

Part Quality Inspection Application: Automated Resonant Inspection System Drop Test Fixture

NDT-DTF

Drop Test
Fixture

The innovative Drop Test Fixture (NDT-DTF) Resonant Inspection System makes automation for 100% quality testing of small parts such as medical implement components, compressed gas cylinders, ball bearings or small electronic connectors easy and efficient. The Drop Test Fixture allows small metal injection molded (MIM), powder injection molded (PIM) or other small metal parts to enjoy the benefits of Resonant Acoustic Method (NDT-RAM™): speed – as fast as a part per second; versatility – multiple part numbers can be QA tested on a single system; ease of use – no part preparation is needed for testing; and objectiveness – no human interpretation is necessary, a simple pass/fail result is returned by the NDT-RAM system and parts are automatically sorted via a controlled servo motor.

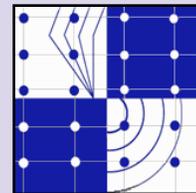
The NDT-DTF automates easily with typical small part automation components like bowl feeders or vibratory tables and is instrumented with a laboratory grade force sensor, microphone and digital signal analyzer while still being rugged enough for the manufacturing environment. The Drop Test Fixture provides free-free testing of small parts; there is no damping of the resonant frequencies from boundary conditions such as fixtures that can decrease the resolution of the testing.

This easy to use NDT system quickly becomes a critical assurance tool in your quality inspection process. The NDT-DTF system can detect imperfections or flaws such as variations in overall geometry, cracks, missing features and density of parts. It can also detect if processes have been missed, such as a machining or heat treating operation.



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Application



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TYPICAL USES:

- Production - End-of-Line Inspection
- Production - Process Monitor
- Field Service - Troubleshooting
- Quality Control - Spot Checking
- Engineering - Development

SUCCESSFUL APPLICATIONS:

- Metal Injection Molding (MIM)
- Powder Injection Molding (PIM)
- Powder Metal
- Small Metal Parts
- Ceramics
- Composites
- Stampings
- Pressurized Container Fill

BENEFITS:

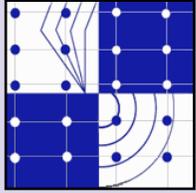
- Speed: Parts are fully inspected as fast as a part per second
- Versatility: Tests many different parts on a single system
- Ease of use: No part preparation, elaborate fixturing or magnetizing required
- Easy to learn & use application software
- Objective: No human interpretation needed
- Generates production report, with statistical analysis
- Industrial packaging for reliable factory operation
- Eliminates or reduces false failures
- Provides four access levels of security
- Ensures the confidence of knowing that every part is 100% QA tested

“Simplifying with Smart Sensing Solutions”

Helping you test,
model, and modify
the behavior of
structures and processes.

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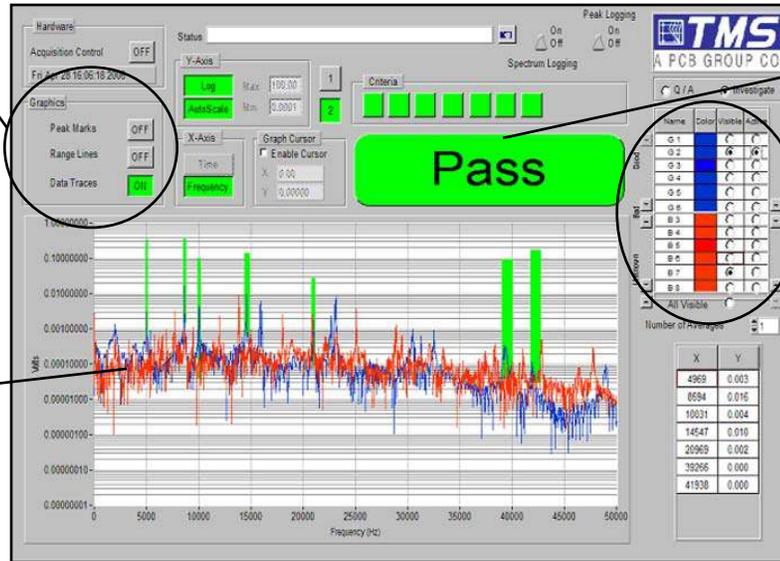
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NDT-DTF Software Graphical User Interface

Screen shot from NDT-RAM software showing resonant frequencies and sort result

Improved graphical features ease visual data evaluation

Overlay of data shows color coded spectra for "good" and "bad" parts against acceptable criteria ranges



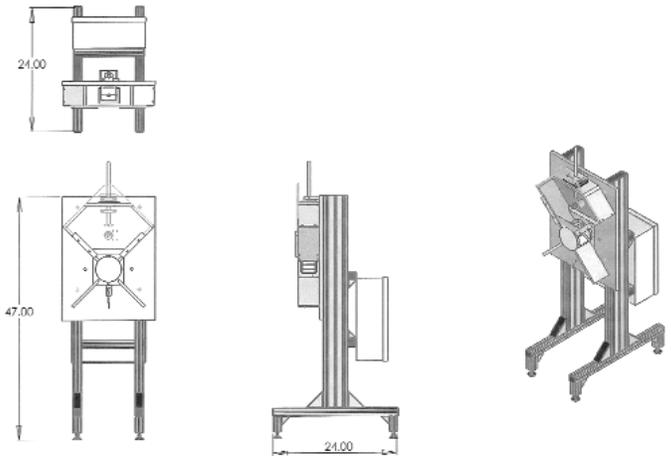
Clear indication of pass/fail by criteria range

Improved investigate mode supports up to 1500 part spectra, labeled good, bad or unknown

NDT-RAM application software compares each parts resonant signature against reference criteria limits and accepts or rejects the part accordingly. The system report generation feature allows for full part signature archival and statistical analysis of your parts and manufacturing processes.

The NDT-RAM Drop Test Fixture is automated, requiring no user intervention during testing, for efficient and cost effective 100% part testing. Integrating a free standing drop test fixture, 2-channel smart digital controller, force sensor, and a microphone, this turnkey system is designed to withstand continuous operation in plant floor environments.

An optional status interface provides prominent visual indication of passed or failed parts, indicating a system fault, or alarming that a preset number of parts have failed. Also, a bowl feeded or other automatic part feed mechanism can be integrated into the NDT-DTF for fully automated testing.



Part Throughput

Drop test rate control
System throughput

Adjustable to your feedrate
Approximately 1 part per second

Pass/Fail Mechanism

User defined criteria ranges
Rejection mechanics
Approval mechanics

Up to 20 frequency bands
Controlled servo motor
Controlled servo motor

Acoustic Measurement

Response sensing
Frequency range

Prepolarized microphone - PCB130 series
Up to 50 kHz

System Control

Servo controller
Computer

8 inputs / 4 outputs modular expandable
Standard PC

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