Metrix+™
Innovative Excellence

BELT TENSION TESTER

BTT IR 500 & 800

Infrared belt tension testing

Measuring principle

This has an infrared sensor and laser, which calculates the natural vibrating frequency of the belt, using time of flight principle for laser. The frequency value can be used to measure the tension of the belt using the formula, $T=4xmxL^2xf^2$, setting the mass and free belt length.

Applications

Belt tension testers test the tension of belts, wires, ropes, tapes, etc, as a means of mechanical strength test. Widely useful in automobile, textile, cables, wires, plastic films, paper, printing, etc. It can be used to measure the tension of auxiliary belts fitted to motor vehicles and other machines.

Features

- Two models BTT IR 500(upto 500Hz) and BTT IR 800(upto 800Hz)
- Integrated and flexible laser sensor, being easier and faster than mechanical sensor
- Flexible split type sensor is small, helpful for measurement in narrow space
- Convertible measurement units
- Backlit display





Technical Specifications

Model	*Metrix+* BTT IR 500	*Metrix+* BTT IR 800
Range	10 ~ 500Hz	10 ~ 800Hz
Belt free strand length	Input upto 99.99mm	
Belt mass	Input upto 9.999kg/m	
Measurement distance	3 – 20mm	
Units	Frequency: Hz Tension: N/ Lbf, mass: kg/m/ lbs/foot, free belt length: m/ inch	
Resolution	1Hz	
Depth of split sensor	approx. 66mm	
Accuracy	< 5%	
Digital sampling accuracy	< 1%	
Power	4 x 1.5V AAA batteries	
Features	backlit display, low battery indication, auto power off	
Operating	Temp: 0~50C, Humidity <80% RH	
Dimensions	Main unit: 178 x 72 x 34mm, approx. 180g Sensor: 124 x 21 x 12mm	
Std accessories	Main unit, sensor, manual, case	

[Note- Tension checking should always be carried out in accordance with the vehicle manufacturers' instructions.]
[In low tension ranges, a bigger vibration may be generated more easily, which may cause measurement errors. If the tension value cannot be obtained, the belt may be too loose to make a clear frequency signal. For more accurate tension values, try to tighten the belt.]







5.4 Measuring Belt Tension

5.4.1 Measuring The Frequency Of The Belt

Press the POWER Key to power on the tester, and set the measurement unit to Hz according to the steps in 5.3.

Make sure that the belt is stationary. Align the laser of the measuring probe with the middle position of the belt, and the distance between the probe and the belt shall be within 3~20 mm.

Tap the installed tension belt to make it vibrate at natural frequency, and the screen displays 'process busy'. Then the measuring probe can detect the static natural frequency with pulse light.

When the measured values are displayed in Hz, the belt mass and length are not required to be input.

5.4.2 Measuring Belt Tension

Press the POWER Key to start the tester, set the measurement unit to N / lbf according to the steps in 5.3, and input the belt mass and free length (the belt length between the center points of two driving wheels). The free length L of the belt is as shown in Fig. 5-2.

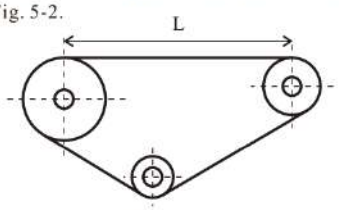


Fig. 5-2

Make sure that the belt is stationary. Align the laser of the measuring probe with the middle position of the belt, and the distance between the probe and the belt shall be within 3~20mm.

Tap the installed tightening belt to make it vibrate at natural frequency, and the screen displays 'process busy'. Then the measuring probe can detect the static belt tension with pulse light.

NOTE!

* The belt tension can only be measured when the belt is stationary.
* In several measurements, the measurement results will fluctuate within ± 10%, which is not caused by measurement error or mistake. In most cases, it is caused by the mechanical tolerance of the driving system.

Model and Specifications subject to change without notice.