



## “MAGNUS” 300kN TEST FRAME HPM1



Year 2  
study

5 to 10  
participants

Space required  
6(L) x 4(W)m

5  
modules

### Features

- A safe, high quality UTM for testing bending, load and compression of real world samples and offering complete customer flexibility.
- Manufactured from parallel flanged steel section to limit frame flex ensuring integrity of results.
- Large scale frame with a working area of 4m x 1.6m.
- Test capability of 300kN for point load, or two 200kN for a four point beam test.
- High quality 700psi hydraulic pump utilising an electronic transducer for accuracy.
- Ideal for student or demonstration use.
- Unlimited potential for student projects.
- Hand-operated hydraulic system enables manual control of loading for maximum precision.
- Data acquisition system with computer linking optionally available.

### Description

The “MAGNUS” Universal Test Frame is constructed of a twinned steel channel frame fastened with high tensile fixings. This creates an overall structure size of 4.61m long, 2.53m high and 1.20m wide and an internal working space of 4.0m long x 1.6m high. The twinned frame creates a 0.60m wide working “gap” between the vertical members allowing for long test specimens to be tested. The base feet distribute the self-weight of about 1 tonne to four anti-vibration levelling feet. The top channel members are used to carry either a single (HPM3) or double acting (HPM3A) hydraulic ram carriage (not supplied). To accompany the “MAGNUS” Universal Test Frame is a wide variety of accessories. These assist the customer to arrange and test their own specimens. Also available are a variety of experiments. There are two (2) physical experiments based on “plane frames”, and a further three (3) experiments which are instruction manual based only, requiring the customer to create the specimens on site.

#### Related Laws/Applications

- Beam Bending Theory
- Compression
- Modulus of Elasticity
- Strength of Material
- Strain

#### Learning capabilities

- Bending Tests
- Load Tests
- Compression Tests
- Single or Double point load
- "Full Scale" Testing
- Arches
- Frames
- Roof Trusses
- Timber Grillage

#### Technical Specification

- Steel used in frame: Nominally 300(W) x 90(H) Parallel Flange.
- Base Feet: 1200(L)mm
- Upright Member: 2340(L)mm
- Upper and Lower Member: 4610(L)mm
- Cross support: 600(L)mm
- Tie Bar:  $\varnothing 50.8$  x 580(L)mm
- Machine mounts:  $\varnothing 160$ mm, M20, up to 100mm adjustment
- ALL steel frame parts painted with corrosion protection.
- 300kN point test load capability
- 2 x 200kN four point bending test load capability

#### Essential Ancillaries

- HPM2: HPM1 Accessories
- HPM3 or HPM3A: Single or Twin Hydraulic Ram System
- HPM12: Protective Guard

#### Recommended Ancillaries

- HPM3 or HPM3A: Single or Twin Hydraulic Ram System
- HPM15: Data Acquisition System and Software
- HPM20: Dial Gauges and Holders set
- HPM6/1: Plane Frame
- HPM6/1A: Plane Frame Fitted with Strain Gauges
- HPM4/1: (Manual Only) Ultimate Moment of a Reinforced Concrete Beam
- HPM4/2: (Manual Only) Crack Control in a Reinforced Concrete Beam
- HPM5/1: (Manual Only) Stress Grading of Timber Joists

#### What's in the Box?

- 1 x Wooden Case Containing Frame and accessories (supplied disassembled)
- 2 x Base feet
- 4 x Upright members
- 2 x Upper cross members
- 2 x lower cross members
- 3 x Cross supports
- 1 x Tie bar
- 4 x Machine mounts (feet)
- 1 x Magnetic Name plate
- Set of 100 High Tensile M20 Hex Head Set Screws, nuts and washers
- 1 x Toolbox with spanners, rubber hammer, level, alignment tool, hexagon wrenches
- Instruction Manual
- Packing List
- Test Sheet

#### You might also like

- HSM58: Universal Testing Machine (35kN)
- HST9: Shear Force in a Beam
- HST10: Bending Moment in a Beam
- HST46: Combined Shear Force & Bending Moment
- HST11: Continuous and Indeterminate Beams
- HST16: Redundant Truss
- HST17: Forces in a Truss (Resolution)
- HST19: Pin Jointed Frameworks
- HST20: Bending Stress in a Beam
- HST35: Strain Measurement for Structures
- HSM1cD: Advanced Beam Testing Apparatus
- HSM11: Combined Bending and Torsion
- HSM18: Electrical Resistance Strain Gauge
- HSM41: Pendulum Impact Tester (25J)
- HFC17: Basic Roof Truss
- HFC31: Combined Shear Force & Bending Moment

#### Weights & Dimensions

- 461(L) x 120(W) x 253(H)cm
- Net Weight: 1400 kg
- Gross Weight: 1700 kg
- Packing Case Dimensions: 490(L) x 75(W) x 88(H)cm
- Packing Case Volume: 3.234m<sup>3</sup>

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**Essential Services**

- Level concrete floor at ground level
- Good lighting
- 220/240V, 50Hz, single phase, live, neutral and earth for HPM3.
- Suitable width of doors and turning circle for long members of MAGNUS frame.
- Room/Laboratory opening of 1.5metres for the packed case
- Fork Lift with capacity of 3 tonnes minimum lifting capacity.
- Distance between forks of forklift must be upwards of 1.5metres to ensure stable movement and support of the long members.
- Ceiling height exceeding 3metres
- Qualified forklift driver on site at all times.
- Assembly team of at least 2 persons.
- 30mm A/F spanner and ratchet socket.
- Hard hats for all personnel involved and steel toe capped boots.
- Suitable moving vehicles for the large steel members of the MAGNUS frame (i.e. trolleys, small lorry) from place of collection to place of installation.

**Operational Conditions**

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

**Ordering information**

To order this product, please call PA Hilton quoting the following code:  
HPM1

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