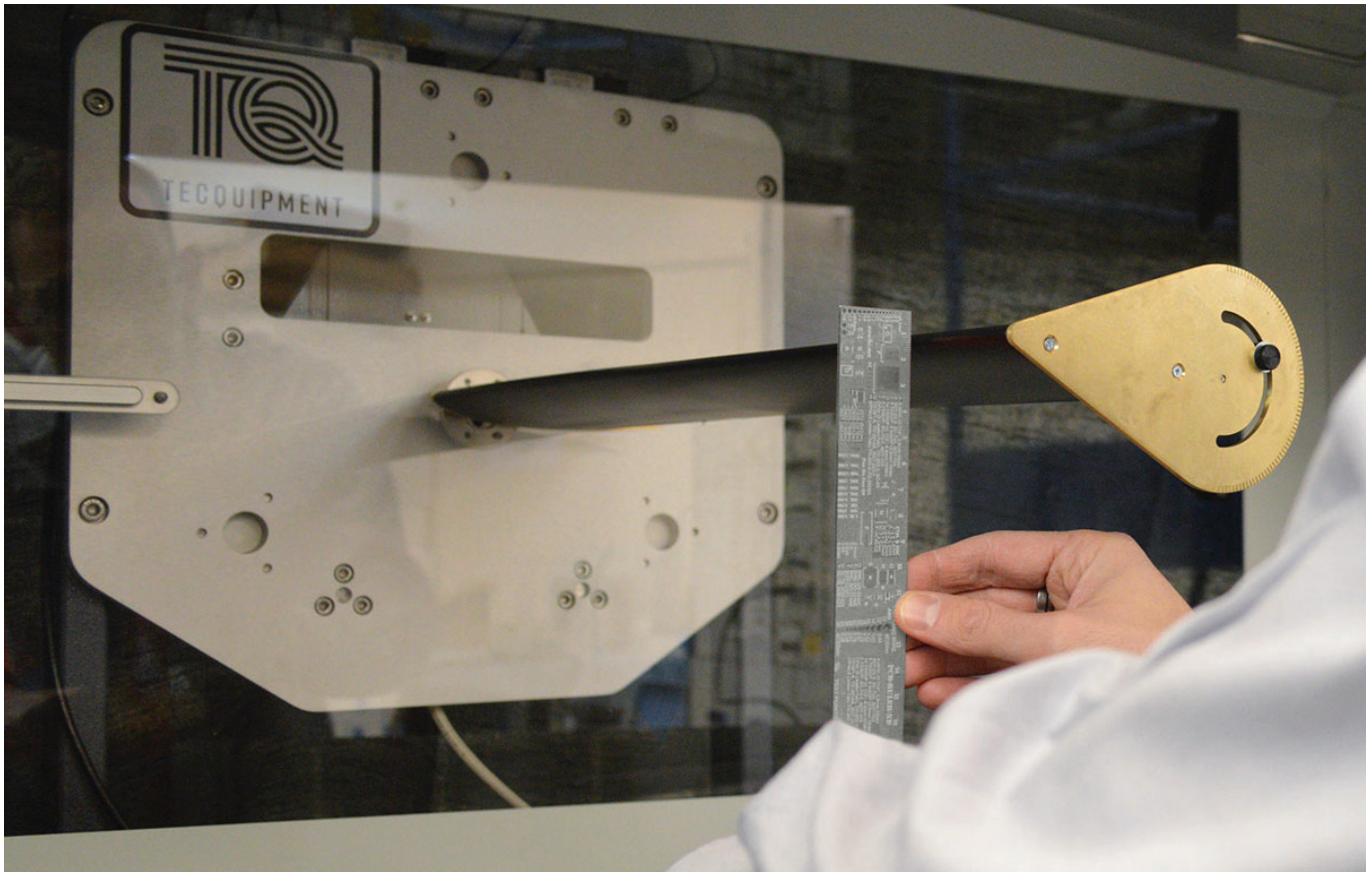
SUBSONIC WIND TUNNEL MODELS

AF1600A TO AF1600J

A selection of optional models for use with the TecQuipment Subsonic Wind Tunnel (AF1600S).



AEROFOIL WITH FLAP (AF1600C) SHOWN BEING SET UP INSIDE THE TECQUIPMENT AF1600S WIND TUNNEL.

KEY FEATURES

- Cylinder, aerofoils, aircraft models, drag models, flat plate and flat plate boundary layer models for use with the TecQuipment Subsonic Wind Tunnel (AF1600S)
- Allow realistic and accurate experiments and demonstrations
- Simple and quick to set-up and use
- Some models include pressure tappings for pressure distribution experiments
- All models work with the other optional instruments for the Subsonic Wind Tunnel
- High-quality surface-finish on all models for accurate results

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SUBSONIC WIND TUNNEL MODELS

AF1600A TO AF1600J

CYLINDER MODEL WITH PRESSURE TAPPING (AF1600A) (INCLUDED WITH AF1600S)

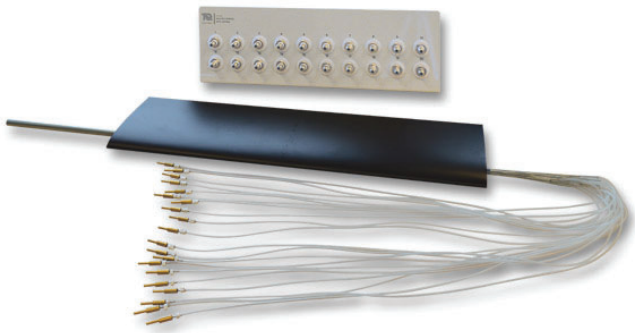
A cylinder model that spans the full width of the working section of the Subsonic Wind Tunnel (AF1600S). A holder (included with the wind tunnel) supports the model in the tunnel. Also, the optional Three-Component Balance (AF1600t, available separately).

The model includes a single pressure tapping so, by rotating the model, students can find the pressure distribution around the cylinder. TecQuipment offers several suitable pressure-measuring instruments (available separately).

Using a Pitot tube, students can traverse the model wake to find the downstream pressure distribution and find the drag on the model. They can compare this to direct measurements, obtained using a balance.

TecQuipment's Smoke Generator (AFA11, not included) increases the educational value of the experiments by showing the flow of air around the model.

150 MM CHORD NACA0012 AEROFOIL WITH TAPPINGS (AF1600B)



The aerofoil has 20 static pressure tappings along its chord on the upper and lower surfaces. They each connect to tubes that pass through the aerofoil and then out to clear, numbered, flexible tubes. Students can connect the tubes to other optional pressure-measurement instruments. They can then measure the pressure distribution around the aerofoil, from which they can find the lift.

Using a Pitot tube, students can traverse the aerofoil wake to find the downstream pressure distribution and find the drag on the aerofoil.

Students can compare these values of lift and drag with direct measurements found from a balance. They can also compare them with the results from another aerofoil with the same profile, such as the AF1600d. Varying the angle of attack of the aerofoil with respect to the air stream allows students to find the changes to the pressure distribution. It also allows investigations into the critical conditions at stall.

150 MM CHORD NACA2412 AEROFOIL WITH VARIABLE FLAP (AF1600C)

An unsymmetrical section (cambered) aerofoil with adjustable flap. The adjustable flap allows students to study the effects of control surfaces such as flaps, ailerons, elevator or rudder. Students can also examine the difference between unsymmetrical and symmetrical aerofoils, by comparing the results to the AF1600d symmetrical aerofoils. The Three-Component Balance (AF1600t, available separately) can hold the aerofoil to measure lift, drag and pitching moment.

Using a Pitot tube, students can traverse the aerofoil wake to find the downstream pressure distribution and find the drag on the aerofoil. They can compare these results with the direct measurements from a balance.

TecQuipment's Smoke Generator (AFA11, not included) increases the educational value of the experiments by showing the flow of air around the model.

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150 MM CHORD NACA0012 AEROFOILS (AF1600D)

A set of two aerofoils. One aerofoil has a span that extends the full width of the working section of the Subsonic Wind Tunnel (AF1600S). This model has the characteristics of a two-dimensional aerofoil. The other aerofoil has a span that extends for half of the working section of the wind tunnel. This model has the characteristics of a three-dimensional aerofoil. Comparing the measured lift and drag of the two aerofoils shows the differences between two-dimensional and three-dimensional aerofoils.

Using a Pitot tube, students can traverse the aerofoil wake of the full-width aerofoil. This gives them the downstream pressure distribution to find the drag on the aerofoil. They can compare their results to direct measurements from a balance (available separately).

Students can compare the results from the full-width aerofoil with the tapped aerofoil model (AF1600b, available separately) as it has the same (NACA0012) section.

TecQuipment's Smoke Generator (AFA11, not included) increases the educational value of the experiments by showing the flow of air around the model.

FLAT PLATE BOUNDARY LAYER MODEL – ROUGHENED AND SMOOTH (AF1600F)

A pair of boundary layer models with a mounting plate, also a pitot and a static probe for investigating boundary layer. One plate is roughened, the other smooth to allow comparisons on boundary layer growth.

The Pitot and static tubes fit to the Pitot-static XY traverse to allow pressures to be measured very close to the flat plate's surface. The traverse allows the boundary layer to be measured at multiple positions.

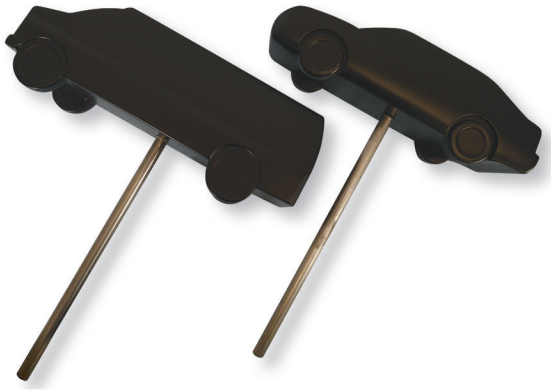
AIRCRAFT MODEL – LOW WING (AF1600G) AND AIRCRAFT MODEL – HIGH WING (AF1600H)

Model aircraft with NACA profile wings. One has a low wing position (bottom of the fuselage), the other has a high wing position (above the fuselage). These models are good for experiments with lift, drag and pitching moment of fixed wing aircraft.

THREE-DIMENSIONAL DRAG MODELS (AF1600J)

A set of different shape models with identical frontal area to allow students to compare the different coefficient of drag for each shape. Includes a dummy stem for tests to cancel out the drag due to each model's support arm.

SET OF TWO VEHICLE DRAG MODELS (AF1600K)



A generic model van and car to allow students to compare the different coefficient of drag for each vehicle.

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SUBSONIC WIND TUNNEL MODELS

AF1600A TO AF1600J

ESSENTIAL BASE UNIT

- Subsonic Wind Tunnel (AF1600s)

STANDARD FEATURES

- Supplied with comprehensive user guides
- Five-year warranty
- Manufactured in accordance with the latest European Union directives
- An ISO 9001 certified company

OPERATING CONDITIONS

OPERATING ENVIRONMENT:

Laboratory

STORAGE TEMPERATURE RANGE: AF1600C

–20°C to +25°C (when packed for transport)

OPERATING TEMPERATURE RANGE: AF1600C

+5°C to +25°C

STORAGE TEMPERATURE RANGE: OTHER ANCILLARIES

–20°C to +25°C (when packed for transport)

OPERATING TEMPERATURE RANGE: OTHER ANCILLARIES

+5°C to +25°C

OPERATING RELATIVE HUMIDITY RANGE: ALL ANCILLARIES

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

RECOMMENDED ANCILLARIES

- Smoke Generator (AFA11)
- Multi-tube Manometer (AFA1)

SPECIFICATIONS

TecQuipment is committed to a programme of continuous improvement; hence we reserve the right to alter the design and product specification without prior notice.

CYLINDER MODEL WITH PRESSURE TAPPING (AF1600A):

- Total span: 595 mm
- Nominal diameter: 63.5 mm
- One pressure tapping at mid span

150 MM CHORD NACA0012 AEROFOIL WITH TAPPINGS (AF1600B):

- 595 mm span
- 20 pressure tappings (ten on each side)

150 MM CHORD NACA2412 AEROFOIL WITH VARIABLE FLAP (AF1600C):

- 590 mm span
- Flap adjustable by +/– 90 degrees

150 MM CHORD NACA0012 AEROFOILS (AF1600D):

- 595 mm and 300 mm span

FLAT PLATE BOUNDARY LAYER (AF1600F)

- Each plate: 750 mm (length), 595 mm (width), 10 mm (nominal depth)

AIRCRAFT MODEL - LOW WING (AF1600G) AND AIRCRAFT MODEL - HIGH WING (AF1600H):

- Wingspan: 266.25 mm
- Length: 217.5 mm
- Wing profile: NACA2415

THREE-DIMENSIONAL DRAG MODELS (AF1600J):

- Plain sphere, hemisphere, dimpled sphere (similar to a golf ball), flat plate and streamlined (teardrop) shape. All mounted on support arms.
- 75 mm diameter frontal area

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