

Application Information

Force to Measure Respiration Rate

Respiration rate is defined by the number of breaths a person takes per minute. This rate is an important indicator of one's health and is a key parameter checked by medical professionals to obtain proper patient diagnosis. An abnormal respiration rate can reveal an illness as this rate increases with fever or other medical conditions. A high rate can also be an indicator if a person is feeling overly stressed or tense. If an individual were able to monitor their breathing rate their wellness would be verified. Likewise, appropriate actions to adjust breathing could lessen the amount of stress. Reducing stress levels can diminish many of the dangerous long term stress-related ailments such as heart disease, diabetes or sleep apnea. Unfortunately, not everyone has the time or means to regularly monitor their breathing.

A leading designer and manufacturer of wearable biotech devices has developed an instrument that measures respiration rates on a human body. To accurately detect the respiration rate, the device sits either at the waist-line or bra line where it measures the force placed on it by the expansion of the subject's torso. The wearable device transfers this data to an accompanying smart phone application. Depending on results, the phone app may offer breathing exercises or wellness tips to aid the user in bringing the rate into the appropriate zone.

During production, to verify that the device will correctly read the minute force produced by the torso from a person breathing, they use the Shimpo FGV-5XY Digital Force Gauge with 5 lbs. (2 kg) capacity combined with the Shimpo FGS-220VC Programmable Motorized Force Test Stand. By utilizing these products, the manufacturer can confirm that the device will measure the force of the expansion at various levels (breathing hard and fast, slow and steady, etc.). They chose the Shimpo force gauge/test stand combination due to the simplicity, repeatability, and accuracy of the measurements. The Shimpo test system enables tight quality control, enabling them to provide high quality products to this new growing biotech device industry.

Equipment Used

- FGS-220VC Motorized Force Test Stand
- FGV-5XY Digital Force Gauge



FGV-XY with Memory & Data Output



Force Test Stand shown with Force Gauge