

Design Concept

for a

Transducer Holding System

Suitable for use with the Ohmic Instruments Model UPDM-DT-1E

Radiation Force Balance

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Ohmic Instruments Model UPDM-DT-1E

Strengths

1. Relatively sensitive
2. Reasonable dynamic range
3. Modest cost

Weaknesses

1. Various useful force sensing targets are not available
2. Various useful measurement chambers are not available
3. A stream guard is not available
4. A variety of transducer holding devices are not available
5. The installed transducer support post is not adequate for precision Acoustic measurements such as hydrophone calibration

Ohmic Instruments Model UPDM-DT-1E

Upgrade Components and Features Required for Hydrophone Calibrations Work

1. Transducer Holding Assembly
 - a. Adjustable with Precision
 - b. Versatile
 - c. Robust
 - d. Semi-permanent Lockdown features

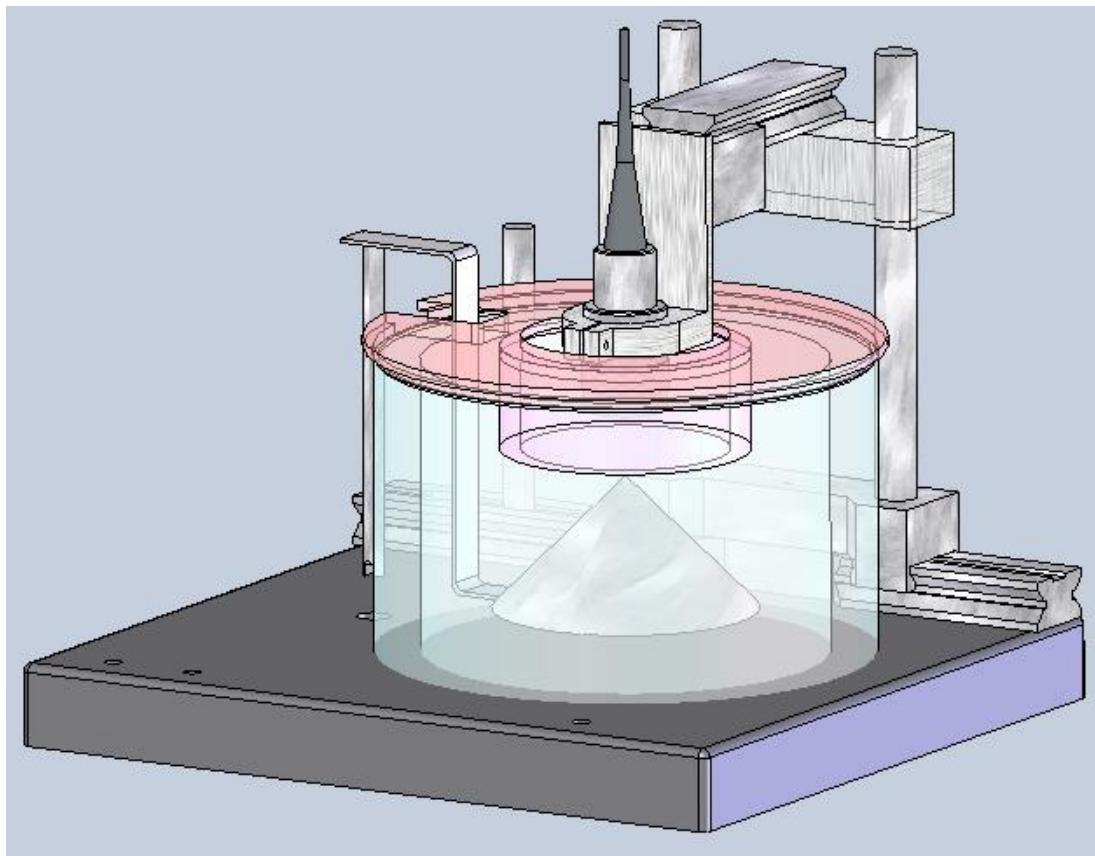
2. Stream Guard Assembly
 - a. Easily installable and Removable
 - b. Useable with a variety of Source Transducers

3. Convenient Features
 - a. All Parts and Pieces to be Stowed Inside the UPDM Storage Case
 - b. No modification to the UPDM-DT-1E should be required

Ohmic Instruments Radiation Force Balance

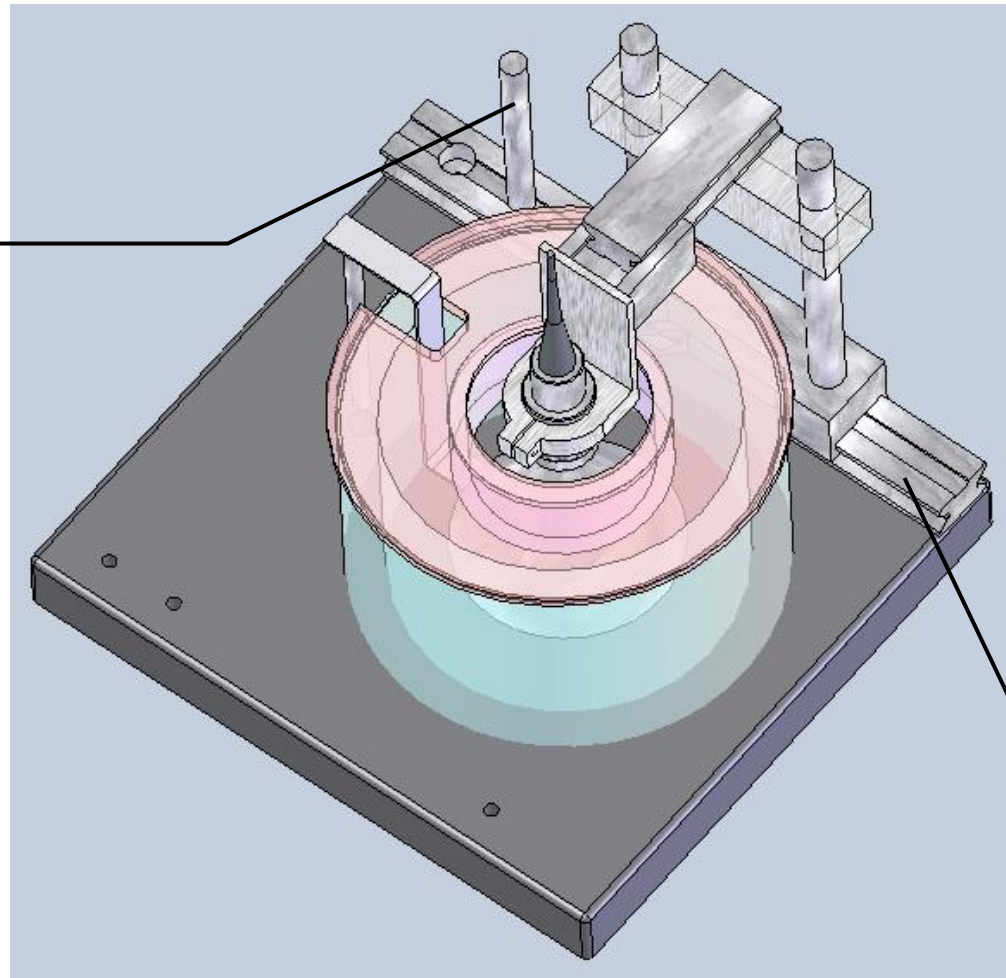
Proposed Transducer Measuring Devices

Overview



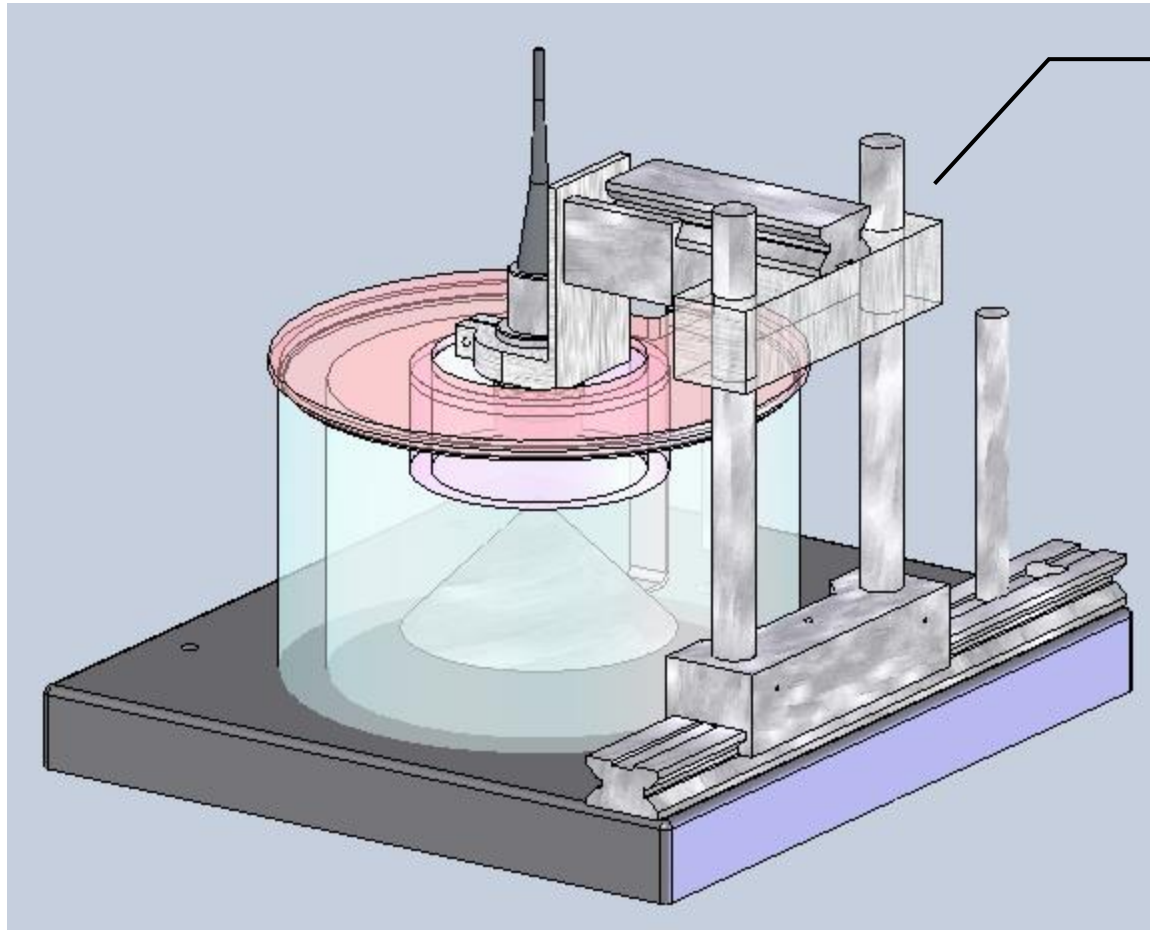
Low Angle $\frac{3}{4}$ Front View – Thumb Nuts and Other Hardware Are Not Shown

Original
Accessory
Support
Post is
Retained



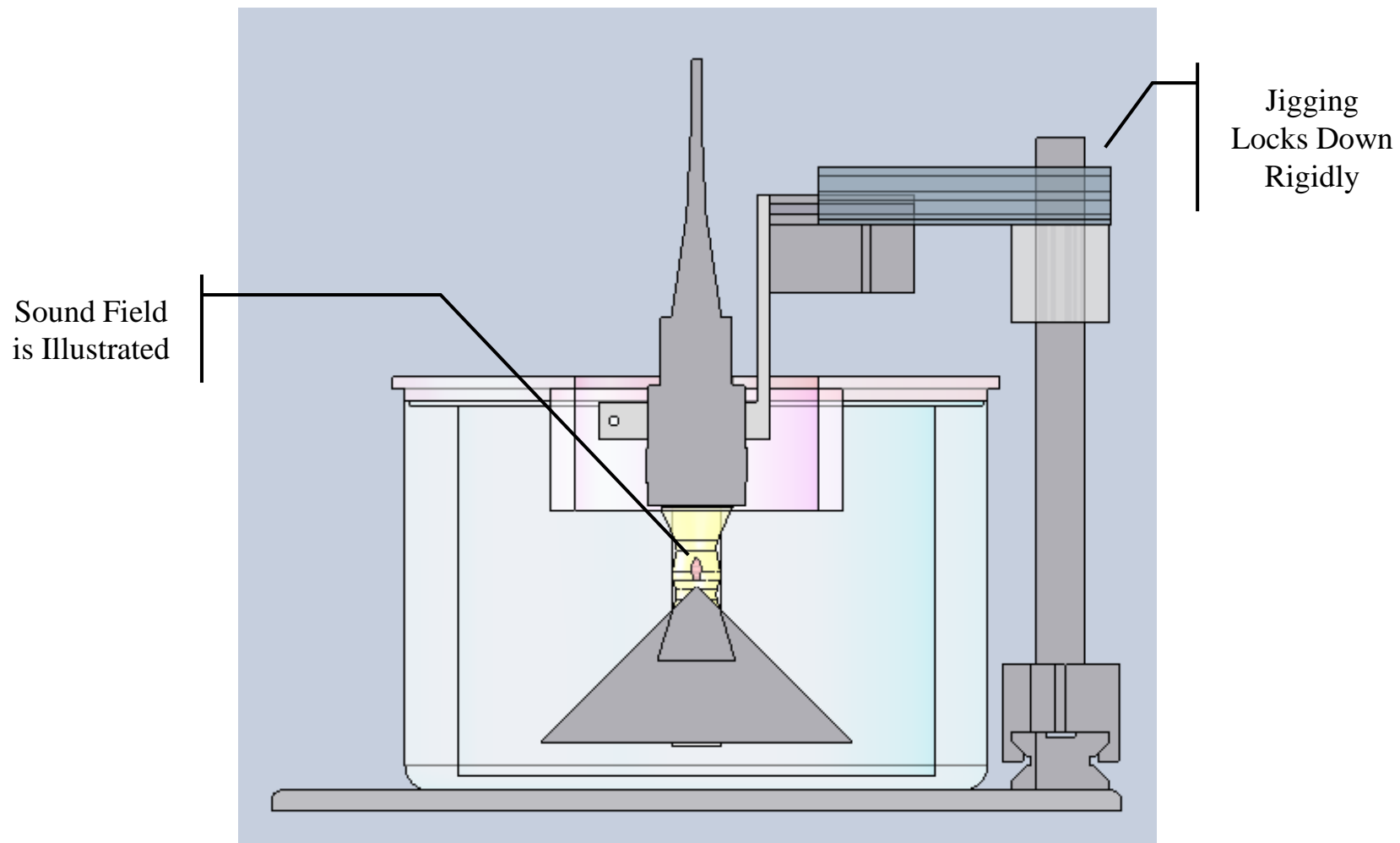
Mounts with
Existing
Screw Holes

3/4 Top View – Thumb Nuts and Other Hardware Are Not Shown

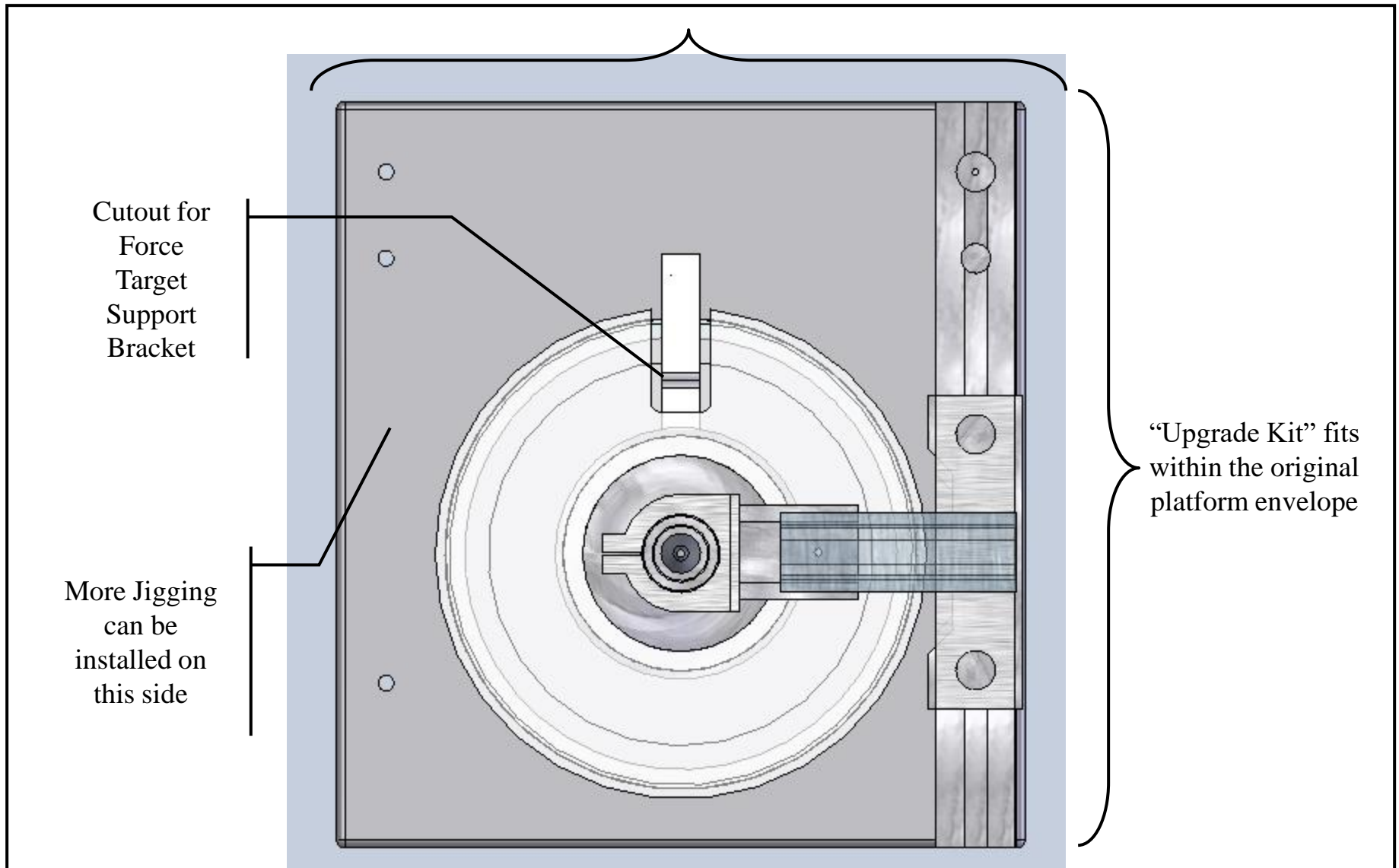


Robust and
Flexible
Jigging Setup

3/4 Side View – Thumb Nuts and Other Hardware Are Not Shown



Cutaway Side View – Thumb Nuts and Other Hardware Are Not Shown

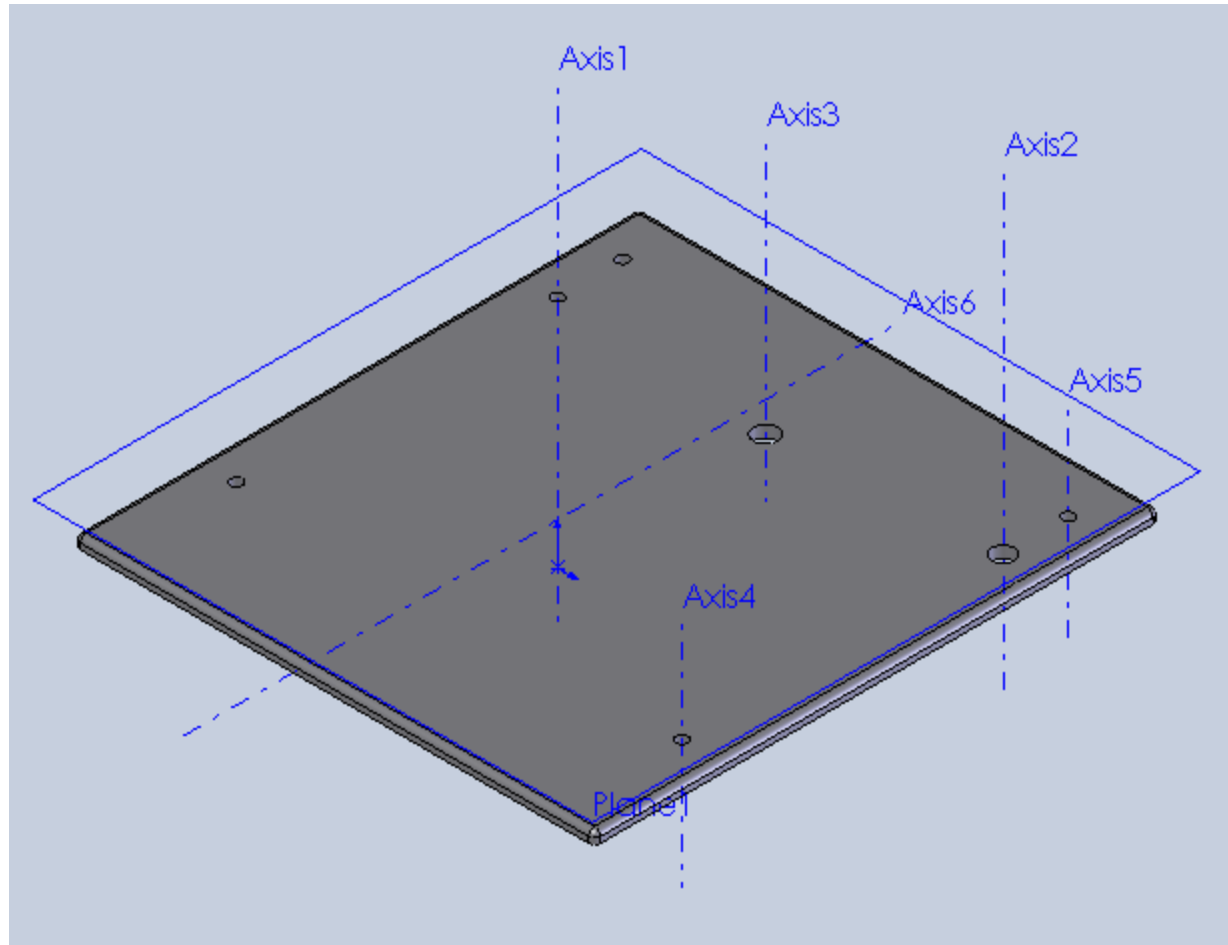


Top View – Thumb Nuts and Other Hardware Are Not Shown

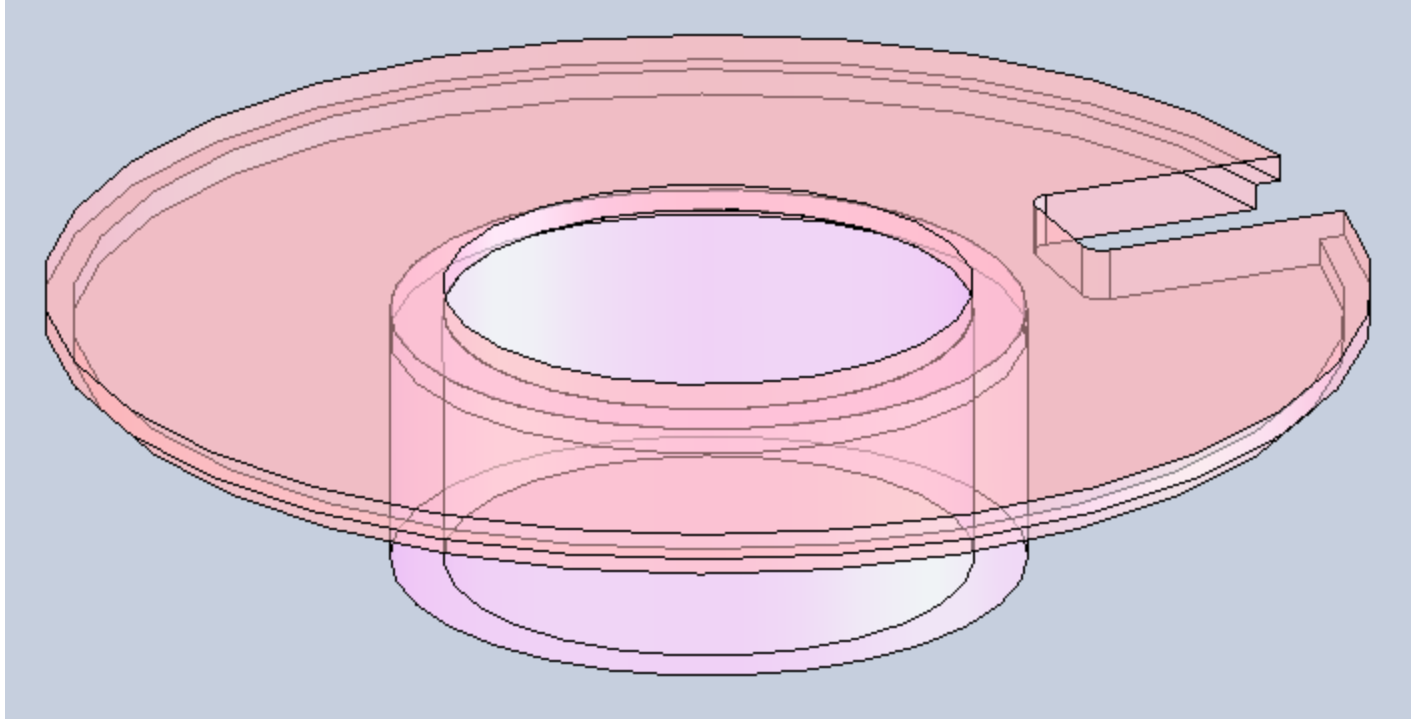
Ohmic Instruments Radiation Force Balance

Proposed Transducer Measuring Devices

Individual Components

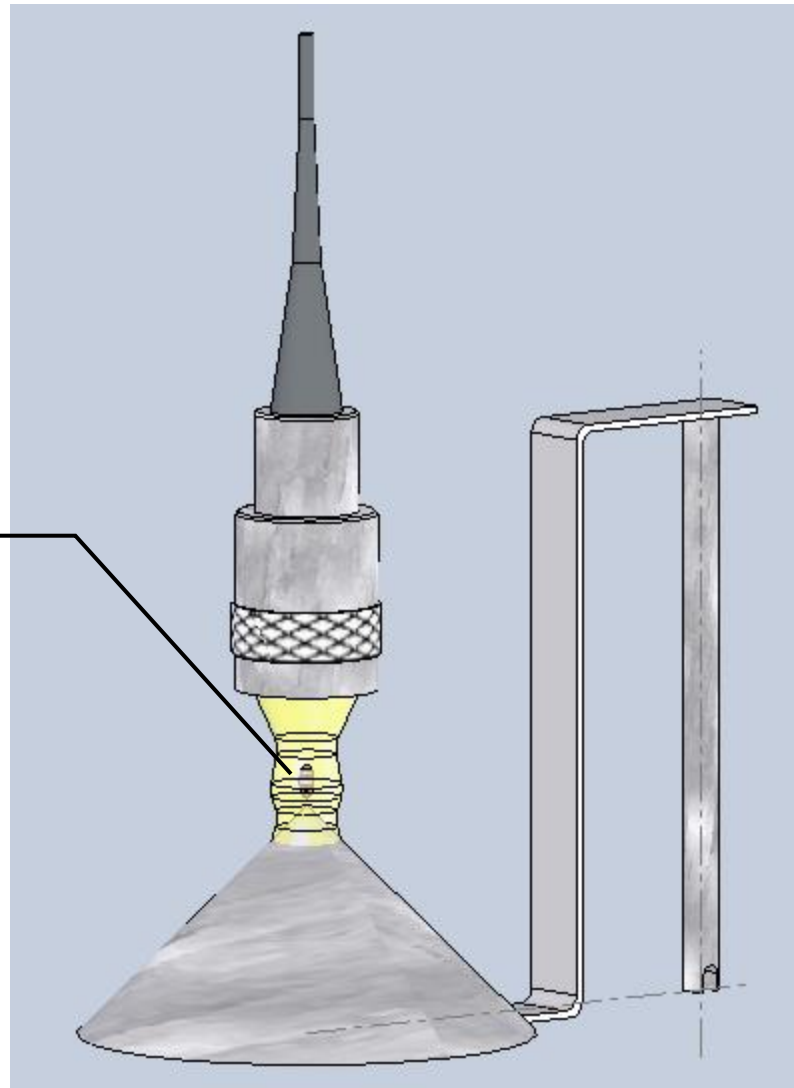


Ohmic Instruments Radiation Force Balance – Top Surface



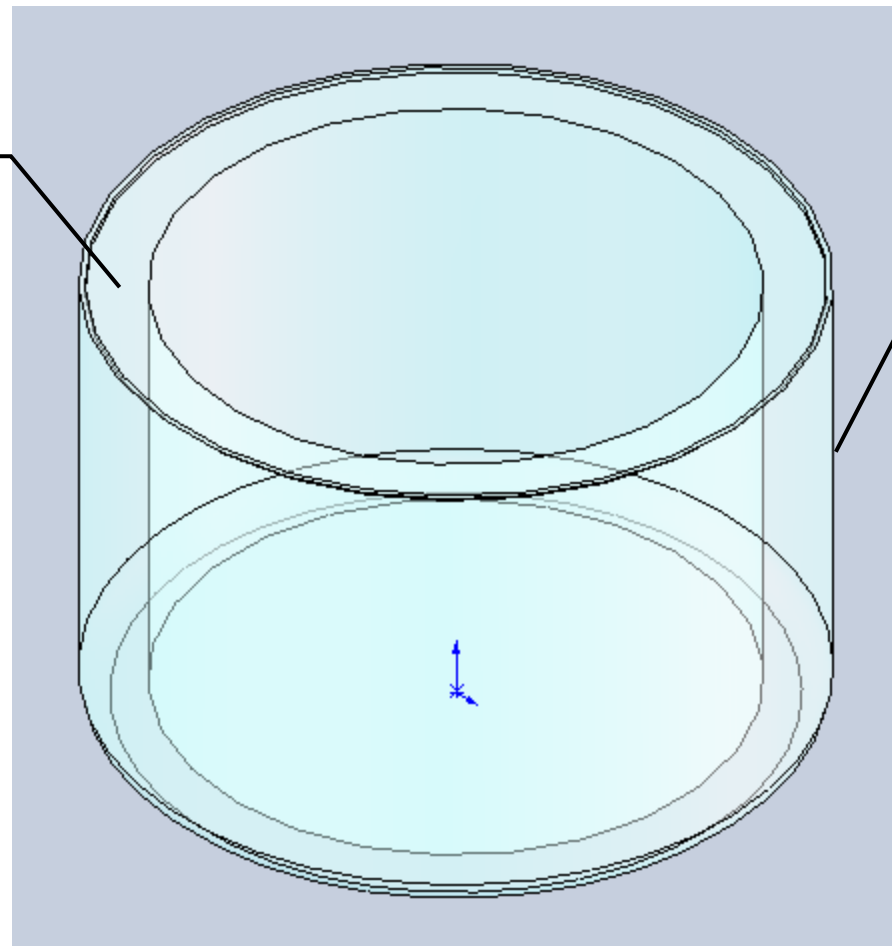
Stream Guard Assembly

Panasonic
Model V318
Sound Field



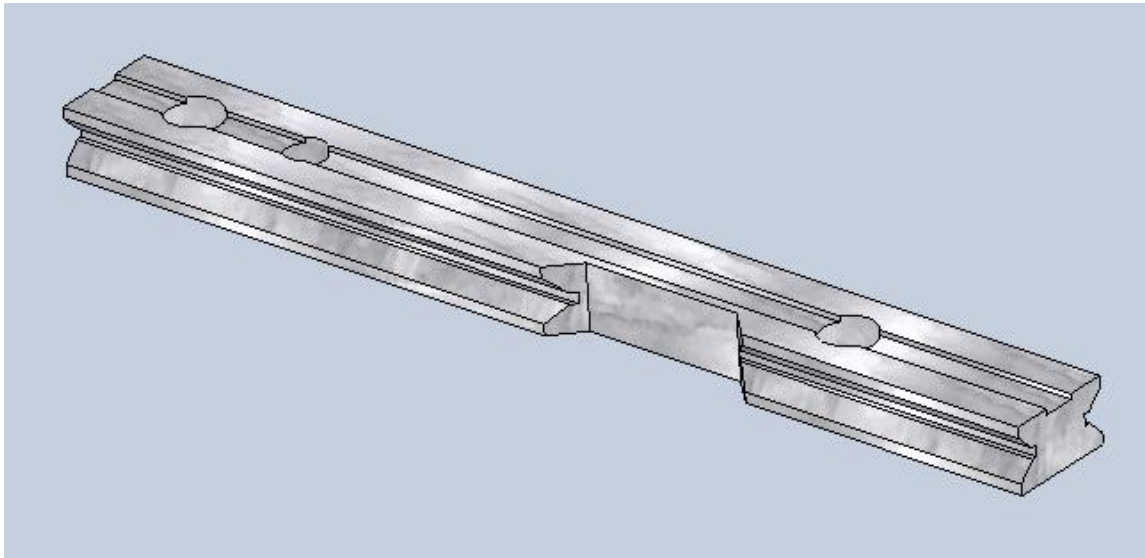
Force Sensing Cone – Panasonic Model V318 Source Transducer with Sound Field (in yellow)

Black Rubber
Sound Absorber
on Sides and
Bottom

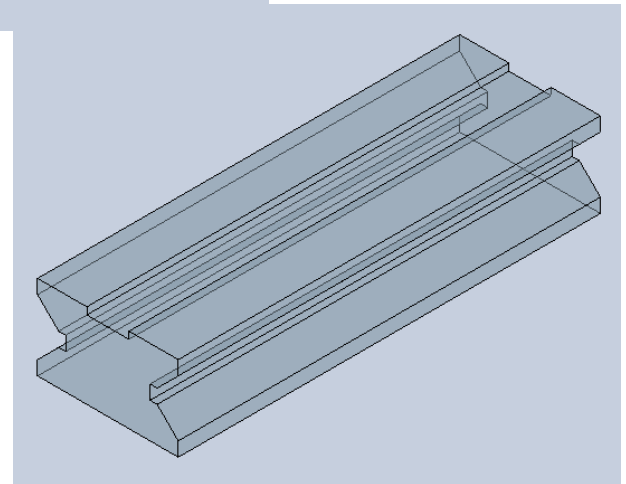


Deep Drawn
Steel Shell

Measurement Chamber - Standard Issue

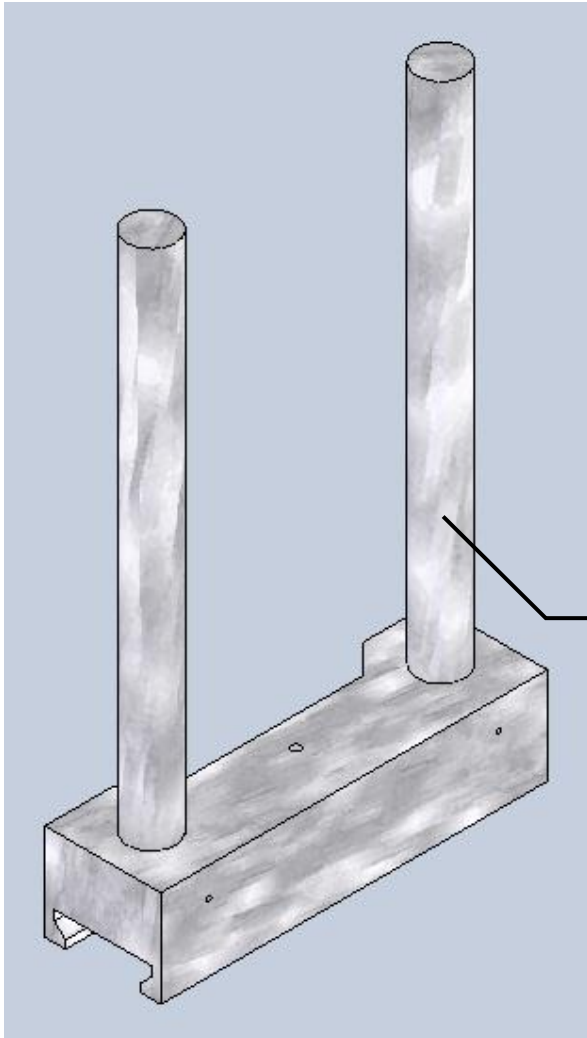


Lower Rail

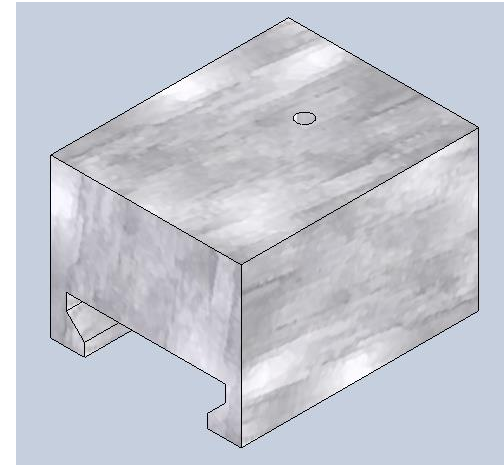


Upper Rail

Both rails have the same cross section



Lower Carriage Assembly

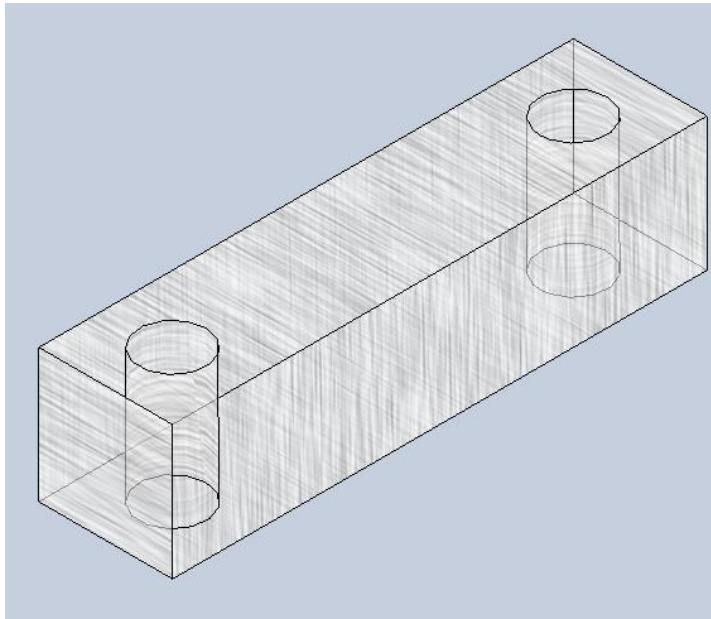


Upper Carriage

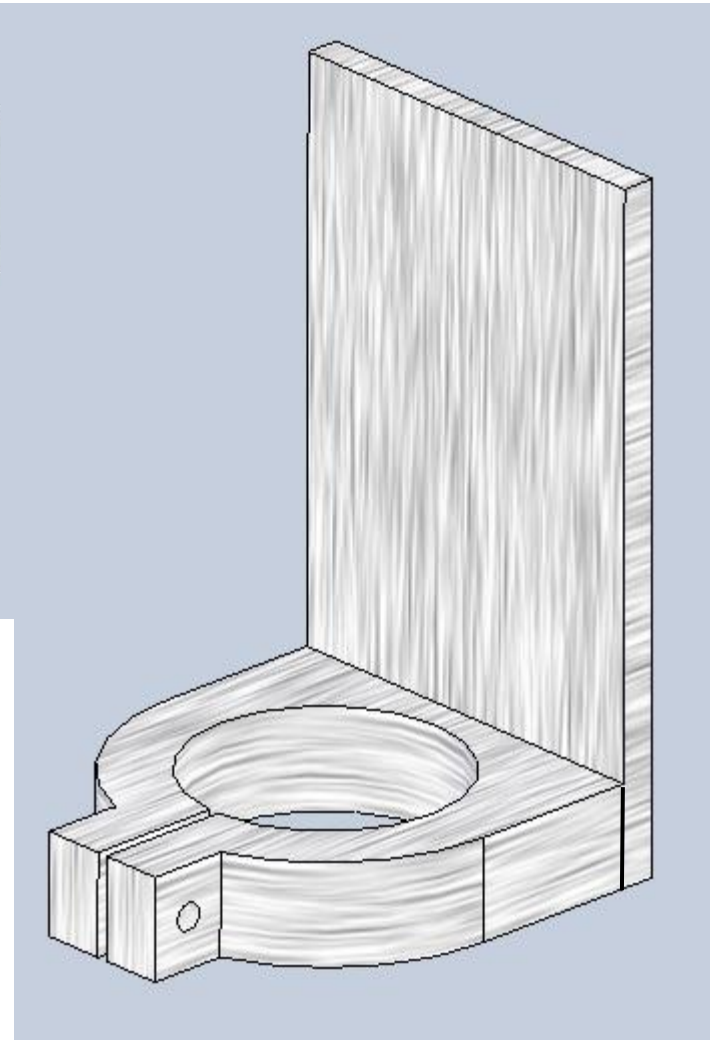
Stainless Steel 1/2 in
Diameter Support Rods

Both rails have the same cross section

Thumb Nuts and Other Hardware Are Not Shown



Upper Cross Bar



Panasonic Model V318 Transducer Holder (Two Parts)

Thumb Nuts and Other Hardware
Are Not Shown

Summary

1. The Ohmic Instruments Ohmic Instruments model UPDM-DT-1E requires enhancement in order to be effectively used for hydrophone calibration and other QA related tasks
2. A set of components has been designed to substantially enhance the UPDM-DT-1E capabilities
3. The proposed “upgrade kit” will allow accurate hydrophone calibrations to be performed
4. The proposed “kit” can be easily modified or adjusted to allow a variety of useful quality assurance tasks
5. A lesser level of upgrade will not suffice for the intended purposes