



# AFA3

## Three-Component Balance

**Measures lift, drag and pitching moment of models in TecQuipment's Subsonic Wind Tunnel (AF100)**

Works with  
**VDAS<sup>®</sup>**



*Three-Component Balance shown fitted to its storage frame and with the optional Angle Feedback Unit (AFA4)*

- Optional ancillary to TecQuipment's modular Subsonic Wind Tunnel (AF100)
- Provides a convenient support system for models to measure the lift, drag and pitching moment
- Fully compatible with TecQuipment's Versatile Data Acquisition System (VDAS<sup>®</sup>) to enable accurate real-time data capture, monitoring and display on a computer
- Digital display shows lift, drag and pitching moment directly
- Allows full adjustment of angle of incidence of the model to direction of air flow

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- An ISO 9001 certified company
- VDAS is a registered trademark of TecQuipment Ltd

# AFA3

## Three-Component Balance

### Description

The Three-Component Balance fits onto the working section of TecEquipment's Subsonic Wind Tunnel (AF100). It may also be used with other subsonic wind tunnels of similar design.

The Three-Component Balance provides an easy-to-use support system for wind tunnel models. It measures lift, drag and pitching moment exerted on the model.

The balance attaches to the vertical wall of the wind tunnel working section. It is designed for air flows from right to left when the balance is viewed from the front. The balance comprises a mounting plate secured to the wind tunnel working section. A triangular force plate is held on the mounting plate by a mechanism that constrains it to move in a plane parallel to the mounting plate only, while leaving it free to rotate about a horizontal axis. This arrangement provides the necessary three degrees of freedom.

Models for use with the balance are available from TecEquipment. Other models used with the equipment will need a mounting stem. The forces acting on the model are transmitted by cables to three strain gauged load cells. The output from each load cell is taken via an amplifier to a microprocessor-controlled display module. The display module mounts onto the wind tunnel control and instrumentation frame and includes a digital display to show the lift, drag and pitching moment directly.

The equipment is fully compatible with TecEquipment's Versatile Data Acquisition System (VDAS®) and can quickly and conveniently connect to a frame-mounting interface unit (VDAS-F, not included). Using VDAS® enables accurate real-time data capture, monitoring, display, calculation and charting of all relevant parameters on a suitable computer (computer available separately).

The model support of the balance can be rotated by 360 degrees. This allows adjustment of the angle of incidence of the model to the direction of air flow. The model support is locked in the required position by a simple clamp after adjustment.

The Angle Feedback Unit (AFA4, available separately) fits onto the Three-Component Balance and transmits the rotational angle of the test model back to the automatic data acquisition unit.

### Standard Features

- Supplied with comprehensive user guide
- Five-year warranty
- Made in accordance with the latest European Union directives

### Recommended Ancillaries

- Angle Feedback Unit (AFA4)

### Ancillary For

- Subsonic Wind Tunnel (AF100)
- Cylinder Model with Pressure Tapping (AF101)
- 150 mm Chord NACA2412 Aerofoil with variable flap (AF103)
- 150 mm Chord NACA0012 Aerofoils (AF104)
- 100 mm Diameter Flat Plate (AF105)
- Aircraft Model - Low Wing (AF107)
- Aircraft Model - High Wing (AF108)
- Three-dimensional Drag Models (AF109)

### Essential Services

*Electrical supply:*

Input: 100 VAC to 240 VAC, 50 Hz to 60 Hz

**Note:** a suitable electrical supply outlet is included at the rear of the wind tunnel controller

### Operating Conditions

*Operating environment:*

Laboratory

*Storage temperature range:*

-25°C to +55°C (when packed for transport)

*Operating temperature range:*

+5°C to +40°C

*Operating relative humidity range:*

80% at temperatures < 31°C decreasing linearly to 50% at 40°C

### Specification

*Dimensions:*

Balance (on frame): width 480 mm x depth 360 mm x height 550 mm

Display module: width 140 mm x depth 125 mm x height 450 mm

Packed for export: 0.5 m<sup>3</sup>

*Nett weights:*

Balance on calibration frame: 18 kg

Display module: 3.5 kg

Packed for export: 50 kg

*Capacity:*

- Lift 100 N
- Drag 50 N
- Pitching moment 2.5 Nm

*Models:*

- Models are available from TecEquipment
- Other models will need a 12 mm x 220 mm mounting stem

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*tradition.*

*innovation.*

*integration.*

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