

■ Power Window Motor: Production Audit Test (Torque, RPM, AMPS, Vibration)

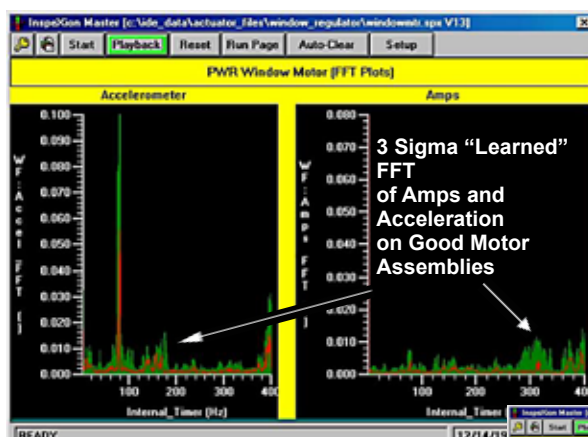
Highlights:

- Detects DC motor faults:
 - “Com bar” defects
 - Current and power
 - Delivered torque and RPM
- Detects mechanical defects:
 - Missing spacers
 - Slow motor
 - Broken magnet
 - High pitch noise
- System features:
 - Statistically determined test limits
 - Advanced Signature Analysis
 - Operator simplicity
 - Network traceable
 - PLC connectivity

Reducing interior vehicle noise presents a significant problem for automobile manufacturers. Continuous quality improvement strives for the smooth, quiet and reliable operation of all electro-mechanical devices that customers expect. At the same time, the relatively noisy environment of the production shop makes it increasingly difficult to detect noise from defects that would be unacceptable under driving conditions.

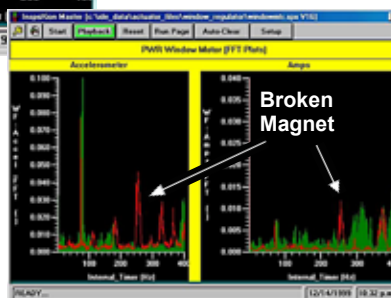
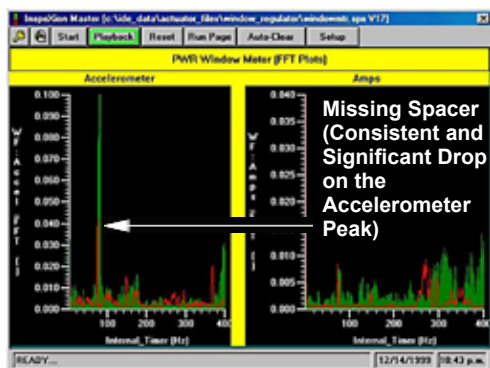


When human operators test a complex device such as a power window motor, even under ideal conditions, fatigue can cause inspection standards to vary. Functioning motors with subtle defects can slip through and cause warranty problems later on.



The Sciometric Test and Analysis System provides a consistent and objective means of noise and mechanical performance testing. Its powerful Pentium™ CPU running under InspeXion® software is easily configurable for various test sequences, each of which focuses on a specific area of interest for the part under test. Up to eight specialized analog sensors that can detect vibration, speed, rotation, torque, pressure and position can be attached to the inputs. Waveform capture, storage and subsequent Signature Analysis provide the statistical basis for determining the inspection limits of known good parts, which are used to assess units in production. The screen

shots show the acceleration characteristics of a good motor (green) superimposed on the signature of a motor with certain defects (a broken magnet and a missing spacer). Note the defects are very easy to detect with the waveform and analysis capabilities of the Sciometric Test and Analysis System.



InspeXion® Screens showing Signature Waveforms that Identify Various Defects Detected in Power Window Motors.

The system can be attached to a network, and all results can be stored for later reports and trend analysis.