

Starrett®

NEW FORCE GAGE TECHNOLOGY OFFERS FASTER, EASIER ALTERNATIVE TO CONVENTIONAL COMPUTER AND SOFTWARE-BASED FORCE MEASUREMENT



FORCE MEASUREMENT SOLUTIONS

AUTOMATION ADVANTAGES

Automated testing, such as using a force gage with a digital force testing frame, has been commonplace in modern manufacturing operations. In this scenario, the force gage is setup to measure the maximum force (peak force), or to measure and display the force result after the test frame's crosshead has moved for a specified distance. The user configures the force gage and the test frame independent from one another. At the completion of the test method, the test frame may display the active crosshead travel and current speed and the resulting distance.

Communication between the force gage and test frame is typically via RS-232. The gage and test frame may require a communication protocol setup such as baud rate, word length, stop bits, etc. Mechanical travel limits are used on the test frame to help prevent accidental overloading of the force gage's internal load cell sensor. At the conclusion of the test, the user reads the force results on the gage and the distance result on the test frame.

Often, the independent results for force and distance need to be manually combined and used later in a separate application for reporting, such as merging data from two sources into an Excel® spreadsheet. So, while the force gage-force tester represents a fairly simple system configuration, there are a variety of pre-test setup requirements and post-test activities involved, leaving a risk of incorrect setup or problems with data integrity.

Tests	
Test Mode	
Distance	
Type	Tension
Target	50.00
Speed	25.00

As a controller, the DFC can be used to measure load and control the FMM Test Frame. Create Load, Distance and Break Limit test methods in seconds.

The force gage also displays both the force measured by the internal load cell sensor as well as the crosshead distance traveled during and at, the completion of the test. When setting up the gage to perform a distance limit test, the gage is used to enter the distance limit and test velocity. The test is started by pressing a key on the gage. During the test, the gage displays the active force and the active distance in SI units of measure or imperial. The target setpoint limit is displayed so the operator knows the status of the test. At the end of the test, the gage displays both the load at the target distance and the distance. If a tolerance limit is used for pass/fail indication, gage the result is shown in red text indicating a failed result. If performing a break limit test, the gage will display the maximum force and the distance at maximum force for the break event.

The force gage also allows results to be saved to memory for export to a network device, such as a computer running ProLink® QC Calc statistical process control software. Bluetooth® technology in the gage enables data transfer to a device wirelessly also.

There is certainly a place for computer-software based systems for force measurement and analysis. These systems offer test method flexibility, analysis and reporting. But they also require a higher level support than force gage-based systems. Now with the DFC and FMM combination, an affordable and easy-to-use testing system for common force measurement applications exists. Users get the performance of a computer-software based system without the concerns and support requirements often associated with traditional systems.

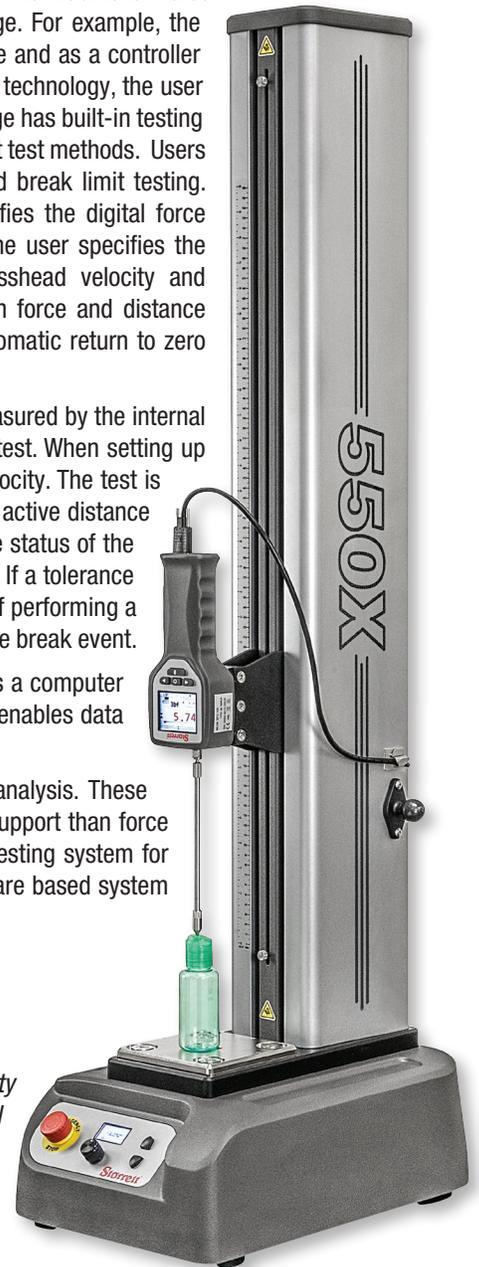
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About the Author

James Clinton earned a Bachelor of Science Degree in Mechanical Engineering from the University of Massachusetts Dartmouth. He has been with Starrett for over six years starting as a Technical Support Specialist. James is now the Product Manager for Force and Material Test Products.

ENSURE DATA INTEGRITY

Solutions are now available that extend the traditional force measurement functionality of a force gage. For example, the DFC Force Gage functions as a force gage and as a controller for the FMM Digital Force Tester. With this technology, the user only needs to setup the gage since the gage has built-in testing templates for common force measurement test methods. Users can perform load limit, distance limit and break limit testing. Within each test method, the user specifies the digital force tester functionality by using the gage. The user specifies the direction of crosshead motion, the crosshead velocity and functions such as automatic zero of both force and distance prior to the actual testing, as well as automatic return to zero position once the test has concluded.



DFC mounted on FMM-550X Digital Force Tester