix
53000	NIBP	JA
5300P	NIBP, Printer	
530T0	NIBP, Temperature	
530TP	NIBP, Temperature, Printer	
53N00	NIBP, SpO ₂	
53N0P	NIBP, SpO ₂ , Printer	
53NT0	NIBP, SpO ₂ , Temperature	
53NTP	NIBP, SpO ₂ , Temperature, Printer	

Recommended Service Intervals

Interval or Condition	Action Recommended	Procedure	Page
Every 6 - 24 months (per hospital protocols)	Complete functional test	Functional Verification	17
Battery does not hold a charge	Check battery capacity	Functional Verification	17
	Replace battery	Disassembly Procedure	43
Monitor has been dropped or otherwise damaged	Complete functional test	Functional Verification	17
Monitor malfunctioning	Complete functional test	Functional Verification	17
Monitor does not pass Functional Verification	Troubleshooting and repair followed by functional test	Troubleshooting and Repair	37
	Return to authorized service center	Disassembly Procedure	43
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3 - Functional Verification

Functional Verification Overview

This section describes the procedure for a complete functional test to support recommended preventive-maintenance schedules.

The verification includes tests for a monitor configured with the printer, temperature, and SpO₂ options. Perform only the tests applicable to the actual configuration.

A checklist of the functional tests is provided on **page 35**. It is recommended that you print a copy of the checklist each time you perform the functional verification procedure, so that you can record and save the test results. If the monitor ever requires service, the records of test results can often facilitate troubleshooting.

Functional verification does not require opening the monitor case.

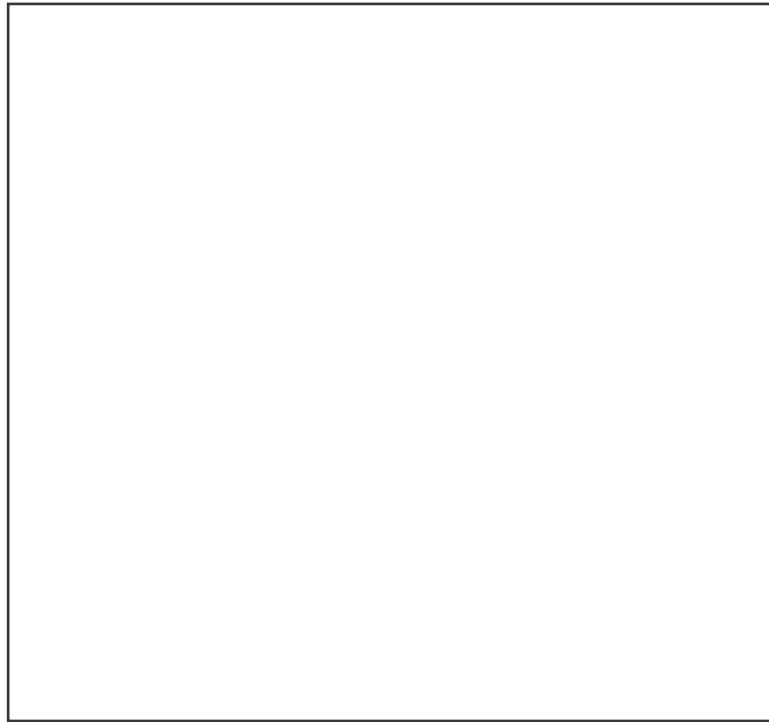
Equipment Required

The following equipment is required for functional verification of a fully configured monitor.

Commercially Available General-purpose/Medical Test Equipment	
Item	Manufacturer Part Number/Specification
Power supply	Variable, 0-8 VDC, 0.75A (minimum), with voltage and current indicators (for 1mA current measurement)
Digital pressure meter	Netech Digimano 1000 or equivalent
AC withstand voltage (hi-pot) tester	Associated Research 3605 or equivalent
SpO ₂ functional tester (for testing the monitor only)	Nellcor SRC-MAX
SpO ₂ extension cable (required for SRC-MAX)	Nellcor DEC-8
SpO ₂ simulator (for testing the monitor and the SpO ₂ sensor)	Fluke (Biotek) Index2 XL/XLFE or equivalent
Syringe, 60 mL, Slip tip, Luer	BD (Becton, Dickinson) 309654 or equivalent
Hi-pot cable connectors	See page 34 .
Timer	

Welch Allyn Accessories and Test Equipment	
Temperature test key (for testing the monitor only)	06138-000
9600 Temperature calibration tester (for testing the monitor and the temperature probe)	01800-210, 110V 01800-500, 220V 01800-810, 220V UK 01800-910, 220V Australia
Neonatal cuff hose, 96"	008-0265-XX
Neonatal #1 cuff, disposable, box of 10	008-0620-XX
500 cc air volume	T112854
DC power adapter	5200-101A
Battery substitution connector (Use the female end from the cable set)	660-0237-XX
Welch Allyn Monitor Service Utility (required for NIBP repair or replacement; not required for functional testing)	840-0676-XX
Service Serial Cable (for use with the Welch Allyn Monitor Service Utility 840-0676-XX)	008-0842-XX
NIBP tubing connector, threaded	600-0021-XX
tubing, 1'	600-0179-XX
Tee, plastic	600-0043-XX

5. Wait another 10 seconds, note the current pressure, and verify that it has not dropped more than 8 mmHg (1.1 kPa) below the pressure noted in **step 4**.
6. Press Δ several times to select 0 mmHg (0 kPa). The valve opens to release pressure.
7. Disconnect the neonate cuff and replace it with the 500 cc volume test setup.



8. Press Δ once to select 80 mmHg (10.7 kPa). The cuff quickly inflates to approximately 80 mmHg (10.7 kPa), and then settles at a slightly lower pressure level. Wait a few seconds for the pressure to stabilize.
9. Verify that the value displayed in SYS is within 3 mmHg (0.4 kPa) of the value displayed on the digital pressure meter.
10. Press Δ to select 150 mmHg (20 kPa) target pressure. The cuff quickly inflates to approximately 150 mmHg (20 kPa), and then settles at a slightly lower pressure level. Wait a few seconds for the pressure to stabilize.
11. Verify that the value displayed in SYS is within 3 mmHg (0.4 kPa) of the value on the digital pressure meter.
12. Press Δ to select 300 mmHg (40 kPa). The cuff quickly inflates to approximately 300 mmHg (40 kPa), and then settles at a slightly lower pressure level. Wait a few seconds for the pressure to stabilize.
13. Verify that the value displayed in SYS is within 6 mmHg (0.8 kPa) of the value on the digital pressure meter.


```

Welch Allyn (R)
Vital Signs Monitor
-- Unit Settings --
13:04:21          15-Oct-2003
    
```

Calibration Record

```

-----
Serial #:          XXXXXX.XXXX
Serial # signature:  NULL
Calibration time/date
    12:00:00      01-Jan-2000
Calibration signature  NULL
Language:          ( 0) English
Configuration
    SpO2   =   1      Temp =   1
    Printer =   1
Ambient bias (K)          X.XX
SpO2 valid ver.:        X.X.X.X
Temp valid ver.:        X.X
NIBP valid ver.:       XX.XX.XX XXXXXX
    
```

User Record

Alarm Settings

```

    High Sys (0.01 mmHg):  220
    Low Sys (0.01 mmHg):   75
    High Dia (0.01 mmHg):  110
    Low Dia (0.01 mmHg):   35
    High MAP (0.01 mmHg):  120
    Low MAP (0.01 mmHg):   50
    High PR (bpm):         120
    Low PR (bpm):          50
    High O2 (%):           0
    Low O2 (%):            85
Patient type (A, P, N):   A
BP Units (mmHg, kPa):    mmHg
Target press (0.01 mmHg) 160
Auto interval:           15
MAP (On, Off):           Off
Temperature units (C, F): F
Temperature mode (P, M): P
Pulse tone volume       :   3
Clinical pause (msec)    0
Print button mode (B, S) B
    
```

H/W Status

```

-----
Hardware revision:        X
Battery voltage (mv)     XXXX
    
```

```

    Total Cycles      Total Runtime
    -----
    XXXXXXX          XXXX (hrs)
    
```

S/W Versions

```

-----
Unit:   X.XX.XX XXXXXX
SpO2:   X.X.X.X
Temp:   X.X
NIBP:   XX.XX.XX XXXXXX
-----
-----
    
```


% SpO ₂	94
Rate	60 (Motion Artifact not selected)

2. Connect an SpO₂ sensor to the simulator optical finger and to the monitor.
3. Wait for the monitor display to stabilize.
4. Verify an SpO₂ saturation level of 94 ± 4 .
5. Verify that the monitor displays a pulse rate of 60 ± 4 .

Temperature

Perform one of the following temperature tests.

Testing the Monitor Only

Use this procedure to test only the temperature function.

1. With the temperature probe in the well, disconnect the probe cable from the temperature input connector on the rear of the unit.
2. Connect the Welch Allyn Sure Temp Plus temperature test key (06138-000) to the temperature input connector.
3. Remove the probe from the well.
4. Verify that the displayed temperature is 97.3 ± 0.2 °F (36.3 ± 0.1 °C).

Testing the Probe with the Monitor

Use this procedure to test the temperature function while verifying the temperature probe.

1. If the Welch Allyn 9600 Calibration Tester (01800-200) is not already warmed up, warm it up as follows:
 - a. Set the 9600 Calibration Tester temperature switch to 96.4 °F (35.8 °C).
 - b. Plug the power adapter into the 9600 Calibration Tester; wait (up to 15 minutes) until the tester 'ready' indicator light is on continuously.
2. Set the monitor temperature mode to Monitored.
3. Insert the temperature probe (without probe cover) into the small thermometer hole on the dry-heat well of the 9600 tester.
4. Wait two minutes and verify that the reading displayed on the monitor is 96.4 ± 4 °F (35.8 ± 2 °C).
5. Switch the 9600 Calibration Tester to 106.0 °F (41.1 °C) and wait about five minutes for the 'ready' indicator to light.
6. Verify that the reading displayed on the monitor is 106.0 ± 0.4 °F (41.1 ± 0.2 °C).
7. Remove the probe from the tester and replace it in the probe well.
8. Disconnect the 9600 Calibration Tester.

3. Connect the hi-pot Nurse Call test cable between the nurse call connector and the return output jack on the hi-pot tester.
4. Press the test button to run the AC withstand voltage test.
5. Verify that the monitor passed the test. (If the input current never exceeds 2.50 mA, the shielding is sufficient.)
6. Remove the Nurse Call test cable.
7. Connect the hi-pot RS232 test cable between the RS232 connector and the return output jack on the hi-pot tester.
8. Press the test button to run the AC withstand voltage test.
9. Verify that the monitor passed the test. (If the input current never exceeds 2.50 mA, the shielding is sufficient.)
10. Remove the hi-pot RS232 test cable from the RS232 connector and the hi-pot tester.
11. Connect the SpO₂ test cable between the SpO₂ connector and the return output jack on the hi-pot tester.
12. Push the test button to run the AC withstand voltage test. Verify that the monitor passed the test. (If the input current never exceeds 2.50 mA, the isolation is sufficient.)

Hi-Pot Test Connections

Cable	Monitor Connection		Hi-Pot Tester Connection	
	Connector/Cable	Connect to	Wiring	Connect to
DC Input	Switchcraft 760 0.100" ID 0.218" OD	DC Input Connector	Both wires connected together and terminated appropriately for your hi-pot tester	Return
SpO ₂	Nellcor D-connector (DEC-8 or other OXI-MAX equivalent)	SpO ₂ Input Connector	All wires connected together and terminated appropriately for your hi-pot tester	High Voltage
RS232	RJ45/standard patch cable	Communication Connector	All wires connected together and terminated appropriately for your hi-pot tester	High Voltage
Nurse Call	Welch Allyn Nurse Call cable 008-0634-XX (Uses Lemo connector PAB.MO.4GLAC397.)	Nurse Call Connector	All wires connected together and terminated appropriately for your hi-pot tester	High Voltage

Checklist and Test Results Report Form

Use a copy of this form to track your progress through the validation tests.

✓	Test	Result	Pass (or N/A) ✓	Fail ✓
	Battery Charging			
	Power-on Self-test			
	Beeper			
	Monitor Off Current	(mA):		
	Init/Idle Current	(mA):		
	Baseline Current	(mA):		
	Battery Voltage	Monitor (V): DMM (V):		
	NIBP Characterization Test			
	NIBP Verification			
	Pressure Leakage	Before (mmHg): After (mmHg):		
	Pressure Accuracy	80 mmHg SYS: Manometer:		
		150 mmHg SYS: Manometer:		
		300 mmHg SYS: Manometer:		
	Valve/Pump Current	Valve/Pump (mA) Baseline (mA) Difference (mA)		
	Inflation	Elapsed time (sec):		
	Dump	Manometer reading (mmHg):		
	Printer Current	Peak (mA):		
	SpO ₂	Saturation (%): Pulse (bpm):		
	Temperature	° Fahrenheit: ° Celsius:		
	Nurse Call Relay	pins 1-2 Alarm (Ω) No Alarm (Ω)		
		pins 2-3 Alarm (Ω) No Alarm (Ω)		
	Battery Charge Time			
	Battery Discharge Time			

Monitor Serial #:
Tested by:
Test date:

Here is an example of verification results for a typical monitor.

✓	Test	Result	Pass (or N/A) ✓	Fail ✓
✓	Battery Charging	charge symbol lit	✓	
✓	Power-on Self-test	normal	✓	
✓	Beeper	audible	✓	
✓	Monitor Off Current	(mA): 0.00	✓	
✓	Init/Idle Current	(mA): 0.467 mA	✓	
✓	Baseline Current	(mA): 0.199 mA	✓	
✓	Battery Voltage	Monitor (V): 5.94 V DMM (V): 5.95 V	✓	
✓	NIBP Characterization Test	C03	✓	
✓	NIBP Verification		✓	
✓	Pressure Leakage	Before (mmHg): 100 After (mmHg): 99	✓	
✓	Pressure Accuracy	80 mmHg SYS: 73 Manometer: 72	✓	
		150 mmHg SYS: 142 Manometer: 140		
		300 mmHg SYS: 290 Manometer: 286		
✓	Valve/Pump Current	Valve/Pump (mA) 0.560 Baseline (mA) 0.199 Difference (mA) 0.361	✓	
✓	Inflation	Elapsed time (sec): 6	✓	
✓	Dump	Manometer reading (mmHg): 0 (3 sec)	✓	
✓	Printer Current	Peak (mA): 0.940 mA	✓	
✓	SpO ₂	Saturation (%): 90 Pulse (bpm): 200	✓	
✓	Temperature	° Fahrenheit: 105.9 ° Celsius:	✓	
✓	Nurse Call Relay	pins 1-2 Alarm (Ω) > 1M No Alarm (Ω) < 1	✓	
		pins 2-3 Alarm (Ω) < 1 No Alarm (Ω) > 1M		
✓	Battery Charge Time	12.5 h	✓	
✓	Battery Discharge Time	19 h	✓	

Monitor Serial #: 9786756453
Tested by: RJ
Test date: 12/18/2003

Symptom	Possible Cause	Suggested Action
Error code E31	RAM test failure.	Cycle the power. If the error persists, return the monitor to an authorized service center for replacement of the main board.
Error code E32	Factory data failure.	Return the monitor to an authorized service center for replacement of the main board.
Error code E33	User data error.	Cycle the power to reset all user settings to default values.
Error code E34	A/D converter failure.	Cycle the power. If the error persists, return the monitor to an authorized service center for replacement of the main board.
Error code E35	SpO ₂ module failure.	Verify all cable connections, and then cycle the power. If the error persists, replace the SpO ₂ board.
Error code E36	Temperature module failure.	Verify all cable connections, and then cycle the power. If the error persists, replace the temperature board.
Error code E37	Printer failure.	Verify all cable connections, and then cycle the power. If the error persists, replace the printer module.
Error code E38	Error E38 always occurs when the monitor is first powered after a battery has been connected. Real-time clock failure.	Cycle the power, and then reset the date and time. Cycle the power. If the error persists, return the monitor to an authorized service center for replacement of the main board.
Error codes E40 and E41	NIBP module failure.	Verify all cable connections, and then cycle the power. If the error persists, replace the NIBP module. Warning: Always characterize NIBP after replacing any NIBP component. (See page 39.)
Error code E44	POST queue full.	Cycle the power. If the error persists, return the monitor to an authorized service center for replacement of the main board.
Missing LED display.	LED failure on the display board.	Replace the display board.
Erroneous LCD characters.	LCD partially connected.	Fully connect the LCD to the main board.
Buttons on the right side of the monitor require noticeably more pressure to actuate.	Screws attaching the display board to the front panel are loose.	Tighten the screws. Do not exceed 4 lbf/in.

Main Board Connectors

For the best results when disconnecting cables from the main board, disconnect the upper cables first and work your way to the bottom of the board, in approximately the following order:

Main-board Connector (Refer to the drawing of the main board, on page 57.)	Connects With
J5	Display board – J1
J12	* Temperature board – J1
J4	Nurse call connector
J1	External RS-232
J6	LCD
J11	Speaker
J2	External DC Input
J7	* SpO ₂ board – J2
J9	NIBP board
J3	Battery
J8	* Printer data – CN3
J10	* Printer power – CN1

(* Denotes optional hardware.)

When reassembling the monitor, connect the cables in reverse order.

Display Board Connector

Connector	Connects With
J1	Main board – J5

Printer Board Connectors

Connector	Connects With
CN1	Main board – J10
CN2	Fujitsu printer
CN3	Main board – J8

SpO₂ Board Connectors

Connector	Connects With	Connector	Connects With
J1	SpO ₂ side panel	J2	Main board – J7

NIBP Board Connectors

Connector	Connects With	Connector	Connects With
J2	Main board – J7	J6	Pump

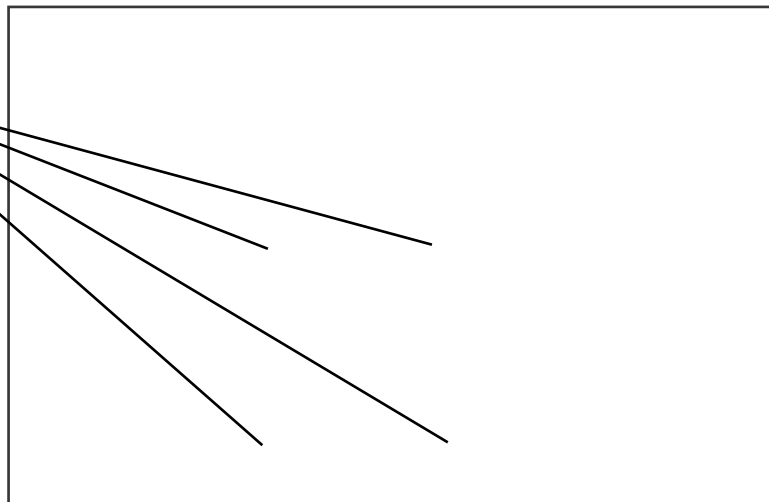
Temperature Board Connectors

Connector	Connects With	Connector	Connects With
J1	Main board – J12	J5	External Probe

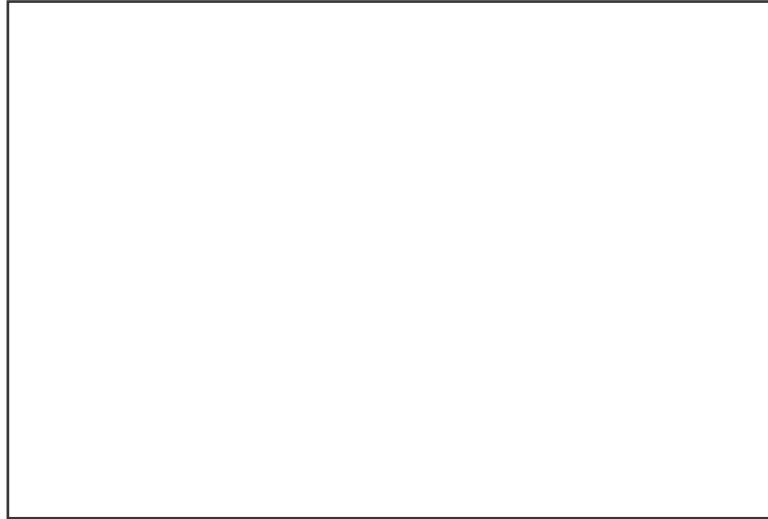
Remove and Disconnect the Battery

1. Remove the four screws securing the battery door.

4 screws securing the
battery door



2. Remove the battery door.



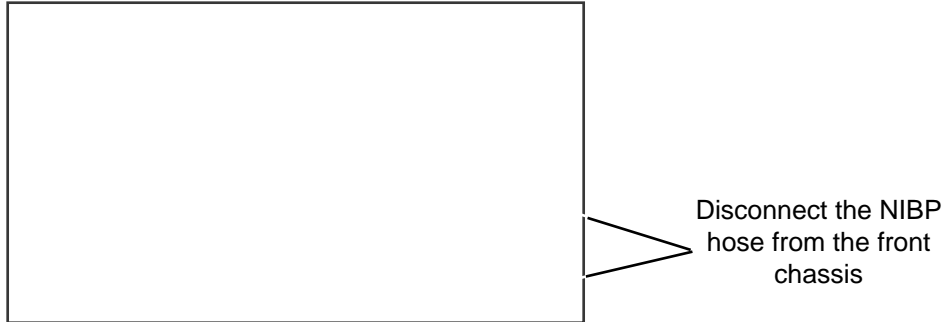
3. Slide the battery out of the battery compartment. This might require lightly shaking the monitor.
4. Disconnect the battery from the monitor.



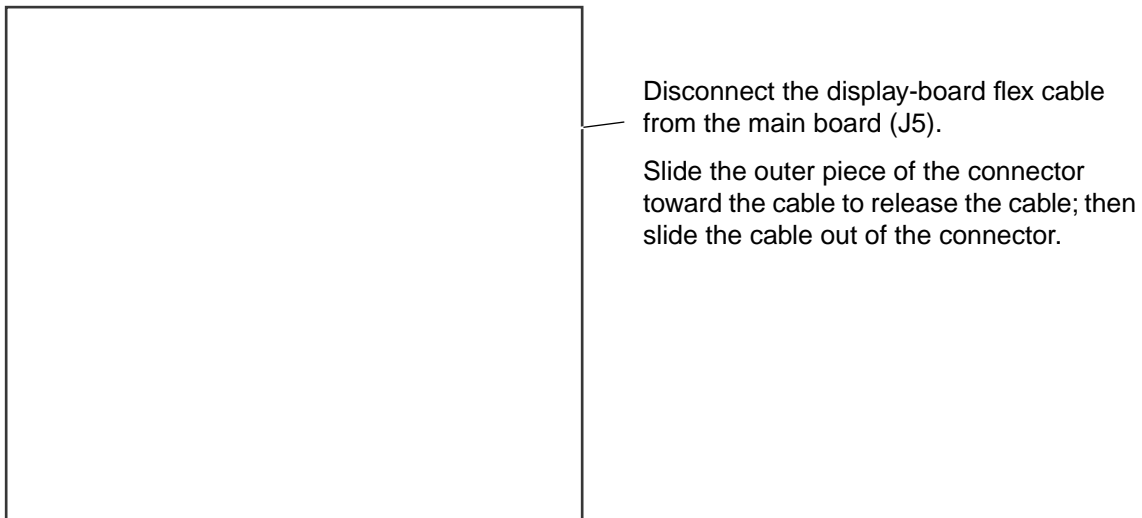
Separate the Front and Rear Chassis

1. Remove the three screws securing the rear chassis.

4. Disconnect the NIBP hose from the connector on the front chassis.



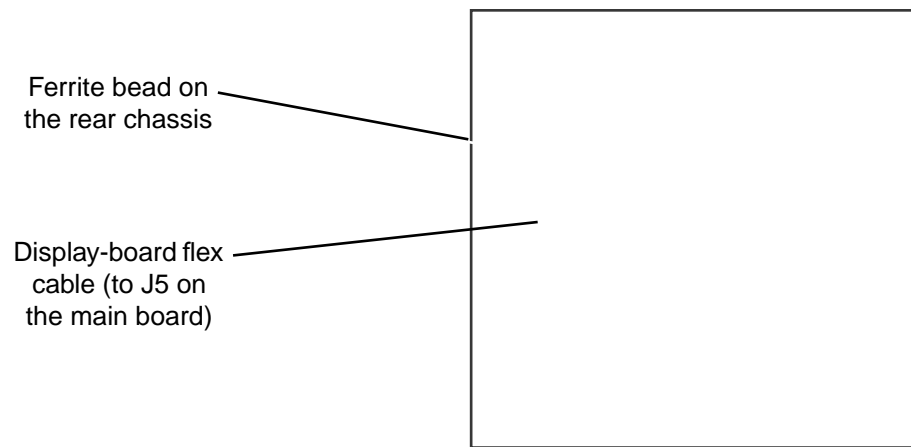
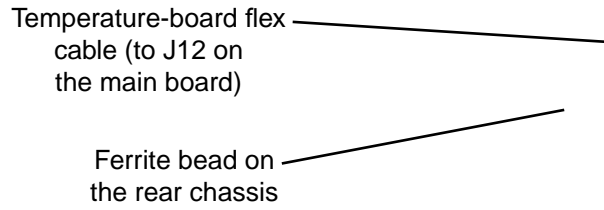
5. Disconnect the display-board flex cable (J5) from the main board.



Reassembly Notes

If you replace the front or rear chassis housing, you must affix a new ferrite bead (included with the replacement kit) to the housing before you close the monitor.

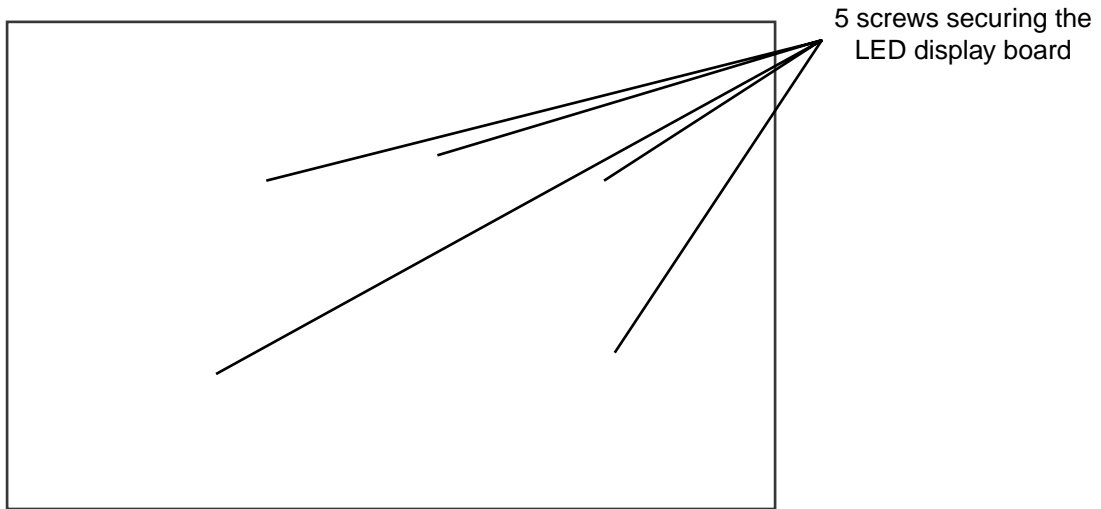
1. Remove the plastic sheet covering the adhesive on the ferrite bead.
2. Affix the ferrite bead at the location shown in the illustration below.
3. At the appropriate point in the reassembly procedure, run the flex cable through the slot in the ferrite bead.



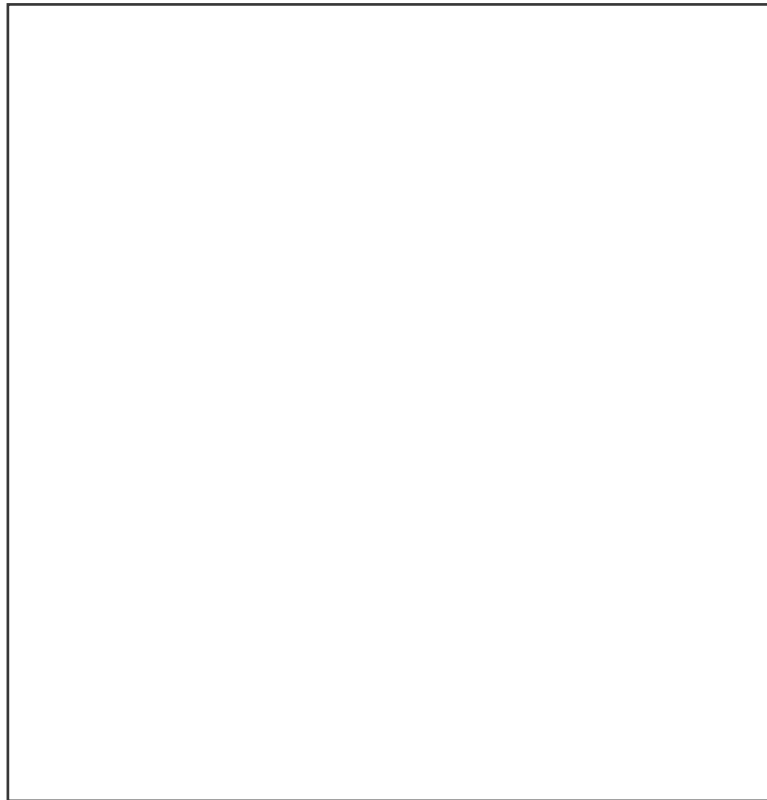
Disassemble the Front Chassis Assembly

The front chassis assembly contains the display board, keypad, and NIBP air fitting.

1. Remove the five screws securing the display board.



2. Lift out the display board.



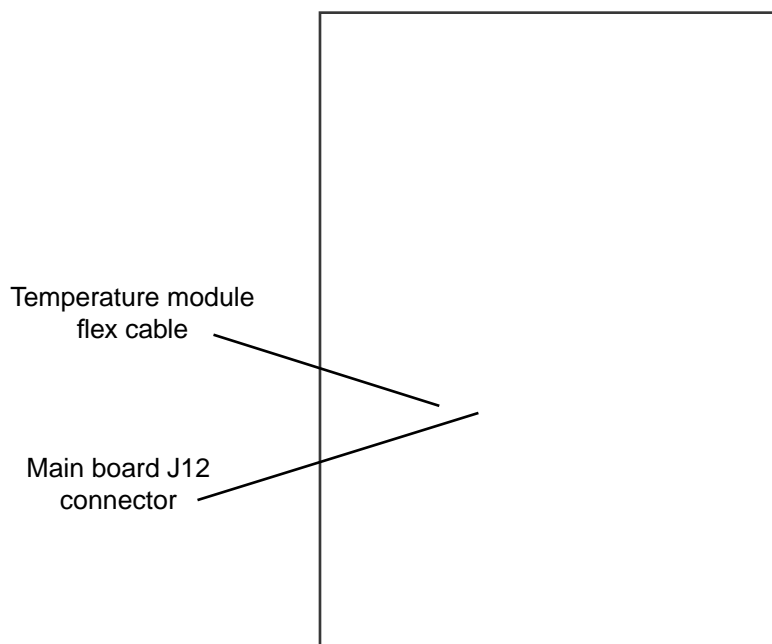
3. Remove the keypad.

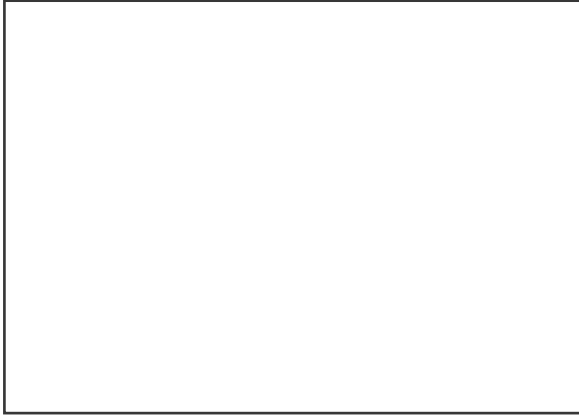
Remove the LCD Display from the Main Board

Disconnect the LCD display module from connector J5 on the main board

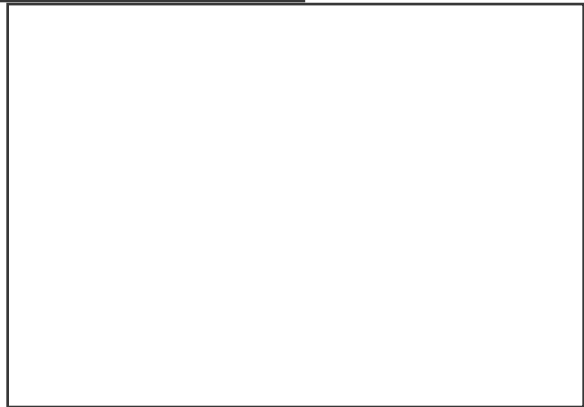
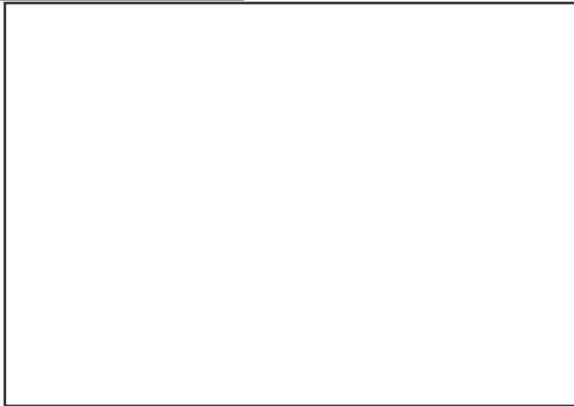
Remove the Main Board from the Rear Chassis Assembly

1. Disconnect the temperature module flex cable from J12 on the main board.

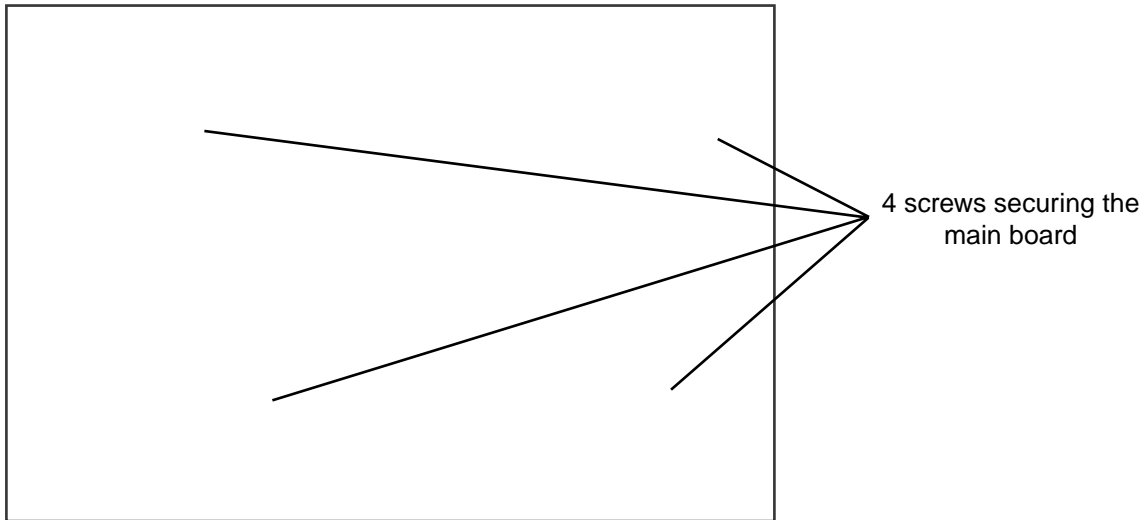




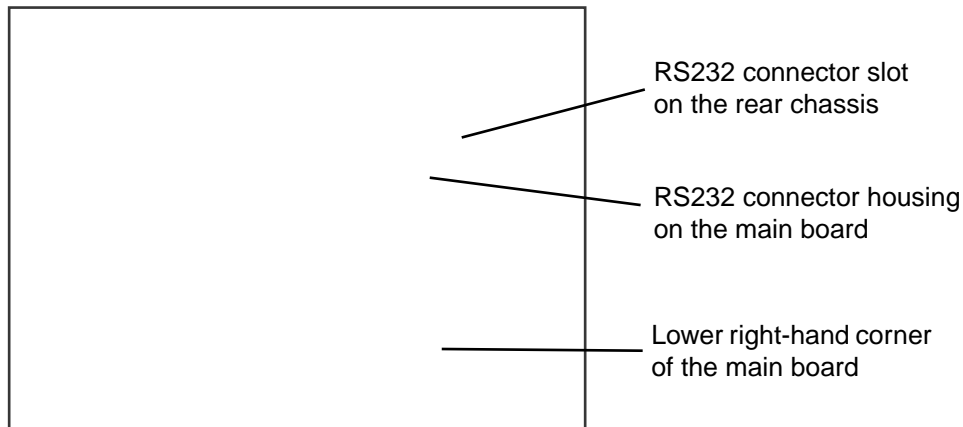
Unlatch the ZIF connector
before removing or inserting
the flex cable



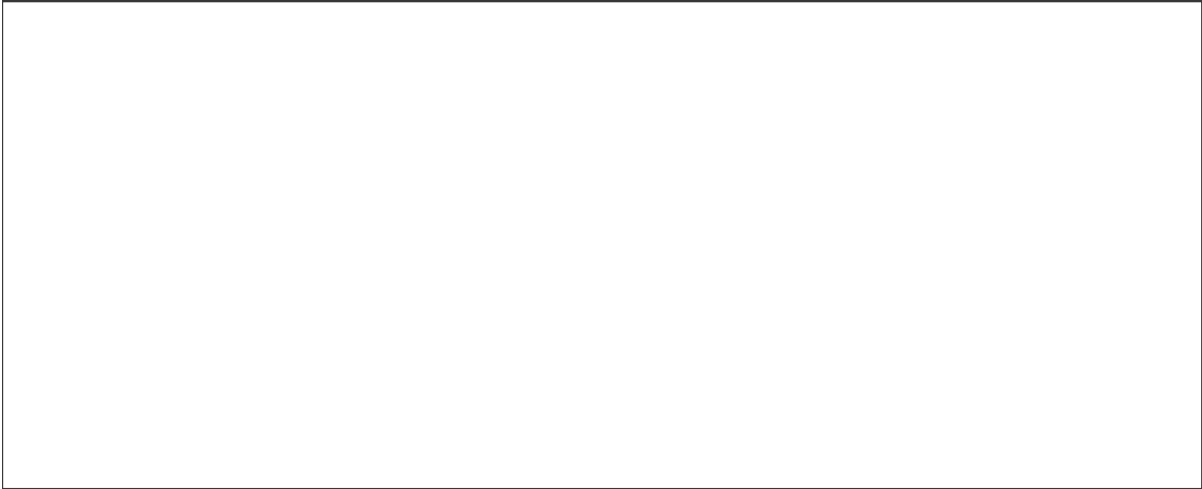
2. Remove the four screws securing the main board to the rear chassis.



3. Pull the lower right-hand corner of the main board away from the rear chassis, just far enough to free the RS232 connector housing on the main board from the RS232 connector slot on the rear chassis.



4. Carefully tip the upper edge of the main board away from the rear chassis, far enough to access the uppermost connectors on the component side of the board.

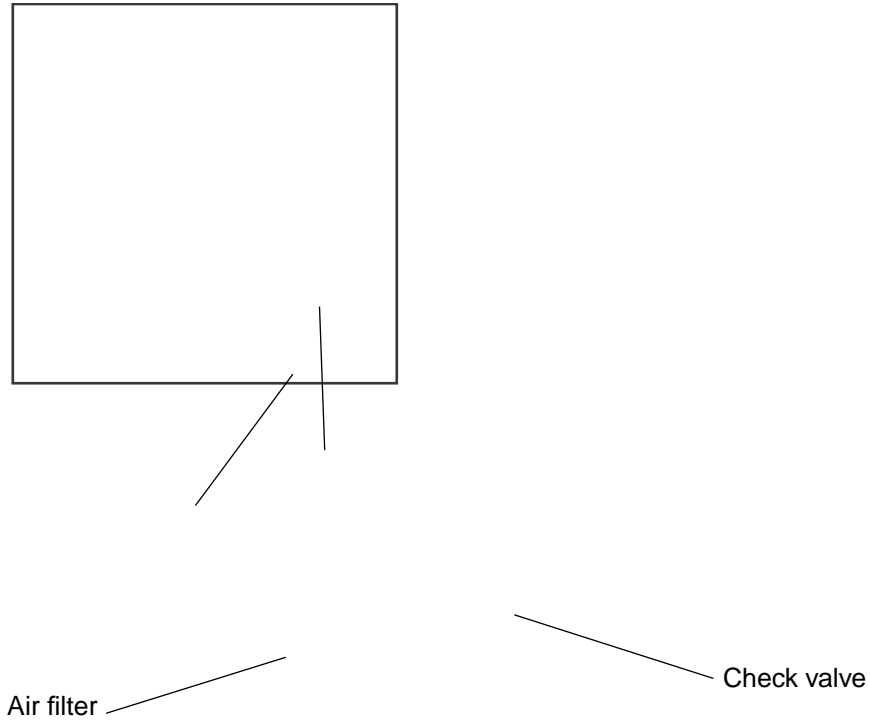


5. For best results, disconnect the uppermost cables first and work your way to the bottom of the main board. For a monitor configured with all options, the approximate order of disconnection is as follows:

Main-board Connector (Refer to the drawing of the main board, on page 57.)	Connects With
J5	Display board – J1
J12	* Temperature board – J1
J4	Nurse call connector
J1	External RS-232
J6	LCD
J11	Speaker
J2	External DC Input
J7	* SpO ₂ board – J2
J9	NIBP board
J3	Battery
J8	* Printer data – CN3
J10	* Printer power – CN1

(* Denotes optional hardware.)

6. Remove the main board.

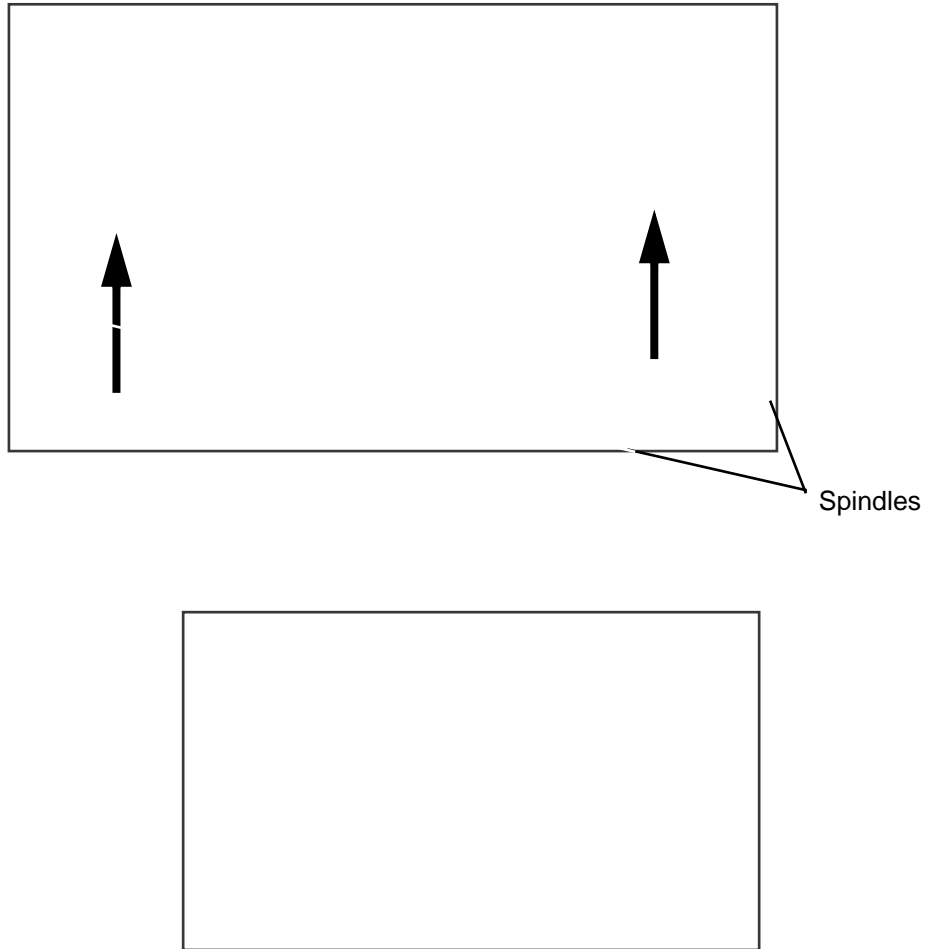


Remove and Disassemble the Printer Assembly

1. Remove the printer door.
 - a. Open the printer door and remove the roll of printer paper.

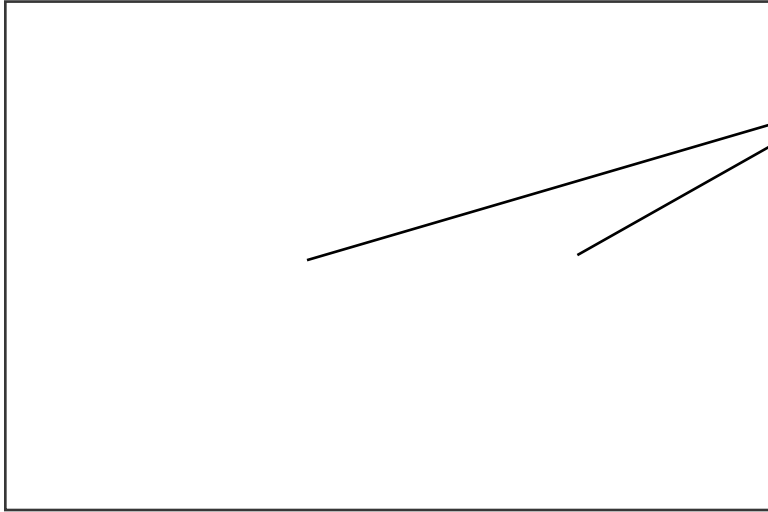


- b. Push the printer door toward the rear of the monitor until it snaps out of the two support spindles on the printer frame.

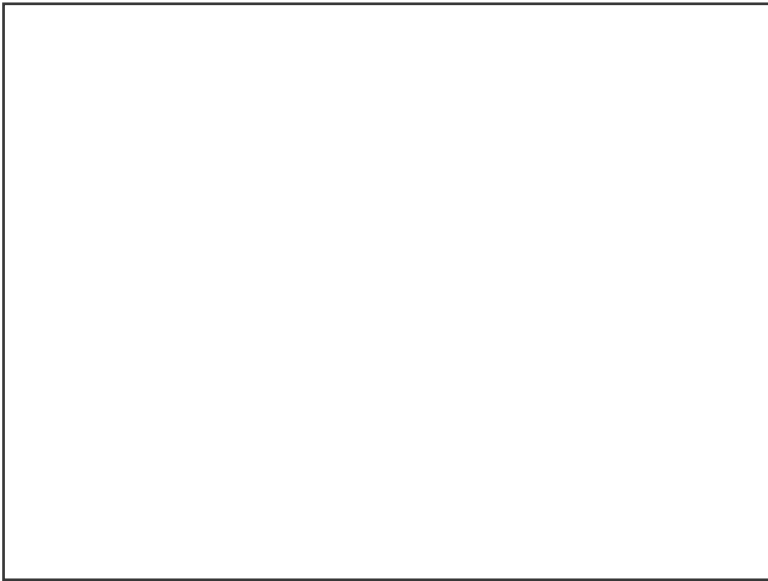


2. Remove the printer assembly.

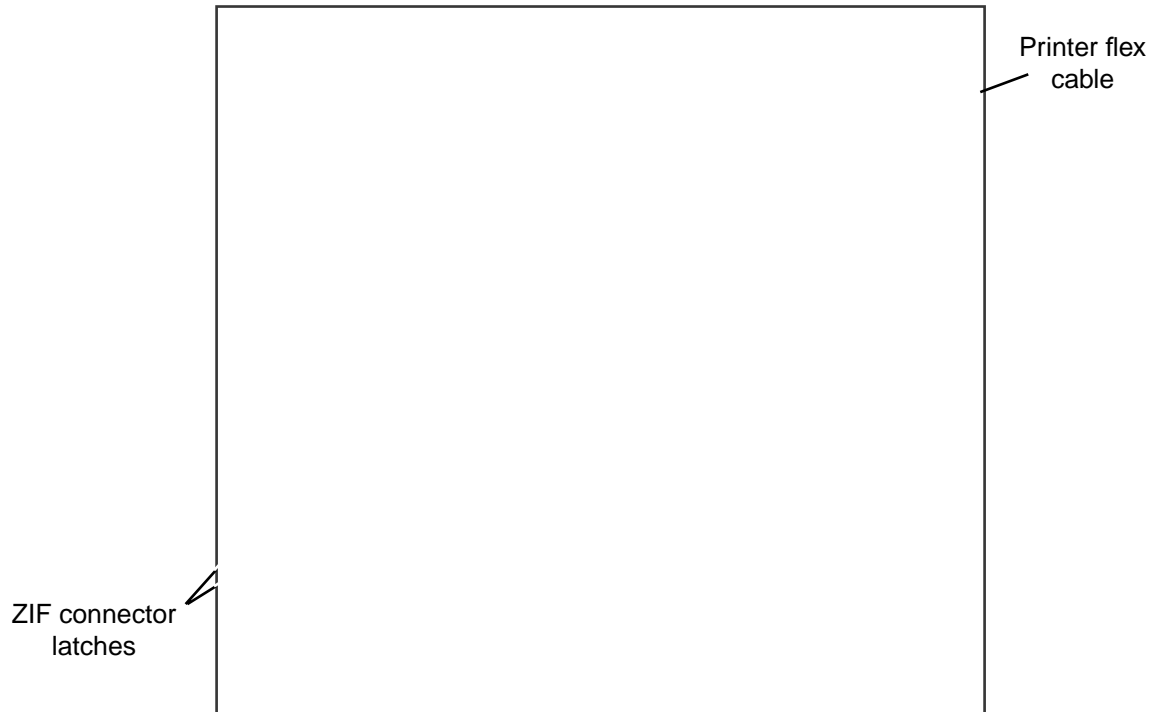
Push the plastic legs of the printer assembly outward and pull the printer assembly forward to free it from the snap-in seating of the rear chassis bulkhead.



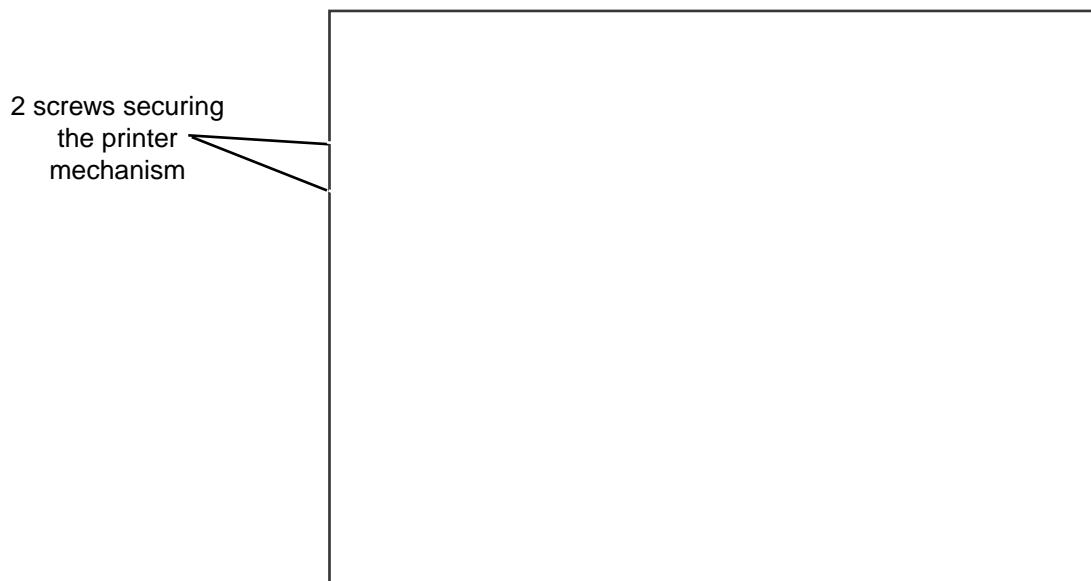
Push the printer legs very slightly outward while pulling them toward you.

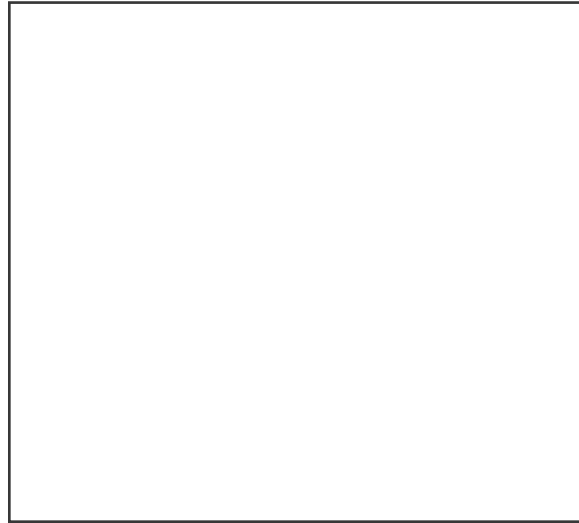


3. Remove the printer mechanism and the printer board.
 - a. Turn the printer assembly upside-down, and release the ZIF connector latches (CN2) on the printer board.



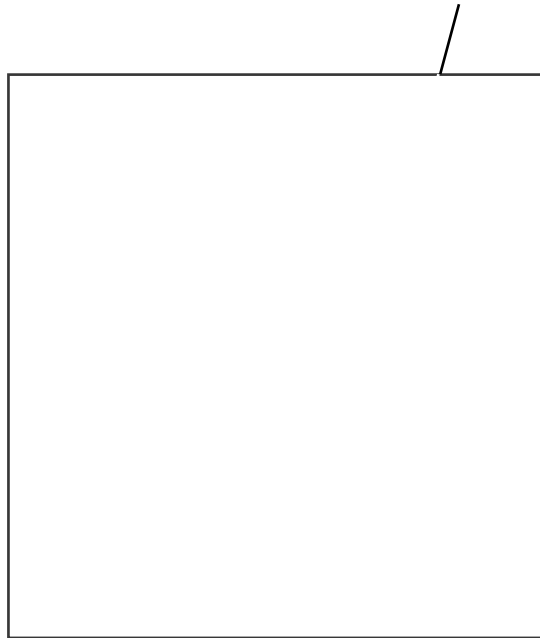
- b. Disconnect the printer flex cable from CN2 on the printer board.
 - c. Turn the printer assembly upright, remove the two screws securing the printer mechanism, and remove the printer mechanism.



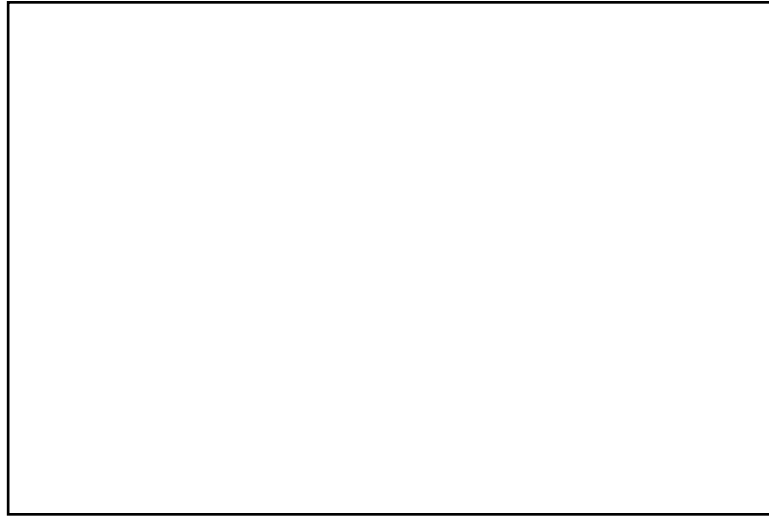


- d.** Remove the screw securing the printer board to the printer assembly.

One screw securing the printer board

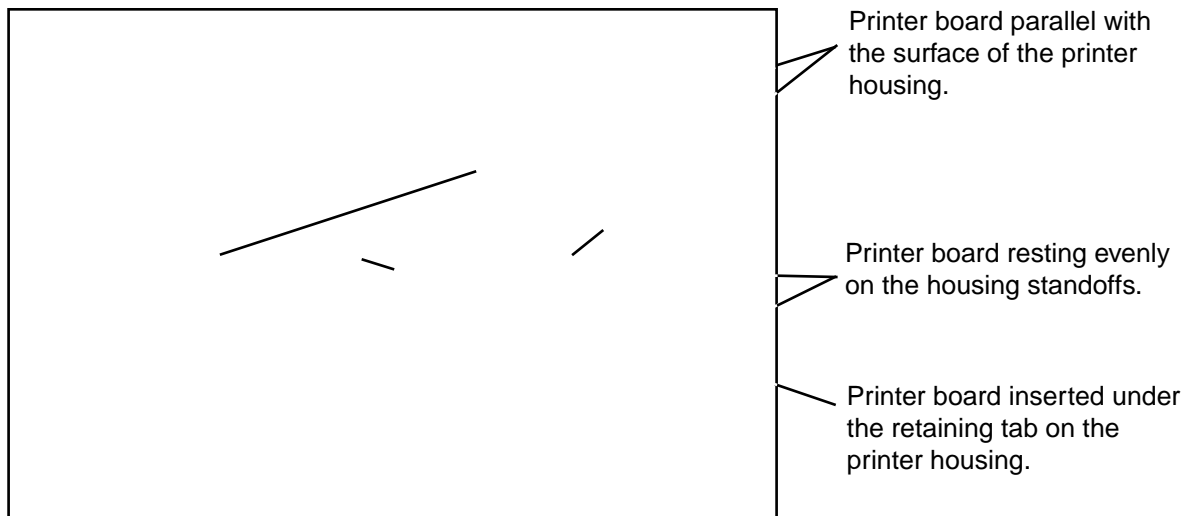


- e. If you are replacing the printer board, remove the cables from connectors CN1 and CN3 for use on the replacement board.



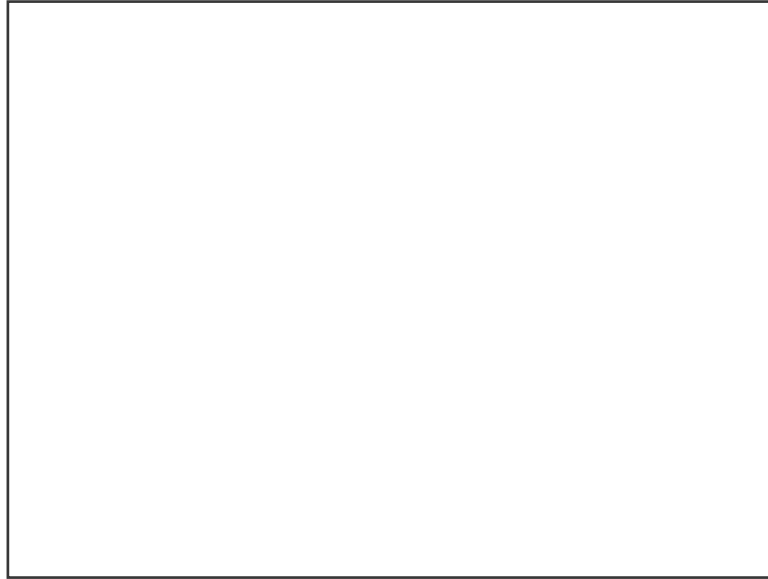
Printer Reassembly Notes

- a. When connecting the printer assembly board to the plastic printer housing, be sure the printer board is seated flat on the housing, within the guide rails on either side of the housing, and with the front of the board secured under the tab on the front of the housing.

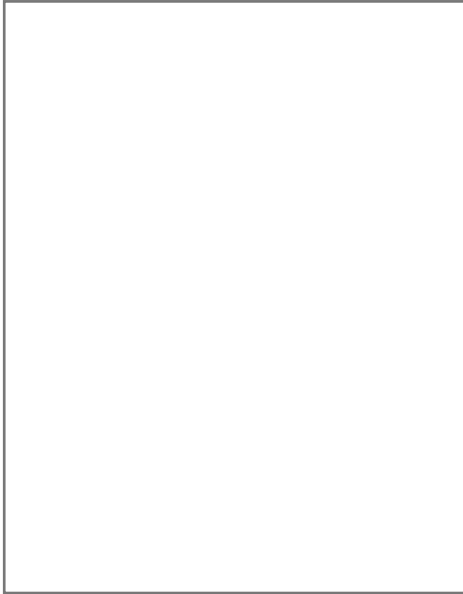


- b. To install the printer assembly into the cavity in the monitor, orient the printer assembly so that the side rails of the plastic frame are on the left and right and the two

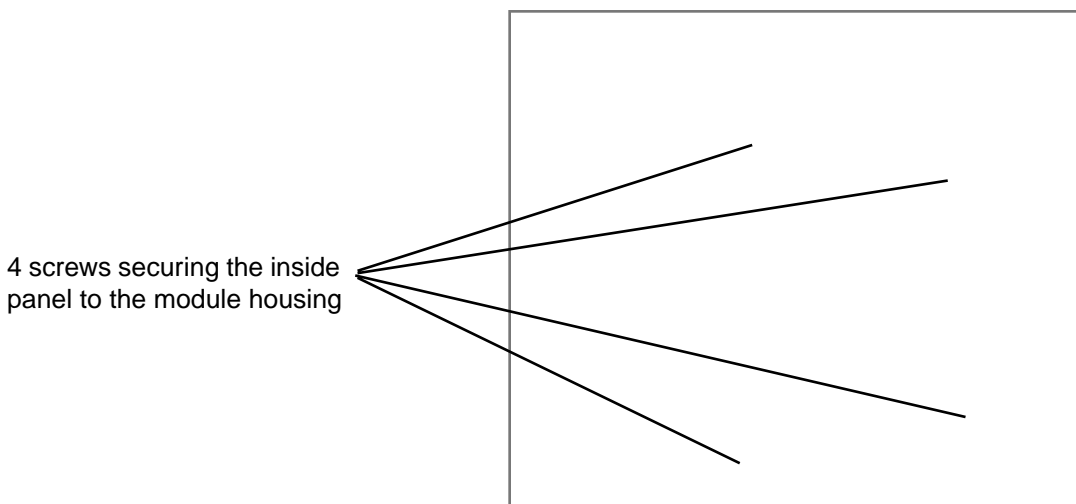
printer-frame “piano” legs are toward the front, extending downward from the assembly.



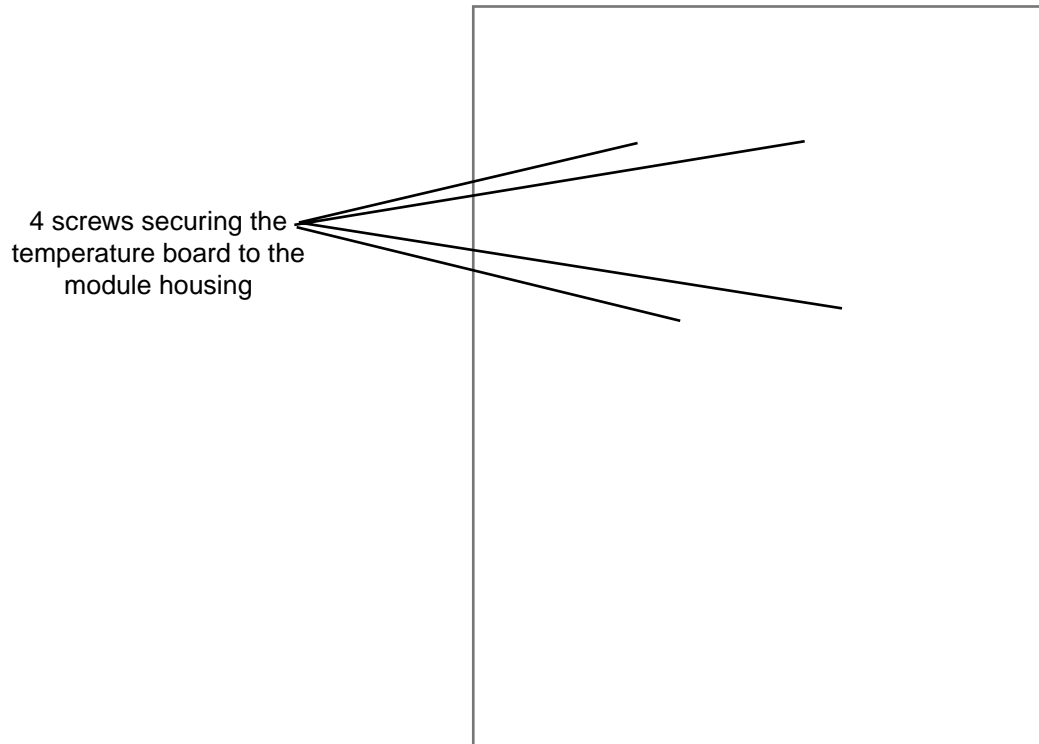
- c. Partially insert the printer frame assembly into the printer well in the rear chassis, aligning the rear side rails for insertion between the two slotted side latches on the top of the printer well of the rear chassis.
- d. Align the bottom of the two printer frame legs toward the top of the vertical bulkhead slots.
- e. Fully insert the printer assembly into the printer well until the side rails engage in the slotted side latches and the legs click into the vertical slots. Be sure that the white plastic shield on the housing rests on the top of the SpO₂ board.
- f. Install the printer door by inserting it in the printer slot, tilted slightly forward, and snapping the latches onto the printer frame spindles.



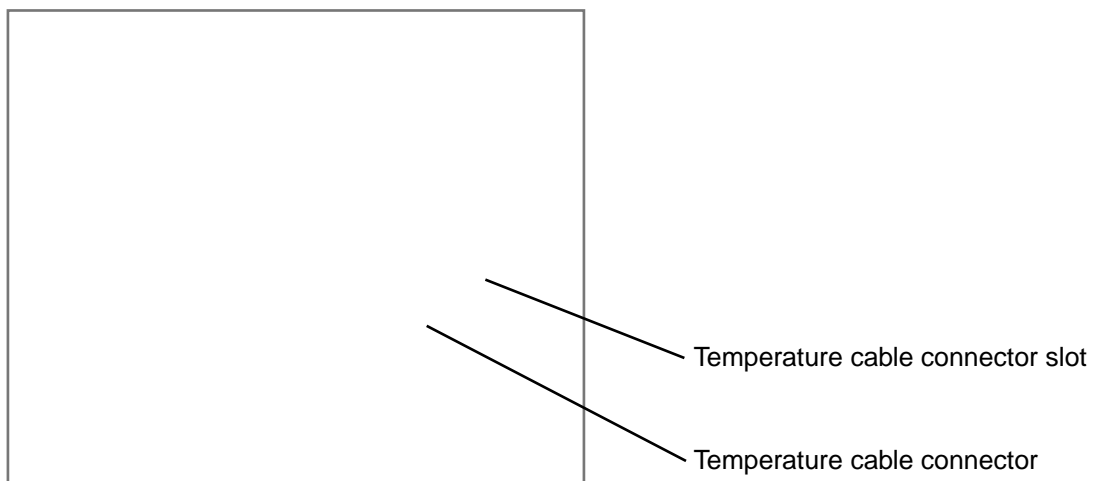
2. Remove the temperature-board assembly from the SureTemp Plus module as follows:
 - a. Remove the four screws securing the inside panel to the module housing.



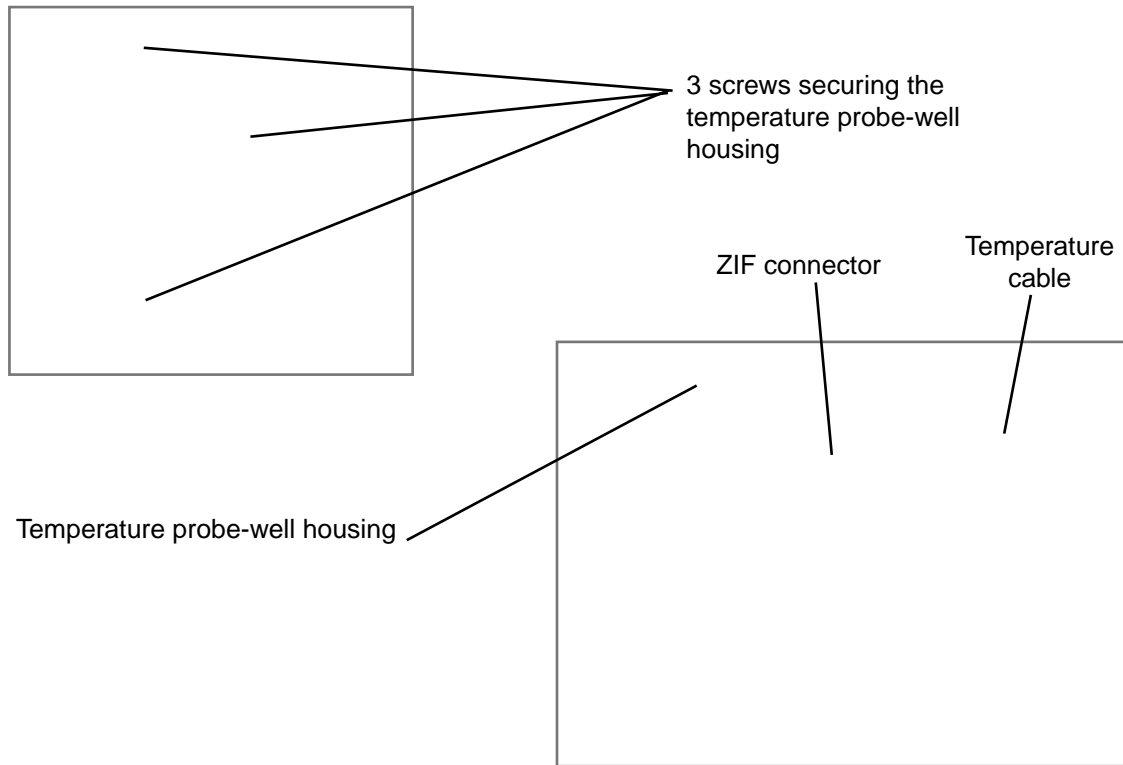
- b. Remove the four screws securing the temperature board to the module housing.



- c. Tilt the temperature board and rotate it clockwise to free the cable connector from the connector slot (J5) in the housing; then lift the board out of the housing.



- d. Remove the 3 screws securing the temperature probe-well housing, and remove the probe well from the temperature module.
- e. Release the ZIF latches (J1) and disconnect the temperature cable.



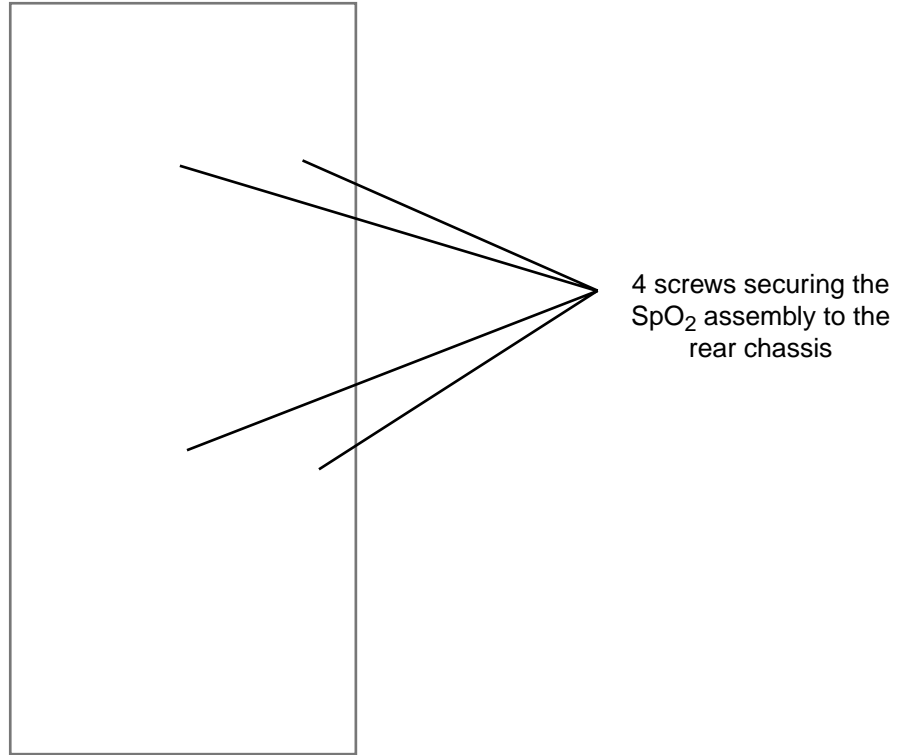
Temperature Module Reassembly Notes

To install the temperature board in the module housing:

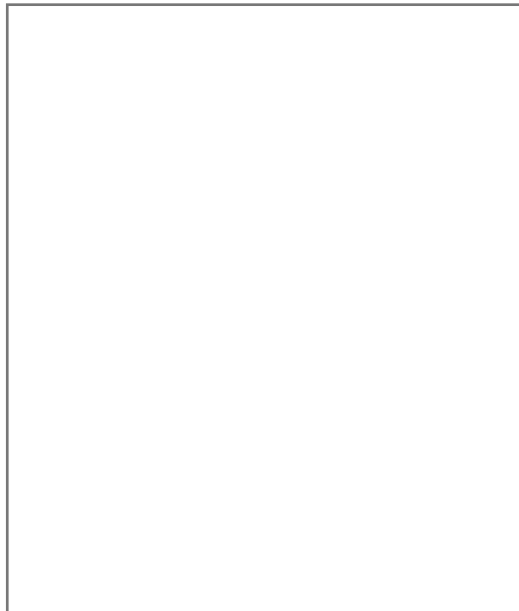
1. Square the circuit board in the housing to fit the probe-well receiver into the top of the outside housing.
2. Tilt the board and rotate it counterclockwise so that the temperature cable connector (J5) fits down into the connector slot in the housing.

Disassemble the SpO₂ Assembly

1. Remove the SpO₂ assembly from the rear chassis and disassemble it as follows:
 - a. Remove the four screws (located on the inside of the rear chassis on the right side) securing the SpO₂ assembly to the rear chassis.



- b.** Remove the side panel and board assembly from the rear chassis.

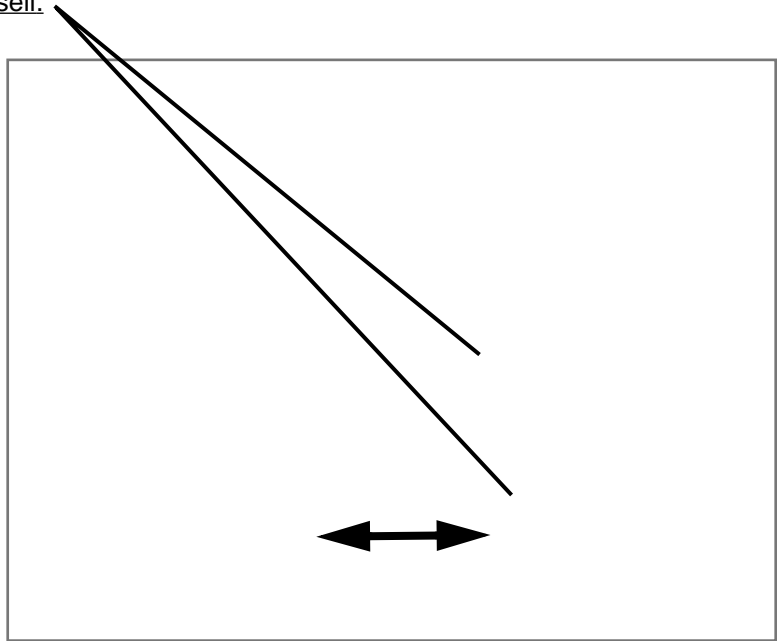


- 2.** Remove the SpO₂ board.

- a.** Remove the two screws securing the board to the side panel.

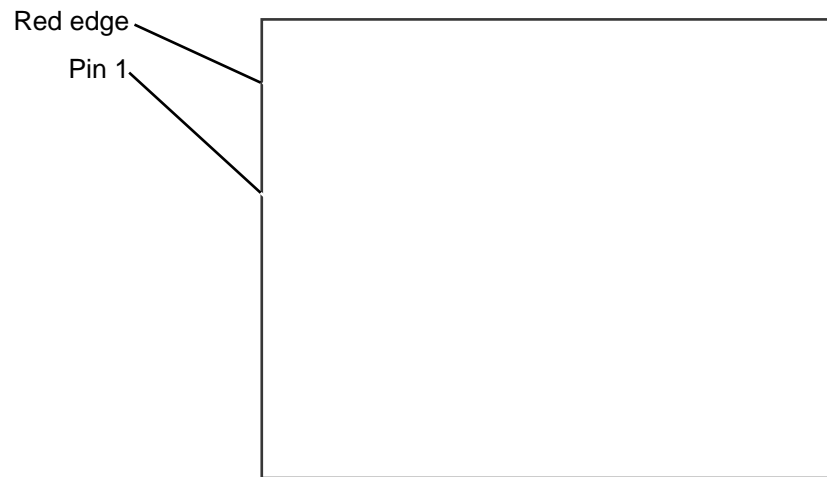
Grip with pliers here, and separate the J1 connector halves.

Never pull directly on the cable itself.



SpO₂ Reassembly Notes

The J2 connector halves are keyed to prevent incorrect connection. However, to facilitate the connection, align the red line on the edge of the ribbon cable with pin 1 of the connector on the SpO₂ board.



6 - Replacement Parts

This list includes field-replaceable service parts only. Product accessories, including patient sensors, probes, cables, batteries, probe covers, printer paper and other consumable items, are listed separately in the Welch Allyn Products and Accessories Guide (810-0409-00), which is available from Welch Allyn Customer Service.

Order Number	Description
Board Assemblies & Modules (Standard Configuration)	
031-0151-XX	Display Board, LED
500-0044-XX	Display Module, LCD
020-0621-XX	NIBP Module
Front Case (Standard Configuration)	
630-0216-XX	Case, Front
600-0495-XX	Fitting, NIBP (order with 630-0216-XX)
620-0392-XX	Retainer, NIBP Fitting (order with 630-0216-XX)
010-0239-XX	Ferrite Bead with Adhesive, Front Case (for monitors with the temperature option only; order with 630-0216-XX)
680-0072-XX	Keypad, Elastomeric
Rear Case (Standard Configuration)	
630-0217-XX	Case, Rear
660-0231-XX	Speaker Assembly (order with 630-0217-XX)
600-0518-XX	Gasket, Speaker (order with 630-0217-XX)
010-0240-XX	Ferrite Bead with Adhesive, Rear Case (for monitors with the temperature option only; order with 630-0217-XX)
501-0015-XX	Battery Assembly
630-0215-XX	Battery Door
600-0517-XX	Feet, Adhesive
020-0622-XX	NIBP pump and tubing assembly
600-0179-XX	Tubing, 1', 0.125" diameter
600-0520-XX	Filter, NIBP
020-0064-XX	Check valve, NIBP
600-0043-XX	Fitting, tee, 1/8"
600-0178-XX	Fitting, elbow, 1/8"
620-0396-XX	Mount, Cable Tie
630-0236-XX	Cover, No-printer Option
600-0524-XX	Gasket (order with 630-0236-XX)
660-0154-XX	Connector Assembly, Nurse Call
660-0232-XX	Cable Assembly, Power
620-0047-XX	Screw, #6-32, 1/4", Machine
620-0394-XX	Screw, #4-40, 3/4", Machine
620-0399-XX	Screw, #4-40, 5/16", Machine
620-0393-XX	Screw, #4-20, 5/16", Thread-forming
620-0091-XX	Screw, #2-32, 3/16", Thread-forming
620-0165-XX	Screw, #2-28, 5/16", Thread-forming

SpO₂ Option	
010-0232-XX	Side-panel Assembly, SpO ₂ , MP-506
031-0139-XX	Board, SpO ₂ , Nellcor MP-506
660-0233-XX	Cable Assembly, SpO ₂ Main Interface
Temperature Option	
21327-000	PCB, Temperature Module
630-0211-XX	Outside Housing, Temperature Module
630-0238-XX	Inside Panel, Temperature Module
660-0230-XX	Cable, Flex, Temperature Main Board
Printer Option	
532012-000	PCB, Printer
532013-000	Printer, with Roller
630-0214-XX	Frame, Printer Assembly
630-0213-XX	Printer Door Assembly
660-0228-XX	Cable, Printer Power
660-0229-XX	Cable, Printer Data
Labels	
680-0085-XX	Overlay, Front Panel, 53000, International
680-0079-XX	Overlay, Front Panel, 5300P, International
680-0082-XX	Overlay, Front Panel, 530T0, International
680-0083-XX	Overlay, Front Panel, 530TP, International
680-0080-XX	Overlay, Front Panel, 53N00, International
680-0081-XX	Overlay, Front Panel, 53N0P, International
680-0084-XX	Overlay, Front Panel, 53NT0, International
680-0071-XX	Overlay, Front Panel, 53NTP, International
680-0093-XX	Overlay, Front Panel, 53000, USA
680-0087-XX	Overlay, Front Panel, 5300P, USA
680-0090-XX	Overlay, Front Panel, 530T0, USA
680-0091-XX	Overlay, Front Panel, 530TP, USA
680-0088-XX	Overlay, Front Panel, 53N00, USA
680-0089-XX	Overlay, Front Panel, 53N0P, USA
680-0092-XX	Overlay, Front Panel, 53NT0, USA
680-0086-XX	Overlay, Front Panel, 53NTP, USA
640-0610-XX	Label, Error Codes, English
640-0641-XX	Label, Error Codes, Italian
640-0642-XX	Label, Error Codes, French
640-0643-XX	Label, Error Codes, German
640-0644-XX	Label, Error Codes, Spanish
640-0611-XX	Label, Icon Reference, USA Only
640-0612-XX	Label, Safety Agency