



# ***Transient Capture***

*Today's Presenter: Kevin Van Popering*

*We will begin shortly!*



# Transient Capture

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# Topics

- What is Transient Capture testing?
- Applications
- “How to” in VibrationVIEW
- New features/Tips & Tricks



# Transient Capture

- What is it?
  - Historically used with drop shock machines
  - Typical Applications
    - Package Testing
    - Product Life Testing
    - Pass/Fail production testing
  - Can be use for data acquisition
    - Transient Events
  - VR ObserVR capability

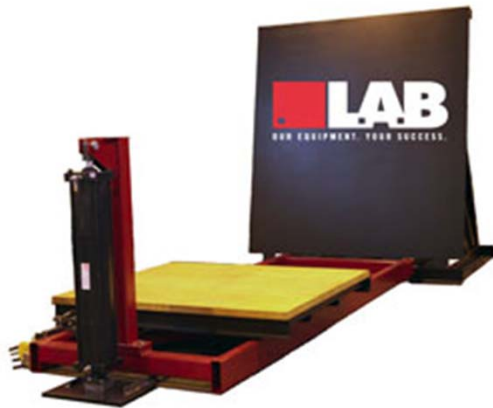


# Drop Shock Machines

- Pulse Shape determined by drop pads
  - **Half-Sine** – produced by a flat elastomer drop pad
    - Deflection (thickness, density, etc.) of elastomer determines the pulse width
  - **Sawtooth** – produced by a lead drop pad
    - The shape determines the pulse width
    - Lead can be shaped many times
  - **Square/Trapezoid** – produced by air cylinders or a crumple material
- Pulse Width
  - Lighter objects will generally see a wider pulse
- Pulse Acceleration determined by:
  - Pads, DUT, frequency content, drop height (velocity), assist mechanisms (bungee cords), etc.



# Drop Shock Machines





# Trigger Tab

- Trigger
  - Trigger on any/all channels (Version 11)
- Capture Window
  - Capture total in milliseconds
  - Pre-capture and hold-off
- Filter
- Sample Rate – at least 10x the analysis frequency
- Frequency Analysis
  - Set Minimum and Maximum plotted Frequency (auto scale range)

The screenshot shows the 'Transient Capture Test Settings' dialog box with the 'Trigger' tab selected. The dialog is divided into several sections:

- Trigger:** Channel (Ch1), Level (2 G), Slope (Rising).
- Sample Rate:** 200000 Hz, with an 'Automatic' checkbox checked.
- Capture Window:** Capture Total (250.0 ms), Pre-Trigger (5.0 ms), One Shot (unchecked), Hold-Off (0.0 ms).
- Filter:** Filter type (Antialias), Min Frequency (0.5 Hz), Max Frequency (1000 Hz).
- Frequency Analysis:** Min Frequency (1 Hz), Max Frequency (4000 Hz).
- Corner frequencies:** 'Automatic' checkbox checked, Integration filter (1 Hz), Differentiation filter (20000 Hz).

Buttons for 'OK' and 'Cancel' are located at the bottom right of the dialog.

# Output Tab

- Output
  - Can use the output to drive a modal shaker (open loop)
  - Choose the output type
    - Burst Random
    - Linear Chirp
    - Exponential Chirp
  - Pulse Duration in Milliseconds
  - Output Level in Millivolts

The screenshot shows the 'Transient Capture Test Settings' dialog box with the 'Output' tab selected. The 'Output' section is expanded, showing the following settings:

- Output Type: Output Disabled (dropdown menu)
- Pulse duration: 200 ms
- Output level: 5 mV
- Output Frequency Range:
  - Sine: Start freq 1 Hz, End freq 100 Hz
  - Random: Start freq 1 Hz, End freq 100 Hz

Buttons at the bottom: Save, OK, Cancel.



# Tolerance Tab

- Create a Reference Pulse
  - Manual
  - Automatic
- Tolerance
  - Set the Min and Max
  - MIL-STD Pulse Limits are predefined
  - Can set individual Pre and Post pulse tolerances

The screenshot shows the 'Transient Capture Test Settings' dialog box with the 'Tolerance' tab selected. The 'Reference Pulse' section has a dropdown set to 'Disabled', 'Pulse Width' at 100 ms, and 'Peak Amplitude' at 2 G. The 'Pulse Alignment' section has 'Offset Method' set to 'Auto from Reference' and 'Trigger Offset' at 0 ms. The 'Tolerances' section has 'Plus Tol (+)' and 'Minus Tol (-)' both at 15%. There are checkboxes for 'MIL-STD pulse limits' (unchecked) and 'Use Pulse tolerances for Pre and Post Pulse' (checked). Below the checked checkbox, there are fields for 'Pre' and 'Post' tolerances, both set to 15%.

Section	Parameter	Value	Unit
Reference Pulse	Reference Pulse	Disabled	
	Pulse Width	100	ms
Reference Pulse	Peak Amplitude	2	G
	Offset Method	Auto from Reference	
Pulse Alignment	Trigger Offset	0	ms
Tolerances	Plus Tol (+)	15	%
	Minus Tol (-)	15	%
Use Pulse tolerances for Pre and Post Pulse	MIL-STD pulse limits	<input type="checkbox"/>	
	Pre Plus Tol (+)	15	%
	Pre Minus Tol (-)	15	%
	Post Plus Tol (+)	15	%
Post Minus Tol (-)	15	%	

# Breakpoints Tab

- Breakpoint Table
  - Define the breakpoints of the desired SRS curve
- Tolerances
  - Can use the same tolerances for all breakpoints or select them individually
- Import
  - Import frequency and amplitude breakpoints from a text file

The screenshot shows the 'Transient Capture Test Settings' dialog box with the 'Breakpoints' tab selected. The dialog has several tabs: Trigger, Output, Tolerance, Breakpoints, SRS, Data, and Tables. The Breakpoints tab contains a table with the following data:

	Frequency	Amplitude	Tolerance (-)	Tolerance (+)
» 1	10 Hz	1 G	0 %	100 %
2	100 Hz	1 G	0 %	100 %

Below the table are buttons for 'Insert', 'Delete', 'Last', and 'Import...'. There is a checkbox labeled 'Use the same Tol for all breakpoints' which is checked. At the bottom of the dialog are 'Save', 'OK', and 'Cancel' buttons.

# SRS Tab

- SRS Analysis
  - Define the analysis parameters
  - Choose Damping and Q values
  - Choose Analysis Range
    - Frequency Range
    - Breakpoint Frequencies

The screenshot shows the 'Transient Capture Test Settings' dialog box with the 'SRS' tab selected. The 'SRS Analysis' section contains the following settings:

- Damping = 5 %
- Q = 10
- SRS Analysis Range: 1/N Octave Intervals (dropdown menu)
- SRS analysis frequency range: 1 to 1000 Hz
- SRS Frequency Resolution: 1 / 6 octave

Buttons at the bottom include 'Save', 'OK', and 'Cancel'.

# Data Tab

- Where the data is saved
- Prompt for Run Name and Annotation Lines
- Tools to help organize data

The screenshot shows the 'Transient Capture Test Settings' dialog box with the 'Data' tab selected. The dialog is divided into several sections:

- Trigger**, **Output**, **Tolerance**, **Breakpoints**, **SRS**, **Data** (selected), and **Tables** tabs are visible at the top.
- Data storage directory:** A text field contains 'C:\VibrationVIEW\Data\2014-02' with a 'Browse' button to its right.
- Data file name:** A text field contains '2014Feb25-0945-0001'.
- Save reports in Data storage directory:** A checkbox is unchecked. A text field contains 'C:\VibrationVIEW\Reports\2014-02' with a 'Browse' button to its right.
- Use Data file name:** A checkbox is checked.
- Save data to disk:**
  - every  th pulse
  - with report
  - A 'Copy from test name' button is located to the right.
- Use this graph layout:** A checkbox is unchecked.
- Prompt for Run Name and Annotation Lines when starting:** A checkbox is unchecked.
- Graph annotation lines:**

Prompt	Graph annotation lines (shown in data bottom and in reports)
Note 1	
Note 2	
Note 3	

At the bottom of the dialog are 'Save', 'OK', and 'Cancel' buttons.

# Tables Tab

- Tables
  - Automatically save tabular spreadsheet data
  - Choose how often data is saved

Transient Capture Test Settings

Trigger Output Tolerance Breakpoints SRS Data Tables

Table Formatted Parameter Strings

» 1 |

2

3

4

5

Add a new line to Table 1:

every change in test status

every 10 Pulses

Append to Test Notes

Parsed table entry

Enter form and select

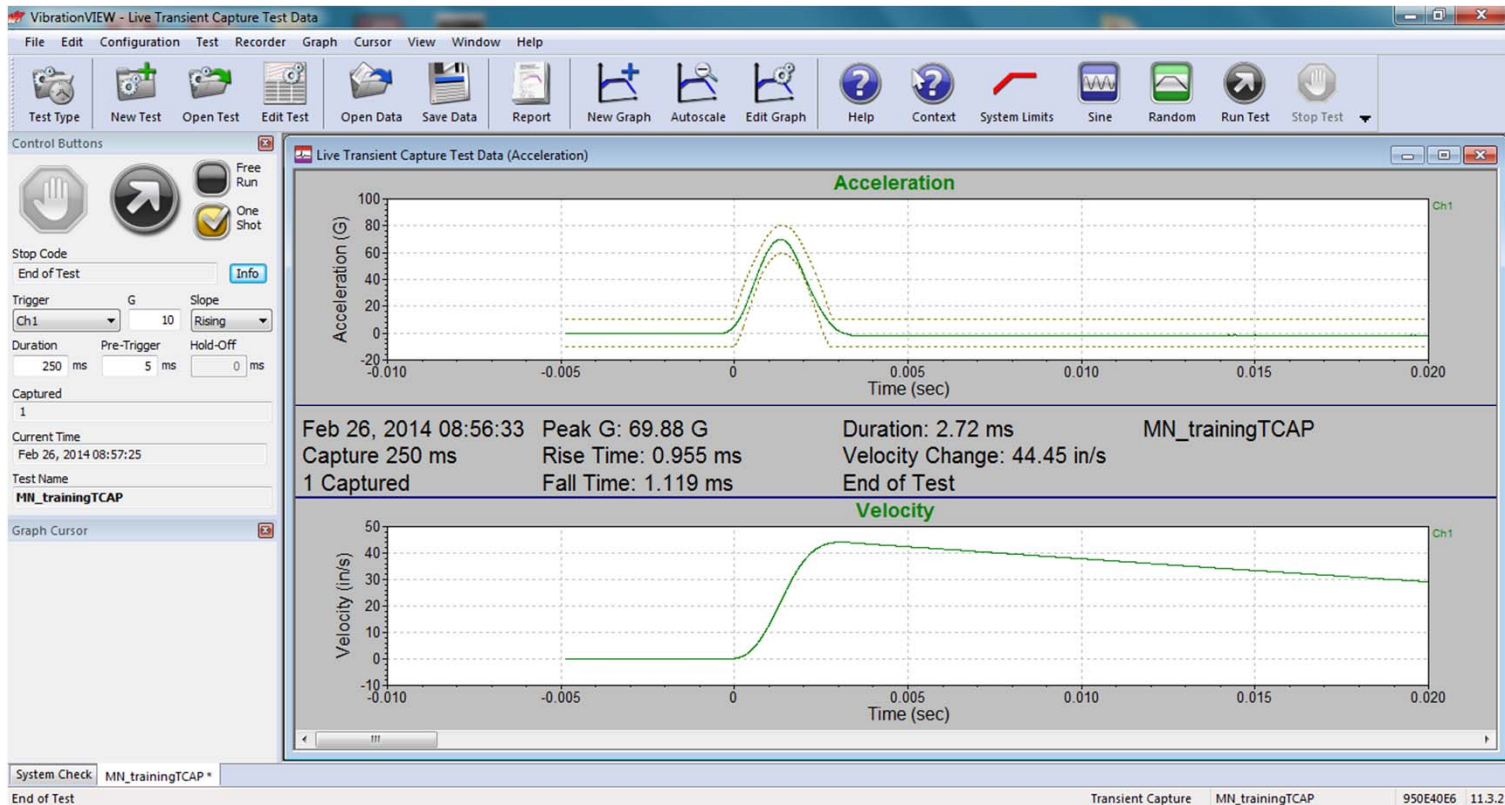
At each int will be upd These tabl display in y

Use 't' for

Formatted Parameter Strings periodically appended to each table. See menu 'View..Report Parameters' fo

Save OK Cancel

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# Thank You for Attending!

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