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900 UNIVERSAL FORCE TABLE (Superior)
To verify the law of conservation and resolution of forcesIt consists of a machined aluminium table 40 cm. in diameter. It's raised rim has engine divided scale, graduatedin 360 degree, mounted on a vertical support rod and tripodbase and provided with leveling screws. Body under study is a ring in center of the table fastened by cords passing over pulleys attached with the table. Complete with four setsof brass pulleys, lotted brass weights and weight hangers

901 UNIVERSAL FORCE TABLE (Normal)
Same as above but with Iron nickled slotted weights and aluminium pulleys.
\
902 LINK POLYGON APPARATUS:
The apparatus consists of five linkages and connectors having hooks to which pans are suspended. The links are fixed betweentwo pulleys around which a rope passes and connects to twospring balances. This apparatus is useful for the study of archesabutments and piers. The wooden rectangularbeam is supported on two pillars. A scale is fixed with beam, Without weights

903 Apparatus to study equilibrium of non concurrent forces:
It consists of wooden board of 50 * 60 cm, fitted with metal guides on all four edges, rectangula sheet of hard board, two champ pulleys, cord, one three leaf linkage lever with hooks and three iron nickeled slotted weights set each set having four weights and one hanger 50 gm.

904 PARALLELOGRAM OF FORCES APPARATUS:
Consists of a wooden board of 50 x 60 cms. with wallbrackets, two clamp pulleys, and three sets of iron nickel plated slotted weight sets and one hanger of 50 gms.

905 POLYGON OF FORCES APPARATUS:
Consisting of a wooden board of 75 x 70 cms size, provided with two wall brackets and four adjustable aluminium pulleys, complete with four one Kg. Weight and one scale pan.

906 TRIANGLE AND PARALLELOGRAM OF FORCES APPARATUS.
A wooden board is fixed within a slotted frame of 75x70 cms. and provided with four aluminium pulleys adjustable in the slots of the frame. The frame is provided with suitable arrangement for f ixing it to wall. The unit is complete with four hangers and 16 iron nickeled slotted weights of 50 gm

907 POLYGON & TRIANGLE OF FORCES APPARATUS:
Same as above but with six pulleys and 24 iron nickeled slotted weights and four hangers of 50 gms. Each.

908 Polygon of Forces Apparatus:
Consisting of 750 * 700 mm board made of soft and seasoned wood with brackets for fixing it with wall. It is supplied with following accessories.a)Six frictionless pulleys of 5 cm dia mouted with frame so that the pulley can be fixed at any position on the edges of the board.
b)Six weight pans with chain, hook and string.c)A set of following weights of physical weight box of iron (duly nickled)500 gm * 05 No.,200 gm * 05 No.,100 gm * 05 No.,50 gm * 05 No. 20 gm * 10 No.,10 gm * 10 No.

909. (A) Law of Conservation of Mass (Collision in 2-D Apparatus):- The apparatus consists of an attractive and durable curved track grooved in the middle on which rolls a steel ball, can be clamped on the table. A leveling screw is provided under the base to make the lower end of track horizontal. The track carries an adjustable automatic release system to permit setting of the ball at exactly the same starting point for multiple runs. An adjustable support attached to base holds the second ball directly in the path of the first or displaced form the path to cause the collision to occur at different angles and at different distance from the end of the track.

909 (b) Apparatus To Verify The Law of Forces in Three Dimensions:
Comprising of circular metallic ring fitted on wooden board with three pillars and provided with three spring balancing chain and hooks. But without weights.

910 PARALLEL FORCES APPARATUS(Tubular balance type):
For verification of condition of equilibrium of parallel forceson simple beam etc. Consistingof two compression thrust type 10 Kg. tubular spring balances fixed on wooden base board,a wooden beam with steel back plate. Complete with two stirrups, hooks and two 1 Kg. Weights.

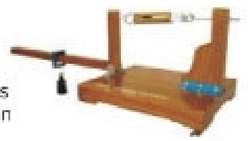
911 PARALLEL FORCES APPARATUS(Dial type balance type):
Same as above but fitted with 10 Kg. Each Dial typecompression balances.

912 PARALLEL FORCES APPARATUS (Overhang beam type):
This apparatus consists of two circular dial type 10 kg. Extensionspring balances. Complete with ironstand, wooden beam with scale and slots at regular intervals, four stirrups, hooks and two 1 Kg. Weights.

913Apparatus For Reactions of Forces in Beam:
It consists of: i)Two Dial type compression spring balances of 20 kg capacity each with zero adjustment device. ii)Two triangular knife edge support blocks of prismatic shape i ii)A wooden beam of about 1500mm length and 60mm * 80mm in cross section duly fitted with steel back plate and holes at rectangular stirrups.

914 BALL CRANK LEVER ON ANGLE IRON BASE (Without weights):
The apparatus consists of :i)A lever of well seasoned wood having horizontal arm 75 cm and vertical arm 20 cm. ii)A spring balance of 10kg capacitry with adjustable wing nut a t shorter end.iii)A set ofslotted cast iron weights of 0.5 kg, one hangerthe complete arrangement in mounted on steel frame.

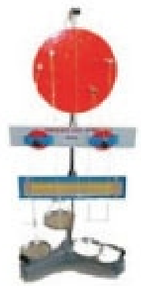
915 BALL CRANK LEVER ON WOODEN BASE (With weight):
Same as above on wooden base and without weights.



916 COMPOUND LEVER APPARATUS (With weights):
Consists of two iron beams connected to each other and fitted on two different stands well balanced with a scale pan, fitted on suitable base. Complete with 1 Kg. Weight an a physical iron nickeled weight box 1-50 gms.

917 CRANKED COMPOUND LEVER. (With weights):
All metal construction mounted on wooden base, complete with spring balance and a set of slotted weights.

918 LEVER APPARATUS. (Apparatus for verification of law of Moments)
Consisting of an aluminium graduated beam fitted into a pivoted stirrup and with spirit level on base. The top of the beam is provided with notches for weight carrying hanger. Complete with two sets of weights, each set consisting of four slottedweights and one hanger of 20gms



919 MOMENTS DISC APPARATUS (without Weights):
Consists of a balanced, machined aluminium disc rotating at its axis and can be clamped on a tripod stand in vertical plane. The disc moves on ball bearing and has a number of holes drilled symmetrically in concentric circles of known circles. . Four pins carrying scale pans can be inserted into the holes at any desired place. Complete with horizontal graduated mirror glass scale , plumb line levelling screw and 4 scale pans. .

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920 LAW OF MOMENTS APPARATUS (Without Weights):
Consists of a balanced, machined aluminium disc rotating at its axis and can be clampedon a tripod stand in vertical plane. The disc moves on ball bearing and has a number of holes drilled symmetrically in concentric circles. Two pins carrying scale pans can be inserted into the holes at any desired place. Complete with horizontal graduated mirror glass scale and plumb line,

921 Cantilever Beam Apparatus:
Consists of a well seasoned wooden beam of L type shape with horizontal graduated horizontal arm 75cm and vertical arm of 20cm, with a spring balance of 10 kg capacity to make thehorizontal leg horizontal under any load. Complete with one sliding slotted set weight set 100gm to 1 kg.

922. Structural Mechanism Apparatus: - It is very easy to form different trusses with the given material and find out stress in different members, the following fourteen types of models can be easily constructed:-

(1) Single Cantilever,
(2) Cantilever with four members
(3) Simple Roof Truss,
(4) Roof truss with Angled Tie Rods (Roof Truss 'A')
(5) A Composite Frame work (Four in one frame)
(6) King Post Roof Truss
(7) Standard Roof Truss (Roof Truss 'B')
(8) Roof Truss with Loads or Standard Roof Truss
(9) Mansard Roof Truss
(10)Island Roof Truss
(11)N Type Girder
(12)Warren Girder
(13)Framed Arch.
(14)North Light Roof Truss

923 JOINTED ROOF TRUSS ON WHEELS (Without Weights):
The apparatus is about 1.2 meter in length and strongly constructed in metal. One leg fitted on asturdy bracket and other end moves on pair of rollers. Spring balances show tension betweenthe rods and compression on rafters. Complete with weight hanging arrangement but without weights.

924 SHEAR LEGS APPARATUS (Without Weights):
Mounted on sturdy wooden base with provision for changing the width between legs. Complete with two tubular compression balances, one spring tension balance and scale pan.

925 SIMPLE JIB CRANE (Without Weights):
Consisting of a tubular compression balance pivoted on a bracket, fitted on base. The tie chain has an adjustable angle bracket and fitted with a 10 Kg, extension spring balance. Complete with 1.2 meter jib, fixed on a wooden base. Without weights.

926 JIB CRANE WITH IRON BASE AND TUBULAR COMPRESSION BALANCE (With Weights):
Heavy duty construction, fixed on a sturdy iron base. Consists of aluminium pipe fitted with compression balance and pivoted on sturdybracket. The tie chain has an adjustable angle bracketand fitted with extension type 10 Kg. Spring balance. Complete with 1.2 meter jiband weights.

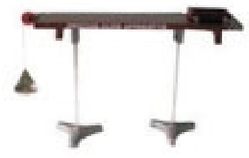
(

927 GEARED JIB CRANE (Without Weights):

928 (A) FRICTION SLIDE APPARATUS (Without Weights) SUPERIOR QUALITY:
This apparatus is used to study different laws of friction. Consists of a wooden board 75 x 15 cms. In size, with a friction-lesspulley at one end and a scale pan with following accessories.

1. One set of three wooden carriages with different bottom surfaces, (Wooden, glass and iron)
2. One carriage with frictionless rollers.
3. One set of three carriages with different bottom surfaces. (Glass plate, plywood, felt cloth.)

928 (B) FRICTION SLIDE APPARATUS (Without Weights)
NORMAL QUALITY:
Simple type having a wooden board 75 x 15 cms. With glass surface, a friction-less pulley at one end. Four sliding boards of different area are provided to determine the force of friction. With scale pan but without weights



929 INCLINED PLANE NORMAL QUALITY (Without weights):
It consists of a 15 x 60 cms. wooden board with glass top hinged on a base, to which a sector with graduated arc and vertical scale is attached. The plane can be clamped at any angle up-to 45 degree. A 5 cm. diameter friction-less pulley is attached at one end by means of a clamp adjustable to any required position. Complete with roller, cart and a pan but without weights

930 INCLINED PLANE SUPERIOR QUALITY (Without weights):
It consists of a 75 x 20 cms. Wooden board with glass top hinged on a base, to which a sector with graduated arc and vertical scale is attached. The plane can be clamped at any angle upto 45 degree. A 5 cm. Dia friction less pulley is attached at one end by means of a clamp adjustable to any required position. Complete with roller, cart and a pan but without weights.

931 (A)COMBINED INCLINED PLANE AND FRICTION SLIDE APPARATUS:
(With Wooden Base & without Weights)
Consisting of a wooden plane 90 x 18 cms. Having adjustment for setting the required angle. Complete with frictionless pulley, linear and circular scale, pan, a wheeled trolley and a set of eight carriages having bottom surfaces of different materials. Without weights.

931 (B)COMBINED INCLINED PLANE AND FRICTION SLIDE APPARATUS:
(With Angle Iron Base & with Weights)
Same as above but mounted on Angle Iron sturdy base and with set of weights. .

932 COIL FRICTION APPARATUS (Without Weights):
it consists of an aluminium drum and three frictionless pulleys mounted on 60 x 75 cms. wooden board. The pulleys can be fixed to give a lap of 1/4, 3/4 and full
circumference of the drum. Complete with cord and two scale pans, but without weights.

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933 COMBINED COIL AND FLAT BELT FRICTION APPARATUS (without Weights):
It consists of a pulley of 30 cms. Diameter withtwo grooves, one for rope and other for flat belt. At the back a circular sturdy wooden disc graduated at 10 degree intervals is provided. A rotatingpulley is fixed at the circumference of the scale. Complete with one flat belt and a rope. The whole apparatus is mounted on a heavy vertical stand. Weights are not included.

934 COMBINED COIL AND 'V' BELT FRICTION APPARATUS (without Weights):
It consists of a pulley of 30 cms. Diameter with two grooves, one for rope and other for 'V' belt. At the back a circular sturdy wooden disc graduated at 10 degree intervals is provided. A rotating pulley is fixed at the circumference of the scale. Complete with one 'V' belt and a rope. The whole apparatus is mounted on a heavy vertical stand. Weights are not included.

935 COMBINED COIL, FLAT & 'V' BELT FRICTION APPARATUS (without Weights):
It consists of a pulley of 30 cms. Diameter withthree grooves, one for rope, one for flat belt and other for 'V' belt. At the backa circular sturdy wooden disc graduated at 10 degree intervals is provided. A rotating pulley is fixed at the circumference of the scale. Complete with one flat belt,one 'V' belt and a rope. The whole apparatus

936 ROPE BRAKE DYNAMOMETER (With Weights): It consists of an aluminium machined wheel of 45 cm. dia having a groove. The wheel runs in bearings and assembled on asturdy angle iron frame. Complete withextension balance, rope and a set of slotted weights and a hanger.

937 PRONY BRAKE DYNAMOMETER (With Weights):
It consists of two woodenblocks clamped together with a pulley in the center. The pulley runs in bearings to reduce friction. A lever bar isattached on upper block and carriesa weight hanger at one end. On other end a spring balance is fitted to measure the load factor developed by tightening of wooden block with wing nuts and spring

938. Pulley Blocks: - Aluminium. 8 cm. Dia & 6 mm groove. Consisting of cast and machined aluminium pulleys moving smoothly in frame with hooks:-
(a) single, (b) double , (c) Triple

939. Pulleys Blocks:- Aluminium. 5 cm. Dia & 6 mm groove. Consisting of cast and machined aluminium pulleys moving smoothly in frame with hooks:-
(a) single, (b) double , (c) Triple

940. Pulley Blocks: - Aluminium. 8 cm. Dia & 15 mm groove.Consisting of cast and machined aluminium pulleys moving smoothly in frame with hooks:-
(a) single, (b) double , (c) Triple

941. Pulley Blocks: - Aluminium. 8 cm. Dia & 10 mm groove. Consisting of cast and machined aluminium pulleys moving smoothly in frame with hooks:-
(a) single, (b) double , (c) Triple

942 Double Sheave Pulley Block (with weights): Consisting of :i)Two parallel double pulleys of aluminium having sheave of 8 cm dia to 6 mm wide groove.ii) One single aluminium pulley mounted in frame with two hooks. The pulley is of 8 cm dia having 6mm.groove. iii)Two pans along witch chain and hook iv)Set of conical weights. Capacity 2 kg of one of 5 kg and one of 10 kg.

942 Differential Pulley Block Model:A cast aluminium double sheave pulley block having the bigger pulley of 15 cm dia and the smaller one of 10 cm. dia mounted on sturdy cast aluminium bracket and moving freely on two steel cone bearings. A snatch pulley 5 cmdiameter with groove is supplied with the unit. Without weight or cord.

944 PULLEY DEMONSTRATION SET (with Weights): Almost every type of pulley experiment can be demonstrated with this experiment.Compirising of wooden base of 100x20 cms. With two metal support stand, a horizontal bar having eight adjustable collars with hooks from which pulleys can be suspended. The following accessories for experimentsare supplied along with this apparatus.

Single pulley with two hooks	7 nos.	Slotted weights 10 gms	3 nos.
Pulley Triple Long	2 nos.	Slotted weights 20 gms	3 nos.
Pulley triole parallel	2 nos.	Slotted weights 50 gms	2 nos.
Wheel and axle	1 no.	Slotted weights 100 gms	7 nos.
Capston	1 no.	Slotted weights 200 gms	4nos.
Slotted weight hanger 50 gms.	7 nos.	Cord 20 meter	

(Slotted weights and hangers are made of iron and duly nickle plated

945 Pulleys Systems Different Type:
(a) First system of pulleys: with four single aluminium pulleys of 5 cm dia. with string and two pans But without pulley frame and without weights.

(B)Second System of Pulley: With two triple long pulley (large pulley 5cm.dia middle pulley 4 cm, and small pulley 2 cm dia) aluminium with two scale pans(but without pulley frame)Without weights.

(C)Third System of Pulley: Having 5 cm dia four aluminium pulleys with two scale pans (without pulley frame) and without weight sets.

(d) Pulley Frame with metal uprights but with wooden base. Over all height about 80cm. suitable for all the above 3 experiments..

946 CHAIN PULLEY BLOCKS: (Without Weights).
(a) Worm GearType. Chain Pulley block with worm gear system for lifting of load.

(B) Spur Gear Box Type. Chain Pulley block with spur gear system for lifting of load.

**(C) Weston`s Differential.** Chain Pulley block with Weston`s Differential pulley system .

947 COMPOUND WHEEL & AXLE 35 CM, DIA (Without Weights):
For experimental determination of velocity ratio, mechanical advantage and comparison with calculated values for compound wheel & axle machine.The wheel is of 35 cms. Dia and axle in three steps of 20, 10 and 5 cms. Reducing diameter, supported in ball bearings in brackets. The heavy cast iron base is provided with holes for fixing the apparatus on wall. Complete with snatch pulley block, cord and hooks. Weights are not included.

948 WHEEL AND DIFFERENTIAL AXLE 30 CMS. DIA (Without Weights):
Consists of a metallic machined wheel of 30 cms. dia withaxle having diameters of 15 and 7.5 cms, respectively giving a ratio of 1 :2:4. A steel axle passes through the center of the wheel which is mounted on ball bearings in brackets. The base of the apparatus has holes for fixing it on wall. Complete with snatch pulleyblock, cord and hooks but without weights.

949WHEEL AND DIFFERENTIAL AXLE 20 CMS. DIA (Without Weights):
Consists of a cast iron machined wheel of 20 cms. dia with axle having diameters of 10 and 5 cms, respectively giving a ratio of 1 :2:4. A steel axle passes through the center of the wheel which is mounted on ball bearings in cast iron brackets. The base of the apparatus s has holes for fixing it on wall. Complete with snatch pulley block, cord and hooks but without weights.

950 WHEEL AND AXLE SIMPLE WOODEN(Without Weights):
Consists of two wooden wheels with grooves 12 cms and 7.5 cms in diameter respectively joined together and mounted on steel centers on wooden brackets and base. Complete with cord and hooks but without weights.

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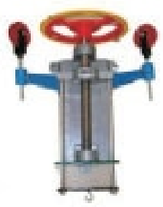
951 WINCH CRAB SINGLE PURCHASE (Without Weights):
Consists of 25 cms dia cast iron gear wheel and axle in mesh with pinion wheel and effort wheel running in brackets, mounted on heavy wall brackets. This apparatus is used for experiments in efficiency and mechanical advantage. Apparatus can be mounted on wall. Without weights.

952 WINCH CRAB DOUBLE PURCHASE(Without Weights): Same as above but with double set of gearing arrangement. Without weights.

953 WORM AND WORM WHEEL (Without Weights): An all metallic apparatus useful for demonstratingthe working of worm and wheel and experimental determination of velocity ratio, effort and efficiency. Consists of a machine cut worm gear 25 cms.in diameter carrying a metal drum of 12 cm. diameter and a machine cut worm on steel spindle carrying a 12 cm. diameter pulley. The whole arrangement is fixed on heavy bracket with holes for fixing to wall. Complete with effort pulley, cord and hooks. Without weights.This apparatus comes in three types.

1. Worm and worm wheel Single purchase
2. Worm and worm wheel Double purchase
3. Worm and worm wheel Triple purchase

954 WORM AND WORM WHEEL Small (Without Weights): Apparatus consisting of 80 teeth worm gear carrying a metal drum of 8 cm. Diameter, and the worm screw carrying a 8 cms. Dia pulley. Complete with string and hooks. Weights are not included.



955 APPARATUS TO FIND PERSONAL HORSEPOWER OF A MAN. It consists of a machined wheel of 45 cm. dia having a groove. The wheel runs in bearings and assembled on a sturdy angle iron frame. Complete with extension balance, rope and a set of slotted weights and a hanger. By rotating the wheel after applyinh the load on wheel and calculating the rpm, the H.P. Of a person can be calculated.

956 SCREW EFFICIENCY APPARATUS. (Without Weights): Consists of a self contained wall bracket with a steel screw having3 cm, diameter. The screw has 5 T. P. I. 'V' thread. Complete with large force pulley two jockey pulleys, hooks and cords. Weights are not include

957 SCREW JACK APPARATUS (without Weights): All metallic construction. Accurately machine cut screw with a pitchof 5 mm carrying a double flanged turn table of about 20 cms. Diameter Fitted on a heavy cast iron base and complete with two adjustable pulleys,cord and hooks. Weights are not included.

958 SCREW JACK MODEL SMALL SIZE (without Weights): It consists of a small screw jack fitted on 12 cms. diameter metalcircular base, a metal precision screw having 12 cm. diameter turn-table on top, an adjustable pulley and a linear vertical scale. Overall height of the model is about 15 cms. Without weights

959 COMPOUND SCREW JACK (Without weights): Consisting of a jack screw of 4 T. P. I. And double stsrt, carrying a load turn-table. The nut of the screw is fitted on a pedestal bearing and keyed to a worm gear of 40 teeth and mesh with a worm screw. The spindle of the worm screw is provided with aneffort wheel of 15 cm diameter. Weights are not included.

960 COMPOUND SCREW JACK WITH TRANSVERSE MOTION(Without weights):
Same as above but the whole unit is mounted on a sturdy slide. The slide platform is about 37 cm. long and is operated by a leading screw with a crank handle. Weights are not included.

961 DEFLECTION OF BEAM APPARATUS (without Weights): Consists of two knife edge end supports, a hanger with knife edge, and a pointer moving over a graduated scale. Complete with scale pan and two beams,one of iron and other of wood. Length of beams is 120 cms. Each. Supplied without weights.

962 BENDING OF BEAM APPARATUS (with Weights): It consists of a brass beam 9 mm square one meter long resting on two knife edge end supports. A central knife edge with hanger rests on the beam at the top of whicha pin isprovided. Complete with cast iro slotted weight set having two weights of 1 Kg., two weights of 500 gms. and a hanger.

963. Elasticity of Fiexture Apparatus: - Consisting of nickelled steel beam one meter lo Two knife edge clamps, stirrup and scale pan, Spherometer head is mounted on a separate If desired a bell and battery circuit may be used for determining the exact contact setting. Binding post are provided for the purpose. Without weights.

964 SHEAR FORCE APPARATUS(with weights): Consisting of two knife edge end supports on stands and a wood beam 180 cms, long which is hinged at 60 cms, from one end. The dynamometer is with an adjusting screw for restoring the line line of beam under load conditions. Complete with two stirrups and weights.

965 BENDING MOMENTS APPARATUS (with weights): Consisting of wooden beam 180cms, long hinged at a distance of 60 cms. Form one end. A spring balance between two bracketsis provided with an adjusting screw so as to compensate the initialextension of of the spring and to keep the beam horizontal under any load. Complete with two stirrups for weights and two knife edge end supports on stands. Weights are included.

966 STRESSES IN BEAM APPARATUS (With weights): Consists of a wood beam 180 cms.Long with two knife edge end supports on stands and two stirrups. A device with a pointer and roller fixed on a stand is provided to magnify strainand show deflection of beam due to bending. of beam. Completewith four weights of 500 gms, 1 Kg, 1.5 Kg. and 2 Kg. Each.

967 COMPRESSION OF COILED SPRINGS (Without weights): Consisting of a bracket for fixing to wall with sliding vernier and scale. Complete with five different compression springs for experiments.

968 COMBINED COMPRESSION AND EXTENSION OF SPRINGS APPARATUS (Without weights):
Consists of a cast iron bracket with sliding vernier and scale to measure extension or compression of springs. The apparatus can be fixed on a wall. Complete with three compression and threeextension springs, 20 cms. Long each.Without weights.

969 HOOKS LAW APPARATUS (With weights):
Consists of 30 cms. Long mirror scale, spring, slotted weights with hanger and pointer. Complete with heavy tripod stand.

970YOUNG'S MODULUS APPARATUS (Searl's Pattern) (without weights):
Consisting of two brass frames with specially designed self centering chucks, connected by a pivoted link carrying a sensitive spirit level and a standard micrometer head reading to 1/100 mm. Supplied with a ceiling bracket, constant weight and suitable wire.Without weights.

971 YOUNG'S MODULUS APPARATUS VERNIER TYPE (without weights):
Simple but very efficient. Consisting of 10 cm. Brass scale and vernier to read 0.1 mm with slide. Complete in case with wire. Ceiling attachment and constant cast iron weight.

973 RIGIDITY OF WIRES APPARATUS: Wire under test is connected to two brass roda 30 cm. Long at their mid point. Complete with three test wires and end screws. Rods are suspended from hooks fitted o a steel plate.

974 MAXWELL VIBRATION NEEDLE: For experiment on rigidity. Two solid and two hollow cylinders each10 cm .long accurately fitting the bore of a hollow brass tube 40 cm. Long are provided. The tube is also fitted with wire chuck and mirror. Graduated scales and verniers on sliding weights. Complete with ceiling attachment.

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975 TORSION APPARATUS CLAMP PATTERN (Without weights): The Unit consists of two hesvy clamps, one of which is fitted with a wheelgraduated in 90-90 degrees and can be read to 0.1 degree by a vernier device. A concentric chuck is also fitted with the wheel. The other bracketcarries a chuck provided with three nipping screwes. Complete with 4 rods of 6mm, 8mm, 9.5 mm and 12.5 mm diameters, hook and belt. Without weights.

976 TORSION APPARATUS SEARLE'S TYPE (without Weights): Horizontal bench pattern. The wheel moving on ball bearings is provided with a chuck. To hold the rod under test. The otherend of rod is clamped tightly to a bracket. The pointers and scales are graduated in single degree and can be clamped at any position.Complete with ribbon, hook and rods of steel and brass. Without weights.

977 TORSION APPARATUS VERTICAL TYPE (without Weights): A steel frame m ounted on heavy cast iron base with leveling screwsUpper end of the rod under test is held in a centering chuck and the lower end is clamped into the axis of a torsion drum which can be rotated by putting load in the scale pan passing over two frictionless pulleys. Freely sliding three circular scales graduated in degrees can be clamped at any position. Three pointers for clamping to the test rods are provided. Complete with three test rods, strings, and two scale pans. Without weights.

979SIMPLE PENDULUM:
Brass ball of 25 mm diameter with a hook and cord.

980 BAR PENDULAM OR COMPOUND PENDULUM:
Consisting of steel bar 100 cm. Long bored at equal intervalswith two removable knife edges and a wall bracket.

981 KATER'S REVERSIBLE PENDULUM: Consisting of 120 x 1.2 cm brass bar with pointed ends, carrying two sets of adjustable knife edges and two large and small brass weights. Two similar hard wood weights are provided. Complete with cast iron wall bracket.

982 MOMENT OF INERTIA OF FLYWHEEL (without Weights): Consists of a machined and balanced cast iron wheel having steelspindle supported in ball bearings in strong brackets. The wheel circumference is marked with a horizontal reference line. A pointer is provided on one of the bracket. A diametric hole id drilled in the shaftto take a pin and a cord. The base is providedwith holes for fixing on the wall. Complete with hook and cordBut without weights.

1. Wheel 15 cms. Diameter
2. Wheel 20 cms. Diameter
3. Wheel 25 cms. Diameter
4. Wheel 30 cms. Diameter

983 MOMENT OF INERTIA OF FLYWHEEL (without Weights). Same as abovew.

(a)Wheel 37 cms. Diameter
(b) Wheel 45 cms. Diameter

984 FLETCHER TROLLEY (with Weights) All metal, can be assembled and dismantled easily. A large metal trolly with removable cylinderical weights is fitted with wheels which moove with very little friction on a track of two steel rods150 cms. Long. The rail roda are held in heavy clampswhich are fitted in two vertical rods, mounted on cast iron feet. A steel vibrator is fitted to one of the vertical rods and frictionless pulley to the other. The apparatus is capable to verify law under different conditions. Complete with cord scale pan and pen.

985 ATWOOD MACHINE:
Consisting of full length brass upright graduated pipe upto 200cm, can be mounted vertically near a wall by means of two brackets. A light weight frictionless weight of 10 cm. Diameter is mounted at it's top. Three adjustable clamps move along the rod, upper carrying a ring and lower carrying a platform and the third one is equipped with electric release system. The unit is all metallic and complete with two sets of falling weights and rider weights.

986 Stop Watch.
(a) Digital

(b) Mechanical

987 Center of Gravity Apparatus: It is consisting of the following;

a)A supporting frame to keep a

988. Centrifugal Force Apparatus: - With this trouble free unit mathematical expression for the centripetal force developed by a body moving uniformly in circular motion can be verified with good precision. In this design two masons moving on ball bearing are carefully pre-portioned so that equilibrium can be obtained at moderate speed. Complete with revolution counter, specially made spring dynamometer and with hand rotating device.

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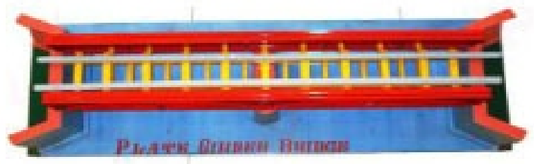
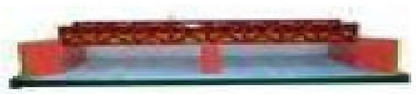
1450 **Plate Girder Bridge**
A properly constructed model of usual construction abutment wing walls all necessary transverse and longitudinal sleepers and track of rail road. The model is About 135 cm long and is made of metallic and wooden parts.



1451 **Lattice Girder Bridge**
A properly constructed model of usual construction showing abutment, wing walls, all necessary transverse and longitudinal sleepers and track of rail road. The model is about 135 cm. long and is made of metal and wood.



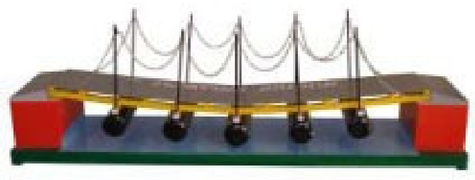
1452 **Lattice Bowstring Girder Bridge**
The properly constructed model of usual construction is with all necessary transverse and longitudinal sleepersand single track of rail road. The model is about 135cm. Long and is make of metallic and wooden parts.

1453 **Road Suspension Bridge**
A properly constructed model of usual construction About 135 cm. long with piers, suspension cable. Link & anchor plates.

1454 **Stone Arch Bridge**
The model representing a two span segmental stone arched bridge Showing details as abutment, wing walls, pier, parapet wall. Road Embankment, revetment and drainage coarse etc. The model is make of timber wood. Complete fitted on about 100X25 cm. Base.

1455 **R.C.C. Deck Slab Bridge**
The properly constructed model is of usual construction Showing two span with abutment piers, wing walls, road embankment, revetment etc.The model is make of timber wood complete fitted on about 100 X 25 cm base.

1456 **R.C.C. Balanced Cantilever Bridge**
The properly constructed model is of usual construction. The Model is made of wood Complete fitted on approx. 100X25 cm base.



1457 **Floating Bridge**
The model is of usual construction showing cylindrical pantoons Road way, longitudinal timber with planks type. Fitted on about 125 X30 cm base.

1458 **T Beam Bridge**
With two span and square returns. a properly constructed all Wooden model duly sectioned showing main girder with Secondary girder, pillars, span & piers. Size approx. 100X25 cm.

459 **Lift Bridge Across A Port Channel**
(Showing Bridge) A properly constructed model with necessary lifting device operated by a F.H.P. electric motor working on 220 volts A.C giving upward and downward motion. The model is approximately 120 cm long and is made of metallic and wooden parts.

460 **Bridge Trusses**
Properly constructed model of mild steel each about one Meter long.

(A) Plate Type

(B) N. Type

(C) Lattice Type

(D) Warren Type

(E) Lattice Bowstring Type.

CULVERT MODELS:

461 **Road Culvert with Single Arch**
Properly constructed wooden model showing the splayed wing walls, road way, parapet walls, drain portion and Concrete apron on either end. Size 60 X 45 cm. Approx.

462 **Road Culvert Brick Barrel Type**
Properly, Constructed model in wood showing details as brick barrel surrounded by concrete, Parapet, wing Walls, roadway and concrete apron on either sides Size 60x45 cm Approximately.

463 **Road Culvert Box Type**
Properly constructed model in wood showing roadway, Parapet walls drain portion and concrete. Size 60 X 45 cm. Approximately.

464 **Road Culvert With R.C.C. Slab**
Properly, Constructed model in wood showing details as brick barrel with R.C.C. Slab.

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1465 Road Culvert Skew Type
Properly constructed model in wood showing roadway, drain portion, wing walls and parapet walls. Size about 60x45 cm.

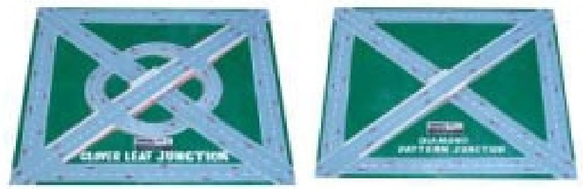
1466 Railway Culvert
Properly constructed model in wood showing abutment, drain portion girders, sleepers, running rails and ground rills, size approximately 60x45 cm.

ROAD MODELS:

1467 Flyover Road Junction
The model is fabricated of wood and mounted on a 60x60 cm.base board showing the uninterrupted flow of one way traffic. The connections to the main high way are very nicely demonstrated for the students of the traffic engineering.

(A) Clover Leaf Junction.

(B) Diamond Pattern.



1468 Model of Cross Section of National Highway
Showing proper formation of embankment, carriage Way shoulder and courses. Complete on about 60 x 40 Cm base board.

1469 Model of Sub-Surface Drainage
It is properly constructed and dissectible model showing lateral and longitudinal pipe, drainage chamber, and carriage way. Complete on about 60 x 40 cm. base board.

1470 Road Signs
A set of 12 signs beautifully drawn on metal plate pieces and all fitted on a 60 x 30 cm. wooden base.

RAILWAY MODELS:

1471 Model of Points Crossing
Properly constructed model to demonstrate to direct a moving train from one tract to another. Consisting of sleepers, stock rail, loop rail stretcher bar, switch lever and a two wheel trolley. Complete on about 100x35 cm. polished wooden base.

1472 Model of Inter Locking
Properly constructed model. To demonstrate the mechanical singalling and inter-locking. Consisting of stock rail, stretcher bar, detector signals and switch levers. Complete on about 90x40 cm. Polished wooden base.

BUILDING MODELS:

1473 Grillage Foundation
A properly constructed model of cast aluminium and metal parts Showing concrete footing grillage on plateform of I beems, Antivibration mat, base plate and column. Complete on wooden Base of size about 30 x 25 cm.

1474 Model of foundation
Showing two walls of a room basement, foundation footing, foundation. Concrete, sand filing, steps ground level etc. Size 45x40cms. Approximately.

1475 Pile Driving Machine Model
Showing a hoist, pile, hammer guides, sliding base etc. Size 60x40 cm. Approximately.

1476 Piles of Different Type
(a) Steel Sheet Pile

(b) Screw Pile

(C) Timber Pile

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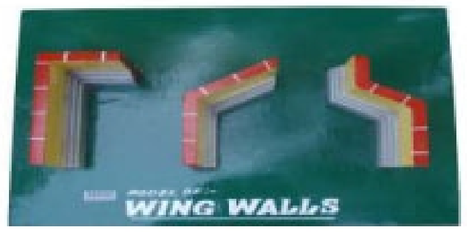
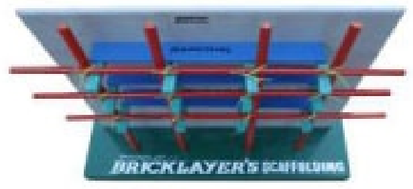
1477 Wing Walls
An all wooden and properly constructed model of three different types of wing walls, beautifully pointed & mounted on wooden base of abot 30 x 45cms. Size.



1478 Pneumatic Caisson
A properly constructed large size dissected model showing main shell with cutting edge at the bottom. The roof has holes for vertical shaft for the passage of men & material and for the outer air into the working chamber. The model is made of Wooden 40x40 cm. size. Overall height of the model is about 52cm.

1479 Model of Bricks
Properly constructed models of ten different kinds and in 1/3 full size. Complete mounted on a base Board with nomenclature.
(a) Full size of bricks with frong is about 70x37x25 mm.
(b) Half Bat
(c) Three quarter bat
(d) King Closer
(e) Queen Closer
(f) Queen Closer quarter.
(g) Bevelled bat large
(h) Bevelled bat small
(i) Bull Nose
(j) Splay Header

1480 Bricklayer's Scaffolding:
Showing ledgers, putlogs, standards, brace and wall. Size 50x20x40 cm. Approx.



1481 Raking Shore
A properly constructed wooden model, showing rider, Braces, sole piece, cleats, wall and wall plate etc. Complete on base with names of parts. Size approx. 35x20x60 cm.

1482 Flying Shore
Properly constructed model showing wall plate, cleats, straining piece, wedges, horizontal strut and inclined struts etc. Complete on base with walls and names of the parts size about 40x20x40cms

1483 Centering of Arch
Model showing ribs, tie struts, leggings, trammel rods, bearer, easing wedges, posts, sleepers, wall etc. Size 50x15x30 cm .approximately.

1484 Carpentry Joints
A set of 20 wooden joints in polished wooden box with nomenclature.

1485 Model of Door Leaf
The types are as under. Size about 65x30 cm. without hinges. Made of timber wood, beautifully painted and labelled.

(A) Fully paneled Door

(B) Half paneled and half glazed Door

(c) Sash Door

(d) Ledged and braced Door

(e) Flush Door

1486 Model Or Doors With Surrounding Frames
Same as No. 10338, but with surrounding frame. Made of Timber Wood, beautifully painted and duly labeled.
Complete with holds fasts, hinges, tower bolt etc.
(a) Fully panalled Door

(b) Half panalled and half glazed Door

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(c) Sash Door

(d) ledged and braced Door

(e) Flush Door.

1487 Model of Venetained Door with Surrounding Frame
Model showing style lock rail venetain blades, panels, hold fasts, hanges tower bolts etc. Overall size 70x40 cm approximately .

1488 Model of Window
Different type, properly constructed, in timber wood, beautifully painted. Complete with frames.
(a) Louvred or Venetioan Window
Stationary, size 27x40 cm. Approx.

(b) Double Hung Window
Top portion slides down and lower portion slides up, size about 35x50cm.

(c) Sliding Window
Sliding horizontally, size 40x60 cm.

(d) Casement Window
Hinged at side, swings cutward, size about 27x40cm

(e) Awing Window
Hinged at top, swings outward, size 30x50 cm. Approx.

(f) Hopper Window
Hinged at bottom, Swings into room, size about 30x45 cm.

(g) Bay Window
Stationary, Projecting outside size about 40x60cm

1489 Corner Window Lintel
Showing two walls only without shutters. Size approxx35x40 cms. Properly constructed all wooden model.

1490 Model of Stair Cases
Properly constructed and painted wooden models showing various details.
(a) Dog Legged stairs 32x30 cm. approx size.

(b) Open well stairs 32x30 cm. approx size.

(c) Quarter Turn Stairs 42x35 cm. approx size.

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(d) Bifurcated stairs 75x35 cm. approx size.

(e) Geometrical stairs 35x25 cm approx size.

1492 Spiral Stairs : All metal stairs parts are fitted on wooden base. Size approx 42x30 cm

1493 Lean to Roof Model
A wooden model showing part of wall stone carbon,drip moldings, Rafters, purlin, slating eave's board and post. Complete on about 45x30 cm. size base board.

1494 Collar Beam Truss Model
Representing a wooden truss, properly constructed, Complete with iron straps and names of the parts.

1495 King Post Truss Model
Representing a wooden truss, properly constructed, complete with iron straps and names of the parts

1496 Queen Post Truss Model
Representing a Wooden truss, properly constructed complete with iron straps and names of the parts.

1497 Joints of Trusses
Set of four types of joints, properly constructed wooden models. Complete with iron straps and Beautifully
Painted.

1498 Model of Steel Roof Truss
Showing different members such as principles rafters. Tie, studs, husset plates, rivets, etc. about 1.5 meter long span.

1499 Model of Roof Showing Ridge Hip & Valley
L shaped, one end is provided with a hip and other end with a gabble.

1500 Model of Partition Wall
Showing heads, tie, studs, noggings, doorway, walls etc. size 45x30 cm. Approximately.

1501 Model of Jack Arch Flooring
For four bays showing different details such as girders, surrounding concrete arches, floor finish etc. size 60x12 cm. Approximately.

1502 T Beam & Slab Reinforcement
A properly constructed model in wood, showing main girder with secondary girders, pillars, reinforcement, flooring, drip hanger etc. Complete on board.

1503 Two Rooms & Verandah
Properly Constructed model in wood illustrating cross section of a Building of two rooms and one verandah with sectional details. Complete on 40x30cms. base approximately.

1504 Two Storied Building
Of flat roof, showing different details including stairs case.The First floor can be removed to see inside details, four rooms are shown in each floor, the model is sectionised so that students may get clear idea. Size 70x60 cm. Approximately

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IRRIGATION

1505 Model of Cotter Dam
Properly constructed wooden model showing earthen dam, Permanent dam, crib, tunnels, roadway, size 40x30 cm. Approximately.

1506 Gravity Dam
The model is properly constructed in wood showing dam portion, spillway of five span, canal sluices, canal guide wall, Road over dam and inspection gallery, Size 90x35 cm. Approximately.

1507 River Head Work
The model is properly constructed showing main canel, head work with controlling system. Complete on about 70x60 cm base board.

1508 Gibb's Module
The model is properly constructed showing inlet spirally running rising pipe eddy chamber, baffle plates and outlet with divergent Flume. Complete on 30x60 cm base.

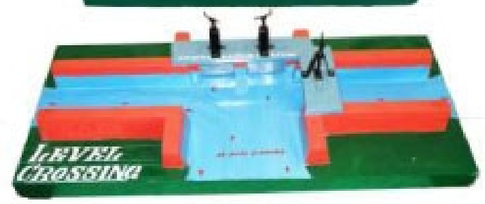
1509 Saddle Syphon Spillway
The model is properly constructed to explain the disposal of high blood discharge. Size Approximately 40x35 cm.

1510 Spill way Gate
The properly constructed model showing road way, bucket water Cushion and down stream deflecter wall. Size about 40x30 cm.

Cat No.	Product	Photo

1511 Volute Syphon Spillway
Showing part of a dam, main vertical Syphon pipe, Bell mouth dome on piller, outlet etc. made of two units. Size about 50x40 cms.

1512 Level Crossing
A properly constructed model of about 60x30 cm. Size



1513 Visweswaraya Gate
The Properly constructed model showing four light gates and four heavy gates, pulleys, master pier well and counter weight etc. complete on about 90x30 cm. size base.

1514 Tank Sluice with Plug & Cistern
Showing tunnel platform, head wall, cistern, wing wall, earthen dam with slope. The model is properly constructed in wood and size approx. 55x30 cm.

1515 Tank Sluice with Tower Head
Properly constructed model showing in take wall, bund slopes, roadway revetment cistern, down stream side and controlling device, size about 80x30 cm.

1516 Tank Weir
The model is properly constructed showing the body wall splayed wing walls, stepped apron, earthen dam and rivetment size about 70x50 cm approximately.

1517 Suppressed Weir
With stepped apron. The model is properly constructed showing the body wall, Splayed wing walls, stepped apron, water cushions, earthen

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1525 Syphon Aqueduct
A properly constructed model showing canal over a drain, abutment, wing wall,embankment, roadway, the drain bed in depiction under canal crossing etc. size 70x50cm. Approximately.

1526 Super Passage of Two Span
The properly constructed all wooden model showing the drain over a canal crossing. Size approx. 70x50 cm. about 70x50cm

PUBLIC HEALTH MODELS

1527 Model of Slow Sand Filter
This is a gravity type sand filter and is properly made in water proof housing. Front panel is in plexi glass for clear visibility with filter collectors in sand gravel bed. Size approximately 30x25x20 cm

1528 Model of Rapid Sand Filter
Water flows by gravity through bed of sand and then thorough gravels. The mild steel sheet filter tank is of about 28 cm dia and 45 cm high approx. A lid with rubber strap is given at top and eye bolts with wing nuts to put the lid down tight. A standard 3/4" size fitting are provided for inlet, outlet and back washing arrangement. Without motor and pump etc.

1529 Model of Pressure Filter
The system of filtration adopted in this unit is cheaper to operate an high flow rate enables to have turn over in about half the time. The mild steel sheet tank is of approx 28 cm dia and 45 cm high. The unit is complete with filtering bag inside and lid at the top with rubber strap and eye bolts. Wings nuts are used to put the lid down taught. Without motor and pump etc.

1530 Safe Water Supply From a Pond
It is demonstration model. Student can easily understand the system only by seeing it . The installation layout showing a pond with water inlet, pump house, setting basin, filter, pump chlorinator and thence to service reservoir, complete on about 90x50 cm. wooden with wooden and metal parts.

bund and revetment. Size about 70x50 cm.

1518 Sluice Gate
Properly constructed having wooden an metallic parts. Rack work type size about 30x20 cm.

1519 Canal Intake
The properly constructed model showing main chamber, coarse screen, outlet pipe, canal banks and road.Size approx. 60x50cm.

1520 Model of Canal Drop
Showing the canal side embank ment, connections, trapezodical notches and other necessary details, size approximately 60x60 cm.

1521 Model of Silt Ejector
Showing the main canal, slab, tunnels with curved piers, escape chting arrangement, complete on about 70x50 cm base board.

1522 Model of Canal Regulator
Showing canal portion, each connections, roadway and shutters with litting arrangement. Complete on about 60x60 cm. base board.

1523 Fish ladder
A properly constructed model showing the inclined chute Cross wall with openings, parts of weir and divide wall, complete on 60x30 cm base.

1524 Model of an Aqueduct
Showing canal over a drain, with beel, bank pier, abutment embankment, drainage and wing wall, size about 70x50 cm.

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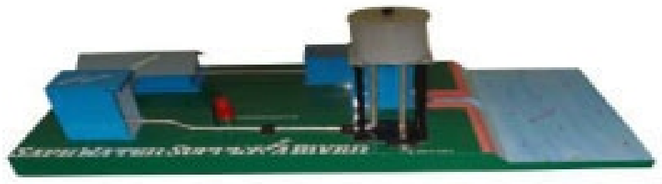
1531 Safe Water Supply From a River
Same as No. 10430 But instead of pond river site is shown.



1532 Sedimentation Tank
With mechanical sludge scraping and collecting devices. The properly constructed model is rectangular in shape showing influent, effluent, scum collector, sludge hopper, devices. Overall size is about 52x19x30cm.

1533 Flocculator
The model is properly constructed consisting of alum supply tower tank, water inlet, alum mixing chamber, and chambers of high and low speed churners. The main tank is with grand churner and outlet system. Complete on about 60x45 cm wooden board.

1534 Tricking Filter
The Model is properly constructed and all metallic showing the main chamber with filtering arrangement, outlet, the central column with rotating shaft and four reaction sprinkles Complete on about 60x45 cm. Wooden base board.

1535 Indian Type Water Closet
A properly constructed dissected wooden model showing privy, septic tank, soakage pit and internal connections. Size approx. 45x20 cm.

1536 Septic Tank
Properly constructed dissectible wooden model showing different compartments, baffle walls. Inlet and outlet pipes, vent pipe and manhole covers etc. Size 20x25x50 cm approx.

1537 Imhoff Tank
Properly constructed wooden model of about 45x30 cm. size showing upper and lower compartments, drainage, inlet, outlet and piping.

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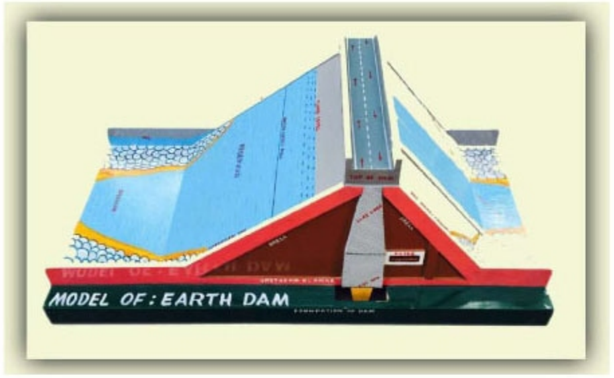
CIVIL LAB MODELS

NEW CIVIL MODELS

Cantilever Bridge



MODEL OF EARTHTH DAM

MODEL OF K.T.WEIR

Timber form work for square Or Rectangular column

Timber form work for octagonal Coiumn

Timbering of trench in firm soil

Timbering of trench in loose soil

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CIVIL LAB MODELS

Wall Footing on Pier Foundation

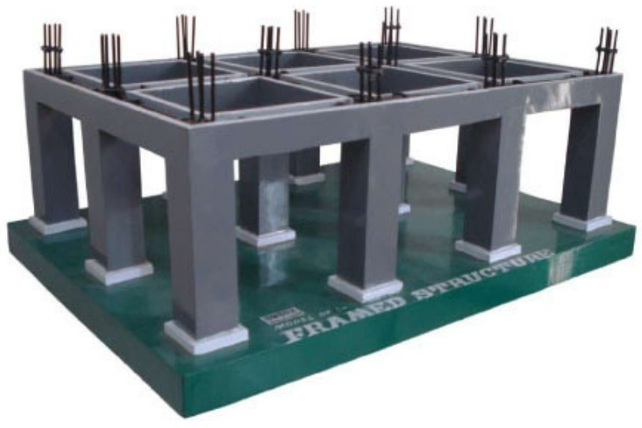
Stepped Foundation

Mosel of Foot Bridge

Timbering of trench in moderately firm soil

Timber form work for a stair

Brick P[llar Footing



Model of framed Structure

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CIVIL LAB MODELS

Queen Post Truss Roof

Scissors Roof

Mansard Roof

Collar Roof

Model of Roof Rain Water Harvesting System

King Post Truss Roof

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CIVIL LAB MODELS

Coupled Roof

Couple Close Roof

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COMPACT MECHANICAL MODELS

The proven way to grasp even the most complex mechanical motion principles

These models explain some of the most fundamental

and frequently used mechanisms and give a deep understanding which is very essential for any student.

- Constructed with Aluminium metal and plastic
- Unit is open system to study and sandwiched by two clear plastic plates.
- This demonstration shows the fundamentals of how a drive works in a mechanism.
- Pointer to show rotation direction.
- Nice bench top or desk top Model.

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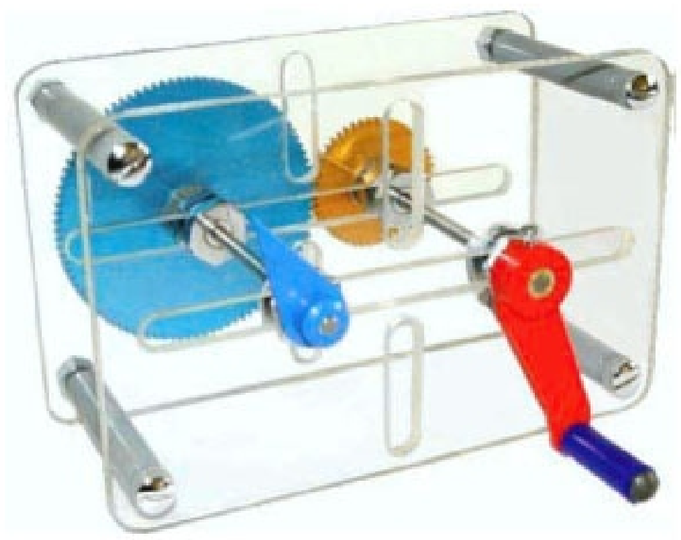
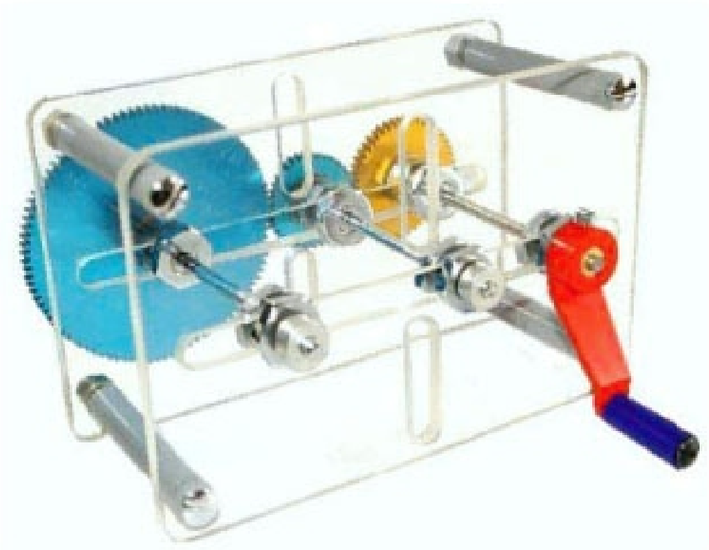
301 SINGLE STAGE SPUR GEAR



Drive illustrates speed relationships in a single mesh, external, spur gear drive.48-tooth gear on crank operated input shaft drives 96-tooth gear on output shaft with indicator. Useful in studying speed ratios and control of direction of rotation obtainable with gearing.

302 SINGLE STAGE SPUR GEAR WITH INTERMEDIATE GEAR



Drive illustrates speed relationships in a gear train with idler. 48-tooth gear on input shaft drives 36-tooth gear (idler) on intermediate shaft, which meshes with 96-tooth gear on output shaft. Illustrates function of idler in changing direction of rotation without affecting output shaft speed.

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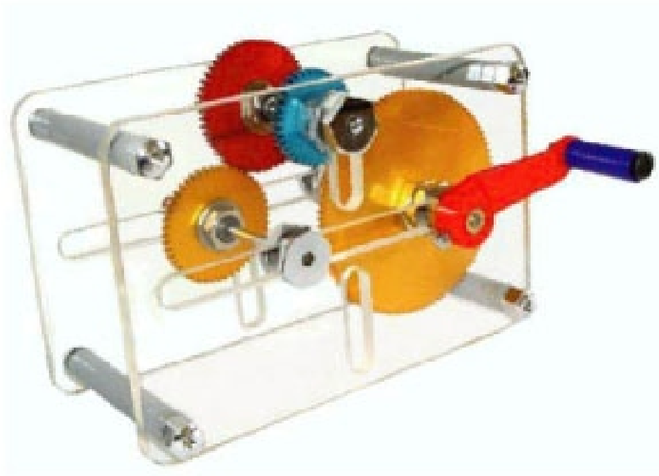
303 TWO STAGE SPUR GEAR



Drive indicates speed and directional relationships in a compound gear train: dependence of speed ratio between input and output shafts on tooth ratios of both meshes (93/36x54/48), while number of meshes determines direction of rotation (in this case both shafts rotate in same direction).

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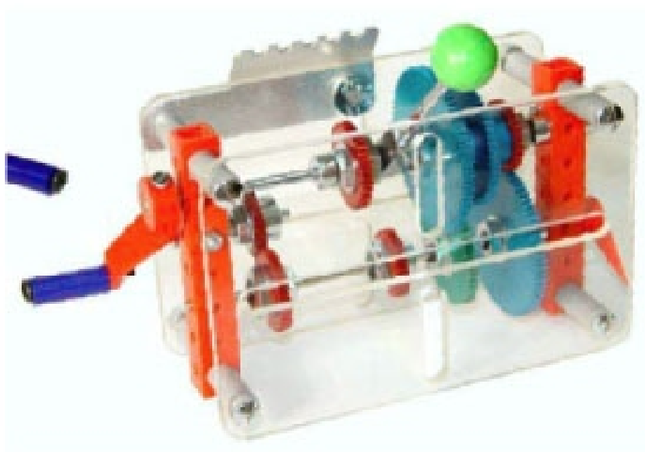
COMPACT MECHANICAL MODELS

306 WORM GEAR

Drive illustrates motion transmission between two non-parallel, non-intersecting shafts at right angles; speed relationships in a worm-gear drive (note high reductions); and introduction to irreversible drives; crank and indicator on the two shafts assist in studying speeds and direction of rotation.

305 THREE SPEED AND REVERSE GEAR

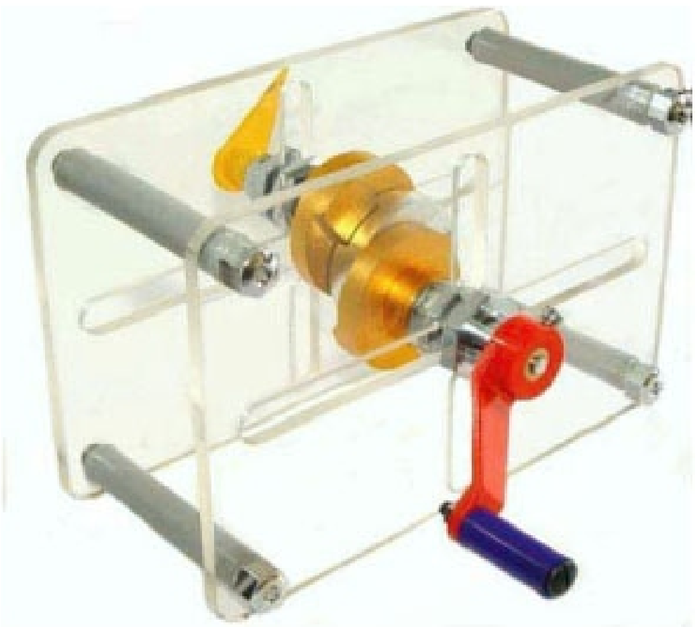


Drive illustrates principle of angular-speed variation using change gears. Drive shaft connected by a sliding clutch to any one of a set of change gears connected to output shaft, thus providing a choice of speed ratios. Useful in understanding design principles and kinematics of transmissions, such as are found in machine tools and vehicle drive

323 FRICTION WHEEL DRIVE CIRCUMFERENCE

Drive illustrates principle of constant-ratio motion transmission between parallel shafts by means of frictional contact between two wheels or discs. Crank-operated drive shaft with disc bears on second disc on output shaft. Basic speed relationships clarified with aid of indicator on output shaft.

342 OLDHAMS COUPLING



Drive illustrates motion transmission requiring coupling of two, offset, parallel shafts running at the same speed. In the Oldham coupling, perpendicular projections or keys on the two shafts engage correspondingly shaped perpendicular slots or keyways on floating, intermediate member. Motion of intermediate member adjusts to accommodate shaft offsets.

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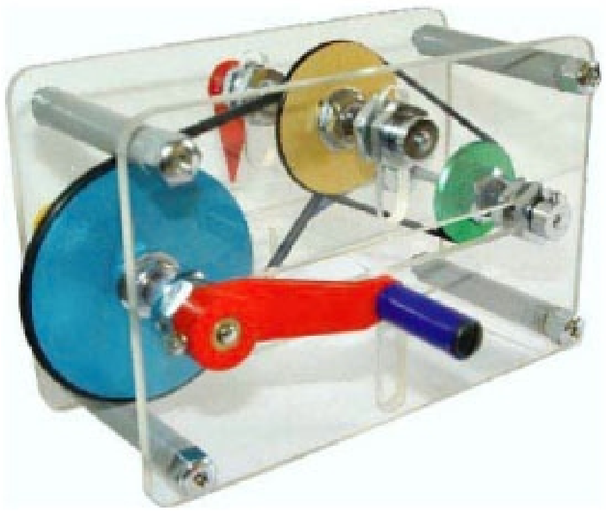
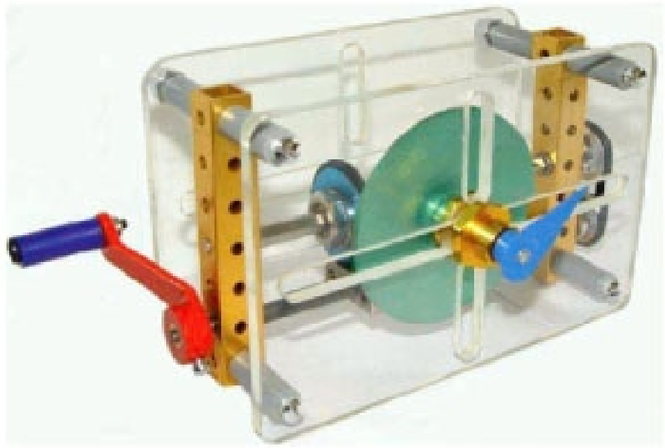
COMPACT MECHANICAL MODELS

333 BELT DRIVE - TWO STAGE



Drive illustrates design of open belt drives in tandem. Crank-operated drive shaft with driving pulley engages belt running over pulley on intermediate shaft. Second pulley on intermediate shaft drives output shaft through another belt. Indicators on the three shafts useful in studying speeds, phasing and directions of rotations involved.

325 FRICTION WHEEL DRIVE VARIABLE SPEED

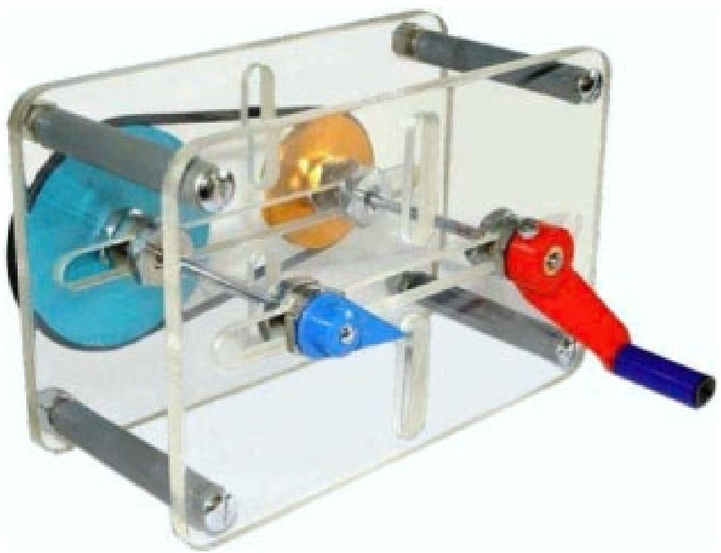


Drive illustrates principle of an infinitely-variable speed transmission. Crank-operated input shaft with keyed roller, slideably mounted on shaft, drives disc on a perpendicular output shaft through frictional contact. Control of roller position obtained by screw moving roller along keyway, thereby adjusting speed ratio.

335 BELT DRIVE MULTI SPEED

Drive illustrates principle of variable-speed transmissions using belt drives. Drive shaft and driven shaft contain five pulleys each; center distance is adjustable. Different reduction ratios obtainable by running belt over different pulley combinations. Unit useful in studying speeds and constructional requirements in variable speed drives.

332 BELT DRIVE SINGLE SPEED



Drive illustrates the principle of belt drives used for uniform motion transmission between parallel shafts. Crank-operated drive shaft has pulley driving belt passing over pulley on output shaft. Indicator on output shaft useful in studying speeds and directions of rotation in a basic friction drive.

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COMPACT MECHANICAL MODELS

 # 330 FLAT BELT DRIVE (WITH TENSIONER)

Drive illustrates principles of motion transmission over belts. Introduction to friction drives. Crank-operated drive shaft with pulley drives belt running over intermediate (idler) pulley and pulley on driven shaft with indicator. Useful in illustrating speed and directional relationships in belt drives.

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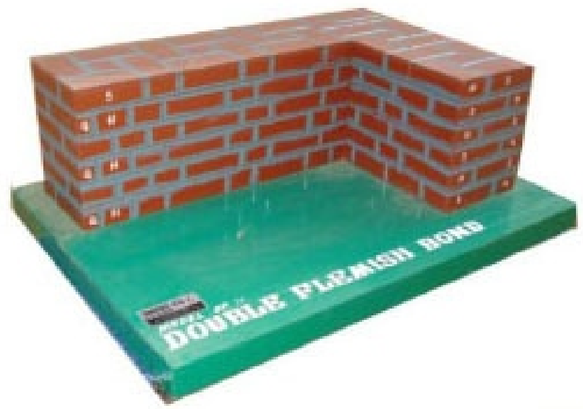
MASONRY MODELS

STONE MASONRY

Coursed Rubble Masonry (First Class)

Coursed Rubble Masonry is the form of masonry which is commonly adopted in the construction of residential buildings public buildings, piers and abutments for ordinary bridges. Considering the dressing and finishing of the stones, it is further sub-divided into first class, second class and third class masonry. In first class masonry, generally all the courses are of the same height and the minimum height of the course is limited to 15 cm. The face stones are hammer dressed and the projection of the rock-faced surface does not exceed 38 mm. beyond the side or bed joints. The beds of the face stones are hammer or chisel dressed and rendered true and square. Finished in different colours. Base Board size



Double Flemish Bond:

In Double Flemish Bond, each course presents the same appearance both in the front and back elevations. Every course consists of headers and stretchers laid alternately. This type of bond is best suited from considerations of economy and appearance. It enables the one brick wall to have flush and uniform faces on both the sides. This type of bonding is comparatively weaker than English bond. Finished in different colours. Base Board size

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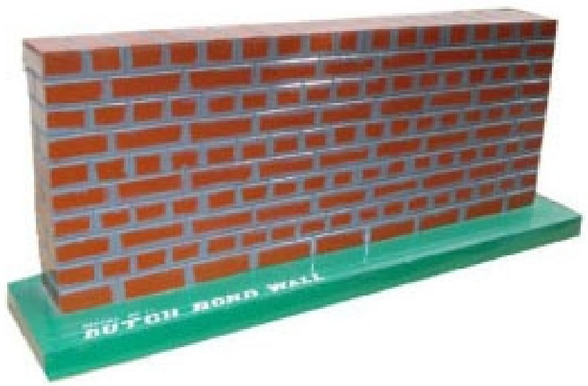
MASONRY MODELS



Dutch bond:

This bond is a modification of the old English cross bond and consists of alternate courses of headers and stretchers. In this arrangement of brick work, each stretching course starts at the quoin with a three-quarter bat and every alternate stretching course has a header placed next to the three-quarter brick bat provided at the quoin. Finished in different colours. Base Board size

English bond

It consists of alternate course of headers and stretches. In this English bond arrangement, vertical joints in the header courses come over each other and the vertical joints in the stretcher course are also in the same line. For the breaking of vertical joints in the successive course it is essential to place queen closer, after the first header in each heading course. The following additional points should be noted in English bond construction Finished in different colours. Base Board size :

Flemish bond Each course consists of alternate headers and stretchers. The alternate headers of each course are centered over the stretchers in the course below. Every alternate course starts with a header at the corner. For the breaking of vertical joints in the successive courses, closers are inserted in alternate courses next to the quoin header. In walls having their thickness equal to odd number of half bricks, bats are essentially used to achieve the bond. Finished in different colours. Base Board size

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MASONRY MODELS

Flemish

garden wall bond. This consists of alternate course composed of one header to three or sometimes even five stretchers in series throughout the length of the courses. Each alternate course contains a three quarter bat placed next to the quoin header and a header is laid over the middle of each central stretcher. Finished in different colours. Base Board size

English cross-bond:

This is similar to English bond and consists of alternate course of headers and stretchers. However, in this bond, queen closer are introduced next to quoin headers and each alternate stretching course has header placed next to quoin stretcher. This bond is sufficiently strong and bears a good elevation. Finished in different colours. Base Board size Finished in different colours. Base Board size

English garden wall bond

The general arrangement of bricks in this type of bonding is similar to that of English bond except that the heading courses are only inserted at every fourth or sixth course. Usually the arrangement consists of one course of headers to three courses of stretchers. A queen closer is placed next to the quoin header of the heading course to give the necessary lap. Finished in different colours. Base Board size

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MASONRY MODELS

Random Rubble Masonry

Random Rubble Masonry is slightly superior to uncoursed rubble masonry. In this form the stones used in the work are hammer or chisel-dressed. The stones are not suitably shaped or finished and as such the elevation of this type of stone masonry shows irregular shaped stones with non-uniform joints. In a good work the face stones are of uniform colour and approximately equal in size. The height of stones should be greater than their breadth or length of tail into the work. Finished in different colours. Base Board size

Single Flemish Bond:

This bond is a combination of English bond and Flemish bond. In this work the facing of the wall consists of **Flemish bond** and the backing consists of English bond in each course. This type of bonding cannot be adopted in walls less than one and a half brick in thickness. This bond is adopted to present the attractive appearance of **Flemish bond** with an effort to ensure full strength in the brick work. Finished in different colours. Base Board size

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MASONRY MODELS

COURSED RUBBLE SECOND CLASS

In good work, at least one third of the face stones tail back into1bçhearting for a distance equal to two times their height normally, and three times their height for thicker walls. The through stones provided to bind the two faces together are spaced at 18 m. apart and the quoins are of the same height as the height of the course. The length of the quoin is generally kept 45 cm. The thickness of joints in this type should not exceed 10 mm.

Uncoursed Rubble Masonry

Uncoursed Rubble Masonry is the poorest form of **stone masonry**. The stones to be used for the work are directly obtained from the quarry, after merely knocking off weak corner and edges with the mason's hammer. The stones are carefully laid so as to break joints as much as possible. To avoid thick joints, chips of stone or spalls are wedged into the hearting. The face stones selected from the heap should have uniform colour, uniform bed and greater size. One-fourth of the face stones should tail back in the hearting in the form of headers. Bond stones provided to interlock the two faces should extend up to the full thickness of wall if the wall is less than 60 cm. in thickness. For wall thicker than 60 cm., a line of headers overlapping each other for a length of at least 15 cm. is laid right through the wall. The quoins are chisel or hammer dressed and are laid as header and stretcher alternately. In this work the thickness of joints should not exceed 13 mm. Finished in different colours. Base Board size

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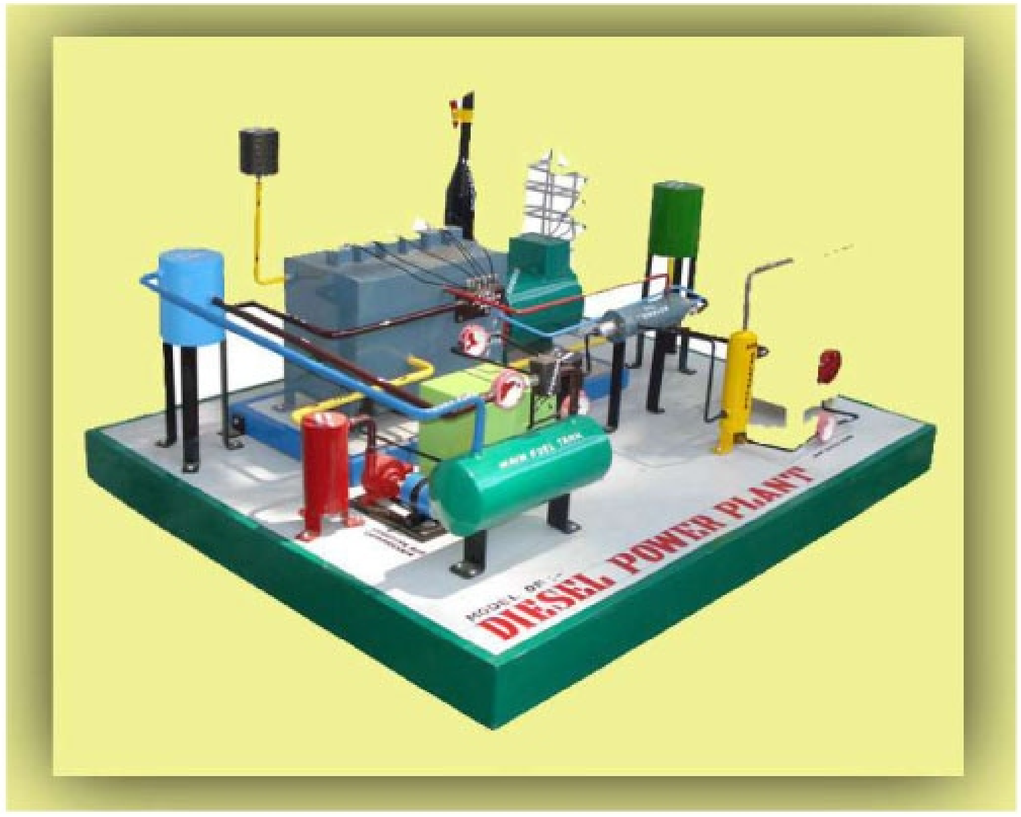
MODELS OF POWER PLANTS

MODEL OF DIESEL POWER PLANT



MODEL OF DIESEL POWER PLANT:

Model shows schematic arrangement and general Layout of a modern Diesel power plant. The main components of power plant model are Diesel Engine, Air filter and supercharger, Exhaust system, Fuel system, cooling system, Lubrication system and starting system. Generator and power transmission system.

All metal construction, finished in different colours. All parts are named for easy identification. Mounted on wooden base board. size 90 cm. x 75 cm.

MODEL OF THERMAL POWER PLANT

MODEL OF THERMAL POWER PLANT:

Model shows schematic arrangement and general Layout of a modern Thermal power plant.

The main components of Thermal Power Plant Model are Cooling tower, Transmission line , Step-up transformer, Electrical generator, Low pressure steam turbine, Intermediate pressure steam turbine, Generator, Feedwater heater, Coal conveyor, . Coal hopper, Coal pulverizer, Boiler steam drum, Bottom ash hopper, Super heater, Forced draught (draft) fan Reheater, Combustion air intake, Economiser, Air pre-heater, Precipitator, Flue-gas stack etc.

All metal construction, finished in different colours. All are named for easy identification. Mounted on wooden base board size 175 cm. x 40 cm.

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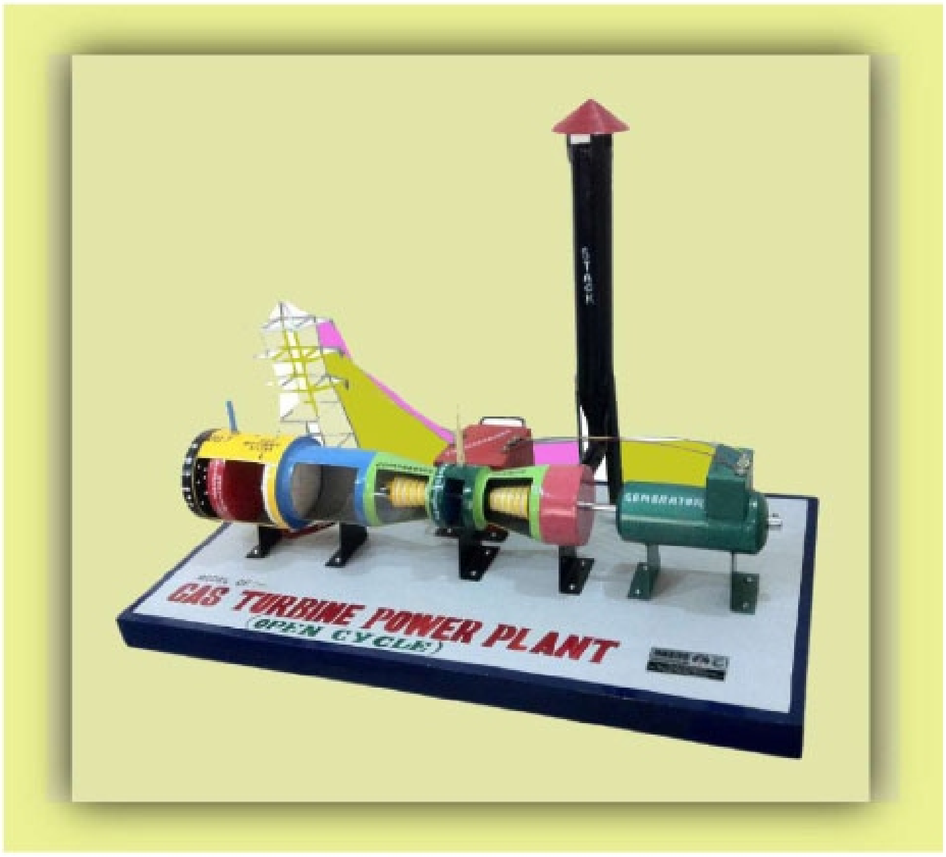
MODELS OF POWER PLANTS

MODEL OF GAS TURBINE POWER PLANT (Open Cycle)



MODEL OF GAS TURBINE POWER PLANT (Open Cycle):

Model shows schematic arrangement and general Layout of a modern Gas Turbine power plant (Open Cycle). The main components of power plant model are air compressor, combustion chamber (combustor) and turbines. Electric Generator, Stack Power transmission system.

All metal construction, finished in different colours. All parts are named for easy identification Mounted on wooden base board. size 85 cm.x 45 cm.

MODEL OF GAS TURBINE COMBINED CYCLE POWER PLANT.

MODEL OF GAS TURBINE POWER PLANT (COMBINED CYCLE):

Model shows schematic arrangement and general Layout of a modern Gas Turbine Combined Cycle power plant. The main components of power plant model are air compressor, a combustion chamber (combustor), turbine. heat recovery steam turbine, Electric Generators, Cooling Tower, , Power transmission system etc.

All metal construction, finished in different colours. All parts are named for easy identification Mounted on wooden base board. size 120 cm.x 65 cm.

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MODELS OF POWER PLANTS

MODEL OF HYDRO-ELECTRIC POWER INSTALLATION:

MODEL OF HYDRO-ELECTRIC POWER INSTALLATION:

Model shows schematic arrangement and general Layout of a modern HYDRO-ELECTRIC power plant. The main components of the plant model are Dam site, Intake, Control gate, Penstock, Water Turbine with Generator, power transmission system etc. Plant body made of wood with metal parts , finished in different colours. All parts are named for easy identification. Mounted on wooden base board. size 65 cm.x 40 cm.

MODEL OF NUCLEAR OWER PLANT:

MODEL OF NUCLEAR POWER PLANT:

Model shows schematic arrangement and general Layout of a modern Nuclear power plant. The main components of power plant model are Containment Structure, Reactor Vessel, Control Rods, Pressurizer, Steam Generator, Steam Turbine, Condenser, Electric Generator, Cooling Tower, Power Transmission System etc.

All metal and wood construction, finished in different colours. All parts are named for easy identification. Mounted on wooden base board. size 100 cm.x 50 cm.

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MODELS OF POWER PLANTS

MODEL OF WASTE WATER TREATMENT PLANT

MODEL OF WASTE WATER TREATMENT PLANT

Model shows schematic arrangement and general Layout of Waste Water Treatment Plant. It consists of Waste water inlet, Coarse screen. Pumping station, Fine screen. Aerated grit and grease removal tank, Primary sedimentation tank, Aeration tank Secondary sedimentation Tank, U.V disinfection unit, Sludge thickener Anaerobic sludge digester, Sludge dewatering unit, Biogas storage tank, Cogeneration system power plant, etc. showing piping system , sludge treatment, water treatment system etc.

All metal construction, finished in different colours. All parts are named for easy identification. Mounted on wooden base board. size 180cm.x 75 cm.

MODEL OF PARABOLIC TROUGH SOLAR POWER PLANT:

MODEL OF PARABOLIC TROUGH SOLAR POWER PLANT:

Model shows schematic arrangement and general Layout of a modern Parabolic Trough power plant. The main components of power plant model are Solar Trough Field, Hot Salt Tank, Thermal Energy Storage, Steam Boiler, Steam Turbine, Oil Circuit Heat exchanger, Cooling Tower. Electric Generator, Power Transmission System etc.

All metal construction, finished in different colours. All parts are named for easy identification. Mounted on wooden base board. size 130cm.x 90 cm.

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MODELS OF POWER PLANTS

MODEL OF DRINKING WATER TREATMENT PLANT:

MODEL OF DRINKING WATER TREATMENT PLANT:

Model shows schematic arrangement and general Layout of DRINKING WATER TREATMENT PLANT. Consists of Intake pipe, Pumping station, Raw water storage, Bar Screen, Low lift Pump Well, Pre Chlorination, Coagulation, Flocculation, Sedimentation Basin, Sand Filtration system, Post Chlorination, High Lift Pump Well, Water storage Tower, and Water Distribution outlet etc.

All metal construction, finished in different colours. All parts are named for easy identification. Mounted on wooden base board.
size 150 cm.x 80 cm.

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STRUCTURAL ENGINEERING LAB EQUIPMENTS

APPARATUS FOR VERIFICATION OF CLERK'S MAXWELL RECIPROCAL THEOREM

Apparatus consists of a beam 100cm long and about 1.25cm x 4mm in cross section with graduations at every 10cm along the length. It is supported on knife edge supports 70cm apart with a 30cm overhang on one side. Reciprocal theorem can be verified by direct measurements of the deflections of various points with the help of a dial gauge due to a load placed at the reciprocal points. A dial gauge with 25mm travel (with a magnetic base) is supplied with the apparatus. Apparatus is supplied complete with a supporting stand and a set of weights.

BEHAVIOUR OF COLUMN AND STRUTS APPARATUS

Apparatus consists of four spring steel columns which are put along a vertical wooden board. These four columns have different end conditions as below:

- Both ends pinned
- Both ends fixed
- One end pinned and other fixed
- One end fixed and other end free

Apparatus is supplied complete with a supporting stand and weights.

CURVED MEMBER APPARATUS

Apparatus consists of a steel bar which is used to make the different curved members Viz. circle, semicircle with straight arm, a quadrant of a circle and quadrant of a circle with straight arm. The bottom ends of the members are fixed to the base. Under the application of load at free end, its horizontal and vertical deflection is measured with the help of dial gauges. A dial gauge with 25mm travel (with a magnetic base) is supplied with the apparatus. Apparatus is supplied complete with a supporting stand and a set of weights.

DEFLECTION OF TRUSS APPARATUS

Apparatus consists of 4 panels of a PRATT truss, each panel being 40cm in horizontal direction and 30cm in vertical direction. Load can be applied on each panel point. All tension members are provided with detachable springs so as to obtain appreciable deformation of the member. Direction of the diagonal members may be changed. Apparatus can be used to illustrate visually the nature of forces set up in various members of the Truss. Apparatus is supplied complete with a supporting stand and a set of weights.

ELASTICALLY COUPLED BEAM APPARATUS

Apparatus consists of a three parallel bar suspension system with elastic beam at their upper and lower ends. The upper ends of the two outer suspension rods are tied to a vertical wooden board while central suspension rod may be tied to the centre of another elastic beam supported at two outer ends only. Apparatus is supplied complete with a supporting stand and a set of weights.

ELASTIC PROPERTIES OF DEFLECTED BEAM APPARATUS

Apparatus consists of a mild steel beam about 2.5cm x 3mm in cross section and 100cm long, pinned to two supports 70cm apart situated symmetrically. One of the ends can be fixed or given a known slope by applying a known moment at the end with the help of suspended loads. At the other end also a known moment can be applied. Vertical loads can be applied at various points along the span of the beam. A dial gauge with 25mm travel (with a magnetic base) is supplied with the apparatus. Apparatus is supplied complete with a supporting stand and a set of weights.

PORTAL FRAME APPARATUS

Portal frame is made up of M.S. flat of rectangular section of about 6mm thick x 40cm wide. Frame is provided with a provision to achieve different end conditions viz. hinged, roller & fixed. The size of portal will be 40cm x 60cm. Portal is also having a provision for pulley arrangement and hook arrangement for horizontal loading at different positions. A dial gauge with 25mm travel (with a magnetic base) is supplied with the apparatus. Apparatus is supplied complete with a supporting stand and a set of weights.

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STRUCTURAL ENGINEERING LAB EQUIPMENTS

REDUNDENT JOINT APPARATUS

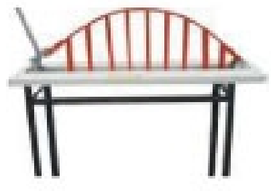
Apparatus consists of three suspension members (spring balances) of different stiffness which are jointed at a point to form the redundant joint. The upper end of the suspension members being tied in a position to a vertical wooden board. Arrangement is provided to apply a vertical load at the joint and to measure its horizontal and vertical displacement on a paper and also elongations and forces in the suspension members by the help of dial gauges. Two dial gauges with 25mm travel (with magnetic bases) are supplied with the apparatus. Apparatus is supplied complete with a supporting stand and a set of weights.

THREE HINGED ARCH APPARATUS

The model has a span of 100cm and rise about 25cm, with hinges at supports and crown. One of the ends rests on rollers. Along the horizontal span of the arch various points are marked at equidistant for the application of load. This being a statically determinate structure, the horizontal thrust developed under the action of any load system can be theoretically calculated and will also be measured directly by neutralizing the outward movement of the roller end. A dial gauge with 25mm travel (with magnetic base) is supplied with the apparatus. Apparatus is supplied complete with a supporting stand and a set of weights.

TWO HINGED ARCH APPARATUS

The model has a span of 100cm and rise about 25cm. Both ends are hinged but one of the ends is also free to move longitudinally. A lever arrangement is fitted at this end for the application of known horizontal inward force for measuring the horizontal thrust. Along the horizontal span of the arch various points are marked at equidistant for the application of load. This being a statically indeterminate structure of the first degree. A dial gauge with 25mm travel (with magnetic base) is supplied with the apparatus. Apparatus is supplied complete with a supporting stand and a set of weights.



UNSYMMETRICAL BENDING APPARATUS

Apparatus consists of an angle of size 1" x 1" x 1/8" or equivalent and of length 80cm is tied as a cantilever beam. The beam is fixed at one end such that the rotation of 45^0 intervals can be given and clamped such that the principal axis of its cross-section may be inclined at any angle with the horizontal and vertical planes. Also arrangement is provided to apply vertical load at the free end of the cantilever and to measure horizontal and vertical deflection of the free end. A dial gauge with 25mm travel (with magnetic base) is supplied with the apparatus. Apparatus is supplied complete with a supporting stand and a set of weights.

SUSPENSION BRIDGE APPARATUS

Apparatus is supplied complete with a supporting stand and a set of weights.

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STRUCTURAL ENGINEERING LAB EQUIPMENTS

DEMONSTRATION MODELS

INTERCONNECTED BRIDGE GIRDER MODEL

In case of bridges which have several longitudinal beams connected by cross girders or continuous slab, a load any where on the bridge effects all the beams of the bridge even if a load is placed exactly on one of the beams, other beams also share the load and the loaded beams is not required to bear the full load. The problem of sharing of the load by all the beams is known as the load distribution problem in bridges. Theoretically it is a highly complicated problem whose exact solution has not been given so far. However experimentally the load shared by each beam can be found every easily. The load shared by each beam will be in the ratio of the maximum deflection suffered by each beam. Hence if vertical deflection of all the beams is measured at the same transverse section passing through the load, the load supported by each beam can be easily estimated. Thus influence surfaces for each beam of the bridge can be experimentally traced.

INTERNAL REACTION IN A RING MODEL

The model of the closed ring demonstrates the Muller Breslau's principle and thus to obtain the influence lines experimentally. If an angular rotation 'q' is given by moving the two arms while the vertical moment of the point diametrically opposite is 'a' then a/q represents the moment at the hinged point due to a unit load applied at the opposite point. Results can be verified theoretically.

LINEAR ARCH MODEL

It is a simple device to draw the line of thrust in arches for a given system of loading. A flexible string is taken whose one end is tied to a pin on a vertical board, the other end of the string passes over a smooth pulley fixed to the same vertical board. The distance between the pulley and pin can be adjusted. The free end of the rope coming over the pulley has a pan attached to it, in which known weights can be put. There is an arrangement to suspend any given load from the string between the pin and the pulley, for any given values of the loads on the string as well as on the pan, the string will maintain equilibrium in a certain deflected form. The deflected form of the string will then represent the linear arch for a given system of loading. The linear arch will change its shape if the load in pan is changed. The load in the pan is equal to the tension in the string at pulley end. The vertical component of this tension in the string is always the same and only depends upon the magnitude and location of the load applied to the string. However its horizontal component changes with the weight in the pan. Thus linear arches with the different horizontal reactions at the end can be constructed with same system of loading.

PINNED JOINT MODEL

Pinned joint model consists of hinged joints. Model demonstrates the qualitative behaviour of the truss under load. As the members are very flexible, a compression member will easily show it's buckling i.e. it will curve out of plain. The tension member however remains straight and tight. The student can therefore have a visual picture of the type of stresses i.e. compressive or tensile that each member of truss will carry under various position of the load. In the case of pinned joint truss, the student may observe that angle between members at each joint undergo a small change.

PORTAL FRAME MODEL

Model demonstrates the behaviour of portal frame under vertical loading placed at different points of this span. Under a central point load, the deflected form of the portal will illustrate the presence of hogging moment near the top corner and sagging moment under load as well as in the two legs of portal. There will be no side sway. If the load is placed eccentrically the frame sways to the opposite side and there will be some change in curvature of the members indicating changes in the size of the moment.

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STRUCTURAL ENGINEERING LAB EQUIPMENTS

- **STIFF JOINT MODEL**

Stiff joint model consists of fixed joints. Model demonstrates the qualitative behaviour of the truss under load. As the members are very flexible, a compression member will easily show its buckling i.e. it will curve out of plain. The tension member however remains straight and tight. The student can therefore have a visual picture of the type of stresses i.e. compressive or tensile that each member of truss will carry under various position of the load.

In the case of stiff joint truss, the student may observe that there is a slight curvature caused in the member near the joint indicating the presence of joint moments in the truss.

- **TWO PINNED ARCH RIB MODEL**

The model of the arch demonstrates the Muller Breslau's principle. The influence lines of horizontal thrust can be obtained by moving one end horizontally and measuring the vertical deflection of the arch rib. The vertical deflection gives the influence line ordinates of horizontal thrust in the arch. Results can be verified theoretically.

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ENGINEERING MODELS

GEAR MODELS

No. **Product Name** **Description**

Single Stage Spur Gears: Working on parallel axis, complete on base.

Single Stage Spur Gears with Intermediate: Complete mounted on base.

Two Stage Spur Gears:Properly: Complete mounted on base.

Three Stage Spur Gears: Properly fitted on base.

Single Stage Bevel Gears: Working on angular axis. Complete on base.

Single Stage Helical Gears: Properly fitted on base.

Single Stage Spiral Gears: Properly fitted on base.

Gear Sets: Four Types i.e. Spur Gear, Bevel Gears, Helical Gear and Spiral Gears, Complete Mounted on Base.

Herringbone Gears: Properly mounted on base. Complete fitted on base

Rack & Quadrant Gears: Properly Constructed model. Complete on base.

Sliding Wedge Gear with Straight Line: Properly Constructed Model on base

Rack & Pinion: Properly Constructed model complete on base.

Epicyclic Gear: Complete on stand with three gears and train arm fitted on base.

Epicyclic Gear: Sun & Planet Type: properly constructed Model

Cycloidal Gear: It is very interesting to demonstrate cycloiidal motion.

Reversing Gears: An arrangement of gears run by a lever making a machine drive stop and reverse.

Worm Gears: Complete mounted on base, with driving dandle.

Train of gear wheels: An economical model to determine the velocity ratio complete on stand.

Differential Gear: It is very interesting to demonstrate the manner of action of Differential Gear with this open model.

Inter Connected Gears: Spur Gears, Bevel Gears, Worm Gears, Rack and Pinion, all inter connected, complete mounted on base board.

Gear Box. 3 Speed & Reverse Gear demonstration model.

Shaper Model: It is very interesting to demonstrate the working of a shaper machine.

MECHANISM MODELS

1019 **Friction Wheel Drive:** The model shows the system of giving variable speeds. Properly fitted on base

1020 **Chain Drive:** Properly fitted on base.

1021 **Geneva Drive:** Showing intermittent motion properly fitted on base.

1022 **Pawl & Rachet Motion:** Showing Intermittent motion of a ratchet wheel.

1023 **Crank & Connecting Rod model.** A properly constructed model on base.

1024 **Slider Crank Mechanism:** Following models are fitted on three different wooden base boards. The mechanism are made of aluminium and other metallic part (A). Reciprocating Engine Mechanism (B), Oscillating Cylinder Mechanism. (C) Whitworth Quick Return Mechanism.

1025 **Slide Crank Mechanism with Calibrated Dials:** A properly constructed model fitted on wooden base board with dials.

1026 **Four Bar Link Mechanism.** A properly constructed model fitted on base.

1027 **Scotch Yoke Mechanism:** A properly Constructed model fitted on base.

1028 **Ellipse Tracer Model:** Properly Constructed model fitted on base

1029 **Watt's Mechanism:** Properly Constructed model fitted on base

1030 **Peculiar Linkage Drive Model:** Properly constructed model fitted on base

1031 **Pantograph Mechanism:** Very interesting model to explain the working of pantograph mechanism.

1032 **Kinematics Pairs:Different types,** showing sliding pair, tuning pair, rolling pair(Two types),Screw pair (two types) spherical pair, completely constrained motion, gear wheels, two types links, all mounted on board.

1033 **Crank Shaft to Slider Mechanism:.** A properly constructed model fitted base board.

1034 **Crank & Slotted Link:** A properly constructed model fitted on base.

1035 **Two Crank & Linkage Drive Model:** A properly constructed model on base

1036 **Slotted Link Bar Mechanism:** A properly constructed model fitted on base.

1037 **Inversion of Four Bar Mechanism.** A properly constructed model fitted on base

1038 **Crank Drive to Oscillating Link Mechanism:** A properly constructed model on base

1039 **Crank & Slotted Lever Apparatus (Fully Calibrated)** A properly constructed model on base

1040 **Inversion of Single Slider Crank Mechanism:** A properly constructed model on base

1041 **Inversion of Double Slider Crank Mechanism:** A properly constructed model on base

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ENGINEERING MODELS

CAM & FOLLOWER MODELS

1042 Cams & Following Set of Five.: Model of five different types of cams followers properly mounted on separate boards
(a) Plate Cam With flat faced reciprocating follower,
(b) Tangent Cam With roller oscillating follower,
(c) Cylindrical Cam with Translating Follower,
(d) Translating Cam with Reciprocating Knife Edge Follower,
(e) End Cam ith Translating Follower.

1043 Action of Cams: It is very interesting to demonstrate the functions of four types of Cam- Heart Shaped Plate, Involute and Eccentric. Properly mounted on a board with follower and rotating arrangement.

1044 Triangular Eccentric Cam: The Model shows Intermittent reciprocating rectilinear motion in Yoke Form. Complete mounted on base.

1045 Tri Clover Leaf Cam: This properly constructed model shows rectilinear reciprocal motion to sliding bar.

1046 Harmonic Motion: Demonstration model mounted on base.

BRAKE MODELS

1048 Single Shoe Brake: The model consists of a brake drum, Mounted on a shaft free to rotate in bearing provided with brake lever, complete on a base.

1049 Double Shoe Brake: Model consists of a brake drum, provided with two levers carrying shoes. A linkage is used to apply braking force at the free end bell crank lever. Complete on base.

1050 Band Brake: Consists of a brake drum mounted on a shaft, free to rotate in bearings. A flexible band is wrapped partly around the drum. Brake force can be applied with the help of lever. Complete on base.

1051 Band & Block Brake: The model is similar to the Band Brake Model but wooden blocks are attached to the band.

1052 Internally Expanding Brake: The model consists of a hollow drum.Two shoes are pivoted on pins.Braking action can be seen by application of force on the cam-lever.

1053 Disc Brake Model: Properly constructed model, complete on bas with operating lever.

Disc Brake Actual Working: Made from original reconditioned parts. Mounted on a sturdy base.

Hydraulic Brake Unit: Unit consists of original but reconditioned components such as master cylinder brake drum complete with brake shoes and brake cylinders, brake pedal and necessary connections.In normal condition the brake drum can be easily rotated by the handle but on pressing the brake pedal, brake fluid in master cylinder is forced in brake cylinders thus expanding the brake shoes stopping the rotation of drum. Brake drum is sectioned. Finished in different colours.

Hydraulic Brake Unit (Two Brake Drums): Same as above but with two brake drums and one master cylinder. Sectioned and mounted on base with brake pedal.

Hydraulic Brake Unit (Four Brake Drums): Same as above but with four brake drums and two master cylinders. One of the master cylinder is suitably sectioned. Mounted on base complete with operating brake pedal.

Mechanical Brake System: Mechanical brake system as used in two Wheelers. is made from original but reconditioned parts. Complete with operating lever, brake pedal, brake drum and necessary linkage. Working of mechanical brake can be demonstrated by pressing the pedal Mounted on a sturdy base.

Power Brake Actual Working: Power brake system made from original reconditioned parts. Mounted on a sturdy frame.

Air- Brake . Non Working model showing construction of air brake system. mounted on board.

BELT & PULLEY MODELS

Model of Belt Pulleys: Cast Aluminium truly machined models
(a) Flat Belt Pulley (b) Rope Pulley (c) "v" Belt Pulley (d) Cone or Step pulley

Belt Drive Single Speed: Complete with two pulleys and a "V" belt, Properly fitted on base board with crank handle.

Belt Drive Two Stage: Consists of two single pulleys, one double pulley and two 'v' belts. Properly mounted on base board with crank handle.

Belt Drive Lose & Fast (Loose and Fast Pulleys): Consists of a driven pulley on one shaft and other shaft has two pulleys, one fixed and other loose one. Complete fitted on base.

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ENGINEERING MODELS

BEARING MODELS

Shafting General Bearing: Properly constructed section cut models.
(a) Open Truck Bearing (b) Simple Bearing
(c) Bush Bearing (d) Thrust Bearing
(e) Plummer Block or Pedestal Bearing (f) Foot Step Bearing

Bearing. Original bearings duly mounted on base. Ball Bearing, Roller Bearing, Taper Bearing and Thrust Bearing

Ball Bearing Set: The above four bearing properly mounted on one board.

Swivel Bearing: A properly constructed model On base.

Hanger Brackets: Properly cast aluminium models. Set of four mounted on board.

Wall Brackets: A set of two types, properly constructed models.

KEY & JOINTS MODELS

Keys (Set of 5): A set of five metal keys mounted on shaft with collars.

Knuckle Joint: An all metallic model, Properly constructed.

Cotter Joint: An all metallic section cut model.

Gib & cotter Joint: Properly constructed section cut model.

Tie Rod Joint : Properly constructed model with rods and coupler

Sleeve & Cotter Joint: Properly constructed section Cut model.

Socket & Spigot Joint: Properly constructed section cut model.

Riveted Joints Set of Four: A set of four wooden models, Single and Double Lap joints, Single and Double strap butt joints.

Riveted Joints(Wooden Models): (a) Riveted Joints Triple (b) Riveted Joints Quadruple (c) Riveted Joints Angel Iron & Girder Joints

Rivets Set of Four(Metal Model): cup head, pan head, conical head and counter sunk head, set of four metallic models mounted on base.

Rolled Sectional Models Set: A set of four in wood, angle iron, T-iron, Channel mounted on base

Girder Models(Wooden): Properly constructed models. (a) Plate Girder (b) Box Girder(c) N. Girder.

COUPLING MODELS

Sellers Coupling: Properly constructed all metallic model.

Universal Coupling: Properly constructed all metallic model.

Hook's Coupling: Single, Properly constructed, on board.

Hook's Coupling(Double): Double, Properly constructed on board

Double Hook's Coupling Experimental Apparatus: Experimental apparatus With graduated discs for angle measurement .

Flexible Coupling: The model is properly made to understand the type of shock absorbing coupling

Box or Muff Coupling: In this section cut model, two shafts ends are made to butt together by means of a sunk key.

Flanged Coupling: Properly machined model with bolts, key groove and key.

Split Muff Coupling: Properly Constructed Model. The two halves bolted together and one side is shown in section.

Oldham's Coupling: The properly constructed model is hand operated, (a) Small (b) Big To illustrate the transmission between two shafts Which are not coaxial. Complete on base.

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ENGINEERING MODELS

CLUTCH MODELS

Claw Clutch: Properly constructed model, one part having sliding groove. Complete on base with operating lever.

Conical Friction Clutch: Properly constructed model. One part having sliding groove. Complete on base with operating lever.

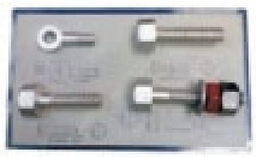
Plate Clutch: Properly constructed. complete on base with operating lever.

Centrifugal Clutch: The model consists of a drum pulley mounted on the out put shaft. The input shaft carrying spring controlled fly weights. The worming can be demonstrated by rotating the input shaft provided with crank handle The output shaft rotates with. clutch action

Multiplate Clutch: A Properly constructed all metallic model mounted on metal base with handle.

SCREW & NUT MODELS

Sectional Models of Screw Thread: Whitworth, Square, Butteress, Acme, Right and left hand screw, set of all the six threads made of aluminium metal mounted on base.



Sectional Models of Screw Thread Nuts: Set of six sectional model of nuts, properly mounted on base.

Standard Bolt: Diameter 25 mm. length about 15cm. Approximately. Properly constructed model is of aluminium alloy, complete with nut, lock nut and washer.

Bolts of Four Types: Ordinary, Eye Type, Stud Type and set Screw type. Properly constructed and mounted on base .

Foundation bolts: Rag Bolt, Cotter Bolt and Lewis Bolt a set of three aluminium models fitted on base.

Foundation Bolts: Same as above but with four different types of bolts mounted on base.

Locking Arrangement of Bolts: Check nut, Castle nut, Grooved nut, Swan nut stop plate nut and Spring washer nut. With the help of these model actual locking systems can be demonstrated.

GYROSCOPE MODELS

Standard Gyroscope: Consists of a wheel 7.5 cm in diameter and 3 cm at rim, carefully balanced and all the three pairs of pivot are adjustable. Complete fitted on base.

Gyroscope with Counter Poise: The circular frame has an accurately centered wheel and adjustable counter poise. The system is held in a yoke in which it pivots freely about a horizontal axis. The yoke is supported by a rod which turns about a vertical axis. When unbalanced, the wheel axis will never the less remain horizontal but will precess in a clock wise or counter clock wise direction depending upon the position of the center of gravity.

Bicycle Wheel Gyroscope: A bicycle wheel of smaller dia is provided with two handles and solid tire on the rim. When a rotation is given to wheel it demonstrates various interesting effects such as vertical rotation and precession force required to change the axis of spin.

Revolving Stool for Above: A metallic stool for above.

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ENGINEERING MODELS

NEW MECHANISMS AND MODELS

Heart Cam
Box Cam
Heart cam
Flat Plate cam.
Cylindrical/Barrel Cam
Pear Shaped Cam
Edge Cam.
Swash Plate Cam
Snail/Drop Cam
Yoke Cam
Conjugate Cam
Globoidal Cam
Types of Followers: Knife edge, Roller, Flat faced, Spherical shape. On board.
Types of motion: Translatory, Oscillatory on board.
Radial and Offset follower on board.
Belt Drive Toothed.
Belt Drive Contra Rotation.
Belt Drive Multi speed.
Flat Belt Drive
Flat Belt Drive with tensioner
`V` Belt Drive
Wire Rope Drive
Cotton Rope Drive
Leather Rope Drive.
Open Belt Drive.
Crosses Belt Drive
Quarter Turn Belt Drive.
Belt Drive with idler pulleys
Cone Pulley Drive
Hydraulic Mini Cherry Picker
Hydraulic Mini.Escavator
Hydraulic mini scissor lift"
Hydraulic Mini Platform Lifte
Parallel Crank Drive
Epicyclic Gear -vSlider Mechanism
Face Cam Drive (Free Follower)
Face Cam Drive (Double Sided) Trapped Followers
Three Speed & Reverse Gear Mechanism
Drafting Mechanism

NEW MECHANISMS AND MODELS

Lathe Drive with Lead Screw
Train of Gear Wheels Compound Apparatus.: for demonstrating Relationship between velocity ratio and number of teeth.
Reverted Gear train
Friction Wheel Drive (Circumference)
Friction Wheel Drive (Variable speed
Friction Wheel Forward and Reverse Mechanism
Robert`s Straight Line Mechanism.
Hart`s Straight line Mechanism
Scott-Russel Mechanism
Modified Scott Russel Mechanism
Grass Hopper Mechanism
Tchebicheff Straight Mechanism.
Kempes Mechanism
Centrifugal Mechanism with Clutch Drive.
Cone Clutch drive single sided
Cone Clutch drive Two sided.
Dog Clutch Single Sided.
Dog Clutch Double Sided.
Turn Buckle
Bevel Gear Type Reversing mechanism.
Cam with gear with straight line and lever follower.
Over Running clutch.
Bicycle Free wheel mechanism.
Foot operated pump mechanism.
Reverse Motion Linkage
Parallel Motion Linkage.
Bell Crank Linkage.
Crank and Slider Linkage
Tool Box drawer linkage
Differential Screw mechanism
Compound Screw Mechanism.
Friction Wheel drive Variable speed.
Chain Drive with tensioner
Drag Link mechanism.
Drag Link Quick return Mechanism
Offset Slider Crank Quick Return Mechanism
Toggle Jack model
Armed pulley. Model
Sarrus linkage./ 'space crank'
Hoekens linkage
C Clamp Model.

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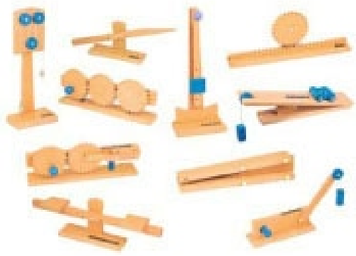
SIMPLE MACHINES WOODEN MODELS

SIMPLE MACHINES WOODEN MODELS



A machine is something that makes it easier for us to do work, such as moving objects. Simple have been a part of our lives for many centuries. In fact, the origins of a simple machines can be dated back to the third century B.C. By Archimedes, the Greek Philosopher. His machines are ones which have only one part to do the work. Simple machines work was with his types of simple machines which were the lever, screw and the pulley. Over time, simple machines have also included the lever, wheel and axle, wedge and inclined plane

beautifully made wooden classroom demonstation models These are fully functional and just the right size for little hands. Students will love to learn about simple machines when they can make them work. These wooden simple machines are a great resource to show students how simple machines can provide mechanical advantage and change the direction and magnitude of a force These classic wooden models offer children a basic concept of the laws of physics

9801 Pulley Demonstration Model

The pulley is one of the basic simple machines and can be found everywhere around us. They are used in cranes, to lift heavy weights. Or when you hoist a flag. It provides mechanical advantage, making it easier to move heavy masses. But how exactly does it work? Find out this and more by experimenting with this Pulleys Model

When a cord is run over a pulley, the direction of the applied force is changed. This is a very useful principle in many different machines and a basic principle that shows up again and again in physics classes. This device lets students explore and understand this basic principle. The sturdy construction of the models makes it perfect for classroom use. This classic wooden model offers children a basic concept of the laws of physics.

Made of MDF compressed board to ensure durable constructions.The base of the model measures 16.5 cm (L) x 8.9 cm (W) x 41 cm (H).

9802 - Lever Demonstration Model

Kids are fascinated with the way things work.
The lever is the most basic of the classic simple machines. When you apply a force at one end of the lever, you get a force at the other end as well. How big a force you get depends on how far the ends are from the pivot point, the fulcrum. This classic wooden model offers children a basic concept of the laws of physics.

Made of MDF compressed board to ensure durable constructions The base measures22 cm (W) x 7 cm (L), with an height of 13.3 cm and the lever arm is 45 cm long.

#9803- Simple Wedge Demonstration Model

wedge is one of the simplest of the simple machines, but it is capable of great force amplification. The The motion of the wedge into the space between two boards is converted to vertical motion of the top board. Small taps on the wedge can lift very large weights

A wedge can be used to separate two objects or portions of an object, lift up an object, or hold an object in place. Wedges are used in everyday life, think of an axe or a door stoppe. This classic wooden model offers children a basic concept of the laws of physics.

Made of MDF compressed board to ensure durable constructions The base of the model measures 35.0 cm (L) x 9.5 cm (W) with an adjustable height.

9804 - Wheel and Axle Demonstration Model

The wheel and axle is a simple machine consisting of a wheel (or crank) and an axle that turn on the same axis. Steering wheels, doorknobs, and screwdrivers are examples of wheel-and-axle devices.

When a cord goes over a pulley, the force it applies changes direction. In this device, an axle is attached for winding up the cord and the cord goes over a pulley, changing the direction of this force. You can easily see the application of this principle on cranes and other machines This classic wooden model offers children a basic concept of the laws of physics.

Made of MDF compressed board and metal pegs to ensure durable constructions and precise measurements & outcomes. The base of the model measures 24 cm (W) x 9.5 cm (L) with a height of 11.5 cm.

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9805 - Screw Demonstration Model

The screw, another of the simple machines, converts a circular motion (the turning of the screw) into a linear motion. It also lets you amplify the force a great deal, since turning the screw only moves the end of the screw a small amount. This classic wooden model offers children a basic concept of the laws of physics

Made of MDF compressed board to ensure durable constructions Metal **screw** mounted on top board. Top of **screw** is 4.8 cm square The base is 19 cm by 10 cm and sits 10 cm high.

9806 - Inclined Plane Demonstration Model

Inclined Plane - The inclined plane, one of the simple machines, allows you to raise great weights with small forces. This model lets students experiment with this principle directly, by seeing how much force is needed to pull the cart up the ramp.

An inclined plane is a flat supporting surface tilted at an angle, with one end higher than the other, used as an aid for raising or lowering a load. They are widely used to move heavy loads over vertical obstacles, for instance a loading ramp on a truck or bus and a pedestrian ramp This classic wooden model offers children a basic concept of the laws of physics

The cart comes with rubber wheels and the track of the inclined plane has grooves to guide the cart. Made of MDF compressed board to ensure durable constructions The model measures 42 cm (W) x 8.2 cm (L) with an adjustable height.

9807 -Pendulum- Demonstration model

This wooden pendulum has a strong and sturdy construction ideal for classroom use. The blue bob is adjustable so that students can easily and quantitatively study the relationship between the length of the pendulum and the period of the bob.

This classic wooden model offers children a basic concept of the laws of physics Made of MDF compressed board to ensure durable constructions

The base of the pendulum model measures 16.5 cm (L) x 8.9 cm (W) x 39.5 cm (H), with a 30 cm long adjustable wooden pendulum

9808- Block And Tackle-Demonstration Model

Wooden Model -Block and Tackle - One pulley can be used to change the direction of the force applied by a cord and several pulleys can be used to make this simple machine. A small force on the cord can be used to lift a large weight. Experimenting with the device shows why: lifting the block by a short distance requires that the cord be pulled a long distance. This classic wooden model offers children a basic concept of the laws of physics.

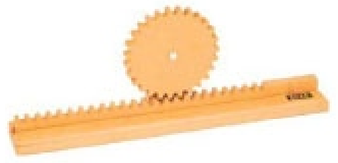
Made of MDF compressed board to ensure durable constructionsSize 16.8 cm by 11 cm base and 32 cm tall.

9809- Fulcrum Balance Scale- Demonstration Model

Wooden Model - Fulcrum Balance Scale - Use this wooden demonstration model to illustrate the concept that the further from the pivot point a force is applied, the greater its effect. This basic principle is behind the operation of the lever and many other basic devices. This model allows students the chance to freely experiment with this idea, by moving masses back and forth and looking for the point of balance. This classic wooden model offers children a basic concept of the laws of physics

Made of MDF compressed board to ensure durable constructions. The base measures 22 cm (W) x 5.5 cm (L) with a height of 13.3 cm. The lever arm is 45cm long. The model is made of particle board and wooden components.

9810- Wooden Gear Rack- Demonstration model



Wooden Simple Machines Model - Gear Rack - When you turn the gear, the rack moves to the side. This gearing system transfers circular motion into linear motion in a straight line.

This principle is behind the operation of many everyday items, such as the "rack and pinion" system that steers a car. This classic wooden model offers children a basic concept of the laws of physics.

Made of MDF compressed board to ensure durable constructions The base measures 40 cm (W) x 6 cm (L) and the model is 15.2 cm tall.

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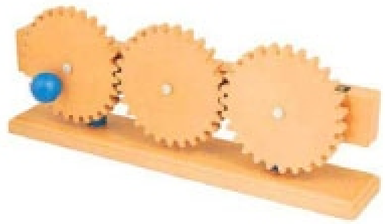
SIMPLE MACHINES WOODEN MODELS

9811- Wooden Gear Train Demonstration Model -

the workings of a system of gears. When you turn Wooden Simple Machines Model - Gear Train - This device illustrates one gear, the meshed teeth cause the other gears to rotat as welel. The second gear turns in the opposite direction as the first, and the third gear turns in the same direction as the first. By meshing together a series of gears, you can transmit force from one place to another, as well as change in the direction of applied motion.



This classic wooden model offers children a basic concept of the laws of physics Made of MDF compressed board to ensure durable construction. The base of the gear train model measures 41.3 cm (W) x 8.9 cm (L) with an height of 16.5 cm.

9812-Wooden Motion Converter - Demonstration Model

This motion converter model easily demonstrates how rotational motion can be converted into linear motion. The durable wooden construction makes this model ideal for classroom use.

Motion converters can be found in internal combustion engines and steam engines. By turning the circular gear, the rotational motion will be converted into linear motion. The first gear drives the motion. This is where the force is applied. It creates repeatable back-and-forth motion and action. The gears are 12 cm in diameter and are mounted on a base. The base measures 38.5 cm (W) x 6.8 cm (L). The model is 14.5 cm tall.

9813-Mini Scissor Lift

Scissor Lift This cool machine is used to lift a platform horizontally in a scissor action. They are commonly used to reach high places like ceilings, providing a steady place to work from.

This model uses the same principles as those in real situations, except you use water instead of hydraulic fluid. The Scissor Lift provides an excellent example of how we use technology to reach new heights. Great for kids to learn about hydraulics, levers and simple machines.The model stands about 18 cm high.

9814-Mini Platform Lifter

Platform Lifters are cool simple machines that are used to lift platforms horizontally. This model uses the same principles as those in real situations, except you use water instead of hydraulic fluid - much cleaner! Fully extended it stands over about 22 cm high. This makes for some interesting fun as you can balance an object as you raise up the platform.

9815 -Mini Cherry Picker

Cherry Picker Widely used by power and telephone companies. This is an excellent model showing levers and hydraulics in action. Using a parallel linkage, the platform stays level all the way up and down The nice thing about the parallel linkage is that as the platform moves up and down, the people don't fall off. Stands about 30 cm high.

9816 -Mini Excavator

Excavator Excavators are big machines that are used to dig holes and move earth, and this model uses the same principles as those used in real situations, except you use water instead of hydraulic fluid. There are many types of excavators and this model uses a first and third class lever to make the arm and shovel move. Stands about 30 cm high.

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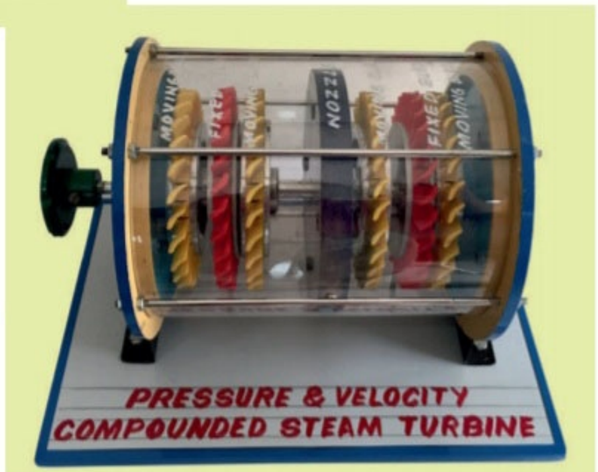
TURBINES

DE-LAVAL TURBINE



PRESSURE & VELOCITY COMPOUNDED STEAM TURBINE

VELOCITY COMPOUNDED STEAM TURBINE

STEAM TURBINE

PRESSURE COMPOUNDED STEAM TURBINE

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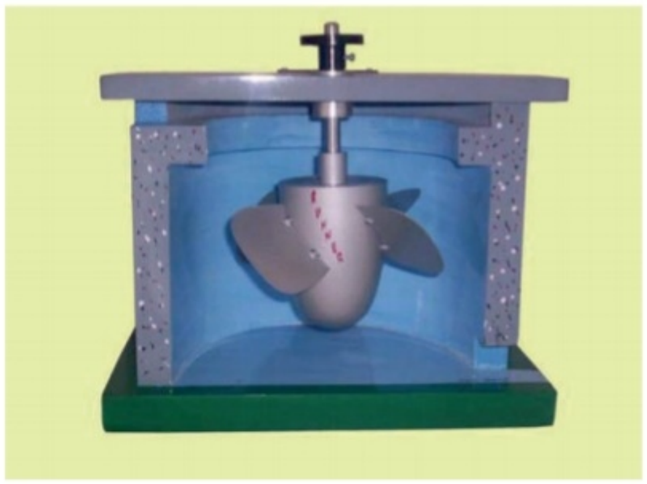
TURBINES



KAPLAN TURBINE

PELTON TURBINE

FRANCIS TURBINE

WIND TURBINE

WIND TURBINE

WIND MILL

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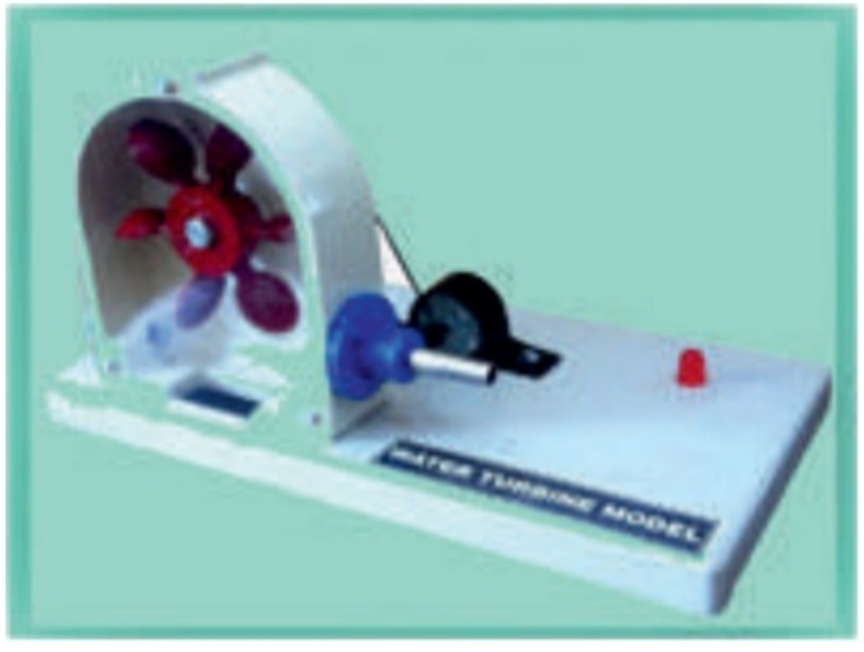
TURBINES

WATER TURBINE WITH NEWTON'S DISC



WATER TURBINE

GAS TURBINE POWER PLANT OPEN CYCLE

GAS TURBINE POWER PLANT COMBINED CYCLE

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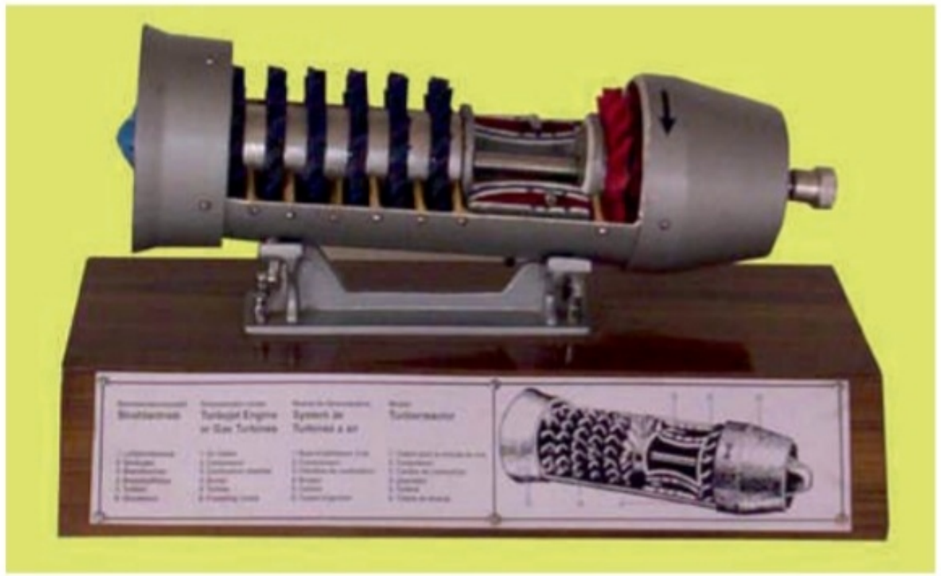
TURBINES

HERO'S STEAM REACTION TURBINE

IMPACT WATER TURBINE



GAS TURBINE /TURBOJET ENGINE

TURBOPROP ENGINE

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TURBINES

REACTION WATER TURBINE

PURE REACTION WATER TURBINE

BULB TURBINE

RAMJET TURBINE ENGINE

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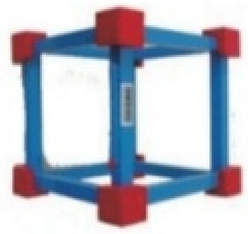
OBJECT DRAWING MODELS

1239Object Drawing Models Dissected: Wooden beautifully painted and specially designed for illustrating and teaching geometrical drawing, approximately size of the model is 20x12 cm.

(a) Rectangular Prism
(b) Rectangular Pyramid
(c) Triangular Prism
(d) Triangular Pyramid
(e) Square Prism
(f) Square Pyramid
(g) Pentagonal Prism
(h) Pentagonal Pyramid
(i) Hexagonal Pyramid
(k) Octagonal Prism
(l) Octagonal Pyramid
(m) Decagonal Prism
(n) Decagonal Pyramid
(o) Cube 20 X 20 cm
(p) Cone
(q) Cone Cut in Four Sections
(r) Sphere 15 cm
(s) Cylinder

1240Object Drawing Models Non-Dissected.



(a) Rectangular Prism
(b) Rectangular Pyramid
(c) Triangular Prism
(d) Triangular Pyramid
(e) Square Prism
(f) Square Pyramid
(g) pentagonal Prism
(H) Pentagonal Pyramid
(i) Hexagonal Prism
(j) Hexagonal Pyramid
(k) Octagonal Prism
(l) Octagonal Pyramid
(m) Decagonal Prism
(n) Decagonal Pyramid
(o) Cube 20 X 20 cm
(p) Skelton Cube 20 X 20 cm
(q) Cone
(r) Sphere 15 cm
(s) Half Sphere
(t) Cylinder
(u) Semi-Cylinder
(v) Quarter-Cylinder
(w) Tetrahedron
(x) Octahedron
(y) Circle
(z) Double Cross
(z1) Single Cross
(z2) Model Plates (Set of 7)

1241 Models of Dissected Solids (Set of 8) The models are of about 20x12 cm size, made of wood and dissected in two parts.

(a) Cube Cut in Two Right Angles
(b) Sphere 10cm Dia Cut in Two Hemispheres
(c) Cylinder Cut in Two Semi-Cylinders
(d) Cone Cut at an Oblique Angle
(e) Pyramid Triangular Cut in Two Parts
(f) Triangular Prism Cut in Two Parts Parallel to Base
(g) Tetrahedron Having Each Side 15cm & Cut in Two Parts Parallel to Base.
(H) Parallel piped Dissected in Two Triangular Prisms.

1242 Cube Dissected: A cube of 15 cm side dissectable in six square pyramids, beautifully painted in two colours.

1243 Geometrical Model Kit Set of 16 Wooden Models in Box:
(a) Cube,(b) Cone,(c) Sphere,(d)Cylinder, (e) Square Prism,(f) Triangular Prism, (g) Square Pyramid,(h) Octahedron,(i) Hexagonal Prism in two parts,(j) Tetrahedron, (k) Sphere,(p) Straight Line.

1244 A Set of Wooden Models on Interpenetration Of Solids:

(a) Two Cylinders of Different Diameters Penetrating each Other at right Angles:
(b) Two Cylinder of Different Diameters With Oblique Penetration.
(c) A Cylinder into a Cone with Oblique Penetration.
(d) A Cone & Cylinder with Penetration at right angle.
(e) Two Cones at right Angle.
(f) Two Square Prism of Different sizes At Right Angles.
(g) Two Square Prisms at Oblique Angles
(h) Sphere & Cone at Centre
(i) Sphere & Cylinder Eccentric
(j) Sphere & Cylinder at Centre

1245 Binomial Cube: $(A+B)^3$ wooden model to explain the formula. Very interesting model.

1246 Cubic Decimeter:: 10 cm cube, wooden, with printed dial, dissectable in 3 parts.

1247. Slide rule

1248 Slide Rule Model: Very instructive wooden model about 70x14 cm is size with four scales. Designed to explain how to multiply. To square and to find square root and to find cube of, with instructions.

1249 Geometrical Instrument Box(Wooden): Wooden, containing compass, divider, protractor, rule set squares and a duster in case. Used by teachers in class rooms for drawing Geometrical figures on black board.

1250Geometrical Instruments Box (Plastic): As above made of plastic in case.

1251 Projection of Straight Line Apparatus: Consists of a straight rod placed in the space formed in between two perpendicular planes representing a straight line standing in between H.P. and V.P. and also hinged to both planes by thin rods. The lines connecting the hinges represent plan and elevation of the straight line. Also the main rod made of two unit can be made to tilt about hinges and to rest on H.P. and V.P. to illustrate the method of finding true length of a line by suitable construction either on H.P. or V.P. Suitable hinges are provided between H.P. or V.P. so that it can be folded and will be found to be quite compact for use in a class room.

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