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Laser Shrinkage Detector NOW WITH TOUCH SCREENS!

The L.S.D. (Laser Shrinkage Detector) is a modification kit for the MB51 sound film reproducer. It enables playback of films with shrinkage rates up to 4 %.

The problem of shrunken film

The ***MB51*** synchronizes itself to external sources with the help of a sprocket wheel. The electronic pulses from the sprocket wheel encoder and the external synchronization pulses are counted and the ***MB51*** regulates the capstan speed in a way to keep the counters equal.

Shrunken film has the problem that it does not run over the sprocket wheel because the perforation pitch does not match the sprocket distance. The sprockets could also damage the film when they hit between the holes. A simple measure would be to file off the sprockets. The MB51 *will* transport the film in this case but not synchronous to external drive and at the wrong speed.

One could think of correcting the audio length afterwards with an editing program, but that is no solution since the shrink-age is likely to vary a lot during playback. The sound would never be in lip-sync.

How L.S.D. works

The L.S.D. modification includes:

- A special sprocket-free roller to replace the existing sprocketed wheel
- A laser light barrier will be mounted nearby the sprocketless wheel
- A microcontroller module with display will be installed inside the machine

The signals from the sprocketless wheel encoder and the light barrier run into a digital signal processor which calculates the position of a "virtual sprocket wheel". It then generates the necessary output pulses that replace the original encoder pulses from the sprocket wheel.

From the machine's point of view nothing has changed. That means the ***MB51*** can be operated and synchronized as usual.

The laser light barrier is sensitive enough to detect the perforation even in clear film. In case of damaged perforations, sophisticated software algorithms sort out the useless perfs and calculate their position from their neighbors. *Timecode and frame sync remain consistent up to 15 unreadable holes.*

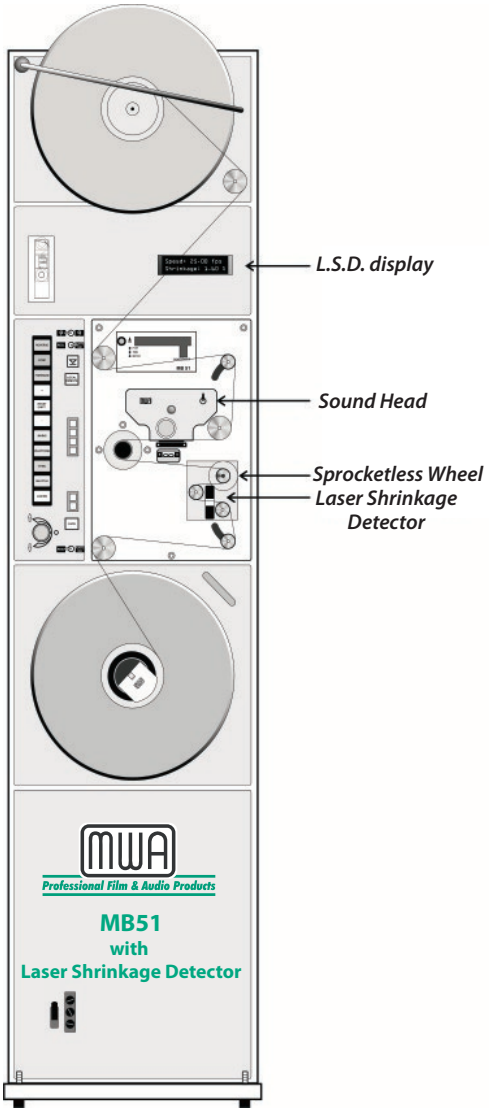
New Touch Screen displays show operating parameters, shrinkage and expansion rates while in motion, and perforation problems. See Page 2!

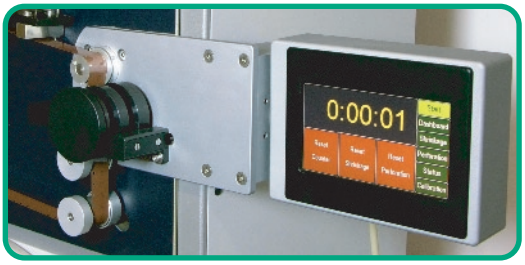
Benefits of an L.S.D. modification

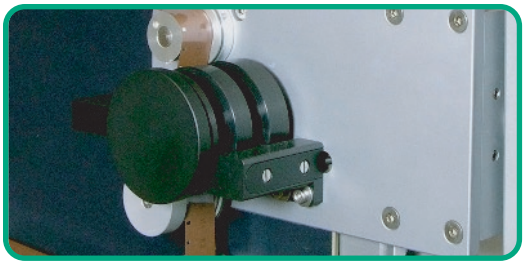
The MB51 will be able to reproduce any kind of film with shrinkage rates up to 4%. The speed is corrected during playback and stays perfectly in sync with external sources like word-clock, biphase or video sync.

Unlike solutions with exchangeable sprocket wheels, L.S.D. also works when the shrinkage rate varies during playback. Since no sprockets exist in the whole film path, there is no danger of damaging valuable archive material.

In combination with MWA's specialized vinegar sound head the user gets a solution for not just shrunken films but also films in curly and waved condition.







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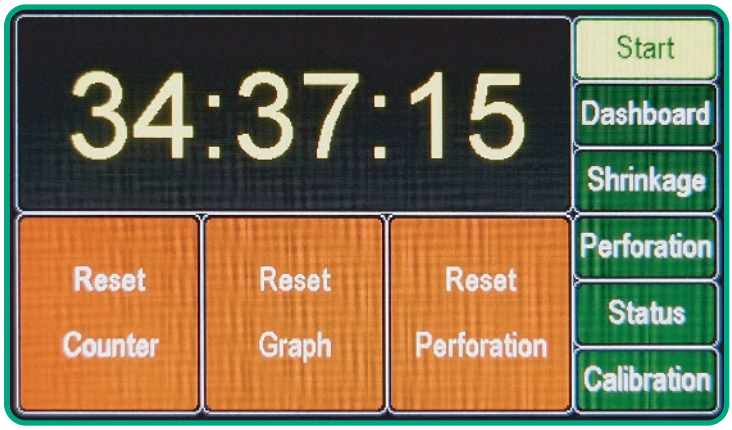
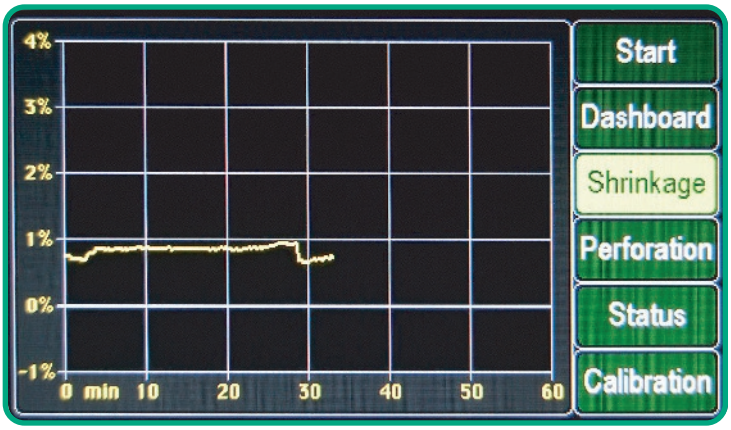
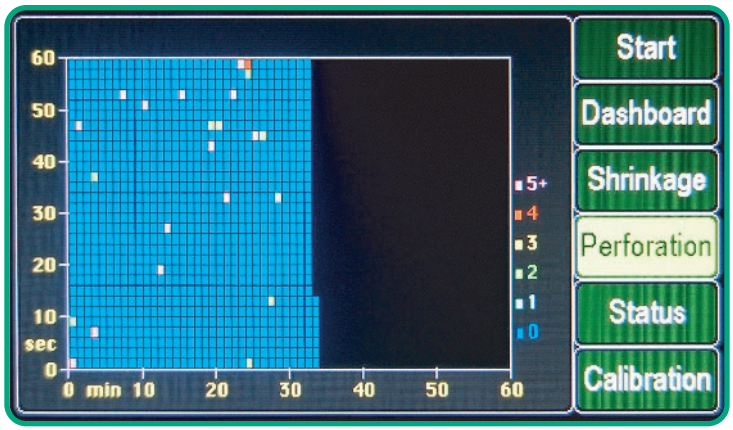


1: Start here with film location counter and reset buttons for Film Counter, Shrinkage and Perf Error screens.

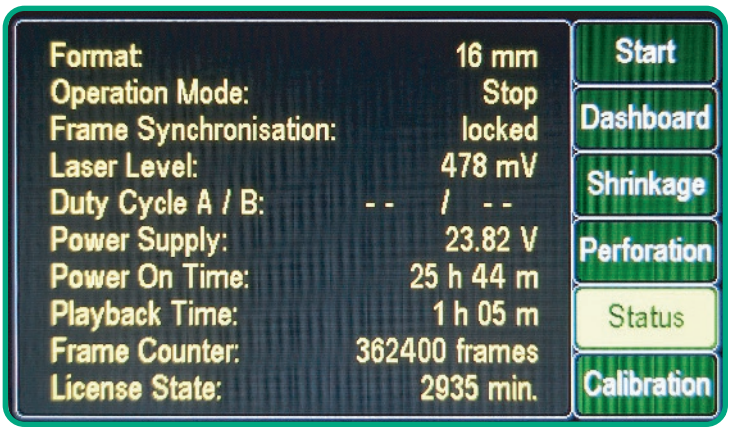
2: The Dashbord tells you the shrinkage measured at that instant, and the film frame rate at that moment.



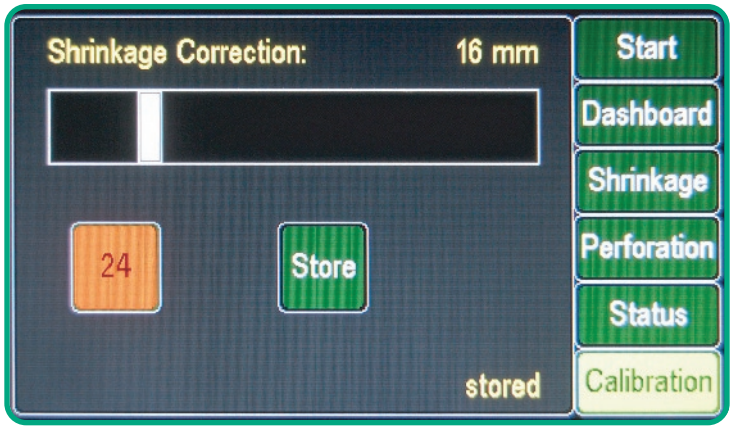
3: The Shrinkage Graph plots the amount of shrinkage during the reel's run in real time for easy viewing. This metadata can be saved to a file.



4: The Perf Error Graph captures problems found as the reel is run. Blue is good. Red and Pink show Perf Errors and possible damage. Metadata can be saved to a file.



5: The Status Panel reports machine operating conditions and usage. Helps with machine maintenance.



6: The LSD is easy to calibrate using this screen.

These screens are just one way that MWA Nova makes transferring shrunken sound film safer and easier.

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