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Quick Reference

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# Keys - Overview



## Device ON/OFF

<b>Medium push (2s)</b>	Power ON / OFF
<b>Very Long push (8s)</b>	Reboot device

## During measurement

<b>Short push</b>	Arming the probe – start / resume measurement
<b>Short push</b>	Disarming the probe – stop measurement



Bluetooth dongle

Battery

USB-C



# Hammers

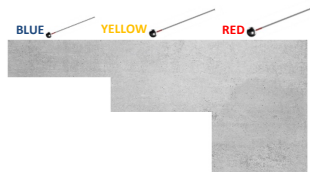
Low frequency hammer



High frequency hammer (3 types)  
7.5mm, 10mm and 15mm



Ball Diameter, mm	Approximate Contact Time, $\mu$ s	Maximum Useable Frequency, kHz	Minimum Measurable Depth, mm
5	22	47	43
6	26	39	52
7	30	33	60
8	34	29	69
9	39	26	77
10	43	23	86
12	52	19	103
15	65	16	129
20	86	12	172



Select the smaller hammer for thinner elements, and the bigger hammer for wider elements

# LED - Behaviour



LED behaviour		
<b>Battery Status</b> (when turning on the device)	Green: single quick blink: >20%	
	Red: single quick blink: <20%	
<b>Turn on</b> , awaiting Bluetooth connection	Green pulsing	
<b>Connected</b> , awaiting arming (disarmed) <ul style="list-style-type: none"><li>Paused</li><li>Stopped</li></ul>	Blue pulsing	
<b>Armed</b> <ul style="list-style-type: none"><li>Resumed</li></ul>	Blue Solid	
<b>While measuring</b> (rod/wheels)	Blue Solid	
Errors		
Error	Red pulsing	
Device in boot loader mode	Red-Green alternate pulsing	
Battery Charging		
While Charging	Green pulsing 0.5Hz	
Charged done	Green solid	
Error <ul style="list-style-type: none"><li>batteries not charging / not inserted</li><li>Overtoltage / overheated</li></ul>	Red solid	

# One Sensor – Two Applications

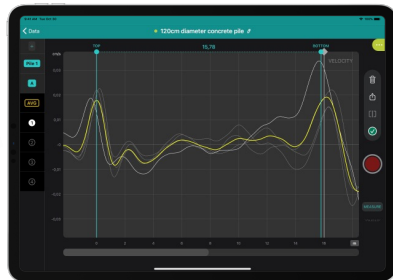
## Pile Integrity Test

Deep Foundations:

- Cast in place piles.
- Driven piles.

Detection:

- Piles with free end.
- Piles with toe in bedrock.
- Short piles.
- Necking.
- Bulging.
- Cracks and voids.



## Impact Echo Test

Concrete elements:

- Slab on grade.
- Foundation slab.
- Roof, floors.
- Beams and columns.
- Concrete pavement.
- Walls.
- Tunnels.

Detection:

- Plate thickness and backwall.
- Cracks and voids.
- Delamination.
- Honeycombs.
- Debonding areas.
- PT duct voids.



# Contact Solution – Coupling material

## Pile Integrity Test

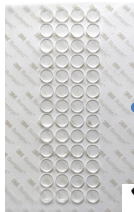
- Clean the surface from dirt and debris.
- Grind the surface to make it smoother.
- Place a small portion of putty (coupling material) in the sensor tip.
- Change the portion of putty once it gets dirty.
- Perform minimum 5-10 impacts per spot.



Putty

## Impact Echo Test

- Clean the surface from dirt and debris.
- Grind the surface to make it smoother.
- **DRY CONTACT SOLUTION:** Place a silicon sticker (coupling material) in the sensor tip and use it as many times as wanted.
- Once it is broken, replace it with a new sticker and clean the sensor tip with the cleaning pen.
- If coupling is not achieved, use putty.
- Perform minimum 5-10 impacts per spot.



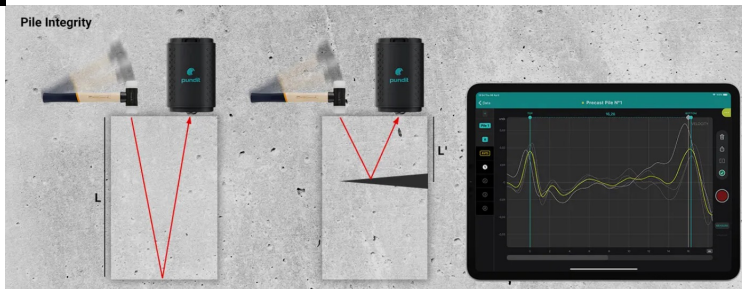
Cleaning pen



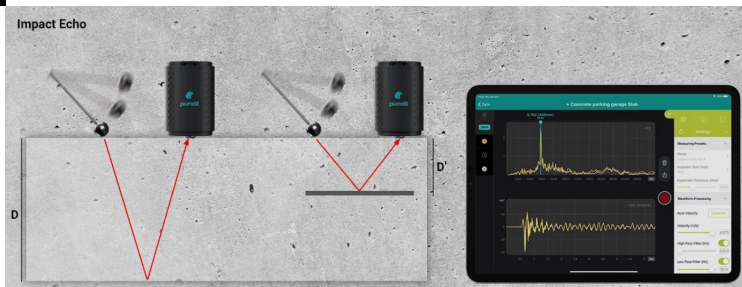
Sticker

# Technical Principle

## Pile Integrity Test



## Impact Echo Test



# First calibration of speed

## Pile Integrity Test

- Select Pile Integrity Mode **(0)**.
- Input the expected length of the pile **(1)**.
- Perform 5-10 impacts at the top of the pile.
- Press the calibration button **(2)**.
- Revise that the length shown on the app **(3)** matches with the expected one.

\* If the length of the element is not known, estimate a wave velocity of 4.000m/s.



- (3)** Measured length
- (0)** Measuring Mode
- (1)** Expected length
- (2)** Calibration button
- Wave velocity

Pulse Velocity	Concrete Quality Grading
> 4'500 m/s	Excellent
3'500 – 4'500 m/s	Good
3'000 – 3'500 m/s	Medium
<3'000 m/s	Doubtful

## Impact Echo Test

- Select Impact Echo Spot / Grid mode **(0)**.
- Input the expected thickness of the concrete element **(1)**.
- Perform 5-10 impacts in the surface far away from the sides (lateral faces, construction joints, etc).
- Press the calibration button **(2)**.
- Revise that the thickness shown in the frequency peak **(3)** matches with the expected one.

\* If the thickness of the element is not known, estimate a wave velocity of 4.000m/s



- (3)** Measured thickness
- (0)** Measuring Mode
- (1)** Expected thickness
- (2)** Calibration button
- Wave velocity



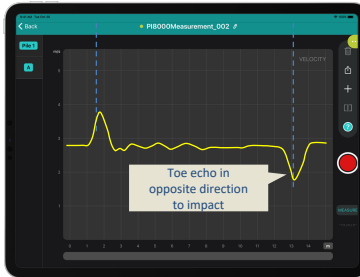
# A few examples

## Pile Integrity Test

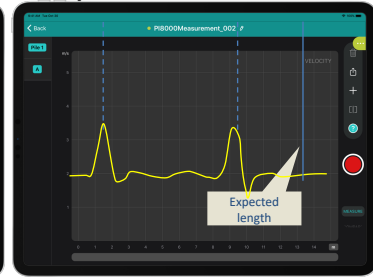
### Pile with free end



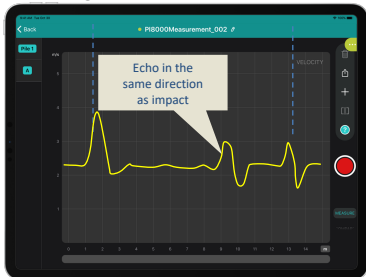
### Toe in bedrock



### Short pile




### Necking – reduction in diameter



### Bulging – increase in diameter

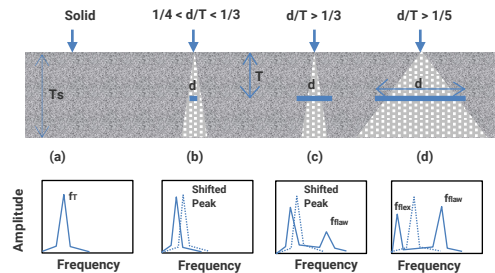


 \*These examples are shown as a reference only and are valid theoretically. However, the signal from a real case scenario can differ and it is the responsibility of the inspector to correctly identify and interpret it.

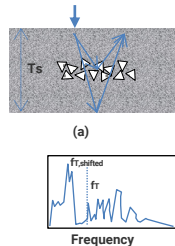
# A few examples

## Impact Echo Test

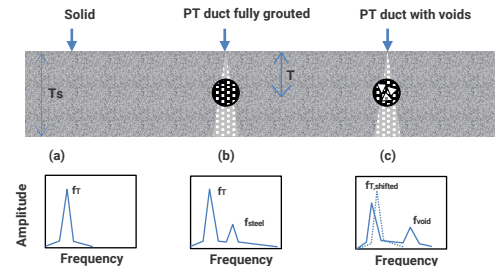
### Cracks & Delamination



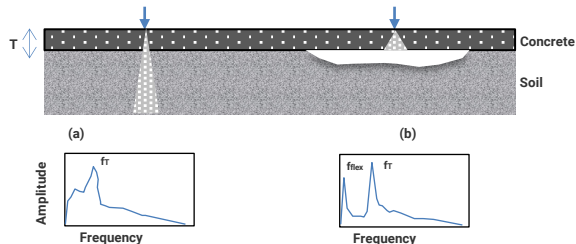
### Honeycomb



### Voids in post tensioning duct



### Plates in contact with soil



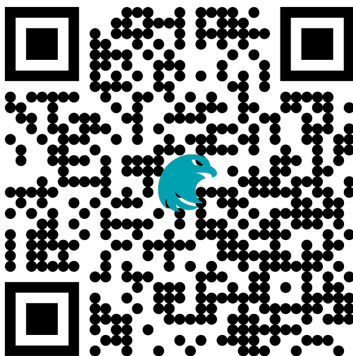
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SWISS  MADE

For more information on the product use of the product,  
please refer to the Product Name PI8000 documentation

It is available for download on



<https://www.screeningeagle.com/en/products/pundit-pi8000>

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