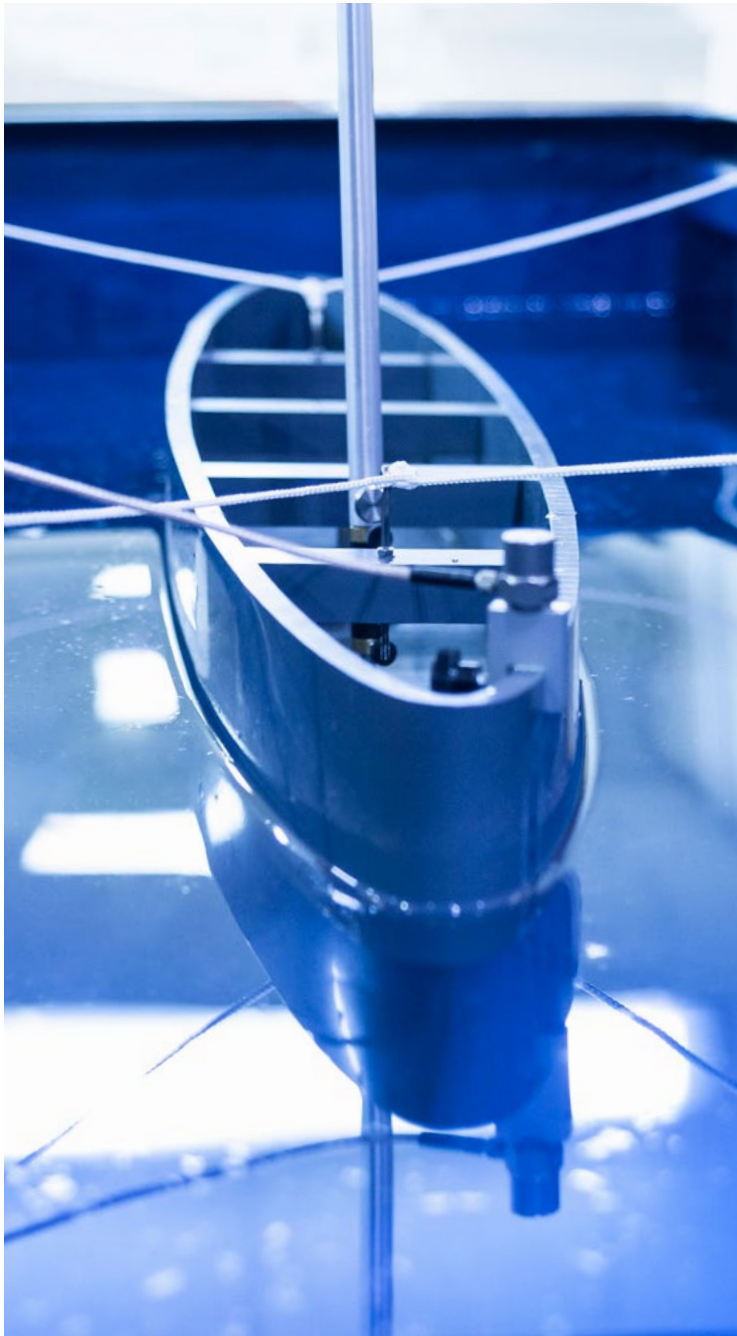


Ships Vibrations Test Model / NA4

The NA4-10 Ships Vibrations Test Model is designed to enable students to investigate a simple model hull form for resonance phenomena. It may be used in conjunction with the optional Armfield Flotation Tank or any suitable customer supplied tank. Many of the principal phenomena associated with ship resonant vibration are clearly demonstrated.

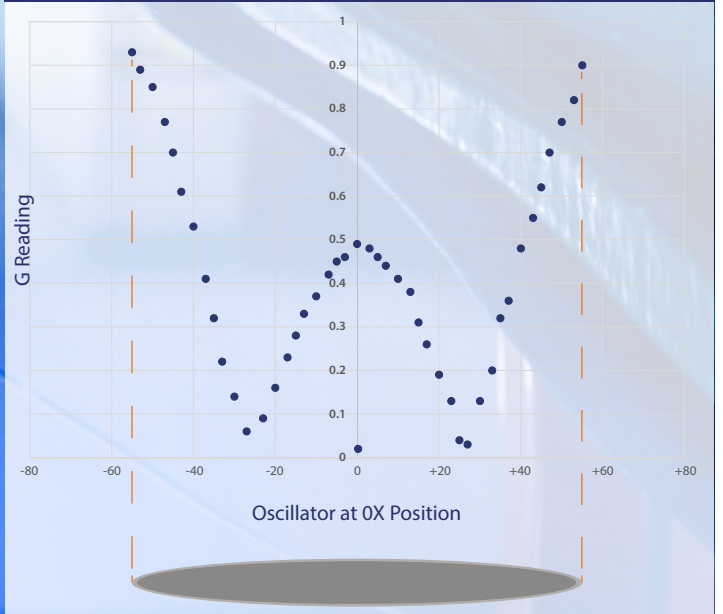
At a more advanced level the distribution of mass and second moment of area may be calculated and using a Young's Modulus value for the material of the ship shaped beam, the natural frequencies may be estimated by a simple tabular method or other means and compared with the measured value.

**3 OSCILLATOR MOUNTING POINTS ALONG THE HULL
PROVIDES AN ANALOGUE COMPARISON TO SOFTWARE MODEL BEHAVIOUR**



NA4 Digital vibration meter

Graph showing midships 81 Hz excitation



Demonstration capabilities

In air to:

- ▶ Investigate modal characteristics of a simple suspended ship shaped box girder
- ▶ Produce a resonance curve
- ▶ Produce the amplitude curve of a 2-node and 3-node flexural model
- ▶ Illustrate the influence of mass and its distribution upon natural flexural frequencies

In water to:

- ▶ Measure the influence of added virtual mass on natural frequency
- ▶ Illustrate the effect of the addition and distribution of sand ballast on the natural frequency
- ▶ Calculate the added virtual mass by different methods and compare with experimentally measured influence using a Schlick-type formula

Ordering specification

- ▶ Apparatus designed to enable students to investigate a simple model hull form for resonance phenomena
- ▶ The apparatus comprises an experimental model hull, a rigid supporting frame, a vibrator (complete with signal generator and power amplifier) and an optional Flotation Tank (order code NA4-11)
- ▶ The experimental model is flat bottomed, wall-sided and open topped. It has an elliptical plan form.
 - Length to Beam ratio 8:1
 - Length to Depth ratio 12:1
- ▶ Used to demonstrate the principle phenomena associated with ship resonant vibration
- ▶ Can be used to investigate resonance phenomena in both air & water

Optional accessory

- ▶ Flotation tank (NA4-11) for NA4-10

Requirements

Scale



Electrical supply:

NA4-10-A: 220V-240V/1ph/50Hz, 2A
 NA4-10-B: 120V/1ph/60Hz, 4A

Free water surface, if NA4-11 Flotation Tank not ordered

Overall dimensions

Length	1.44 m
Width	2.66 m
Height	1.44 m

Packed and created shipping specifications

Volume	1.0 m ³
Gross weight	75 kg



NA4 Signal generator & amplifier

Ordering codes

- ▶ NA4-10 Ships Vibrations Test Model
- ▶ NA4-11 Flotation Tank for NA4-10

Armfield standard warranty applies with this product

Knowledge base

- > 28 years' expertise in research & development technology
- > 50 years' providing engaging engineering teaching equipment

Benefit from our experience, just call or email to discuss your laboratory needs, latest project or application.

An ISO 9001:2015 Company



Products CE certified

armfield.co.uk

Aftercare

Installation
 Commissioning
 Training
 Service and maintenance
 Support: armfieldassist.com