

## USING VOICE COIL ACTUATORS IN MEDICAL DEVICES AND COMMAND SERVO-CONTROLLED VIBRATIONS

### Challenge

Motion control in medical devices is a highly specialized field, as the dynamics involved put a tremendous focus on precision within a small range of motion.

One application in particular which includes specific challenges is ultrasound elastography.

With this approach, a probe is used to send low frequency vibrations through an organ or tissue under examination.

As the probe or transducer sweeps over the target area, it records how fast the vibrations travel through the organ or tissue, and renders that data into images, which display differences in how elastic the tissue being examined is compared to the tissue around it.

This type of scan can provide evidence of fibrosis in different organs or bodily systems, such as the liver or prostate, in a non-invasive, non-surgical approach. In addition to the initial diagnosis, the process can also be used to measure progression of a potential condition over time.

Because of the nature of the test – which is looking for subtle variations in the condition of tissue - the vibrations issues by the probe must be incredibly consistent. Any inconsistency in the vibrations decrease the accuracy of the overall examination and create additional risk and liability.

### Solution

This type of application is ideal for a voice coil actuator to control the vibrations from the transducer.

Attaching a voice coil actuator to an ultrasonic probe makes it possible to command closed loop servo-controlled vibrations all within the hand-held device.



The model LAS04 is a very small self-contained actuator with its own shaft, bushings and internal feedback sensor. Because this actuator is moving magnet device, it has no moving wires which makes it even extremely reliable.

The tiny actuator uses high energy product rare earth magnets which give it high performance characteristics within a small package.



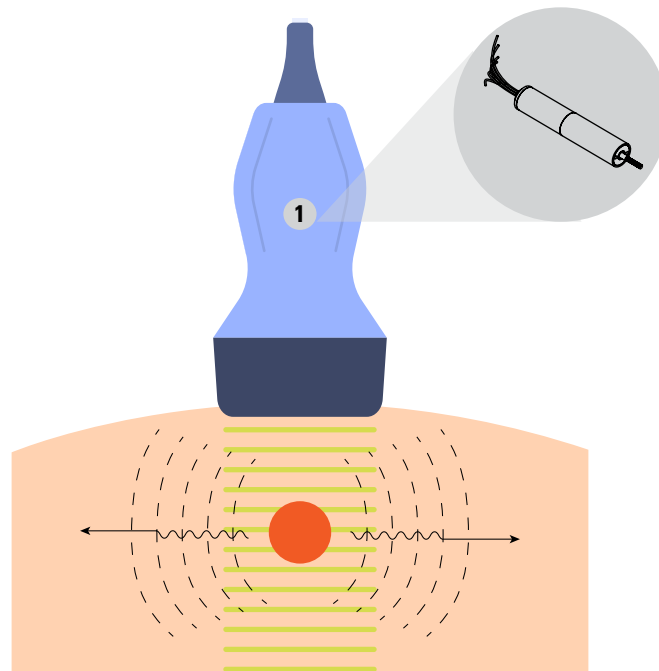


## RELATED PRODUCTS

Reference on Diagram	Product	Features	Function
1	 LAS04	<ul style="list-style-type: none"> <li>Resolution of up to 10 microns</li> <li>Life tested in excess of 500 million cycles</li> <li>Absolute analog output</li> </ul>	Motion control to generate vibrations in elastography transducer
2	 DK-LAS04	<ul style="list-style-type: none"> <li>Self-contained kit including a VCA with built-in feedback sensor and a programmable controller with motion control software</li> <li>Kit includes VCA, servo drive, I/O cable, USB 2.0 Cable, Key flash drive</li> </ul>	Allows users to take advantage of the inherent benefits of VCAs without needing to separately specify the necessary electronics for a complete control system



## ULTRASOUND ELASTOGRAPHY DIAGRAM



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