

MM 500 MECHANICAL ENGINEERING EXPERIMENT SERIES

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MM 500 MECHANICAL ENGINEERING TEST SERIES

This is a bench top set for studying various principles in Mechanical Engineering. It consists of MM500-001 a basic panel for mounting accessories for specific experiment. There are over 20 sets of optional accessories for over 60 experiments. Software for data display and analysis is supplied for selected experiments. Instruction manual is also included.

MM 500-001 BASIC PANEL DESCRIPTION

The panel is made from a perforated stainless steel sheet mounted on two supports with adjustable footings. The panel can be tilted, put in portrait or landscape position. Accessories for specific experiments are mounted on the panel by quick fitting screws.



TECHNICAL DATA

- Panel size : 375 x 500 mm
- Distance between holes : 25 mm
- Supports : 2 ea.

MM 500-111 FORCES SET



DESCRIPTION

This is part of MM 500 Mechanical Engineering Test Series which provides sets for various experiments on MM 500-001 Basic Panel (separately supplied) to study or demonstrate specific engineering principles. The set is supplied in plastics box.

Flat plates are used for determination of center of gravity. Pulleys, cords and rings with load hangers and weights are used for force polygons.

EXPERIMENT CAPABILITIES

- Centers of gravity.
- Force triangle.
- Force polygon and Bow's Notation.
- Non- concurrent forces.

MAIN COMPONENTS AND PARTS

- plastic plates
- Cord set
- Load hangers
- Weights
- Plastics box
- Software for data display and analysis by computer (separately supplied).

OPTIONAL:

- MM500-111-1 : Work done by variable work force, vertical and tangential efforts, using rotating arm, spring balance and ruler.

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MM 500-112 MOMENTS SET



DESCRIPTION

This is part of MM 500 Mechanical Engineering Test Series which provides sets for various experiments on MM 500-001 Basic Panel (separately supplied) to study or demonstrate specific engineering principles. The set is supplied in plastics box.

Rigid beam is pivoted and balanced on both sides by load hangers and weights. Reaction from the load can be shown on spring balance.

EXPERIMENT CAPABILITIES

- Principles of moments.
- Rigid beam.
- 1st, 2nd and 3rd order of levers.
- Bell crank lever.
- Beam balances.
- Beam reactions.

MAIN COMPONENTS AND PARTS

- Stainless steel beam with hook points 400 mm long
- Bell crank lever with hook points
- Cord and hook
- Pin support
- Pulley
- Spring balances
- Load hangers
- Weights
- Plastics box
- Software for data display and analysis by computer (separately supplied).

MM500-113 BENDING MOMENT



DESCRIPTION

This is part of MM 500 Mechanical Engineering Test Series which provides sets for various experiments on MM 500-001 Basic Panel (separately supplied) to study or demonstrate specific engineering principles. The set is supplied in plastics box.

The beam has two parts with a ball bearing hinge at the joint. An underhung spring balance holds the hinge in compression, hence resists bending moment. The beam rests on two round supports. Load hangers and weights slide along the beam.

EXPERIMENT CAPABILITIES

- Bending moment of a beam under loads.

MAIN COMPONENTS AND PARTS

- Beam for bending moment test
- Beam supports
- Hanger sliders
- Spring balance
- Load hangers
- Weights
- Plastics box
- Software for data display and analysis by computer (separately supplied).

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MM500-114 SHEAR FORCE SET



DESCRIPTION

This is part of MM 500 Mechanical Engineering Test Series which provides sets for various experiments on MM 500-001 Basic Panel (separately supplied) to study or demonstrate specific engineering principles. The set is supplied in plastics box.

The beam has two parts with one part having ball bearings travel on flat vertical surface of the other part. An overhung spring balance measures the shear force and an underhung spring resists bending moment. The beam rests on two round supports. Load hangers and weights slide along the beam.

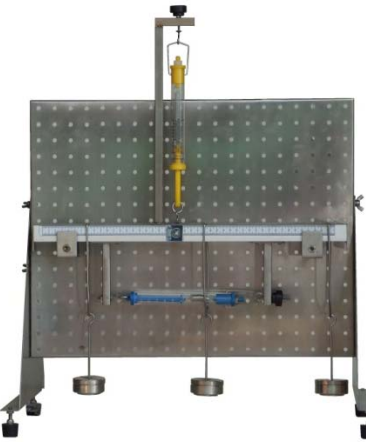
EXPERIMENT CAPABILITIES

- Shear force of a beam under loads.

MAIN COMPONENTS AND PARTS

- Beam for shear force test 400 mm
- Beam supports
- Hanger sliders
- Spring balance
- Load hangers
- Weights
- Plastics box
- Software for data display and analysis by computer (separately supplied).

MM500-115 SHEAR FORCE AND BENDING MOMENT SET



DESCRIPTION

This is part of MM 500 Mechanical Engineering Test Series which provides sets for various experiments on MM 500-001 Basic Panel (separately supplied) to study or demonstrate specific engineering principles. The set is supplied in plastics box.

The beam has two parts with a ball bearing hinge at the joint. An underhung spring balance holds the hinge in compression, hence resists bending moment. The beam rests on two round supports. Load hangers and weights slide along the beam.

EXPERIMENT CAPABILITIES

- Bending moment of a beam under loads.
- Shear force of a beam under loads.

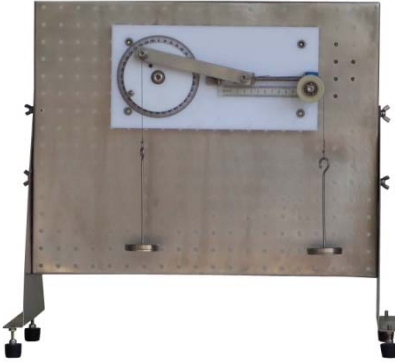
MAIN COMPONENTS AND PARTS

- Beam for bending moment test
- Beam supports
- Hanger sliders
- Spring balances
- Load hangers
- Weights
- Plastics box
- Software for data display and analysis by computer (separately supplied).

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MM500-117 CRANK AND TOGGLE SET



DESCRIPTION

This is part of MM 500 Mechanical Engineering Test Series which provides sets for various experiments on MM 500-001 Basic Panel (separately supplied) to study or demonstrate specific engineering principles. The set is supplied in plastics box.

Load hanger and weight are applied on the crank to create turning moment and horizontal force is measured on the slider using load hanger and weights.

EXPERIMENT CAPABILITIES

- Turning moment vs for crank resistance at different crank angles.

MAIN COMPONENTS AND PARTS

- Crank and slider set with provision for load hangers and angular scale.
- Cords
- Load hangers
- Weights
- Plastics box
- Software for data display and analysis by computer (separately supplied).

MM500-121 DEFLECTION OF BEAMS AND CANTILEVERS SET



DESCRIPTION

This is part of MM 500 Mechanical Engineering Test Series which provides sets for various experiments on MM 500-001 Basic Panel (separately supplied) to study or demonstrate specific engineering principles. The set is supplied in plastics box.

A beam is placed on two supports and loads are applied on the beam by load hangers and weights. Displacement is measured by dial indicator.

EXPERIMENT CAPABILITIES

- Beam length vs deflection.
- Beam material vs deflection.
- Effects of moment of inertia on deflection.
- Effects of beam supports on deflection.

MAIN COMPONENTS AND PARTS

- Stainless steel, brass and aluminium beam
- Stainless steel beam
- Knife edge support
- Knife edge and fixed beam support
- Stainless steel ruler
- Stainless steel vernier
- Hanger sliders
- Dial indicators
- Load hangers
- Weights
- Plastics box
- Software for data display and analysis by computer (separately supplied).

MM 500 MECHANICAL ENGINEERING TEST SERIES

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MM500-132 TENSILE TEST SET



DESCRIPTION

This is part of MM 500 Mechanical Engineering Test Series which provides sets for various experiments on MM 500-001 Basic Panel (separately supplied) to study or demonstrate specific engineering principles. The set is supplied in plastics box.

Tensile specimen is attached to the tensile test frame where load is applied by a screw. Load is measured by a dial indicator on the spring and specimen displacement is measured by a vernier.

EXPERIMENT CAPABILITIES

- Tensile test to failure to determine elastic limit, yield and ultimate strength of specimens.

MAIN COMPONENTS AND PARTS

- Tensile test frame with calibrated spring
- Specimens of mild steel, medium carbon steel, brass and aluminium
- Dial indicator
- Vernier
- Weights
- Plastics box
- Software for data display and analysis by computer (separately supplied).

MM500-133 TORSION SET



DESCRIPTION

This is part of MM 500 Mechanical Engineering Test Series which provides sets for various experiments on MM 500-001 Basic Panel (separately supplied) to study or demonstrate specific engineering principles. The set is supplied in plastics box.

Circular bar is attached to two supports one fixed and the other rotating. Torsion load is applied on the rotating end via a pulley and angular displacement is measured a dial indicator on an arm.

EXPERIMENT CAPABILITIES

- Angle of twist vs specimen length.
- Angle of twist vs specimen material.
- Angle of twist vs moment of inertia.

MAIN COMPONENTS AND PARTS

- Circular bars of stainless steel, brass and aluminium.
- Dial indicator
- Stainless steel tube
- Stainless steel Vernier
- Stainless steel ruler
- Rotating and fixed bar supports
- Bar clamps for bars and tube
- Load hanger
- Weights
- Plastics box
- Software for data display and analysis by computer (separately supplied).

MM 500 MECHANICAL ENGINEERING TEST SERIES

This is a bench top set for studying various principles in Mechanical Engineering. It consists of MM500-001 a basic panel for mounting accessories for specific experiment. There are over 20 sets of optional accessories for over 60 experiments. Software for data display and analysis is supplied for selected experiments. Instruction manual is also included.

MM500-134 SPRING TEST SET



DESCRIPTION

This is part of MM 500 Mechanical Engineering Test Series which provides sets of various experiments on MM 500-001 Basic Panel (separately supplied) to study or demonstrate specific engineering principles. The set is supplied in plastics box.

Coil spring(s) are attached to the test frame and load is applied to the spring(s). Spring extension is measured by a vernier.

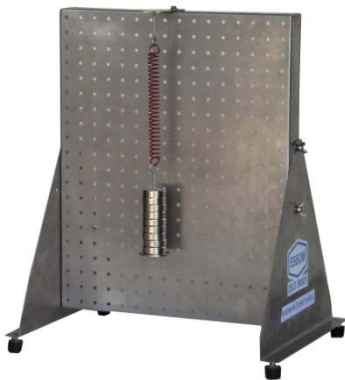
EXPERIMENT CAPABILITIES

- Hooke's law for spring compression.
- Hooke's law for spring tension.
- Parallel and series spring tests.

MAIN COMPONENTS AND PARTS

- Coil springs of different sizes
- Spring tester
- Spiral spring
- Stainless steel ruler
- Stainless steel vernier
- Load hanger
- Weights
- Plastics box
- Software for data display and analysis by computer (separately supplied).

MM500-135 POTENTIAL AND KINETIC ENERGY SET



DESCRIPTION

This is part of MM 500 Mechanical Engineering Test Series which provides sets for various experiments on MM 500-001 Basic Panel (separately supplied) to study or demonstrate specific engineering principles. The set is supplied in plastics box.

A pendulum, a flywheel with string, a weight hanger and weights are used to demonstrate how energy is transferred from one from to another.

EXPERIMENT CAPABILITIES

- Kinetic and potential energy in a pendulum.
- Static potential energy in a spring.
- Kinetic energy in a flywheel.

MAIN COMPONENTS AND PARTS

- Simple pendulum
- Flywheel with cord
- Stop watch
- Spring
- Stainless steel ruler
- Load hanger with cord
- Weights
- Plastics box
- Software for data display and analysis by computer (separately supplied).

MM 500 MECHANICAL ENGINEERING TEST SERIES

This is a bench top set for studying various principles in Mechanical Engineering. It consists of MM500-001 a basic panel for mounting accessories for specific experiment. There are over 20 sets of optional accessories for over 60 experiments. Software for data display and analysis is supplied for selected experiments. Instruction manual is also included.

MM500-141 INCLINED PLANE SET



DESCRIPTION

This is part of MM 500 Mechanical Engineering Test Series which provides sets for various experiments on MM 500-001 Basic Panel (separately supplied) to study or demonstrate specific engineering principles. The set is supplied in plastics box.

The set uses an adjustable slope inclined plane whose surface finish can be changed. Moving on the inclined plane is a sled, a roller or a rolling car with load. A pulley with load hangers and weights are provided for loading and friction measurement.

EXPERIMENT CAPABILITIES

- Forces on an inclined plane.
- Rolling and sliding friction on different surfaces.
- Kinetic and static friction.
- Effects of inclined angle.

MAIN COMPONENTS AND PARTS

- Inclined plane,
- Plastics and steel surfaces
- Sliding block
- Rolling car
- Roller
- cord
- Load hanger
- Weights
- Plastics box
- Software for data display and analysis by computer (separately supplied).

MM500-142 ROTATIONAL FRICTION SET



DESCRIPTION

This is part of MM 500 mechanical Engineering Test Series which provides sets for various experiments on MM 500-001 Basic Panel (separately supplied) to study or demonstrate specific engineering principles. The set is supplied in plastics box.

Friction materials includes a screw jack and bushing of different materials. Pulley, load hangers and weights measure the friction. An oil cup is provided for a study of lubrication effect.

EXPERIMENT CAPABILITIES

- Efficiency of a screw jack.
- Efficiency of different bushing materials.
- Effect of bushing diameter.
- Effect of lubrication.

MAIN COMPONENTS AND PARTS

- Bushings made of brass (2 different diameters) and plastics with pulleys
- Screw jack set
- Oil cup with oil
- Pulley
- Cord
- Load hangers
- Weights
- Plastics box
- Software for data display and analysis by computer (separately supplied).

MM 500 MECHANICAL ENGINEERING TEST SERIES

This is a bench top set for studying various principles in Mechanical Engineering. It consists of MM500-001 a basic panel for mounting accessories for specific experiment. There are over 20 sets of optional accessories for over 60 experiments. Software for data display and analysis is supplied for selected experiments. Instruction manual is also included.

MM500-151 PULLEY SET



DESCRIPTION

This is part of MM 500 mechanical Engineering Test Series which provides sets for various experiments on MM 500-001 Basic Panel (separately supplied) to study or demonstrate specific engineering principles. The set is supplied in plastics box.

The set is for demonstration of mechanical advantage for various types of pulleys using load hangers and weights.

EXPERIMENT CAPABILITIES

- Fixed, movable and compound pulleys.
- Wheel and axle.
- Weston differential pulley.

MAIN COMPONENTS AND PARTS

- Single, double and triple pulley
- Weston differential pulley
- Wheel and axle set
- Cord
- Load hangers
- Weights
- Plastics box
- Software for data display and analysis by computer (separately supplied).

MM500-152 BELT AND CHAIN DRIVE SET



DESCRIPTION

This is part of MM 500 mechanical Engineering Test Series which provides sets for various experiments on MM 500-001 Basic Panel (separately supplied) to study or demonstrate specific engineering principles. The kit is supplied in plastics box.

The kit includes belt and chain power transmission systems. Weights and load hangers are used for determination of mechanical advantage and efficiency.

EXPERIMENT CAPABILITIES

- Chain drive system power and efficiency.
- Belt drive system power and efficiency.

MAIN COMPONENTS AND PARTS

- Chain and sprocket
- Belt and pulley set
- Cords
- Weights
- Plastics box
- Software for data display and analysis by computer (separately supplied).

MM 500 MECHANICAL ENGINEERING TEST SERIES

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MM500-153 GEAR TRAINS SET



DESCRIPTION

This is part of MM 500 mechanical Engineering Test Series which provides sets for various experiments on MM 500-001 Basic Panel (separately supplied) to study or demonstrate specific engineering principles. The set is supplied in plastics box.

The set includes spur gear set, worm and wheel, bevel gear set with load hangers and weights for determination of gear ratio, mechanical advantage and efficiency of the gear system.

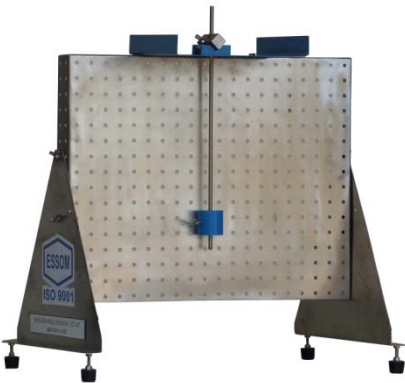
EXPERIMENT CAPABILITIES

- Characteristics of spur gears for single and compound trains.
- Characteristics of bevel gear.
- Characteristics of worm and wheel.

MAIN COMPONENTS AND PARTS

- Spur gears of different number of teeth
- Worm and wheel set
- Bevel gear set
- Cords
- Load hangers
- Weights
- Plastics box
- Software for data display and analysis by computer (separately supplied).

MM500-161 SIMPLE HARMONIC MOTION SET



DESCRIPTION

This is part of MM 500 Mechanical Engineering Test Series which provides sets for various experiments on MM 500-001 Basic Panel (separately supplied) to study or demonstrate specific engineering principles. The set is supplied in plastics box.

This kit includes different pendulums with support, spring mass system, load hanger and weights. A stop watch measures motion period.

EXPERIMENT CAPABILITIES

- Simple harmonic motion of simple, bifilar and trifilar pendulums.
- Simple harmonic motion of spring- mass system.
- Simple harmonic motion for compound and Kater's pendulums.

MAIN COMPONENTS AND PARTS

- Top plate support for pendulums
- Simple pendulums
- Kater pendulum
- Bifilar bar
- Trifilar plate
- Spring
- Stop watch
- Load hanger
- Weights
- Plastics box
- Software for data display and analysis by computer (separately supplied).

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MM500-162 CENTRIFUGAL FORCE SET



DESCRIPTION

This is part of MM 500 Mechanical Engineering Test Series which provides various experiments kits and MM 500-001 Basic Panel (separately supplied) to study or demonstrate specific engineering principles. The set is supplied in plastics box.

A rotating frame consists of a shaft, sliding masses and calibrated spring. When rotated, the mass forces the spring to compress. Centrifugal force is measured by spring compression and rotation speed is measured by mental count and stop watch.

EXPERIMENT CAPABILITIES

Relationship of centrifugal force with rotating speed, mass and its distance from axis of rotation.

MAIN COMPONENTS AND PARTS

- Centrifugal force frame
- Stop watch
- Masses
- Plastics box
- Software for data display and analysis by computer (separately supplied).

MM500-171 BAR LINKAGES SET



DESCRIPTION

This is part of MM 500 mechanical Engineering Test Series which provides sets for various experiments on MM 500-001 Basic Panel (separately supplied) to study or demonstrate specific engineering principles. The set is supplied in plastics box.

Over 20 perforated bars of different lengths and joints are used for assembly to form different linkages. The bar can accommodate a pen to trace the movement of the linkages on paper.

EXPERIMENT CAPABILITIES

- Four bar linkages.
- Straight line linkages.
- Pantograph.
- Ackermann steering.

MAIN COMPONENTS AND PARTS

- Bars with holes of different lengths
- Pencil holder
- Screw driver and wrench
- Fixed joint attachments
- Movable joint attachments
- Plastics box
- Software for data display and analysis by computer (separately supplied).

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MM500-172 CAM AND FOLLOWER SET



DESCRIPTION

This is part of MM 500 mechanical Engineering Test Series which provides sets for various experiments on MM 500-001 Basic Panel (separately supplied) to study or demonstrate specific engineering principles. The set is supplied in plastics box.

Cam rotation is measured on angular scale and follower displacement is measured by a dial indicator.

EXPERIMENT CAPABILITIES

- Relation of cam rotation vs follower linear displacement for different types of cam and follower.

MAIN COMPONENTS AND PARTS

- Cam and follower base frame with angular scale
- Dial indicator
- Circular cam
- Pear shape cam
- Spiral cam
- Flat face follower
- Roller follower
- Plastics box
- Software for data display and analysis by computer (separately supplied).

MM500-173 ROTARY – TRANSLATION MOTION SET



DESCRIPTION

This is part of MM 500 mechanical Engineering Test Series which provides sets for various experiments on MM 500-001 Basic Panel (separately supplied) to study or demonstrate specific engineering principles. The set is supplied in plastics box.

Slider crank, slotted link, and quick return mechanism are used for studying relation of rotary motion and translation.

EXPERIMENT CAPABILITIES

- Relation of rotary motion and translation in slider crank, slotted link and quick return mechanism and step pulley.

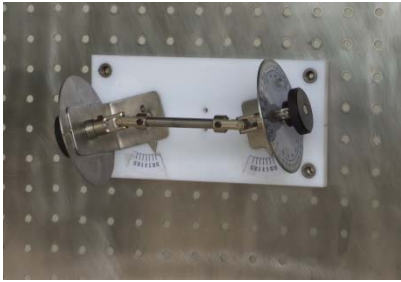
MAIN COMPONENTS AND PARTS

- Slider crank
- Slotted link
- Quick return mechanism
- Weight hanger
- Weights
- Plastics box
- Software for data display and analysis by computer (separately supplied).

MM 500 MECHANICAL ENGINEERING TEST SERIES

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MM500-174 ROTARY MOTION FOR TWO SHAFTS SET



DESCRIPTION

This is part of MM 500 mechanical Engineering Test Series which provides sets for various experiments on MM 500-001 Basic Panel (separately supplied) to study or demonstrate specific engineering principles. The set is supplied in plastics box.

Oldham coupling and universal joint are used for study of relative angular displacement for the two shafts.

EXPERIMENT CAPABILITIES

- Relation of angular displacement between two parallel but displaced shafts.
- Relation of angular displacement between two intersecting shafts and effect of angle between the two shafts.

MAIN COMPONENTS AND PARTS

- Old ham coupling
- Universal joint
- Plastics box
- Software for data display and analysis by computer (separately supplied).

OPTIONAL EQUIPMENT

Planetary gear for a study of angular displacement between two axial shafts.

MM500-175 INTERMITTENT MOTION SET



DESCRIPTION

This is part of MM 500 mechanical Engineering Test Series which provides sets for various experiments on MM 500-001 Basic Panel (separately supplied) to study or demonstrate specific engineering principles. The set is supplied in plastics box.

A Geneva stop and a ratchet mechanism are used to demonstrate how rotary motion is converted into a start – stop motion.

EXPERIMENT CAPABILITIES

- Relation between rotary motion and start – stop angular motion.

MAIN COMPONENTS AND PARTS

- Geneva stop
- Ratchet mechanism
- Plastics box