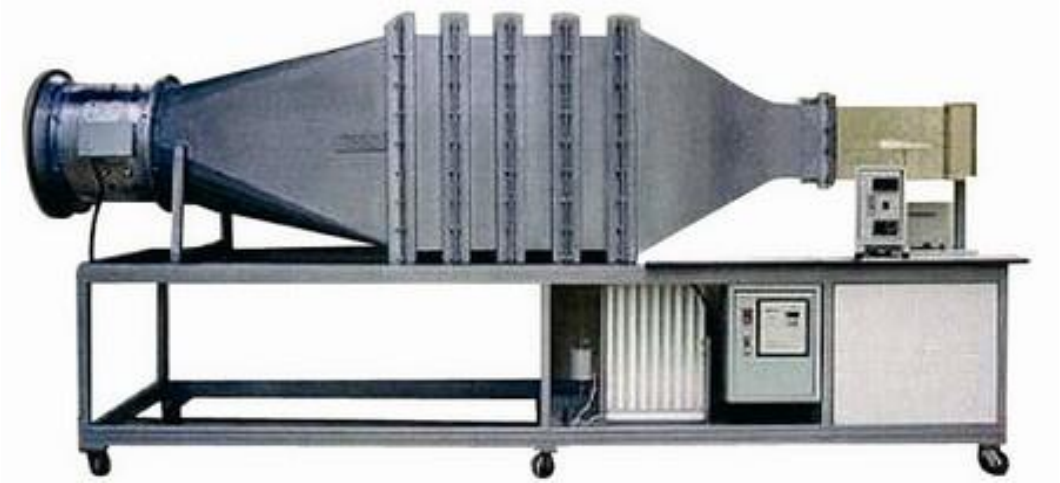
MP 330 U SUBSONIC WIND TUNNEL, Upstream Fan



GENERAL DESCRIPTION

The wind tunnel is an open circuit upstream fan type, designed for studying the subsonic aerodynamics. It is to be used with optional accessories and models below.

An axial flow fan delivers air through a diffuser, aluminum tube flow straigthener, three wire mesh screens and a high contraction ratio section to ensure uniform velocity across the transparent test section. The diffuser and contraction sections have a high quality internal finish to minimize the boundary effects. The fan impeller blades are of an aerofoil design cast aluminum to ensure maximum aerodynamic efficiency and minimum turbulence. The fan speed is adjustable by an inverter.

Four equally spaced static pressure taps are connected to a manifold to minimize effects from a model and air speed is indicated by an inclined manometer and a calibration graph. Models are mounted on two components load cell support with digital display for measurement of drag and lift. Model holder can be rotated to allow quick change on the angle of incidence, this angle is indicated on an angular scale.

The wind tunnel is mounted on a steel table on wheels.

EXPERIMENT CAPABILITIES

- Pressure and velocity measurement.
- Estimation of drag coefficients of various bodies, eg. sphere, hemisphere, disc, plate, streamlined shape etc.
- Estimation of drag lift and pitching coefficients of an aerofoil.
- Pressure distribution around an aerofoil or a cylinder.
- Effects of instability of a “flutter Wing”.
- Investigation of boundary layer at a flat plate by measuring total head distribution.
- Stream lines visualization using a smoke generator.
- Wakes behind models.

TECHNICAL DATA

• Fan :		
- Diameter	:	500 mm.
- Impeller	:	Single stage, aerofoil aluminum blade.
• Contraction area ratio	:	7:1.
• Test Section	:	300 mm x 300 mm x 600 mm long, transparentor on three sides.
• Maximum air velocity	:	Over 30 m/s.
• Air velocity control	:	Inverter.
• Measuring instruments		
- Water manometer	:	Twin type.
- Wind velocity	:	Contraction section differential pressure with inclined water manometer and velocity calibration graph (to be used with inclined water manometer above).
- Lift and drag	:	Two component balance for measurement of lift and drag.
• Power supply	:	380 V . 3 Ph 50 Hz. Other power supply is available on request.

OPTIONAL ACCESSORIES

- MP 330-003 Three component balance for measurement of lift, drag, and pitching instead of two component balance.
- MP 330-005 Velocity (differential pressure) digital display.
- MP 330-110 Anemometer for velocity measurement.
- MP 330-111 Angle digital display for model angular position.
- MP 330-114 Multitube inclined water manometer.
- MP 330-114D 16 point differential pressure sensor with sequential readings instead of multitube inclined water manometer.
- MP 330-121 Pitot-static probe, stainless steel.
- MP 330-122 Yaw probe, three tube type with clamp.
- MP 330-125 Wake survey rake.
- MP 330-130 Smoke generator set.

OPTIONAL MODELS

Models for a study of lift, drag and pitching include:

- MP 330-011 Sphere
- MP 330-012 Hemisphere
- MP 330-013 Circular disc
- MP 330-014 Circular ring
- MP 330-015 Square plate
- MP 330-016 Vane
- MP 330-017 Cylinder
- MP 330-018 Streamlined shape
- MP 330-019 Aerofoil
- MP 330-025 Model air plane
- MP 330-026 Model automobile
- MP 330-030 Aerofoil with slot and flap

OPTIONAL MODELS AND ACCESSORIES FOR INDIVIDUAL STUDY

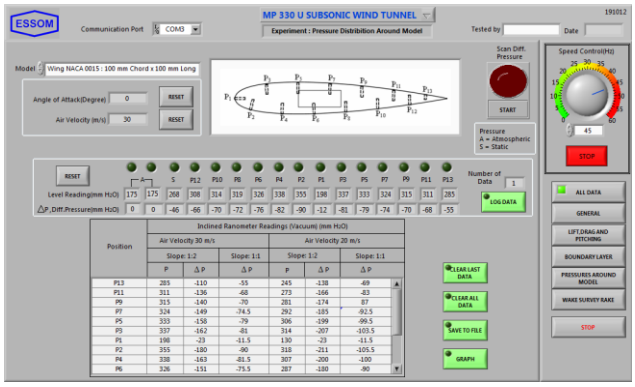
- MP 330-050 Flutter wing, aluminium aerofoil on steel frame.
- MP 330-053 Pressure wing, aluminium
  - Number of taping points
- MP 330-055 Pressure cylinder, plastics
  - Number of tapping points
- MP 330-057 Boundary layer plate with probe.
- MP 330-150 Computer Interface

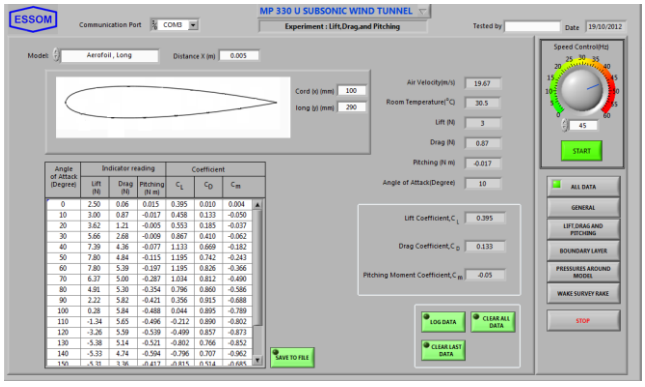
This package consists of computer interface unit, software, and required accessories for:

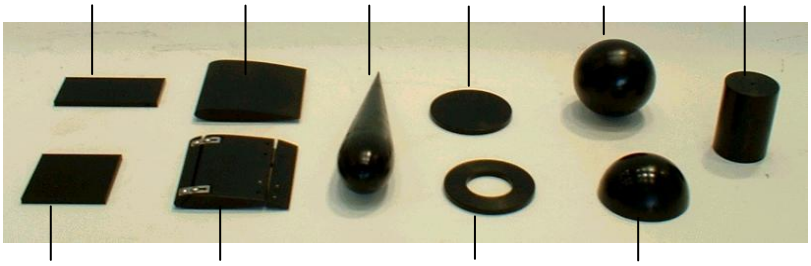
. Control of wind velocity.

. Display of:

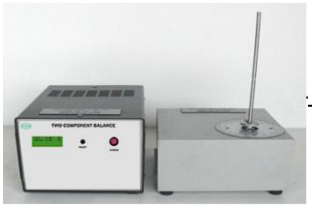
- Wind velocity, lift, drag, pitching moment, and angle of attack.
- Coefficient of lift, drag, and pitching moment.
- Pressure distribution.







Two component balance with indicators



MP 330-003

MP 330-050

MP 330-053

MP 330-055

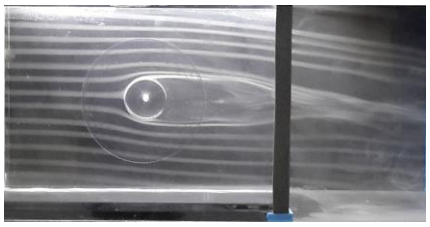
MP 130-057

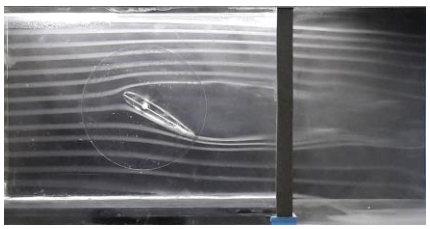
MP 330-114

MP 330-114D

MP 330-122

MP 330-125





MP 330-130

Net (unpacked) shipping dimensions WxLxH : 95 x 385 x 130 cm.
Net weight : Approx 600 kg.