



# Tapping Machine

## Nor277

### Application

- Impact sound transmission testing according to ISO140, part VI, VII and VIII, ASTM E-492 and ASTM E-1007.



### Features

- Remote operation from hand switch or PC
- Mains or battery operation
- Low weight
- Compact
- Rugged construction
- Built in self check of hammer fall speed, and tapping sequence.
- Retractable feet

## General

The tapping machine Nor277 is the third generation of tapping machines from Norsonic for performing standardised impact noise tests (foot fall noise). It incorporates all the experience from the former generations into a compact, light, yet a rugged unit with the construction based on an extruded aluminium chassis. The hammers are made of harden stainless steel, ensuring non deformation of the hammer shape even after years in use. The unit weight is only 10 kg including the optional battery. Retractable feet ensure easy transportation and storage

The unit has the required five hammers each weighting 500g, with a fall height of 40 mm and 100 ms between each hammer impact. A crystal controlled servo system ensures the correct tapping frequency is maintained at all times and temperatures. A level gauge mounted on the top helps the user to align the unit when adjusting the fall height.

## Self check

The tapping machine standards specify the impact velocity of the hammer and to ensure this requirement is met the Nor277 continually monitors each hammer. Each hammer is fitted with a laser sensor to measure the impact velocity to ensure that the energy imparted into the test floor is correct hence the effects of any friction or misalignments are immediately apparent. Each hammer has a LED indicator on the front panel that indicates when the impact velocity and tapping frequency are within the requirements of the standard. The user can now be assured that the noise generation system will perform to the requirements of the standards and therefore concentrate on the other aspects of the measurement.

## Battery operation

The unit can be equipped with an internal battery (Option 1) that will run the unit for approximately one hour. The battery is of the lithium-ion type and is automatically charged while the unit is connected to mains. A three step LED battery monitor tells the user about the state of charge. Charging time is 2 hours.

## Wireless Remote control

A wireless remote control (option 2) allows the user to switch the unit on/off remotely. The radio range is 100m in free field, which correlates to failure free operation through most thick concrete constructions. The unit may also be controlled via the RS232 interface and this allows wireless control via standard RS232 to Bluetooth adaptors. The RS232 interface is a part of the basic unit and does not require option 2.



## Specifications

### Standards

ISO140, part VI, VII and VIII, ASTM E-492, ASTM E-1007.

### Calibration

All units are delivered with calibration certificates.

### Hammers

Five in line specially harden stainless steel hammers separated by 100 mm. Each hammer has a weight of 500g  $\pm$ 4g. Hammer diameter 30 mm  $\pm$ 0,2 mm. Hammer front radius is 500 mm.

### Tapping sequence

10 impacts per second, rpm controlled via servo feedback loop.  
Sequence: 1, 3, 5, 2, 4

### Effective fall height

40 mm (adjustable  $\pm$ 5 mm). A gauge for exact height adjustment is attached to the machine.

### Power

85-264 VAC, 47-63 Hz, 120 - 370 VdC, consumption less than 30W.

### Interface

RS232. For computer control. This allows wireless control via standard RS232 to Bluetooth adaptors.

### Battery operation (option 1)

Built in Lithium Ion rechargeable batteries.  
Battery life: > 1 hour    Charging time: 2 hours

### Wireless remote control (option 2)

Operating frequency:  
433 MHz EMC compliant for use in Europe  
315 MHz FCC compliant for use in USA  
Transmitting range: 100m

### Supports

3 retractable and height-adjustable feet with rubber pads.

### Dimensions

WxHxD feet retracted: 165x230x495 mm (6,5x9,1x19,5")  
WxHxD feet extended: 265x230x495 mm (10,4x9,1x19,5")  
+50 mm (H) including handle (2")

### Weight

10 kg (22 lb) including battery and wireless remote option

### Environmental

Operation: -10 to +40 deg C 90% RH  
Storage: -30 to + 70 deg C 90%RH

### CE conformity

EMC compliance according to EN50081-1 and EN50082-1  
Safety according to EN61010-1 and Machine directive 89/392

### Accessories

Carrying/Shipping Case Nor1336