Remove and replace the fan filter as shown below.

Performance Assurance Tests

Some of the following test procedures must be performed in service mode or demo mode. To enter service mode or demo mode select **Operating Modes** in the main menu. Then select **Service Mode** or **Demo Mode** and enter the password.

Charging Station Performance Assurance Test

Power on the Charging Station. Check that:

- the Power on LED is green
- the fan is switched on for a few seconds
- The Slot LEDs are yellow/green when a device is connected
- charging of connected devices begins and the time to full is visible on the display of the device (if no INOP is issued on the device)
- the charger display shows battery status icons

NOTE

All nine charging station slots need to be tested.

Basic Performance Assurance Test (NBP Pod and SpO2 Pod)

This section describes the basic performance test procedure. Please refer to the section for detailed information on when which test procedure is required.

Procedure:

Power on the NBP Pod or SpO_2 Pod and go into demo mode. Check that each connected parameter displays values.

Basic Performance Assurance Test (Respiration Pod)

This section describes the basic performance test procedure. Please refer to the section for detailed information on when which test procedure is required.

Procedure:

Power on the Respiration Pod, assign it to a monitor or Guardian Software and go into demo mode. Check that the Respiration parameter and the (optional) Pulse parameter display values.

Full Performance Assurance Test

The following sections describe the full performance testing procedures i.e. detailed testing of each parameter with a patient simulator or specified tools. Please refer to the section for information on when which testing procedure is required.

SpO2 Performance Test

This test checks the performance of the SpO_2 measurement.

Tools required: none

1 Connect an adult SpO2 transducer to the SpO_2 cradle.

2 Measure the SpO_2 value on your finger (this assumes that you are healthy).

3 The value should be between 95% and 100%.

Test	Expected test results
SpO2 Performance Test	95% and 100%

Measurement Validation

The SpO2 accuracy has been validated in human studies against arterial blood sample reference measured with a CO-oximeter. In a controlled desaturation study, healthy adult volunteers with saturation levels between 70% and 100% SaO2 were studied. The population characteristics for those studies were:

- about 50% female and 50% male subjects
- age range: 20 to 34
- skin tone: from light to dark brown

Pulse rate accuracy has been validated with an electronic pulse simulator.

NOTE

A functional tester cannot be used to assess the accuracy of a pulse oximeter monitor or sensor. However, it can be used to demonstrate that a particular pulse oximeter monitor reproduces a calibration curve that has been independently demonstrated to fulfill a particular accuracy specification.

NBP PerformanceTest

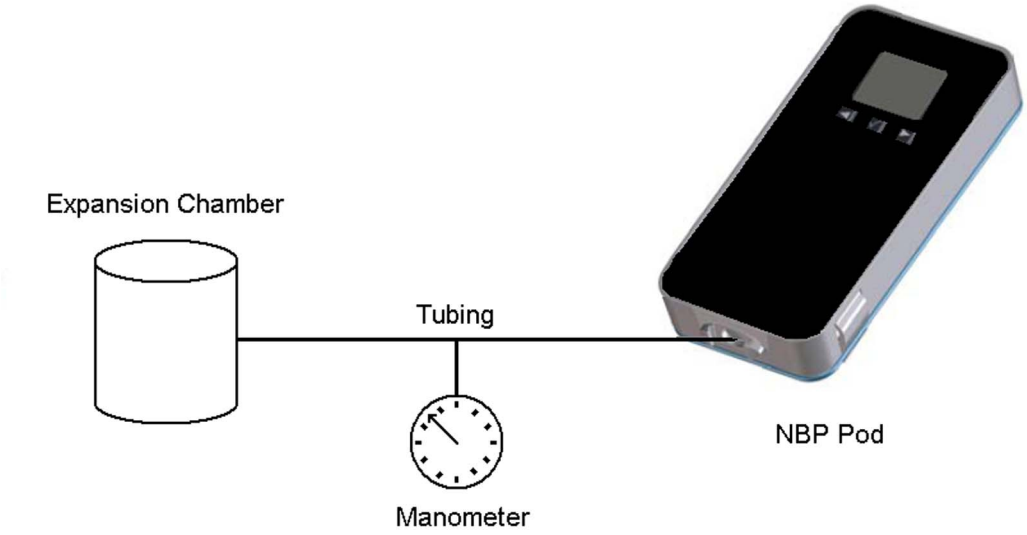
This section describes NBP test procedures.The cableless measurement device must be in service mode to perform these tests. The NBP Performance Test consists of:

- NBP Accuracy Test
- NBP Leakage Test
- NBP Linearity Test
- Valve Test

The NBP test procedures can either be performed using a monitor equipped with SRR or with a standalone NBP Pod.

NBP Accuracy Test

This test checks the performance of the non-invasive blood pressure measurement. Connect the equipment as shown:



Tools required:

- Reference manometer (includes hand pump and valve), accuracy ±0.8mmHg.
- Expansion chamber (volume 250 ml +/- 10%)
- Appropriate tubing.

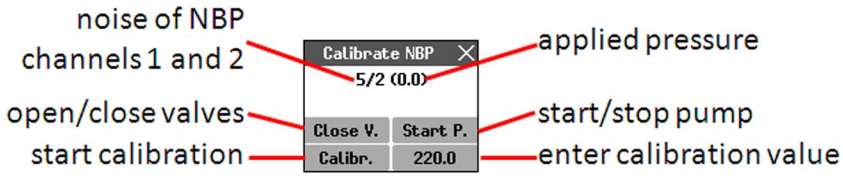
In service mode, the systolic and diastolic readings indicate the noise of NBP channels 1 and 2 respectively. When static pressure is applied, the reading in NBP channel 1 should be below 50. The value in parentheses indicates the actual pressure applied to the system.

1 Connect the manometer and the pump with tubing to the NBP connector on the NBP Pod and to the expansion chamber.

2 **If you are performing the test with a monitor**, assign the NBP Pod to a monitor. Otherwise, proceed with step 3.

3 **If you are performing the test with a monitor**, go into service mode and select the **Setup NBP** menu on the assigned monitor.

If you are performing the test with a standalone NBP Pod, go into service mode, select **Main Setup** -> **NBP** -> **Calibrate NBP**. The last calibration date is displayed ->Select the check button.



4 **If you are performing the test with a monitor**, select **Close Valves: On**
If you are performing the test with a standalone NBP Pod, select **Close V.**

5 Raise the pressure to 280 mmHg with the manometer pump.

6 Wait 10 seconds for the measurement to stabilize.

7 Compare the manometer values with the displayed values.

8 Document the value displayed by the monitor or NBP Pod (**x1**).

9 If the difference between the manometer and displayed values is greater than 3 mmHg, calibrate the NBP Pod. If not, proceed to the leakage test.

10 **If you are performing the test with a monitor:**

To calibrate the NBP Pod, select **Close Valves off** then **Calibrate NBP** and wait for the instrument to pump up the expansion chamber.Wait a few seconds after pumping stops until **EnterPrVal** is highlighted and then move the cursor to the value shown on the manometer. If one of the following prompt messages appears during this step, check whether there is leakage in the setup:

– NBP unable to calibrate–cannot adjust pressure

– NBP unable to calibrate–unstable signal

Press **Confirm**.

If you are performing the test with a standalone NBP Pod:

To calibrate the NBP Pod, select **Close V.** to release the pressure, then select **Calibr.** and wait for the instrument to pump up the expansion chamber.Wait a few seconds after pumping stops and the signal is stable. Select <calibration value> and enter the value shown on the manometer. If one of the following prompt messages appears during this step, check whether there is leakage in the setup:

– NBP unable to calibrate–cannot adjust pressure

– NBP unable to calibrate–unstable signal

If the INOP NBP Equipment Malfunction message occurs in monitoring mode, go back to service mode and repeat the calibration procedure.

NBP Leakage Test

1 The NBP leakage test checks the integrity of the system and of the valve. It is required once every two years and when you repair the cableless device or replace parts.

2 If you have calibrated, repeat steps 2 to 6 from the accuracy test procedure so that you have 280 mmHg pressure on the expansion chamber.

3 Watch the pressure value for 60 seconds.

4 Calculate and document the leakage test value **(x2)**.
x2 = P1 - P2
where P1 is the pressure at the beginning of the leakage test and P2 is the pressure displayed after 60 seconds.
The leakage test value should be less than 6 mmHg.

NOTE

The leakage test value of 6 mmHg applies for an expansion chamber of 250ml. When using a different size of expansion chamber, the expected test result needs to be adapted accordingly. E.g for an expansion chamber of 500ml, the leakage test value should be less than 3 mmHg. All other NBP performance tests are independent of the expansion chamber size.

NBP Linearity Test

1 Reduce the manometer pressure to 150 mmHg.

2 Wait 10 seconds for the measurement to stabilize.

3 After these 10 seconds, compare the manometer value with the displayed value.

4 Document the value displayed by the monitor (**x3**)

5 If the difference is greater than 3 mmHg, calibrate the NBP Pod (see step 10 in the accuracy test procedure).

Valve Test

1 Raise the pressure again to 280 mmHg.

2 **If you are performing the test with a monitor,** select **Close Valves: Off**.
If you are performing the test with a standalone NBP Pod, select **Close V.** to release the pressure

3 Wait five seconds and then document the value displayed. The value should be less than 10 mmHg.

4 Document the value displayed by the monitor or NBP Pod (**x4**).

Expected Test Results for NBP Accuracy Test, Leakage Test, Linearity Test & Valve Test

Test	Expected test results
Accuracy test	x1 = value displayed by monitor/ NBP Pod Difference ≤ 3mmHg
Leakage test	x2 = leakage test value x2 < 6 mmHg (with 250ml expansion chamber)
Linearity test	x3 = value displayed by monitor/ NBP Pod Difference ≤ 3mmHg
Valve Test	x4 = value < 10 mmHg

Respiration/Pulse Performance Test

This test checks the performance of the Respiration and (optional) Pulse measurement.

Tools required: none

1 Assign the Respiration Pod to a monitor or Guardian Software. Attach the Respiration Pod to your left costal arch as described in the Instructions for Use.

2 Start a Respiration/Pulse measurement (this assumes that you are healthy).

3 The value for Respiration should be between 10 and 20 and the value for Pulse between 50 and 100.

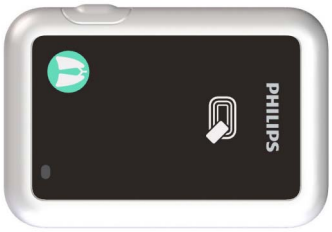
Test	Expected test results
Respiration/Pulse Performance Test	Respiration: 10-20 Pulse: 50-100

Posture Performance Test

Assign the Resp Pod to a monitor or to GuardianSoftware.

At the monitor, configure a numeric field to show the posture "**Post**." At the GuardianSoftware go to "**Realtime View**" to show the posture.

Place the Resp Pod as described below and wait approximately one minute for the result to be displayed.

Orientation	Orientation	Result
	Pod placed horizontally, key facing up (this is the normal position when applied to a patient)	on Monitor: Upright on GuardianSoftware: 
	Pod placed vertically, Philips logo readable	on Monitor: Lying Right on GuardianSoftware: 
	Pod on back	on Monitor: Supine on GuardianSoftware: 

Short Range Radio (SRR) Performance Test with Monitor

1 Assign a CL measurement device to the IntelliVue Patient Monitor according to the procedure described in the Instructions for Use of the cableless measurement device.

2 Check that the following conditions are fulfilled:

   a. Place the CL measurement device close to the monitor.

   b. The CL measurement device status is displayed on the monitor in the measurement selection window.

   c. Waves or numerics from the CL measurement device are displayed on the monitor. There are no dropouts or gaps in waves or numeric transmission.

d. The battery status of the CL measurement device is displayed in the measurement selection window.

e. The Signal Quality Indicator shows at least 

3 Check that the data from the CL measurement device is transmitted to the monitor within a 1m radius and that there are no dropouts or gaps in waves or numerics.

4 Check whether the connection remains stable within a 5m radius from the monitor.

5 Switch on as many CL measurement devices as possible in the vicinity and check that there are no interferences between the CL measurement devices and their assigned monitors.

6 Check and record the coverage area of the CL measurement device and inform the customer about this coverage area.

Short Range Radio (SRR) Performance Test with MX40 and Telemetry

1 Assign an MX40 or a telemetry transceiver to the CL measurement device according to the procedure described in the Instructions for Use of the cableless measurement device.

2 Check that the following conditions are fulfilled:

a. Place the MX40 or telemetry transceiver close to the CL measurement device.

b. Numerics from the CL measurement device are displayed on the central station.

c. The Signal Quality Indicator shows at least 

3 Check that the data from the CL measurement device is transmitted to the MX40 or telemetry transceiver within a 1m radius and that there are no dropouts or gaps in waves or numerics at the central station.

4 Check whether the connection remains stable within a 5m radius from the MX40 or telemetry transceiver.

5 Switch on as many CL measurement devices and MX40 monitors or telemetry transceivers as possible in the vicinity and check that there are no interferences between the CL measurement devices and their assigned MX40 or telemetry transceivers.

Short Range Radio (SRR) Performance Test with IntelliVue GuardianSoftware (Transmitter/Hotspot)

1 Assign a CL measurement device to the IntelliVue GuardianSoftware according to the procedure described in the Instructions for Use of the IntelliVue GuardianSoftware.

2 Check that the following conditions are fulfilled:

a. Place the CL measurement device close to the Transmitter/Hotspot.

b. Numerics from the CL measurement device are displayed at the IntelliVue GuardianSoftware.

c. The battery status of the CL measurement device is displayed at the IntelliVue GuardianSoftware.

d. The Signal Quality Indicator shows at least 

3 Check that the data from the CL measurement device is transmitted to the IntelliVue GuardianSoftware within a 1m radius from the transmitter.

4 Check whether the connection remains stable within a 5m radius from the Transmitter/Hotspot.

5 Switch on as many CL measurement devices and Transmitters/Hotspots in the vicinity as possible and check that there are no interferences between the CL measurement devices and the Transmitters/Hotspots.

6 Check and record the coverage area of the CL measurement device in regard to Hotspots and inform the customer about this coverage area.

LAN Communication Test (Transmitter and Hotspot only)

1 Make sure the LAN cable is connected to the Transmitter/Hotspot and the device is powered.

2 Make sure the Network settings of the Transmitter/Hotspot are properly configured (configuration will be done via Support Tool Mark2).

3 Select **Main Setup** -> **Network** -> **LAN Diagnostic** to access the LAN Diagnostic window.

4 Proper installation of the LAN Network settings is assured by receiving an IP address (if DHCP is configured (->**LAN IP Config** -> **IP Config**)) and if the network symbol on the main screen shows:

either  or  .

Test	Expected Test Results
LAN Communication Test	Devices receive an IP address and the network symbol shows either  or 

WLAN Communication Test (Transmitter and Hotspot only)

1 Make sure that no LAN cable is connected to the Transmitter/Hotspot and that the device is powered.

2 Make sure the Network and WLAN settings of the Transmitter/Hotpsot are properly configured (configuration will be done via Support Tool Mark2).

3 Select **Main Setup** -> **Network** -> **WLAN Diagnostic** to access the WLAN Diagnostic window.

4 Proper installation of the WLAN Network settings is assured if the Connection Status is "Connected" (**WLAN Diagnostics** -> **Conn. Status** is *Connected*) and if the network symbol on the main screen shows: either  or  .

Test	Expected Test Results
WLAN Communication Test	Connection status shows "Connected" and the network symbol displayed is either  or  .

IntelliVue Guardian Communication Test (Transmitter and Hotspot only)

1 Make sure that the device has either LAN or WLAN settings configured and that a connection is established with the desired LAN/WLAN (network status icon shows either  or ).

2 If an XDS is running in the network, after a short period of time, the icon will switch to a filled rectangle without any pixels missing ( or ).

3 In the XDS ->Infrastructure Services, go to the tab "Status" and expand "Transmitters". The device should be listed here with its equipment label and IP address.

Test	Expected Test Results
IntelliVue Guardian Communication Test	Device is listed in the XDS -> Infrastructure Services -> Status -> Transmitters.

Reporting of Test Results

Philips recommends all test results are documented in accordance with local laws. Authorized Philips personnel report the test result back to Philips. While hospital personnel (biomedical engineers or technicians) do not need to report results to Philips, Philips recommends that they record and store the test results in accordance with local laws.

The following table lists what to record after completing the tests in this chapter. Record the results in the empty column in the Test and Inspection Matrix.

The following is a guide as to what your documentation should include:

- Identification of the testing body (for example, which company or department carried out the tests).
- Name of the person(s) who performed the tests and the concluding evaluation.
- Identification of the device(s) and accessories being tested (serial number, etc.).
- The actual tests (incl. visual inspections, performance tests, safety and system tests) and measurements required
- Date of testing and of the concluding evaluation.
- A record of the actual values of the test results, and whether these values passed or failed the tests.
- Date and confirmation of the person who performed the tests and evaluation.

The device under test should be marked according to the test result: passed or failed.

Carrying Out and Reporting Tests

Test Report

Testing Organization: Name of testing person: Date:	(Check one of the following three options) Test before putting into service (reference value) Recurrent Test Test after Repair
Responsible Organization:	
Device Under Test:	ID-Number
Product Number:	Serial No.:
Accessories:	
Measurement Equipment (Manufacturer, Type, Serial No., Calibration Date):	
Safety Test Method used	
Functional Test (parameters tested):	
Mains voltage and frequency used during safety testing:	

Test and Inspection Matrix

Test	Test or Inspection to be Performed	Expected Test Results	Record the Results (mandatory for Philips Personnel only)	
			What to record	Actual Results
Visual Inspection	Perform Visual Inspection	Pass or Fail	V:P or V:F	
Power On	Power on the unit. Does the self-test complete successfully	If Yes, Power On test is passed	PO:P or PO:F	
Noninvasive Blood Pressure Performance Tests	Perform the Accuracy Test	X1 = value displayed by monitor Difference <= 3mmHg	PN:P/X1 or PN:F/X1	
	Performance Leakage Test	X2 = leakage test value X2 < 6 mmHg	PN:P/X2 or PN:F/X2	
	Performance Linearity Test	X3 = value displayed by monitor Difference <= 3mmHg	PN:P/X3 or PN:F/X3	
	Performance Valve Test	X4 = value < 10 mmHg	PN:P/X4 or PN:F/X4	
All other performance tests	Perform the remaining parameter performance tests, if applicable	See expected results in test procedures	P: P or P: F	

Test	Test or Inspection to be Performed	Expected Test Results	Record the Results (mandatory for Philips Personnel only)	
			What to record	Actual Results
Safety (1)	Perform Safety Test (1): Protective Earth Resistance	With mains cable: Maximum impedance (X1): <=300 mOhms	S(1):P/X1 or S(1):F/X1	
Safety (2)	Perform Safety Test (2): Equipment Leakage Current - Normal Condition.	With mains cable: Maximum leakage current (X1):<= 100 µA	S(2): P/X1 or S(2): F/X1	
Safety (3)	Perform Safety Test (3): Equipment Leakage Current - Single Fault Condition (Open Earth)	With mains cable: Maximum leakage current (X2):<= 300 µA	S(3): P/X2 or S(3): F/X2	
System (Sys 1-2)	Perform the system test according to subclause 19.201 of IEC/EN 60601-1-1, if applicable, after forming a system	Equipment Leakage Current: Sys1 <= 100 µA (Normal Condition) Sys2 <= 300µA (Single Fault Condition	Sys: PSys1/PSys2 or Sys: FSys1/Fsys2	
System (Sys 3)	Perform the system test according to subclause 19.201 of IEC/EN 60601-1-1, if applicable, after forming a system	Protective Earth Leakage Current if medical electrical system components are connected to the same Multiple Portable Socket Outlet: Sys3 <= 300 µA	Sys: PSys3 or Sys: FSys3	
Key: P = Pass, F = Fail, X or Sys = test value to be recorded				

NOTE

All values for current and voltage are the root mean square (r.m.s.) values, unless otherwise stated.

Evaluation

	Yes	No
Safety and Functional Test passed		
Repair required at a later date, safety and functional test passed		
Device must be taken out of operation until repair and passed tests		
Device failed and must be taken out of operation.		

Notes:		
Next Recurrent Test:		
Name:_____		
Date/Signature:_____		

Evaluation of Test Results

The evaluation of the test results must be performed by appropriately trained personnel with sufficient product, safety testing and application knowledge.

If any test results are between 90% and 100% of the respective expected result, the previously measured reference values must be taken into consideration for the assessment of the electrical safety of the device under test. If no reference values are available, you should consider shorter intervals between upcoming recurrent tests.

NOTE

If any single test fails, testing must be discontinued immediately and the device under test must be repaired or labeled as defective. Be sure to inform the user about the test failure in writing.

Battery Handling, Maintenance and Good Practices

This section provides some information on how to handle and maintain the battery in order to get the best usage from them. Additionally, some good working practices are also given regarding the correct disposal of the batteries.

NOTE

The battery of the CL Respiration Pod cannot be exchanged.

Introduction

Lithium ion technology is the state-of-the-art in DC energy storage and has been widely adopted to meet the demand for more power and longer operating times. Lithium ion batteries store a large amount of energy in a small, lightweight package, so you can carry less and do more for a longer period of time.

Our lithium ion batteries are designed to provide the following characteristics:

- **Safe and reliable** - redundant safety features in the batteries protect the batteries and their users.

- **Quick charging** - lithium ion batteries can quickly charge to their full capacity because they do not require an overnight trickle charge.
- **Tolerant of partial charging** - because lithium ion batteries are tolerant of partial charging, there is no effect on battery life when patient care requires you to suspend charging and use the battery before it is fully charged.

Batteries are a consumable item, and their age and condition will impact the operation of the products they power. Lithium ion technology is a relatively new battery chemistry. While our batteries have been designed and manufactured using the best safety techniques available, it is important to understand and follow proper and safe practices for use, storage, battery lifetime management and disposal of lithium ion batteries in order to reduce any residual risk.

We strongly recommend that you implement the following battery management practices. Failure to follow safe practices may result in bodily injury and/or property damage.

Use and Handling

Use only Philips battery kits as listed in the Parts section for the IntelliVue Cableless Measurement Devices. These specially designed, high performance batteries are the only ones that have been verified for safe and effective use with the IntelliVue Cableless Measurement devices. Always use the batteries in accordance with the instructions in your device's Instructions for Use.

Battery Care

Battery care begins when you receive a new battery and continues throughout the life of the battery.The table below lists battery care activities and when they should be performed.

Activity	When to Perform
Perform a visual inspection	Before installing a battery into the device
Charge the battery	Upon receipt, after use, or if a low battery state is indicated. To optimize performance, a fully (or almost fully) discharged battery should be charged as soon as possible.
Condition the battery	After 100 charging cycles or one year of use, whichever comes first.
Store the battery/device in a state of charge in the range of 40% to 50%	When not in use for an extended period of time

Refer to your device's Instructions for Use for details on how to perform battery care activities, including charging and conditioning.

NOTE

The battery of a IntelliVue CL Cableless Measurement device must be charged within six months after the date of manufacture, otherwise the battery may go into deep discharge.

Handling Precautions

Lithium ion batteries store a large amount of energy in a small package.Use caution when handling the batteries; misuse or abuse could cause bodily injury and/or property damage.

- Handle with care
- Do not short circuit - take care that the terminals do not contact metal or other conductive materials during transport and storage
- Do not crush, drop or puncture - mechanical abuse can lead to internal damage and internal short circuits which may not be visible externally
- Do not apply reverse polarity
- Do not expose batteries to liquids
- Do not incinerate batteries or expose them to temperatures above 60°C (140°F)
- Do not attempt to disassemble a battery.

If a battery has been dropped or banged against a hard surface, whether damage is visible externally or not:

- discontinue use
- dispose of the battery in accordance with the disposal instructions

Storage

When storing batteries/cableless measurement devices, make sure that the battery terminals do not come into contact with metallic objects, or other conductive materials.

If batteries/cableless measurement devices are stored for an extended period of time, they should be stored in a cool place, ideally between 15°C (60°F) and 25°C (77°F), with a state of charge of 40% to 50%. Storing batteries/cableless measurement devices in a cool place slows the aging process.

Do not store batteries/cableless measurement devices in direct sunlight.

Stored batteries/cableless measurement devices should be partially charged to 40% to 50% of their capacity every 6 months. They should be charged to full capacity prior to use.

The batteries/cableless measurement devices should not be stored at a temperature outside the range of -20°C (-4°F) to 60°C (140°F).

NOTE

Storing batteries/cableless measurement devices at temperatures above 40°C (104°F) for extended periods of time could significantly reduce the batteries' life expectancy.

Battery Lifetime Management

The lifetime of a Lithium Ion battery depends on the frequency and duration of use. When properly cared for, the useful life is approximately 4 years or 400 complete charge-discharge cycles, whichever comes first. In addition, experience indicates that the incidence of failure may increase with battery service life due to the accumulated stresses of daily use. We therefore strongly recommend that lithium ion batteries be replaced after 4 years or 400 complete charge-discharge cycles.

The age of a lithium ion battery begins at the date of manufacture. To see the date of manufacture and the number of charge-discharge cycles:

1 Select the battery symbol on the CL NBP Pod, SpO_2 Pod or Transmitter.

2 Press the "check" button.

3 Scroll down with the "right arrow" key until you see **Cycles** (Full Charge Cycles), **Remaining Cycles** (Remaining Cycles) or **Manufacturing Date** (Manufacturing Date of the battery).

The battery information can also be displayed by using the Support Tool Mark2:

- Get a **Device Report** and open the **Battery Information** in the Report. This works with the CL NBP Pod,SpO_2Pod, Respration Pod and Transmitter

NOTE

Batteries will discharge over time if the cableless device is not used for a longer period of time.

Disposal

Discharge the batteries and insulate the terminals with tape before disposal. Dispose of used batteries promptly and in accordance local recycling regulations.

Checking the Battery Status

When the device is connected to the charging station or the Transmitter Base Station, the battery charges automatically.

NOTE

Use only the Charging Station or the Transmitter Base Station for charging IntelliVue Cableless Measurement Devices.

Battery status (level of charge) is indicated in several ways:

- LED on the Charging Station.
- LED on the CL Respiration Pod.
- Battery gauge (on charging station display).
- Display of battery time (on SpO_2/NBP Pod/Transmitter display).
- Battery status window (on SpO_2/NBP Pod/Transmitter display).
- INOP messages.

The AC Power/Error LED is green when the charger is connected to AC Mains. The LED is cyan to indicate general errors.

The battery LED on the charger and the LED on the CL Respiration Pod can be green, yellow, cyan or off depending on the following conditions:

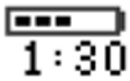
LED Colors	**Battery Status**
Green	battery full (≥90%)
Yellow	battery charging (battery power < 90%)
Flashing Yellow	device put on charger slot until completely recognized
Cyan	error at connected device[1,2] or charging station[2]
Off	no device in charging bay

1 indicated by malfunction symbol and INOP
2 for further details see Troubleshooting section

NOTE

- If the battery has been charged to 100% charging will not begin again until battery power is <98%
- When the battery is empty, the IntelliVue Cableless Measurement Device switches off automatically
- If the batteries become too warm or too cold, they will not begin the recharging cycle until the battery temperature is within range. Note that the relevant temperature is the battery temperature and not the ambient temperature. Therefore, if several devices are placed on a charging station, it is possible that one device stops charging due to high temperature, while the other devices continue charging
- If the battery has reached its maximum allowed charge cycles (INOP "Service Battery"), charging of the battery is inhibited and the battery needs to be replaced.
- If the battery has nearly reached its maximum allowed charge cycles i.e. less than 50 cycles left (INOP "Check Battery"), you should replace the battery.
- If the battery charge status goes below a certain threshold it can no longer be charged and needs to be exchanged (INOP "BATT MALFUNCTION").

Battery Status on the CL Device Main Screen (SpO2 Pod, NBP Pod, Transmitter)



Battery power gauge:

This shows the remaining battery power. It is divided into five sections, each representing 20% of the total power. If three sections are shaded, as in this example, this indicates that 40-60% battery power remains.

Battery Status Window (SpO2 Pod, NBP Pod, Transmitter)

♦ To access the **Battery Status** window, open "SmartKeys" and select "Battery". The following information is available in the battery status window:

Level: Current charging state of the battery.

Time to Empty:Remaining time until battery is empty (if not charged).

Time to Full: Remaining time until battery is fully charged (if charged).

Remaining Capacity: Remaining capacity of the battery

Full Capacity: Full charge capacity of the battery

Temperature: Current temperature of the battery

Voltage: Voltage of the battery in mV

Current: Average current of the battery in mA

S/N: Battery Serial Number

HW Rev: Battery HW Revision

Cycles: Full Charge Cycles

Remaining Cycles: Remaining Cycles

Manufacturing Date: Manufacturing Date of the battery

Model: Battery model

Type: Battery type

Status: Internal Status Code

Battery Status Window at Charging Station

- To access the Battery Status window at the Charging Station, open "SmartKeys", enter "Main Setup", select the desired slot, scroll to "Battery" and press the ✓ key.If a device on the charger occupies two slots, the information about the device is provided in the first slot and the menu of the second slot is empty. If a slot with no device on it is selected, the menu is also empty. The following information is available in the battery status window:

Level: Current charging state of the battery.

Time to Full: Remaining time until battery is fully charged

Remaining Capacity: Remaining capacity of the battery

Full Capacity: Full charge capacity of the battery

Temperature: Current temperature of the battery

Voltage: Voltage of the battery in mV

Current: Average current of the battery in mA

S/N: Battery Serial Number

HW Rev: Battery HW Revision

Cycles: Full Charge Cycles

Remaining Cycles: Remaining Cycles

Manufacturing Date: Manufacturing Date of the battery

Model: Battery model

Type: Battery type

Status: Internal Status Code

Conditioning a Battery

What is Battery Conditioning?

Battery conditioning recalibrates the battery to ensure that it has accurate information on the actual battery capacity.

Why is Battery Conditioning Necessary?

The capacity of a battery decreases gradually over the lifetime of a battery. Each time a battery is charged its capacity decreases slightly. Therefore, the operating time of a device running on batteries also decreases with each charge cycle.

Battery conditioning ensures that the value stored in the battery for its full capacity takes account of this decrease, so that the remaining battery charge can be calculated accurately, and the low battery warning given at the right time.

When Should Battery Conditioning be Performed?

Battery conditioning should be performed after 100 charging cycles or after one year of use (whichever comes first).

To check the number of charging cycles:

For CL NBP Pod, SpO2 Pod and Transmitter:

Go to the **Battery Status** window by selecting the battery icon on the screen and pressing the ✓ key.

The menu item **Cycles** will inform you about the number of charging cycles the battery has had.

For CL NBP Pod, SpO2 Pod, Respiration Pod and Transmitter:

Use the Support Tool Mark2, get a **Device Report** and open the **Battery Information** in the report.

Conditioning Batteries

Battery conditioning can either be performed with the IntelliVue CL Charging Station or the IntelliVue CL Transmitter Base Station.

To condition the battery:

Discharge the battery by placing the pod or transmitter into the cradle and activating a measurement. Discharge completely until the pod/transmitter switches off automatically. Wait for five hours after discharge. Recharge the battery until it is fully charged by placing the pod/transmitter onto the IntelliVue CL Charging Station or the IntelliVue CL Transmitter Base Station. When the battery is fully charged ("fully charged" is displayed on the pod), remove the pod/transmitter from the charging station and switch power off (See “Power States” on page 65 for details). Wait five more hours before using the device to monitor patients.

The temperature should be between 10 and 40°C during the waiting periods.

After Installation, Testing or Repair

Before handing the IntelliVue Cableless Devices over to the end-user, make sure they are configured appropriately and that they are in monitoring mode. Ensure that the user receives the current revision of the product documentation.