



## To our customers!

Thank you for your interest in calibrating and maintaining your measuring equipment. We at Norsonic want you to benefit from the investments you have made.

Norsonic calibration laboratory complies with the ISO 17025 quality standard and is approved by Norwegian accreditation to perform measurements. You can always get more information about measuring equipment, quality and calibration if you contact us.

### Before sending equipment for calibration:

- Contact the laboratory to optimize the time schedule for both you and us.
- Wait for an email quotation from the laboratory before sending the equipment. It will be sent quickly.

### When submitting equipment for calibration:

- Print and attach the email quotation you received from us. It contains quotation number and information about your equipment. Then you get the right type of calibration, the right price and the fastest possible service.
- Be careful to inform us if the return address or invoice address is different from the sender address.
- If you would like us to make adjustments and maintenance of the equipment while it is at Norsonic, then please contact us about this. If there are known defects in your equipment, we can have it repaired at the same time.
- Send your instruction manuals with the equipment. (Not necessary for Norsonic equipment.) Many manufacturers change the specifications of their products during the life cycle, and we would like to measure your equipment correctly. If we do not have the necessary information, we must contact the supplier. If information is not available, we cannot calibrate your equipment. Then we cannot guarantee that we keep the agreed delivery time, and an additionally fee may be added. Contact your Customer Adviser to make sure we have the right information about your equipment.

## Calibration of sound calibrators

Sound calibrators are calibrated using a reference microphone. This is done according to an international standard, IEC 60942, which ensures that your certificate contains the values for level, frequency and distortion with very good accuracy. Calibrators are divided into two accuracy classes. Class 1 is intended for control of precision measuring equipment, while class 2 is intended for control of other sound measuring equipment. The class name must be on the calibrator. Our measurement procedure is called L244-02.

*Especially for Norsonic calibrators:* If a calibrator comes in out of specifications, the customer will of course be notified immediately. If during the calibration it turns out that only small adjustments are needed, we want to provide the service that the calibrator is adjusted as close to nominal values as is practically possible. This later gives the customer a better control of their sound measurement equipment. The customer can notify the customer supervisor that he does not want this adjustment.

### Statement of conformance

For a sound calibrator known to be type approved, the standard (IEC 60942) allows to issue a certificate which includes a "statement of conformance". This statement is based on the type approval of the object type, and the results of the actual measurements. The statement will tell if the measurement object is working according to the requirements in the standard, or not. *If your type of sound calibrator is type approved, NCL usually includes a statement of conformance. Please contact the Customer Adviser if you do not want a statement of conformance included on your certificate.*

## Calibration of pistonphones

A pistonphone is a mechanical laboratory reference calibrator. The calibration of reference pistonphones is different from the calibration of other sound calibrators. This is to obtain an even better precision in the results. Pistonphones are also described in IEC 60942 standard. Our calibration procedure is called L244-40.

## Calibration of sound level meters

Calibration of sound level meters is an extensive process. It consists of both acoustic tests and simulation of sound with electrical signals. The sound level meter calibration follows the standard IEC 61672-3. Our procedure is called L244-07. Both frequency response, level linearity and the properties of measuring pulse-shaped signals are tested. Microphone and preamplifier are included in the calibration. The standard has two accuracy classes. Class 1 is used for precision sound level meters and class 2 is for general sound meters. The class is indicated on the sound meter.

### Statement of conformance

For a sound level meter known to be type approved, the standard (IEC 61672) allows to issue a certificate which includes a "statement of conformance". This statement is based on the type approval of the object type, and the results of the actual measurements. The statement will tell if the measurement object is working according to the standard, or not. *NCL usually includes a statement of conformance on the certificate if your type of sound level meter is type approved. Please contact the Customer Adviser if you do not want this statement to be included on your certificate.*

## Calibration of microphones and microphone preamplifiers

Some customers want to have their microphones and preamplifiers calibrated separately. These calibrations are more detailed in frequency response than those required for regular sound meter calibration. Our procedures for microphones and preamps are called L244-03 and L244-10 respectively. The standard procedure is to measure absolute sensitivity with a reference calibrator and frequency response using electrostatic actuator.

NCL can also calibrate your microphones and microphone preamplifier combinations (microphone set) in an anechoic chamber. Our free-field procedure L244-12 ensures high accuracy and good resolution of these measurements. The standard for calibrating microphones is called IEC 61094.

## Calibration of accelerometers and vibration calibrators

Vibration and sound are often closely related. Many customers have gradually acquired accelerometers for connection to the sound meter. We calibrate the accelerometer's sensitivity and frequency response by comparison with a reference accelerometer in accordance with ISO 16063-21. We can also calibrate vibration calibrators. The level, frequency and distortion of the calibrator are controlled with good accuracy. Our procedure is called L244-17.

## Calibration of tapping machines

Tapping machines are used to generate simulated step noise. The machine itself is described in ISO 10140-5. Our calibration procedure is called L244-15. Before calibration, the fall height of the hammers is adjusted.

We also perform cleaning and lubrication maintenance of the machinery prior to the calibration to ensure proper results and a long faultless time of operation.

## Calibration of Reference sound sources

The calibration of reference sound sources is described in ISO 6926. Our calibration procedure is L244-16. The calibration is performed in a very large hall simulating free field conditions over a reflecting plane. This hall is also used for other purposes so the laboratory only has access there two times per month. Be sure to schedule the right time with the Customer Advisor.

## **Calibration of other equipment**

At Norsonic Calibration Laboratory, we have extensive experience in calibrating a wide variety of equipment, both what Norsonic has made and what is made by other manufacturers. Feel free to contact us so we can help you.

We are constantly working on improving our quality and ensure that our calibration procedures are up to date, and that the measurement equipment are regularly calibrated. We have a continuous focus on education and our calibration engineers are well qualified for the work.

A list of our accredited services can be found at: [Norsk Akkreditering](#).

Best regards,

**Norsonic Kalibreringslaboratorium**