

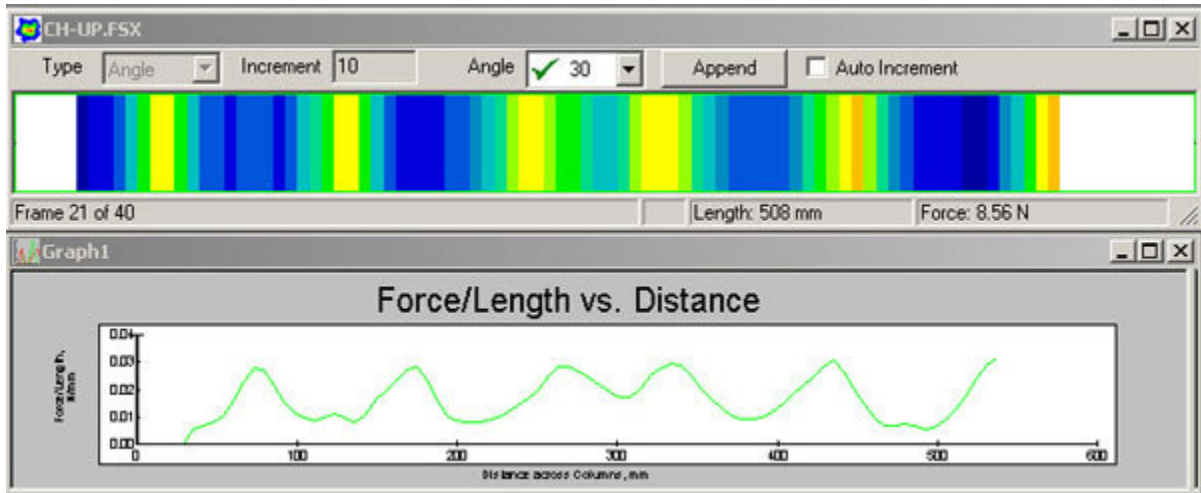
Wiper™ to Windshield Force Measurement System



The *Wiper* system measures wiper blade to windshield interface force profiles along the entire length of the blade, under various testing conditions. Designing a wiper blade that effectively cleans a windshield is not easy. The many constraints, such as different blade lengths, durometers, low and uneven pressures, varying windshield contours, complex mechanical linkages, and varying wind impact velocities, create a very challenging material and dynamics problem.

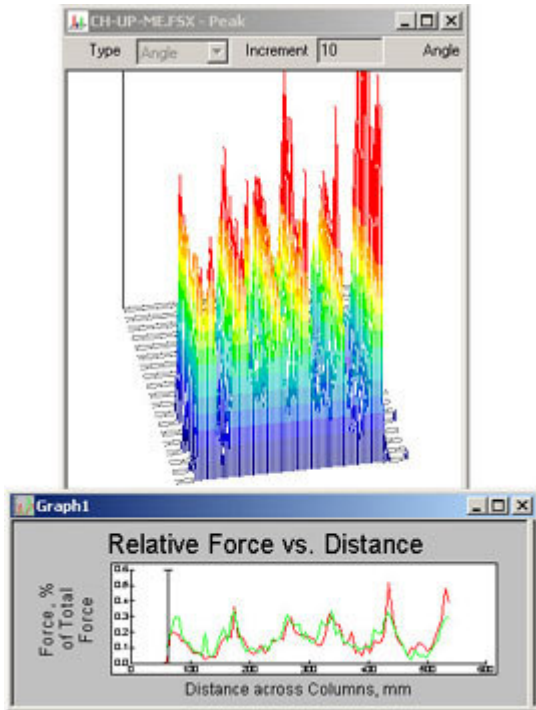
The *Wiper* system is a key research and development tool to improve blade and wiper system design and performance. The *Wiper* system uses a 0.004 in (0.1 mm) thin, flexible sensor that dynamically captures the force profile under such conditions as "lift-off," the effect that results from varying vehicle speeds, wind impingement velocities, and wiper upstroke and downstroke. The *Wiper* system captures the force distribution along the entire length of the blade, providing important insights into how to improve design to overcome the many wiper design challenges.

Force output measured - wiper blade at 30° angle on windshield



Output displayed graphically - Force vs. Distance across sensor rows

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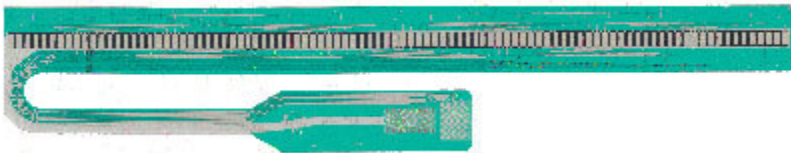
Software Features

- Capture dynamic force
- Display blade angle
- Display real-time and recorded data as 2-D and 3-D images
- Play-back force "movies"
- View data frame-by-frame
- Export ASCII file capability
- Display data frame-by-frame, single, and/or multi-frame
- Ability to isolate and analyze specific areas
- View and compare multiple tests simultaneously
- And much, much, more!

Data Acquisition Electronics and Sensor to PC Interface

Every Tekscan Industrial system, including *Wiper*, uses a specially designed sensor interface electronic called a "handle". The handle connects to the sensor, gathers the data from the sensor, and then processes and sends this data to your computer. The handle also connects to an interface on your PC. Tekscan offers a variety of PC interfaces including USB, parallel and PCI boards. Each interface product embodies sophisticated microprocessor based circuitry to control scanning sequence and frequency, adjust sensitivity, and optimize the performance of our sensors.

Sensor Description



Technology: Resistive

Calibration: With application of controlled device

Sensor Thickness: 0.04 in (0.1 mm)

Model [9901](#)

No. of Sensing Elements: 96

Spatial Resolution: 4.0 sensels/linear in / 1.6 sensels/linear cm
Size of Sensing Area: 24 in x 0.4 in (610 mm x 10 mm)
Pressure Ranges: 0-10 PSI

Model [9920](#)

No. of Sensing Elements: 128
Spatial Resolution: 4.0 sensels/linear in / 0.5 sensels/linear cm
Size of Sensing Area: 32 in x 0.08 in (813 mm x 2 mm)
Pressure Ranges: 0-10 PSI

The *Wiper* system comes standard with:

Equilibration/Calibration devices - Pneumatic devices apply a uniform pressure to the active area of a sensor to normalize output of each sensing element. The system electronically compensates for variation in individual sensing elements.