



# BOLT-Tester CTS-03

## BOLT-Tester on CTS-03

The BOLT-Tester is used for integrity testing for chemical anchor bolts, bolts and nuts of steel bridges.

BOLT-Tester is based on CTS-03 USB device as the measuring device and it works with Windows PC. All measured data are stored in PC.

CTS-03 is a USB measuring device composed of the preamplifier for ICP type accelerometer and AD converter which used for non-destructive testing of concrete strength as named the mechanical impedance method.

Using CTS-03 device with other sensors and application software, it can be used as the measuring instrument which has various functions.

## Functions of BOLT-Tester on CTS-03

By simply tapping bolts or nuts with dedicated hammer, BOLT-Tester measures the waveforms of rebound force by built-in impulsive accelerometer.

If the reactive motion is considered as elastic behavior, bolts or nuts are evaluated as integrity while plastic behavior is evaluated as non-integrity.

BOLT-Tester is developed for the integrity testing of chemical anchor bolt. However, it is also widely applicable for the integrity testing of any bolts and nuts used for plant facilities, wheel studs of automobiles and the other areas.

## Applications

- Construction management of chemical anchor
- Anchor Bolt Testing
- Wheel bolts testing



## BOLT-Tester on CTS-03

<b>Dimension</b>	380mm×190mm×90mm
<b>Hammer</b>	420g weight with Impulsive Accelerometer
<b>Measurement</b>	Waveform of impact acceleration
<b>Power supply</b>	Bus-powered
<b>Data</b>	Stored in PC as text data
<b>Attachment</b>	Dedicated Storage Case, CD-ROM (Installer, Device driver and Application software), and Measuring manual



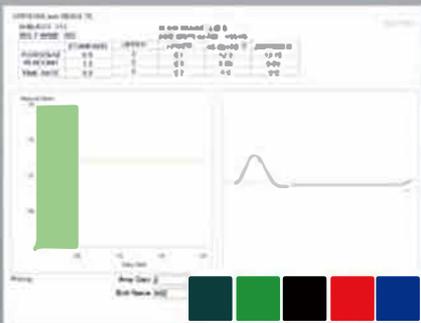
Nitto Construction Incorporation.



# BOLT-Tester CTS-03

BOLT-Tester consists of dedicated hammer with impulsive accelerometer, CTS-03 USB device and the application software which works on Windows XP, Vista, 7 and 8 (32, 64 bit OS). CTS-03 is a USB device designed for the Concrete Tester. Measuring function of CTS-03 is applied for the integrity testing of bolts and nuts on BOLT-Tester. BOLT-Tester is newly developed as simple and high performance measuring instrument which require only hitting a bolt head to inspect the integrity of bolts and nuts in real time.

User can add other application program on the PC to use CTS-03 for various purposes. If you need more information, please contact with your nearest dealer or the manufacturer.



### Application program

The application program of BOLT-Tester works on the Microsoft Windows OS. The software is provided as CD-ROM which including the device driver of CTS-03, BOLT-Tester application and installation program. After copying contents of CD-ROM into your windows PC, run the installer. The application program also can be used with tablet computer unless it is Windows OS.

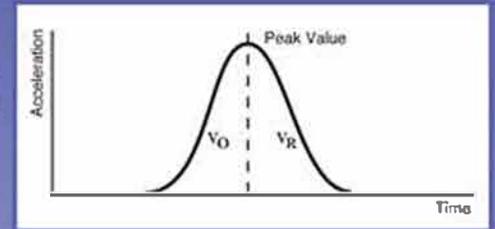
### Contact to

## Measurement theory

If the anchor bolt was executed in a good manner, the elastic deformation of the bolt occurred by the hammer blow will be recovered very quickly. The more integrity of the bolt, the more elastic modulus becomes. On the other hand, at a low integrity, the plastic deformation is caused with the adhesive. It causes lower stiffness of bolt structure and deformation of the waveform by hammer blow. In addition, if the bonding strength of the bolt and concrete is weak, the bolt moves toward to the bottom of anchor hole then the bolt strikes concrete body. This sequence generate a unique waveform which shows two peaks. BOLT-Tester detects the integrity of the bolt by analyzing the waveform of the hammer blow.

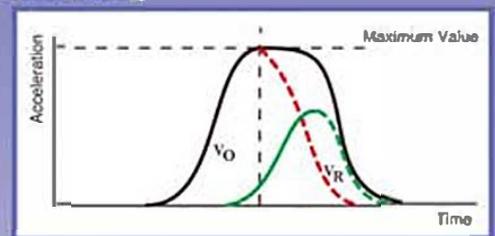
### The waveform of the integrity bolt

The waveform of integrity bolt show one peak, and it is almost symmetry. If the condition of the bolt is not perfect, the waveform may shows slight disturbance, however, the waveform shows still one peak unless it has enough bonding strength.



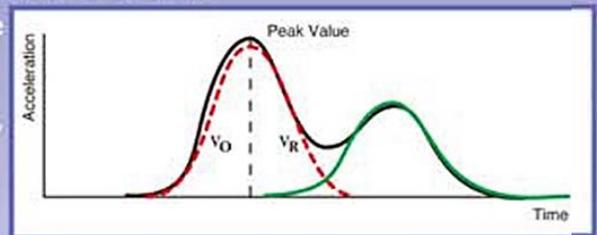
### The waveform with slight plastic deformation

The reactive force against the hammer blow will be delayed in short time. Accordingly, peak of the waveform will be shown a little wider.



### The wave form of the non-integrity bolt

The reactive force against the hammer blow delays obviously, then the wave-forms will show two peaks.



Manufactured by



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