

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.

Other Regular Tests

The care and cleaning requirements that apply to the monitor and its accessories are described in the Instructions for Use. This section details the periodic maintenance recommended for the monitor, transducers, and accessories.

Transducer Functional Tests

If any of the following tests fail, repeat the test using another transducer. If the second transducer passes the tests, confirming that the first transducer is defective, contact your service personnel.

If the second transducer also fails the tests, contact your Philips Service Engineer or Response Center.

The following tests apply to:

- Old generation wired Avalon transducers
- New generation wired Avalon transducers
- Avalon CL transducers

Ultrasound Transducer Functional Check

To test the ultrasound transducer:

- 1 Switch on the monitor and the recorder.
- 2 Connect the transducer to the fetal monitor.
- 3 Select the fetal heart sound for this channel.
- 4 Increase the loudspeaker volume to an audible level.
- 5 Set the transducer into the transducer opening tool.



- 6 The ultrasound transducer contains seven piezoelectric crystals. Basic functioning of each can be verified by holding a flat bottomed pen or similar above each crystal and moving it up and down as shown. A sound should be heard for each crystal tested. The pen should be held two to three centimeters from the transducer surface when the test is carried out.



- 7 A sound should also be heard when the transducer is moved back and forth over a solid surface, or the hand as shown.



Maternal Pulse Functional Check

To test the maternal pulse performance:

- 1 Switch on the fetal monitor.
- 2 Connect the transducer with the maternal pulse feature to the fetal monitor.
- 3 Place the transducer with its bottom to the forearm or the cheek, in order to generate an artificial maternal pulse, this may take up to 10 seconds.
- 4 Note what happens to the numeric display and the signal quality indicator.

Toco Transducer Functional Check

To test the Toco transducers:

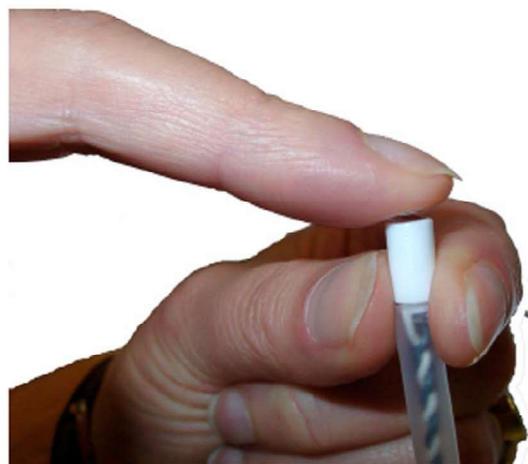
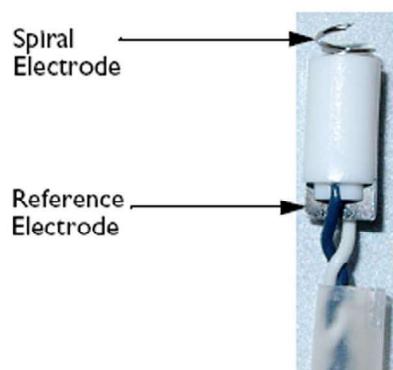
- 1 Switch on the monitor and the recorder.
- 2 Press the Toco baseline key to readjust the Toco display to 20 ± 1 .
- 3 Turn the transducer over so that the Toco sensor is resting on the flat surface. You should see a marked increase in the value of the Toco numeric in the Toco display.
- 4 Press the Toco Baseline Key to readjust the Toco display to 20 ± 1 .
- 5 Turn the transducer over again. You should see a marked decrease in the value of the Toco numeric in the Toco display.

DECG Functional Check

- 1 Switch on the monitor and the recorder.
- 2 Connect the transducer to the fetal monitor.
- 3 Attach the DECG adapter cable M1362B to the socket on the transducer.
- 4 Ensure that the dFHR channel display on the fetal monitor shows the **dFHR x Leads Off INOP** is still displayed, the DECG adapter cable may be defective. Replace the adapter cable.
- 5 Take a Fetal Scalp Electrode, and connect it to the DECG adapter cable.
- 6 To see if an ECG signal is present, turn on the wave display at the fetal monitor. If no wave is displayed when the electrode is touched, either the cable or the transducer is disfunctional.
- 7 Either hold the reference electrode between the thumb and index finger of one hand, and touch the spiral electrode with the index finger of the other hand, as illustrated below. This makes a short between the spiral electrode and the reference electrode (it is best to wet your fingers first). Use a **sterile** Fetal Scalp Electrode.

CAUTION

The tip of the spiral electrode is sharp. Take care not to injure your fingers. Never use a used electrode for this test.



Or cut off the plastic tip of the fetal scalp electrode (containing the spiral and reference electrodes) from the end of the wires. Strip the insulation from the end of the wires, and connect them to a patient simulator.

NOTE

We do not recommend the use of a specific patient simulator. The use of a patient simulator does not allow checking the specification of the ECG-functionality; it allows only a check of the general function.

- 1 Result: the **dfHR x Leads Off** INOP should disappear.
- 2 Viewing the ECG wave: when configured, you can view the DECG wave on the screen, and any noise will be visible as an additional verification of the effectiveness of the test.
If the test results are not as outlined above, repeat the test with another ECG transducer. If this does not solve the problem, try the following:
- 3 Check all connections.
- 4 If the **dfHR x Leads Off** INOP is still displayed, the DECG adapter cable may be defective. Replace the adapter cable.
- 5 If the problem persists, replace the transducer.

MECG Functional Check

- 1 Switch on the monitor and the recorder.
- 2 Connect the transducer to the fetal monitor.
- 3 Attach the MEGC adapter cable M1363A to the red color-coded socket on the transducer.
- 4 Either attach electrodes to the M1363A adapter cable, and apply the electrodes to the skin (for example on the wrists), or attach the M1363A adapter cable to a patient simulator.

NOTE

We do not recommend the use of a specific patient simulator. The use of a patient simulator does not allow checking the specification of the ECG-functionality; it allows only a check of the general function.

- 5 Result: You should see MEGC values displayed on the maternal display, or annotated on the recorder trace.
- 6 If the test results are not as outlined above, repeat the test with another ECG/IUP transducer. If this does not solve the problem:
- 7 The MEGC adapter cable may be defective. Replace the adapter cable, and repeat the test.
- 8 Check all connections.

IUP Functional Check

To test the IUP functionality of the transducer, you need the following:



- 1 Three lengths of silicone tubing with a 'T' adapter
- 2 Expansion chamber
- 3 Manometer
- 4 ECG/IUP transducer
- 5 IUP adapter cable
- 6 IUP catheter

- 1 Switch on the monitor and the recorder.
- 2 Connect the transducer to the fetal monitor.
- 3 Attach the IUP adapter cable (989803143931) to the socket on the transducer.
- 4 Cut the sensor tip off an IUP catheter (M1333A).
- 5 Connect the catheter to the IUP adapter cable.
- 6 Connect the silicone tubing to the test volume chamber and the manometer as shown in the picture.
- 7 Connect the cut end of the catheter to the silicone tubing.
- 8 Apply a pressure of $80 \text{ mmHg} \pm 5 \text{ mmHg}$ with the manometer. Check that the value on the display and on trace corresponds to this pressure. Slowly release the pressure, and check that the value on the display and on trace shows this change in pressure.

Touchscreen Calibration

To access the touchscreen calibration screen:

- 1 Enter Service Mode
- 2 Select **Main Setup**
- 3 Select **Hardware**
- 4 Select **Calibrate Touch**