A Simple and Highly Portable Flow Phantom for Doppler Ultrasound Quality Measurements

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Technology description

Summary
A new flow phantom has been designed in which Doppler ultrasound measurements can be conducted for quality assurance purposes. The phantom is highly portable and allows for simple and reproducible measurements of Doppler ultrasound function. This combination of advantages allows for realistic monthly, weekly, even daily Doppler QA measurements.
Addressed Need
The existing versions of Doppler ultrasound phantoms are particularly bulky and/or expensive. They rely on motor driven flow and require time consuming and inconvenient setup, which often makes frequent quality testing impractical for most medical facilities. The phantom discussed here overcomes these obstacles by being inexpensive, highly portable, and particularly easy-to-use. The phantom requires no setup, no addition of extra Doppler test fluid, and no motor or external power source. This, along with a hand held size, makes this phantom ideal for simple and quick testing of Doppler ultrasound systems. This device allows hospitals and clinics to achieve daily characterization of Doppler ultrasound functionality.
Technology Description
The phantom is a closed system that can achieve a constant and reproducible flow of the Doppler test fluid. It has dimensions of 16cmx14cmx13.5cm, although this size can be scaled down further. Each time the phantom is activated, it will produce the same steady fluid velocity for Doppler ultrasound testing. The conceptual simplicity is key to the design while the specific details of the internal phantom geometry ensure the same, steady flow is achieved from one measurement to the next.

Advantages

Highly Portable: easy to store and handle
Sealed System: No need to add Doppler fluid
No power required in order to operate the system
Novel design allows for repeatable, consistent, and constant flow
Simple operation making frequent Doppler measurements feasible

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