

EXPERIMENTAL CAPABILITY

- ◆ Frame for Free Air Wind Turbine tests
- ◆ Allows comparison Wind Channel tests
- ◆ Problems Related to wind fluctuations
- ◆ All Tests with either P3100 or P3120

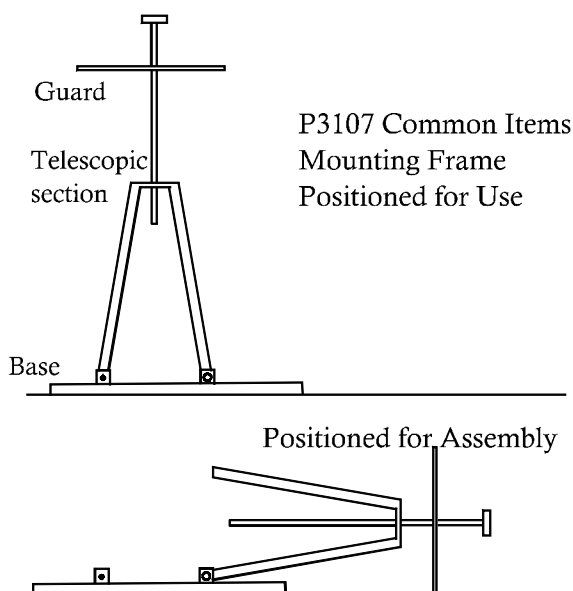
INTRODUCTION

P3107 External Wind Generator Mounting Kit - Common Items

Testing a wind generator in free wind has a number of advantages and disadvantages. The advantages are that blockage effects are minimal, and results are determined across a representative range of wind fluctuations. The disadvantages are that the wind fluctuates so that it is difficult to obtain repeatable results, and the wind will not provide a suitable range of variability over a typical laboratory session. Whilst Cussons P3100 Horizontal Axis and P3120 Vertical Axis Wind Generators are designed for use within a wind channel such as Cussons P3105 they can also be used externally on the appropriate external mounting frame.

The frame consists of

P3107 Common mounting frame kit



Wind Generator

External Mounting Kit

P3107 Common Items

P3108 Horizontal Axis

P3125 Vertical Axis

and either

P3108 Horizontal Axis Wind Turbine kit

or

P3125 Vertical Axis Wind Turbine Kit

NOTE These products are for use in winds up to 16m/s velocity and are not to be used in higher wind speeds.

DESCRIPTION

P3107 Common Frame Kit

The P3107 Common external mounting frame kit comprises of a large tripod base, which is designed to be tilted into the vertical from a downwind position. The base is supplied with "pockets" that can be weighted at site with soil, rocks or water to provide a secure base in stronger winds.

Once raised to the vertical position the frame has an additional telescopic section that allows the wind turbine to be raised further from the ground. The upper end of the telescopic section incorporates a horizontal guard frame designed to reduce the risk that a student comes into contact with the rotor.

The frame includes a mounting location for the control panel supplied with either the Cussons P3100 Horizontal Axis or the P3120 Vertical Axis Wind Generators. Note: These control

panels are not waterproof, and whilst low voltages means that there is not an inherent danger if the boxes become flooded, the equipment could be damaged, and it is not recommended that the equipment be used in rainy conditions, and particularly not when there is a risk of lightening.

Warning: It is not recommended to use the external frame in winds that are gusting above 16m/s.

Technical Specification P3107 Common Items

The Common Items for the P3107 External Wind Generator Mounting Kit shall comprise of a robust tripod base, with pivoting feet, allowing the tripod to be raised to the vertical. The base is to be provided with pockets in which weights can be placed to help weigh down the tripod. The base is to include a telescopic section and to have a mounting point for a Cussons control panel. The frame is to include a horizontal guard to help prevent unintentional access to the wind generator.

The Kit is to interface correctly with both Cussons P3108 Horizontal Axis Wind Turbine kit and Cussons P3125 Vertical Axis Wind Turbine Kit (although not both together).

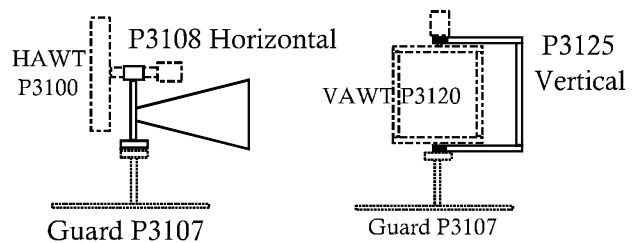
P3108 Horizontal Axis Wind Turbine Special Mounting Kit

Cussons P3100 Horizontal Axis Wind Turbine can be mounted externally to carry out tests in free wind conditions. It is essential that P3108 is used with the P3107 common items kit.

P3108 comprises of a robust frame, together with a light bearing and wind vane, to maintain the P3100 Horizontal Axis Wind Turbine pointing directly into the wind. It is possible to lock the turbine into a set angle relative to the wind. The kit also contains an electrical extension lead to extend the connections and extension cables for the measurement of torque and thrust in the mechanical P3100 version. (Mechanical measurement of thrust and torque externally is

not accurate).

P3125 Vertical Axis Wind Turbine Special Mounting Kit



Cussons P3120 Vertical Axis Wind Turbine can be mounted externally to carry out tests in free wind conditions. It is essential that P3125 is used with the P3107 common items kit.

P3125 comprises of a robust frame to mount the P3120 Vertical Axis Wind Turbine and to provide upper and lower bearings in which the rotor can turn. The kit also contains an electrical extension lead to extend the connections and extension cables for the measurement of torque in the mechanical P3120 version. (Mechanical measurement of torque externally is not accurate).

OVERALL DIMENSIONS

P3107 Packed for Self Assembly

Length 2.5m Width 1.1m Depth 0.3m

P3108 Packed for Self Assembly

Length 1.5m Width 0.6m Depth 0.3m

P3125 Packed for Self Assembly

Length 1.5m Width 0.6m Depth 0.3m

REQUIRED ACCESSORIES

P3108 requires P3107 Common Items, and P3100 Horizontal Axis Wind Generator Module (together with a blade set) or the users own wind generator.

P3125 requires P3107 Common Items, and P3120 Vertical Axis Wind Generator Module (together with a blade set) or the users own wind generator.