



## PLANE FRAME FITTED WITH STRAIN GAUGES HPM6/1A



### Features

- Real size welded truss
- Comparison with pin jointed design theory
- Verification of reciprocal theorem
- Provides influence lines
- Strain measured with strain gauges
- Introduces students to strain gauges
- Deflections measured
- Pinned & roller-end bearings

### Description

The standard truss supplied is made from fully welded hollow square section steel members making a 45° sections. The truss has special end mountings that allow different end bearing conditions to be used, i.e. pinned and roller end. Both these end bearing arrangements are supplied. The end mountings also allow the frame to be inverted for work on an inverted truss. Seven members of the truss are strain gauged with half bridge arrangements. Each strain gauge pairing has a cable loom attached and terminated with a number connector. This connector can be fitted into the HPM15 Data Acquisition Upgrade (not supplied) for direct reading of the member strain during loading. The truss has been specially designed to be tested in the HPM1 MAGNUS Test frame (not supplied) with the HPM3 Hydraulic ram systems (not supplied) and the HPM2 accessories kit. The experiment calls for joint deflections to be measured during testing. These deflections are measured using the analogue dial gauge & stand supplied. An alternative HPM20 dial gauge set can be purchased at additional cost. For safety reasons during experimentation, two safety chains have been provided to secure the truss to the HPM1 MAGNUS frame, whilst not restricting the truss movements or deflections. Two high level reaction supports are supplied to allow the truss to be inverted and to use the same end bearing conditions. A comprehensive instruction manual is provided giving details of connections, experimental method, and example results. If forces in the members are not required, then order HPM6/1 instead of HPM6/1A.

### Learning capabilities

- Comparison of deflections with theoretical values assuming pin joints
- Comparison between normal and inverted trusses
- Measurement of strains in members of a fully welded truss
- Investigation of reciprocal theorem
- Strain gauging of welded structures
- The use of strain gauges and strain meters

### Technical Specification

- 40 x 40mm box section with 3mm wall thickness (approximately)
- Fully welded joints
- Seven members strain gauged
- Pinned and roller end bearings
- High level reaction supports provided

### Essential Ancillaries

- HPM1 Universal Test Frame
- HPM2 Accessories Kit
- HPM3 Single Hydraulic Ram System
- HPM15 Data Acquisition Upgrade
- HPM12 Protective Guard

### Recommended Ancillaries

- HAC20K Stain Gauge Kit
- HPM20 Dial Gauge Kit

### What's in the Box?

- 1 x Plane Frame fitted with Strain Gauges
- 2 x High level reaction supports
- 2 x 'S' hooks
- 1 x Cross rocker bearing
- 2 x Pins
- 1 x Bearing
- 1 x Roller bearing assembly
- 1 x Dial gauge, 25mm travel, 0.01mm resolution
- 1 x Magnetic dial gauge stand

### Weights & Dimensions

- Plane Frame fitted with strain gauges Net Dimensions: 3.65M (L) x 0.94M (H)
- Plane Frame fitted with strain gauges Net Weight: 50Kg

### Essential Services

- 2.5 Amp.220-240 Volts, Single Phase, 50Hz (With earth/ground) or
- 5 Amp.110-120 Volts, Single Phase, 60Hz (With earth/ground).

### Operational Conditions

- Storage temperature: -10°C to +70°C
- Operating temperature range: +10°C to +50°C
- Operating relative humidity range: 0 to 95%, non condensing

### Data logger channel inputs where applicable\*

The channels available to the HPM15 when used as an integral part of the HPM set-up are as follows:

- 16 x strain channels (convertible to 16 x Force or combinations in between)
- 1 x pressure channels
- 6 x dial gauge channels

### Ordering information

To order this product, please call PA Hilton quoting the following code: HPM6/1A PLANE FRAME FITTED WITH STRAIN GAUGES

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