

Functional verification tests

The functional verification tests help to confirm the proper operation of the device and its options. You do not need to disassemble the device to perform these tests.

The tests can also be used as a diagnostic tool to help isolate a malfunction.

About the Welch Allyn Service Tool

The service tool is required to complete functional verification and calibration tests.

The Silver-level service tool enables a calibration check to satisfy the recommended annual service. To perform the calibration check, execute each of the Silver-level tests indicated in the table below. A Service Record form is provided at the end of this chapter for documentation of the calibration check results. If any of the Silver-level testing shows an out-of-specification result, use the Gold-level service tool to perform a full calibration.

The Gold-level service tool checks the functionality and calibration of the device. As it checks the device, the Gold tool also performs any needed calibration to bring the device within specifications. This full suite of tests is required to complete a repair. Each time you open the case, you must use the Gold tool to test the device before returning the device to normal use.

For information about the service tool, see the following:

- For instructions on installing and using the service tool, see *Welch Allyn Service Tool Installation and Configuration Guide*.
- For instructions on performing these tests, see the service tool's help files installed with the Welch Allyn Service Tool CD.

Tests performed by the service tool

The service tool tests the following device functionality:

Test	Silver	Gold
POST		✓
LCD		✓
Backlight		✓
LED		✓

Test	Silver	Gold
Voltage		✓
Leak test	✓	✓
Calibration		✓
Accuracy	✓	✓
A/D noise		✓
Pump inflation		✓
Dump		✓
Valve control		✓
Inflation linearity		✓
Overpressure	✓	✓
Valve/pump current		✓
Residual pressure		✓
<i>Bluetooth</i>		

Required equipment

Material no.	Description	Silver	Gold	Qty
407691	Service test box		✓	1
407672	BP test volume repair fixture 113670	✓	✓	1
407841	Adapter, Y tube, PTSS	✓	✓	1
4500-30	Blood pressure hose, 5 ft		✓	1
3400-925	USB cable, 2.4 m (8 ft)	✓	✓	1
200-2000IN	Pressure meter, NETECH	✓	✓	1
103521	Welch Allyn Service Tool CD	✓	✓	1

Test *Bluetooth* radio functionality

Use this procedure to verify *Bluetooth* radio functionality on devices with the *Bluetooth* feature enabled. The procedure tests whether the device can be detected by a *Bluetooth* technology-enabled computer.

Required equipment

- Computer with *Bluetooth* technology enabled and the Welch Allyn Service Tool installed
- Device to be tested
- USB 2.0/5-pin Mini-B cable

Before you begin

If the device and the computer are already paired, unpair them using the *Bluetooth* software on the computer. Consult the instructions provided by the software manufacturer.

To verify *Bluetooth* radio functionality

1. Use the service tool to acquire the serial number of the device.
 - a. Start the service tool on the computer.
 - b. If the Welch Allyn screen appears, click **Service**.
 - c. If prompted, log on.

The Device list page appears.
 - d. If any device tabs are open, close them.
 - e. Use the USB cable to connect the device to the computer.
 - f. If the device is not already on, power it up.

The device name and serial number appear on the Device list page.
 - g. Keep the service tool open so that you can access the serial number later in this procedure.
2. Place the device into Pairing mode.
 - a. On the device, navigate to **Settings > Bluetooth radio**.
 - b. Confirm that **Enable** is selected.
 - c. Select **Pair**.

The device indicates that it is in Pairing mode by displaying the message, "Pairing."
3. Verify that the computer detects the device.
 - a. Use the *Bluetooth* software on the computer to search for discoverable *Bluetooth* devices. Consult the instructions provided by the software manufacturer.

The software detects the device and displays the device serial number.
 - b. Verify that the serial number displayed by the *Bluetooth* software matches the serial number displayed on the Device list page of the service tool.

If the *Bluetooth* software detects the device, the radio is functioning properly. Completion of the pairing process is not required for this test.

Service record

Date:	Time:
Device name:	Serial number:
Technician:	MODF firmware version:
Host Controller version:	

Leak test

	Specification	Actual reading
LeakTest:	Max: 5	

Overpressure test

	Specification	Actual reading
OverPressureTest:	280 . . . 329	

Accuracy test

Target pressure ±5 mmHg	Pressure meter	Service tool	Specification	Pass/fail
0 mmHg	mmHg	mmHg	±3 mmHg	
50 mmHg	mmHg	mmHg	±3 mmHg	
150 mmHg	mmHg	mmHg	±3 mmHg	
250 mmHg	mmHg	mmHg	±3 mmHg	

Upgrades and licenses

Welch Allyn supports software and license upgrades for this device.

Software upgrades, when available, may be purchased or provided at no charge to customers covered by a Welch Allyn Service Agreement. The upgrades can be installed by either a Welch Allyn service center or by the customer using the service tool, Silver or Gold edition. Customers choosing to install software upgrades on their own will receive the software via the internet. When ordering software, provide the serial number of the device you wish to install the software on.

Licenses are available for purchase to enable additional software features. Customers who want to install licenses themselves must have the service tool, Silver or Gold edition, installed on a PC with internet access. Customers who have purchased a license receive an authorization code to enter in the service tool. The code authorizes the service tool to download the license file from the Welch Allyn server. The service tool then installs the license on the connected device, enabling the new feature. A more detailed description of the license process can be found in the service tool help files.

Note When a license authorization code is used to activate the license, the authorization code is married to the device serial number. Save the license authorization code with the serial number for future use. If the main board is replaced, you will need the authorization code to reactivate the license.

Available upgrades and licenses

The following upgrades and licenses can be added to each model's base configuration.

Supported software upgrades

Software updates and upgrades are supported for the Host Controller and ModF (Blood Pressure) module. New software upgrades are announced on the product page of the Welch Allyn website as they become available.

Licensed features

Model	<i>Bluetooth</i>	SureBP
34XX		
34BX		

Model	<i>Bluetooth</i>	SureBP
34XF	<input type="checkbox"/>	<input checked="" type="checkbox"/>
34BF	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Not available for this model. Available for this model. Included with this model.