



# F1 Wind Tunnel Model Support System

## Description

Design and manufacture of a model support system for a half scale formula one wind tunnel.

The system has a full working height of 3.4 m, carrying a load of 6 kN with a deflection of only 0.5 mm.

Positional accuracy is 0.0005 mm at a speed of 25 mm/s. This was achieved using a multi-start, ground and pre-loaded precision roller screw driven by a stepper motor with integral brake and encoder.

## Specification Summary

- Half scale, F1 wind tunnel
- Working section height = 3.4 m
- Maximum down force = 6 kN
- High rigidity
- Maximum deflection = 0.5 mm lateral
- Maximum lift = 530 mm
- Lift speed = 25 mm/s
- Fine ride height adjustment = +/- 30 mm
- High positional accuracy = +/- 0.01 mm
- Stepper motor drive with integral brake and encoder feedback
- Maximum model mass = 150 kg

## Disciplines Used

- Composites design & analysis
- Mechanical & electro-mechanical design
- Stress & vibration FEA
- Project management
- Manufacture & Assembly
- Test & commissioning



*F1 Tunnel Model Motion System*