Customer Service Bulletin

Products:	• Connex Spot Monitor – CSM • Connex Vital Signs Monitor – CVSM • Connex Integrated Wall System – CIWS • ProBP 3400 • Spot • Spot LXI • Propaq CS • Propaq EN • Propaq LT • VSM 300 • Micropaq • CP50 • CP150 • CP100/200 • ABPM 6100 • ABPM 7100	**Date:** 2019-12-05

Subject:	Clinical Dynamics AccuSim Patient Simulator		
HW Version(s) Affected:	All	**SW Version(s) Affected:**	All
Serial Numbers Affected:	All	**Lot or Date Code Affected:**	All

Classification:	Informational Only			
Distribution:	☒ Customer Care	☒ Product Service	☒ Field Service	
	☒ ASPs ☒ Distributors	☒ Customers	☐ Company Confidential	

Summary:

The Clinical Dynamics AccuSim Patient Simulator has been verified to be used in conjunction with the above devices. Additionally, the below information is being made available to end users to show how to use the simulator with the device to verify functional checks and Full calibration (CSM, ProBp 3400, CIWS, CVSM only) for preventative maintenance.

Customers requesting additional information, parts, tooling, etc.. for the AccuSim Patient Simulator should reach out to Clinical Dynamics directly at the address below.

Clinical Dynamics

www.clinicaldynamics.com

Clinical Dynamics Corporation
10 Capital Drive
Wallingford, CT 06492-2318 USA
203-269-0090
800-247-6427

1.0 Purpose:

This service procedure details how to use the Clinical Dynamics AccuSim simulator for preventative maintenance or calibration activities for the devices defined within this process.

2.0 Scope:

The instructions in this procedure apply to the below products.

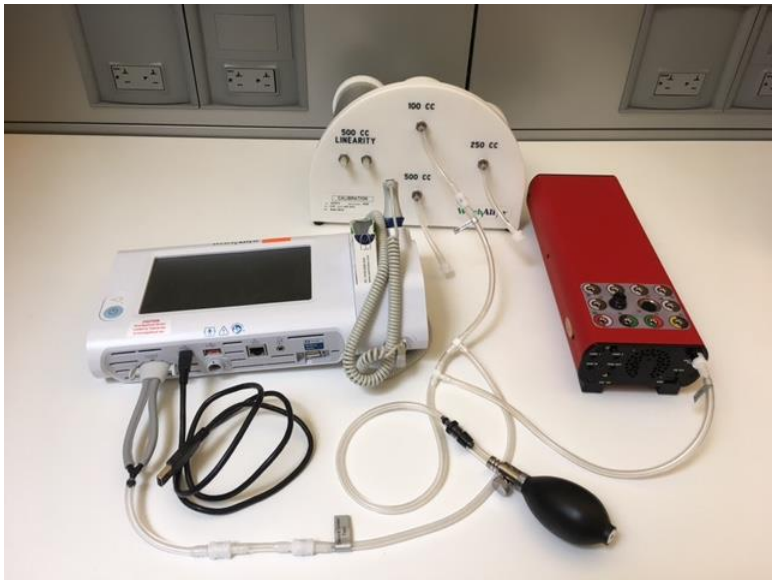
- Connex Spot Monitor – CSM
- Connex Vital Signs Monitor – CVSM
- Connex Integrated Wall System – CIWS
- ProBP 3400
- Spot
- Spot LXI
- Propaq CS
- Propaq EN
- Propaq LT
- VSM 300
- Micropaq
- CP50
- CP150
- CP100/200
- ABPM 6100
- ABPM 7100

3.0 Device specific Instructions:

1. Connex Spot Monitor – CSM

- Required Tools
  - CSM
    - Blood Pressure Hose
    - Spo2 Ext. cable (Nellcor, Masimo, Nonin)
    - Y-tube adapter
  - Service Test Box (Nurse Call)
  - USB A to B
  - 3.5mm audio cord
  - Ethernet Cable
  - Test Volume
  - Welch Allyn Service Tool – WAST
  - USB A to B micro cable
  - AccuSim Simulator
    - NIBP Tubing Kit
      - NIBP Tube
      - NIBP Adapters
        - Male to male
      - NIBP Barb to Hose (x6)
    - SPO2 Cable Kit (Nellcor, Masimo, Nonin)
      - SPO2 Adapter
      - SPO2 Simulator cable
    - SureTemp cable
      - SureTemp Plus cable

• NIBP Functional Verification

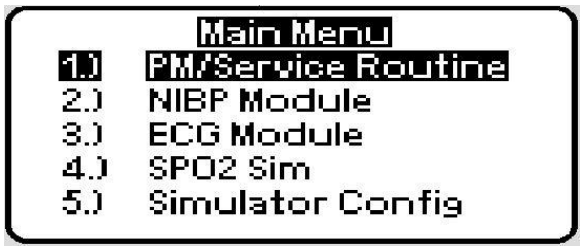


** Attach the USB cable to a PC with WAST

1. Connect the “NIBP Barb to Hose” hose to each cylinder (100cc, 250cc, and 500cc) on the Test Volume
2. Connect the “NIBP Barb to Hose” hose (100cc) to “Test Volume” hose on “NIBP Tube”
3. Connect the “NIBP Adapter” (male to male) to “Device Under Test” hose on “NIBP Tube”
4. Connect the “NIBP Adapter” (male to male) to “NIBP Barb to Hose”
5. Connect the “NIBP Barb to Hose” to “Y-tube adapter”
6. Connect the “Y-tube adapter” to “Blood Pressure hose”
7. [CSM] Connect the “Blood Pressure hose” to CSM
8. [AccuSim] Connect the Hose labeled “AccuSim” to “Pressure Port” on back of the AccuSim Simulator
9. [AccuSim] Turn on the Simulator

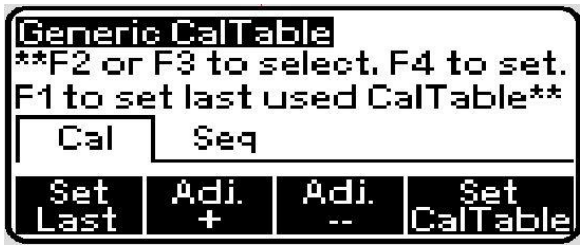
** Power button is located on the back of [AccuSim]

10. [AccuSim] Press the “Menu” button to launch the main menu options



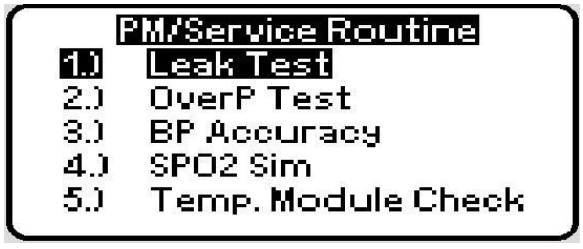
11. [AccuSim] Press "Enter" button to select "PM/Service Routine"

12. [AccuSim] Press "Enter" to message "Elec. Safety Checked?"



13. [AccuSim] Press "Up/Down Arrow" buttons to locate the "CSM"

14. [AccuSim] Press "F4" button to launch "Set CalTable" and press "Enter"



15. [AccuSim] Press the "Scroll up/down" button to select the "BP Accuracy" and press "Enter"

16. [CSM] Power on the device
17. [CSM] Connect the USB cable to CSM and a PC with WAST (Welch Allyn Service Tool) installed.
18. [PC] Launch WAST
19. [PC] Click on the “Service” option if prompted
20. [PC] Enter in the User ID and Password for WAST
21. [PC] Double Click on the “Connex Spot Monitor” listed
22. [PC] Click the “Verify and Calibrate” tab
23. [PC] Double Click on the “NIBP Sensor” listed
24. [PC] Click “Begin” to start the test and calibration
25. [PC] Click “Perform all”
26. Follow the instruction from the WAST
27. Read the following “**” ahead to avoid confusion

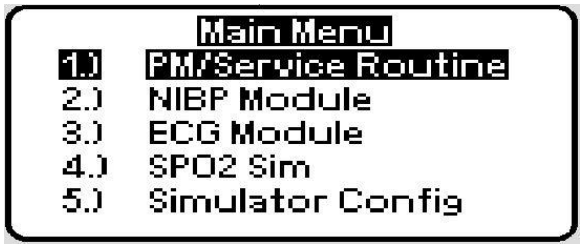
** The “Meter readings” are from the AccuSim Simulator

** For the “Single Lumen” or “Double Lumen” test only one needs to be ran, Skip the one you don’t use

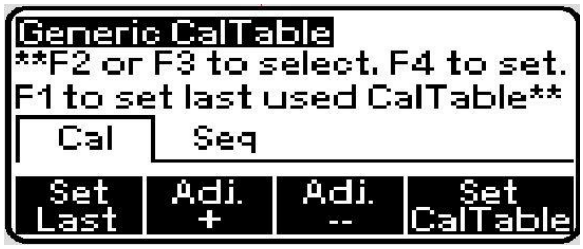
28. Verify the test successfully finish without failures [Pass/Fail]
29. Press “close” and disconnect all cables and devices

• Spo2 Functional Verification

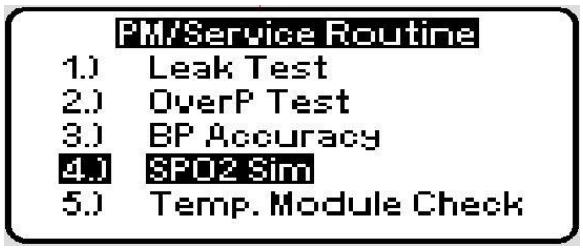
1. [AccuSim] Connect the “SPO2 Adapter” to the AccuSim simulator
2. Connect the “SPO2 Adapter” to the “SPO2 Simulator cable” (Simulator cable is labeled per the type of Spo2 system being used)
3. Connect the “SPO2 Simulator cable” to the “SPO2 Ext. Cable”
4. [AccuSim] Press “Escape” button twice



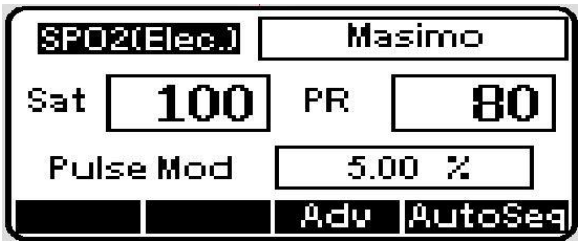
5. [AccuSim] Press “Enter” button to select “PM/Service Routine”
6. [AccuSim] Press “Enter” to message “Elec. Safety Checked?”



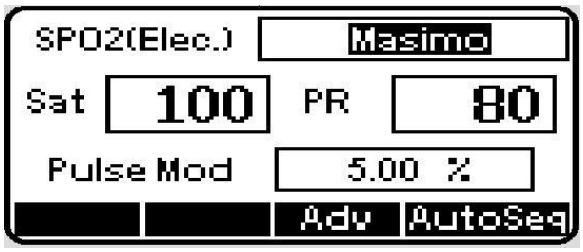
7. [AccuSim] Press “F1” to set the last calibration table



8. [AccuSim] Press the "Scroll up/down" button to select the "Spo2 Sim" and press "Enter"



9. [AccuSim] Using the "Right/Left Arrow" buttons to navigate to top right of the screen

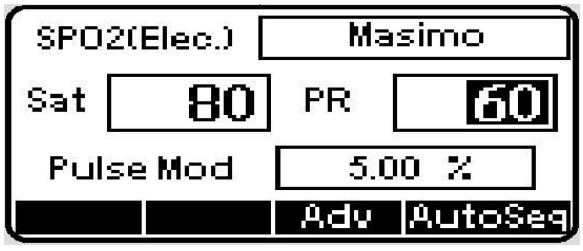


10. [AccuSim] Using the "Up/Down Arrow" button to change the Spo2 system to the current system being used
11. Connect the according "SPO2 Ext. Cable" to CSM

** Follow steps 12-13 for Masimo and steps 14-17 for Nellcor and Nonin

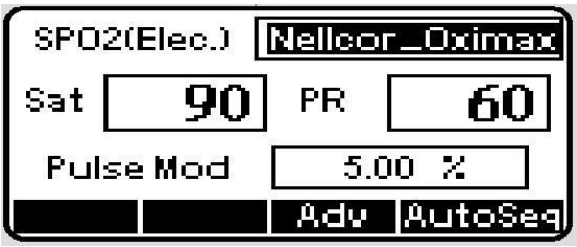
** Give the device about 30 seconds to stabilize

12. [AccuSim] Using the "Right/Left/Up/Down Arrow" buttons adjust the Saturation level and to 80% and Pulse Rate to 60 bpm



13. [CSM] Verify that Saturation level is 80% ±3% and Pulse Rate is 60 bpm ± 1 bpm [Pass/Fail]

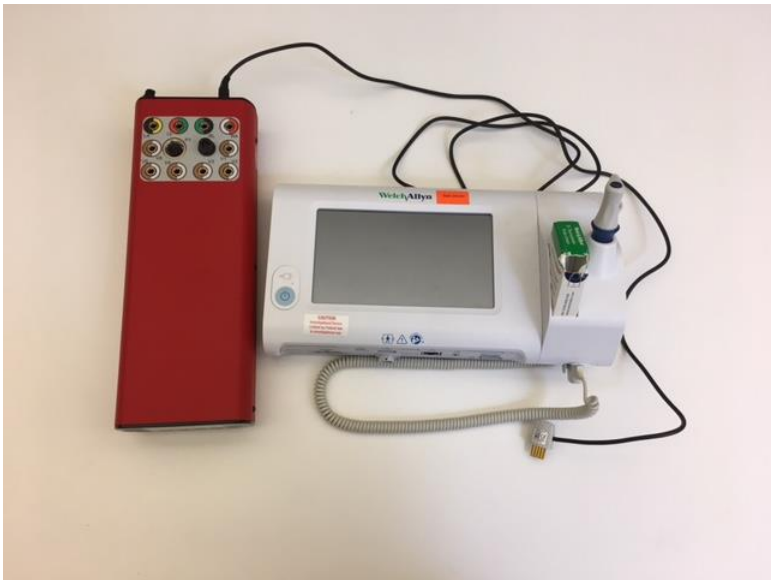
14. [AccuSim] Using the "Right/Left/Up/Down Arrow" buttons adjust the Saturation level and to 90% and Pulse Rate to 60 bpm



15. [CSM] Verify that Saturation level is 90% ±1% and Pulse Rate is 60 bpm ± 1 bpm [Pass/Fail]
16. Disconnect all spo2 cables

** SPO2 adapter is spring loaded, grab the bottom end of the cable connected to the simulator and pull up

• SureTemp Temperature Functional Verification



1. Remove the Probe Key attached to CSM if there is one
2. [AccuSim] Connect the “SureTemp Plus cable” to “Temp 2” located at the back of the simulator
3. [CSM] Connect the “SureTemp Plus cable” to CSM
4. [CSM] Remove the “Probe” from the well on CSM
5. [CSM] Verify that the displayed temperature is 97.3 ± 0.2 ºF (36.3 ± 0.1 ºC) [Pass/Fail]
6. [CSM] Disconnect the simulator cable and reconnect the “Probe” to the CSM

- **Full Calibration**

** Follow this step only for device Calibration

1. Make sure both devices are powered down
2. [CSM] Power on the device
3. [AccuSim] Power on the Simulator
4. [CSM] Attach the USB cable to a PC with WAST
5. [PC] Launch WAST
6. [PC] Click on the "Service" option if prompted
7. [PC] Enter in the User ID and Password for WAST
8. [PC] Double Click on the "Connex Spot Monitor" listed
9. [PC] Click the "Verify and Calibrate" tab
10. [PC] Double Click on the "Connex Spot Monitor" listed
11. [PC] Click "Begin" to start the test and calibration
12. Follow the instruction from the WAST

** SPO2Test

13. [AccuSim] Connect the "SPO2 Adapter" to the AccuSim simulator
14. Connect the "SPO2 Adapter" to the "SPO2 Simulator cable" (Simulator cable is labeled per the type of Spo2 system being used)
15. Connect the "SPO2 Simulator cable" to the "SPO2 Ext. cable"
16. [CSM] Connect the "SPO2 Ext. cable" to CSM
17. [AccuSim] Press the "Menu" button to launch the main menu options
18. [AccuSim] Press "Enter" button to select "PM/Service Routine"
19. [AccuSim] Press "Enter" to message "Elec. Safety Checked?"
20. [AccuSim] Press "Up/Down Arrow" buttons to locate the "CSM"
21. [AccuSim] Press "F4" button to launch "Set CalTable"
22. [AccuSim] Press the "Scroll up/down" button to select the "Spo2 Sim" and press "Enter"
23. [AccuSim] Using the "Right/Left/Up/Down Arrow" buttons adjust the SPO2 type, Saturation level and Pulse Rate to given value in WAST

** NIBP

24. Connect the "NIBP Barb to Hose" hose to each cylinder (100cc, 250cc, and 500cc) on the Test Volume
25. Connect the "NIBP Barb to Hose" hose (100cc) to "Test Volume" hose on "NIBP Tube"
26. Connect the "NIBP Adapter" (male to male) to "Device Under Test" hose on "NIBP Tube"
27. Connect the "NIBP Adapter" (male to male) to "NIBP Barb to Hose"
28. Connect the "NIBP Barb to Hose" to "Y-tube adapter"
29. Connect the "Y-tube adapter" to "Blood Pressure hose"

30. [CSM] Connect the “Blood Pressure hose” to CSM
31. [AccuSim] Connect the Hose labeled “AccuSim” to “Pressure Port” on back of the AccuSim Simulator
32. [AccuSim] Press “Escape” button
33. [AccuSim] Press the “Scroll up/down” button to select the “BP Accuracy” and press “Enter”
34. [AccuSim] Press “Enter” to message “Elec. Safety Checked?”

** SureTemp Temperature

35. Skip the “Low temperature test”
36. Instead of the Calibration key, connect the SureTemp Plus cable to “Temp2” on AccuSim and CSM

** The “Meter readings” are from the AccuSim Simulator

** For the “Single Lumen” or “Double Lumen” test only one needs to be ran, Skip the one you don’t use

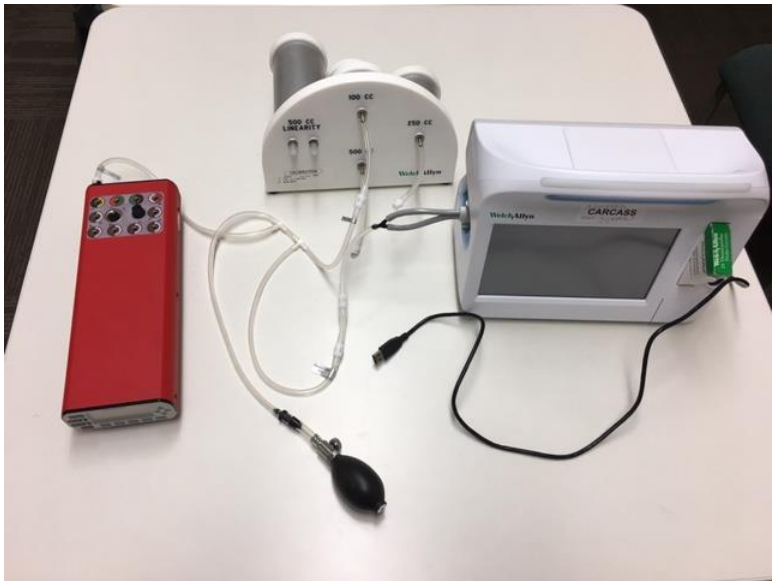
37. [PC] Access and save the calibration certificate and service logs at the following directory:

    C:\ProgramData\Welch Allyn Service Tool\ServiceLogs

2. Connex Vital Signs Monitor – CVSM/CIWS

- **Required Tools**
  - CVSM/CIWS
    - Blood Pressure Hose
    - Y-tube adapter
    - SPO2 Ext. cable (Nellcor, Masimo)
    - Service Test Box (Nurse Call)
      - USB A to B
      - 3.5mm audio cord
    - Ethernet Cable
  - Test Volume
  - Welch Allyn Service Tool - WAST
    - NIBP Tubing Kit
      - NIBP Tube
      - NIBP Adapters
        - Male to male
      - NIBP Barb to Hose (x6)
    - SPO2 Cable Kit (Nellcor, Masimo)
      - SPO2 Adapter
      - SPO2 Simulator cable
    - SureTemp cable
      - SureTemp Plus cable
    - ECG banana plug
  - USB A to B mini cable
  - Slotted Screwdriver

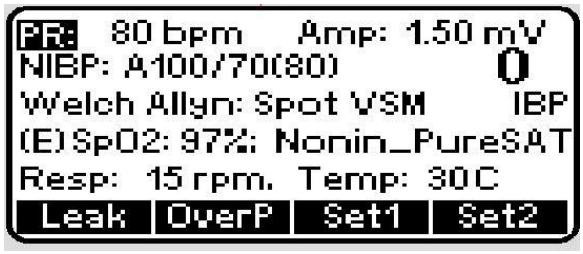
• NIBP Functional Verification



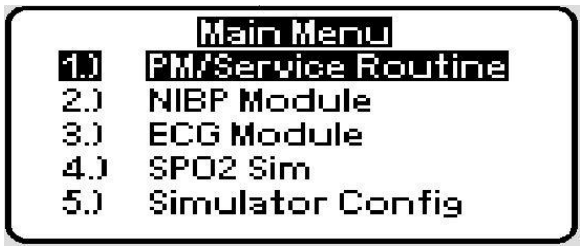
** Attach the USB cable to a PC with WAST available

1. Connect the “NIBP Barb to Hose” hose to each cylinder (100cc, 250cc, and 500cc) on the Test Volume
2. Connect the “NIBP Barb to Hose” hose (100cc) to “Test Volume” hose on “NIBP Tube”
3. Connect the “NIBP Adapter” (male to male) to “Device Under Test” hose on “NIBP Tube”
4. Connect the “NIBP Adapter” (male to male) to “NIBP Barb to Hose”
5. Connect the “NIBP Barb to Hose” to “Y-tube adapter”
6. Connect the “Y-tube adapter” to “Blood Pressure hose”
7. [CVSM] Connect the “Blood Pressure hose” to CVSM
8. [AccuSim] Connect the Hose labeled “AccuSim” to “Pressure Port” on back of the AccuSim Simulator
9. [AccuSim] Turn on the Simulator

** Power button is located on the back

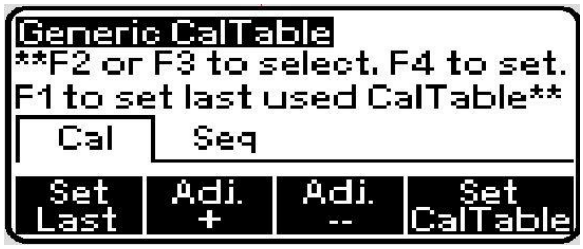


10. [AccuSim] Press the “Menu” button to launch the main menu options



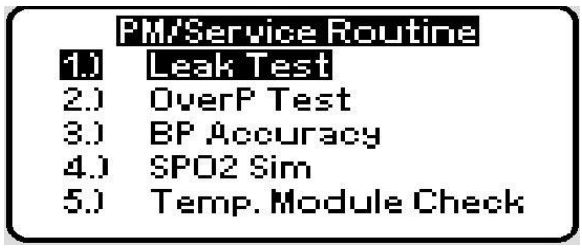
11. [AccuSim] Press "Enter" button to select "PM/Service Routine"

12. [AccuSim] Press "Enter" to message "Elec. Safety Checked?"



13. [AccuSim] Press "Up/Down Arrow" buttons to locate the "VSM 6000"

14. [AccuSim] Press "F4" button to launch "Set CalTable"



15. [AccuSim] Press the "Scroll up/down" button to select the "BP Accuracy" and press "Enter"

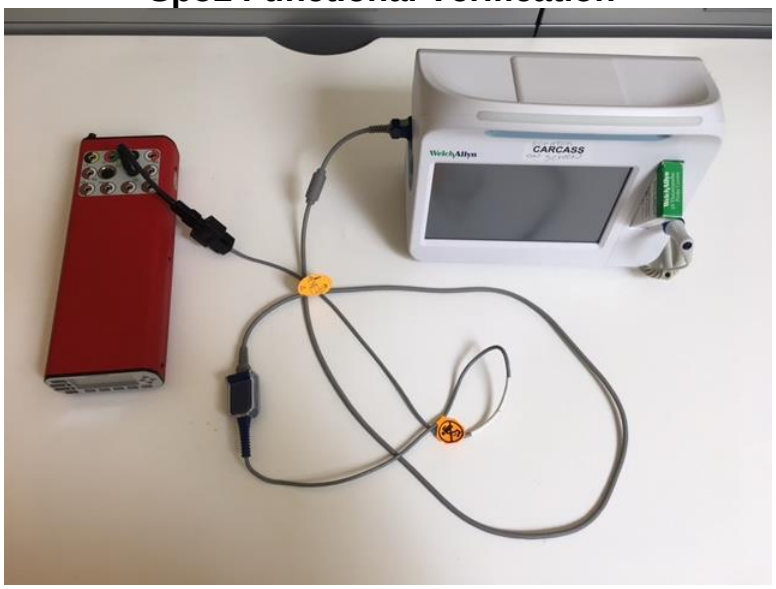
16. [CVSM] Power on the device
17. Connect the USB cable to CVSM and a PC with WAST (Welch Allyn Service Tool) installed.
18. [PC] Launch WAST
19. PC] Click on the “Service” option if prompted
20. [PC] Enter in the User ID and Password for WAST
21. [PC] Make sure “Device List” is selected, if not click on it
22. [PC] Double Click on the “Welch Allyn Connex Device” listed
23. [PC] Click the “Verify and Calibrate” tab
24. [PC] Double Click on the “NIBP Sensor” listed
25. [PC] Click “Begin” to start the test and calibration
26. [PC] Click “Perform all”
27. Follow the instruction from the WAST
28. Read the following “**” ahead to avoid confusion

** The “Meter readings” are from the AccuSim Simulator

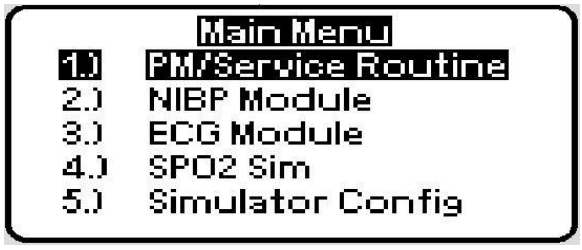
** For the “Single Lumen” or “Double Lumen” test only one needs to be ran, Skip the one you don’t use

29. Verify the test successfully finish without failures [Pass/Fail]
30. Press “close” and disconnect all NIBP cables and devices

- **Spo2 Functional Verification**

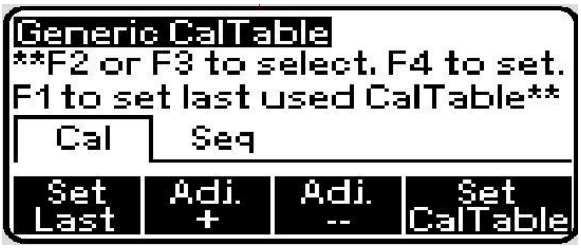


1. [AccuSim] Connect the “SPO2 Adapter” to the AccuSim simulator
2. Connect the “SPO2 Adapter” to the “SPO2 Simulator cable” (Simulator cable is labeled per the type of Spo2 system being used)
3. Connect the “SPO2 Simulator cable” to the “Spo2 Ext. cable”
4. [AccuSim] Press the “Escape” button twice

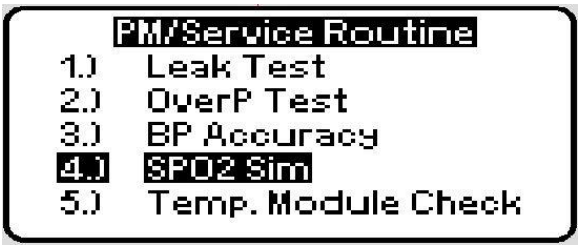


5. [AccuSim] Press “Enter” button to select “PM/Service Routine”

6. [AccuSim] Press “Enter” to message “Elec. Safety Checked?”

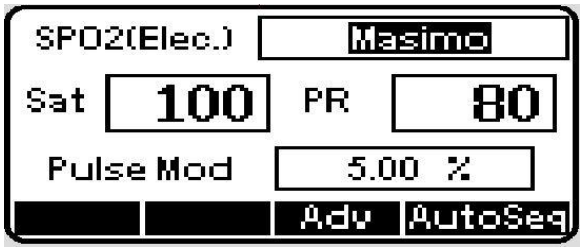


7. [AccuSim] Press “F1” to set the calibration table



8. [AccuSim] Press the “Scroll up/down” button to select the “Spo2 Sim” and press “Enter”

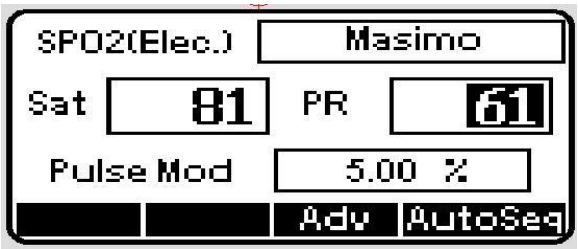
9. [AccuSim] Using the “Right/Left Arrow” buttons to navigate to top right of the screen



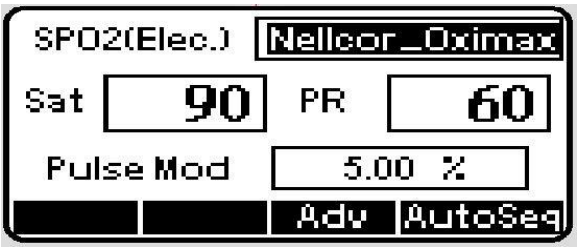
10. [AccuSim] Using the “Up/Down Arrow” button to change the Spo2 system to the current system being used
11. [CVSM] Press the “Settings” tab
12. [CVSM] Press the “Device” tab
13. [CVSM] Press the “Intervals Monitoring”
14. [CVSM] Press the “Home” tab
15. [CVSM] Connect the “Spo2 Ext. cable to CVSM
16. Follow steps 17-18 for Masimo and steps 19-20 for Nellcor and Nonin

** Give the device about 30 seconds to stabilize

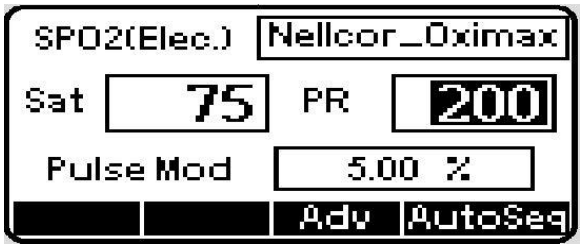
17. [AccuSim] Using the "Right/Left/Up/Down Arrow" buttons adjust the Saturation level and to 81% and Pulse Rate to 61 bpm



18. [CVSM] Verify that Saturation level is 81% ±3% and Pulse Rate is 61 bpm ± 1 bpm [Pass/Fail]
19. [AccuSim] Using the "Right/Left/Up/Down Arrow" buttons adjust the Saturation level and to 90% and Pulse Rate to 60 bpm



20. [CVSM] Verify that Saturation level is 90% ±1% and Pulse Rate is 60 bpm ± 1 bpm [Pass/Fail]
21. [AccuSim] (For both Spo2) Using the "Right/Left/Up/Down Arrow" buttons adjust the Saturation level and to 75% and Pulse Rate to 200 bpm



22. [CVSM] Verify that Saturation level is 75% ±1% and Pulse Rate is 200 bpm ± 2 bpm [Pass/Fail]
23. Disconnect all Spo2 cables

** Be careful removing the SPO2 Adapter, it is spring loaded and may ruin the components inside. Grab the bottom portion of the adapter and lift to remove

- **SureTemp Temperature Functional Verification**

1. Remove the Probe Key attached to CVSM if there is one
2. [AccuSim] Connect the "SureTemp Plus cable" to "Temp 2" located at the back of the simulator
3. [CVSM] Connect the "SureTemp Plus Cable" to CVSM
4. [CVSM] Remove the "Probe" from the well on CVSM
5. [CVSM] Verify that the displayed temperature is 97.3 ± 0.2 ^{o}F (36.3 ± 0.1 ^{o}C) [Pass/Fail]
6. [CVSM] Disconnect the "SureTemp cable" and reconnect the "Probe" to the device

- **Full Calibration**

** Follow this step only for device Calibration

1. Make sure both devices are powered down
2. [CVSM] Power on the device
3. [AccuSim] Power on the Simulator
4. [CVSM] Attach the USB cable to a PC with WAST
5. [PC] Launch WAST
6. [PC] Click on the "Service" option if prompted
7. [PC] Enter in the User ID and Password for WAST
8. [PC] Double Click on the "Welch Allyn Connex Device" listed
9. [PC] Click the "Verify and Calibrate" tab
10. [PC] Double Click on the "Welch Allyn Connex Device" listed
11. [PC] Click "Begin" to start the test and calibration
12. Follow the instruction from the WAST

** SPO2Test

13. [AccuSim] Connect the "SPO2 Adapter" to the AccuSim simulator
14. Connect the "SPO2 Adapter" to the "SPO2 Simulator cable" (Simulator cable is labeled per the type of Spo2 system being used)
15. Connect the "SPO2 Simulator cable" to the "SPO2 Ext. cable"
16. [CVSM] Connect the "SPO2 Ext. cable" to CVSM
17. [AccuSim] Press the "Menu" button to launch the main menu options
18. [AccuSim] Press "Enter" button to select "PM/Service Routine"
19. [AccuSim] Press "Enter" to message "Elec. Safety Checked?"
20. [AccuSim] Press "Up/Down Arrow" buttons to locate the "VSM 6000"
21. [AccuSim] Press "F4" button to launch "Set CalTable"
22. [AccuSim] Press the "Scroll up/down" button to select the "Spo2 Sim" and press "Enter"
    [AccuSim] Using the "Right/Left/Up/Down Arrow" buttons adjust the SPO2 type, Saturation level and Pulse Rate to given value in WAST

** SureTemp Temperature

23. Skip the "Low temperature test"
24. Instead of the Calibration key, connect the SureTemp Plus cable to "Temp2" on AccuSim and CVSM

** NIBP

25. Connect the "NIBP Barb to Hose" hose to each cylinder (100cc, 250cc, and 500cc) on the Test Volume
26. Connect the "NIBP Barb to Hose" hose (100cc) to "Test Volume" hose on "NIBP Tube"

27. Connect the “NIBP Adapter” (male to male) to “Device Under Test” hose on “NIBP Tube”
28. Connect the “NIBP Adapter” (male to male) to “NIBP Barb to Hose”
29. Connect the “NIBP Barb to Hose” to “Y-tube adapter”
30. Connect the “Y-tube adapter” to “Blood Pressure hose”
31. [CVSM] Connect the “Blood Pressure hose” to CVSM
32. [AccuSim] Connect the Hose labeled “AccuSim” to “Pressure Port” on back of the AccuSim Simulator
33. [AccuSim] Press “Escape” button
34. [AccuSim] Press the “Scroll up/down” button to select the “BP Accuracy” and press “Enter”
35. [AccuSim] Press “Enter” to message “Elec. Safety Checked?”

** The “Meter readings” are from the AccuSim Simulator

** For the “Single Lumen” or “Double Lumen” test only one needs to be ran, Skip the one you don’t use

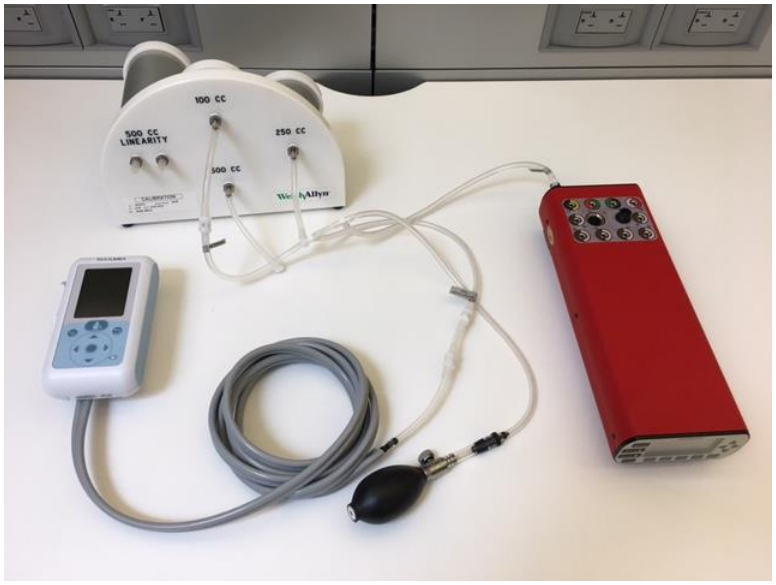
38. [PC] Access and save the calibration certificate and service logs at the following directory:

    C:\ProgramData\Welch Allyn Service Tool\ServiceLogs

3. ProBP 3400

- **Required Tools**
  - ProBP 3400
    - Blood Pressure Hose
    - Y-tube adapter
  - Test Volume
  - Welch Allyn Service Tool - WAST
  - AccuSim Simulator
    - NIBP Tubing Kit
      - NIBP Tube
      - NIBP Adapters
        - Male to male
      - NIBP Barb to Hose (x6)
  - USB A to B mini cable

- **Full Calibration**

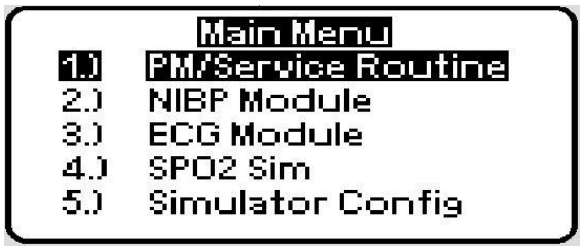


** Attach the USB cable to a PC with WAST available

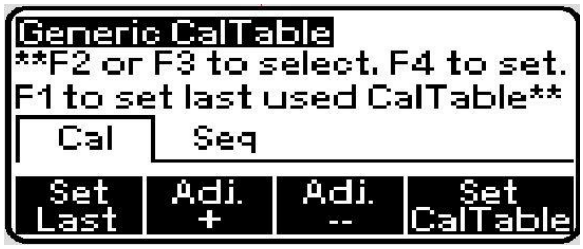
1. [AccuSim] Connect the "AccuSim" end of the "NIBP Tube" to "Pressure Port" located on the back of the simulator
2. Connect the "NIBP Barb to Hose" hoses to each cylinder on the Test Volume
3. Connect the "NIBP Barb to Hose" hose (100cc) to "Test Volume" hose on "NIBP Tube"
4. Connect the "NIBP Adapter" (male to male) to "Device Under Test" hose on "NIBP Tube"
5. Connect the "NIBP Adapter" (male to male) to "NIBP Barb to Hose"
6. Connect the "NIBP Barb to Hose" to "Y-tube adapter"
7. Connect the "Y-tube adapter" to "Blood Pressure hose"
8. [ProBP] Connect "Blood Pressure hose" to ProBP3400
9. [AccuSim] Turn on the Simulator

** Power button is located on the back

10. [AccuSim] Press the "Menu" button to launch the main menu options

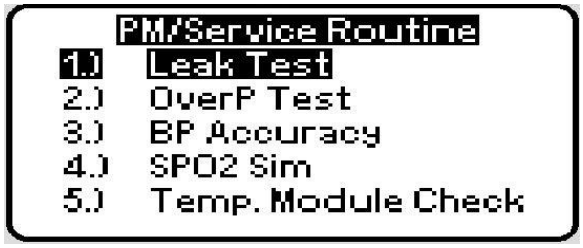


11. [AccuSim] Press “Enter” button to select “PM/Service Routine”
12. [AccuSim] Press “Enter” to message “Elec. Safety Checked?”



13. [AccuSim] Press “Up/Down Arrow” buttons to locate the “ProBP 3400”

14. [AccuSim] Press “F4” button to launch “Set CalTable”



15. [AccuSim] Press the “Scroll up/down” button to select the “BP Accuracy” and press “Enter”
16. [AccuSim] Press “Enter” to the message
17. [ProBP3400] Power on ProBP 3400
18. [ProBP3400] Connect the USB cable to ProBP 3400 and a PC with WAST (Welch Allyn Service Tool) installed.
19. [PC] Launch WAST
20. PC] Click on the “Service” option if prompted
21. [PC] Enter in the User ID and Password for WAST

22. [PC] Double Click on the “ProBP 3400” listed
23. [PC] Click the “Verify and Calibrate” tab
24. [PC] Double Click on the “ProBP 3400” listed
25. [PC] Click “Begin” to start the test and calibration
26. Follow the instruction from the WAST

** The “Meter readings” are from the AccuSim Simulator

** For Inflation linearity test, disconnect the Y tube adapter and connect the blood pressure hose to “500 cc Linearity” on test volume

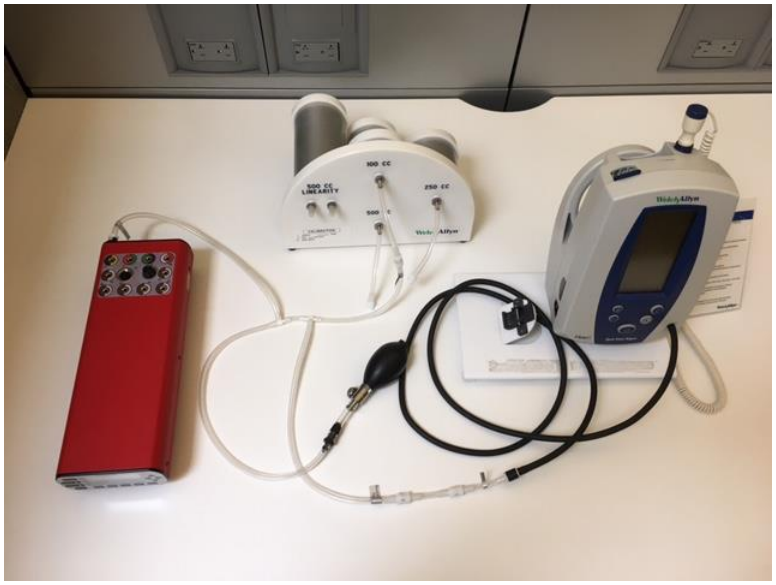
27. Verify the test successfully finish without failures [Pass/Fail]
28. [PC] Access and save the calibration certificate and service logs at the following directory:

    C:\ProgramData\Welch Allyn Service Tool\ServiceLogs

4. Spot

- **Required Tools**
  - Spot Vital Signs
    - Blood Pressure hose
  - AccuSim Simulator
    - NIBP Tubing Kit
      - NIBP Tube
      - NIBP Adapters
        - male to male
        - PROPAQ female
      - NIBP Barb to Hose (x6)
    - SPO2 Cable Kit (Nellcor, Masimo)
      - SPO2 Adapter
      - SPO2 Simulator cable
    - SureTemp cable
      - SureTemp cable
  - Test Volume

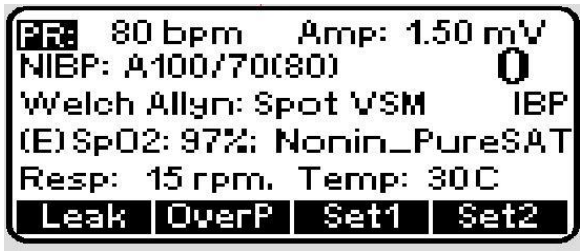
• NIBP Functional Verification



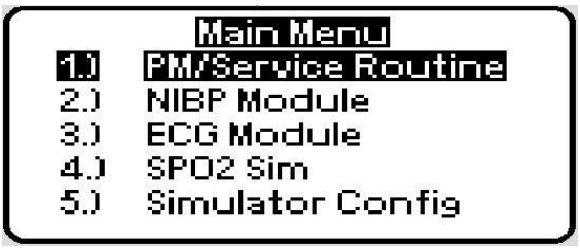
Leak Test

1. Connect the "NIBP Barb to Hose" hose to each cylinder (100cc, 250cc, 500cc, and 500cc Linearity) on the Test Volume
2. Connect the "NIBP Adapter" (male to male) to "Device Under Test" hose on "NIBP kit"
3. Connect the "NIBP Adapter" (PROPAQ female) to "NIBP Adapter" (male to male)
4. Connect the "NIBP Adapter" (PROPAQ female) to "Blood Pressure hose"
5. Connect the "NIBP Barb to Hose" hose (100cc) to "Test Volume" hose on "NIBP kit"
6. [Spot] Connect the "Blood Pressure hose" to Spot
7. [AccuSim] Connect the Hose labeled "AccuSim" to "Pressure Port" on back of the AccuSim Simulator
8. [AccuSim] Power on the Device

** Power button is located on the back

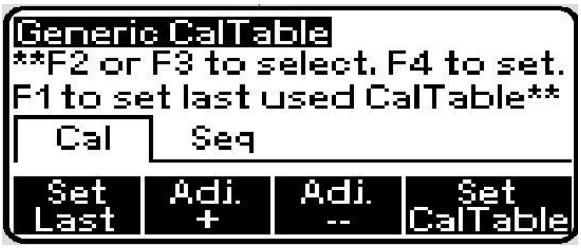


9. [AccuSim] Press the "Menu" button to launch the main menu options



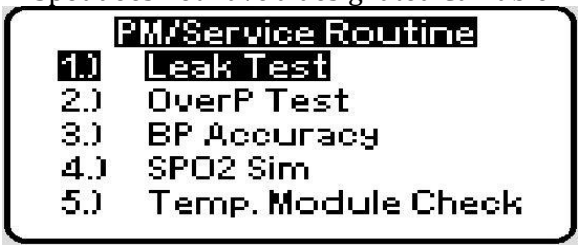
10. [AccuSim] Press “Scroll up/down” button to navigate to “PM/Service Routine” and press “Enter”

11. [AccuSim] Press “Enter” to the message

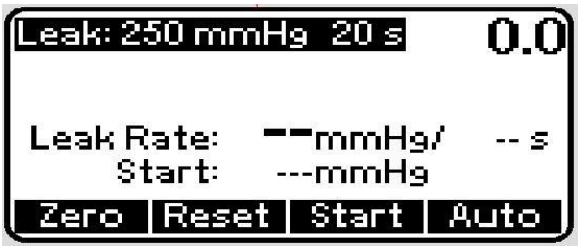


12. [AccuSim] Press “F4” to set the CalTable

** Spot does not have a designated CalTable



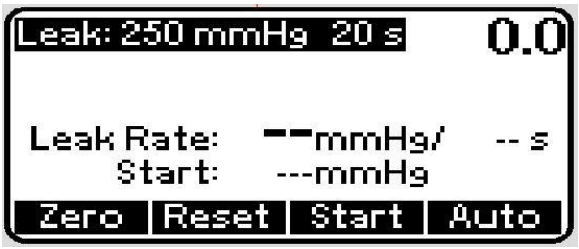
13. [AccuSim] Press the “Scroll up/down” button to select the “Leak Test” and press “Enter”
14. [AccuSim] Press the “Enter” button



15. [AccuSim] Press the "Menu" button to preset the Configuration

16. [AccuSim] Press the "Up/Down/Left/Right Arrow" buttons to adjust to 250 mmHg and 20 sec

17. [AccuSim] Press the "Escape" button to return to Leak Test



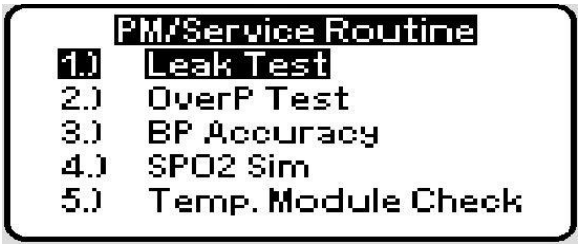
18. [Spot] While holding the "Blood Pressure Start/Stop" button turn the device on
19. [Spot] Press the "Mode" button until "CAL" is displayed on the top of the screen
20. Allow for device to stabilize.
21. Make sure the screw on the "Inflation Bulb" is closed
22. [AccuSim] Press "F1" to zero and "F2" and to reset.
23. [Spot] Press the "Blood Pressure Start/Stop" button to close the valve inside the device
24. [AccuSim] Press "F3" to start the test.
25. Verify Simulator leakage of less than 6 mmHg for 15 seconds [Pass/Fail]

**The minimum test time is 20 seconds

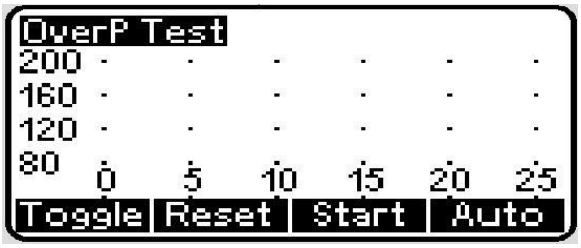
26. [AccuSim] Press “F2” to reset

Over Pressure Test

1. Disconnect the “Test Volume” hose on “NIBP Tube”
2. Connect the “Test Volume” hose on “NIBP Tube” to test volume 250cc
3. [AccuSim] Press “Escape”



4. [AccuSim] Press the “Scroll up/down” button to select the “OverP Test” and press “Enter”
5. [AccuSim] Press the “Enter” button



6. [AccuSim] Press “F2” and to reset.
7. [AccuSim] Press “F3” to start the test.
8. [Spot] Verify error message “E10.” Overpressure Cutoff is 305 mmHg with ± 15 mmHg [Pass/Fail]
9. [Spot] Power down the device

BP Accuracy Test

1. [AccuSim] Press “Escape” button to return to “PM/Service Routine”
2. [AccuSim] Press the “Scroll up/down” button to select the “BP Accuracy” and press “Enter” button.

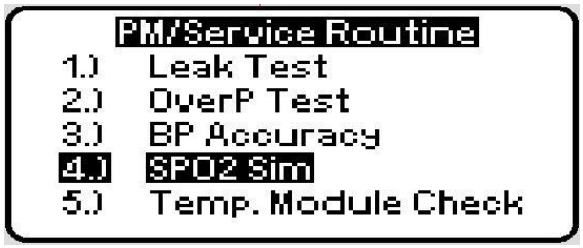
3. [AccuSim] Press “F1” to zero and “F2” and to reset
4. [Spot] While holding the “Blood Pressure Start/Stop” button turn the device on
5. [Spot] Press the “Mode” button until “CAL” is displayed on the top of the screen
6. [Spot] Press the “Blood Pressure Start/Stop” button to close the internal valve
7. [AccuSim] Press “F4” and using the “Up/Down Arrow” buttons to set desired pressure. Press “F3” to start the test. Press “F3” to disable the pump. After recording the pressure press “F4” to quit the test
8. Repeat the previous procedure for the following pressures. And verify that the pressure is within the error margin [Pass/Fail]
    a. 0.0 ± 1.0
    b. 50.0 ± 1.0
    c. 150.0 ± 1.5
    d. 250.0 ± 2.0

**The Simulator will continuously pump to the specific pressure if not disabled

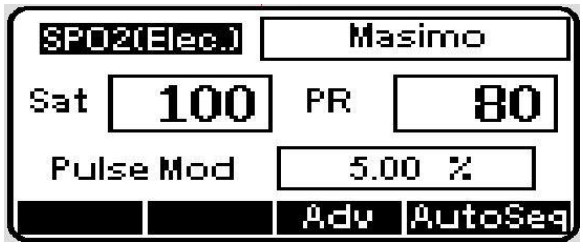
9. Disconnect hoses and cables from the “NIBP kit”

- **Spo2 Functional Verification**

1. [AccuSim] Connect the “SPO2 Adapter” to the AccuSim Simulator
2. Connect the “SPO2 Adapter” to the “Simulator cable” (Simulator cable is labeled per the type of Spo2 system being used)
3. [AccuSim] Press the “Escape” button to return to “PM/Service Routine” menu
4. [AccuSim] Press the “Scroll up/down” button to select the “Spo2 Sim” and press “Enter”



5. [AccuSim] Using the “Right/Left Arrow” buttons to navigate to top right of the screen

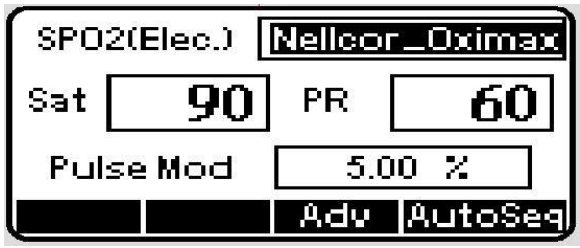


6. [AccuSim] Using the "Up/Down Arrow" button to change the Spo2 system to the current system being used

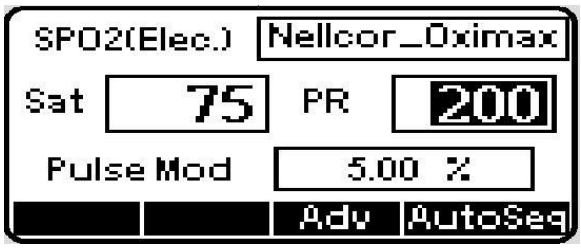
7. [Spot] Power down Spot Vital Signs
8. [Spot] Power on Spot Vital Signs
9. [Spot] Connect the "SPO2 Simulator cable" to Spot Vital Signs
10. Follow steps 11-12 for Masimo and steps 13-16 for Nellcor
11. [AccuSim] Using the "Right/Left/Up/Down Arrow" buttons adjust the Saturation level and to 81% and Pulse Rate to 61 bpm

** Wait for 30 seconds for Spot Vital Signs to stabilize

12. [Spot] Verify that Saturation level is 81% ±3% and Pulse Rate is 61 bpm ± 1 bpm [Pass/Fail]
13. [AccuSim] Using the "Right/Left/Up/Down Arrow" buttons adjust the Saturation level and to 90% and Pulse Rate to 60 bpm



14. [Spot] Verify that Saturation level is 90% ±1% and Pulse Rate is 60 bpm ± 1 bpm [Pass/Fail]
15. [AccuSim] (For both Spo2) Using the "Right/Left/Up/Down Arrow" buttons adjust the Saturation level and to 75% and Pulse Rate to 200 bpm



16. [Spot] Verify that Saturation level is 75% ±1% and Pulse Rate is 200 bpm ± 2 bpm [Pass/Fail]
17. [Spot] Power down Spot Vital Signs
18. Disconnect all Spo2 cables

** SPO2 adapter is spring loaded, grab the bottom end of the cable connected to the simulator and pull up

• SureTemp Temperature Functional Verification

1. [Spot] Power on Spot Vital Signs
2. Remove the Probe Key attached to Spot if there is one
3. [AccuSim] Connect the “SureTemp cable” to “Temp 2” located at the back of the simulator
4. [Spot] Connect the “SureTemp cable” to Spot
5. [Spot] Remove the “Probe” from the well on Spot
6. [Spot] Verify that the displayed temperature is 97.3 ± 0.2 ºF (36.3 ± 0.1 ºC) [Pass/Fail]
7. [Spot] Disconnect the “SureTemp cable” and reconnect the “Probe” to the device

5. Spot LXI

- **Required Tools**
  - Spot Vital Signs LXI
    - Y-tube Adapter
    - Y-fitting hose
    - SPO2 Ext. cable (Nellcor, Masimo)
  - AccuSim Simulator
    - NIBP Tubing Kit
      - NIBP Tube
      - NIBP Adapters
        - Male to male
      - NIBP Barb to Hose (x6)
    - SPO2 Cable Kit (Nellcor, Masimo)
      - SPO2 Adapter
      - SPO2 Simulator cable
    - SureTemp cable
      - SureTemp Plus cable
  - Test Volume
  - Stopwatch (Smartphone, Watch, Clock, etc.…)

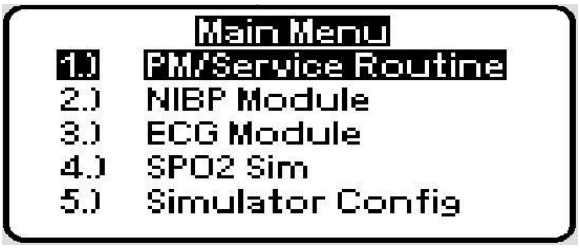
- **NIBP Functional Verification**

Leak Test

1. Connect the "NIBP Barb to Hose" hose to each cylinder (100cc, 250cc, 500cc, and 500cc Linearity) on the Test Volume
2. Connect the "NIBP Barb to Hose" hose (100cc) to "Test Volume" hose on "NIBP kit"
3. Connect the "NIBP Adapter" (male to male) to "Device Under Test" hose on "NIBP kit"
4. Connect the "NIBP Adapter" (male to male) to "NIBP Barb to Hose"
5. Connect the "NIBP Barb to Hose" to "Y-tube adapter"
6. Connect the "Y-tube adapter" to "Y-fitting hose"
7. [AccuSim] Connect the Hose labeled "AccuSim" to "Pressure Port" on back of the AccuSim Simulator
8. [LXI] Connect the Y-Tube Hose to the [LXI]
9. [LXI] Hold the "Select" button while pressing the "Power" button
10. [LXI] Press the "Arrow" buttons to navigate to "Blood Pressure" and press "Select" button
11. [LXI] Press the "Arrow" buttons to navigate to "BP Calibration Check" and press "Select" button
12. [LXI] Press the "Arrow" buttons to navigate to "Close Valve" and press "Select" button
13. [AccuSim] Power on the simulator

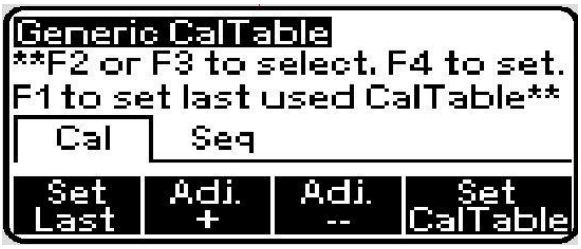
** Power button is located on the back

14. [AccuSim] Press "Menu" button to enter the Main Menu

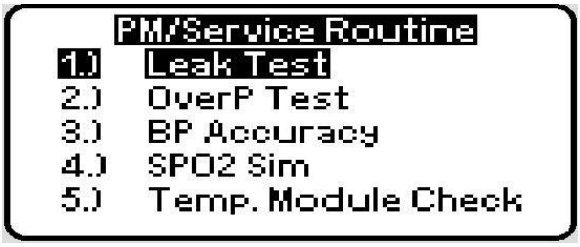


15. [AccuSim] Using the "Scroll up/down" button to select the "PM/Service Routine" and press "Enter"

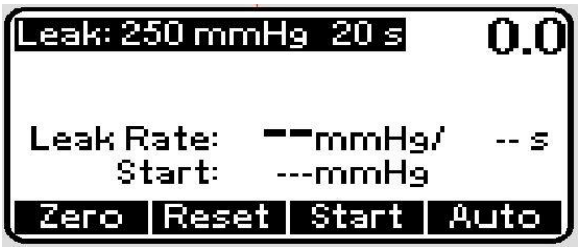
16. [AccuSim] Press "Enter" to the message



17. [AccuSim] Using the "**Up**/Down" button to navigate to "Spot LXI" and press "F4" to set the CalTable



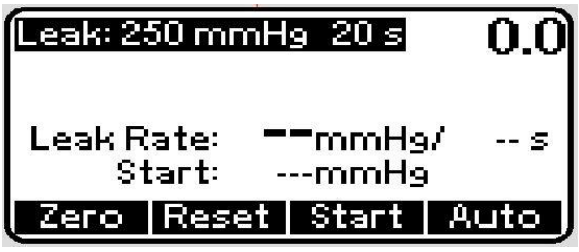
18. [AccuSim] Press the “Scroll up/down” button to select the “Leak Test” and press “Enter”
19. [AccuSim] Press the “Enter” button to the message



20. [AccuSim] Press the “Menu” button to preset the Configuration

21. [AccuSim] Press the “F1” button to navigate to “Set1”
22. [AccuSim] Press the “Up/Down/Left/Right Arrow” buttons to adjust to 250 mmHg and 20 sec

23. [AccuSim] Press the “Escape” button to return to Leak Test



24. Close the screw on the hand bulb to lock the pressure within the system
25. Allow for devices to stabilize.
26. [AccuSim] Press “F1” to zero and “F2” and to reset.
27. [AccuSim] Press “F3” to start the test.

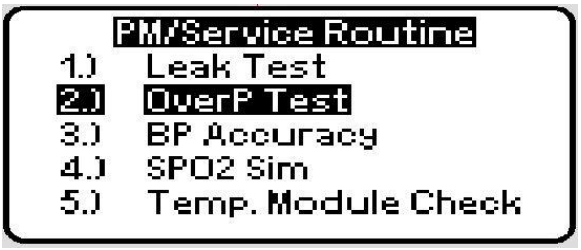
28. [AccuSim] 250 mmHg must have leakage of less than 6 mmHg for 15 seconds [Pass/Fail]

** The minimum run time for leak test is 20 seconds

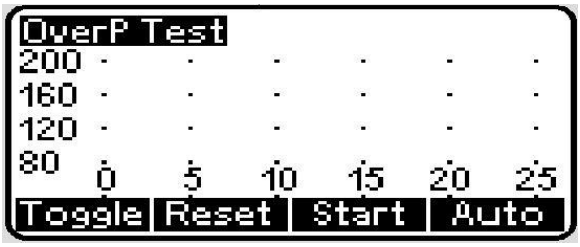
29. [AccuSim] Press "F2" to quit and reset the test

Over Pressure Test

1. Disconnect the "Test Volume" hose on "NIBP Tube"
2. Connect the "Test Volume" hose on "NIBP Tube" to test volume 250cc
3. [AccuSim] Press "Escape" button to return the "PM/Service Routine"



4. [AccuSim] Press the "Scroll up/down" button to select the "OverP Test" and press "Enter"
5. [AccuSim] Press "Enter" to message



6. [AccuSim] Press "F2" to reset the previous data
7. [AccuSim] Press "F3" to start the test
8. [LXI] Verify that maximum pressure is between 296 to 329 mmHg [Pass/Fail]

** The Simulator will continue to pump, but the Spot LXI should display a pressure less than 329 mmHg

9. [LXI] Press the "Select" button to release the pressure
10. [AccuSim] Press "F2" to reset

Inflation Test

1. [LXI] Press the "Select" button to lock the pressure
2. [AccuSim] Press "Escape" button
3. [AccuSim] Press the "Scroll up/down" button to select the "BP Accuracy" and press "Enter"
4. [AccuSim] Press "Enter" to the message
5. Setup a stopwatch

** stopwatch can be: smartphone, clock, watch, etc.

6. [LXI] Press the "Arrow" buttons to navigate to "Start Cuff Inflation"

** Read the next 4 steps ahead before proceeding

7. [LXI] Press "Select" button and start the stopwatch
8. [AccuSim] Stop the stopwatch immediately as soon as the pressure hits 210 mmHg (does not have to stabilize)
9. [LXI] Press "Select" button after the pressure hits 210 mmHg
10. Verify the test takes 7 seconds or less [Pass/Fail]
11. [LXI] Press the "Arrow" buttons to navigate to "Open Valve" and press "Select" button

BP Accuracy Test

1. [LXI] Press "Select" button to close the valve
2. Disconnect the "Test Volume" hose on "NIBP Tube"
3. Connect the "Test Volume" hose on "NIBP Tube" to test volume 500cc

4. [AccuSim] Press "F1" to zero and "F2" to reset
5. [AccuSim] Press "F4" and using the "Up/Down Arrow" buttons to set desired pressure. Press "F3" to start the test
6. [AccuSim] when the pressure reaches set pressure, press "F3" to disable the pump and compare the results [Pass/Fail]
   a. 0.0 ± 1.0
   b. 50.0 ± 1.0
   c. 150.0 ± 1.5
   d. 250.0 ± 2.0

7. [AccuSim] Press “F4” to stop and then “F1” to reset. Repeat the procedures 4-7 as required.

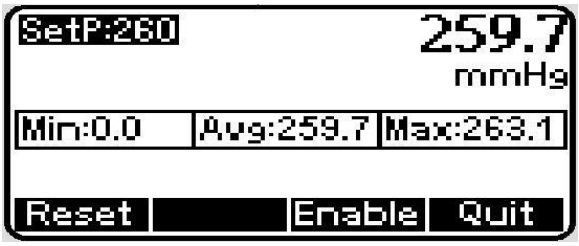
Dump Test

1. [AccuSim] Press “F1” to reset the system

2. [AccuSim] Using the “Up/Down Arrow” buttons adjust the pressure to 260mmHg
3. [AccuSim] Press “F3” to set up the required pressure and wait till system stabilizes

** The pressure does not need to be exact

4. [AccuSim] Press “F3” to disable the pump once the reaches 260 mmHg

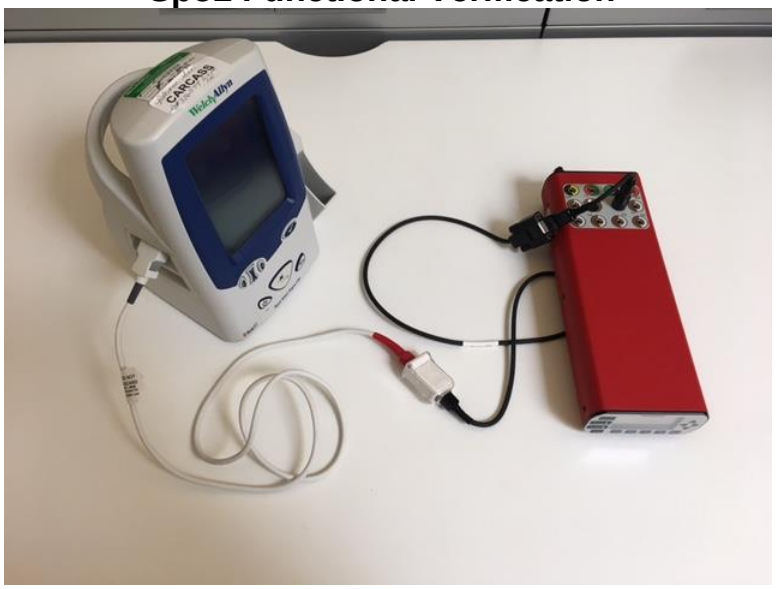


5. Prepare a stopwatch

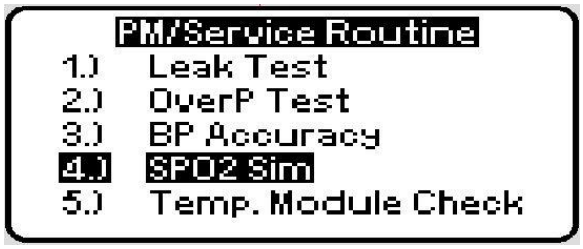
** stopwatch can be: smartphone, clock, watch, etc.

6. [LXI] Simultaneously press “Select” to open the valve and start the stop watch
7. [AccuSim] Stop the stopwatch when the pressure hits 15 mmHg
8. Verify the test takes less than 10 seconds [Pass/Fail]
9. [AccuSim] Press “F4” to stop the simulator
10. Disconnect hoses from the “NIBP kit”

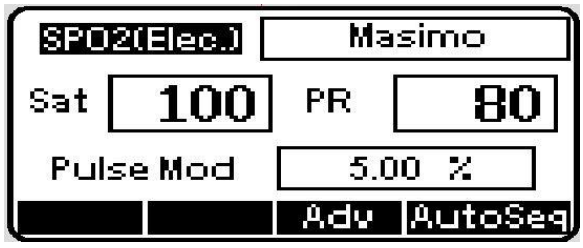
- **Spo2 Functional Verification**



1. [LXI] Power down the Spot LXI
2. [AccuSim] Connect the “SPO2 Adapter” to the Simulator
3. Connect the “SPO2 Adapter” to the “SPO2 Simulator cable” (Simulator cable is labeled per the type of Spo2 system being used)
4. Connect the “SPO2 Simulator cable” to the “SPO2 Ext. Cable”
5. [AccuSim] Press the “Escape” button twice to return to the “PM/Service Routine”
6. [AccuSim] Press the “Scroll up/down” button to select the “Spo2 Sim” and press “Enter”

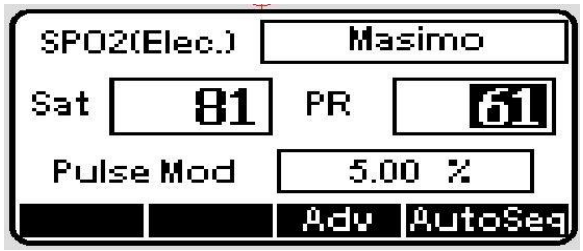


7. [AccuSim] Using the “Right/Left Arrow” buttons to navigate to top right of the screen

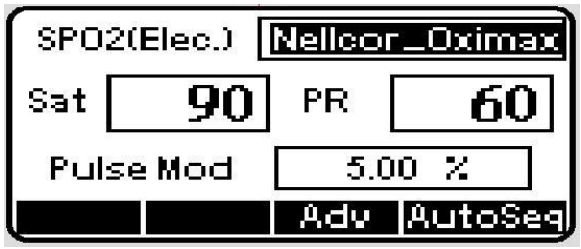


8. [AccuSim] Using the "Up/Down Arrow" button to change the Spo2 system to the current system being used

9. [LXI] Connect the according "SPO2 Ext. cable" to Spot LXI
10. [LXI] Power on the Spot LXI
11. Follow steps 12-13 for Masimo and steps 14-15 for Nellcor
12. [AccuSim] Using the "Right/Left/Up/Down Arrow" buttons adjust the Saturation level and to 81% and Pulse Rate to 61 bpm



13. [LXI] Verify that Saturation level is 81% ±3% and Pulse Rate is 61 bpm ± 1 bpm [Pass/Fail]
14. [AccuSim] Using the "Right/Left/Up/Down Arrow" buttons adjust the Saturation level and to 90% and Pulse Rate to 60 bpm



15. [LXI] Verify that Saturation level is 90% ±1% and Pulse Rate is 61 bpm ± 1 bpm [Pass/Fail]
16. Disconnect all cables

** SPO2 adapter is spring loaded, grab the bottom end of the cable connected to the simulator and pull up

• SureTemp Temperature Functional Verification

1. [LXI] Power down the Spot LXI
2. [LXI] Power on the Spot LXI
3. [LXI] Remove the Probe Key attached to Spot LXI if there is one
4. [AccuSim] Connect the “SureTemp Plus cable” to “Temp 2” located at the back of the simulator
5. [LXI] Connect the “SureTemp Plus Cable” to Spot LXI
6. [LXI] Remove the “Probe” from the well on Spot LXI
7. [LXI] Verify that the displayed temperature is 97.3 ± 0.2 ºF (36.3 ± 0.1 ºC) [Pass/Fail]
8. [LXI] Disconnect the “SureTemp cable” and reconnect the “Probe” to the device

6. Propaq CS

- **Required Tools**
  - Propaq CS
    - 5 lead ECG cable
  - AccuSim Simulator
    - NIBP Tubing Kit
      - NIBP Tube
      - NIBP Adapters
        - PROPAQ male
      - NIBP Barb to Hose (x6)
    - YSI400/700 Temperature Kit
    - SPO2 Cable Kit (Nellcor, Masimo)
      - SPO2 Adapter
      - SPO2 Simulator cable
    - ECG banana plug
    - Invasive BP Cable
  - Test Volume

• NIBP Functional Verification

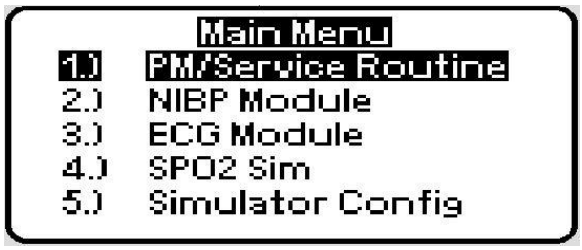
Leak Test

1. Connect the "NIBP Barb to Hose" hose to each cylinder (100cc, 250cc, 500cc, and 500cc Linearity) on the Test Volume
2. Connect the "NIBP Barb to Hose" hose (100cc) to "Test Volume" hose on "NIBP Tube"
3. [AccuSim] Connect the Hose labeled "AccuSim" to "Pressure Port" on back of the AccuSim Simulator
4. Connect the "NIBP Adapter" (PROPAQ male) to "Device Under Test" hose on "NIBP Tube"
5. [Propaq] Connect the "NIBP Adapter" (PROPAQ male) to Propaq CS
6. [ProPaq] Turn the device on
7. [ProPaq] Press the following options accordingly:

   SETUP > MORE > MORE > SERVICE > YES > NIBP TEST
8. [AccuSim] Power on the simulator

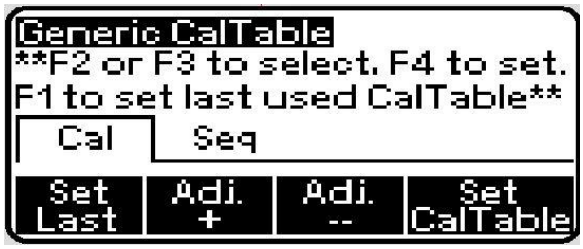
** Power button is located on the back

9. [AccuSi0m] Press the "Menu" button to launch the main menu options



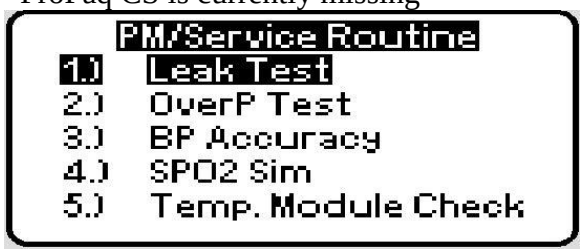
10. [AccuSim] Press “Enter” button to select “PM/Service Routine”

11. [AccuSim] Press “Enter” to message “Elec. Safety Checked?”

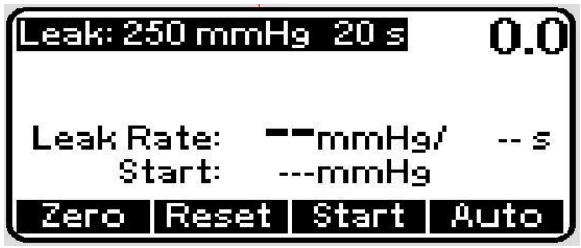


12. [AccuSim] Press “F4” to set CalTable

*ProPaq CS is currently missing



13. [AccuSim] Press the “Scroll up/down” button to select the “Leak Test”
14. [AccuSim] Press the “Enter” button



15. [AccuSim] Press the “Menu” button to preset the Configuration

16. [AccuSim] Press the "Up/Down/Left/Right Arrow" buttons to adjust to 280 mmHg and 240 sec
17. [AccuSim] Press the "Escape" button to return to Leak Test

18. Close the screw on the hand bulb to lock the pressure within the system
19. [AccuSim] Press "F1" to zero and "F2" and to reset.
20. [ProPaq] Press "ZERO" button
21. [ProPaq] Press "NIBP CAL" button (this closes the valve)
22. Allow for devices to stabilize.
23. [AccuSim] Press "F3" to start the test.
24. Verify that both devices display leakage of less than 50 mmHg [Pass/Fail]

25. [AccuSim] Press "F2" to reset after finishing the test

BP Accuracy

1. Disconnect the "Test Volume" hose connected to 100cc and connect it to 500cc on the Test Volume
2. [AccuSim] Press "Escape" button to return to the "PM/Service Routine"
3. [AccuSim] Press the "Scroll up/down" button to navigate to "BP Accuracy" and press "Enter" button
4. [AccuSim] Press "Enter" button

5. [ProPaq] Press "CANCEL" to dump the pressure
6. [ProPaq] Press "ZERO" and then press the "NIBP CAL"
7. [AccuSim] Press "F1" to zero and "F2" and to reset
8. Compare the pressure on AccuSim simulator and Propaq. Verify that the following is true [Pass/Fail]
    a. 0 mmHg ± 2 mmHg
9. Compare the pressure on AccuSim simulator and Propaq. Using the "Inflation Bulb" pump the pressure up to 20 mmHg and verify the following on Propaq [Pass/Fail]
    a. 20 mmHg ± 2 mmHg
10. [ProPaq] Press "CANCEL" to dump the pressure then press the "NIBP CAL" button once the pressure reaches zero

** Read the next 5 steps ahead

11. [AccuSim] Press "F4" and by using the "Up/Down Arrow" buttons to set desired pressure.
12. Press "F3" to start the test. Once the pressure closes in on the desired value Press "F3" to disable the pump.
13. Compare the values between AccuSim simulator and the Propaq and verify that the following is accurate. [Pass/Fail]
    a. 50 mmHg ± 2 mmHg
    b. 100 mmHg ± 2 mmHg
    c. 200 mmHg ± 2 mmHg
    d. 250 mmHg ± 3 mmHg
        i. PR1 250 ± 3 mmHg
        ii. PR2 250 ± 15 mmHg

e. 270 mmHg ± 4 mmHg

14. [AccuSim] Press “F4” to quit and press “F1” to reset
15. Repeat the steps 12-15 to complete each volume listed in 13
16. Disconnect all NIBP cables

• YSI400, YSI700 Temperature Functional Verification

1. Connect the 3.5mm audio cable to ¼" Jack adapter
2. [AccuSim] Connect the 3.5mm audio cable to "Temp1" AccuSim
3. [AccuSim] Press "Escape" button
4. [AccuSim] Press the "Scroll up/down" button to select the "Temp. Module Check" and press "Enter" to launch
5. [Propaq] Press the "Home" button
6. [AccuSim] Press "F4" to launch the default option of "37º C"
7. [Propaq] Connect the ¼" Jack adapter to "T1" ProPaq
8. [AccuSim] Using the "Up/Down" button to navigate to "Type: YSI 400"
9. [ProPaq] Make sure the temperature is 37o C ± 0.1o C [Pass/Fail]

** If already YSI 400 change to YSI 700

10. [AccuSim] Using the "Up/Down Arrow" button to change the type to "YSI 700"
11. [ProPaq] Make sure the temperature is 37o C ± 0.1o C [Pass/Fail]
12. Repeat steps 8-11 for "T2" port on Propaq

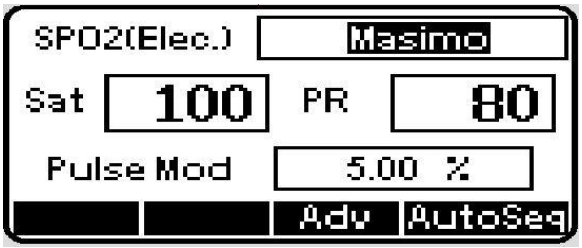
** Silence the alarm "Probe not detected"

13. Disconnect all cables

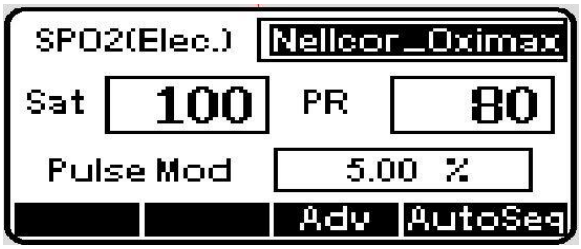
• Spo2 Functional Verification

1. [AccuSim] Connect the “SPO2 Adapter” to AccuSim
2. Connect the “SPO2 Adapter” to “SPO2 Simulator cable” (Simulator cable is labeled per the type of Spo2 system being used)
3. [AccuSim] Press “Escape” button to return to the PM/Service Routine Menu
4. [AccuSim] Press the “Scroll up/down” button to select the “SPO2 Sim” and press “Enter” to launch

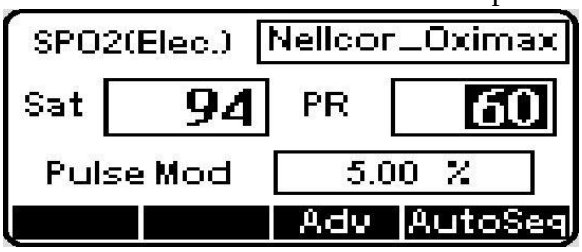
5. [ProPaq] Press the “SpO2” button
6. [AccuSim] Using the “Right/Left Arrow” buttons to navigate to top right of the screen



7. [AccuSim] Using the “Up/Down Arrow” button to change the Spo2 system to the current system being used



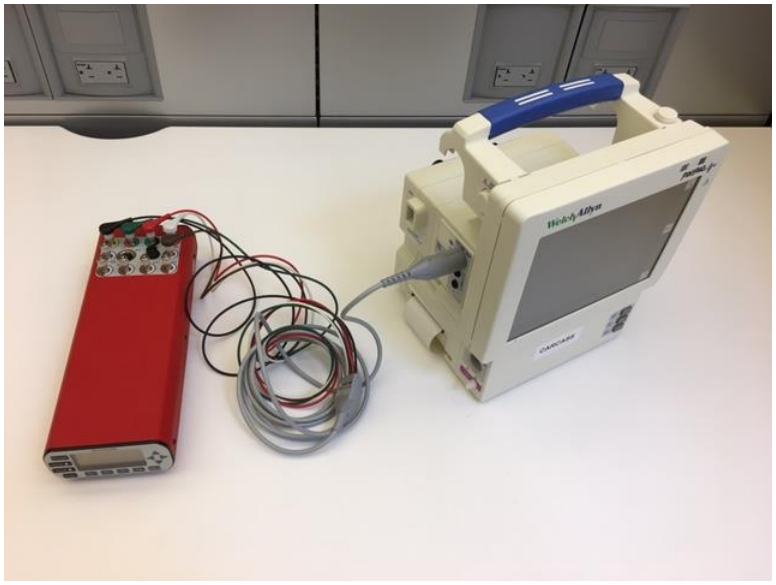
8. [Propaq] Connect the SPO2 Simulator cable to Propaq
9. [AccuSim] Using the "Right/Left/Up/Down Arrow" buttons adjust the Saturation level and to 94% and Pulse Rate to 60 bpm



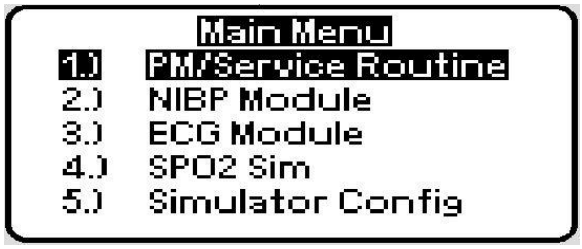
10. [Propaq] Verify that Saturation level is 94% ±4% and Pulse Rate is 60 bpm ± 4 bpm [Pass/Fail]
11. Disconnect all Spo2 cables

** SPO2 adapter is spring loaded, grab the bottom end of the cable connected to the simulator and pull up

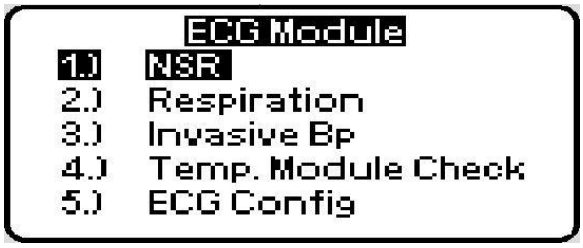
- **ECG Functional Verification**



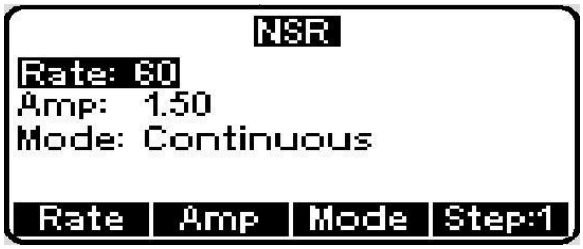
1. [AccuSim] Connect all ECG banana plug to AccuSim
2. [AccuSim] Connect the 5 lead ECG cable to each banana plug per the level
    i. Brown = V1
    ii. Green = RL
    iii. Red = LL
    iv. Black = LA
    v. White = RA
3. [AccuSim] Press “Escape” button twice to return to the Main Menu



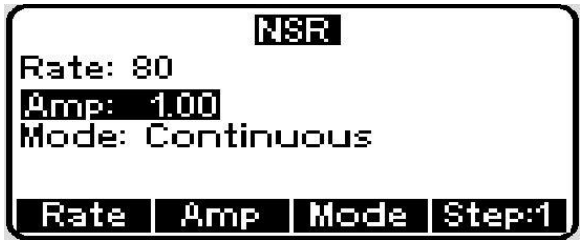
4. [AccuSim] Press the “Scroll up/down” button to select the “ECG Module” and press “Enter” to launch



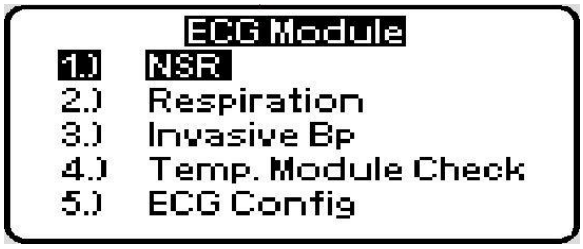
5. [AccuSim] Press the "Scroll up/down" button to select the "NSR" and press "Enter" to launch



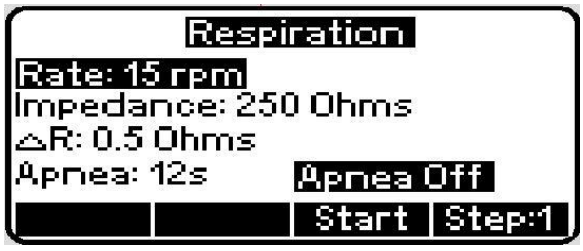
6. [AccuSim] Make sure the Rate is 80, Amp is 1.00, and Mode is Continuous
7. [AccuSim] Using the "Right/Left/Up/Down Arrow" buttons adjust each value to the previous step



8. [AccuSim] Press "Escape" button to go back to ECG Module menu



9. [AccuSim] Press the "Scroll up/down" button to select "Respiration" and press "Enter" to launch



10. [AccuSim] Using the "Right/Left/Up/Down Arrow" buttons to change each values accordingly:
    a. Rate = 40 rpm
    b. Impedance = 1,000 Ω
    c. ΔR = 1 Ω

** Silence the alarm

11. [ProPaq] Press the “Home” button

12. [ProPaq] Press the following options accordingly:

    SETUP > ALARMS > LIMITS
13. [ProPaq] Press the "NEXT PARAMETER" button
14. [ProPaq] Press the "Up" button and increase the value to 45
15. [ProPaq] Press the "Home" button
16. [ProPaq] Press the "ECG/RESP" button
17. [ProPaq] Press the "More" button
18. [ProPaq] Using the "Next" and "Change" button, navigate and change the values accordingly
    i. HR/PR TONE: Low
    ii. PACER DISPLAY: ON
    iii. ECG BANDWIDTH: MONITOR
    iv. RESP LEAD: Ld1
    v. RESP MONITORING: ON
19. [ProPaq] Press the "PREVIOUS MENU"
20. [Propaq] Using the buttons "ECG SIZE," "ECG LEAD," RESP SZE" change the values accordingly (changes will be displayed on the left side of the monitor):
    i. ECG1 SIZE: 1mV/cm
    ii. ECG1 LEAD: II
    iii. RESP SIZE: 8X
21. [Propaq] Connect the 5 lead ECG cable to Propaq CS
22. [Propaq] Check that a normal sinus rhythm ECG waveform is displayed. There should be a soft beep tone with each QRS event [Pass/Fail]

** The graph displayed should be like the shown picture above

23. [Propaq] Check that monitor's heartrate display is 80 ± 4 bpm and the respiration rate is 40 ± 2 bpm [Pass/Fail]

Lead Off Alarm

1. [AccuSim] Disconnect the LA ECG lead from the simulator.
2. [Propaq] Check that equipment alert occurs. “EQUIPMENT ALERT / ECG FAULT.” It should also indicate which lead is disconnected [Pass/Fail]
3. [Propaq] Press any key to acknowledge the alarm
4. [AccuSim] Reconnect the disconnected lead.
5. Repeat the processes 1-4 for each lead
6. Remove all ECG connections

• IBP Functional Verification

1. [AccuSim] Press the "Escape" button to return to ECG Module
2. [AccuSim] Press the "Scroll up/down" button to select the "Invasive Bp" and press "Enter" to launch
3. [AccuSim] Connect the "Invasive BP Cable" to port labeled "P1" on AccuSim
4. [Propaq] Press the "Home" button
5. [ProPaq] Press the following options accordingly:

   SETUP > WAVE SEL
6. [Propaq] Check that P1 and P2 waveforms are turned on
7. [Propaq] Press the "Home" button
8. [ProPaq] Press the following options accordingly:

   SETUP > ALARMS > 4 SUSPND
9. [Propaq] Press the "Home" button
10. [Propaq] Press the "INV PRS" button
11. [Propaq] Connect the "Invasive BP Cable" to port labeled "INV. BP" on Propaq CS
12. [Propaq] Press the "ZERO P1" button and wait until the device displays "ZEROED"
13. [Propaq] Press the "RESCALE" button
14. [Propaq] Verify that the noise level is ≤ 3 mm on the IBP waveform [Pass/Fail]
15. [Propaq] Verify that the mean pressure reading is 0 mmHg ± 1 mmHg [Pass/Fail]
16. [AccuSim] Press the "Up/Down Arrow" buttons to adjust the pressure to 200 mmHg
17. [Propaq] Verify that pressure is 200 mmHg ± 2 mmHg [Pass/Fail]

** If there are two IBP ports, repeat the steps 11 to 17

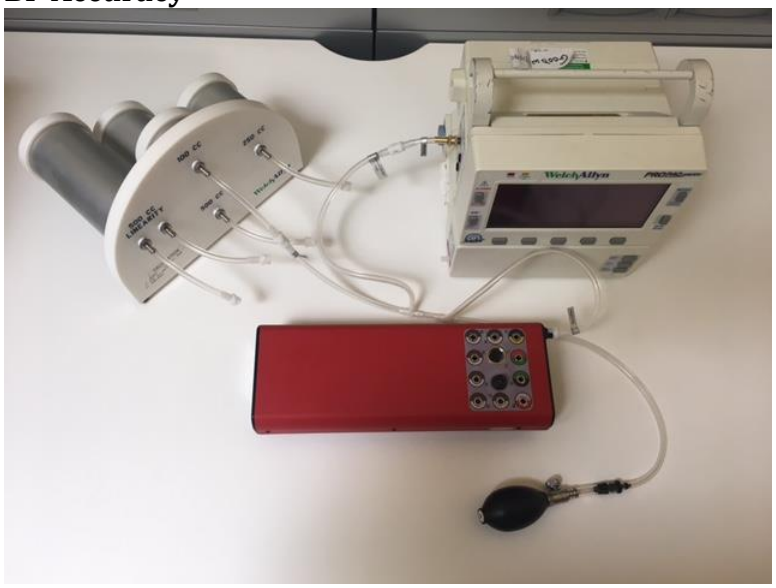
18. [Propaq] Remove the "Invasive BP Cable"
19. [Propaq] Verify that the message "P1 FAULTY – TRANSDUCER NOT DETECTED" appears [Pass/Fail]
20. [Propaq] Silence the message and remove all IBP connections

7. Propaq EN

- **Required Tools**
  - Propaq Encore
    - 5 lead ECG cable
    - Y-tube Adapter
  - AccuSim Simulator
    - NIBP Tubing Kit
      - NIBP Tube
      - NIBP Adapters
        - PROPAQ male
      - NIBP Barb to Hose (x6)
    - YSI400/700 Temperature Kit
    - SPO2 Cable Kit (Nellcor, Masimo)
      - SPO2 Adapter
      - SPO2 Simulator cable
    - ECG banana plug
    - Invasive BP Cable
  - Test Volume

• NIBP Functional Verification

BP Accuracy

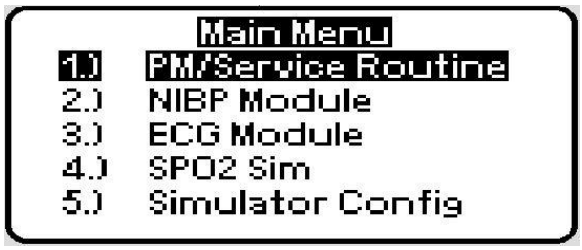


1. Connect the "NIBP Barb to Hose" hose to each cylinder (100cc, 250cc, 500cc, and 500cc Linearity) on the Test Volume
2. Connect the "NIBP Barb to Hose" hose (500cc) to "Test Volume" hose on "NIBP Tube"
3. [AccuSim] Connect the Hose labeled "AccuSim" to "Pressure Port" on back of the AccuSim Simulator
4. Connect the "NIBP Adapter" (PROPAQ male) to "Device Under Test" hose on "NIBP Tube"
5. [Propaq] Connect the "NIBP Adapter" (PROPAQ male) to Propaq EN
6. [ProPaq] Turn the device on
7. [ProPaq] Press the following options accordingly:

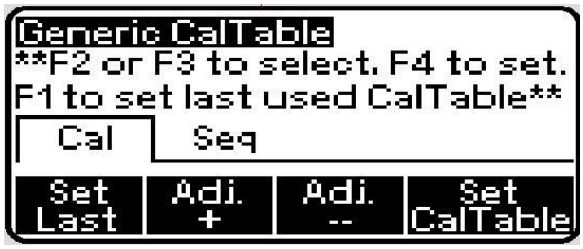
   SETUP > MORE > MORE > SERVICE > YES > NIBP TEST > NIBP CAL
8. [AccuSim] Power on the Simulator

** Power button is located on the back

9. [AccuSim] Press the "Menu" button to launch the main menu options



10. [AccuSim] Press “Enter” button to select “PM/Service Routine”
11. [AccuSim] Press “Enter” to message “Elec. Safety Checked?”



12. [AccuSim] Press “**Up**/Down Arrow” buttons to locate the “PropaqEncore”

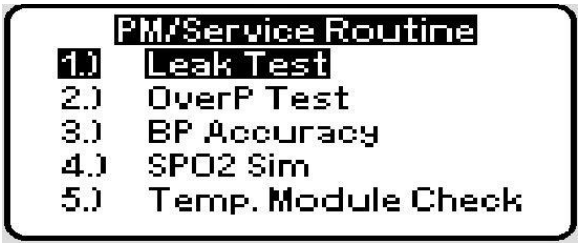
13. [AccuSim] Press “F4” button to launch “Set CalTable”
14. [AccuSim] Press the “Scroll up/down” button to select the “BP Accuracy” and press the “Enter” button

15. [AccuSim] Press “F4” button
16. [AccuSim] Press “Up/Down Arrow” buttons to adjust the pressure to 250 mmHg
17. Make sure the screw on “Inflation Bulb” is closed
18. [AccuSim] Press “F3” to start the inflation
19. [AccuSim] Press “F3” to disable the pump once the pressure is 250 ± 1 mmHg
20. [Propaq] Verify that PR1 250 ± 3 mmHg and PR2 250 ± 15 mmHg
21. Using the “Inflation Bulb” pump the pressure up to 270 mmHg

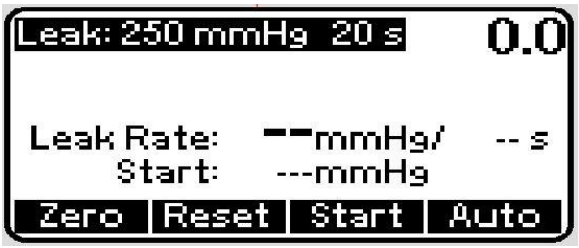
22. Manually reduce the pressure as indicated as follows
23. Compare the values between AccuSim simulator and the Propaq and verify that the following is accurate. [Pass/Fail]
    a. 270 ± 4 mmHg
    b. 250 ± 3 mmHg
    c. 200 ± 2 mmHg
    d. 100 ± 2 mmHg
    e. 50 ± 2 mmHg
    f. 20 ± 2 mmHg
    g. 0 ± 2 mmHg
24. [AccuSim] Press “F4” to stop the test

Leak Test

1. Disconnect the “Test Volume” hose connected to 100cc and connect it to 500cc on the Test Volume
2. [AccuSim] Press “Escape” button twice to return to the PM/Service Routine Menu



3. [AccuSim] Press the “Scroll up/down” button to select the “Leak Test” and press “Enter”
4. [AccuSim] Press “Enter” to message



5. [AccuSim] Press the “Menu” button to preset the Configuration

6. [AccuSim] Press the "Up/Down/Left/Right Arrow" buttons to adjust to 280 mmHg and 240 sec
7. [AccuSim] Press the "Escape" button to return to Leak Test

8. [AccuSim] Press "F1" to zero and "F2" and to reset.
9. [ProPaq] Press "ZERO" button
10. [ProPaq] Press "NIBP CAL" button (this closes the valve)
11. [AccuSim] Press "F3" to start the test.
12. Verify that both devices display leakage of less than 50 mmHg [Pass/Fail]
13. [AccuSim] Press "F2" to reset after finishing the test
14. [ProPaq] Disconnect all NIBP tubing from device and [AccuSim]

• YSI 400/700 Temperature Functional Verification

1. Connect the 3.5mm audio cable to ¼" Jack adapter
2. [AccuSim] Connect the 3.5mm audio cable to "Temp1" AccuSim
3. [AccuSim] Press "Escape" button
4. [AccuSim] Press the "Scroll up/down" button to select the "Temp. Module Check" and press "Enter" to launch
5. [ProPaq] Press the "Main Menu" button
6. [AccuSim] Press "F4" to launch the default option of "37º
7. [Propaq] Connect the ¼" Jack adapter to "T1" ProPaq
8. [AccuSim] Using the "Left/Right Arrow" button to navigate to "Type: YSI 400"
9. [ProPaq] Make sure the temperature is 37o C ± 0.1o C [Pass/Fail]
10. [AccuSim] Using the "Up/Down Arrow" button to change the type to "YSI 700"

** If already at YSI 700, reverse the order 8-9
** ¼" Jack adapter may need to be unplugged and plugged again for system to recognize

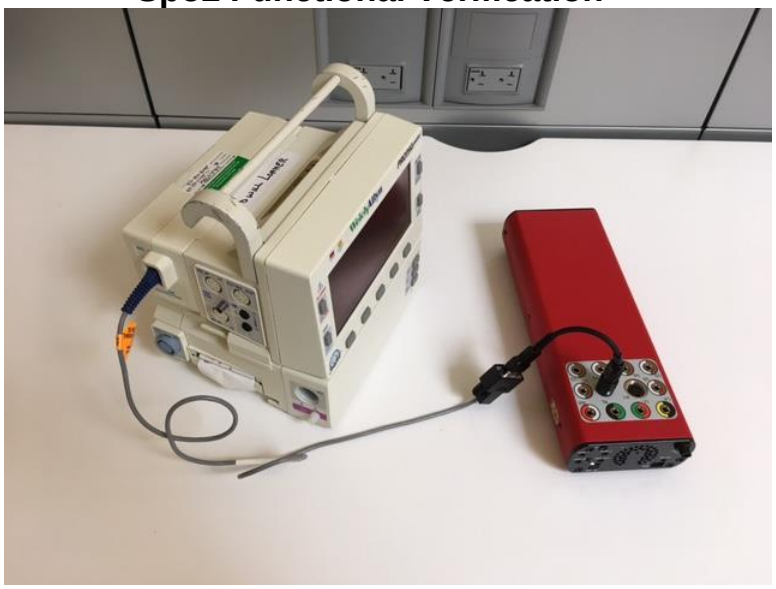
11. [ProPaq] Make sure the temperature is 37o C ± 0.1o C [Pass/Fail]

12. Repeat steps 8-11 for "T2" port on Propaq

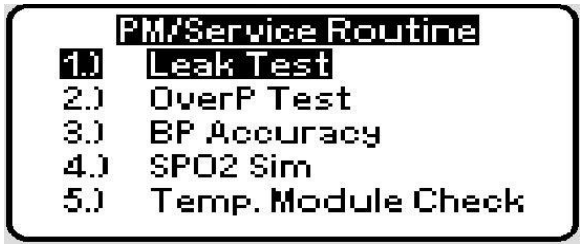
** Silence the alarm "Probe not detected"

13. Disconnect all wires and cables

• Spo2 Functional Verification

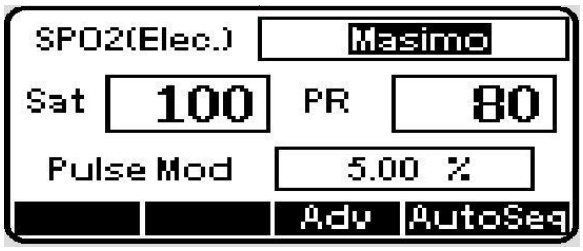


1. Connect the “SPO2 Adapter” to AccuSim
2. Connect the “SPO2 Simulator cable” (Simulator cable is labeled per the type of Spo2 system being used)
3. [AccuSim] Press “Escape” button to return to the PM/Service Routine Menu

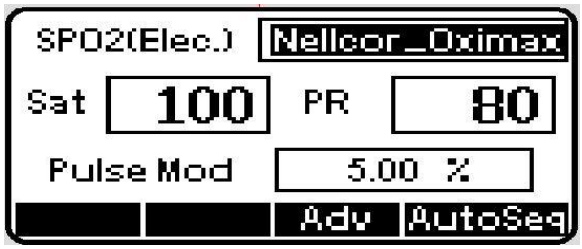


4. [AccuSim] Press the “Scroll up/down” button to select the “SPO2 Sim” and press “Enter” to launch

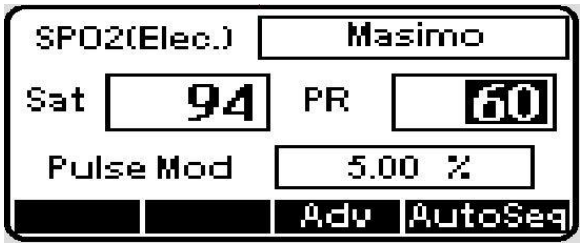
5. [ProPaq] Press the “Main Menu” button
6. [AccuSim] Using the “Right/Left Arrow” buttons to navigate to top right of the screen



7. [AccuSim] Using the "Up/Down Arrow" button to change the Spo2 system to the current system being used



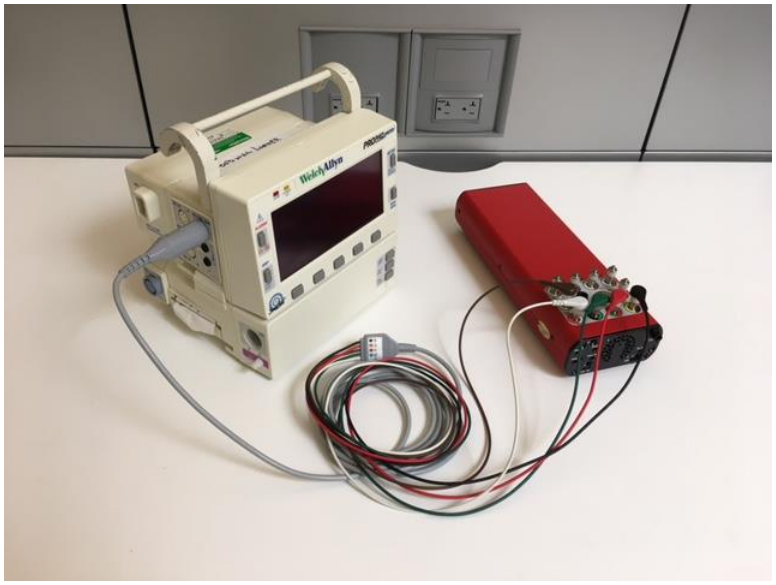
8. [Propaq] Connect the SPO2 Simulator cable to Propaq
9. [AccuSim] Using the "Right/Left/Up/Down Arrow" buttons adjust the Saturation level and to 94% and Pulse Rate to 60 bpm



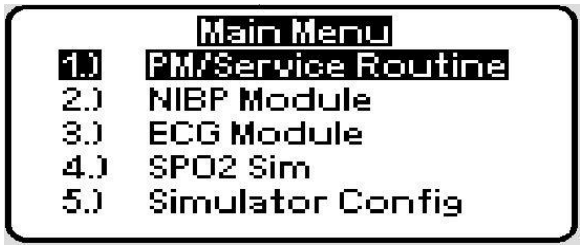
10. [Propaq] Verify that Saturation level is 94% ±4% and Pulse Rate is 60 bpm ± 4 bpm [Pass/Fail]
11. Disconnect all Spo2 wires and cables

** SPO2 adapter is spring loaded, grab the bottom end of the cable connected to the simulator and pull up

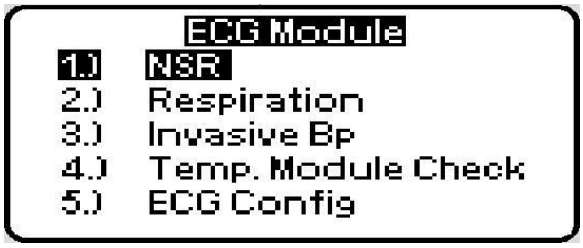
- **ECG Functional Verification**



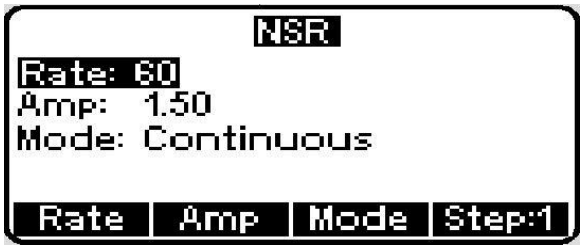
1. Connect all “ECG banana plug adapter” to AccuSim and the device
2. Connect the 5 lead ECG cable to each banana plug per the level
    a. Brown = V1
    b. Green = RL
    c. Red = LL
    d. Black = LA
    e. White = RA
3. [AccuSim] Press “Escape” button twice to return to the Main Menu



4. [AccuSim] Press the “Scroll up/down” button to select the “ECG Module” and press “Enter” to launch

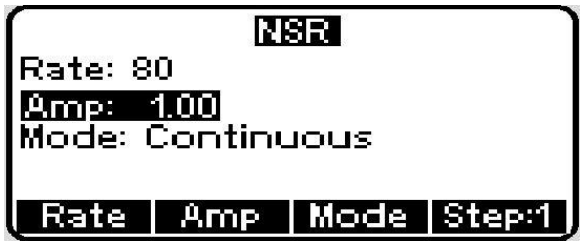


5. [AccuSim] Press the "Scroll up/down" button to select the "NSR" and press "Enter" to launch

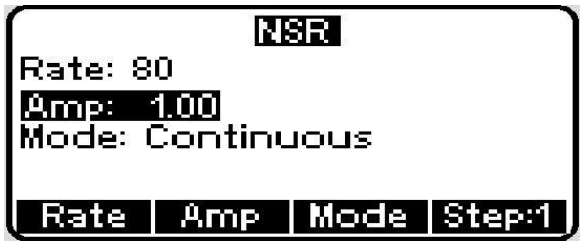


6. [AccuSim] Using the "Right/Left/Up/Down Arrow" buttons to adjust the rate to 180 bpm

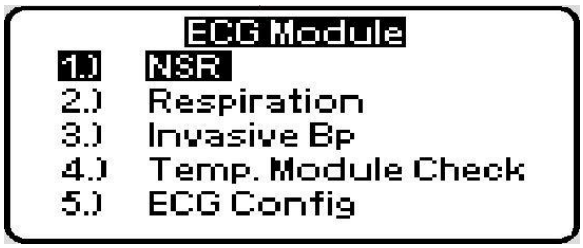
7. [ProPaq] Check that alarm goes off [Pass/Fail]
8. [AccuSim] Using the "Right/Left/Up/Down Arrow" buttons return the pulse rate back down to 80 bpm



9. [AccuSim] Make sure the Rate is 80, Amp is 1.00, and Mode is Continuous
10. [AccuSim] Using the "Right/Left/Up/Down Arrow" buttons adjust each value to the previous step



11. [AccuSim] Press "Escape" button to go back to ECG Module menu



12. [AccuSim] Press the "Scroll up/down" button to select "Respiration" and press "Enter" to launch

13. [AccuSim] Using the "Right/Left/Up/Down Arrow" buttons to change each value accordingly:
    a. Rate = 40 rpm
    b. Impedance = 1,000 Ω
    c. ΔR = 1 Ω

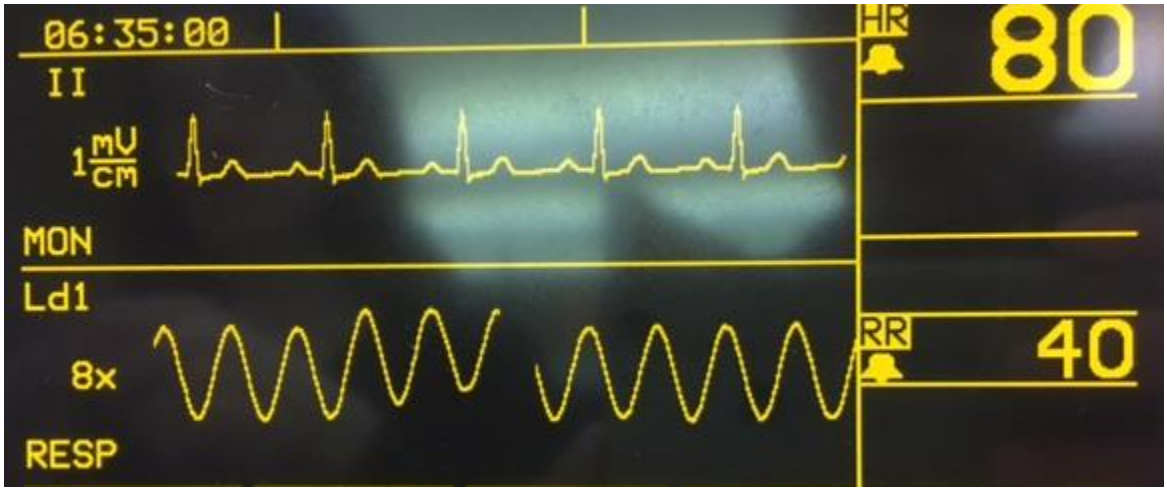
** Silence the alarm

14. [ProPaq] Connect the ECG channel to the device
15. [ProPaq] Press the following options accordingly:

    Main Menu > ECG/RESP > More

16. [ProPaq] Using the "Next" and "Change" button, navigate and change the values accordingly
    a. HR/PR TONE: LOW
    b. PACER DISPLAY: ON
    c. ECG BANDWIDTH: MONITOR
    d. RESP LEAD: Ld1
    e. RESP MONITORING: ON
17. [ProPaq] Press the "PREVIOUS MENU"

18. [ProPaq] Using the buttons “ECG SIZE,” “ECG LEAD,” RESP SZE” change each value accordingly
    a. ECG1 SIZE: 1mV/cm
    b. ECG1 LEAD: II
    c. RESP SIZE: 8X
19. [ProPaq] Check that a normal sinus rhythm ECG waveform is displayed. There should be a soft beep tone with each QRS event [Pass/Fail]



** The graph displayed should be like the top half of the shown picture

20. [ProPaq] Check that monitor’s heart rate display is 80 ± 4 bpm and the respiration rate is 40 ± 2 bpm [Pass/Fail]

Lead Off Alarm

1. [AccuSim] Disconnect the LA ECG lead from the simulator.
2. [ProPaq] Check that equipment alert occurs. “EQUIPMENT ALERT / ECG FAULT.” It should also indicate which lead is disconnected [Pass/Fail]
3. [ProPaq] Press any key to acknowledge the alarm
4. [ProPaq] Reconnect the disconnected lead.
5. [ProPaq] Repeat the processes 1-4 for each lead
6. Disconnect all cables and wires
7. Power down all devices

• IBP Functional Verification

1. [AccuSim] Press the "Escape" button to return to ECG Module
2. [AccuSim] Press the "Scroll up/down" button to select the "Invasive Bp" and press "Enter" to launch
3. [AccuSim] Connect the "Invasive BP Cable" to port labeled "P1" on AccuSim
4. [Propaq] Press the "MAIN MENU" button
5. [ProPaq] Press the following options accordingly:

   SETUP > WAVE SEL
6. [Propaq] Check that P1 and P2 waveforms are turned on
7. [Propaq] Press the "MAIN MENU" button
8. [ProPaq] Press the following options accordingly:

   SETUP > ALARMS > 4 SUSPND
9. [Propaq] Press the "MAIN MENU" button
10. [Propaq] Press the "INV PRS" button
11. [Propaq] Connect the "Invasive BP Cable" to port labeled "INV. BP" on Propaq EN
12. [Propaq] Press the "ZERO P1" button and wait until the device displays "ZEROED"
13. [Propaq] Press the "RESCALE" button
14. [Propaq] Verify that the noise level is ≤ 3 mm on the IBP waveform [Pass/Fail]
15. [Propaq] Verify that the mean pressure reading is 0 mmHg ± 1 mmHg [Pass/Fail]
16. [AccuSim] Press the "Up/Down Arrow" buttons to adjust the pressure to 200 mmHg
17. [Propaq] Verify that pressure is 200 mmHg ± 2 mmHg [Pass/Fail]

    ** If there are two IBP ports, repeat the steps 11 to 17
18. [Propaq] Remove the "Invasive BP Cable"
19. [Propaq] Verify that the message "P1 FAULTY – TRANSDUCER NOT DETECTED" appears [Pass/Fail]
20. [Propaq] Silence the message and remove all IBP connections

8. Propaq LT

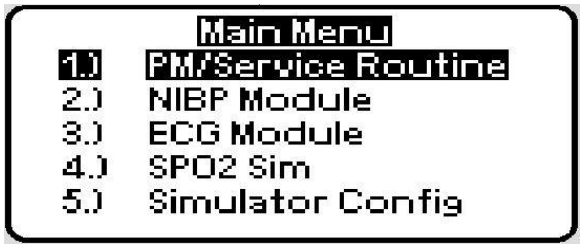
- **Required Tools**
  - Propaq LT
    - 5 lead ECG cable
  - AccuSim Simulator
    - NIBP Tubing Kit
      - NIBP Tube
      - NIBP Adapters
        - PROPAQ male
      - NIBP Barb to Hose (x6)
    - SPO2 Cable Kit (Nellcor, Masimo)
      - SPO2 Adapter
      - SPO2 Simulator cable
    - ECG banana plug
  - Test Volume

• NIBP Functional Verification

Leak Test

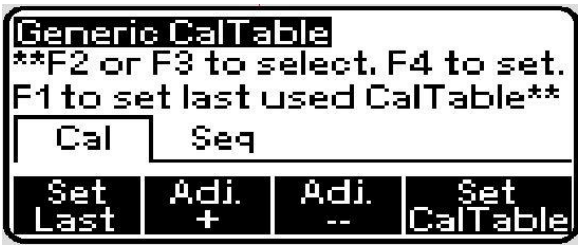
1. Connect the "NIBP Barb to Hose" hose to each cylinder (100cc, 250cc, 500cc, and 500cc Linearity) on the Test Volume
2. Connect the "NIBP Barb to Hose" hose (100cc) to "Test Volume" hose on "NIBP Tube"
3. [AccuSim] Connect the Hose labeled "AccuSim" to "Pressure Port" on back of the AccuSim Simulator
4. Connect the "NIBP Adapter" (PROPAQ male) to "Device Under Test" hose on "NIBP Tube"
5. [Propaq] Connect the "NIBP Adapter" (PROPAQ male) to Propaq LT
6. [AccuSim] Power on the Simulator

   ** Power button is located on the back
7. [AccuSim] Press the "Menu" button and press "Enter" twice



8. [AccuSim] Press "F4" to set the CalTable

** Propaq LT CalTable is not in the system yet



9. [AccuSim] Using the "Scroll Up/Down" buttons navigate to "BP Accuracy" and press "Enter" twice

10. [Propaq] Power on the device
11. [Propaq] Press "Action" button
12. [Propaq] Press the "Blood Pressure" button
13. [Propaq] Verify that "Equipment Alert/NIBP Fault/Kinked or neonate hose" message appears [Pass/Fail]
14. [Propaq] Using the "Up/Down/Left/Right" buttons to navigate to "NIBP mmHg" and press "Action" button
15. [Propaq] Using the "Up/Down/Left/Right" buttons to navigate to "Setup" and press "Action" button
16. [Propaq] Using the "Right" button to navigate to "Service" and press "Action" button
17. [Propaq] Using the "Up/Down/Left/Right" buttons to navigate to "NIBP Test" and press "Action" button
18. [Propaq] wait about 10 seconds for Propaq LT to stabilize
19. [Propaq] Press "Action" button to inflate to 80 mmHg
20. [Propaq] After 20 seconds' press "Action" button again to inflate to 150 mmHg
21. [Propaq] After 20 seconds' press "Action" button again to inflate to 300 mmHg

** read the next 4 steps ahead

22. The device inflates to 300 mmHg
23. [Propaq] Verify that the instantaneous pressure display reads "+++" [Pass/Fail]
24. [Propaq] Wait until the pressure drops enough for the display to read 299 mmHg
25. [AccuSim] Verify that within the next 10 seconds that the instantaneous pressure is ≥ 291 mmHg [Pass/Fail]
26. [Propaq] Press "Action" button to release pressure

BP Accuracy Test

1. Disconnect the “Test Volume” hose connected to 100cc and connect it to 500cc on the Test Volume
2. [AccuSim] Press “F2” and “F1” to reset
3. [Propaq] Press “Action” button to inflate to 80 mmHg
4. [AccuSim] Verify that the pressure inflates up to pressure (Max Pressure) of 80 ± 3 mmHg [Pass/Fail]
5. [Propaq] After 20 seconds’ press “Action” button again to inflate to 150 mmHg
6. [AccuSim] Verify that the pressure inflates up to pressure of 150 ± 3 mmHg [Pass/Fail]
7. [Propaq] After 20 seconds’ press “Action” button again to inflate to 300 mmHg

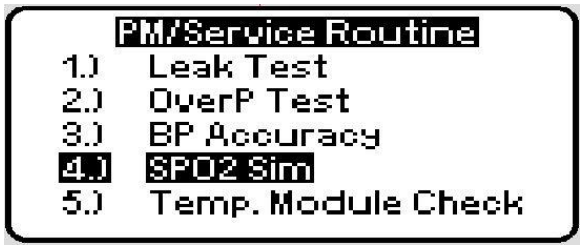
** The Propaq LT may display the pressure as “+++” before settling below 300 mmHg

8. [AccuSim] Verify that the pressure inflates up to pressure of 299 ± 6 mmHg [Pass/Fail]
9. [Propaq] Press “Action” button to release pressure
10. Disconnect the “PROPAQ” adapter hose and the “NIBP Barb to Hose” hose

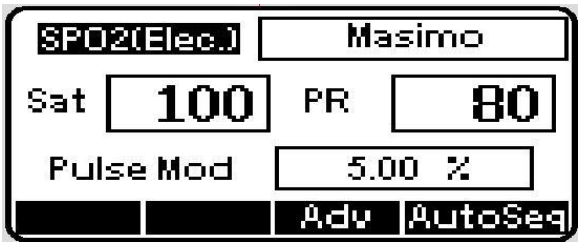
• Spo2 Functional Verification

** Use the compatible Spo2 cable

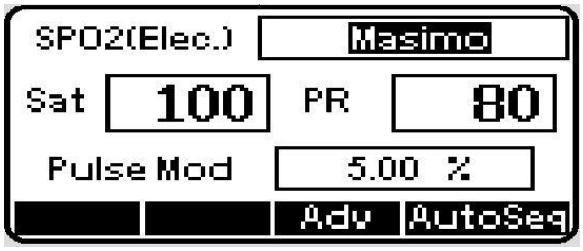
1. [AccuSim] Connect the “SPO2 Adapter” to AccuSim
2. Connect the “SPO2 Adapter” to “SPO2 Simulator cable” (Simulator cable is labeled per the type of Spo2 system being used)
3. [Propaq] Press the “Graph” button “Tab/Wave” is displayed on left side of the screen
4. [Propaq] Using the “Up/Down” buttons navigate to top left of the graph (above the “Tab/Wave”) and press the “Action” button
5. [Propaq] Using the “Up/Down” buttons navigate to “Spo2” and press the “Action” button
6. [AccuSim] Press “Escape” button



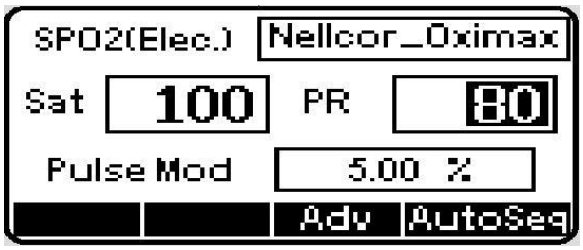
7. [AccuSim] Using the “Scroll Up/Down” buttons navigate to “SPO2 SIM” and Press “Enter”



8. [AccuSim] Using the "Left/Right Arrow" buttons to navigate to top right of the screen



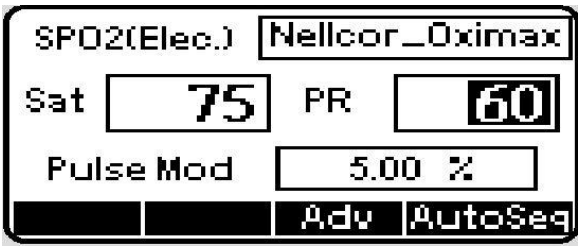
9. [AccuSim] Using the "Up/Down Arrow" buttons to change the value to the Spo2 type being used



10. [Propaq] Open the Spo2 latch on top of the Propaq device
11. [Propaq] Connect the "SPO2 Simulator cable to Propaq
12. [Propaq] Close the Spo2 latch on top of the Propaq device
13. [Propaq] Using the "Up/Down" buttons to navigate to "Lower Limit"
14. [Propaq] Using the "Left/Right" buttons change the lower limit to 70

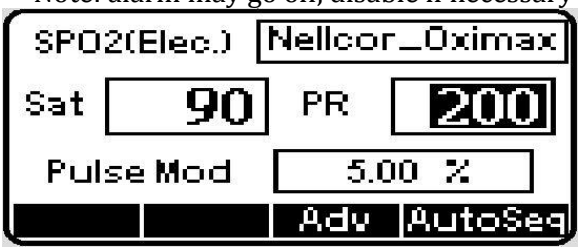
** (Monitor Only) Note the steps 15-18 are for Models 802LTxN. If Model is 802LTxS follow steps 19-20

15. [AccuSim] Using the "Up/Down/Left/Right Arrow" buttons to navigate to "Sat" and "PR" and set the values accordingly:
    a. Sat = 75
    b. PR = 60

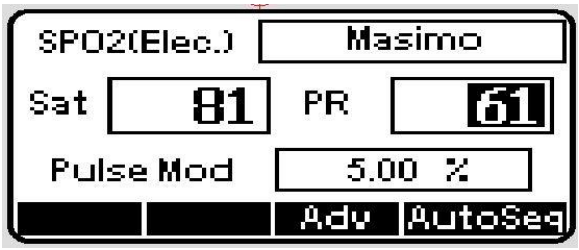


16. [Propaq] Verify that the following results are accurate [Pass/Fail]
    a. Pulse Rate: 60 ± 3 bpm
    b. Saturation: 75 ± 3%
17. [AccuSim] Using the "Up/Down/Left/Right Arrow" buttons to navigate and change the pulse rate to 200 bpm and saturation to 90%
18. [Propaq] Verify that Propaq displays pulse rate is 200 ± 3 bpm and that saturation is 90 ± 3% [Pass/Fail]

** Note: alarm may go off, disable if necessary



19. [AccuSim] Using the "Up/Down/Left/Right Arrow" buttons to navigate to "Sat" and "PR" and set the values accordingly:
    a. Sat = 81
    b. PR = 61

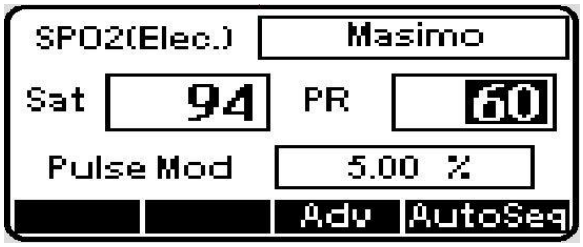


20. [Propaq] Verify that the following results are accurate [Pass/Fail]
    a. Pulse Rate: 61 ± 3 bpm
    b. Saturation: 81 ± 2%

** Next step applies to all Spo2

21. [AccuSim] Using the "Up/Down/Left/Right Arrow" buttons to navigate to "Sat" and "PR" and set the values accordingly:
    a. Sat = 94

b. PR = 60



22. After Propaq stabilizes, verify that the following results are accurate [Pass/Fail]
    a. Pulse Rate: 60 ± 4 bpm
    b. Saturation: 94 ± 4%
23. Disconnect all Spo2 cables and wires

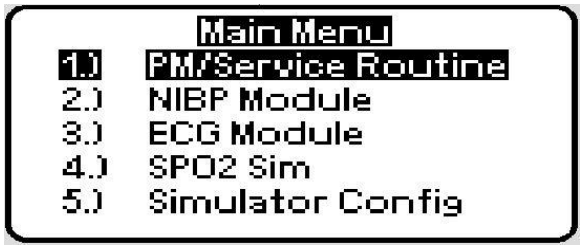
** SPO2 adapter is spring loaded, grab the bottom end of the cable connected to the simulator and pull up

- **ECG Functional Verification**

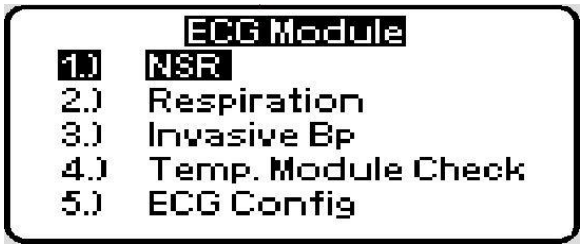
Waveform/HR

1. [Propaq] Turn off the device
2. [AccuSim] Connect all ECG banana plug to AccuSim
3. Connect the 5 lead ECG cable to each banana plug
    a. Brown = V1
    b. Green = RL
    c. Red = LL
    d. Black = LA
    e. White = RA

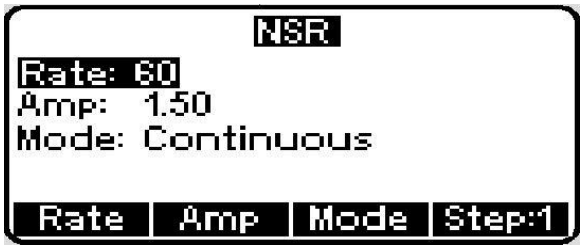
4. [Propaq] Connect the ECG cable to ProPaq
5. [AccuSim] Press “Escape” button twice



6. [AccuSim] Using the “Scroll Up/Down” buttons navigate to “ECG Module” and press “Enter”



7. [AccuSim] Press “Enter” to launch NSR



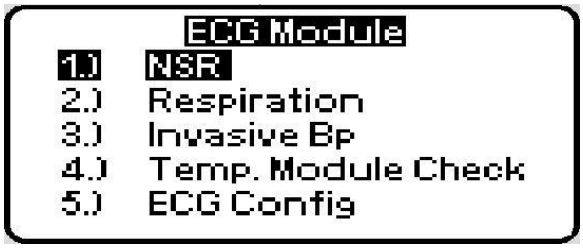
8. [AccuSim] Make sure the values for each option follows accordingly:
    a. Rate = 80
    b. Amp = 1.00
    c. Mode = Continuous
9. [AccuSim] Using the “Up/Down/Left/Right Arrow” buttons adjust to previously mentioned values

10. [Propaq] Turn on the device
11. [Propaq] Press the “Action” button to launch as new patient

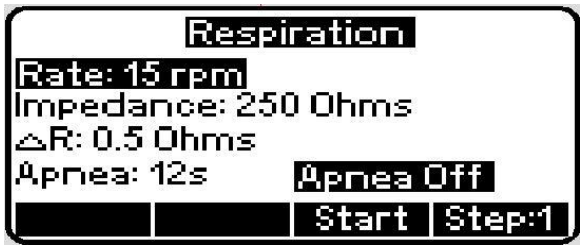
12. [Propaq] Press the “Display” button located above the left arrow
13. [Propaq] Using the “Up/Down” buttons navigate to top left of the **graph** (below the ID)
14. [Propaq] Press the “Action” button to bring up the “Waveform Source” menu
15. [Propaq] Using the “Up/Down” buttons navigate to “Lead II” and press the “Action” button
16. [Propaq] Verify that waveform is present and that heart rate is 80 bpm ± 3 bpm [Pass/Fail]
17. [Propaq] Repeat steps 14-16 for ECG Lead (I, II, III, and V) [Pass/Fail]

Respiration

1. [AccuSim] Press “Escape” button



2. [AccuSim] Using the “Scroll Up/Down” buttons navigate to “Respiration” and press “Enter”



3. [AccuSim] Make sure the values for each option follows accordingly:
    a. Rate = 20
    b. Impedance = 250
    c. ΔR = 1.0 Ω
4. [AccuSim] Using the “Up/Down/Left/Right Arrow” buttons adjust to previously mentioned values

5. [Propaq] Press the “Display” button
6. [Propaq] Using the “Up/Down/Right/Left” buttons to navigate to “Resp/min” and press the “Action” button
7. [Propaq] Press the “Right” button to enable “Resp Monitoring” to be on
8. [Propaq] Press the “Display” button 3 times to return to the waveform display.
9. [Propaq] Using the “Up/Down” buttons navigate to top left of the **graph** (below the ID)
10. [Propaq] Press the “Action” button to bring up the “Waveform Source” menu

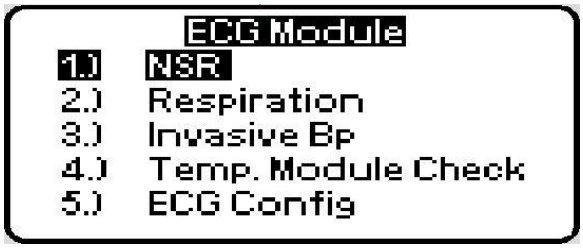
11. [Propaq] Using the "Up/Down" buttons navigate to "Resp" and press the "Action" button
12. [Propaq] Check to verify that the monitor displays a Resp waveform with a rate of 20 bpm ± 2 bpm [Pass/Fail]

Lead Off Alarm

1. [AccuSim] Remove one lead and verify that the monitor displays an equipment alert identifying the failed lead: "Equipment Alert/ECG Fault/xx Lead Failed" [Pass/Fail]
2. [AccuSim] Replace the lead and wait for the waveform to stabilize again.
3. Repeat steps 1-2 for each lead.

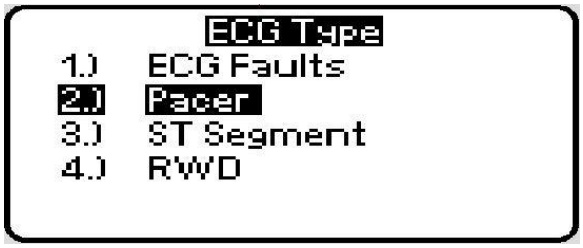
Pacer Test

1. [AccuSim] Press "Escape" button

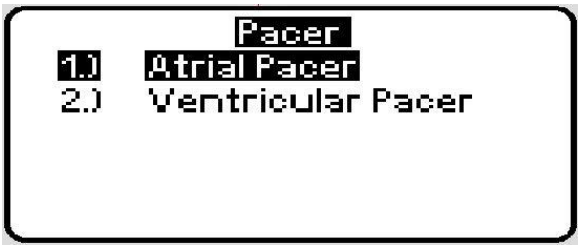


2. [AccuSim] Using the "Scroll Up/Down" buttons navigate to "ECG Config" and Press "Enter"

3. [AccuSim] Press "Enter" to launch "ECG Type"



4. [AccuSim] Using the "Scroll Up/Down" buttons navigate to "Pacer" and Press "Enter"



5. [AccuSim] Press "Enter" to launch "Atrial Pacer"

6. [AccuSim] Using the "Up/Down/Left/Right Arrow" buttons, navigate to each value and set the values accordingly:
    a. Polarity: ve+
    b. Width: 5mSec
    c. Amp: 2.0 mV
7. [AccuSim] Press the "F4" button to navigate to "Pacer and Ecg Synched" is displayed on the third row

8. [Propaq] Press the "Down" button to navigate to "HR/min" on the display and press the "Action" button
9. [Propaq] Press the "Down" button to navigate to "Setup" and press the "Action" button
10. [Propaq] Press the "Right/Left" buttons to navigate to "ECG"
11. [Propaq] Press the "Up/Down" buttons to navigate to "Pacer Indicator"
12. [Propaq] Press the "Right" button to change the indicator setting to "On"
13. [Propaq] Press the "Display" button to show the waveform display
14. [Propaq] Using the "Up/Down" buttons navigate to top left of the **graph** (below the ID)
15. [Propaq] Press the "Action" button to bring up the "Waveform Source" men
16. [Propaq] Using the "Up/Down" buttons navigate to "Lead II"

17. [Propaq] Check to verify that the monitor ECG waveform displays the pacers as vertical dashed markers [Pass/Fail]
18. Disconnect all cables and wires
19. Power down all devices

9. VSM 300

- **Required Tools**
  - VSM 300
  - AccuSim Simulator
    - NIBP Tubing Kit
      - NIBP Tube
      - NIBP Adapters
        - PROPAQ male
      - NIBP Barb to Hose (x6)
    - SPO2 Cable Kit (Nellcor, Masimo)
      - SPO2 Adapter
      - SPO2 Simulator cable
    - SureTemp cable
      - SureTemp Plus cable
  - Test Volume
  - Stopwatch (Smartphone, Watch, Clock, etc.…)

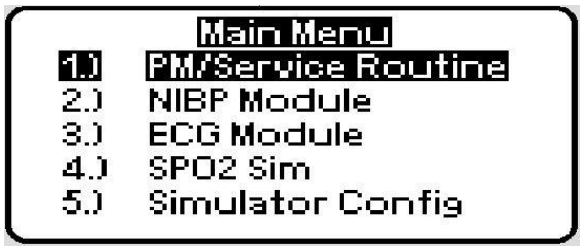
• NIBP Functional Verification

Leak Test

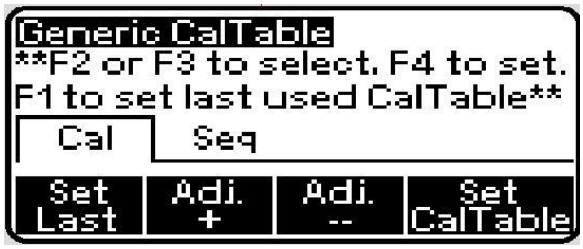
1. Connect the “NIBP Barb to Hose” hose to each cylinder (100cc, 250cc, 500cc, and 500cc Linearity) on the Test Volume
2. Connect the “NIBP Barb to Hose” hose (100cc) to “Test Volume” hose on “NIBP Tube”
3. [AccuSim] Connect the Hose labeled “AccuSim” to “Pressure Port” on back of the AccuSim Simulator
4. Connect the “NIBP Adapter” (PROPAQ male) to “Device Under Test” hose on “NIBP Tube”
5. [VSM] Connect the “NIBP Adapter” (PROPAQ male) to VSM300
6. [AccuSim] Connect the “AccuSim” end of the “NIBP Tube” to “Pressure Port” located on the back of the simulator
7. [AccuSim] Power on the Simulator

** Power button is located on the back

8. [AccuSim] Press the “Menu” button to launch the main menu options



9. [AccuSim] Press "Enter" button to select "PM/Service Routine"
10. [AccuSim] Press "Enter" to message "Elec. Safety Checked?"



11. [AccuSim] Press "**Up**/Down Arrow" buttons to locate the "VSM 300"

12. [AccuSim] Press "F4" button to launch "Set CalTable"
13. [AccuSim] Press the "Scroll up/down" button to navigate to "BP Accuracy" and press "Enter"

14. Close the valve on the Inflation bulb
15. [VSM] Power on the VSM300
16. [VSM] Press the "Start/Stop" button
17. [VSM] Verify that error message "C03" appears [Pass/Fail]
18. [VSM] Power down the VSM300
19. [VSM] While holding the "Start/Stop" button turn the VSM 300 on by pressing the "On/Off" button

20. [VSM] Tap the "Menu" button until "NIBP TEST" appears in the message window and 0 is displayed in the SYS and DIA windows
21. [AccuSim] Press "F1" to zero and "F2" to reset

22. [VSM] Press the "Up Arrow" button once to select 80 mmHg

** Expect much higher pressure than 80 mmHg

23. [AccuSim] Wait 15 seconds and note the current pressure
24. [AccuSim] Wait another 10 seconds and verify that the pressure has not dropped more than 8 mmHg [Pass/Fail]
25. [VSM] Press the "Up Arrow" button quickly three times until 0 mmHg is selected

BP Accuracy Test

1. Disconnect the "Test Volume" hose (100cc) and reconnect to 500cc
2. [AccuSim] Press "F1" to zero and "F2" to reset

3. [VSM] Press the "Up Arrow" button until 80 mmHg is selected, and then settles at a slightly lower pressure level. Wait 10 seconds for the pressure to stabilize
4. [AccuSim] Verify that the value displayed in SYS is ± 3 mmHg of the value displayed on the AccuSim Simulator [Pass/Fail]
5. [VSM] Press the "Up Arrow" button until 150 mmHg is selected, and then settles at a slightly lower pressure level. Wait 10 seconds for the pressure to stabilize
6. [AccuSim] Verify that the value displayed in SYS is ± 3 mmHg of the value displayed on the AccuSim Simulator [Pass/Fail]
7. [VSM] Press the "Up Arrow" button until 300 mmHg is selected, and then settles at a slightly lower pressure level. Wait 10 seconds for the pressure to stabilize
8. [AccuSim] Verify that the value displayed in SYS is ± 6 mmHg of the value displayed on the AccuSim Simulator [Pass/Fail]
9. [VSM] Press the "Up Arrow" button until 0 mmHg is selected

Inflation Test

1. [VSM] Press the "Up Arrow" button until 150 mmHg is selected, wait for the pump to stop
2. Using the "Inflation Bulb," bleed the pressure to 0 by releasing the pressure valve
3. Set up a stopwatch

** smartphone, clock, watch, etc.…

4. Close the pressure valve on the "Inflation Bulb"
5. [AccuSim] Press "F1" and "F2" to zero and reset simulator

** Read next 2 steps ahead to avoid confusion

6. [VSM] Press the "Up Arrow" button once to select 300 mmHg and start the stopwatch
7. [AccuSim] once the simulator reaches 250 mmHg stop the stopwatch
8. Verify that the elapsed time is less than 8 seconds [Pass/Fail]

**Do not release the pressure

Dump Test

1. Using the “Inflation Bulb” make sure the pressure is approximately 300 mmHg
2. Set up a stopwatch
3. [VSM] Press the “Up Arrow” button once to release the pressure and start the stopwatch
4. [AccuSim] After 10 seconds, verify that the simulator reads less than 15 mmHg [Pass/Fail]

Over Pressure Test (Optional)

1. [AccuSim] Press “F1” to zero and “F2” to reset

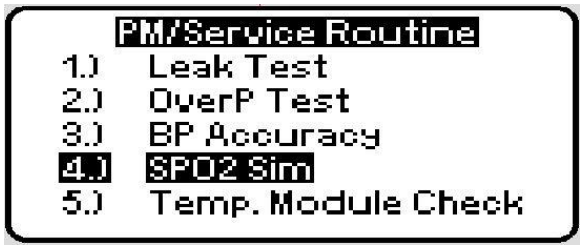
2. [VSM] Turn off the VSM
3. [VSM] Turn on the VSM
4. [VSM] Press “Menu” button until “Neonate, Pediatric, or Adult” is displayed in the message window
5. [VSM] Press “Up Arrow” button until “Adult” is displayed
6. [VSM] Press “Menu” button until “Target Pressure” is displayed
7. [VSM] Press “Up Arrow” button until “270” is displayed on the SYS window

** This should be the maximum pressure available

8. [VSM] Press “Start/Stop” button to start the test
9. [VSM] The pressure reaches approximately 270 mmHg, the pump shuts off, and the pressure is released [Pass/Fail]
10. Repeat the steps 1-9 for Pediatric (170 mmHg) and Neonate (132 mmHg)
11. [VSM] Disconnect all NIBP tubing from the device and [AccuSim]

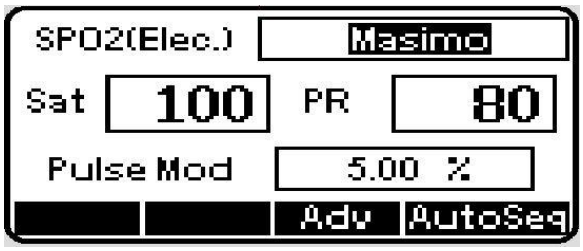
- **Spo2 Functional Verification**

1. [VSM] Turn off the VSM
2. [VSM] Turn on the VSM
3. [AccuSim] Connect the “SPO2 Adapter” to the Simulator
4. Connect the “SPO2 Adapter” to the “SPO2 Simulator cable” (Simulator cable is labeled per the type of Spo2 system being used) and to the [VSM]
5. [AccuSim] Press “Escape” button

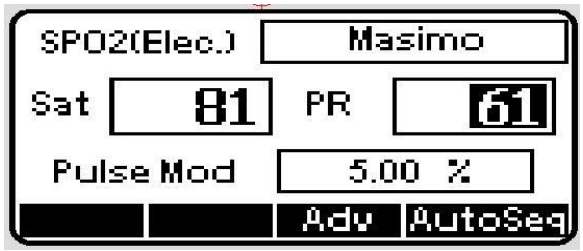


6. [AccuSim] Press the “Scroll up/down” button to select the “Spo2 Sim” and press “Enter”

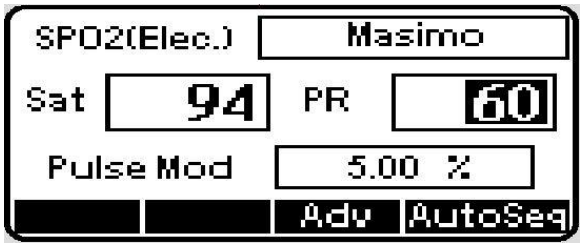
7. [AccuSim] Using the “Right/Left Arrow” buttons to navigate to top right of the screen



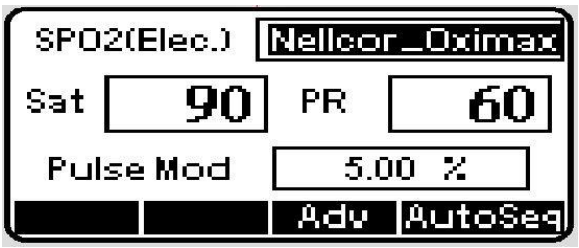
8. [AccuSim] Using the "Up/Down Arrow" button to change the Spo2 system to the current system being used
9. [VSM] Connect the according "SPO2 Simulator cable" to VSM
10. Follow steps 11-14 for Masimo and steps 15-18 for Nellcor
11. [AccuSim] Using the "Right/Left/Up/Down Arrow" buttons adjust the Saturation level and to 81% and Pulse Rate to 61 bpm



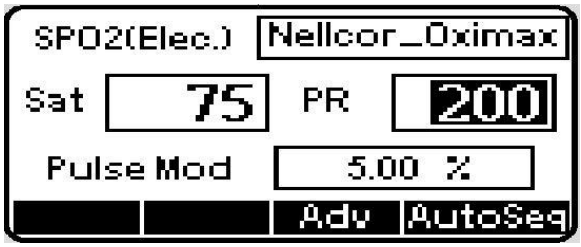
12. [VSM] Verify that Saturation level is 81% ±3% and Pulse Rate to 61 bpm ± 1 bpm [Pass/Fail]
13. [AccuSim] Using the "Right/Left/Up/Down Arrow" buttons adjust the Saturation level and to 94% and Pulse Rate to 60 bpm



14. [VSM] Verify that Saturation level is 94% ±4% and Pulse Rate to 60 bpm ± 4 bpm [Pass/Fail]
15. [AccuSim] Using the "Right/Left/Up/Down Arrow" buttons adjust the Saturation level and to 90% and Pulse Rate to 60 bpm



16. [VSM] Verify that Saturation level is 90% ±3% and Pulse Rate to 60 bpm ± 3 bpm [Pass/Fail]
17. [AccuSim] Using the "Right/Left/Up/Down Arrow" buttons adjust the Saturation level and to 75% and Pulse Rate to 200 bpm



18. [VSM] Verify that Saturation level is 75% ±3% and Pulse Rate to 200 bpm ± 3 bpm [Pass/Fail]
19. Disconnect all Spo2 cables and wires

** SPO2 adapter is spring loaded, grab the bottom end of the cable connected to the simulator and pull up

• SureTemp Temperature Functional Verification

1. [AccuSim] Press “Escape” three times to return to the starting screen
2. [AccuSim] Connect the “SureTemp Plus Cable” to simulator to “Temp 2” located back of the AccuSim Simulator
3. [VSM] Remove the “Probe Key” attached to VSM if there is one
4. [VSM] Connect the “SureTemp Plus Cable” to VSM
5. [VSM] Remove the “Probe” from the well on VSM
6. [VSM] Verify that the displayed temperature is 97.3 ± 0.2 ^{o}F (36.3 ± 0.1 ^{o}C) [Pass/Fail]
7. [VSM] Replace the “Probe” and the “Probe Key”
8. Disconnect all cables and power down all devices

10. Micropaq

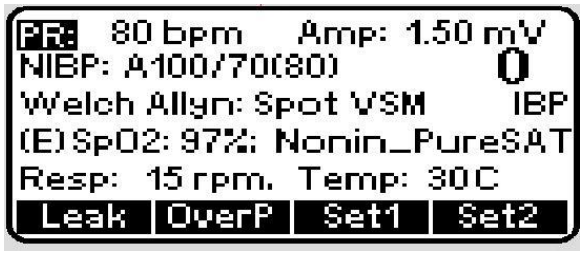
- **Required Tools**
  - Micropaq
    - ECG 5 Lead cable
  - AccuSim Simulator
    - ECG banana plug
    - SPO2 Cable Kit (Nellcor, Masimo)
      - SPO2 Adapter
      - SPO2 Simulator cable

• ECG Functional Verification

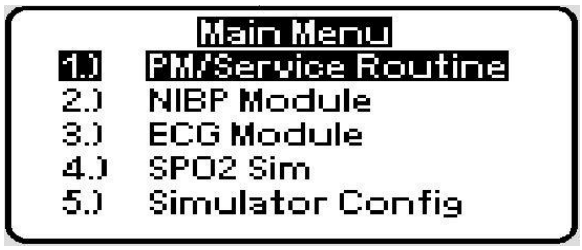
HR/PR

1. [AccuSim] Connect all ECG banana plug to AccuSim
2. [AccuSim] Connect the 5 lead ECG cable to each banana plug
    a. Brown = V1
    b. Green = RL
    c. Red = LL
    d. Black = LA
    e. White = RA
3. [Micropaq] Connect the ECG cable to Micropaq
4. [AccuSim] Turn on the Simulator

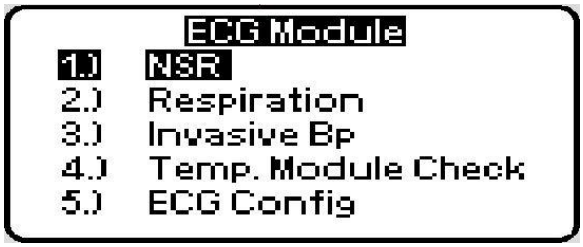
** Power button is located on the back



5. [AccuSim] Press “Menu” button



6. [AccuSim] Using the "Scroll Up/Down" buttons navigate to "ECG Module" and press "Enter"



7. [AccuSim] Press "Enter" to launch NSR

8. [AccuSim] Make sure the values for each option follows accordingly:
    a. Rate = 80
    b. Amp = 1.00
    c. Mode = Continuous
9. [AccuSim] Using the "Up/Down/Left/Right Arrow" buttons adjust to previously mentioned values
10. [Micropaq] Insert the battery into the Micropaq
11. [Micropaq] Press the "Down" button to launch menu options
12. [Micropaq] Using the "Up/Down" buttons to navigate to "ECG LEAD" and press the "Select" button
13. [Micropaq] Using the "Up/Down" buttons to navigate to ECG 1

** ECG have multiple options: I, II, III, V, aVR, aVL, and aVF

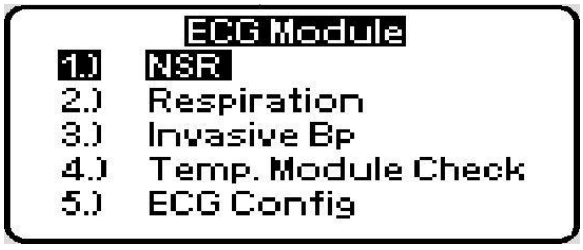
14. [Micropaq] Press the "Select" button to change the ECG lead
15. Repeat previous step for ECG Lead I, II, III, and V and verify waveform is present and the heart rate is 80 bpm ± 3 bpm [Pass/Fail]
16. [Micropaq] Press the "Up" button and press "Select" button
17. [Micropaq] Press the "Select" button again to exit menu options

Lead Off Alarm

1. [AccuSim] Remove one lead from the simulator and verify that the monitor displays an equipment alert identifying the failed lead. A picture is displayed[Pass/Fail]
2. [AccuSim] Replace the lead and wait for the waveform to stabilize again.
3. Repeat steps 1-2 for each lead.

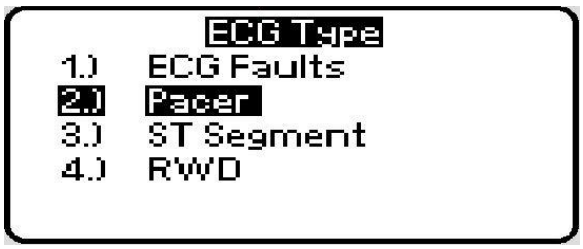
Pacer Test

1. [AccuSim] Press “Escape” button

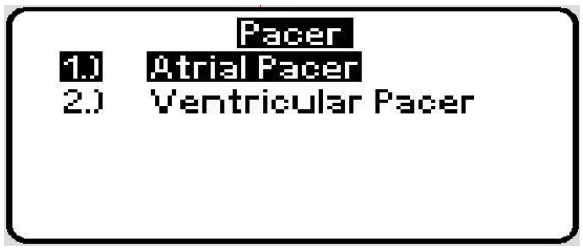


2. [AccuSim] Using the “Scroll Up/Down” buttons navigate to “ECG Config” and Press “Enter”

3. [AccuSim] Press “Enter” to launch “ECG Type”



4. [AccuSim] Using the “Scroll Up/Down” buttons navigate to “Pacer” and Press “Enter”



5. [AccuSim] Press “Enter” to launch “Atrial Pacer”

6. [AccuSim] Using the "Up/Down/Left/Right Arrow" buttons, navigate to each value and set the values accordingly:
    a. Polarity: ve+
    b. Width: 5mSec
    c. Amp: 2.0 mV
7. [AccuSim] Press the "F4" button until "Pacer and Ecg Synched" is displayed on the third row

8. [Micropaq] Verify that the monitor ECG waveform is displayed and the pacer is present in the form of vertical dashed markers [Pass/Fail]
9. Disconnect all ECG cables and wires

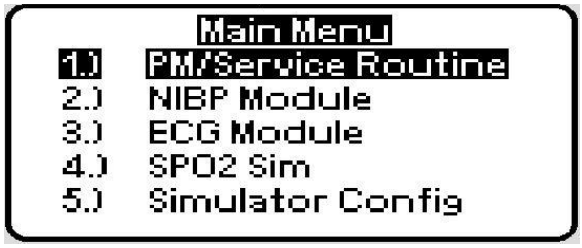
• Spo2 Functional Verification

** Use the compatible Spo2 cable

1. [AccuSim] Connect the “SPO2 Adapter” to Simulator
2. Connect the “SPO2 Adapter” to “SPO2 Simulator cable” (Simulator cable is labeled per the type of Spo2 system being used)

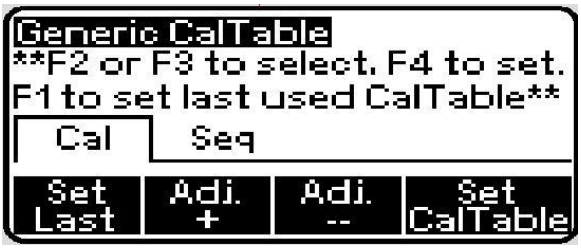
** Do not connect the “SPO2 Simulator cable” to Micropaq yet

3. [AccuSim] Press “Escape” button five times



4. [AccuSim] Using the “Scroll Up/Down” buttons navigate to “PM/Service Routine” and Press “Enter”

5. [AccuSim] Press “Enter” to message

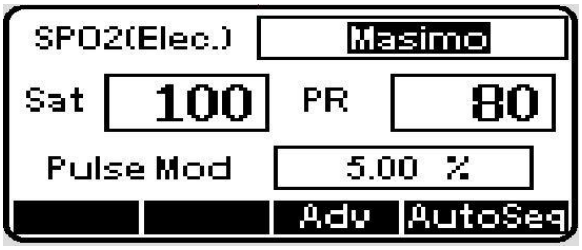


6. [AccuSim] Press “F4”

** Micropaq does not have a designate CalTable

7. [AccuSim] Using the “Scroll Up/Down” buttons navigate to “SPO2 Sim” and Press “Enter”

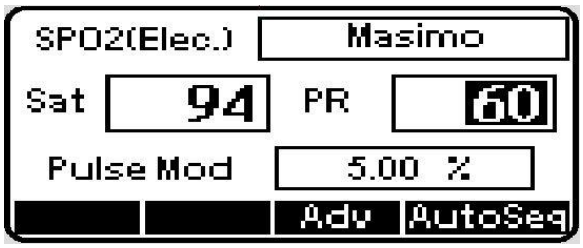
8. [AccuSim] Using the “Left/Right Arrow” buttons to navigate to top right of the screen



9. [AccuSim] Using the “Up/Down Arrow” buttons to change the value to the Spo2 type being used
10. [Micropaq] Open the Spo2 latch on top of the Micropaq
11. [Micropaq] Connect the “SPO2 Simulator cable” to Micropaq and close the Spo2 latch

**There may be alarms due to low Sat, you may silence the alarm or move on. The steps after will correct the alarm

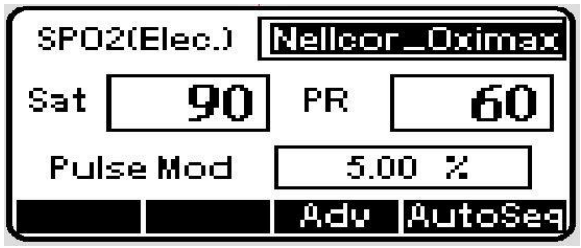
12. Follow steps 13-14 for Masimo and steps 15-16 for Nellcor
13. [AccuSim] Using the “Up/Down/Left/Right Arrow” buttons to navigate to “Sat” and “PR” and set the values accordingly:
    a. Sat = 94
    b. PR = 60



14. [Micropaq] Verify that the following results are accurate [Pass/Fail]
    a. Pulse Rate: 60 ± 3 bpm * With motion ± 5 bpm
    b. Saturation: 94 ± 2% * With motion ± 3%

** Motion is defined as rubbing and tapping motions at 2 to 4 Hz at an amplitude of 1 to 2 cm

15. [AccuSim] Using the "Up/Down/Left/Right Arrow" buttons to navigate to "Sat" and "PR" and set the values accordingly:
    a. Sat = 90
    b. PR = 60



16. [Micropaq] Verify that the following results are accurate [Pass/Fail]
    a. Pulse Rate: 60 ± 3 bpm
    b. Saturation: 90 ± 2%
17. Disconnect all cables and power down all devices

** SPO2 adapter is spring loaded, grab the bottom end of the cable connected to the simulator and pull up

11. CP50

- **Required Tools**
  - AccuSim Simulator
  - CP 50
    - 12 Lead ECG cable

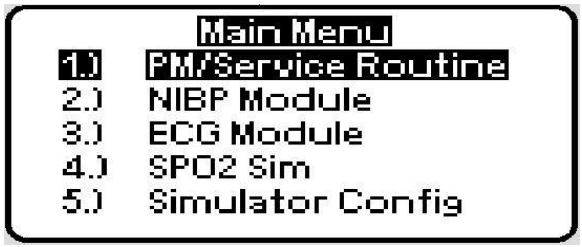
• ECG Functional Verification

ECG Communication

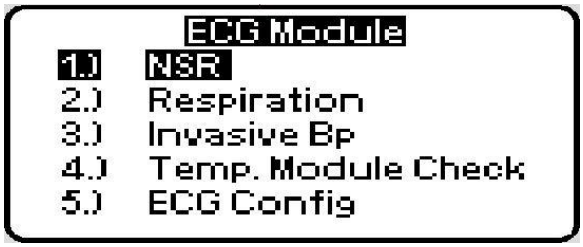
1. [CP50] Connect the 12 Lead ECG cable to CP50
2. [AccuSim] Connect the 12 Lead ECG cable to AccuSim simulator (Each lead is labeled)
3. [AccuSim] Turn on the simulator

** Power button is located on the back

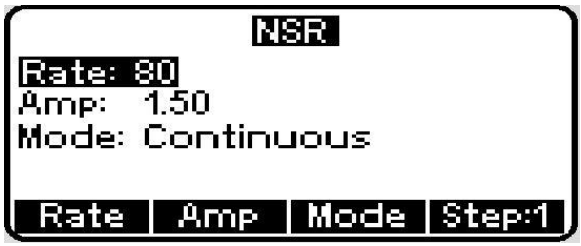
4. [AccuSim] Press the "Menu" button



5. [AccuSim] Press the "Scroll up/down" button to select the "ECG Module" and press "Enter" to launch



6. [AccuSim] Press the "Scroll up/down" button to select the "NSR" and press "Enter" to launch



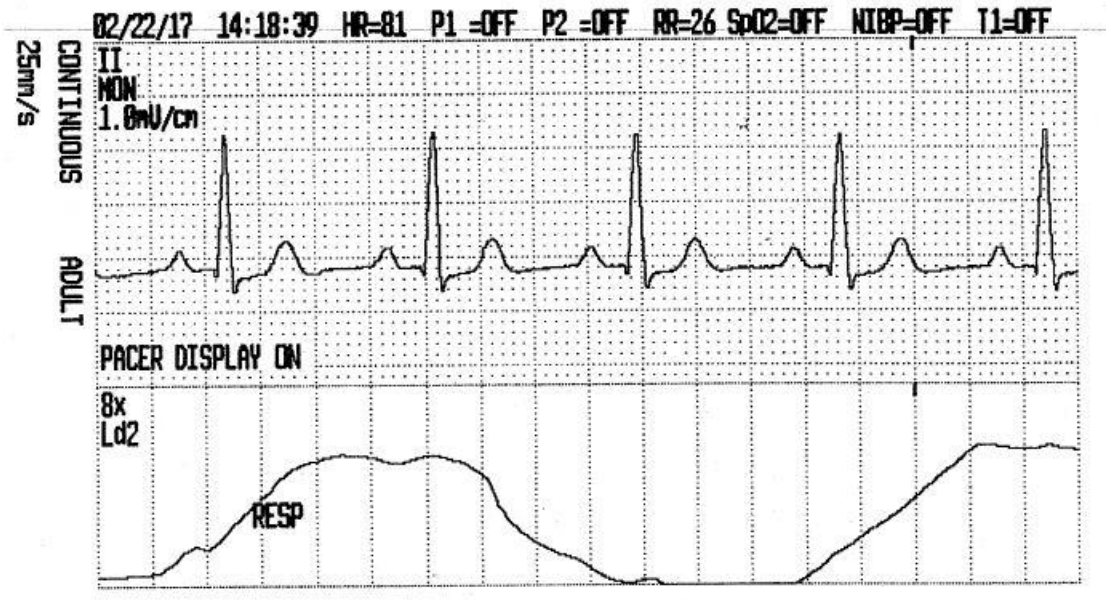
7. [CP50] Turn on the device
8. [CP50] Touch the "Menu" tab located bottom left of the touchscreen
9. [CP50] Touch the "Service" tab
10. [CP50] Type in the User ID and the Password
    a. Default User ID is 7378423
    b. Default User Password is 6676737
11. [CP50] Touch the "CP 50" tab
12. [CP50] Touch the "Right Arrow" button to skip the test until "ECG"

** This step should have a picture with the placements of each ECG lead

13. [CP50] Verify that all lead indicators are green on CP50 [Pass/Fail]
14. [CP50] Touch the "Right Arrow" button to skip the rest of the test

ECG HR/Waveform

1. [CP50] Touch the "Exit" tab located bottom right of the touchscreen twice
2. [CP50] Verify that the normal sinus rhythm ECG waveform is displayed [Pass/Fail]



** The graph displayed should be like the top half of the shown picture

3. [CP50] Verify that the heartrate displayed is 80 ± 1 bpm [Pass/Fail]

** This device is made for monitoring purpose, there is not accuracy requirement for the heartrate. The ± 1 is simply for the verification of functionality

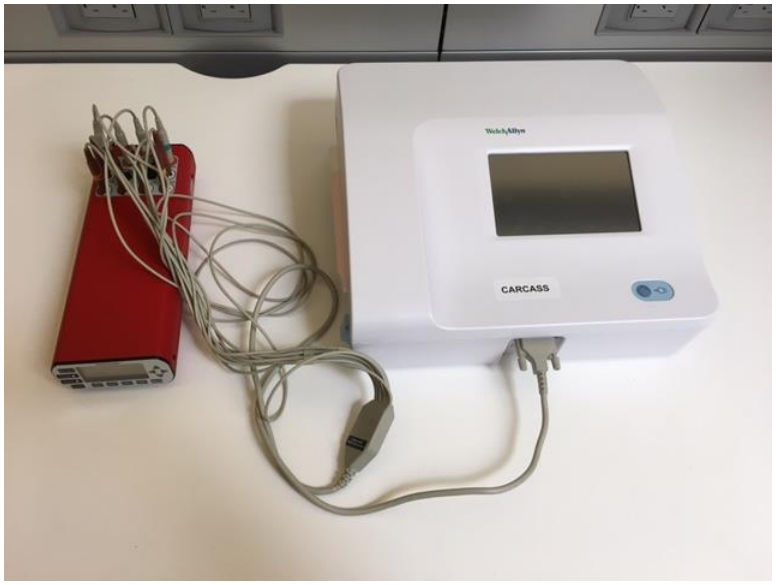
Lead Off Alarm

1. [AccuSim] Remove one lead from the simulator and verify that the monitor displays an equipment alert identifying the failed lead [Pass/Fail]
2. [AccuSim] Replace the lead and wait for the waveform to stabilize again.
    a. The alert may have different identification than the leads
        i. V1-V6 = C1-C6
        ii. RA = R
        iii. RL = N
        iv. LL = F
        v. LA = L
3. Repeat steps 1-2 for all 10 leads.

12. CP150

- **Required Tools**
  - AccuSim Simulator
  - CP 150
    - 12 lead ECG cable

- **ECG Functional Verification**



ECG Communication

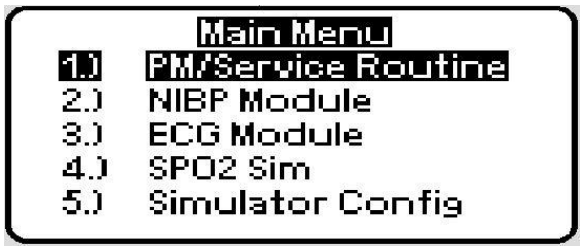
1. [CP150] Connect the 12 Lead ECG cable to CP150
2. [AccuSim] Connect all the leads to AccuSim simulator
3. [CP150] Power on the device
4. [CP150] Touch the “Settings” tab
5. [CP150] Touch the “Advanced” tab
6. [CP150] Touch the “Advanced settings code” and type in “6345” on the touch screen
7. [CP150] Touch the “Service” tab
8. [CP150] Touch the “Self-tests” tab
9. [CP150] Touch the “CP 150” to test the hardware
10. [CP150] Touch the “Right Arrow” button to skip the test until “ECG signal”

** This should be the 6/9 page

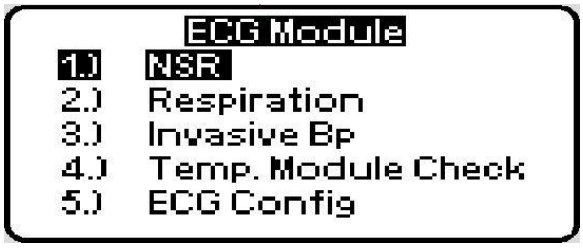
11. [AccuSim] Turn on the simulator

** Power button is located on the back

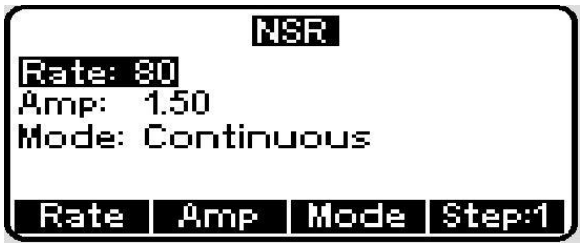
12. [AccuSim] Press the “Menu” button



13. [AccuSim] Press the "Scroll up/down" button to select the "ECG Module" and press "Enter" to launch



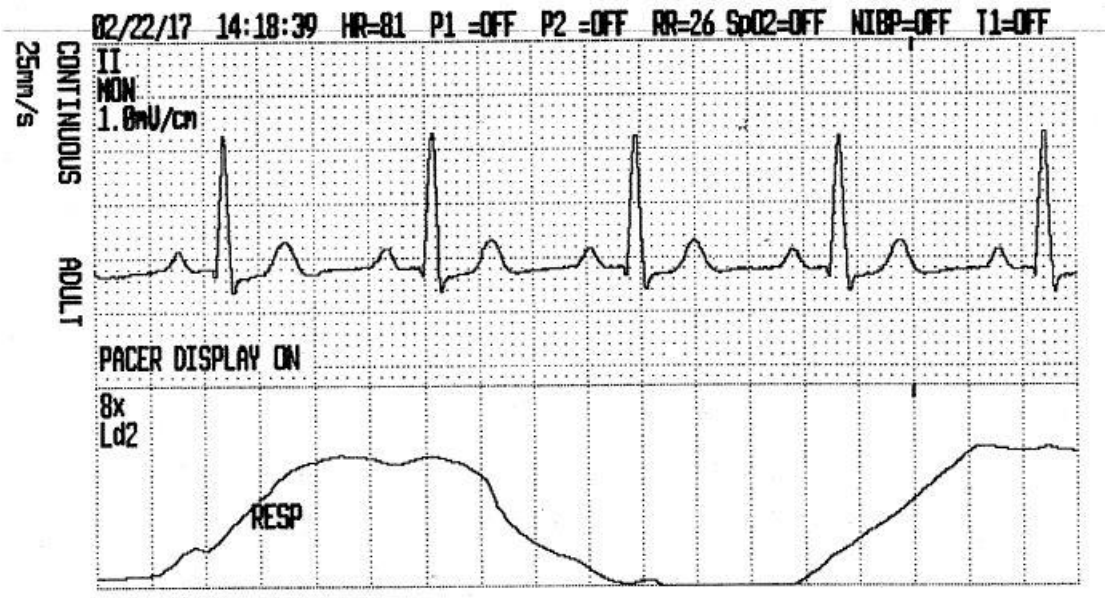
14. [AccuSim] Press the "Scroll up/down" button to select the "NSR" and press "Enter" to launch



15. Verify that all lead indicators are green on CP150
16. [CP150] Touch the "Right Arrow" button to skip the rest of the test
17. Verify that ECG test passed on CP150 [Pass/Fail]

ECG HR/Waveform

1. [CP150] Touch the "Exit" option
2. [CP150] Touch the "Stat" option
3. [CP150] Touch the "View" option until 6 leads are displayed
4. [CP150] Touch the "Leads" button on bottom left of the touchscreen to change the leads displayed
5. [CP150] Verify that the normal sinus rhythm ECG waveform is displayed [Pass/Fail]



** The graph displayed should be like the top half of the shown picture

6. [CP150] Verify that the heartrate displayed is 80 ± 1 bpm [Pass/Fail]

** This device is made for monitoring purpose, there is not accuracy requirement for the heartrate. The ± 1 is simply for the verification of functionality

Lead Off Alarm

1. [AccuSim] Remove one lead from the simulator and verify that the monitor displays an equipment alert identifying the failed lead [Pass/Fail]
2. [AccuSim] Replace the lead and wait for the waveform to stabilize again.
3. Repeat steps 1-2 for all 10 leads.
4. [CP150] Disconnect all leads from the device and [AccuSim]

13. CP100/200

- **Required Tools**
  - AccuSim simulator
  - CP200
    - *CP200 may be replaced by CP100
    - 12 Lead ECG cable

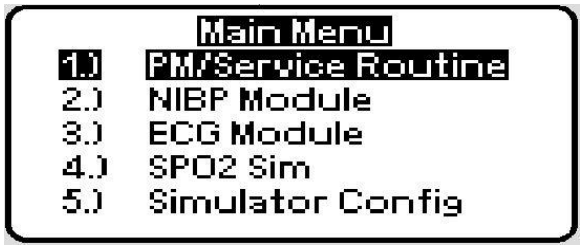
• ECG Functional Verification

ECG Communication

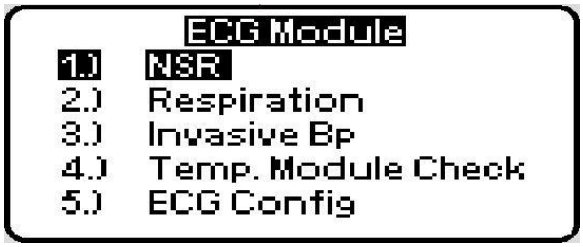
1. [CP100/200] Connect the 12 Lead ECG cable to CP100/200
2. [AccuSim] Connect the 12 Lead ECG cable to AccuSim simulator (Each lead is labeled)
3. [AccuSim] Turn on the simulator

** Power button is located on the back

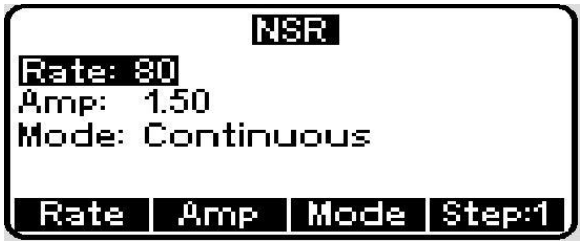
4. [AccuSim] Press the "Menu" button



5. [AccuSim] Press the "Scroll up/down" button to select the "ECG Module" and press "Enter" to launch



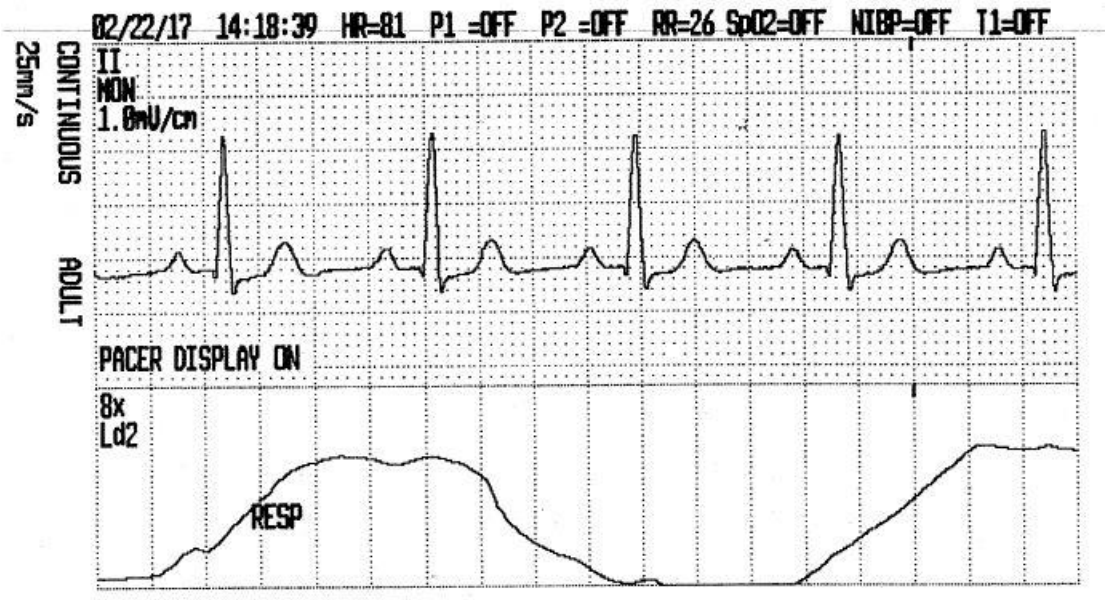
6. [AccuSim] Press the "Scroll up/down" button to select the "NSR" and press "Enter" to launch



7. [CP100/200] Turn on the device
8. Verify that all lead indicators are green on CP200 [Pass/Fail]

ECG HR/Waveform

1. [CP100/200] Verify that the normal sinus rhythm ECG waveform is displayed [Pass/Fail]



** The graph displayed should be like the top half of the shown picture

2. Verify that the heartrate displayed is 80 ± 1 bpm [Pass/Fail]

** This device is made for monitoring purpose, there is not accuracy requirement for the heartrate. The ± 1 is simply for the verification of functionality

Lead Off Alarm

1. [AccuSim] Remove one lead from the simulator and verify that the monitor displays an equipment alert identifying the failed lead [Pass/Fail]
2. [AccuSim] Replace the lead and wait for the waveform to stabilize again.
3. Repeat steps 1-2 for all 10 leads.
4. [CP100/200] Disconnect all leads from the device and [AccuSim]

14. ABPM 6100

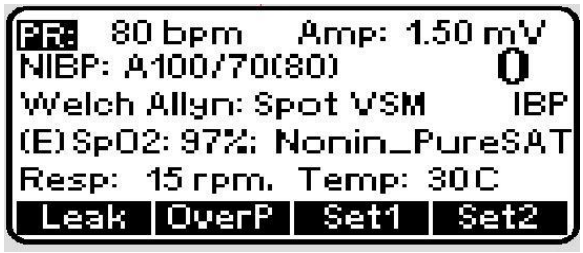
- **Required Tools**
  - ABPM 6100
  - AccuSim Simulator
    - NIBP Tubing Kit
      - NIBP Tube
      - NIBP Adapters
        - male to male
        - PROPAQ female
      - NIBP Barb to Hose (x6)
  - Test Volume

• NIBP Functional Verification

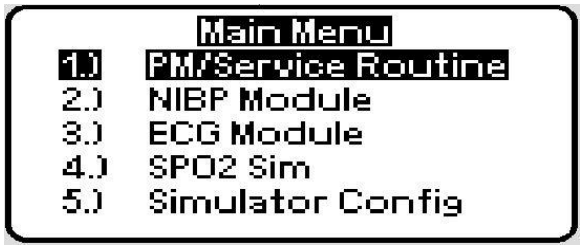
Leak Test

1. Connect the “NIBP Barb to Hose” hose to 500 cc cylinder on the Test Volume
2. [AccuSim] Connect the “AccuSim” outlet of “NIBP Tube” to “Pressure Port” located at the back of the AccuSim Simulator
3. Connect the “NIBP Adapter” (male to male) to “Device Under Test” on “NIBP Tube”
4. Connect the “NIBP Adapter” (PROPAQ female) to “NIBP Adapter” (male to male)
5. [ABPM] Connect the ABPM to “NIBP Adapter” (PROPAQ female)
6. [AccuSim] Turn on the Simulator

** Power button is located on the back



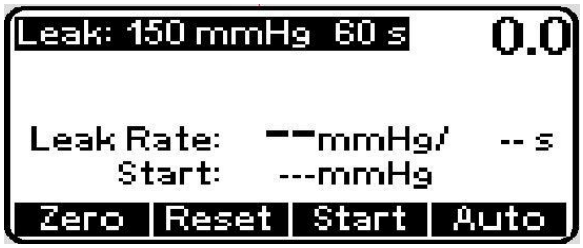
7. [AccuSim] Press the “Menu” button to launch the main menu options



8. [AccuSim] Using the "Scroll up/down" button to select the "PM/Service Routine" and press "Enter"
9. [AccuSim] Press "Enter" button to the message
10. [AccuSim] Press "F4"

** ABPM does not have a designated CalTable

11. [ABPM] Insert the AA battery, while the LCD display shows dashes, press and hold the "Start/Stop" button
12. [AccuSim] Press the "Scroll up/down" button to navigate to "Leak Test" and press "Enter" button
13. [AccuSim] Press the "Enter" button to the message



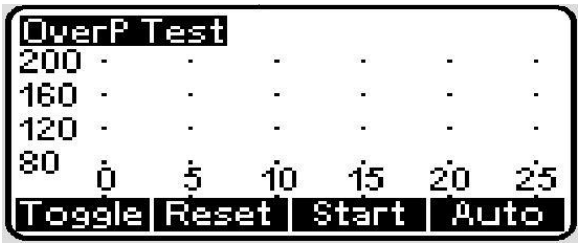
14. [AccuSim] Press the "Menu" button to set the leak test
15. [AccuSim] Press the "Up/Down/Right/Left Arrow" buttons to adjust the values
    a. 150 mmHg
    b. 60 seconds

16. [AccuSim] Press "Escape" button
17. [AccuSim] Press "F2" and then "F1" to reset and zero the simulator
18. [AccuSim] Press "F3" to start the Leak test
19. [AccuSim] Verify that the leak rate is less than 4 mmHg [Pass/Fail]
20. [ABPM] Remove one AA battery

Overpressure Test

1. [ABPM] Insert the AA battery, while the LCD display shows dashes, press and hold the "Start/Stop" button
2. [AccuSim] Press "Escape" button
3. [AccuSim] Press the "Scroll up/down" button to navigate to "OverP Test" and press "Enter" button

4. [AccuSim] Press "Enter" to the message



5. [AccuSim] Press "F2" button to reset
6. [AccuSim] Press "F3" button to start the test, pay attention to the ABPM and note the final pressure reading
7. [ABPM] Verify that the final pressure is 300 mmHg + 10 mmHg [Pass/Fail]

** Pressure should deflate between 300 to 330 mmHg

8. [ABPM] Remove one AA battery.

BP Accuracy Test

1. [AccuSim] Press "Escape" button
2. [AccuSim] Press the "Scroll up/down" button to select the "BP Accuracy" and press "Enter"
3. [AccuSim] Press "Enter" to the message

4. [ABPM] Insert the battery, while the LCD display shows dashes, press and hold the "Start/Stop" button
5. [AccuSim] Press "F4" button
6. [AccuSim] Press "Up/Down Arrow" buttons to adjust the pressure to 250 mmHg
7. AccuSim] Press "F3" to start the test
8. [AccuSim] Press "F3" to disable the pump once the pressure is 250 mmHg ± 1 mmHg
9. Verify that the pressure difference between the simulator and ABPM 6100 is no larger than 4 mmHg [Pass/Fail]
10. [Inflation Bulb] Open the screw valve slightly to bleed the pressure down no faster than 10 mmHg, stopping to check the pressure at 200, 150, 100, and 50 mmHg
    a. Verify the pressure difference between the simulator and ABPM 6100 is no larger than 4 mmHg at each step [Pass/Fail]

11. [AccuSim] Press “F4” to quit

Pressure Release Test

1. [ABPM] Insert the battery, while the LCD display shows dashes, press and hold the “Start/Stop” button
2. [AccuSim] Press “Up/Down Arrow” buttons to adjust the pressure to 150 mmHg
3. [AccuSim] Once the pressure reaches 150 mmHg, Press “F3” to disable the pump
4. Verify that after approximately 3 minutes that the pressure deflates to 0 mmHg [Pass/Fail]
5. [AccuSim] Press “F4” to quit
6. Disconnect the “NIBP Tube” from the simulator and adapters
7. [AccuSim] Power down the simulator
8. [ABPM] Remove both AA batteries and replace the back cover

15. ABPM 7100

- **Required Tools**
  - ABPM 7100
  - AccuSim Simulator
    - NIBP Tubing Kit
      - NIBP Tube
      - NIBP Adapters
        - male to male
        - HP female
      - NIBP Barb to Hose (x6)
  - Test Volume

• NIBP Functional Verification

Leak Test

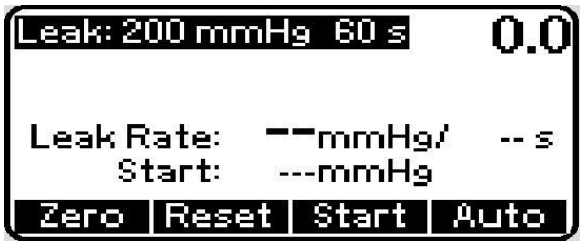
1. Connect the “NIBP Barb to Hose” hose to 500 cc cylinder on the Test Volume
2. [AccuSim] Connect the “AccuSim” outlet of “NIBP Tube” to “Pressure Port” located at the back of the AccuSim Simulator
3. Connect the “NIBP Adapter” (male to male) to “Device Under Test” on “NIBP Tube”
4. Connect the “NIBP Adapter” (HP female) to “NIBP Adapter” (male to male)
5. [ABPM] Connect the ABPM to “NIBP Adapter” (HP female)
6. [AccuSim] Turn on the Simulator

** Power button is located on the back

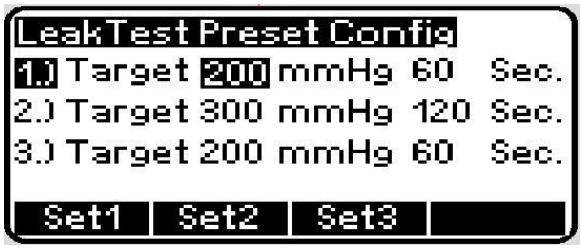
7. [AccuSim] Press “Menu” button
8. [AccuSim] Press the “Scroll up/down” button to navigate to “PM/Service Routine” and press “Enter” button
9. [AccuSim] Press “Enter” button
10. [AccuSim] Press “F4”

** ABPM does not have a designated CalTable

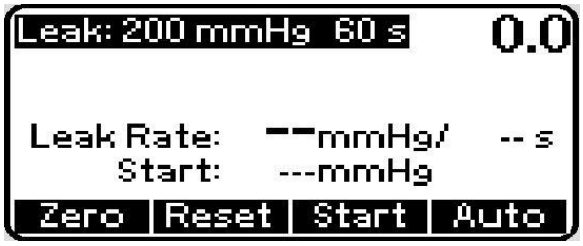
11. [AccuSim] Press the “Scroll up/down” button to navigate to “Leak Test” and press “Enter” button



12. [AccuSim] Press the "Menu" button to navigate
13. [AccuSim] Press the "Up/Down/Right/Left Arrow" buttons to adjust the values
    a. 200 mmHg
    b. 60 seconds



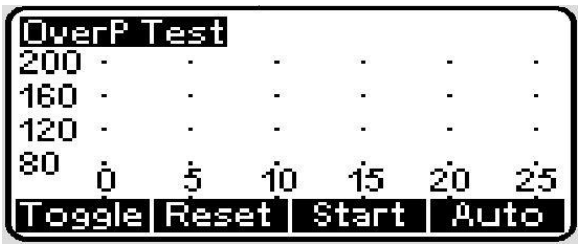
14. [AccuSim] Press "Escape" button



15. [ABPM] While holding the "ON/OFF" button, insert the battery back in
16. [AccuSim] Press "F2" and then "F1" to reset and zero the simulator
17. [AccuSim] Press "F3" to start the Leak test
18. [AccuSim] Verify that the leak rate is less than 6 mmHg [Pass/Fail]
19. [ABPM] Remove one AA battery

Overpressure Test

1. [ABPM] While holding the "ON/OFF" button, insert the battery back in
2. [AccuSim] Press "Escape" button
3. [AccuSim] Press the "Scroll up/down" button to navigate to "OverP Test" and press "Enter" button
4. [AccuSim] Press "Enter" to the message



5. [AccuSim] Press "F2" button to reset
6. [AccuSim] Press "F3" button to start the test, pay attention to the ABPM and note the final pressure reading
7. [ABPM] Verify that the final pressure is 320 ± 5 mmHg [Pass/Fail]
8. [ABPM] Remove one AA battery.

BP Accuracy Test

1. [AccuSim] Press the "Escape" button
2. [AccuSim] Press the "Scroll up/down" button to select the "BP Accuracy" and press "Enter"

3. [AccuSim] Press "F4" button
4. [AccuSim] Press "Up/Down Arrow" buttons to adjust the pressure to 250 mmHg
5. [ABPM] While holding the "ON/OFF" button, insert the batteries
6. [AccuSim] Press "F3" to Start the test
7. [AccuSim] Press "F3" to disable the pump once the pressure is 250 mmHg ± 1 mmHg
8. Verify that the pressure difference between the simulator and ABPM 7100 is no larger than 4 mmHg [Pass/Fail]
9. [Inflation Bulb] Open the screw valve slightly to bleed the pressure down no faster than 10 mmHg, stopping to check the pressure at 200, 150, 100, and 50 mmHg
   a. Verify the pressure difference between the simulator and ABPM 7100 is no larger than 4 mmHg at each step [Pass/Fail]
10. [AccuSim] Press "F4" to quit

Pressure Release Test

1. [ABPM] Insert the battery, while the LCD display shows dashes, press and hold the "Start/Stop" button

2. [AccuSim] Press “Up/Down Arrow” buttons to adjust the pressure to 150 mmHg
3. [AccuSim] Press “F3” to enable the pump
4. [AccuSim] Once the pressure reaches 150 mmHg, Press “F3” to disable the pump
5. Verify that after approximately 2 minutes and 20 seconds that the pressure deflates to 0 mmHg [Pass/Fail]
6. [AccuSim] Press “F4” to quit
7. Disconnect the “NIBP Tube” from the simulator and adapters
8. [ABPM] Remove both AA batteries
9. [AccuSim] Power down the simulator

Version	Sec, Pg, Para Changed	Change Made	Date Version Created	Version Created By (initials)
A	N/A	Initial Release	2017-06-24	KMG
B	Section 3 Connex Spot Monitor – CSM – Spo2 Functional Verification Step 13	had typo for the Saturation level at +/-1% and actual is +/-3%	2019-12-05	KMG