MECHANICS

0005 BALANCE GENERAL LABORATORY PURPOSE

A laboratory grade specifically designed for use by students. It is made of cast alloy Al- beam fitted with the balancing screws, agate bearings and knife edges, The hangers are provided with double hooks for specific gravity experiments. The pans are made of brass and nickel plated also they can be detached as and when required. Central pilar and plumb lines are enameled painted and mounted on a polished wooden base with leveling screws. Pan dia: 10cms.

A) Cap : 250 mg.; Sensitivity : 2mg
B) Cap : 250 mg.; Sensitivity : 1mg

0010 BALANCE CHEMICAL

Advanced,Beamengravedwithariderscale,forusewith10mg rider, balancing screws, agate bearing and knife edges, Fitted on a wooden board in a polished wooden case with glass windows.

A) Cap : 250gm, Sensitivity 0.2mg.

0015 BALANCE PHYSICAL

Short triangular beam, with rider scale, The beam supports are extended and relieve the agate knife edges when at rest. Pillar is highly finished and stirrups from double hooks suspend re- movable pans. The balance is mounted in a polished wooden case, Complete with rider slide, leveling screws, Cap: 250gm, Sensitivity : 1 mg

0020 BALANCE HYDROSTATIC :

For finding out the specific gravities with two long and one short pan. Fitted on wooden base. Cap : 250gm, sensitivity 5mg.

0025 SPRING BALANCE, FLAT METRIC

Flat form; Zero reading having anodized metal scale in high im-pact plastic body.

CAPINGMS :	100	200	500	1000	2000
SubDiv :	1	2	5	10	20

0030 BALANCE LEVER

A single pan balance with two Ranges:0-250 x 1gm and 0-1000 x 5gm. Frame is made of Die Cast aluminium alloy. Other parts are highly

chrome plated with leveling screw to set zero & a pointer for reading without parallel error with detachable pan having a hook for experiments on specific gravity.

0040 BALANCE BE RANGER

Beam with central knife-edge and pointer, with two pans and heavy base. Capacity in Kgs.

A) 2kgs; B)5kgs; C)10kgs

0042 SINGLE PAN DIAL-O-GRAM BALANCE

Magnetically damped beam movements makes possible easy and rapid weigthings. Capacity : 311gx 10mg, two beams graduated 0-200gm x 100gm and 0-100gm x 10gm and a direct reading dial, graduated to 0-10x0.1gm with a vernier reading 0.01gm suit- able for laboratory uses.

0045 DOUBLE BEAM BALANCE

Two pan balance for accurate and rapid weighing up to 2kg. The balance has two beams with central reading sliding masses. These weigh up to 0-200 gm x 10gm, & 0-10gm x 0.1 gm. Total 210 gm. Supplementary masses extend the range to 2kg with spring loaded zero adjuster and magnetic damping. With stainless steel pans of 150 mm diameter.

0050 TRIPLE BEAM BALANCE

Single pan, to weight Up to 2610gm. The balance has three beams with sliding masses giving weighing capacity of 610 gm, which can be increased, to 2610 gm with three supplementary masses. Stainless steel pan of 150mm dia.. Provided with spring-loaded zero adjuster & magnetic damping for rapid weighing.

Beams: 0 -500 x 100gm; 0 -100 x 10 gm; 0 -10 x 0.1 gm

0055 SPRING BALANCE

Newton calibrated, with adjustable zero reading, strong cast metal body with brass scale, chrome plated suspension ring & load hook.

0060 SPRING BALANCE NEWTON RANGE

Flat form; Zero reading having anodized metal scale in high impact plastic body.

Capin	**N's:**	2.5	5.0	10	2050		100
Sub	**Div:**	.025	.05	.1	.5	.5	1

0065 SPRING BALANCE DUAL RANGE

Flat form, Zero reading having anodized metal scale in high im- pact plastic body. Scales printed one side in gms & other sides in Newton (N) Cap in Gms / N:

A) 102/1 B) 204/2 C) 255/2.5 D)510/5
E) 1020/10 F) 2040/20

0070 SPRING BALANCE TUBULAR DUAL RANGE

Same as above but provision of measurements both in metric and Newton scale.

A) 102gm/1N B) 204gm/2N C) 255gm/5N
D) 510gm/5N E) 1020gm/10N F) 2040gm/20N

0080 SPRING BALANCE TUBULAR METRIC

These balances are tubular and hook suspension type. Made of Brass / Al provided with zero adjuster. **Ranges are:**

	A	B	C	D
Capacity, gm	100	200	500	1000
Subdivision	1	2	5	10

0090 SPRING BALANCE DIAL TYPE

These spring balances are compression overloading type. Very much suitable for retails shops, weighing packed materials in plastic/jutebags.

A) 10Kg/50gm. B) 20Kg/100gm.
C) 50Kg/200gm. D) 100Kg/500gm.

0095 PERSONAL WEIGHING BALANCE

Very useful for measuring the weight of in/outdoor patients, nursing homes and special ward to monitor weight. **Range :** 125Kg / 0.5Kg

0100 LOADING BALANCE ELECTRONIC

Electronic balance, working on 230 V, 50 Hz readout with L.E.D. Display.

A) Capacity : 200gm, Sensitivity : 0.1gm
B) Cap : 2000gm, Sensitivity : 1gm

0115 BALANCE MASS SET PHYSICAL

Brass, Chrome plated in a wooden case with Lid, complete set with plated forceps and light metal fractional weights.

A) 1mg to 50gm; B) 1mg to 100gm; C) 1mg to 200gm.
D) 1gm to 500gm.; E) 1gm to 1000gm.

0120 BALANCE MASS SET, ANALYTICAL

Chrome plated Brass weights, complete set with light alloy fractional weights, 10mg rider and forceps, in a nicely polished wooden case.

A) 1mg to 50gm; B) 1mg to 100gm.; C) 1mg to 200gm.

0135 FRACTIONAL WEIGHT

Made of special metal alloy complete in plastic case. Weight covers full range from 1mg to 500mg.

0140 WEIGHTS WITH HOOKS

These weights are made of brass and provided with hooks on both sides. Standard range : 5, 10, 20, 50, 100 and 200mm.

0145 SLOTTED MASSES, 1000GM SET

Consist of nine slotted masses of Brass with one hanger. Each masses including hanger are of 100 gm each making total of 1000gm weight. Masses are easily removable. Accuracy within 5%.

0150 SLOTTED MASSES SET, STEEL

Same as above but made of steel.

0160 SLOTTED MASSES, 500GM SET

Consist of nine slotted Brass masses of each 50gm with one 50gm hanger. Total weight is 500gm. Masses are easily removable. Accuracy within 5%.

0165 SLOTTED MASSES, 200GM SET

Consist of nine slotted Brass masses of each 20gm with one 20gm hanger. Total weight is 200gm. Masses are easily removable. Accuracy with in 5%.

0175 HEXAGONAL IRON MASSES WITH RING

These masses are made of iron as standard. With integral lifting ring.
Ranges are : 50, 100, 200, 500, 1000, 2000 and 5000 gms.

0180 SCALE WOODEN

Made of seasoned hard Non-wrapping wood, 25mm width, One edge divided in inches and the other in Centimeters and Millimeters.

A) One meter long.
B) Half meter long.

0181 SCALE WOODEN

Made of seasoned hard Non-wrapping wood, 25mm width, both edges divided in Centimeters and Millimeters.

A) One meter long.
B) Half meter long.

0185 PLASTIC SCALE

Made of plastic both edges divided in to cms and mms. Figured at every cms and inches. **Lengths :**

A) 15 cm (6") B) 30 cms (12")

0190 SCALE METAL

Made of steel. Marked in cms and Inches. **Lengths:**

A) 15 cm (6"); B) 30 cms (12");
C) 60 cms (24"); D) 100 cms (36")

0195 MEASURING TAPE

Woven metal wired tape in ABS case, with handle for rewinding. **Length :**

A) 1 meter; B) 2meter;
C) 3 meter; D) 5meter

0205 MEASURING TAPE FIBER

Made of fiber with PVC covering, water proof non-con ducting, fitted with flush winding handle **Lengths :** 5, 7.5, 10, 15, 20, 25, 30 meters.

0210 VERNIER CALLIPERS

Made of steel chrome plated. Double scale, reading 0-12 cm x 0.1 mm and 5 x 0.01 inch, with depth gauge, in plastic pouch.

0215 VERNIER CALLIPERS

Same as above, but with thumb wheel for fine adjustment.

0220 VERNIER CALLIPERS, IME TYPE

Chrome plated steel, heavy type, scale 150x0.1mm & 6x0.01 inch, sliding jaw with thumb movement for fine adjustment, in velvet lined box.

0225 CALLIPER, DEMONSTRATION

Made of wood well polished with aluminum channel. **Length:** 600mm.

0230 MICROMETER SCREW GAUGE

Brass body, with steel screw of 0.5mm pitch, thimble with ratchet stop, range 0 to 25 mm, reading of 0.01 mm, in plastic pouch.

0232 MICROMETER SCREW GAUGE

Nickel plated, made of brass, with ratchet top, oxidized threaded steel rod duly packed in a card board case.

A. 0-15mm x 1/100mm.
B. 0-20mm x 1/100mm.
C. 0-25mm x1/100 mm.

0240 MICROMETER DIAL GAUGE

For precision measurements, **Range :** 0-10mm, least count 0.01mm lug back and knurled adjustable zero setting knob.

0245 SPHEROMETER

Brass dial head ,dia 40 mm head divided in 100 divisions, Vertical Scale 10-0-10mm. Frame with three accurately positioned steel legs. Legs separation approx. 40mm

A) Screw pitch 1mm, reading0.01mm
B) Screw pitch 0.5m m ,reading0.005mm

0250 SPHEROMETER DISC TYPE

Brass dial head, dia 40 mm head divided in 100 divisions, mounted over a disc instead of metal frame, Vertical Scale 10-0-10mm. Three accurately positioned steel legs. Legs separation approx. 40mm

A) Screw pitch 1mm, reading 0.01mm
B) Screw pitch 0.5mm, reading 0.005mm

0265 BOW CALIPER

Suitable for the measurement of diameter of circular or spherical objects

0270 CALIPER SPRING TYPE

Made of steel pivoted with spring and integral knurled knob for the measurement of diameter of spherical objects. **Ranges :**

A) Out side diameter measurements.
B) Inside diameter measurements.

0275 TRI & MITRE SQUARE COMBINED

This tool combines Tri and Mitre Square, depth gauge, height gauge, marking gauge and rules which can be used seprately. If desired, a spirit level is in corporated in the die cast stock, enabel painted available in the die cast stock, enamel painted available in 300mm/12inch length only.

0280 DEPTH CUM PROTRACTOR GAUGE

Used for the measurement of internal depth of container, external height of an article. It has 200mm sliding cross bar and 300 vertical scale. **Overall height:**400mm.

0285 STANDARD WIRE GAUGE ROUND

Suitable for the measurement of wire diameter/ gauge. **Range:**0-36 swg.

0290 HEIGHT MEASURING POST :

For the measurements of height of personnel's. Consist of 200cm height scale calibrated above 80 cm every cm. Sturdy metal base, size 300mm square. A head marker is free to slide up and down for the exact indication of individual height. Length of the head marker is190mm.

0292 CLINOMETER TRIGGER TYPE,

By depressing the trigger allows the sighted protractor scale to rotate freely while sighting, releasing the trigger locks the scale enabling angles to be read off.

0293 CLINOMETER, SIMPLE TYPE

Angle of declination can be found when viewing through the sights. Angle in degrees beneath zenith, of elevation and in inches per yard of slope.

0294 VERNIER MICROSCOPE

For measurement on two axis, with horizontal & vertical scales, heavy stand with leveling screws, and a carriage fitted with micro meter screw for fine adjustment. An other sliding carrier is provided on vertical bar also with micrometer screw for fine adjustment. Microscope tube is fitted with rack & pinion and focusing knob, Stainless steel scales and verniers, horizontal scale 160 mm with vernier reading to 0.01 mm & vertical scale 140 mm with vernier reading to 0.01 mm. Ramsden eye-piece X10 with cross line graticule and 50 mm focus objectives Magnifier is provided to read vernier.

0295 NEWTON RING VERNIER MICROSCOPE

For Newton Ring Apparatus. Can also be used in various positions, heavy cast body, microscope tube mounted on a carriage sliding on top of the base, provided with fine adjustment screw, scale 120 mm long, vernier reading to 0.01 mm fitted with 10 X Rams den eye-piece, glass cross line graticule and 75 mm focus achromatic objective.

0296 STUDENT VERNIER MICROSCOPE

The Microscope can be used both in vertical as well horizontal position. Microscope carrying assembly is mounted on parallel steel rods and passes very smooth movements. The fine movement of microscope is achieved through fine threaded screw. A vernier scale is provided with list count of 0.01mm. Horizontal scale is engraved from 0-100mm. Microscope is provided with10X Rams den Eye piece and a 3X objective to give total magnification of30X.

0298 READING TELESCOPE

This is a general-purpose laboratory reading telescope. It has 10X E.P. and 17cm focal length achromatic objective. It canbe used for focusing an object at a distance of one meter to infinity by integral rack and pinion focusssing knob. The Telescope is mounted on a heavy cost iron triangular base. An adjustable ring is provided to avoid the carriage from falling. The telescope can be placed in vertical as well horizontal position.

0300 STOP CLOCK

It is used for the measurements of interval between any two events. It has two time indicating pointers to indicate time elapsed in minutes and seconds. It has inbuilt lever system where one lever starts/stops with the working of clock while other lever brings back the pointer to zero.

Available in :

A) Metal Body; B) Plastic Body.

0302 STOP WATCH

0-30 Minutes, with manual stop reset. Accuracy 1/5 or 1/10 sec.

0305 STOP WATCH DIGITAL

Maximum range upto 59min., digital display of time in min. and seconds.
Resolution : 0.01Sec. Continuous timings can also be recorded.

0310 INTERVAL TIMER

In a metal /plastic body, large dial indicator, max time period setting up 60 minutes. Set time completion indicator by long ring bell. Required period is set manually.

0340 COMPASS

Made of nickel-plated metal with steel points and pencil holder with knurled locking ring. Overall length 100mm or 125mm.

0345 COMPASS & DIVIDER, BLACK BOARD

It is suitable for the classroom explanation of geometric construction. Made of non-wrapping hardwood in lacquer finished with wing nut locking pivot. At one leg interchangeable rubber cup and other side a of collect type, closed by sliding. **Size :**

A) 30cm; B) 35cm; C) 46 cm

0350 DRAWING BOARD

Made of non wrapping wooden board thickness cm. **Dimensions:**

A) 30x45cm B) 50x57.5cm C) 75x105 cm

0355 DIVIDER

Made of metal with nickel finish, overall length 100 or 125mm

0360 PROTRACTOR FULL CIRCLE

Made of transparent Plastic, beveled edge with two scales, **Range:**

A) 100mm B) 150mm

0370 PROTRACTOR HALF CIRCLE

Made of transparent Plastic, beveled edge divided 180x1 degree or 180x0.5 degree in both directions

0380 SETSQUARE

45 degree or 60 degree, export quality, made of plastic, **Sizes :**

A) 75x100mm B) 100x150mm
C) 150x200mm D) 200x250mm

0395 MINID RAFTER

Made of unbreakable plastic, one protractor head and transparent scales, lockable supplied in plastic cover.

0400 DRAWING INSTRUMENT SET, ENGINEERING

Consists of 17 Parts. Supplied in a box.

0410 BLACK BOARD INSTRUMENTS SET, WOODEN

This set is designed for classroom demonstration of geometrical drawings. Consists of one pair of triangle graduated. Divider, compass, straight rule and duster. Complete set packed in a nicely polished wooden box.

0435 CRYSTAL MODEL SET

These Crystal Model Sets contain different color jacks (Red, Black & White) & Connectors (long & Short) in a prescribed number to be joined together in an illustrated way to form structures like Diamond, Graphic & Sodium Chloride. Made from Polyethylene material..

0440 GEOMETRICAL MODELS & FIGURE

Set of solid geometric shapes, made of hard wood. Plane shapes included triangles, figures with four, five, six, seven, eight, nine and ten sides, circle, semi circle and quadrant. The solid shapes include cylinder, sphere, cube, tetrahedron, pyramid, cone, prism. Cube size 30 mm, cylinder height. Made of hard wood, set of 20, in box. **Size in mm :**

A) 40 x25 B) 50 x30

0445 ATOMIC MODEL SET

These sets consist of moulded balls of different colors and sizes along with connecting lugs of different sizes. These sets are very helpful in modeling different organic & inorganic compound.

A) Set of 60 balls B) Set of 120 balls C) Set of 360 balls

0500 PULLEYS, 38MM

These pulley fitted in metal frame. **Range available are :**

A) Made from Aluminium. B) Made from Brass

1) Single Pulley with single hook.
2) Single Pulley with double hooks.
3) Double Pulley in series with double hooks.
4) Double pulleys in parallel with double hooks.
5) Triple Pulleys in series with double hooks.
6) Triple Pulleys in Parallel with double hooks.

0510 PULLEYS, 50MM

These pulley fitted in metal frame. Pulleys diameter 50mm.

Ranges available are :

A) MADE FROM ALUMINIUM

1) Single Pulley with single hook,
2) Single Pulley with double hooks,
3) Double Pulley in series with two hooks,
4) Double pulleys in parallel with two hooks,
5) Triple Pulleys in series with two hooks,

B) MADE FROM BRASS

1) Single Pulley with single hook,
2) Single Pulley with double hooks,
3) Double Pulley in series with two hooks,
4) Double pulleys in parallel with two hooks,
5) Triple Pulleys in series with two hooks,

0520 PULLEYS, PLASTIC, 50MM (PLASTIC)

These pulleys are fitted in metal frame. **Ranges available are :**

A) Single Pulley with single hook
B) Single Pulley with two hooks
C) Double Pulley in series with two hooks
D) Double pulleys in parallel with two hooks
E) Triple Pulleys in series with two hooks
F) Triple Pulleys in Parallel with two hooks

0525 PULLEYS, METAL, QUADRUPLE

Four Pulleys made of Al, 50mm diameter, Mounted in parallel in a 4 mm diameter metal rod to move freely without bracket and hooks.

0530 PULLEYS, METAL, QUADRUPLE WITH HOOKS

Four Pulleys made of Aluminium, 50 mm diameter mounted in parallel in a bracket to move freely and provided with two hooks.

0535 DIFFERENTIAL PULLEYS

Made of Aluminium in one piece. Integrated three pulleys of dia 62, 50 and 38mm with bracket and single hook.

0536 DIFFERENTIAL PULLEYS

Made of Aluminium in one piece. Integrated three pulleys of dia 62, 50 and 38mm in metal frame with rod.

0540 PULLEY WALL/BOARD MOUNTING

Pulley made of Aluminium mounted in metal frame with holes, suitable for wall mountings. **Pulley diameter :** 50mm.

0545 PULLEY BENCH/TABLE MOUNTING

Made of Aluminium, 50mm dia pulley, mounted in a frame to made it suitable for table / bench mountings.

0550 ROD MOUNTING PULLEY

Made of Aluminum. 50mm dia pulley, mounted in a metal square bar at one side and other side provided with hole of 10 mm dia so as to make it suitable for rod mounting.

0555 FORCE BOARD

This is a wall mountable force board make easy to demonstrate principles of parallelogram and polygon of forces. It consists of a robust drawing board 750x 600mm fitted with metal sockets and bracket for easy mounting on the wall. Design is such that sufficient space is available round edges of board for attachment of pulleys and slotted weight. The instrument is supplied complete with cords pulleys and masses.

0560 UNIVERSAL FORCE TABLE

This consists of a 40cm diameter heavy Aluminum disc mounted on a heavy cost iron tripod base with leveling screws. The discis accurately machined and a circular scale 0-360 degree is engraved on it. The disc can be rotated as well as fixed both in horizontal and vertical position. Provided with four frictionless adjustable pulley that are pivoted with hardened steel with cards with central ring are attached with slotted weight. Pulleys clamps have an index marked for identification of

direction of forces. Supplied with four mass hangers and 12 masses : 2x10g; 2x20g; 4x 50g; 4x100g.

0562 MAXWELL APPARATUS

On stand, having metal wheel of dia 90mm with side latching for peripheral mass. Concentration via wheel center passing through a shaft of 9mm dia and 14cm length. Stand U shaped 65cm in height and vertical rods of 9mm dia, metal horizontally fitted on base.

0565 LEVER KIT

This is to demonstrate moment, and principal of lever action. This kit consists of complete sets for a minimum of 5 students. Consists of 5 plywood beams size: 600x45x3mm, Beams are graduated at interval of 38 mm, 4 U supports with holes at center at upper side to form ful curn., 20 fulcrum pins and 40 metal penny weights of size 25x25mm.

0570 LEVER SIMPLE FORM

This is to demonstrate the principle of lever and beam balance. It consists of wooden rule one meter long divided in cms at one end and holed at interval of 2 cms.

0585 WHEEL AND AXLE COMPOUND, METAL

The compound wheel and axle is made of light aluminum alloy, wheel diameters 12cm and 4cm, Axle diameter 12mm. A steel rod passes through the center and has cone bearing for free and smooth rotation of wheel. A Iron bracket with steel adjustable pivots to reduce the friction over the axle. The complete com- pound wheel and axle is mounted on a wooden base. Supplied without masses.

0595 INERTIA BALANCE KIT

This kit is suitable for the classroom demonstration of masses and weight and their relation. The kit consists of two metal trays 130x50mm separated 200mm apart on a steel strip attached two the sides. One tray has hole to take three equal cylindrical masses (100x25mm). Other tray acts as anchor and can be clamped to the bench both horizontally as well vertically. Three support pin sare provided to fitra dially. Also supplie done G-Clamp for fixing of tray.

0600 WHEEL, FLY

About 20 cms in diameter by 44 mm wide turned and carefully balanced, mounted on a horizontal shaft, held in ball bearings. The wheel is

marked and pointer is fixed to the bracket. The bracket has four holes and can be fixed to the wall also.

0605 WHEEL AND AXLE, WOOD

Consisting of a wooden double wheel with flat-bottomed grooves, 15 and 5cm diameter respectively. The Wheel is pivoted on a spindle 1cm diameter which projects for a normal retort stand. The apparatus is supplied complete with two hooks and 6 meters of whipcord, but without masses.

0610 WHEEL AND AXLE, WOOD, WALL MOUNT

This apparatus is basically similar to Wheel And Axle, Simple Form comprising a wooden double wheel with diameters of 15 and 5cm. The spindle is, however, carried by a pair of cast aluminium brackets which are mounted on a wooden base board 20 x 15cm equipped with a pair of hanging plates. When hung on wall the maximum projection of the completer apparatus is 20cm. Supplied complete with two hooks and 6 meters of whipcord, but without masses.

0615 FALLING BODIES APPARATUS

L-section launcher with holes for locating two 19mm diameter steel balls which actas projectiles. Launcher is released by push and projects one ball forward while allowing the other to fall freely. Launching mechanism mounted on wooden block, 180 x 60 x 30 mm, which may be clamped by bench and has a convenient storage pocket for the balls, complete with two steel balls.

0618 MINIATURE HOIST

Used for the lifting of heavy loads and demonstrating the use of pulley systems. It consists of two pulleys blocks, top one with four pulleys and bottom block with three pulleys. Made of steel including the pulleys, axle, pulleys mounting plates etc. Provided with a safety to hold the weight at any height without slipping. Supplied with 20 meter nylon rope.

Safe Load Capacity :

A) 150Kg. B) 300Kg.

0625 HOOK'S LAW APPARATUS

Consists of a mirror scale 12cm long and supports spring, a weight holder and slotted weights of 250 grams capacity.

0630 ELASTIC MATERIAL KIT

It comprises of 2 latex foam blocks, 125 x 50 x 50 mm, 4 elastic cords with eyelets; 4 soft rubber erasers, one 900mm valve rubber tubing; 40 gm reels of bare copper wire gauge 0.28 mm and 0.45 mm diameter; 2 wide steel springs of 4 ½ turns, 50mm diameter and 25 expandable steel springs for testing beyond the elastic limit, with ends bent to form hooks.

0635 YOUNG'S MODULUS APPARATUS

Vernier Type. For the experimental determination relationship between a load supplied to a wire and the resulting extension. The apparatus consists of an engraved brass scale 10 cm long and vernier reading 0.1mm complete with tension weight but without load masses.

0638 YOUNGS MODULUS OF WIRES APPARATUS

This apparatus comprises scale plate carrying a 0-30mm scale and a moveable vernier reading to 0.1mm. Both have bars with clamping screws for the wires under investigation and have hooks for tensioning weight and loading masses. The bar of the scale is permanently fixed, the vernier is attached to the bar with a thumb screw to allow zero adjustment. Supplied complete with a ceiling clamp with a pair of large wooden screws for suspending wires to door frame of overhead beam. Also a tension mass approx 1.25kg. for comparison, wire is also supplied along with, But supplied without load masses.

0640 COMPOUND PENDULUM, REVERSIBLE

This is a reversible type compound pendulum. It consists of a Steel bar length 10 cms. approx. Drilled at 5 cm intervals, with removable knife-edges, provided with metal bracket that makes it suitable for wall mounting.

0645 COMPOUND PENDULUM, KATER, REVERSIBLE

Kater pendulum is made of nickel plated brass rod length120cm, diameter 10mm, with one pair each of small and large adjustable brass, and wooden masses, two steel knife edges set in adjustable metal holders and metal bracket support for wall mounting.

0650 PENDULUM BOBS

Made of various metals in Spherical shape very much suitable for study of Vibrations and time period, provided with hooks

		Diameters	in	mm
A)	Brass	12	18	25
B)	Aluminum	12	18	25

C)	Copper	12	18	25
D)	Iron	12	18	25

0655 G BY FREE

This apparatus is used to determine G by measuring the time of fall of steel ball through a pre-determined distance. This time taken being less than one second, a centi second/mill second time capable of measuring time in fraction of seconds has to be used. Comprises two unit seach of which Is mounted on a plastic which can be clamped on a 12mm diameter retort rod. Connections are taken out to 4 mm sockets. The sloenoid unit has amu metal core which facilitates propmt release of the sphere on a de-energising. The gate switch comprises a hinged steel plate holed against an adjustable contact by means of a small permanent magnet, the plate falls away promptly at the time of fallilng steelball. The apparatus is supplied with a solenoid unit, gate switch, steel bar 18mm dia and a stand.

0660 INERTIA APPARATUS

Simple form, to demonstrate the inertia of a body at rest. A sheet of cardboard may be removed from beneath a steel ball, without displacing the ball from its original position.

0700 MATERIAL KIT, SOLIDS

This kit is used to familiaries the students with appearance, feel, Texture, hardness and density of a range of common substance. It consists of two each of the seventeen blocks, as detailed below:

MATERIAL	DIMENSION	MATERIALS	DIMENSIONS
Softwood	50x40x30	Aluminium	20x20x100
Hardwood	50x40x30	Softwood	20x20x100
Paraffin	50x40x30	Marble	20x20x100
Aluminium	50x40x30	Lead	50x40x30
Iron	50x40x30	Aluminium	50x40x30
Foamed	50x40x30	Hardwood	50x40x30
Perepex	20x20x100	Brass	20x20x50
Glass	20x20x100	Iron	40x40x20
Black Marble	20x20x100		

(All Dimensions are in mm)

0705 SET OF CUBES, METAL, ASSORTED

10mm, set of six of different metals brass, lead, iron, copper aluminium and zinc.

0710 SET OF CUBES, METAL, ASSORTED

Sameasabove,butsetofseven,abovesixplusonecube10mm, oftin.

0715 SET OF CUBES, METAL, ASSORTED

Same as above, but 20mm size set of six of different metals brass, lead iron, copper, aluminium and zinc.

0720 SET OF CUBES, METAL, ASSORTED

Same as above, but set of seven plus one 20mm cube of tin.

0725 DISPLACEMENT VESSEL

Metal, large size of class demonstration 180 x 100 mm height x diameter, with spout.

0730 DISPLACEMENT VESSEL/CONTAINER

Made of clear perspex with leak proof joints for specific gravity experiments. size 50x50x100 mm (Approx).

0735 BUCKET AND CYLINDER

For demonstrating ARCHIMEDES principle, there is a brass bucket and a brass cylinder. The bucket has a suspension hook at the bottom. The cylinder has suspension hook at one end. Size of cylinder 50x16mm diameter. Overall length of including hook as suspension loop 160mm (Approx).

0745 SPRINGS STEEL

A) Approx. 200mm long, 6mm dia, stretching approx.120 mm with 250gm, pack of 3 pcs.

B) Approx. 330mm long, 6mm dia, streching approx. 150mm with 250gm, pack of 3 pcs.

C) Approx. 330mm long, 6mm dia, streching approx. 180mm with 250gm, pack of 3 pcs.

0785 HARDNESS OF METAL APPARATUS

This is to determine the hardness of matal sample by in dention method. A simple apparatus comprising an aluminum tube 750mm long,

12.5mm outside diameter. A standard center punchis provided which is dropped down the tube the lower end of which reset sona sample under test. The tube ensures that punchis dropped from a constant height and indentation to be measured with a hand microscope of approx. 30 x magnification with a builting raticule.

0790 METAL TWISTING APPARATUS

This apparatus is used to compare the degree of brittleness of wires of different materials. Two pin chunks are mounted on stout metal bracket on a baseboard 240x100mm. Brackets are positioned 100mm apart. One of the brackets is fixed and other bracket rotatable by handle. The fixed Chunkis drilled through pass the wire under test for pre - tensioning purposes. The wire is slowly twisted until it breaks and the number of turns required to break samples of different metals are noted and compared. Supplied complete with a set off our wire samples, supplied without masses

0795 SET OF FOUR DIFFERENT WIRES

One each of Brass, Copper, Iron and Stainless Steel, 2 meters long (Approx.)

0800 MASS FOR PRE-TENSIONING WIRE

Set of masses of Nickel or chrome plated iron, 9x100 masses and hanger of 100gms.

0805 METAL BENDING APPARATUS

This apparatus is used to compare the ductilties of strips of vari-ous metals. Relative ductility is calculated as the total number of times the individual strips need to be sent through 180 degree for the metal to fracture. The metal strip under test is firmly held at one end in a fixed clamp and other end is clamped in an adjustable steel clamp plate located across the U-shaped steel handle. The handle is manually moved through an arc of approximately 180 degree thus bending the strip. Whole assembly is mounted on a woodbase 350x150x12mm (Approx) on rubber feet with a rubber feet with a rubber stop at each end to give standard angle of rotation. Supplied complete with a set of six strips of different metals. **Spares :** Set of Six Strips.
One each of brass, copper, aluminium, lead, mild steel and zinc. Dim. approx. 150x12.5x0.7mm.

0810 MAXWELLS NEEDLE

For determining the modulus of rigidity of wires or moment of inertia of rods. Hollow metal cylinder 200mm long with pointer and chunk to

accommodates wires up to 20SWG with two each hollow and solid cylinders 50mm long. Tripod stand with rod 1.2 meter long, base with levelling screws; clamp with arm 180mm long with chunk. Complete with three wires 1.4 meter long. One brass wire 26 SWG and two of steel 26 and 28 SWG.

0815 TORSION APPARATUS

Series horizontal pattern. Two cast iron feet each with three through holes grub securing screws separated by two rods approx 700mm long, wheel 165mm diameter over groove moving in ball bearings mounted on front foot, with spindle carrying split collect chunk for holding one end of test rod, other end supported with clamping block through rear foot with two aluminium scales graduated 30-0-30 degrees mounted on pillar supports, two pointers with clamps for attaching to specimen one each brass and steel rods 5mm diameter, cord and hook for carrying masses and two spanners for clamping block nuts w/o masses.

0820 PASCAL'S LAW APPARATUS

To show that the pressure of liquids depend upon their height and the surface of bottom of the columns and not on the capacities of the vessels with plastic/glass vessels of four different shapes mounted on leak proof metallic collars, all parts of brass and chrome plated. Supplied with slotted mass 100gm with hook.

0850 INCLINED PLANE SIMPLE

Hardwood, comprising out away base to allow cord to hang freely and hinged plane (approx.) 600x75x18mm with pulley and steeped lower face accommodates wood back for selling different angles complete with cylindrical metal, roller and pan.

0855 INCLINED PLANE

On stable iron bases 45x15cms, 25mm thick, hinged to woode plane comprising two hardwood strips 48x6cm, 20mm apart rigidly joined at ends by metal crosspieces. A well balanced aluminium pulley 50mm diameter on 150mm long stem adjustable at any angle in a clamp on a strip with 50mm extension, a metal scale fixed to plane edge and a combined angular and linear scale screwed to base with clamp which serves as an index.

0880 INCLINED PLANE AND FRICTION BOARD

A plane Board 600 x 75mm hinged to the base at one end provided with pulley for the force chord at the other end. The inclination of the plane is

varied by a movable block. The friction slider 200 x 85mm is made reverasible and has one side cut away for half of its area. Supplied complete with roller 65x25mm but without masses or scale pan.

0885 SCALE PAN

Aluminium, Circular 75mm diameter complete with suspension cords and hook.

0886 SCALE PANS

Light alloy, 150mm. dia. with chains and rings.

0890 CORDS

Cords approx. 0.75mm diameter for the light rods.

0895 MASSES

One 10gm wire hanger plus 9x10gm brass weights, total 100gm.

0900 FRICTION BOARD APPARATUS

It Comprises a wooden friction board 480x75x18mm, a wooden slider with hook 140x70x20mm, a plain aluminium slider with rub- ber backing, an additional long aluminium slider is provide which fits over the friction board to provide on alternative surface type.

0905 LEVER KIT

Supplied as a kit for eight pupils and consists of five plywood beams of 600 x 44 x 3 mm graduated every 38mm and with a groove across it scentre to locate the fulcrum point. Also included are four fulcrums 32x32x64mm and 40 metal blanks of 25mm square. The masses of the blanks are matched to +/-1%.

0906 LEVER KIT SIMPLE FORM

Comprises a 1meter rule divided in centimetres and millime-tres. Drilled every 2cm, without riders.

ACCESSORIES : RIDERS : Set of three : One acts as a fulcrum and the other two as weight hanggers. With pins.

0910 DYNAMIC TROLLEY WOODEN

A pair of these trolleys are used for investigation on momen- tum, velocity, acceleration etc. Both the trolley are identic a land each consists of two rectangular wooden blocks 300x86mm, moving on three low friction plastic wheel. The trolley is fitted with spring loaded impulse rod. Rod has three positions to provide different impulses which is triggered by are lease pin. In front of each trolley two holes are drilled and fitted with corks. With removable metal pins a teachend to enable trolley to be stacked or to provide anchoring points for all accelerating cords.

0915 TROLLEYS RUN WAY

Board 2.4x0.3 meter and thickness 18mm of war presistant wood reinforced with metal angle side rails. Complete with six wood feets two fixed and two at each and adjustable in height. Thus the feet can be used for levelling or inclining the runway.

0920 TROLLEYS RUN WAY SHORT TYPE

Similar to runway Trolley Runway but only 1.5meter long convenient to store where storage space is limited.

0940 TICKER TAPE TIMER

This timer is use ful for students to develop a sound basis under- standing of constant speed, acceleration and de-acceleration. It operates on 12V A.C. and is therefor quite safe for work by students in the dynamic lab. This timer has an electromagnet with spring loade damature which vibrates above support-table over a carbon disc. Paper tape down through guides on table is struck by adottting screw carried on the armature. Pegon support table is move able to allow maximum use of carbon peper discs. Supplied complete with approx. 90meter roll of tape,apackof100carbonpaperdiscs.The timer produces dots at 1/15 or 1/16s intervals depending on mains frequency. It is fitted with a silicon rectifier and pair of 4mm sockets at 19 m spacing and it can be used via a mains transformer.

0945 TICKER TAPE TIMER

It operates on D.C. It produces dots on 1/50s intervals only and it is fitted with apair of 4mm sockets at 19mm spacing, colour coded red and black

0985 SPECIFIC GRAVITY BOTTLE

Made from glass with flat bottom and perforated stopper unadjusted.

A) Capacity 25ml; B) Capacity 50ml

0990 SPOUNTING JAR

Metal Cylinder 400 x 65mm diameter having three or ifices of the same size but at different heights down one side. It is provided with a foot diameter to ensure stability.

1000 COMMUNICATING VESSELS

A) Glass as pirat or 250ml capacity with tube having four branches of unequal cross sections.

B) This is an alternative version of above. The apparatus comprises of four different shapes limbs projecting vertically from a common horizontal tube made of glass on wooden/plas- tic round stand.

1010 LIFT PUMP MOUNTED

A working model of a clear glass to show and explain the principle involved. It has a cylinder of 25mm dia and overall lenghts of 350mm. Both cylinder and pision are provided with non-return float valves and outlet is by name of a side tube. Glass Part mounted on wooden Stand with plastic trough.

1015 LIFT PUMPUN MOUNTED

Same as above but without stand and plastic trough.

1020 FORCE PUMP MOUNTED

A working model to demonstrate the principles involved in the action of a force-pump Cylinder is 25x400mm diax overall height. It is provided with a non-return float valve a tit slower end. Lower part of the cylinder has an outlet side tube communicating with the lower end of another cylinder also equipped with non-return valve. Outlet tube from these condary cylinder is drawn out into a jet to demonstrate ability of force pump to eject water at high pressure. Mounted on wooden stand with plastic trough.

1025 FORCE PUMPUN MOUNTED

Same as above but without stand and plastic trough.

1030 FLUID PRESSURE APPARATUS

To determine the transmissablity of fluid pressure. The apparatus comprises two metal cylinders 15mm and 30mm dia respectively fitted with piston and connected by a tube. The pistons are provided with rod sterminating in plate forms for loading with masses required. The complete apparatus is fitted on a wooden base.

1045 CARTE SANDIVER

It is demonstrate the transmission of pressure by a liquid. Approx. 35mm long (hollow figure made of glass with one fire opening to float upright in water filled glass cylinder). When the diveris placed in a glass jar (300x50mm, Htxdia) full of water it floats. When a stopper or membrane is fitted to top chaining the pressure within the jar, the diver will sinkorrisede pending on the pressure applied.

1050 WEIGHTED GLASS BULB

A glass bulb 40mm dia approx., lead shot content is adjusted so that bulb floats in cold water and sinks in hot water.

1055 U-TUBE ON STAND

Comprising a glass U tube 45cm long mounted on wooden stand with scales fixed to each side of the stand. U Tube Glass suitable for CAT-No. P-1985, 45 cm long.

1060 HARES APPARATUS

This appratus is used to compare the densities of liquids. It comprises a three limited glass tube with 250 mm of rubber tubing on the centre limb closed by mohr clip. Mounted on wooden stand with a 45cm long scale on both limbs with zero at bottom. The densities of liquid are compared by measuring heights of the two coloumns of the liquid by applying suction to short centre limb. Hares Apparatus glass tube are limited suitable for CAT-No.45 cm long.

1061 BOYLE'S LAW APPARATUS

Mounted on nicely polished wooden stand with heavy metal base, painted in grey colour, having levelling screws. Overall height 120 cm. Box wood scale 100cm, graduated in mm.,reading in both directions. The mercury reservoir heldin clamp, sliding on metal rod chromium plated. Complete with rubber tubing and set of two tubes open and closed. Made from neutral glass, without mercury.

1062 CHARLE'S LAW APPARATUS (Joll's Apparatus)

Mounted on niely polished wooden stand with heavy metal base finished in grey colour, having levelling screws. Overall height 120cm. Boxwood scale 100cm, graduated in mm.,reading in both directions. The mercury reservoir held in clamp slides on metal rod chromium plated. A jolly's air bulb made from corning glass is supplied mounted

on a wooden frame which can be slotted on the side. Complete with pressure rubber tubing and set of two hard glass tubes, without mercury.

1063 JOLLY'S AIR BULB.

Made from corning glass.

1064 BOYLE'S LAW GLASS TUBES

Set of two, open and closed made from neutral glass

1065 BOYLE'S LAW GLASS TUBES

Graduated, set of two open and closed made from corning glass.

1066 UNIVERSAL HYDROMETERS

For Sp. Gr. 0.700 to 2.000, all glass, with parallel graduated stem

1070 NICHOLOS ON HYDROMETERS

For liquid and solid density experiments, comprises hollow metal floatation body, upper loading pan and weighted lower loading pan, all black painted.

1075 DENSITY HYDROMETER

Used to measure the Specific Gravity range 0.650-0.700, calibration 0.001, max length 270mm accuracy : +-0.0002.

Other ranges available are :

A)	0.700-0.750	B)0.750-0.800
C)	0.800-0.850	D) 0.850-0.900

1080 BEAUME GLASS HYDROMETERS

Made of Glass, Max length 300mm, Accuracy +-0.1degree, used for the specific gravity measurements. Range available are :

	Range	**Calibration in Degree**
A)	0-10	0.1
B)	10-20	0.1
C)	20-30	0.1
D)	30-40	0.1
E)	40-50	0.1
F)	50-60	0.1
G)	60-70	0.1
H)	0-20	0.2

1085 BATTERY HYDROMETER

To measure the charge of lead-acid storage batteries by meas-uring specific gravity of the electrolyte. Hydrometer float calibrated for specific gravity. The float is contained in a body acid resistant plastic fitted with a rubber nozzie and a flexible rubber bulb.

1095 BERNOULI TUBE

To demostrate that when a liquid flows through a tube having a constriction, the speed of flow is increased and pressure de- creased in the constricted section. A horizontal tube 500mm long is constricted near its center and short side tubes are provided in each section for attaching glass manometer tubes 270 x 8 mm bore. If a constant head device is used to send a flow of water through the horizontal tube the variation of pressure in various sections may be determined.

1105 SOAP FILM DEMONSTRATOR

For demonstrating beautiful examples of minimal surface soap films, consists of nine frames as follows: Triangle, square, single-ring, two-ring, cube, wire and ring, wire and semi-ring, pyramid and twisted trape zoid. Supplied with one bottle soap film solution.

1107 FLUID PRESSURE APPARATUS

The apparatus comprises two brass cylinders fitted with pistons and connected by brass tube 19 &38 mm diameter. The pistons are provided with rods terminating in a circular platform The complete apparatus is mounted on a wooden base. It is used for demonstrating the transmissibilty of fluid pressure.

1110 LIQUID LEVAL APPARATUS

To show that the level of liquid in communicating vessels is constantir respective of the size of the vessels. Comprising four glass tubs of different shapes and cross sectional area projecting vertically from a common horizontal tube on a wooden base.

1111 LIQUID LEVEL APPARATUS

same as above but large size supplied on a plastic stand.

1115 CAPILLARY TUBES APPARATUS

For demonstrating the relationship between capillary pressure and the

bore diameter of the capillary tube. The apparatus comprises a metal frame, the base of which takes the form of a trough, size 115 x 40 x 100mm. The upper part of the frame supports six capillary tubes, each of a different bore, their lower ends resting in the bottom trough. The trough is filled with water and the difference in heights of the resulting columns of water in the tubes is readily apparent. Overall height of frame 90mm, length of capillary tubes 150mm.

1125 OIL FILM KIT

The kit consists of two special trays, 16 wire loops mounted on cards, 8 special holders with clips, 4 metal strips, 8 levelling wedges, 8 beakers (10ml), 8 graticules 1/2mm, two spongs, one brush, one Can paint, Parafine wax, olive oil, lycopodium powder, camphor, lamp black etc.

1130 CONVECTION APPARATUS

This apparatus is used to demonstrate the movements in liquid currents caused by variation in temperature. It is made of 12mm borosilicate glass tube in rectangular shape, length 20 cm, width 12.5 cm with opening at top for the pouring of water. Under dem-onstration, color dye or cork dust is placed in water and any lower corner of the apparatus is heated, as a result; convection current is set in the water and movement of dye or dust makes current easily seen.

1135 BUOYANCY APPARATUS

It comprises of a 1000ml graduated glass jar with lip and one 50mm wooden ball. In use, ball is placed in side the jar filled with water and the weight of the displaced water is compared with the weight of the ball and Archimedes's principal of floating bodies is easily demonstrated.

1140 U-TUBE MANOMETER

It is made of 8mm dia opening glass tube of limbs height 330mm and fitted on a painted metal frame. The frame is fitted on a wooden base. Tube height calibrated from-100mm to+ 100mm, with center at zero. Supllied, with or without stop cock.

1145 U-TUBE MANOMETER STOP COCK

Same as above but mounted on a suitable plate for wall mounting. The Tube has built in stop cock. Scale is calibrated with 80080 mm with 2 mm division.

1150 U-TUBE MANOMETER, LARGE

Made of 8mm bore glass tube and mounted on a plate suitable for wall hanging. **Two sizes are available :**

A) Scale 250-0-250mm.
B) Scale 500-0-500mm.

1155 BAROMETER ANEROID DEMONSTRATION

This is demonstration type fully enclosed in a transparent syn- thetic case. Dial 100mm coated, and reads pressure in inches and mili bars both **Ranges :** 28-32 inches i.e. 950-1040 milibars.

1160 FORTIN'S BAROMETER

This murcury barometer is made in 7 mm bore glass tube, mounted on a nicely polished wooden base with provision for wall hanging. Pressure range : 675 to 810mm of Hg, (least count 0.05mm of Hg/0.002 inch Hg) or 26 to 32 inch Hg with adjust-ment knob. Suitable for use on higher altitude. Supplied complete with-10 to 50 degree centigrade thermometer.

1170 BAROMETER TUBE

Barometer tubes are made in 3-4mm bore corning glass. One end open. total length 90 cms. Also available in neutral Glass.

1175 HYGROMETER, WET AND DRY

It consists of two thermometer, Range-10 to 550C, mounted on a metal base enamelled painted in white color. One of the thermometer bulb is covered with muslin and kept in moist by connecting to a water reservoir. Also available in wooden base mounting.

1180 WHRLING HYGROMETER

It is used in laboratories for the measurement of humidity. It is ventilated type in design for better sensitivity. It consists of two thermometer range -5 to +500 C*0.5 0 C, mounted horizontally in a wooden case. The design is such that readings are easily seen. One of the thermometer is dipped in the water reservoir mouted in the base frame.

1185 HAIR HYGROMETER

This is made of metal in circular shape with dial made of anodised Aluminium, Range : 0-100*1% RH

1190 HYGRO METER WET AND DRY BULB, MASON'S

Comprising two-10 to +55deg. C thermometers fitted on a metal scale. One thermometr bulb is covered with muslin which is kept moist by being connected to a reservoir of water. Mounted in a white enamelled case with hinged cover.

1195 SAME AS ABOVE BUT MOUNTED ON A WOODEN BASE.

1200 THERMOMETERS MAXIMUM AND MINIMUM

These thermometer are made of U-shape glass tube with sprit and murcury filled for temperature indication. The base over which thermometer is mounted is made of metal and white enamelled paint finished and scale plate is made of Al with white an odised for good contrast of reading. Range:- 20 to 550C, Calibrated 10 C in six double scales. Also Available on wooden base with scale screen printed in black on white background. x 1o C, packed in a metal / wooden case with pads 12 charts to record measurements.

1205 RAIN GAUGE, BRITISH PATTERN

It consists of one metal funnel Dia 125mm, Height 250mm; One receiving cylinder Dia 7 cm, Height 20 cm; One outer cylinder Dia 12.5 cm, Height 30Cm and one rain measuring cylinder graduated 0 to 10mm, readability to 0.1mm

1210 RAIN GAUGE, OTHERS

A) Same as above but made of Galvanised Iron sheet and graduated plastic jar.

B) Same as above but made of copper and polished finished with measuring cylinder.

1215 RAIN GAUGE / RECORDER

This is a self recording type rain gauge. It is consists of nickle plated brass receiver placed on a sensitive dial pattern spring balance type machine which records the rain fall. Rain up to 100mm can be recorded with this machine.

1220 METERO LOGICAL SET

It is used for the study of weather determining ingredients. It consists of one rain gauge75mm dia, One collecting bottle made of glass, capacity 45 mm, one measuring cylinder graduated 0-12 x 1 mm, one maximum-minimum thermometer -20-500 c x1 o c, one wet bulb thermometer range 0-500C.

1230 WINDVANE

Specially designed to produce best results even for very small change in wind direction. Made in phosphor-bronze bearing, mounted on steel pivot. Fitted with north, south, east west script direction indicators along with wind direction indicating vane at different height level. Complete height 35 cms.

1235 ANEMOMETER

It is an ecconomical model used to easy determination of wind velocity. It is made off our cups, one of them painted in red color for easy counting of rotational speed of air. Whole cups assembly revolves freely on vertical pivot mounted on heavy metal base, total height 40Cms.

1240 ANEMOMETER CUP COUNTER

The instrument consists of three conical cups mounted in a hori- zontal plane on a bearing mounting assembly to minimise friction.The cup wheel spindle is connected with a worm gear and to a revolution counter. The counter reading over a known period of time is used for calculation of average wind velocity.

2005 LINEAR THERMAL EXPANSION

It consists of two Cast Iron uprights mounted vertically with the rods supporting an expansion bar. The expansion bar is fixed at one side, whereas other side is resting on a friction pointer for the indication of change in the length due to increase in temperature. Length of the expansion bar is 380mm. Height of the apparatus is 180mm Approx. Supplied with one each expansion rod of length 38 Cm, dia 6mm of Aluminium, Brass and Iron.

2015 RING AND BALL, ON STAND

Consists of a brass ball mounted on tri pode stand. The ball is fixed hanging by a chain over a ring of same material monted on the stand. The height of the hanging ball and ring both are adjustable. This is used for the demonstration of thermal expansion. When ball is cold it enters in the ring where as when heated it do not enter in the ring.

A) Ball dia : 25 mm B) Ball dia : 18mm

2020 RING AND BALL, GRAVE SANDE

It consists of a brass ball mounted in brass stem with wooden handle. A brass ring of same dia is stem mounted with wooden handle. The ring is precisely machined so that when ball is heated it do not enters in the ring demonstrating the expansion of ball diameter.

A) Ball dia : 25mm B) Ball dia : 18mm

2022 RING AND BALL, GRAVE SANDE

Comprising a captive brass ball secured to a mounted brass ring by a chain, Ring mounted on rod with a wooden handle. The ball passes through the ring when cold but will not pass through after being it is heated.

2025 BAR AND GAUGE

Used for the demonstration of expansion of materials by heating. It consists of a chrome plated iron bar length110mm, dia 12mm connected with plated iron rod via a polished wooden handle. Length of bar with handle is approximately 280mm. One brass gauge of open-ing same as that of bar with slide fitting, mounted in wooden handle is supplied to study the expansion of bar. Two holes of dia 12mm are also drilled in the gauge at the both ends. When bar is heated it do not enters in the gauge opening and also in the holes at the ends.

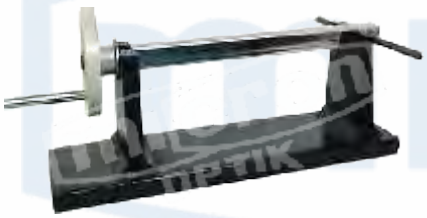
2030 BAR AND GAUGE

Same as above but bar of length :75mm, dia : 9mm.

2032 LINEAR EXPANSION APPRATUS, STEAM TYPE

It consists of a nickle plated Brass tube mounted over metal uprights fixed over a heavy channel base. The brass tube is con-nected with three tubes, two at the ends and one at center for steam inlet, out let and inserting thermometer. There are detach-able conical cups one each at both end of the tube. Cup atone end incorporates a adjustable screw while at the other end is fitted with Micrometer Screw with reading to 0.01mm. The rods under study are placed one by one inside the tube of the cup with one endin contact with adjustable screw. The micrometer reading before and after heating by a steam gives the idea of rate of expansions of different metals.

2035 GUN THERLINE AR EXPANSION APPARATUS



This apparatus is used to study the linear thermal expansion. The appratus construction is such that two cast iron uprights connected with three metal rods which carry two v supports for a glass jacket. The glass jacket has out let and inlet to hot water at both ends. One side of the glass jacket caped with cork has provision to hold Brass and Copper rods horizontally. One end of the rod is fitted with contact screw and other ends with spherometer of least count 0.005mm. The total rod length is 500mmand rod dia is 7mm. A thermometer can be attached to either of rods by rubber bands. Brass terminals are also fitted with apparatus to connect to electrical circuit. Supplied with rods of Copper, Brass and Iron, each length 500mm, diameter 7mm.

2040 BAR BREAKING APPARATUS

This apparatus is used to demonstrate the force exerted during thermal expansion and contration. It comprises a heavy cast iron frame with slotted end pillars to hold stout iron breaking bars. The bar is threaded fixed at one end by large tensioning nut and has holes at the other end to accomodate the cast iron breaking bars. Supplied complete with 10 breaking bars.

2045 COMPOUND BAR NICKEL & INVAR

It is to demonstrate, curvature introduced by unequal expansion of two different metals. Comprising Bi-metal strips mounted in a wooden handle. Ranges available are : Length x Width

A) 150 x 15mm
B) 200 x 25mm
C) 300 x 25mm

2050 COMPOUND BAR COPPER & IRON

For differential expansion of two metals as by curvature produced when bar is heated. Comprising a bar of Copper & Iron. 200x15mm.

2060 THERMOCOUPLE

To demonstrate generation of electricity when the junction of two unlike metal is heated.

2065 THERMO COUPLE COPPER-IRON.

With four copper and four iron wires app.130mm long. twisted together to form seven junctions, four on one side, three on the other side. With brass connectors.

2070 EXPANSION OF LIQUID APPARATUS

This apparatus is used to explain that the thermal expansion of different liquid is different for a fixed temperature. It comprises 5 glass tubes of equal capacity mounted on support with scales and metal trough to hold hot water. The hot water is used to heat the different liquids placed in tube and see the corresponding expansion.

2090 HOPE'S APPARATUS

ter, Sheet iron cylinder 200 x 50 mm (ht x diameter) mounted on a base and encircled mid way along its length by a gallery 60x100mm (ht. x diameter). Fitted with tubulures but with suitable rubber stoppers fitted with thermometers.

2095 HYPSO METER, REGNAULT

A) For the determination of the upper fixed points of ther-mometer and boiling points at barometric pressures other than atmospheric. Double walled copper cylinder 34 x 6 cm height x outer dia mounted on steam boiler. Fitted with thermometer tubulure at the top, side outlet draining tube and glass manometer mounted in tubulure with rubber bungs.

B) Same as above but made of sheet metal, out finish hammer ton painted.

2100 CALORIMETER COPPER, SET

A) Complete set consisting of 75x50mm. (Ht. x dia) cylinder, with felt pad inside, one outer copper cylinerical vessel 100x75mm (Ht.xdia). Outer vessel fitted with detachable clip type thermometer support complete with stirrer.

2105 CALORIMETER

Polished aluminium, 75x50mm dia meter with wood/ebonite lid fitted with rubber stopper and stirrer.

B) same as above but size 100 x 75mm diameter.

2110 CALORI METER JOULE'S

It comprises a nickle plated copper calorimeter 75x50mm fitted with a cork and a heating coil of thin constant an wire. Resistance of coil 6 ohm & working current 0.5-1.0 A . Used to determine specific heat of a liquid by electrical method. Supplied without Thermometer.

2112 CALORIMETER WITH WOODEN BOX

Copper, 75x50mm, resting on felt pad, inside teak wood polished box, provided with a brass nickel plated thermometer holder with copper stirrer. Supplied without Thermometer.

2113 CALORIMETER, JOULE'S

For determination of the specific heat capacity of liquid by the electrical method. Comprises a nickel plated copper calorimeter 75 x 50 mm lagged and enclosed within an outer vassel 100 x 75 mm. A closed fitting ebonite lid is provided with a wire stirrer and a pair of 4mm socket terminals connected to a constantan wire heating coil of 6 ohms. Supplied without thermometer.

2114 CALORIMETER JOULE'S

For the determination of the specific heat capacity of a liquid by the electrical method. Comprises a nickel plated copper calorimeter 75 x 50 mm with outer teakwood polished box. The bake lite lid with hole for thermometer, fitted with a stirrer, terminals and heating coiled for current upto 2 Amps. Complete with stirrer and outer teak wood vessel having thermometer support. Supplied with thermometer 500 x 0.100.

2115 CALORIMETER BLOCKS

Used for specific heat experiments and heat capacity of different metals. Cylinderical blocks with 12.5mm central hole to accept immersion heater and hole for thermometer. Mass :1kg approx.

Aluminium Size appx. in mm : 76 x 84 (dia x height) Steel Size appx. in mm : 44 x 89 (dia x height) Brass Size appx. in mm : 44 x 84 (dia x height)

Copper Size appx. in mm : 44 x 79 (dia x height) Supplied without thermometers.

2130 EQUAL MASS CYLINDERS, SET OF SIX.

Comprises six metal cylinders of 100gm each of Copper, Lead, Brass, Iron, Zinc and Aluminium differ in length from 5cm to 19cm. and are drilled from suspension.

2135 EQUAL SIZE CYLINDERS, SET OF SIX FOR SP. HEAT

Consists of six cylinders, each of size (Length x Dia): 38 x 9.5 mm of Aluminium, Brass, Copper, Iron, Lead and Zinc.

2140 STEAM HEATER

Cylindrical copper vessel 180 x 115mm (Ht. x diameter) with filling tube, steam vent and vertical tube terminating in chute passing through side of the vessel. There is a brass tube, sliding fit in the central tube to carry thermometer. Lower end is cut at an angle to seal the chute.

2145 STEAM BOILER TIN PLATE

Cylinderical body with conical top and short neck for bung. Fitted with finger loop handle on the conical portion.

A) 1 Litered
B) 2.5 Liter

2160 STEAM TRAP

Completely made of Boro silicate glass, overall length 160mm.

2165 EDSER THERMAL CONDUCTIVITY APPARATUS

Used to demonstrate thermal conductivites of different metals. A cylindrical metal container with five rods of Brass, Steel, Stainless Steel, Copper, and Aluminium. The container is supported by ring and boss head for fitting to retort stand. Supplied without retort stand. Each rod has captive slider which realeases from as pot of wax when heat travels along the rod.

2166 PARAFFIN WAX 500GM PACK.

2167 STEAM GENERATOR, COPPER

Copper cylinder of overall height 280mm and diameter 115mm. Capacity : 1.5 liter, neck diameter 23mm with riffled side tube of 9.5 mm and with water gauge.

2169 RODS FOR THERMAL CONDUCTIVITY EXPERIMENT.

300mm long x 3 mm diameter, supplied in packet of ten rods.

	Metal	**Conductivity**
A).	Iron	72
B).	Copper	395
C).	Aluminium	240

2170 THERMAL CONDUCTIVITY KIT

To observe difference in thermal conductivity of different metals & strips of different thickness. Set of 8 rods of each Copper, Brass, Aluminium, Glass and Iron length 250mm and diameter 3mm and one each rods of Copper, Brass and Iron length 250mm and diameter1.5mm.

2175 THERMAL CONDUCTIVITY OF METAL APPARATUS

Consists of metal strips of Copper, Brass, Iron and Aluminium screwed on a wooden ring base and outer ends of strips have cup to hold paraffin wax.

2180 WEIGHTED GLASS BULB

Comprises glass bulb 50mm diameter with integral hook, weighted with lead shot and adjusted to sink in cold water.

2184 INGEN HAUSZ APPARATUS

Metal rods 150x3mm length x diameter, one each of aluminium, brass, copper, glass and iron, embedded along one side of a metal tank size 150 x 90 x 100 mm length x width x height.

2185 INGEN HAUZ APPARATUS

It Consists of six equal rods of Copper, Iron, Lead, Brass, Zinc and Aluminium, mounted in corks, with their ends in water tank. Rods are coated with paraffin wax and when water in the tank is heated ,the rate of melting of wax are compared for comparison of thermal conductivites of corresponding metals. The tank is supplied on four legs at height of appx. 170mm.

2190 WOOD AND METAL ROD

To demonstrate difference in conductivity of wood and metal. A Cylinder 200 x 25mm, half of which is wood and other half of metal.

2191 THERMOSTAT MODEL

Demonstrates the operation of a thermostat. A vertically mounted bi-metallic strip is used to open or close an electrical circuit with change in temperature. Consists of binding posts for connections to low current circuits and adjustable contacts.

2192 THERMAL CONDUCTIVITY OF COPPER, SEARLE'S APPARATUS

Cylindrical copper rod about 300mm length 25mm diameter, one end containing as team chamber connected to inlet and outlet tubes, other end of copper rod has cavity connected to thermometer pockets to water inlet and outlet tubes. Through two thermometers tubes 75mm apart are inserted in rod for finding the temperature at two points. Fitted in teak wood polished case and removable front without thermometer.

2195 CONVECTION & RADIATION

Made of Borosilicate glass and used to demonstrate convection of heat in a liquid. Glass tube O.D.20 mm in rectangular shape, overall height x width: 360 x 200mm. Also fitted with liquid filling funnel.

2200 VENTILATION APPARATUS, CONVECTION IN AIR APPARATUS

A rectangular metal box 220 x 100 x 165mm L x W x H, with sliding glass front and two openings on top to place glass chimneys. A candle holder fitted to base of box beneath the one chimney. Supplied without candle. Convection may be demonstrated by use of smoke from a string held close to the top of unheated chimney.

Spare Parts : Glass Chimney 2 Nos.
Accessory : Candle Pack of 12 Nos.

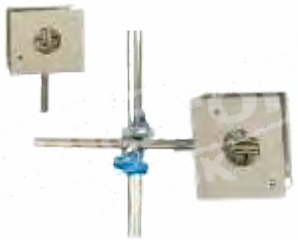
2205 LESLIE'S CUBE

Tin plate box with 130mm sides. The vertical faces of the box are blackened, roughened varnished and polished. The top opening is 75mm diameter and is fitted with a lid. The apparatus is fitted with water maintained at boiling point by a low bunsen flame. Infra red sensors may be used to compare the relative radiant heat output from each of the four faces.

2210 PAIR OF CONCAVE SPHERICAL MIRRORS

For reflection of heat experiments. 300mm diameter, 85mm focal length approx. The mirrors are of spun brass, nickel plated and polished. With fitted boss to accept 9mm diameter retort stand rod. Supplied without stands.

A) Metal stands for above.

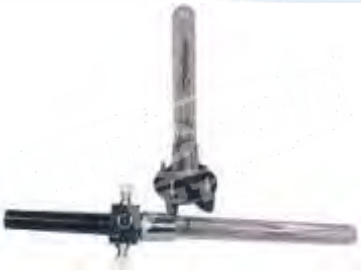


2215 RADIAN THE AT SOURCE, LOW VOLTAGE

The12V, 100W heating coil is mounted over insulating base and suspended between metal pillar (brass) with 4mm sockets. Complete assembly mounted on 150 x 8mm rod. A pair of removable heat resistance screens 70x70mmeachwitha 30mm aperture is provided.

2225 CROOKE'SS

Consists of a Partialy vauum 65mm diameter glass bulb containing 4 mica vanes mounted on a pivot. One side of each vane is black ned and reverse side is kept reflecting bright. When exposed to bright light source, the motor rotates rapidly. Fixed on a insulating roundbase.



2240 PLATINUM RESISTANCE THERMOMETER

A thin plantinum wire wound inductively on an insulating frame enclosed in a glass tube 150 x 19mm, with a pair of compensating leads. The tube has a plastic cap fitted with two pairs of terminals connected to the plantinum wire and compensating leads respectively. For showing the principals of platinum

2245 THERMOPILE

It consists of 12 pairs of Bismuth and Antimony bars joined together in series with insulation between them. The couples thus arranged are enclosed in a brass frame having two terminals connected to the Bismuth and Antimony poles. Complete with nickel- plated brass cone and mounted on an adjustable stand.

A) As above with 24 pairs of Bismuth and Antimony poles.

B) As above with 48 pairs of Bismuth and Antimony poles.

2255 TEMPERATURE CO-EFFICIENT OF RESISTANCE OF IRON

A coil of insulated iron wire of about 5 ohm resistance wound non-conductively on an insulating former and connected to thick copper wires fitted with terminals. The coil is enclosed in a glass test tube with stopper and thermometer. Tube contains paraffin oil.

Tube Size : 150 x 25mm, Overall Size : 200x 50mm Approx.
Supplied without thermometers.

2260 ROTATING VANE APPARATUS

This is to introduces the concept softerminal velocity with high degree of easiness. The apparatus consists of four aluminium vanes 80 x 50mm mounted upon a freely rotating arm. The arms rotate in a radius of 150mm and are attached to a spindle which is carried in a bearing for free rotation. Pillar mounting of size150x12.5m (Length x dia). Thes pindle is provided with an attachment for a driving cord and the complete apparatus is mounted on a square heavy base.

2300 KINETIC THEORY MODEL

This is to demonstrate various aspects of kinetic theory of gases. It consists of a clear perspex tube 400mm long x 50mm outside diameter provided with a freely sliding expanded polystyrene piston and a loose fitting metal cap. The tube is mounted on a wooden box 175x175x125mm high containing an agitator piston driven by a motor. Supplied complete with 3mm diameter metallic spheres and four card board discs. Sup- plied with metallic spheres 3mm dia. and four cardboard loading discs and without power supply.

2310 CHARLES LAW APPARATUS

It consists of a 15mm dia U-glass tube, with one limb plain 220mm long and other limb 120 mm long, graduated 25 to 35 x 0.2ml, terminating in a bulb 38mm diameter, with third 185x6mm (L x bore) joined at right angles to the plane of the other two, short length of glass tubing mounted in end of wide bore plain limb with rubber bung. Supplied with beaker 1000 ml and stirrer. Supplied without mercury.

2325 CONSTANT VOLUME AIR THERMOMETER

This apparatus is mounted on nicely polished wooden base with rectangular trap at base for collection of mercury. The apparatus consists of a air thermometer (detachable), bulb dia 50mm con- nected to the mercury tube with 0 mark with three ways top cock. Reservoir tube slides on vertical rod. Vertical scale 50 Cm x 1mm. Cylindrical Copper vessel is supported on detachable stand.

2330 ABSOLUTE EXPANSION OF MERCURY APPARATUS.

For the determination of the co-efficient of absolute expansion of mercury. The length of glass tubing with vertical limbs contained within

glass jackets approx. 460x25mm ht. x dia. closed by bungs and fitted with inlet and outlet tubes. Upper ends of vertical limbs are angled on emergence from the jackets to produce two short adjacent limbs placed against a silvered glass scale 0 to 12 cmx1mm. Mounted on stand 610x230mm.

2335 THERMOMETER, WALL, (CLSIUS AND FAHRENHEIT)

Comprises red spirit filled magnifying lens tube on wooden frame with black engraved markings and figures. Range -20 to +500 C x10C, 00 to 1200F x 20F.

A). As above but scale printed on aluminium sheet which is fixed on wooden base.

B). As above, but scale printed on plastic, made of plastic base.

2336 THERMOMETER WALL

Mounted on wooden polished base, with screen printed markings and figures. Range -200 to +500 C x 10C, 00 to 1200Fx 20 F. Red spirit filled. Overall dimensions 50 x 4 cms.

A). As above, but mounted on milky white plastic sheet.

B). As above, but mounted on acrylic sheet.

ENGINE MODELS

2405 STEAM ENGINE MODEL

An all metallic model, the metal cylinder is section cut and is covered with a glass plate. Complete with working parts-piston, slide valve, link motion and reversing method can be observed. The movement of the wheel is light enough to demonstrate working even by blowing with mouth on a Perspex base.

2410 STEAM ENGINE WITH BOILER

The operation of a commercial steam engine is well illustrated with the working model. The extra large size unit is provided with a horizontal boiler with a whistle, safety valve, steam gauge, on metal base. Operates on 220VA.C..

2420 HERO'S ENGINE

It is a nearliest form of steam turbine. Whole assembly is mounted on a nicely polished wooden base. A borocillicate glass bulb diameter 70mm with side arm bent at right angle and formed in to jets at their tips. The bulb with right angle jet is mounted on metal uprights stand with provision free rotation. When bulb filled with water is boiled it rotates freely on the stand with high speed of rotation. The overall dimensions are : 180mm x120mm

2425 PETROL ENGINE, TWO STROKE

It is a section al working model of 2-stroke petrol engine. All parts are made of Al-alloy nicely painted. The ignition is shown by means of miniature bulb. The sectional view of carburetter and fuel supply is nicely presented. For mannual operation a crank handle is provided. Mounted on a well polished wooden base with printed diagram.

2430 PETROL ENGINE, FOUR STROKE

Same as above but model of 4-stroke petrol engine.

2435 DIESEL ENGINE, TWO STROKE

This is for the demonstration of sectional view of two-strokes diesel engine. Made of Al-ferus metal alloy. The engine is shown in half section as above models. The working parts move in correct position in relationship to another. Rotated manually through hand crank.

2440 DIESEL ENGINE, FOUR STROKE

As above but demonstration of sectional view of working components/parts of 4 stroke diesel engine.

2445 TURBOJET ENGINE / GAS TURBINE

Model demonstrates the sectional parts and working of gas turbine or turbojet engine. Combustion chamber, Turbine Fuel supply, double stage compressure, air intake points etc parts are shown very clearly.

2450 WANKEL ENGINE

Engine is mounted on a polished wooden base and working detail is printed on the same. The model is construted in away to show the internal constructional features of the engine.

ENERGY CONVERSION /TRANSFER APPARATUS (MALVERN)

2455 MALVERN ENERGY CONVERSION KIT

This kit comprises a number of units to show qualitatively energy conversion from one form of energy to another. All units except steam Engine units are carried on a standard 165 x 200mm base with 4mm socket terminals.

A). LARGE MOTOR / GENERATOR

It comprises as 2-6Vd.c. motor provided with a 15mm diameter 'V' pulley complete with driving belt.

B). LAMP UNIT TRIPLE

To give an indication of motor/generator output when used as dynamics. Three lamp holders are connected in parallel. Supplied complete with three lamps 1.25V,0.25A.

C). FLY WHEEL UNIT

Iron fly wheel 115mm diameter mass 1.25kg. mounted on stand post with metal bearings. The shaft has an alluminium 'V' pulley 44mm diameter for driving with spring belt. Used with large motor/ generator and lamp unit to demonstrate the conversion of electrical energy to kinetic energy.

D). HAND WHEEL DRIVING UNIT

Mounted on a nicely polished wooden base. It is used to drive dynamics, line shafts, flywheels, pump etc. It has two 75mm diameter pulleys, one for driving and other for output. Another pulley of 20mm diameter is mounted to result a step up ratio of 3.75, Base size :160 x 160mm.

E). LINE SHAFT UNIT

Used with motor/generator and lamp unit to demonstrate conversion of electrical energy in to potential energy by winding weight on a cord. A 6mm steel shaft is mounted on stand post with nylon or metal bearings. One end carries an aluminium V pulley 50mm diameter and other, over hanging end is fitted with a cord anchoring collor. Supplied complete with driving belt. Dimensions approx. 225 x 100 x115mm.

F). SPRING UNIT

For showing potential energy in a wound-up spring and its conversion to electrical energy by driving a dynamo and lighting a lamp. May also be used to wind up a weight on a cord showing the change from potential energy to kinetic and back to potential in the raised weight. The steel shaft carries a clock spring with a free wheel device and winding ratchet, also an aluminium 'V' pulley 55 mm diameter. One end of the shaft overhangs the base for use as a line shaft when winding up a weight. Dimensions 220 x 100 x 100 mm high. supplied complete with driving belt.

G). HEAD OF WATER UNIT

For use with turbine unit to provide an open or closed system in demonstrating the conversion from electrical to kinetic energy in pump and potential energy in the head of water. Supplied with two basins 80mm dia and glass tubes. The upper platform has 38mm dia hole to use as a simple re-circulation system with a single reservoir.

H). STORAGE BATTERY UNIT

A) lead/acid battery is mounted on a polished wooden base. Battery can be charged with a motor driven dynamo and further used to lit a bulb.

I). EDDY CURRENT UNIT

It consists of a 120mm diameter aluminium disc mounted axially with a 20mm driving pulley. The powerful magnets are carried on a pivoted arms which can be moved over or away from the disc as requried. Complete assembly mounted on a nicely polished wooden base of size 100 x160mm.

J). PLUG-IN LAMP MOUNTS

It comprises a M.E.S. lamp holder having 4mm pins. The mounts are designed to plug directly in to the sockets of energy conversion units, above and being stackable, they can be used to investigate the effects of varying electrical loads on the performance of the system. Supplied in set of three lamps without bulbs and pack of 10 bulbs 1.25V, 0.25A are supplied along with.

K). MOTOR FOR SOLAR CELL, MOUNTED

It comprises a small low consumption electric motor on a base able to run from the output of a solar cell. The motor spindle carries as mall fan in a box, and when poweres by the solar cell. The motors pindle carries a small and runs when powered by the solar cell. This unit is to demonstrate the direct conversion of light energy to electrical and hence to mechanical and provided with small bulb for demonstration energy conversion from solar to electrical light.

L). MOUNTED SOLAR CELL

It comprises a silicon photovoltaic cell housed in a plastic case. This solar cell is used with motor to demonstrate the production of electrical energy directly from light energy.

M). MOUNTED LAMP

It comprises a bulb in a metal socket mounted on a holded metal base 100x60mm with a pair of 4mm sockets. This is to be used with mounted solar cell and motor listed above.

OPTICS

3005 DOUBLE CONVEX

Optically finished , ground edges, made from optical glass.

A) Diameter : 38mm
B) Diameter : 50mm

	F.L.	POWER
A)	500	20
B)	100	10
C)	150	6.6
D)	200	5
E)	250	4
F)	300	3
G)	500	2
H)	1000	1

3010 DOUBLE CONCAVE

A) Diameter : 38mm
B) Diameter : 50mm

	F.L.	POWER
A)	50	-20
B)	100	-10
C)	150	-6.6
D)	200	-5
E)	250	-4
F)	300	-3.3
G)	500	-2
H)	1000	-1

3015 PLANO CONVEX

Optically finished surfaces, edges ground, ranges available are

	Diameter	Focal length	Power
A)	25 mm	70 mm	+14
B)	25 mm	50 mm	+20
C)	25 mm	100 mm	+10
D)	32 mm	1000 mm	+1.0
E)	37 mm	150 mm	+6.6
F)	50 mm	140 mm	+7.0
G)	50 mm	400 mm	+2.5
H)	100 mm	150 mm	+6.6

3020 SET OF SIX LENSES

These lenses are optically worked with edges ground and faces polished accurately. Supplied one each of double convex, double concave, plano-concave, plano-convex, concave-convex, convexo-concave in valvet lined wooden Box. Lens Diameters : 50mm.

3030 CYLINDRICAL LENSES

Made in Clear glass, with edges ground and optically worked faces.

A) Bi Convex (45x50mm), +13.3D
B) Bi Convex (50x50mm), +13.3D
C) Bi Convex (40x45mm), +6.7D
D) Plano-Convex (45x50mm), -6.7D

3035 ADJUSTABLE LENSE HOLDER

Made of metal, V-shape with adjustable hinged arms to hold lenses of diameter up to 75mm. Also suitable for mirror mountings.

3040 LENS HOLDER WOODEN

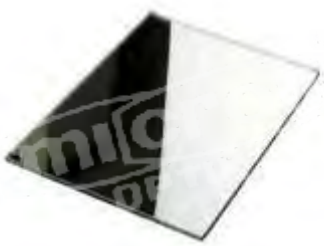
Made of wooden for lenses or mirrors upto 75mm dia, 100mm high upright with V-slot mounted on wooden base. centerline is located by aline index marked on each side of the vertical upright.

3045 LENS HOLDER

Spring pattern to hold lens or mirror of 50mm diameter, V-groove in centre of holder. Mounted on 6mm metal rod, suitable for standard optical bench. Supplied with bake lite base.

3050 LENSE HOLDER, METAL

Comprising metal holder with side grooved to hold lens or mirror of 50mm diameter.



3055 MIRRORS

Back surface glass mirrors in rectangular shape with ground edge. Sizes :

A)	50x50mm	B) 75x25mm	C) 75x75mm
D)	100x75mm	E) 150x25mm	F) 150x50mm
G)	150x100mm.		

3060 CIRCULAR MIRROR

Plane, circular smooth edge, 50mm dia back silvered, with protective coating.

3065 MIRROR PLANE FRONT COATED

These mirrors are optical instrument grade having front surface coated with protective layer and reflectivity is more than 80%. Sizes :

A) 25x25mm B) 32x32mm C) 25x32mm
D) 50x50mm E) 30x50mm F) 75x50mm
G) 75x75mm

Also, available in any size and shape including round.

3070 CONVEX MIRRORS

Optically worked, back silvered glass mirrors.

A) Diameter : 38mm in different Focal Lengths of : 75, 100, 150, 200, 300
B) Diameter : 50mm in different focal Lengths of :

A	B	C	D	E	
75	100	150	200	300	in mm.

C) Diameter : 75mm in different focal length of : A) 75 B)150 in mm.
D) Diameter : 300mm in focal lengths in mm. of : A) 300 in mm.

3080 CONCAVE MIRRORS

Same as above.

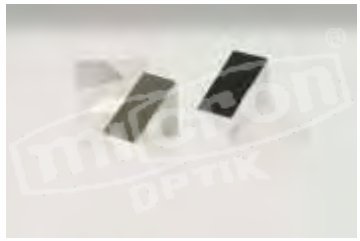
3090 CYLINDRICAL CONCAVE MIRROR

Semi Circular mirror, stainless steel, 150mm diax75mm high.

3095 CYLINDRICAL CONVEX MIRROR

Semi circular mirror, stainless steel, 150mm dia x 75mm high.

3110 EQUILATERAL PRISM



600x600x600, made of Optical Glass, Faces polished.

A) 25mm B) 38mm C) 50mm.

3115 RIGHT ANGLE PRISMS

900x450x450, Made of Optical Glass, Faces polished.

Three varities are available:

1).	Regular	2). Superior	3. Extra White
A)	25mm	B) 38mm	C) 50mm.

3125 PRISMS, PERSPEX

60x60x60 degree Acrylic, polished surfaces.

A)	38 mm.	B) 50mm.

3130 PRISMS, PERSPEX

90x45x45degree, All faces polished.

A)	38 mm.	B) 50mm.

3135 HOLLOW GLASS PRISMS

Made from ordinary glass plates, ciminted with optical cement in different sizes :

A) 38 x 38 mm hollow prism.
B) 50 x 50 mm hollow prism.
C) 75 x 50 x 18 mm hollow slab.
D) 60x60mm hollow truff.
E) 75x75mm hollow truff.

3150 FRESENEL'S BI PRISM

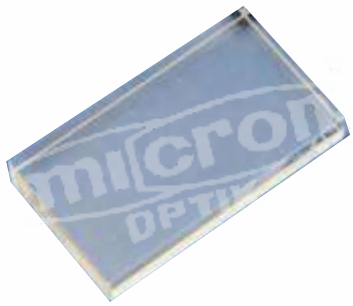
Optically worked made from crown glass.

A)	40x30mm	B) 50x40mm

3155 GLASS BLOCK

Rectangular, All sides polished. Dimensions are as under:

A)	75x50x12mm	B) 75x50x18mm
C)	100x60x18mm	D) 115x65x18mm



3160 GLASS BLOCK, SEMI-CIRCULAR

With polished faces, dia 90mm, thickness 18mm.

3165 PERSPEX BLOCK, RECTANGULAR

Rectangular, All sides polished. Dimensions are as under:

A)	75x50x18mm	B) 100x65x18mm
C)	115x65x20mm	D) 100x45x25mm

3170 BLOCK PERSPEX, SEMI CIRCULAR

Clear perspex, all faces nicely polished, dia : 90mm, Thickness :18mm

3175 PERSPEX BLOCKS, SET

Clear acrylic plastic blocks 20mm thick with bottom surface finished in white to show ray tracks and all other surfaces fully polished. The set comprises. Rectangle : 75x50mm

A) Triangle : 90deg., 45deg., 45deg., 75mm hypotenuse.
B) Triangle : 60deg., 60deg., 60deg., 57mm side.
C) Semi-circular : 75mm diameter.
D) Bi-concex : 75mm long, curved faces,115mm radius.
E) Bi-convex : 5mm long, curved faces, 145mm radius.
F) Bi-concave : 75mm long, curved faces, 115mm radius.

All packed in cardboard storage box.

3180 OPTICAL PINS

Nickel plated brass heavy gauge, packs of 100gms.

A) L=50mm B) L=75mm

3200 HAND MAGNIFIER

Bi-Convexnickelplatedmetalframewithmetallicorplastichandle

	Diameter	Focal Length	Magnification
A)	40mm	10cm	3.5x
B)	50mm	12cm	3.0x
C)	50mm	15cm	2.5x
D)	60mm	15cm	2.5x
E)	60mm	20cm	2.25x
F)	75mm	15cm	2.5x
G)	75mm	20cm	2.25x
H)	100mm	15cm	2.5x
I)	100mm	20cm	2.25x.

3205 MAGNIFIER, READING GLASS

Fitted in unbreakable plastic mount with handle.

A) Dia 40mm B) Dia 50mm
C) Dia 60mm D) Dia 75mm

3210 FOLDING MAGNIFIER

Fitted in plastic frame, 20mm dia lens approx.

A) Single 4x B) Double 7x C) Triple 10x.

3215 FOLDING MAGNIFIER

A Gow land type magnifier, Made of extra white glass with unbreakable plastic lens holder. Magnification 10x.

3220 POCKET MAGNIFIER

Lense diameter : 40mm, magnification : 3.5x.

3225 WATCH MAKER'S EYE GLASS

Lens diameter : 25mm, A clear perspex lense mounted in a plastic frame. Magnification : 3.5X

3230 FLEXIBLE ARM MAGNIFIER

A large bi-concavvex lens (100mm) mounted in metal frame attached with flexible arm screw tightened at heavy round metal base. Convenient to use in any position.

3235 ILLUMINATED MAGNIFIER

Made of unbreakable plastic, magnification : 3 X, lens with illuminations provided by a flash lamp bulb on one side of the field of view. Battery operated.

3240 OPTICAL BENCH, WOODEN

Most suitable for junior students. A wooden base board 1110 x 15 mm (LxW) with a one meter scale divided in mms and figured at cms fixed along the front edge. Supplied with 2 Nos. object and receiving screen each comprising a white card with apparatus and index. The card is fixed in black metal frame 150x100mm and mounted on wooden base about 100x50mm with index mark. The optical centre height of all components is 100mm above the base board. Plane mirror on base - One nos.. Lens Holder- four nos. Needle on base- one nos Candle Holder- one nos.

3245 OPTICAL BENCH WOODEN 1.5 METER

Suitable for use by junior and senior students. A wooden base board 1600 x 140mm, fitted with 1.5 meter scale figured in cms and marked at mms, six nos. sliding bases 100x50 mm each with marked index line, C.I. pillars with locking screw. Supplied with following accessaries. Lamp house with white bulb, 15W - One nos. Object screen 75mm diameter with gauze-onenos. Lense Holder, 38mm diameter- one nos. Receiving screen - one nos. Mounted Object needle-one nos. Mounted Plane mirror-one nos. All above accessories are mounted on a 6mm rod which fits into stand. Optical height of objects are maintained in a same plane for easy experimentation.

3250 OPTICAL BENCH

One meter optical bench, A single square rod, fitted on two sturdy side metal feet with levelling screws. Graduated properly to give better results. Mounted four sliders with index marking to hold lense and sharp optical pins. Two of the slider are provided with transverse fine motion knobs. Supplied with two lens holders mounted in rod for suitable post mounting and two sharp optical pins. When objects are moved from one end to other it moves without play or jerk.

3255 OPTICAL BENCH, DOUBLE ROD

Most of the construction are same as above expect that it occupy simple rod instead of square rod. Two rods of 18mm diameter mounted parallel to each other for more stability. One of the rod is graduated for taking readings. Supplied with four sliders with mounted post, two for lens holder and two for object holder. Two lense holders and two needle objects are also supplied with. Following Optical bench with accessaries are available.

A) One meter optical Bench.
B) One and Half meter Optical Bench.

3260 HOLDERS FOR DIFFRACTION OBJECTS

For supporting diffraction objects in 50mm square mounts. Rectangular metal frame with spring clips and a mounting rod.

3265 PRISM TABLE

To support prisms, glass blocks etc. A brass/Alu disc 82mm diameter mounted on a standard 6mm rod.

3270 OBJECT NEEDLE MOUNTED

A steel needle point mounted on a 6mm rod to give an overall length of 80mm approx.

3280 CROSS WIRES

A circular black metal screen 75mm diameter, with 10mm diameter aperture with cross wires.

3285 PINHOLE SCREEN

Circular black metal screen 75mm diameter with a 0.6mm dia centre hole.

3290 IRIS DIAPHRAGM

A circular black metal screen, 45mm diameter, with an adjustable iris diaphragm, maximum aperture 8mm.

3295 OBJECT SCREEN

A circular metal screen, 75mm diameter, with a 10mm central aperture covered with 1.5mm mesh wire gauze.

3300 ADJUSTABLES LIT

Circular black metal screen, 75mm diameter, with a 12.5 central aperture. A screw controlled, spring loaded precision slit is mounted on one side of the disc. Maximum slit opening 4mm approximately.

3305 CANDLE HOLDER

Round metal holder, 20mm Inner Dia and 22mm deep, mounted on a metal rod size 35mm long and x 6 mm dia.

3315 GROUND GLASS SCREEN

In metal frame 100x75mm with a central aperture 63mm dia.

3320 LAMP 240V

White Lamp, 240V, 15W in lamp house, mounted on standard 6mm rod. Supplied with 2 mtrs. of twin flex wire.

3330 JOLLY PHOTOMETER

Made of two blocks of translucent material with dimensions 25x 20 x 12.5mm, separted by a sheet of opaque material. Mounted on a plastic base, with window for viewing. Fitted on a stem length 50mm & 10mm for post mounting. When two sides of the blocks are exposed to uneven illumination, the block shows difference in color.

3335 PHOTOMETER GREASE SPOT

For measurement of light intensity by comparison, comprises a waxed paper screen with a wax free central spot 16mm diam-eter, mounted in a black metal frame 100x75mm with central aperture of 51mm.

3340 PHOTOCELL

A large diameter photocell for connecting directly to multimeter. Mounted in a case 105x65x14mm with 4 socket terminals and a 6mm support rod. Cell aperture 20mm (approx.)

3360 GRATICULE EYE-PIECE

A Ramsden eye-piece with tube focussing provided with a glass graticule 0-10 x 0.1mm and mounted on a 75mm dia metal screen.

3365 POLARISER AND ANALYSER

Comprises two identical unit each provided with a polaroid disc mounted on a rotable mount with an aperture of 25mm.

3415 HERTLEY OPTICAL DISC

A circular metal disc 290mm diameter with a matt white finished surface divided into quadrants and graduated 0 to 90 degree. Graduation marked every 1 degree with major lines marked at every 50, figures at

every 100. The disc is supported in a vertical plane on a tripode metal stand. The discisso mounted as that it can be rotated as requried. A small light box at the top give light for experimentation on refraction, dispersion, lense as focussing elements etc. Optical accessories are fitted with magnets to place at any desired position on optical disc.

ACCESSORIES : Accessories are made of 15mm thick acrylic and well polished. The mirror are made of metal and bright plated.

OPTICAL ELEMENT :

1) BICONCAVE LENS
Length 90mm, radius of curvature 120mm (approx)
2) BI-CONVEX LENS
Length 90mm, radius of curvature 85mm (approx.)
3) BI-CONVEX LENS
Length 90mm, radius of curvature 210mm (aprox)
4) CIRCULAR BLOCK
Dia 90mm approx.
5) SEMI CIRCULAR BLOCK
Dia 90mm approx.
6) RIGHT ANGLE PRISM
Hypotenous 90mm
7) TRAPEZIUM SHAPED BLOCK
87x24 mm (Base x Ht.)
8) PLANE MIRROR
95x10x4 mm (LxHxT)
9) CURVED MIRROR
95x10x4 mm (LxWxT) radius of curvature 150mm approx.
All above sets as supplied in a partitioned velvet lined box.

3420 OPTICAL DISC, SIMPLE

This is a necconomical model of the Hertley Optical Disc and all the experiments can be performed with ease. It consists of white matt finished wooden base with circular scale as in case of optical disc is printed. A circular metal disc with quadrant marked is placed in center of the printed scale and can be rotated. A light box is used as a source of light. Optical accessories are same as above. Supplied complete with light box, optical components set of nine pieces as illustrated above but without power supply.

3425 RAY BOX

Made of sheet metal and well ventilated. Front opening type. Fitted with 12V-24 Watt bulb and connecting cable. Vertical V-slots are provided to place cylindrical lense to give parallel rays of light and suitable for placing slits without lenses.

3430 RAY BOX PHPATTERN

Same as above but with three side opening making suitable for use by three students at a time or may also be used for color mixing expertiments. Made of Aluminium casting with very good workmanship and nicely painted. Suitable vertival grooves at each side for placing of filters, slits, cylinderical lenses etc. Fit- ted with 12V-24 Watt lamp.

3435 OPTICAL BOX

A ventilated rectangular metal box with lid fitted with a light trap and a lamp holder. There is an aperture at each end of box. (This aperture is in the shape of right angle, triangle) which is painted white for fucussing back experiments. Metal plates with 0.5mm wides lisare on the sides of box. Two group of students can perform experiments simultanously and this outfit is suitable for all focussing experiments with lenses and mirror for spectrum work and for obtaining a vertical plane of light. Supplied complete with a 240V, 60W white lamp and 1.5 mtr. of twin mains cable.
dimapprox : 150x98x170mm. Accessory : Lens Holder Metal.

3440 COMPACT LIGHT SOURCES

It is used as high intensity source in smoke box and other experiments by students. A12V, 100wW quartz halogen lampin.

a ventillated metal housing. Apertures of 19mm diameter are provided on a adjacent sides to enable students use it either as an intense horizontal line source or as a powerful point source. Aperture cane be closed with a shutter, the lamp house is mounted on a rod 160x10mm (length x diameter) to support on an ordinary laboratory stand. Approx. dimension of lamphouse:80x80x155mm..Supplied complete with 1 meter of twin cable.

Spare and Accessories :

1) Lamp 12V-100W quartz Halogen
2) Transformere for the same.

3442 SMOKE CELL

To observe brownian movement in smoke particles :
Comprises a plastic/wooden box with a sliding lid. The bottom of the box has flanges at either end. These flanges fit into stage clips of any microscope. The box contains a smoke cell, a cylinderical glass condensing lens and a 12V-3W festoon bulb. The optical component sare all preset and no adjustment is necessary expect focussing of microscope into the cell. A squeezed bottle type smoke generator is used to generate smoke.
Dimension : appx. 90 x 45 x 20mm

3445 RAY BOX-CUM COLOR MIXING APPARATUS

Made of sheet metal, painted matt black to give minimum reflection. Three side opening fitted with two hinged mirror at one side while other side open. Alampof12V,24Wattismonted in well ventilated light housing. Fitted with vertical V-groovesfor filters, slits and cylinderical lens at proper spacing.

3460 RAY OPTIC SKIT

A basic kit for experiments on optics and optical phenomenas. Basic laws of optics as linear propagation of light, reflection, refraction dispersion, lens as focussing elements can be easily verified. The kit consists of two lamp house on lamp holder, two light shields, two metal slits with three opening on one side and one opening on other side. Two similar multiple opening slits. Two Slis holder clip, four wooden light barriers, Plano cylinderical lenses 7D -4 nos, Plano cylinderical lenses 10D -2 nos, Plano cylinderical lenses 17D -2 nos, and Negative Plano cylinderical lenses -7D -2nos.

3465 PARALLEL BEAM PROJECTOR

The light source is of utmost requirement for all optical study. Our parallel beam light source fits any optical experiment with provision of mounting on optical bench. The light alloy made parallel beam projector produces divergent as well as convergent beam at a variable distance. The projector has an attached prism table for prisms / filters/ grating mounting.

1). Size 300 x 100 x 75mm (Aluminium alloy)
2). Light source 12V, 24W axial filament bulb in sliding mount.
3). A planoconvex lens dia: 50mm, F=150mm for beam converging and diverging, mounted and detachable. 4.Supplied in matt black finish and with 1meter 2core PVC cable and two 4mmplugs.

3470 SODIUM LAMP

Comprisesa35Wsodiumdischargetube,housedinmetalshield with a 25mm diameter aperture and mounted by means of a base head on an alloy rod at the control box. The transformer and ON/OFF switch are mounted in the control box. For 220V A.C. 50Hz. supplies.

3472 SODIUM VAPOUR LAMP

Complete with vacuum jacket 35watt, for producing monochromatic light at a high intensity. Each lamp has a glass envelope with an inner discharge tube containing the gas or vapour, and two electrodes. The envelops is mounted on an E.S. cap, providing an arc centre height of

110mm appx. Each lamp is fully interchangeable. No adjustment being required.

3475 MERCURY VAPOUR LAMP

80 watt Mercury vapour lamp mounted in lamp having aperture of 25mm diameter. Supplied with complete choke and stand.

3500 SPECTROMETER STANDARD

Suitable for many quantitative light experiments by students at junior level, reading to 0.1degree.The base combined with the colli mater tube support carries rotating telescope arm. The collimator and telescope tubes one piece casting of light alloy,

focussing by friction drive rack and pinion, 175mm dia circular scale reading 0.1 degree, estimation up to 0.05 degree with following accessories :

1) TELESCOPE

With achromatic object glass of 178mm focus, 25mm clear aperture, 8X Ramsden eye piece with hair line graticule, helical focussing motion, tanget screw for finer adjustment.

2) COLLIMATOR

Achromatic object glass 178mm focus,25m clear a perture, adjustables lital the other end of collimator tube, Helical focussing.

3) PRISMTABLE

Fitted with three levelling screws. Supplied complete with tommy bar, and grating holder but without prism, This Spectrometer is normally supplied in a strong wooden box with lock & key.

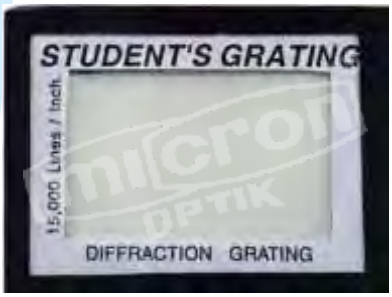
3505 SPECTRO METER SENIOR

Its optical system and features are equivalent to those of advanced model making it still suitble for senior students to do many quantitative experiments. Substantial iron casting base with levelling screws, protected graduated disc 125mm diam-eter fixed to table, double ended single vernier reading to 1 minute of arc attach to telescope with following accessories :

1) TELESCOPE

178mm focus a chromatic object glass with 25mm clear aperture, 8 X Ramsden eye-piece with cross lines.

2) COLLIMATOR



Achromatic object glass 178mm focus, 25mmclear aperture adjustable precision slit with stainless steel jaws, rack and pinion focussing, prism table with levelling screw and its height is adjustable, surface marked with parallel lines to facilitate levelling of prism. Supplied complete with prism clamp and grating holder, watch makers eye lens to read vernier and tommy bar without prism. Supplied in beautifully polished wooden case with lock and key.

3510 OPTICAL GRADE PRISMS FOR SPECTROMETER

Equilateral, faces polished high quality optical instrument grade

	GLASS TYPES	SIZES(MM)		
A)	Crown glass	1a	2a	3a
	R.I: 1.52	25x25	32x32	38x38
B)	D.F.Glass	1b	2b	3b
	R.I:1.62	25x25	32x32	38x38
C)	E.D.F.Glass	1c	2c	3c
	R.I: 1.65	25x25	32x32	38x38

3535 DIFFRATION GRATING REPLICA

Mounted between glass plates.

A) Transmission type Size : 30 x 25 mm 15000 lines per Inch mounted in plastic frame.

B) Diffraction grating school quality Size: 25 x 30 mm , 13400 lines per inch mounted in plastic frame.

C) Transmission type size: 38 x 50 mm, 15000 lines per inch. Replica on glass plate covered with another glass plate.

3555 PINHOLE CAMERA KIT

It is meant for group of students to perform experiments on simple optics to demostrate the principles of image formation using simple pinhole camera and then proceeding towards the use of a single lens to obtain image of greater brilliance with clarity. The effect of aperture variaton on depth of the field may also be shown.

This kit comprises the following :

- Cardboard boxes 150 x 100 x 100mm with hole-8nos
- Translucent Screen-8nos.
- Sheets of black paper, 250x250mm-50nos..
- Filament lamp 200 W, mounted on holder-onenos.
- Packet of pins.

3560 PINHOLE CAMERA, WOODEN

To illustrate images produced by small aperture. Comprises a polished wooden box.15x10x10 cm with pinhole in front and ground glass screen at back.

3600 MODEL OF PERISCOPE

Two parrallel mirrors mounted in a tube to form periscope. Overall dimension is 400mm x 50mm.

3615 POLARIMETER

This is to study the polarization angle of sodium using polaziser and analyser. It consists of a metal cylindrical house which incorporates light source followed by a poloroid. The cylinder adopts a nessler cylinder of 50ml for solutions to be tested. On the other end of the metal cylinder is a round disc 150mm and 360 degree scale printed over the circular disc an analyser with pointer can be placed to study the extinction angle of a particular solution.

3625 POLARIMETER HALF SHADOW

It has two V supports 100 or 200mm apart to locate solution tubes (Polarimeter tubes) in the optical axis. The solution tube is enclosed in aluminium light shield mounted in a heavy cast iron base with synthetic hammer or plane finish as desired. All bright parts chrome plated. Solution tube is200mm long. Half shadow angle 5". The polariser and analyser have polaroid discs and polariser is fitted with condenser lens to obtain parallel light. Scale is 180m min diameter divided in degrees read with a Vernier to 0.1". Accessories :

1. Solution tube 100mm, 200mm one each.
2. Rubber washers for tubes pack of 6.
3. Sodium lamp 14W with lamp house and transformer

3630 POLARIMETER BELLINGHAM AND STANLEY

It has polarizing elements and a quartz half wave plate. The two part field is investigated in the lower telescope. There is an analyser circle rotating which achieves the balance and it is observable in upper telescope till both halves of the field are of equal intensity. Then optically active sample is introduced and this upsets the balance which is in turn restored by rotating the analyser circle by rotating through an angle which will correspond to the rotation caused by sample. A 100mm glass circle is fitted to the instrument with 360 degree angular scale sub divide din 1" and also an internation sugar scale 0 to 130 degree sub divided 1 degree is fitted along with. Further sub division is achieved by a divided drum which ensures angular scale reading to 0.05 and sugar scale to 0.1". A suitable filter is included. Optical system used with Sodium lamp 14W with lamp house and transformer. Supplied complete with angular scale, international sugar scale, variable half shadow polariser, and one 200mm polarimeter tube of glass with normal bore 8mm screw on endcaps, suitable glass cover disc and rubber warsher but without

sodium lamp. As pare polarimeter tube along with 6 nos glass cover disc and a pack of 12 rubber washers are supplied packed separately with one instrument.

3640 NEWTON'S RING

Two Pieces of glass, one flat and the other with as lightly convex surface, when clamped together with in two plastic/metal ring sit produces interference rings. Demonstrate the accuracy of polished glass surfaces. Outer dia 60mm clear aperture 35mm approx.

3650 NEWTON'S COLOUR DISC

To demonstrate that white light is composed by all seven spectral colours. A seven color disc, dia 150mm mounted on a metal stand driven by a hand wheel. When the disc is rotated rapidly it gives appears white, thus demonstrating that white light is composed of seven colors.

B) Same as above but with metal disc of 200mm dia, mounted on metal stand can be fixed with the clamp on table.

SOUND

3700 TUNING FORKS

Nickle plated plane shank Frequency in Hz

A)	256	C1	B)	288	D
C)	320	E	D)	341	F
E)	384	G	F)	426	A
G)	480	B	H)	512	C2

3710 TUNING FORK SET

Set of 8 tuning fork of nickle plated steel with plain shank packed in a case, frequencies marked C1, D, E, F, G, A, B and C2 from 256 to 512Hz.

3715 TUNING FORK SET

Set of 13 tuning forks made of blued steel with frequencies marked from (C1 256) Hz to (C2 512) Hz. packed in a case.

3720 TUNING FORK

Made of Aluminium alloy, Set of 8 pieces of different frequencies packed in a case.

3725 TUNING FORKS ON RESONANCE BOXES

Two tuning forks, C1 256 Hz and C2 512 Hz are mounted on individual resonance boxes with one hammer. One fork is provided with adjustable mass by help of which frequency may be changed.

3735 FOUR TUNING FORKS ON RESONANCE BOX

Four tuning forks are mounted on a single proper size dresonance box to produce a major chord. Forks have frequencies of C1 256, E320Hz, G384Hz and C2512Hz. When struck together with hammer, the forks will produce the chord of C major. Supplied complete with one hammer.

3740 TUNING FORK ELECTRIC ALLY OPERATED

Mounted on sturdy base with provision for horizontal or vertical use. Fork is manufactured form selected steel. Prong is 10 x 25 x300mm. Accurate frequency adjustment, vibrations rate 60/ Secs. Electromagnet can work on 6 volts. The amplitude of vibration can vary by sliding the

electromagnet inside prongs. Complete with stylus, mirror and counter piece.

3755 STETHOSCOPE

Nickel plated metal parts, with rubber tubing, highly sensitive.

3760 ORGAN PIPE

Square section with tapered mouth piece made of nicely polished wood, overall length760mm.

3765 ORGAN PIPE

Made of varnished wood with glass front and membrane suspended on cord for loading with sand to show positions of nodes and anti nodes, overall length 760 mm.

3770 ORGAN PIPE

Used to investigate phenomenon of beats in conjunction with a second pipe of same type. Square section, tapered mouthpiece made of polished wood, graduated sliding piston, square in section with knob at the end for easy handling. The slider marked with a dia-tonic scale (C 256) to (C1024)Hz.

3775 FREQUENCY APPARATUS

Used for comparison off requencies of two tuning forks by falling plate methos. A wooden stand, a glass plate with an arrangement for holding it and for clamping the forks side by side. Supplied with two tuning forks.

3780 RESONANCE APPARATUS

It comprises glass resonance tube of 100 cm length mounted on retort stand with clamp and boss, 500ml glass bulb supported on split iron ring. The bulb is joined to glass tube by rubber tubing.

3785 RESONANCE APPARATUS SIMPLE FORM

A) It comprises two aluminium with in the tubes may be altered. Air columan variable from 300mm to 530mm. Outer tube fits in to a removable wooden base.

B) Same as above but with plastic tubes.

3795 WAVE FORM HELIX, SLINKY

For demonstration of wave motion, helical coil of flat section tempered steel coil, dia 75 mm, closed lengths 115 mm, fully extened 5 meters.

3800 WAVE FORM HELIX

For demonstration of wave motion, pulses, reflection and interference, steel wire close wound helix, 19mm diameter closed length 3 mtrs. extending to approximately 9 mtrs with loops ends.

3805 WAVE'S DEMONSTRATION APPARATUS

used for the demonstration of longitudinal and transverse motions. It consists of a number of eccentric disc supporting a series of metal rods. Transverse waves are obtained on revolving the handle. Longitudinal waves obtained with bent rods running in a metal guide and fitted on polished wooden base.

3810 WAVE MACHINE, POWELL'S

Used for the demonstration of progressive transverse waves. It comprises 22 small balls on wire rods with e centric motion attachment with driving handle and fitted on polished wooden base.

3825 SAVART'S WHEEL

Four 75mm dia, to othed wheels made of brass having 36, 45, 54, and 72 teeths are fixed 6mm apart on a common shaft projecting as spindle. The spindle is slightly tape rat it send formounting in whirling table post. Used with whriling table.

3830 WHIRLING TABLE (CENTRIFUGAL ENGINE)

This is a multipurpose whirling engine may beused for centrifuse tube, Newton color disc, Sewart wheeletc. Over all height 430mm, can be used in both horizontal and vertical position.

3835 SIREN DISC

A 190mm circular sir endisc having four concentrichole rings of 38, 45, 54, and 72 holes respectively fitted with slight taper at end of central spindle. Supplied with glass air tube, used with whirling table.

3836 SIREN WITH INDICATOR

It consists of a air chamber and a rotating disc having circles of holes. When the disc is rotated by blowing air, a shrill sound is produced. By means of a worm gear the number of revolutions is recorded. Mounted on a base.

3840 RIPPLE TANK

This is used for class room demonstration of circular waves, reflection, deffraction and interference effects of sound waves. It comprises a tray made of wooden frame and base fitted with glass plate. The tank is carried on four detachable legs. Overall size of tray 600 x 525 x 55mm. At the side of the tank, a pair of support rods are attached to carry the wave generating system. A set of 4 metal barriers or reflectors consisting of a pair of straight barriers approx 150x25mm, a curved barrier of 215mm x 25mm chord length x ht. and a small straight barrier 25 x 25mm. A set of four loose gauze strips are provided to minimise undesired reflections from the sides of the tank. These gauze strips are arranged as to form a beach on all sides. A wave generator to produce ripples consists of a small 1.5 to 4.5V electric motor mounted at the centre of a 330mm long waxed wooden bar. The wooden bar have a row of holes to mount the spherical dipper. Supplied with suitable variable power supply.

3845 SONO METER

It consists of a wooden board 900 x 80mm (LxW) on four feet, fitted with two steel wires about 0.3 x 1m (dia x length). At one end of base there are two 50N spring balances with hooks and at the other end are two wrest pins. Supplied complete with three bridges, one large and two small bridges for individual wires, two steel wires of 30SWGx1 meter long.

3850 SONO METER-2- WIRE PATTERN

Wooden resonance box of 114cm (length) 12.5cm width and 10cm height, with two rules 1 meter long. One brass and one steel wire of different diameters attached to fixed bridge and tensioned by fine adjustable pegs. Two moveable bridges, pulley and fixed screw to enable a third wire to be fixed for tensioning by masses. One each additional wire of steel and brass, each 1.5m length of 22SWG.

3855 SONO METER-3-WIRE PATTERN

A hollow wooden resonance box 120x12.5x10cms (LxWxH). Two wooden rules 1mtr. long sub-divided in mms, fixed between bridges over which wires has stretched. A spring balance 100 x 5N is fitted on

one wire. Tension exerted can thus be measured and also adjustable finely by a wing nut resting against a plate at the end of the apparatus, second wire passes over a pulley and can be loaded as desired, a third wire is given for comparison and its tension adjustable by a wrest pin. Distance between fixed bridges is kept 720mm. Supplied complete with three movable bridges, a set off our wires 1.5mtr. of 20, 22, 24, 26SW Geach. Supplied without weights.

SPARE AND ACCESSORIES : Sonometer Wires : Set of 6 wires 1.5mtr. each ends looped ready for use.

3860 MELDE'S APPARATUS

To show the effect of vibrations in a strecthed cord and investigate the relationship between frequency, tension and density. In addition the provision of electrical contacts, opened and closed by the vibrating armature, allow the apparatus to be used as highspeed changeover switch in. Comprises a thin steel rod armature mounted in a clamp formed by a pair of 4mm socket terminals, so that its free length may be adjusted as desired. An A.C. energising coil surrounds the armature and a permanent magnet provides the necessary magnetic polarisation. The free end of the armature equipped with a small boss and clamping screw for attachment of the cord and also serves as the moving contact when the apparatus is operating as a changeover switch. The complete apparatus is carried upon a box type base 150 x 80mm.

MAGNETISM

4005 HORSE SHOE MAGNETS

Chromed steel, with keepers, dimensions are :

A) 50 x 12x5mm B) 75 x 12 x 5mm

C) 100 x 12x5mm D) 150 x 12 x 5mm in card board case.

4010 HORSE SHOE MAGNETS

ALNICO, with keepers. Dimensions are nominal, packed in card board case. Sizes available are :

A) 50 x 12 x15mm

B) 75 x 12 x15mm

C) 100 x 12 x 15mm

4015 HORSE SHOE MAGNETS

ALNICO with keepers, over all length 25mm and distance across the poles 22mm.

4020 BAR MAGNETS

Chromed steel, in pair, red painted with keepers, dimensions are :

A) 37x12x5mm B) 50x12x5mm C) 75x12x5mm

C) 100x12x5mm E) 150x12x5mm

Optional : wooden case for above.

4020 BAR MAGNETS

ALNICO in pair, lifting power 500gms, with keepers. supplied in card board boxes. Dimensions are : Width x Thickness (13 x 10) mm in different lengths :

	A	B	C	D
Lengths :	50	75	100	150

4025 BAR MAGNETS

ALNICO, in pairs with keepers, Dimensions areas below in cardboard packing : Width x Thickness (15 x 10) cms in different lengths:

	A	B	C	D	E
Lengths :	25	50	75	100	150

4030 BAR MAGNETS

ALNICO, in pairs with keepers, Dimensions are as below in cardboard packing : Width x Thickness (12 x 8) mm in different lengths :

	A	B	C	D
Lengths :	50	75	100	150

4035 BAR MAGNETS

ALNICO, in pairs with keepers, Dimensions areas below in cardboard packing : Width x Thickness (15 x 5) mm

	A	B	C
Lengths :	50	75	100

4040 BOXES

Wooden boxes for Bar Magnets

	A	B	C	D
Length :	50	75	100	150

4045 CYLINDRICAL MAGNETS

Chrome plated 12mm dia in pairs in different lengths :

A) 50mm B) 100mm C) 150mm

4050 CYLINDERICAL MAGNETS

ALNICO, Rounded edges, in pairs, with keepers supplied in cardboard boxes in different length's :

in dia of 10mm : A) 37 B) 50 C) 75

in dia of 12.5 : D) 37 E) 50 F) 75 G) 100

4055 U SHAPE MAGNETS

ALNICO dimensions are nominal in cardboard boxes :

	Length	Distance across the poles
A)	30mm	45mm with hole
B)	30mm	45mm with out hole

4060 U SHAPE MAGNETS

ALNICO with keepers dimensions are nominal in card board boxes :

	Size	Centre Gap	Lifting power
A)	37x13x10mm	18mm	350gms
B)	50x13x10mm	18mm	500gms
C)	75x13x10mm	18mm	500gms

4065 RING MAGNETS, CERAMIC

Magnetised in different sizes in MM :

A) 32x16x8 B) 36x18x6 C) 36x18x8 D)45x22x8
E) 45x22x11 F) 53x24x10 G) 72x32x10 mm

4070 FLOATING RING MAGNETS

It comprises five number ceramic ring magnet search having 23mm external diameter are put around a wooden rod on base. Over all height 125mm, ring magnets are placed on the road that they mutually repel, floating effect is readily apparent as are sult.

4075 SET OF METAL DISCS

For demonstration that some metals are magnetic whilst other sare not, and for general metali dentification exercises. Comprises sixteen discs of 25mm dia, 2 each of mild steel, stainless steel, brass, zinc, nickel, silver bronze, aluminium and copper. One of each pair stamped with the name of the metal. The other is unmarked.

4100 MATERIALS SET OF MAGNET IS MAND ELECTRICITY

It comprises 11 pieces of magnetic and non-magnetic materials about 185x30mm (LxW), thickness of metals 0.9mm and non metals 1.6mm approximately. Materials are aluminium, brass cardboard, copper, lead, mumetal, acrylic, ploythene Steel, wood and zinc.

4110 COMPASS PLOTTING

Made of metal with top glass cover, perfectly balance needle to show North -South directions with color coding. Available in following diameters.

A) 20mm B) 25mm C) 50mm

4115 COMPASS PLOTTING

Same as previous but both top and bottom is made of glass.

A) 20mm B) 25mm C) 50mm

4120 COMPASS POCKET

50mm dia in plastic case with cover.

4130 MARINER'S COMPASS

Aluminium bowl with gimbals in polished wooden box with sliding cover, dia 100mm.Slide 20cm. with sliding kit.

4135 MARINER'S COMPASS

Same as above but on aluminium stand.

4142 MAGNATO METER

Comprising a stout metal box. 100mm dia, with aluminium dial graduated from 0 to 90 degree four times having anti parallex mirror slot.

4143 MAGNATO METER

Same as above but mounted on a wooden with meter scale.

4145 MAGNETISATION KIT

It consists of 150 nos. each of hardened steel rods of 1mm diameter and 100mm length and shim rings of 19mm outside diameter and 10mm inside diameter for magnetization and to show the field and pole distributions.

4150 SPRINKLER IRON/IRON FILING

Iron fillings, Pack of 1 Kg.

A) Coarse B) Fine

4165 VIBRATION MAGNETO METER

It consists of a wooden box with sliding glass windows. The top of case is slotted and carries a glass tube fitted with a simple torsion head to support a stirrup to carry magnets etc. The base of the box is marked with longitudinal index line. This is used to compare the magnetic moments of magnets and to determine moment of intertia. Supplied complete with one each of 50mm and 100mm bar magnets and one each 50 and 100mm Brass bars.

4170 MAGNETIC NEEDLES

With Brass centre, accurately balanced. Length

A) 50mm B) 75mm C) 100mm

4171 MAGNETIC NEEDLES

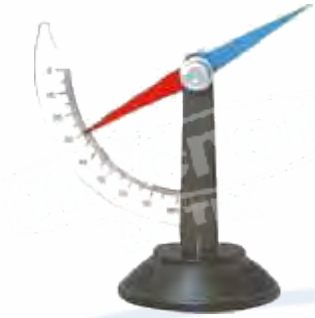
with jewel centre, accurately balanced.

A) 50mm B) 75mm C) 100mm

4180 STAND FOR MAGNETIC NEDDLE

A) Non magnetic metal pillar with carbon steel point, on stable base. Overall height 110mm.

B) same as above but with plastic base.



4185 DIP NEEDLE

With cobalt steel needle, 100mm long, graduated quadrant fully rotatable on metal base.

4190 DIP NEEDLE, SIMPLE

With steel needle 10cm. long on jewelled bearings, with circular metal scale, 13cm, diameter and anti parallex mirror, both rotable about vertical axis. Aluminium base of 15cm. diameter marked as four quadrants. Complete with extra needle.

4195 DIP NEEDLE PRECISION TYPE

For good and consistently accuratere sults. Case is made of light alloy metal 112 mm diameter approx with easily removable windows on both sides. Mounted on a heavy metal tripod base with two adjustable levelling feet and one fixed feet. Collors fixed on the bearing screws enables needle to be removed and replaced easily and accurately without damage to the pivot or bearing. Needle made of hardened steel, accurately balanced, 80mm long. 100mm diameter inclination scale graduated clock wise 0-900 four times. Horizontal Scale 100mm circular, graduated clock wise 0-3600 x 10. Fitted with a circular spirit level.

4205 ELECTRO MAGNET U-FORM

Comprising iron U-shaped core of circular section, with armature and carrying hook, wound with insulated 1.6mm diameter copper wire and provided with barrel connections, 100x13x75mm. for use on 4-6 volts DC.

A) Economy B) Super

4210 ELECTRO MAGNET

Lifting type, built with a coil of 300 turns of insulated copper wire operats on 6-12 volts and will easily lift 15kg. Complete with disc armature.

4211 INDUCED CURRENT APPARATUS

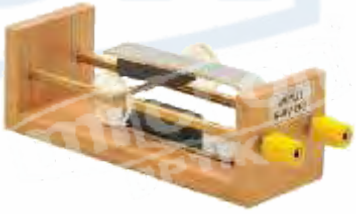
Used for the study of induced of currents comprises of two solenoids with one smaller to fit in the bigger one. The resistance of the first solenoid is 0.5 ohms (Approx) and second having resistance of 110 ohms (Approx.). Both the solenoids are prepared with enamelled copper wire and two connecting brass terminals are mounted on each. Supplied complete with one soft Iron core of length 120mm, dia 13mm mounted on a wooden base.

4212 DEMONSTRATION INDUCTION COIL

With primary of heavy gauge enamelled copper wire, appx. resistance 0.5 ohms wound on former 110 x 30mm, (Lt x dia). Secondary coil of fine enamelled copper wire, appx. resistance 100 ohms on former 110 x 82 mm (Lt x dia). Both coils fitted with 4mm sockets. Iron core 120 x 15 mm.

4213 APPARATUS TO SHOW FORCE ON CONDUCTOR IN A MAGNETIC FIELD

Comprising a strong U-shaped magnet and a pair of brass rails with 4 mm socket terminals. A brass axle with plastic discs is free to roll along the rails and completes the electrical contact between them. When the axle is placed on the rails between the poles of the magnet, and a power supply unit is connected, the axle is repelled and rolls along the rails away from the centre of magnetic field. Dimensions 175 x 60 x60mm.



4214 BARLOW'S WHEEL

For demonstration of electric energy into mechanical energy. Star shaped copper disc 9cm. Diameter rotable vertically on pair of adjustable centers and dipping into mercury through between the vertical limbs of a small horses hoe magnet on a woodenbase 15 x10cm. Disc adjustable vertically on metal pillar which is connected to one of two terminals mounted on base. The other terminal is connected to the mercury trough. The apparatus will operates on 4 volts at which voltage it takes 1.8 amps., with out battery.

4215 COIL, HIGH INDUCTANCE

For use on a double 'C' core, the bobbin is wound with 1100 turns of 22

S.W.G. copper wire, has a resistance of 6 wand an inductance of about 15 Henries. Dimensions 100x60x55mm approx.

4216 MAGNETISING AND DEMAGNETISING COIL

For magnetisation of iron bars strips and for demagnetisation and remagnetisation of old magnets, compass needles etc. It comprises of a solenoid wound with insulated copper wire and mounted on a base complete with switch and connecting terminals. Solenoid 250x35mm length x Internal diameter. Operates on 6A, 12V A.C. or D.C. power supply. However, A.C. power supply is most suitable for both Magnetisation and De-magnetisationexperiments.

4220 FORCE ON A CONDUCTOR BALANCE

To study the force of attraction and repulsion due to current in a conductor in magnetic field. A balance beam is supported by the pillars in two bearings which form the fulcrum. Each pillar is provided with an external circuit and whole unit is mounted on a plastic base. Two screwed adjustment of senstivity and other for equilibium position under no current. Scale marked 0 to 75mm x 1 mm rider of 1gm.

ELECTROSTATICS

4300 VANDE GRAFF GENERATOR, HAND DRIVEN

A hand driven Vande Graff Generator mounted on wooden base. The generator is self exciting provision of charge separation. Two removable Aluminium sphere of dia 150mm and 75mm supported on a pivoted arm with handle for charge collecting and discharging purpose, respectively. The discharge sphere is also attached to the top of driving wheel pillar. A 4mm socket is provided at the top of large sphere.

4305 VANDE GRAFF GENERATOR, MOTOR DRIVEN

Used for the continuous production of high voltage in laboratory. A motor driven Vande Graff Generator for generating electrostatic charges equivalet to 200 KV for a spark length of 75mm (Approx). It operates on 230V, 50Hz mains supply. The charge is transfers from generator to the metallic sphere of dia 150mm, mounted surrounding the belt mounted on upper pulley. Power inputs by color coded 4mm scockets. A separate discharging sphere 100mm diameter, mounted on metal stem is provided for discharging purpose.

SPECIFICATIONS :

Motor	: Operates on 220v A.C. 50Hz.
Collecting	: Rubber
Brushes	: Metallic non injurious to belt.
Spheres	: Aluminium,16.5cm. dia. app.
Voltage	: 250KV under dust free atmospheric developed. conditions corresponding to as park discharge of 7cm.
Earthing	: By earth lead of 3 core mains cable.
Discharge	: 10cm. dia. sphere mounted on a metallic rod.

ACCESSORY SET :

Head of Hair, brush of artificial hair may be fixed in 4mm socket in top of upper dome of generator-Faraday pail-Neon bulb-vibrating column to stimulate ions in motion in transparent plastic contain or and one spare belt. Supplied complete with above accessories.

4310 WIMSHURST MACHINE

This is a conventional electrostatic generator capable of producing spaks up to 75mm approx. A revolving disc of dia 250mm and having 25 radial Alminium foil segments and mounted in between two plastic plates held close together. The naturalizing bars are provided with replaceable tapes. A pair of leyden glass jars are provided. The complete machine is mounted on nicely polished wooden base.

4325 PROOF PLANE

Used for collection of charge from a charge body. Made of a small copper 15mm circular disc mounted coaxially on a 150 mm long perspex or ebonite rod.

4330 ELECTRO PHOROUS, SIMPLE

Used for producing electrostatic charges for electroscope experiments. A plated metal disc of 15cm diameter, mounted on wooden sole, brass cover 10cm. dia. with abonite handle and small brass contact spheres.

4335 AEPINUS CONDENSER

This is to demonstrate the variation of capacity of a condenseron the distance between the plates and the medium in between. Two Brass/Aluminium plates mounted on stem with insulating handle and mounted on post and their distance can be varied manually. Mounted on a wooden base with lockty peterminals. Provision for placing an insulating plate in between the condenser plates. supplied with three dielectric plates of glass, wood and perspex.

4345 SPHERE CONDUCTOR

For experiments on electrostatic induction chrome plated brass sphere diameter 50 mm(Approx) and mounted on an insulting stand.

4350 CONDUCTORS, SET OF THREE

Three conductors, one each of a sphere 50mm diameter, a cylinder 125 x 50 mm and a cone 100x50mm (length x diameter) interchangeable on an insulating stem over metal base.

4355 DISCHARGING TONGS

A) Consists of two brass spheres of dia 15mm each mounted on stiff curved arms, and fitted over an insulating handle made of ebonite/perspex.
Overall length = 30 cm. app.

B) As above, overall length = 20cm. app.

4360 FARADAY'S ICE PAILS

To explain the equality of charges produced by electrostatic induction. Consists of 4 aluminium metal cylinders fitted with insulating base, in a graded size, Dimension of largest pail 120 height x 150 O.D. and lowest pail is 75mm high and 75 O.D.

4365 ELECTRIC WHIRL

Consist of a wheel having a nos. of spokes rotatable freely on an insulating stand. The wheel rotates freely on a pivot point mounted on a short stand and the stand is provided with a 4mm connection socket on its round molded base. Used to demonstrate the effect of electric discharge from points.

4380 PITH BALL SIMPLE

A pair of metallised expanded polystyrene spheres, suspended by cotton threads from a wire frame stand Upper part of the stand is insulted from its base.

4385 CLOTH, FRICTION CHARGING

For experiments on electro statics and gold leaf electroscope,

A) Silk, size 50cms x 50cms.
B) wool, size 50cms x 50cms.

4390 FRICTION RODS, INSULATING MATERIALS

For experiments on electro statics following rods are available.

A) Nylone Rod, 13mm dia, 300mm length
B) Ebonite Rod, 12mm dia, 300mm length
C) Glass Rod, 13mm dia, 300mm length
D) Perspex Rod, 12mm dia, 300mm length
E) Half brass and half glass, dia12mm, length 300mm
F) Half brass half ebonite, dia 12mm, length 300mm

4410 MALVERN ELECTRO STATIC KIT

This kit is very much suitable for experiments on electro statics. It consist of a dual purpose electroscope with removable glass panels, removable insulation bush, fitted with 4 mm socket at the side wall of the electroscope accessories are:

A) Electroscope as described with top metal plate and hook electrode.
B) Gold leaves for fixing-One Pkt..
C) Metallized polystyrene sphere, dia 10mm. -4Nos.
D) Fine nylone thread -one reel,.
E) Polythene plates 60 x 60 mm square.
F) Electrophorous plate 50 mm dia with handle,
G) Aluminium cylinder 50mm x 25mm (length x dia)
H) Cellulose acetate strip.
I) Polythene strips 150x25mm.
J) Woolen Rubber for above.
K) Stirrup for suspending strips.

4416 BATTRY JAR

Clear glass molded and top grounded.

A) Height 75mm x Dia 50mm.
B) Height 200mm x Dia 115mm.

4425 CELL PLATES

Used for the construction of simple type batteries. Plates are 125x50mm and connected with 4mm sockets for connection.

	Material	Thickness
A)	Zinc	1.5
B)	Carbon	6
C)	Copper	1.5
D)	Lead	1.5

4430 DANIELL CELL

Outer vessel made of Copper with an internal perforated shelf for CuSo4 (Copper Sulphate) crystals. Porous pot and zinc rod fitted with wooden cap. Each of zinc rod and copper vessel is provided with 4 mm socket.

4431 POROUS POT CYLINDRICAL

	Height in mm	Diameter in mm.
A)	75	25
B)	100	25
C)	150	50
D)	150	60

4435 COPPER VOLT AMETER

A glass jar with insulated cover and 3 copper plates 75x33mm fitted with connecting terminal knobs.

4440 VOLT AMETER

Platinum electrodes fitted with two graduated test tubes, capacity 10ml, mounted on a base with terminals.

4441 ACCUMULATORS

With charge indicating system 2 volts 45AH on 20 Hrs rate in plastic containor.

4442 NI-FECELL

Nickel-Cadmium cells reconditioned and uncharged with emf 1.2 V per cell, housed in wooden crate of 2 cells in different capacities.

A) 25AH B) 45AH C) 75AH

A) Electrolyte for above cell, 450 gms dry powder.

B) Electrolyte for above cell, 750 ml solution.

4443 LECLANCHE CELL

A) Charged porous pot 150 x 60mm (Ht. x Dia), with brass terminal, having e.m.f 1.5 Volts and zinc rod 12.5 mm diameter in rectangular polythene jar.

B) As above but in glass jar.

4444 SIMPLE CELL POT

Simple cell pot is used for making simple cells and voltmeter etc. Moulded in polypropylene. This pot has very good clearity and excellent chemical resistant. Being in polypropylene this pot is much durable than one used conventionally.

4445 LECLANCHE CELL POT

Blown in polypropylene, this pot is used for making Leclanche cell. This pot has very good contact clarity and excellent chemical resistance.

4446 STANDARD CELL

Portable type, for use inside panel of instruments such as Potentiometers, PH-meters, Electronic Instruments. Cell is housed inside with engraved acrylic panel, Red and Black terminals provided. Internal resistance 1000 to 1500 ohms. Emf. at 20 Degree C is 1.01859 volts.

4460 OERSTED'S APPARATUS

To explain the effect off low of current in conductor on the magnet. Consist of a rectangular section of copper rod of dia 6mm, mounted on an insulting base over a post on the axis of which a 75mm magnetic needle is mounted. When current flows in the conductor needle moves around depending on the direction of flow of current.

ELECTRICITY

4470 DEMONSTRATION TRANSFORMER

Operates on 220 V A.C. mains, 50Hz. Two interchangeable secondary coils to produce 6 V and 12 V at 2A can be mounted one by one over the primary coil. The mains coilis provided with 1 mtr. of two core cable and secondary coil are mounted with 4mm socket terminal. Students can easily mount or demount the transformer unit to get a 6V or 12V power supply as per requirement.

4475 DEMONSTRATION MOTOR

Operates on 4-8volts d.c. having two pole armature wound with enameled copper wire and a permanent magnetic field produced by a remove able bar magnet placed at the top of the assembly. Mounted on wooden base and provided with two 4mm socket terminal for power connection. The axis is freely moveable on with the applied voltage through disc type commutator and phosphorous bronze bushes.

4480 MOTOR, OPEN TYPE

For the demonstration of the construction of simple motor, with magnets in side post and small pulley on axis, works on 4-6 volts D.C. Mounted on a Bakelite base with newton color disc.

4490 DEMONSTRATION MOTOR, ST. LOUIS

For the study of fundamental principals of electric motor and generator. The motor consists of two poles. The brush holder with two heavy binding post terminals, may be ritated for experiments. The permanent bar magnets are supported by un adjustable clamps horizontally for pole separation. Complete with two bar magnets, a two pole D.C. armature.

4495 DEMONSTRATION DYNMO

A hand driven dynmo mounted on wooden base. Pulley diameter 120mm connected to a small pulley mounted on the axis of motor through rubber belt. The electrical out put is taken via two 4mm sockets and feed to low voltage bulb in holder. When large pulley is rotated by hand crank, bulb illuminates. This may also be used as motor on 4-8 volt d.c.

4500 BICYCLE DYNMO ASSEMBLY

A cycle dynmo mounted on a wooden base having two 4mm socket terminals. The dynmo is connected with two set of gears driven by a hand crank for fast and slow speed selection. One MES bulb is mounted in lamp holder and internally connected for demonstration of its working.

4505 INDUCTION COIL

Used for producing high potential difference and unidirectional current by electromagnetic inductions. Mounted on wooden base and provided with two 4mm socket terminal for connection to the power supply. Available in various spark gap ranges fitted with or without reversing switch.

A) Spark Gap: 10mm (Approx)
B) Spark Gap: 15mm (Approx)
C) Spark Gap: 20mm (Approx)
D) Spark Gap: 25mm (Approx)
E) Spark Gap: 50mm (Approx)
C) Spark Gap: 75mm (Approx)
D) Spark Gap: 100mm (Approx)

4506 INDUCTION COIL

Electronic solid state induction coil, but without vibrator, fitted with reversing switch, operates on 220 Volts A.C.

	A	B	C	D
Spark in mm	25	50	75	100

4510 INDUCTION COIL, SPARK, OPEN TYPE

Same as above but open type, fitted with transparent perspex window to see the winding of primary & seconday coil.

4530 MORSE SOUNDER

Mounted on polished wooden base electromagnet, pivotedarm, adjustable screw, On/Off switch and terminals.

4535 CARBON AR CLAMP

To explain the working of an arc lamps operates on 12V A.C or D.C.

4540 TELEGRAPH SET, TABLE TYPE

Set of two units, each unit is fitted with one morse key, one sounder and

on/off switch for battery with four terminals. Each unit is workable on 4-6 Volts D.C.

4550 TELEGRAPH SET, LECTURE PATTERN

Set of two units working model, each unit is mounted on wooden polished vertical stand, all connections are clearly visible to explain the principle of telegraph. Each unit is workable on 4-6 Volts D.C.

4560 BELL DEMONSTRATION MODEL

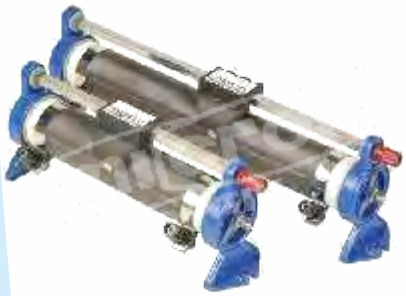
All the components of an electric bell are mounted on a large panel. All wiring is visible and parts are of large size. Operates on 3-4 Volts D.C.

4565 BELL DEMONSTRATION MODEL

Same as above but of superior quality on folding stand.

4570 RHEOSTAT RESISTORS SLIDING CONTACT

For use as series resistors of potentiometers. Open type slide wire type with a variety of resistance and current carrying capacity. Copper nickel alloys wire is oxidised to provicde perfect insulation. Phosphor bronze contact provided on metal chrome plated slider-rod to give rapid and smooth adjustment. Three 4mm socket terminals are provided, one a teachend of the wire and the third a tone end of the slider-rod thus the Rheostate can beused as potentiometer also. Resistance in ohms and current carrying capacities are engraved on it.



			Length in MM.			
	150	200	250	300	400	500
	A	B	C	D	E	F
Amps.			**RESISTANCE IN OHMS**			
8	1.5	2.5	3.5	4.5	6.5	8.5
6.5	3	4.4	6	7.5	10.5	13
5.0	4.5	6.5	9	11	15	20
4.2	8	12	16	20	28	36
3.3	11	16	22	27	37	50
2.8	15	22	29	36	50	64
2.3	23	34	45	56	80	100
1.8	36	55	74	92	128	165
1.6	50	75	100	125	175	225
1.4	64	96	128	160	220	290
1.2	89	135	180	225	315	395
1.0	115	175	235	290	405`	515
0.8	160	240	320	400	560	720
0.6	270	400	540	670	930	1200

0.5	400	600	800	1000	1400	1800
0.4	660	975	1300	1625	2275	2950
0.3	1150	1700	2250	2850	3950	5150

4571 RHEOSTAT RESISTORS SLIDING CONTACT

----------SAME AS ABOVE---------- But Dia of Tube 56mm.

		Length in MM.				
	150	200	250	300	400	500
	A	B	C	D	E	F
Amps.		**RESISTANCE IN OHMS**				
8.5	2	3	4.5	5.5	8	10
6.5	3.5	5.5	7.5	9.5	13	17
5.0	5.5	8	11	14	20	26
4.2	10	15	20	25	35	45
3.3	14	20	28	34	48	64
2.8	1.8	28	38	48	66	86
2.3	26	41	56	71	102	128
1.8	47	70	93	116	160	210
1.6	64	96	125	160	225	290
1.4	84	120	160	200	285	360
1.2	115	170	230	290	400	500
1.0	148	225	295	365	520	675
0.8	200	300	400	500	700	925
0.6	345	510	675	835	1165	1500
0.5	500	750	1000	1250	1800	2300
0.4	840	1250	1650	2270	2900	3750
0.3	1350	2100	2350	3600	5100	6750

4572 RHEOSTAT DOUBLE TUBE RESISTORS SLIDING CONTACT

--------SAME AS ABOVE---------- But Dia of tube 43mm.

		Length in mms			
	300	350	400	450	500
	A	B	C	D	E
Amps		**Resistance in Ohms**			
10	5.5	6.5	7.5	9	10
8	9	11	13	15	17
4.2	40	4.8	56	64	72
2.8	74	90	104	120	134
1.6	250	300	351	400	450

4573 RHEOSTAT DOUBLE TUBE

Same as above but in tube dia of 56mm.

		Length in mms			
	300	350	400	450	500
	A	B	C	D	E
Amps		**Resistance in Ohms**			
10	7	8.5	10	11.5	13
8	11	14	16	8	20
6.5	19	22	26	30	34
3.3	68	84	96	116	128
2.3	142	172	204	228	256
1.2	580	690	800	900	1000
0.8	1000	1200	1400	1600	1800
0.6	1670	2000	2330	2670	3000

4574 RHEOSTAT SINGLE TUBE

Wounded with heavily oxidized resistance wire upon a vitreous enamelled steel tube. The winding is locked into a placed with ceramic cement. The tube is holded on a die cast stands and and a heavy duty sliding contact is of the multi leaf phosphor bronze type, nickel plated for corrosion resistance, 4mm socket terminal sare fitted, for rheostate or potentometer connections.

Tube Size in : 200x43 cms

	Resistance in Ohms	**Max Current**
A)	1600	0.3
B)	600	0.6
C)	300	0.9
D)	135	1.4
E)	55	2.3
F)	16	4
G)	8.5	5
H)	2.5	9
I)	6.5	5.5
	Tube size in: 300x43cms.	
J)	1325	0.5
K)	280	1.2
L)	125	1.8
M)	37	3.2
N)	20	4.5
O)	4.5	9

4575 RHEOSTAT (SINGLE TYPE) RESISTORS SINGLE CONTACT WITH PROTECTED COVERS

Wounded with heavily oxidized resistance wire upon a tube. with 4mm socket terminals. Maximum voltage 550 volts, 650 watts for 15 minutes, Resistance+/-10% compared to nominal value. Appx. Wt : 3.5kg.

	Resistance in Ohms	**Current in Amp.**
A)	3	12
B)	10	8

C)	33	4.4
D)	100	2.5
E)	330	1.4
F)	1000	0.8

4576 WHEAT STONE BRIDGE, ONE METER

This substantial FOURGAP bridge has broad, electroplated brass strips mounted on polished hard wood base. With 4mm terminals, sockets are provided to reduce the unwanted resistance and the gaps are closed by removable plated brass strips. Which can be placed in position by the terminals. The 24 SWG constant an wire is stretched along the top of a meter scale subdivided into millimeters and figured every centimeter. The ends of the wire are securely clamped to the terminating strips to reduce end errors to an egligible level. Supplied with Jokey. Dimensions are 1.15mm x 80 mm x 50mm appx.

4577 WHEAT STONE BRIDGE, ONE METER

Comprising 24 SWG constantan wire along the meter scale subdivided in centimeters and mms. Electroplated brass strips with 4mm socket terminals fastened along the back of the baseboard and two gap system for normal Wheatstone bridge work. Supplied with Jockey.

4578 POTENTIOMETER, ONE METER, SINGLE WIRE

A) Comprising 24 SWG constant an wire stretched along ameter scale, subdivided in centimeters and mms., clamped to thich electroplated brass end plates. The terminating strips are provided with 4mm socket terminals and mounted on a polished hard wood base board supplied with Jokey.
Dimensions : 1.15mm x 80mm x 50mm appx.

B) as above but with two wires.

4579 POST OFFICE BOX PLUG TYPE

Plug type, in polished teak wood box with hinged lid and black bakelite panel lined in white color to show circuit connections. Coils of constantan wire double silk covered are wound non-inductively and have a negligible temperature co-efficient. three pairs of ratio arms are 10,100,1000ohms and resistance arms contains 16 coils from 1 to 5000 ohms with infinity plug. Two spring keys have a special contact for battery and galvanometer. Accuracy of coils 100 to 500 ohms +/-0.05% and of the rest coils+/-0.1%

4580 POST OFFICE BOX PLUG TYPE

Same as above, with four pairs of ratio arms are each 1, 10, 100, 1000

ohms. Above are available with coils made of MANGANIN wire at extra cost.

4581 POST OFFICE BOX, WHEAT STONE BRIDGE

Decade dial type, with 6 decade (two decade 4 ratio arms 1, 10, 100, 1000 ohms and decade resistance units, total resistance 11110 ohms.) Coils are fitted with two enclosed tapping keys for battery and galvanometer. Accuracy +/-0.01% of unit coils.

4582 RESISTANCE BOX, SINGLE DIAL

Housed in metal box with knob and dial fitted. Provided with 4mm socket terminals. Accuracy +/-1% Range

A) 0.1 to 1 ohms in steps of 100 milliohms.
B) 1 to 10 ohms in step of 1 ohm
C) 10 to 100 ohms in step of 10 ohms.
D) 100 to 1000 ohms in steps of 100 ohms.
E) 1000 to 10000 ohms in step of 1000 ohms.

4583 RESISTANCE BOX, PLUG TYPE

In polished teak wooden box and bakelite panel. Split brass contact blocks hold precision cut, interchangeable plug having moulded black bakelite fluted tops. Coils of constantan wire, double silk covered. Coils are connected with double nut system, accuracy +/-0.1%.

	Range in Ohms	Total Ohm	No. of Coils
A)	1-100	210	9
B)	1-500	1110	12
C)	1-1000	2110	13
D)	1-5000	11110	16
E)	1-10000	21110	17

4584 RESISTANCE BOX, PLUG TYPE

Same as above but with coils of Mangan in wire, double silk covered. Accuracy +/- 0.05%.

4585 RESISTANCE BOX, DECADE DIAL TYPE

Very useful in laboratory, deviation bridges. Fuse protected, accuracy +/-1%. Available in two models.

A) In 4 decades
0-100 ohms in steps of 10 ohms.
0-1 k ohms in steps of 100 ohms.
0-10 k ohms in steps of 1 k ohms.
0-100 k ohms in steps of 10 k ohms.

B) In 5 decades

0-10 ohm in steps of 1 ohm.
0-100 ohm in steps of 10 ohm.
0-1 k ohm in steps of 100 ohm.
0-10 k ohm in steps of 1 k ohm.
0-100 k ohm in steps of 10 k ohm.

4586 INDUCTANCE BOX DECADE DIAL TYPE

For laboratory use. Useful as an oscillator element, wave shaping and resonance experiments. Fuse protection for safety. Accuracy +/-3%

A) In 4 decades
0-100 uH in steps of 10 uH
0-1mH in steps of 100 uH
0-10 mH in steps of 1 mH
0-100 mH in steps of 10 mH

B) In 5 decades
0-100 uH in steps of 10 uH
0-1mH in steps of 100 uH
0-10 mH in steps of 1 mH
mHinstepsof10mH
0-1H in steps of 100mH.
Also available in 6decades.

4587 CAPACITANCE BOX.

Single dial, compact size in metal box with dial and knob fitted with 4mm output plugs. Accuracy +/-2%. Voltage 250 volt D.C. Ranges :

A) 10 nF to 100 nF in steps of 10 nF.
B) 100 nF to 1000 nF in steps of 100 nF.
C) 1 KPF to 10 KPF in steps of 1 KPF.
D) 10 KPF to 100 KPF in steps of 10 KPF.
E) 100KPFto1000KPF instepsof100 KPF.

4588 RESISTANCE COILS

In bakelite case with 4 mm socket and captive head terminals Bobbins non inductively bound with double silk cover constant an wire. Accuracy 0.2%.

A) 0.1 to 0.9 ohms
B) 1.0 to 10 ohms
C) 11 to 50 ohms
D) 51 to 100 ohms
E) 101 to 500 ohms
F) 501 to 1000ohms

4589 RESISTANCE COILS

In transparent plastic tube with 4 mm socket and captive head terminals Bobbins non inductively bound with double silk cover constantan wire. Accuracy 0.2%.

A)	0.1 to 0.9 ohms	B)	1.0 to 10 ohms
C)	11 to 50 ohms	D)	51 to 100 ohms
E)	101 to 500 ohms	F)	501 to 1000 ohms

4593 VERNIER POTENTIOMETER.

Wide range. Specially for low voltage measurement. Coarse and fine galvanometer keys.
Total Range : 0 to 1.9 Volts in three ranges in step of 0.1 micro volt
Resistance : 100 Ohms per volt
Accuracy : +/-0.005% or 0.00002 Volts

4625 GALVANOMETER

Moving coil for D.C. Measurements

	A	B	C
Range	1-0-1mA	35-0-35mV	3.5-0-3.5mA

4630 AMMETERS

Moving Coil AC/DC. Any single **range from :** 0-1.5, 3, 5, 10 Amps.

4635 VOLTMETERS

Moving coil AC/DC. Different **range from :** 0-1.5, 3, 5, 10, 25, 50, 100, 150, 250, 300 Volts.

4640 MILLI AMMETERS

Moving coil AC/DC. Different range from : 0-100, 250, 500 Milli amps.

4645 AMMETERS

Dual scale, moving coil for D.C. measurements
Range from : 2.5/5, 1/5, 1.5/3, 5/10 Amps

4650 VOLTMETERS

Dual scale, moving coil for DC measurements Different
Range From : 1/5, 3/15, 5/15 Volts.

4655 MILLI AMMETERS

Triple scale, moving coil for D.C. measurements
Range from : 50mA /500mA/5A

4660 VOLTMETERS

Triple scale moving coil for D.C. measurements

	A	B
Range	3V/15V/30V	3V/15V/300V

4665 DEMONSTRATION METER

These meters are developed to teach easily constructional features of permanent magnet moving coil type, Movement is fitted in transparent box and internal electrical connection are made visible. These meter scan be used to demonstration and also for actual measurements

Accuracy Class Index : 2.5
Scale Length : 110 +/-2mm
Overall Size : 80 x 100 x 190mm.

4670 DEMONSTRATION METER INTER SCALE

Moving coil type with accuracy of +/-2.5%. Basis sensitivity of meteris 5mA, 100m V F.S.D. The meter can be used to demonstrate the working principle of AC or DC Ammeter or Voltmeters with the interchangeable plastic scales.

4675 DIAL INTERCHANGEABLE

For use with Demonstration Mete reach dial conprises a laminated plates panel 315x115mm with a sealed mounted box at one end, which contains the shut or voltage multiplier appropriate to the scale.

	D.C. CURRENT	D.C. VOLTAGE	A.C. CURRENT	A.C. VOLTAGE
A)	2.5-0-2.5mA	A) 0-1V	A) 0-10mA	A) 0.5 V
B)	10-0 -10mA	B) 0-5V	B) 0-50mA	B) 0-10 V
C)	0 -10 mA	C) 0-10 V	C) 0-100 mA	C) 0-15 V
D)	0-50 mA	D) 0-15 V	D) 0-500mA	D) 0-50 V
E)	0-100 mA	E) 0-300 V	E) 0-1 A	E) 0-300V
F)	0-500mA	F) 5-0-5 V	F) 0-5 A	MILLIVOLTS RANGE
G)	0-1 A	G) 10-0-10 V		A) 0-100mV
H)	0-5A			B) 0-500mV
I)	0-10 A			

4680 WATT METERS

Used for measuring effective power. Available for single phases as well as three phase balanced and unbalanced loads. It works on the principle of electrodynamic moments. Available size are 140x140 mm square or 150 mm round. Types :

A) Single Phase, Single element, low power factor watt meter,

Range Voltage : 62.5/125/250V OR 75/150/300V OR 125/250/ 500v OR 150/300/600V.
Current Range : 0.5/1, 1/2, 2/5, 5/10 OR 10/20 A.

B) Single Phase, Single element, Dynamometer type watt meter
Current Range :0.5-1, 1/2, 2.5/5, 5/10, 15/30 or 20/40 Amp.
Voltage Range : 50/100, 75/150, 125/250, 150/300, 250/500 or 300/600 Volts.

4685 KVARMETERS

These are used for measuring watt less components of KVA in three phase systems. Works on the principle of iron free electrodynamometer. Available in 144mm square or 150mm round projection suitable for pannel board mountings .
Range : Current up to 40amps directly and voltage up to 600 V with internal resistance. Accuracy Class 1-0.

A) KVAR Meter, 2-element Dynamometer type for 3 phase, 3-wire balance & unbalanced loads.
B) KVAR Meter, 3-element Dynamometer type for 3 phase, 4-wire balanced & unbalanced loads.

4690 PHASE SEQUENCE INDICATOR

For the testing of the sequence of electrical phase, while wiring, Plastic Body size 96x96 mm. Rotating disc type.
Operating Voltage : 150V-500V,
Operating Frequency : 25-60Hz.

4705 PHASE SEQUENCE INDICATOR

Used for the checking of phase sequence in a three phase system. Rotating disc type, separate terminals for three phase.
Rated voltage **:** 100-500 Volts.
Rated frequency **:** 40-60Hz.

4710 CELL TESTER/ VOLTMETER

Most suitable instrument for the measuring of voltage of batteries and cells. Bakelite case, supplied with a pair of built in leads which can be directly connected to any battery. **Digital Display :** 3x1/2digit.
Resolution : 0.001V, **Ranges :**

A) 2-0-2 Volts +- 0.1%
B) 20-0-20 Volts +- 0.1%

4720 SPOT GALVANOMETER

Designed for use as a null detector for potentiometric circuits and bridges. May also be used in industrial Kelvein bridge. Movement

protected against shocks.

Galvanometer Resistance : 125 ohms
Period : 2Sec.
Critical Damping Resistance : 1000 Ohms
Sensitivity : 5x10(-3) Amp/mm scale Div. OR 6.25x10(-5)V/mm scale Div.

4725 TANGET GALVANOMETER

Consist of a circular bakalite bobbin, in side which three coils of 250 and 500 turns are wound. Insulted copper wire of high quality is used for winding of coils. Circular bobbins (dia:162mm) rests on freely rotating circular table made of bakelite. The circular base is fitted with 4mm terminals and rest on a nonmagnetic tripode base with leveling screws. A compass magnetometer is mounted at the centre of coil ring.

4750 BALLISTIC GALVANOMETER

Used for measurement of small quantities of electrical charge. Levelling screws for balancing the coils. Coil with mirror suspended between long suspension at the upper end and spring at lower end. Suspension and spring are made of phosphor bronze alloy. Bakelite case rigid and robust. Clamping arrangement for transportation. Strip provided for making it a periodic. Weight 1.5 kg and size 250x150mm.

4755 MULTIMETER MULTITESTER

Made in plastic body with automatic circuit breaker for overload protection. Lower AC Volts ranges are used as an audio output voltmeter. Provided with meter movement protection and solid state rectifier.

MEASUREMENT RANGES :

DC Volts : 0-0.25-1-2.5-10-50-250-500-1K (20k ohm/v) +-2%
DC Current : 0.50mA, 0-1-10-100mA,0-1- 10A(250mv) +-2%
AC Volts : 0-2.5; 0-10; 0-50-250-1000 +-3%
Frequency : 50Hz to 100kHz. below 10v. AC A 0-1-10A (250mv) +/-5%.
Ohms : 1x10x100x1kx10k (max 2o M ohm, Battery 1.5Vx1 & 9Vx1.
Size : 224x182x95mm (Approx)
Weight : 1.45Kg (Approx.)

4760 MULTI METER

Suitable for Electricians and technicians. Works on two batteries of 1.5 Veach.

Measurement Ranges :

DC Volts : 0.25-10-50-250-1000v (4000Ohm/VinDC and 2000 Ohm/V in AC
DC Amperes : 0.25-10-250mA.
AC Volts : 10-50-250-500-1000V.
Ohms : 0-10k, 0-1 M ohms.
dB : -20 to +22dB at AC/10V range.
dB : +20dB to +35dB at AC/50V range.
Batteries : 2 Batteries type (1.5Volts).
Size : 12x9x3.5cms appx.

4765 MULTI METER POCKET SIZE

Voltage Range : 5V to 1000VAC/DC
DCmA : 250mA
Resistance : 1,10,100,1000 ohms.
Batteries : 2 Batteries type (1.5Volts).

4775 OSCILLOSCOPE, SINGLE TRACE

Specially designed for teaching and test work. The circuit is easy, carefully planned for easy operation. Both focus and intensity controls are provided to give sharp and clear trace. Input is selected via socket provided on front panel. The sockets are marked with circuit diagram to explain the significance of A.C. and D.C. coupling. Most reliable for student use. Detail Specifications :

VERTICAL DEFLECTION (Y-AXIS)
Band Width : DC-15MHz (-3DB)
Rise Time : 23 n Sec (Approx.)
Over shoot : +/-3%
Deflection Coefficient : 5mV/Div. to 20V/Div/ in1, 2, 5 sequence
Input Impedance : 1 Mega ohms /35pf.
Input Coupling : AC/DC/Ground Max.
Input Voltage : 400V (DC+ACPeak)
Horizontal Deflection : 5m sec/Div to 0.2 sec/Div. in18 steps of 1, 2, 5 sequence.
Varibles weep : Extends the latest sweep to 0.2 m sec/Div(Approx).

TRIGGERING SYSTEM :
Source : Internal, Line, External.
Slope : Positive or Negative
Sensitivity : IV PTP for external Trigger
Mode : Auto and Normal Trigger.

HORIZONTAL AMPLIFIER :
Band Width : DC- 500KHz.
Deflection Coefficient : 5V/Div.
Input Impedance : 1Meg/140F.
Note : For detail specifications please call for latest literature as

specifications are subject to change due to new innovations and continuous development.

4780 OSCILLOSCOPE, DUAL TRACE

Flat Face, rectangular cathode ray tube, front intensity control focus, astigmatism and trace rotation knobs with accelerating voltage of 1800 volts and trace width of 0.5mm max. AlsoCH1, CH2 inverted, and Dual (Alt/Chop).

Detail Specifications : Vertical Deflection
Impedance : 1M/25pf
Sensitivity : 2mv/Div to 10vDiv in 12 calibrated steps in 1-2-5sequence.
Accuracy : +/-3%
Input protection : 500v (DC + peak AC)
Horizontal Deflection :
Sweep Speed : 0.5 sec/div to 0.1 m sec/div in 21 calibrated steps in 1-2-5sequence.
Triggering system : Auto /normal with variable level adjuster with LED indication. Band width DC-40MHz
Sources : Channel 1 or V mode or external triggering.
Auto Mode : 50Hz to20Mhz
Normal Mode : DC to 20 Mhz
Internal Sensivity : 2mm up to2Mhz 4mm up to 20Mhz
External Sensitivity : 50mV up to 2Mhz 150mV up to 20 Mz TV Mode Int./Ext
X-Y Operation : Ch 1 as X, ch 2 as Y retaining basics ensitivity.
Band Width : DC-2 MHz(-3dB). External Input Protection

4785 SIGNAL GENERATOR AM-FM

Technical Specifications :
Frequency : 07 Hz to 100KHz in six decades and read onlin early calibrated scale.
Waves : Sine, Square &Triangular
Coarse Frequency : Slow motion drive on frequency selector.
A.F Output : 10 VPP max.
Accuracy : +/-5%.

4790 SIGNAL GENERATOR

Light Weight, table model, internal electrical protection, Overload & short circuit protected.

Technical Specifications :
Power : Output up to 1 Watt.
Frequency : 5Hz to 50Hz in four calibrated steps.
Amplitude : Continues Variable 8V peak to peak.
Waveform : Square &sine
Accuracy : +/-10%

4795 SIGNAL GENERATOR & AMPLIFIER

Output Frequency : 1 Hz to 100KH zin five ranges, accuracy +/-5%
Wave Form : Sine, Square &Triangular.
Out voltage :10v/14v peak to peak, typical a thigh impedance output.
Output Power : up to 4 watt at 4 ohms or 5 watt /8 ohms.

4800 FUNCTION GENERATOR, AUDIO

Frequency Ranges : 1 Hz-220 KHz with course & fine controls.
Accuracy : +/- 3% on all ranges, output impedance 80ohms (Approx.)
Wave Shape : sine, square and triangular waves by band switch selection.

4805 FUNCTIONGENERATOR,0-1HZ-1MHZ

Wave Shape : Sine, square and triangular.
Amplitude : 20V peak to peak sine wave & 15V peak to peak square wave
Output Impedance : 600 ohms for sine and square wave.
Accuracy : +/- 3 % full range

4810 R.F. OSCILLATOR

Frequency Range : 3 MHz to 8MHz.
Continues variable, used for experiments on ultrasonic waves.

4811 LABORATORY TRAINER KIT

Comprises four different panels : Semi conductor Diode, Bipolar Transistor, Operational amplifier & Basic logic. Gates trainer panel with combined wooden storage box. These panels are enable to demonstrate the behavior of diodes, transistors, operational amplifiers & logic gates in different circuits. Connecting leads are also provided for experiments.

4812 WORCESTER CIRCUIT BOARD KIT

Kit consists of base board terminals, set of metal connection pillars and a number of clip-on connection stripes & accessory units. Supplied with all accessories without cells but with instruction manul.

4813 RESISTANCE SUBSTITUTION BOX

With 10 preferred value resistors, Rotary selector switch & 4mm sockets.

4814 DIODE UNIT SILICON.

Mounted on transparent base with 4mm, color coded sockets, with circuit diagram prited for demonstration.

4815 THERMISTOR UNIT.

Mounted on transparent base with 4mm, color coded sockets, with circuit diagram prited for demonstration.

4816 ZENER DIODE UNIT

Mounted on transparent base with 4mm, color coded sockets, with circuit diagram prited for demonstration.

4817 PHOTO ELECTRIC CELL UNIT

Mounted on transparent base with 4mm, color coded sockets, with circuit diagram prited for demonstration.

4818 SOLAR CELL UNIT

Used to convert solar energy in to mechanical energy. With motor, unit capable of rotating a small propellor, mounted on mini motor.

4819 MINI MOTOR UNIT

A small motor which operates from 1.5 to 4.5volts DC with a small pulley.

4820 NAND GATE UNIT

Suitable to see the behavior of NAND gates.

4821 OR GATE UNIT

Suitable to see the behaviour of OR gate.

4822 VARIABLE CAPACITORS

In cabinet with transparent panel, continously variable from 0-500 pF.

4823 FIXED CAPACITORS

In cabinet with transparent panel, operates on 220V AC Range 330 mFd.

4824 DEMONSTRATION MODEL OF STEREO CASSETTE PLAYER TRAINER KIT

To study working and various faults of stereo cassette player. The whole unit is made upon phenolic sheet with top side nicely screen printed and reverse side is printed circut layout (PCB). Components are mounted on PCB tags for easy replacement / fault creation. Acrylic cover is provided at the top to protect the instrument. Instrument is divided in different sections of Power supply section, cassette player section, external speakers and output section. Instrument is complete with 12 Volts DC power supply, 2 external speakers.

4825 EXPERIMENT TO CALCULATE E/M BY THOMSON METHOD.

To study charge of an electron using thomson method. High voltage power supply with one meter provided to measure the deflection voltage. Complete with intensity, focus and deflection controls with the **Following Accessories :**
Compass box &set of strong Elico Magnets. Teak wood stand with CRT mounted, Teak wood stand for compass box and teak wood U stand with scale on both the arms for placing magnets.

4826 E/M BY LONG SOLENOID/HELICAL METHOD

To study charge of an electron using Helical method. Kit comprises of High voltage power supply unit with intensity, focus, X, Y deflection and Solenoid current controls. Two meters are provided in power supply for acceleration voltage control and for solenoid current controls. One solenoid unit comprises of one solenoid mounted on wooden stand and 3" CRT is kep in the solenoid pipe.

4827 E/M BY SHORT SOLENOID METHOD.

To study charge of an electron using short solenoid method. Kit comprises of low voltage DC power supply unit, with filament voltage and solenoid current controls. Two meters are provided for A node Voltage controls. One solenoid unit comprises of one solenoid mounted on wooden stand and valve is kept in the solenoid pipe.

4828 E/M BY MAGNETIC FOCUSING METHOD.

To study charge of an electron by using Magnetic Focusing method. Kit comprises of High Voltage power supply with intensity, focus, X, Y deflection and solenoid current controls. Two meters are provided for acceleration voltage control and for solenoid current controls. One solenoid unit comprises of 3" CRT mounted on Teak wood stand and one ring type solenoid slides over the CRT.

4824 REGULATED POWER SUPPLY

Power Supply, D.C. Regulated

Load Regulations : +/-0.2%
Line Regulation : +/- 0.05%
Ripple : < 3mV R.M.S.
Input Voltage : 230V +/- 10% AC, 50Hz.

Short circuit & over load protected. Separate anglogous voltage & current meter, 4mm sine sockets for voltage & current.

Ranges available are :

A)	0-15V DC, 1.0 Amp	B) 0-15V DC, 2.0Amp
C)	0-30V DC, 1.0 Amp	D) 0-30V DC, 2.0Amp
E)	0-30V DC, 3.0 Amp	F)0-30V DC, 5.0 Amp
G)	0-30VDC, 10.0Amp	H) 0-60VDC, 1.0Amp
I)	0-60V, DC, 2.0 Amp	J) 0-60V DC, 5.0 Amp
K)	0-300VDC, 100mA	L) 0-300V DC, 500ma
M)	0-300VDC, 1.0A	N) 0-500VDC, 100mA

4826 REGULATED POWER SUPPLY, DIGITAL

Digital DC power supplies are same as above except two 3x1/ 2 digit digital pannel meters in place of anologue volts and current meter.

4827 POWER SUPPLY, CONSTANT VOLTAGE, CONSTANT CURRENT

Overload protected, Automatic, Switch over output from constant voltage to constant current. May be used either constant voltage or constant current. Very low ripple, hence both voltage and current precisely regulated. Max. voltage up to 30 volts. Current selection from HIGH, LOW switch.

Technical Specifications :

Input : 220V AC + 10%, 50Hz.
Output : 30 volts (max.)
Display : 3x1/2 digit, LED type, separate for voltage & current.
Accuracy : 0.5% +/- 1 digit, 3% full scale div.
Regulation : 0.05 % +2 mv (+/- 10% Mains fluctuation).

Ranges Available are :

A) 0-30 V, 2 Amp DC
B) 0-30 V, 3 Amp DC
C) 0-30 V, 5 Amp DC
D) 0-30 V, 10 Amp DC.

4880 HIGH TENSION, POWER SUPPLY

High Tension power supply for AC/DCuses.

H Tout put voltage : 0-500V AC/DC
Output current : 500mA
Bias voltage : 0-100 V DC/10mA.

4885 BATTERY ELIMINATORS

Battery eliminators mounted in a steel cabinet with blow fuse, band switch for voltage selection. On/Off Switch with indicator and 4mm banana sockets for connection to output.

A) 2-6 V DC, 1Amp. B) 2-6 V DC, 2Amp.
C) 2-6 V DC, 3Amp. D) 2-6 V DC, 5Amp.
E) 2-12 V DC, 2Amp. F) 2-12 V DC, 5Amp.

4890 VARIABLE AUTO TRANSFORMER (VARIAC)

A variable AC voltage transformer enclosed in a thick metal box. Output via 4mm socket terminal as well as 3-pin 5 Amp. socket. On/Off indicator, overload protection. The output is variable from 0-270 Volts.
Single Phase
Input Voltage : 220/240 VAC
Output Voltage : 270 V AC,
Current ranges available are :
A) 2 Amp. B) 4 Amp. C) 8 Amp. D) 10 Amp. E) 15 Amp..

4895 STEP DOWN TRANSFORMERS

Suitable for calender & Barne's Experiments/Appara- t us
A) 6V-30V, 3Amps.
B) 8V, 3Amps.
C) For sodium vapour lamp, 35 watts & 55 watts.

4900 TRANS FORMER 1 KVA, 115/230 V

Output voltage in the steps of 25, 50, 75, 100, 125 and 150 Volts.

4905 SERVO CONTROLLED VOLTAGE STABILIZER

Operates from mains 150-300 Volts. Stabilized output with in +/-1% for mains voltage 170-270 Volts. Built in surge protection, Overload protection, AC servomotor control for zero wave form distortion. Auto/ manual operation. **Supplied in following capacities :**
A) 1.0KVA B) 2.5KVA C) 5.0KVA

4910 KNIFE SWITCH SINGLE

Single pole double throw, mounted on bakelite base. Size 100 x 15 x 30 mm (Approx.)

4915 KNIFE SWITCH, DOUBLE

Double pole double throw, other specifications same as above.

4920 REVERSING SWITCH

Rotary brush type, Current rating : 10A, Size : 100x100x70mm (Approx.)

4925 TOGGLE SWITCH (ONE WAY)

Single pole, ON-OFF with screw terminal son side of moulded plastic body capacity 250volts A.C. 5Amp. Oneway.

4930 TOGGLE SWITCH (TWO WAY)

Same as above but working on TWO WAY,

4935 SINGLE CONTACT KEY

A brasss pring arm with knob and two brass terminals mounted on Bakelite base.

4940 DOUBLE CONTACT KEY

Three brass studs mounted on a insulating base, with three brass terminals. Common terminal at centre and other two are connected to other studs.

4945 PLUG KEY, ONE WAY

Two brass block 4 mm thick mounted on a bakelite base (size 80x55mm)VbrassVterminals for connection. Accurate plug with bakelite top flits between the block hole.

4950 PLUG KEY, TWO WAY

Three brass block of 4 mm thick mounted on a moulded bakelite base. Two accurately tappered plugs moulded bacalite tops are supplied and fit into the holes between the blocks providing contacts with very low resistance.

B) PLUG KEY, THREE WAY

Same as above but three ways.

4960 INSULTED SOCKET TERMINAL

Suitable for 4 mm plug, top socket in moulded plastic with nuts and washer, screw will connect on both side and spade terminals available in black & red colors.

4965 SPADE TERMINAL ADOPTER

Standard type of spade, with an insulater 4 mm socket connector.

4970 SOCKET FOR BANANA PLUG, 4MM

Made of moulded plastic material, lower part threaded for nut tightening, provision of brass holder pin, suitable for mounting in plate/sheet of thickness up to 10mm. in different colors of :

A) Black B) Red C) Yellow D) Green

4971 SPADE CONNECTORS

Hooked shaped blade fitted in plastic body in different colors of :

A) Black B) Red C) Yellow D) Green

4975 BANANA PLUGS

Pin dia 4mm, 18mm long with spring tightened in a hard plastic body. Overall length 40mm in different colors

4980 CROCODILE CLIP

Spring loaded, clamping screw for wire, wires can also be soldered. Used for quick connection in different colors.

4985 FLEXIBLE LEADS

Made of PVC with crocodile clip at both end OR with 4 mm plug at both ends in different lengths and different colors.

4990 FLASH LAMPS

Bulbs with MES cap, suitable for flash lamp, 1.25V, 2.5V, 2.5V, 3.5V,4.5V

4995 LAMP HOLDER

Double contact type lamp holder made of brass in plastic body mounted on insulted plastic base

5010 SOLDERING IRON

Instant heating type, with wooden or bakelite handle, light weight shock proof and constant temperature, with spare bits.

A) 35Watt. B) 65Watt. C) 95Watt. D) 120Watt.

5020 DE-SOLDERING PUMP

Used for the cleaning of PCB's while soldering and after de-soldering . Made of plastic body and metal rod & plastic/ Teflan nozzle.

A) 15Watt B) 25Watt C) 40Watt.

5025 SOLDERING PASTE

Pack of 50gms.

5030 WIRE STRIPPER

For cutting and stripping of insulating wires.

5035 INSULATING TAPE

For protection from sock over high voltage AC temporary connections. Roll of 35mtrs, width 19mm (Approx.) Available in different colors.

5040 COPPER WIRE, BARE

High conductivity, annealed copper wire with insulation coating useful for transformer and coils winding, available from 0.28mm to 2.0 mm thick, package of 250gm. & 500gms.

5045 MANGANIN WIRE

For use in the fabrication of precision, stable resistance coils. The wire is made of an alloy of manganese, nickel and copper and passes very low temperature coefficient. Supplied in each of mass 50 gm (Approx.). These wires are available in various gauges
i.e.0.31, 0.40, 0.45, 0.56, 0.71, 0.90 etc.

5050 CONSTANTAN WIRE

These wire are made of copper nickel alloy and posses low temperature coefficient, suitable for resistance making. Available in various gauges i.e.1.6, 1.25, 0.9, 0.70, 0.55, 0.45, 0.40, 0.31, 0.28 and 0.25mm.

5055 WIRE FLEXIBLE

Multicore copper wire with PVC insulation. Current carrying capacity 5 Amps. Supplied in lengths as required.

5060 TWIN FLEXIBLE WIRE

Flexible electrical connection wire in different color coding, twin together. Makes more convenient for polarity identification and for connection to the power supply.

5065 CARTRIDGE FUSES

Fuses mounted in a transparent cylindrical glass case. It is quick blow type, length 20mm and 5 mm diameter. Available in various current ratings i.e. 250mA, 500mA, 1A, 2A, 3A, 5A etc.

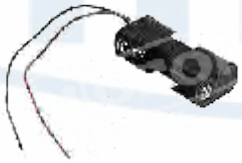
5070 FUSE HOLDER

Suitable for above fuses.

5075 FUSE WIRE

Spare copper wire, tinned may also be supplied in packs 100gm are as required. Wires in 2, 5, 10 and 15 Amp current rating are available.

5080 BATTERY HOLDER



Made of plastic with provision for taking connection out side. Suitable for 2 and 4-D type 1.5V batteries.

5085 BATTERY HOLDER, PENCIL

Made of plastic with provision for taking connection out side. Suitable for 1, 2 and 4-pncil type dry cells, 1.5V each.

5095 NICHROME WIRE

Suitable for high temperature application such as heating element, rheostats etc.

Available in diameters :1.25, 0.90, 0.71, 0.56, 0.45, 0.40, 0.31, 0.28mm

NUCLEAR PHYSICS

5097 GEISSLER'S TUBE

In different shapes, different degree of vacuum, showing different discharge phenomenon, illuminations, patterns etc. Tube end provided with caps for connections to Induction coil. In set of six.

A) 15cm long in velvet lined box. B) 20cm long in velvet lined box.

5099 MOLECULAR MOVEMENT TUBE

Tube fitted with glass beads and mercury under high vacuum. When heated on spirit lamp, the glass beads give exact replica of the Brownian movements, visible to naked eyes.

5100 BROWNIAN MOVEMENT CHAMBER

For demonstration Brownian movement under a microscope, cube shaped chamber with inlet and outlet tubes, lighting arrangement and base plate designed for clamping on Microscope platform.

5102 X-RAY TUBE ROENTGEN

For use with electronic machine or Induction coil, with vacuum regulating device. Comprises a glass sphere with a concave disc electrode generating cathode rays and focusing on a tungsten target, placed at an angle of 45degree at the inner end of arm. These tubes produces soft X-Rays.

	A	B	C
Dia of Tube	80	90	110mm.

5105 X-RAY SCREEN FLUORESCENT

Duly framed and coved by a protecting glass.

A) 10 x 10cms B) 10 x 15cms C) 12 x 10 cms D) 15 x 25 cms

5107 SPECTRUM TUBES

20cms long, straight form, with side electrodes and 50mm long fine capillary in the middle. Filled with Different gases of Oxygen, Neon, Helium, Air, Nitrogen, Argon, Ammonia Vapours, Alcohal Vapours, Carbon dioxide, Hydrogen, Iodine Vapours, Sulpher water vapours.

5110 REPULSION EFFECT

When side electrode is made positive and one of the top electrode is

made negative, it casts a thin dark shadow across on the side of glass wall, but when bot electrodes are made negative the shadows on both sides of glass tube is greatly widened due to mutual repulsing effect of cathode rays.

5112 RECTILINEAR PROPAGATION

V-shaped tube to show cathode rays are generated on stand.

5114 SHADOW EFFECT ELECTROMAGNET

An object obstructing cathode rays casts its shadow on the fluorescent wall facing it. If the running cathode rays are subjected to magnetic effects per an electromagnet, the shadow is affected by its slight rotation change complete with electromagnet.

5116 REPULSION TUBE GOLD STEIN'S

Vertical tube with two parallel wire cathodes at two end of tubes with third electrode to serve as anode on base.

5155 MAGNETIC EFFECT DEFLECTION

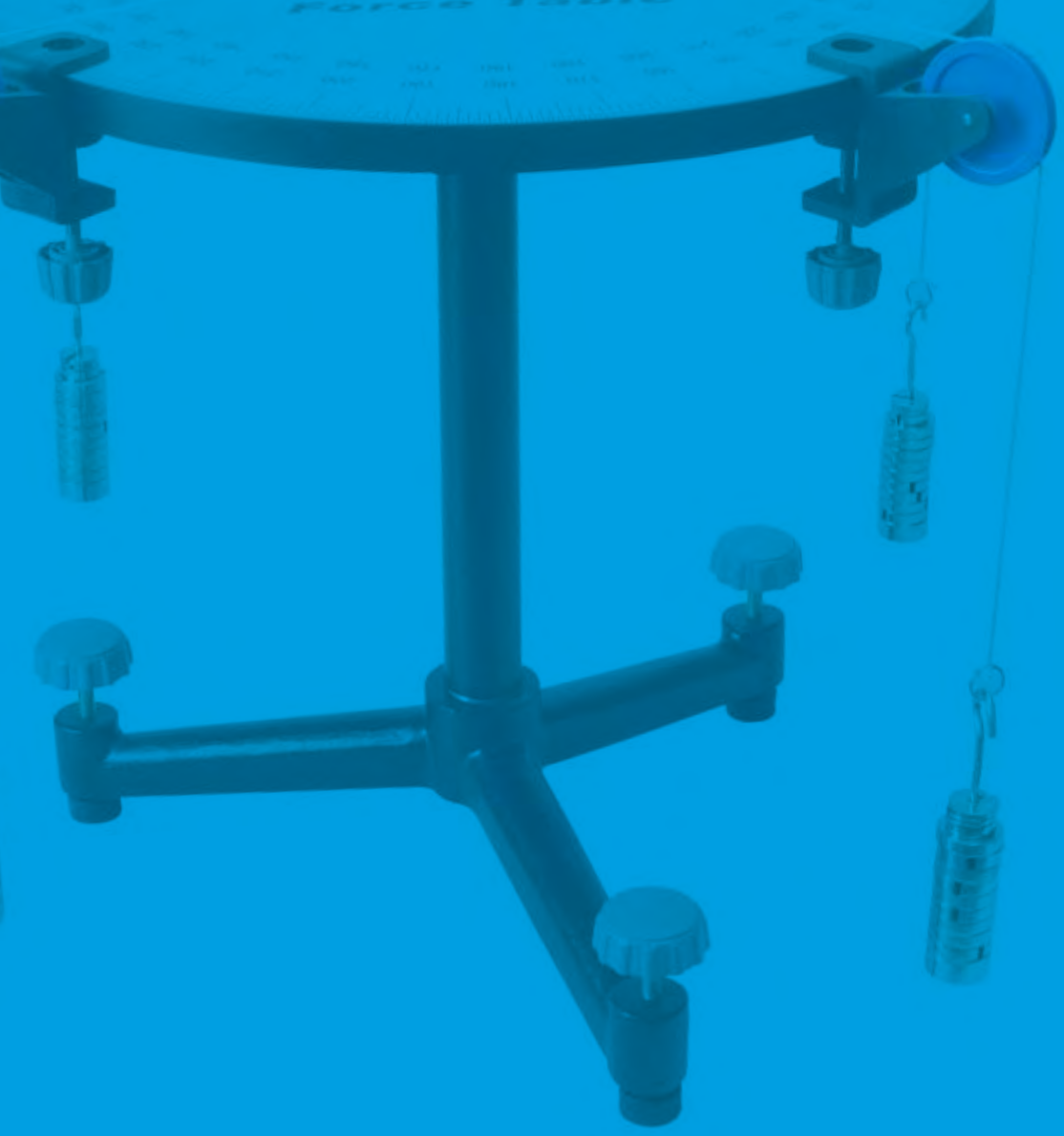
Running cathode rays are visible to naked eye by glowing path on fluorescent screen. The deflection of the cathode ray under magnetic field may be demonstrated easily by moving magnet across the same.

5165 MECHANICAL EFFECT

The cathode ray exerts a pushing effect on objects it falls on Demonstrated by rotation of vanes as a result of forces exerted by cathode rays.

TERMS AND CONDITIONS :

1. Specifications and designs of instruments are subject to change without any notice or obligation on the part of manufacturer for the advancement or modernisation.
2. Goods are very securely packed and our responsibility ceases when the delivered the goods to transport company. However specific instructions may be send for insurance along with the orders.
3. All pictures shown are for illustration purpose only, actual product may vary.



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