

Title: Nihon Kohden Monitor	Date: February 16, 2018
By: tbd	<b>DISCLAIMER: THIS PROCEDURE PROVIDED "AS IS" AND WITH POSSIBLE FAULTS. USER MUST VERIFY BEFORE USE. NEITHER PROVIDER NOR WEBSITE ASSUMES ANY RESPONSIBILITY FOR ITS USE.</b>
File = BSM-2300 Draft.doc	

# 1. General

Applies to Nihon Kohden monitors BSM-2300 thru 2354.

# 2. Reference Documents

The manufacturer no longer supports this device. However user and service manuals can be found on the internet. Example:



[http://www.frankshospitalworkshop.com/equipment/ecg\\_service\\_manuals.html](http://www.frankshospitalworkshop.com/equipment/ecg_service_manuals.html). P/N 0614-006206M (User) 0634-001878G (Service)

# 3. Tools

Digital Manometer, Blood Pressure Simulator, YSI type Thermistor probe/plug (2.25K ohms @ 25C reference).

# 4. Accessories

Nellcor SP02 sensor (usually DS-100A), SP02 cable (p/n OEM-10 / purple housing), or the Nihon Kohden sensor, temperature Sensor (3 types: adult, child, body surface), ECG cable with clips, NIBP tubing/connector set.

# 5. Basic PM Procedure

## 5.1. Physical Inspection

If necessary, clean the touch screen with a smooth cloth dampened with a “neutral detergent”. The user manual lists disinfectants for the accessories.

Check case, power cord, accessories, and hose for integrity. If “Battery is Weak” message occurs, the manufacturer recommends plug-in/charging for 16 hours. Otherwise, the unit should be able to run on battery alone for 45 minutes before battery alert message.

## 5.2. Time and Date Check/Change

After accessing the main <Menu>, the date and time are accessed using the <Date and Time> soft icon in the bottom row.

*Note: All sensors (example: SP02) are “plug and play”.*

*Warning: The unit will not recognize some Nellcor cables (gray housing) even though the SP02 sensor is lit. And even with the correct cable, some Nellcor sensors also will not be recognized. The Nellcor SP02 items in “Accessories” above are a working alternative to the Nihon Kohden SP02 cable/connector illustrated below.*

## 5.3. SpO2 Functional Check

Use an SpO2 simulator to check the SpO2 functionality (including heart rate). Otherwise, the average healthy person will normally measure in the high 90’s as a reference. Also, note that the heart rate displays.

#### 5.4. ECG Check Cables available – 3 lead, 6 lead and 10 lead

3-Lead Cable (if used): to be recognized, check that <Menu>, <ECG>, <Other Setting>, <Normal 3 Indiv> has been selected.

6-Lead Cable (if used): to be recognized, check that <Menu>, <ECG>, <Other Setting>, <4-6 Indiv> has been selected. However it will still display with the 3-lead setting.

The heart rate and waveform will automatically appear. Verify correct displayed heart rate.

#### 5.5. Printer Check

The button just above the printer will start and stop the printer. Use an ECG waveform to verify.

#### 5.6. Temperature Accuracy Check

The service manual gives no information to check temperature accuracy. As a workaround, the normal under-the-tongue temperature is 37°C (98.6°F).

*Note: To change from C to F or vice versa, the system setup screen must be first invoked by pressing <Silence Alarms> followed by pressing the <Power Switch Button>. Then press <System Setup>, <UnitsSetup>, then <Fahrnanheit> or <Centigrade>.*

#### 5.7. NIBP Check

Use a Simulator if available to check performance (Start/Stop Green Button on right side panel.) Or if no simulator, perform an automatic NIBP check on a human person to verify pumping and valve bleed functionality. Optional: pressure accuracy can be accessed by holding a reference manometer next to the unit's display as the unit bleeds down during a normal BP run. Note: Erratic operation can often be traced to a leak in the cuff being used.

#### 5.8. Pressure Accuracy -- refer to page 3.28 of service manual 0634-001878G for further detail.

Enter the internal diagnostic mode by pressing and holding the <Power> and <Silence Alarms> buttons simultaneously. When the DIAGNOSTIC CHECK screen appears, press soft key <MANUAL CHECK>, and then <NIBP CHECK>.

#### 5.9. Leak Test

Refer to "Pressure Hold" in the diagnostics check section of the service manual.

Rev History: Initial Release 2018.

## APPENDIX

FINAL CHECKLIST	
Cleanliness, Cracks	
Date, Time	
NIBP	
Temperature	
SP02	
Printer	

