- Electricity
- Energy
- Light
- Mechanics
- Biology
- Chemistry
- General

INDOSAW

Committed to Excellence

















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ABOUT US



- Started Manufacturing in 1919.
- Was a Science Teacher.
- Published 400 Pages Catalogue in 1937



Nand Lal
The Group Founder



Ajay Sagar (M.D.)
- B.E. Production, PEC Chd.
- 25 Years Experience



Manisha Sagar (Jt.M.D.)
- P.G. in Science
- 8 Years Experience

INFRASTRUCTURE

Head Office and Factory
Location : Ambala
Established : 1993
No. of employees : 300

Roorkee Unit
Established : March 2010
Products : Electronic Equipment

Delhi Office
Location : Centrally located at Nehru Place, Ansal Tower, New Delhi.

Continuous Improvement
- Our team of engineers and technicians are continuously working to improve existing products and develop new ones. We welcome suggestions of our valued customers.

Customised Production
- We have a very flexible manufacturing setup. We regularly producing goods for various customers as per their design and samples often on exclusive basis.

Wide Variety
- More designs are also available with us which are produced on request.

Turnkey Projects
- We can provide complete solutions to our customers to plan, design and equip. Complete laboratories for Physics, Chemistry and Biology.



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FACTORY TOUR



Entrance



Design & Development



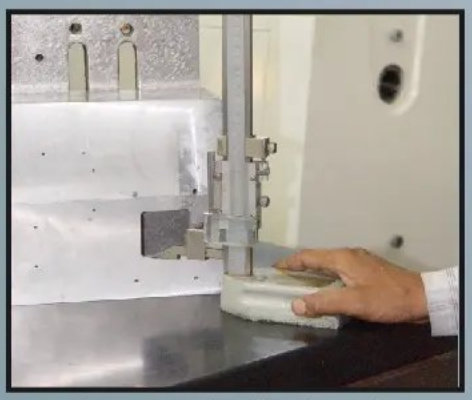
Incoming Quality Control



CNC Machining Centre



CNC Turning Centre



Inprocess Quality Control



Paint Shop - Powder Coating



Electronic Assembly



Mechanical Assembly



Finish Goods Quality Control



Packing



Shipment Ready for Dispatch

We would welcome suggestions from teachers to improve or add experiments.

OSAW INDUSTRIAL PRODUCTS PVT. LTD.

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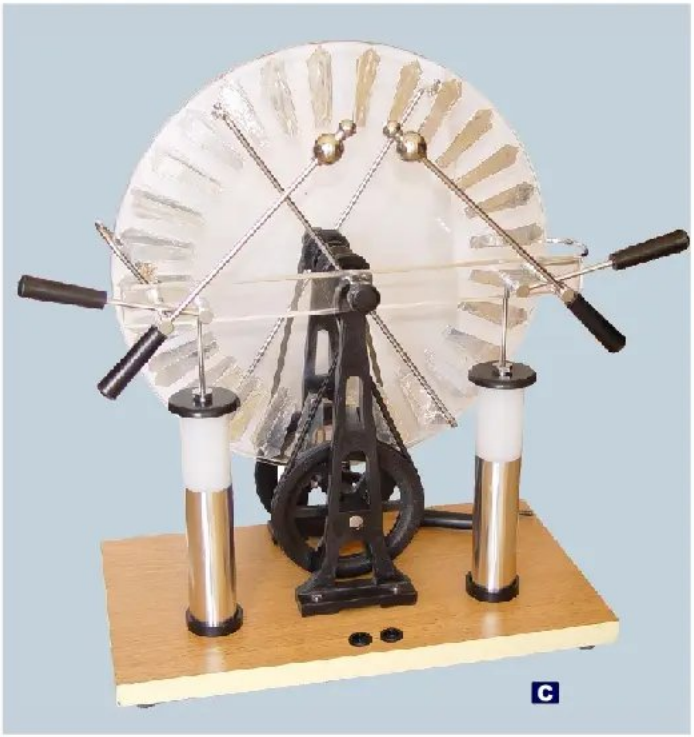
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WIMSHURST MACHINE A **SE872**

A tabletop model for generating high DC voltage and demonstration of working of a Wimshurst machine. It can also be used with various electrostatics accessories. It is mounted on a base with rubber feet and 4mm sockets are provided on it. It consists of hand operated crank and has two Leyden jars which can be connected or disconnected as per the requirement.

Salient features:

- Two large size Leyden jars.
- Excellent Spark Length.

Disc : Plastic 30cm Dia.
Leyden Jar : 13.5 x 7.5cm (L x Dia)
Spark Length : 80mm (under favourable ambient conditions)
Dimensions : 36 x 18 x 43cm (L x W x H) overall.

WIMSHURST MACHINE C

An economy model of Wimshurst machine for generating high DC Voltage. It consists of transparent discs which can be rotated using hand operated crank and has two small Leyden Jars which can be connected or disconnected as per requirement.

Cat. No.	Dia.	Type
SE164	250mm	Black
SE165	250mm	Transparent
SE166	300mm	Black
SE167	300mm	Transparent



ELECTROSTATICS KIT B **SH545**

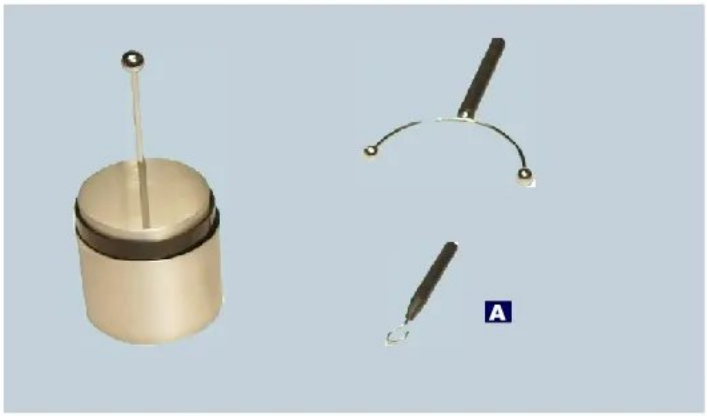
The kit for demonstrating a number of electrostatics experiments. It consists of various elements and a gold leaf electroscope with a transparent front window and ground glass rear window.

❑ Proof plane on insulating handle 1pc ❑ Metalized polystyrene sphere 4pcs ❑ Electrophorous plate insulating handle 1pc ❑ Polythene strip 1pc, ❑ Polythene tiles 2pcs ❑ Nylon reel 1pc ❑ Aluminium cans 2pcs ❑ Cellulose acetate strip 1pc ❑ Wire stirrup 1pc ❑ Polishing cloth 1pc ❑ Plated wire hook 1pc ❑ Gold leaf electroscope 1pc.

OUR SPECIALITY

We have a very flexible manufacturing setup. We are regularly producing goods for various customers as per their design and samples often on exclusive basis.

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LEYDEN JAR **A** **SW166**

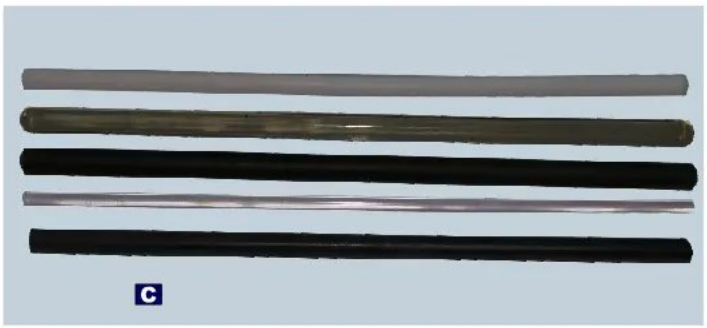
It consists of a plastic jar with a metal insert in an outer shell, both of which can be removed to show that the charge lies on the surface. It is provided with discharger fixed type held on the metal rod to which a non-conducting handle is attached. Recommended for demonstration of high voltage and static charge. Extractor for removal of internal vessel is also provided.
Jar:90mm Dia., Aluminium



ELECTROSTATICS KIT (DEMONSTRATION) **B** **SE972**

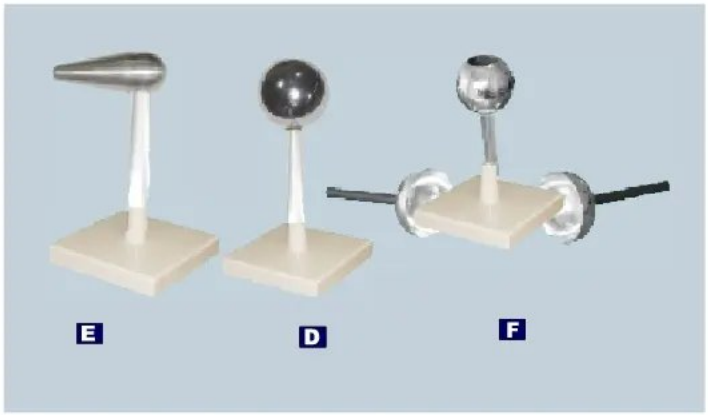
It consists of various objects which are used for demonstrating electrostatic phenomena. Various items provided in the kit can be mounted on the tripod stand (with levelling screws) with the help of an insulated stand rod. Suitable to use with Van- De-Graff generator or Wimshurst machine model.

❑ Storage stand 1pc, ❑ Friction rod 1pc, ❑ Luminous Pane 1pc, ❑ Tripod stand 1pc, ❑ Stand rod 1pc, ❑ Sphere with connector pin 1pc, ❑ Bell 1pc, ❑Connecting chain 2pcs, ❑ Paper brush 1pc, ❑ Pith balls in box 10pcs, ❑ Pith double pendulum 1pc, ❑ Needle with connecting pin1pc, ❑ Pointed wheel 1pc, ❑ Jar with point shaped electrode 1pc, ❑ Jar with spherical shaped electrode 1pc, ❑ Hook stand 1pc, ❑ Base plate with ring guide 1pc, ❑Plastic ball 1pc.



SET OF 5 RODS **C** **SA692A**

It consists of five rods, Ebonite, Glass, PVC, Acrylic & Polythene rods having size 300 x 12mm. Used in producing electrostatic charge by friction.



CONDUCTING SPHERE **D** **SW639**

A conducting sphere made of brass electroplated Diameter: 70mm. Mounted on a plastic rod. The entire assembly is fitted on a stable plastic base (size: 15 x 15cm).

CONE **E** **SW168**

Cone made of Aluminium. Fitted on an insulated acrylic rod shape stand. The entire assembly is fitted on a stable plastic base. (Size: 15 x 15cm).
Size : 100mm

BIOTS CONDUCTOR **F** **SW167**

Hollow sphere with a hole in the centre. Fitted on an insulated acrylic transparent tube shape stand. The entire assembly is fitted on a stable plastic base. Two Biot's hemispheres with plastic handles are provided. Hollow shell: 65mm dia. Hemisphere: 90mm dia. Base Size: 15 x 15cm.



CONDUCTORS **G**

Conductors are used for electrostatic experiment mounted on an insulating rod.

Rod length	: 100mm
SE190	: Sphere: 50mm Dia
SE191	: Cylindrical: 125x50mm (length x diameter)
SE192	: Conical: 100x50mm(length x diameter)
SE187	: Set of 3 conductors(SE190, SE191& SE187)

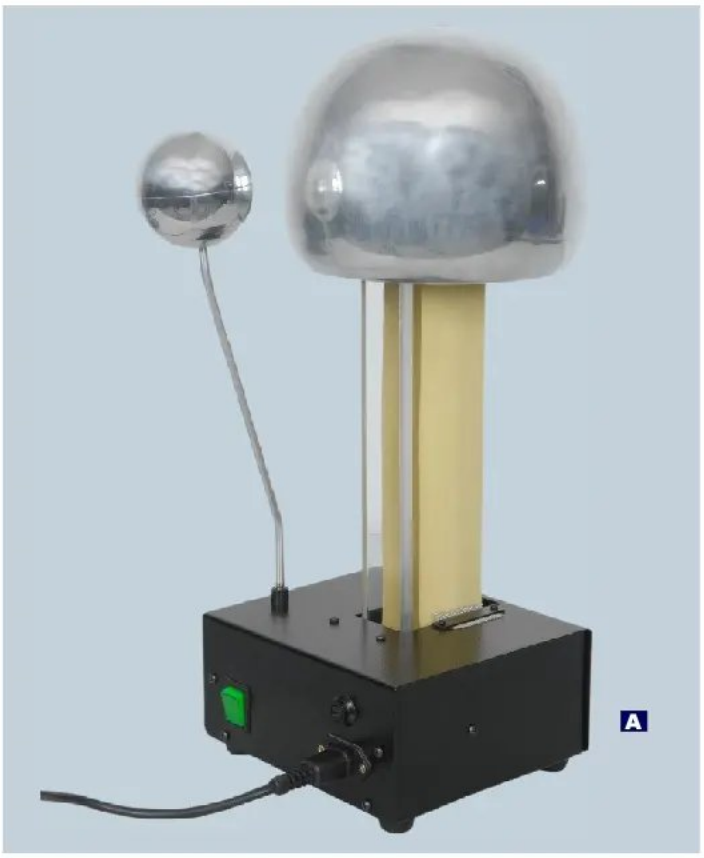
FOR YOUR INFORMATION

Our team of engineers and technicians are continuously working to improve existing products and develop new ones. We welcome suggestions of our valued customers.

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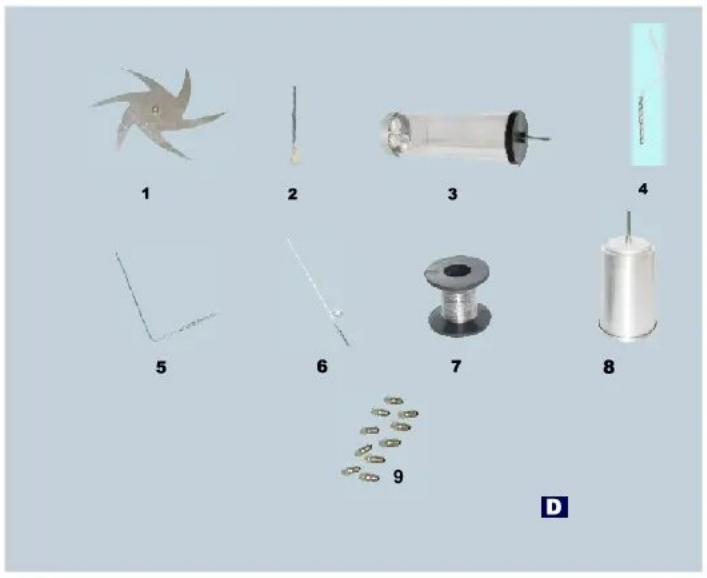
VAN DE GRAFF GENERATOR ELECTRICAL **A** **SH502**
To do all electrostatic experiments, especially where continuous production of a high voltage is required. It consists of an Aluminium dome dia. 175mm approx. and a separate discharging Aluminium sphere dia. 75mm approx. Charge belt is made of a special rubber for better performance & long life. It can generate up to spark length 60mm approx. 4mm sockets in dome and base are provided.



PITH BALL ELECTROSCOPE (LONG) **B** **SN742**
Pith Ball Electroscope "Long" is perfect for classroom demonstration. It consists of a pair of pith Ball suspended by threads from a U-shaped brass wire mounted on a base with rubber feet.
Height: 30cm.
Base: Acrylic10 x 10cm



VAN DE GRAFF GENERATOR HAND DRIVEN **C** **SH513**
Mounted on a wooden base. The discharge sphere is supported on a pivoted arm with a handle, and is attached to the top of the driving - wheel pillar. Diameter of Aluminium dome & discharger are 175 & 75mm approx respectively. Suitable for 4mm plug socket.



VAN DE GRAFF ACCESSORIES SET **D** **SW312**
To be used with Van de graff generator for demonstrating various electrostatics experiments. It consists of set of nine objects:-
1. Pointed Wheel
2. Needle on 4mm plug
3. Perspex Jar on 4mm plug with metal coated pith balls
4. Thread Brush with 4mm plug
5. Point Discharge with 4mm plug
6. Perspex Pillar with suspended metalized sphere on 4mm plug
7. Reel of nylon thread
8. Faraday's Pail with 4mm plug
9. Neon lamp

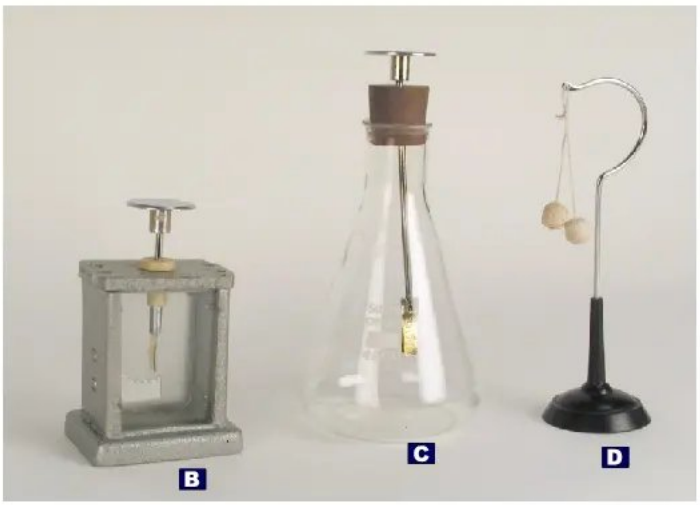
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ELECTROSCOPE **A** **SE177**

For introductory electrostatic experiments and for indication of DC & AC voltages. Suitable for shadow projection. Complete with detachable capacitor plate.

Maximum Voltage : 5kV AC/DC
Diameter : 200mm
Height : 310mm



GOLD LEAF ELECTROSCOPE IN METAL CASE **B** **SE173**

The leaves are housed in a metallic case having glass sides to see through. A scale is provided inside.

GOLD LEAF ELECTROSCOPE IN CONICAL FLASK **C** **SE174**

It is used for detection of electrostatic charges.

ELECTROSCOPE PITH BALL **SE175**

Fitted on base. Total height 15cm. **D**



ELECTROMETER AMPLIFIER **E** **SD003**

The electrometer amplifier (gain factor 1) is an impedance transformer with extremely high-resistance voltage input and low-resistance output.

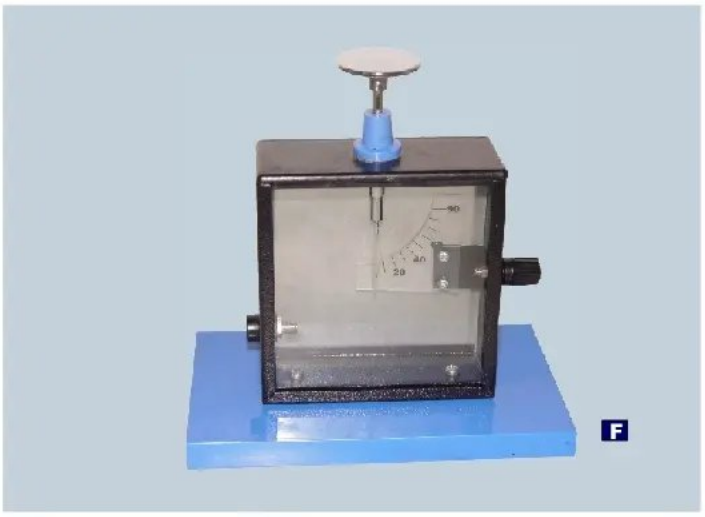
The unit is used with a connected voltmeter to conduct the following measurements:

1. For quasi-static voltage measurement up to 10 V DC.
2 For high-resistance measurement of voltages greater than 10 V with an ohmic voltage divider consisting of resistors module.
3 For quasi-static measurements of voltages greater than 10 V DC with a capacitive voltage divider consisting of capacitors module.
4. For measurement of very small currents using plug-in resistors module up to 10 G ohm as shunts.
5. As a charge meter as low as 10^{-9} A-Sec, with capacitors module from 1000 nF to 1 nF.

Technical Specifications:

Electrometer amplifier is used for charge measurement.

Gain : 1
Input Impedance : $>10^{13}$ ohm
Input Current : ≤ 0.5pA
Output Voltage : upto +10V
Output Current : 5mA (Short Circuit Protected)
Supply Voltage : 12 V AC



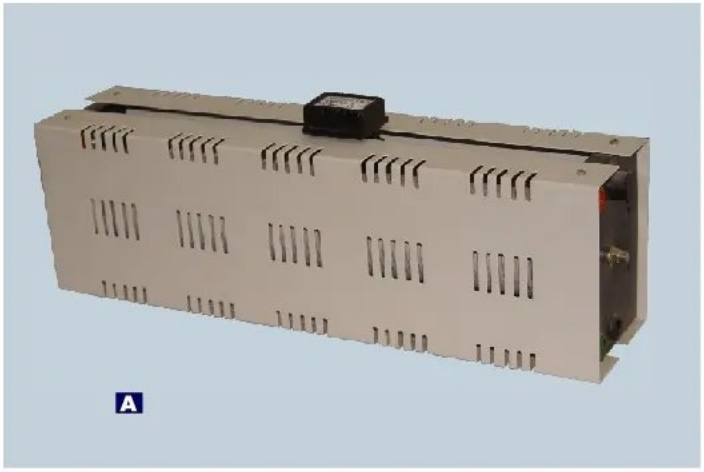
ELECTROSCOPE **F** **SH512**

A gold leaf electroscope is used to detect the presence of charge in electrostatics experiment. Gold leaf is attached by metal plate supported by an insulating bush with a 4mm socket. It consists of a transparent glass front window and ground glass rear window and also consists of a graduated scale (0°- 90°).

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Fax:+91-171-2699102, 2699222, E-mail:eenquiry@indosaw.com (Foreign Customer), deducation@indosaw.com (Indian Customer)



A



C

RHEOSTAT A

Resistance wire wound on a pipe having dia 5.6cm,perforated cover for touch protection. Electrical connections via three 4 mm safety sockets. It can be used as fixed resistor and potentiometer. Fourth socket is used as earth.

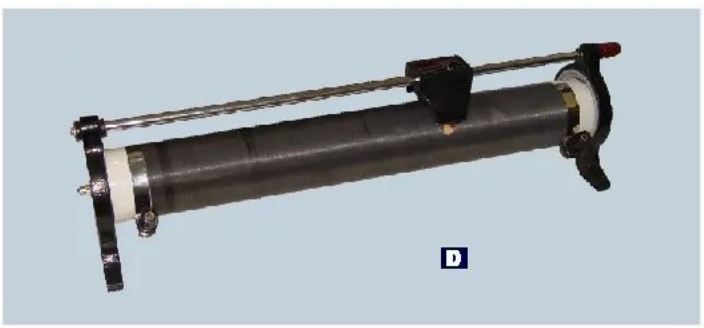
Porcelain Pipe Closed	Enamelled Pipe Closed	Length (cm)	Resistance (Ohms)	Current (Amps.)
SN771	SF819	25	10	5.7
SN774	SF820	25	33	3.1
SN772	SF821	25	100	1.8
SN775	SF822	30	330	1.0
SN773	SF823	35	1000	0.57
SN776	SF824	30	3300	0.31



B

DECADE RESISTANCE BOX B **SA614**

It is housed in a metal box. Three dial knobs are mounted on a panel having range (0 - 10) x 0.1Ω, (0 - 10) x 1Ω, (0 - 10) x 10Ω.



D

Note: These Rheostats are also available in porcelain pipe.

DECADE RESISTANCE BOX C

These resistance boxes incorporate specially designed switches for precision and rapid measurement of resistance. The dial assembly is mounted on a panel and enclosed in a box for protection from dust and acid fumes.

Salient features

- **It uses metallic film resistance which is better than coils.**
- **4 mm safety sockets are provided.**

Dimensions: 285 x 135 x 72 mm

Cat No.	Range in ohms	Total Resistance in ohms	Dials
SE090	Units	10	1
SE091	Tens	100	1
SE092	Hundreds	1000	1
SE095	Units & tens	110	2
SE096	Units, tens & hundreds	1110	3
SE097	Units, tens, hundreds & thousands	11110	4
SE098	Units, tens, hundreds, thousands & ten thousands	111110	5
SE099	Units, tens, hundreds, thousands, ten thousands & hundred thousands	1111110	6

RHEOSTAT - ENAMELLED IRON PIPE OPEN TYPE D

Wire wound on Enamelled Iron pipe having dia 5.6cm. Supports are made of Aluminium.

Cat. No.	Length in cm	Resistance in Ohms	Current in Amps
SE741	15	1400	0.3
SE742	40	5100	0.3
SE743	15	150	1
SE744	20	225	1
SE745	25	300	1
SE746	30	375	1
SE747	25	56	2.3
SE748	40	100	2.3
SE749	15	10	4.2
SE750	25	20	4.2
SE751	40	35	4.2
SE752	15	3.5	6
SE753	25	7.5	6
SE754	40	13	6

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A

DECADE CAPACITANCE BOX A

Each dial operated by a knob. Special type of switches are provided to minimize the residual capacitance.

Salient features:

- **High quality switches to minimize residual capacitance.**
- **4 mm safety sockets are provided.**

Cat. No.	Range in Microfarad (µF)	Total Resistance in Microfarad (µF)	Dials
SE025	0.001	001	1
SE034	0.01	0.1	1
SE035	0.1	1	1
SE770	1	10	1
SE771	0.001 & 0.01	0.11	2
SE772	0.01 & 0.1	1.1	2
SE773	0.1 & 1	11	2
SE774	0.001, 0.01 & 0.1	1.11	3
SE775	0.01, 0.1 & 1	11.1	3
SE776	0.001, 0.01, 0.1 & 1	11.11	4



B

WHEATSTONE BRIDGE PORTABLE B SE083

This test set has been designed to provide an accurate and sensitive instrument for measurement of resistance and locating faults in cables by adopting the Murray or Varley loop circuit for tests. This set is entirely self contained with dry battery and a galvanometer. The instrument is equipped with another switch controlling the sensitivity or short circuiting the Galvanometer. Arrangement has been provided to use the extra Galvanometer or the high source voltage for increasing the sensitivity of the bridge. Range : 0.001 ohms to 11.11 megohms.

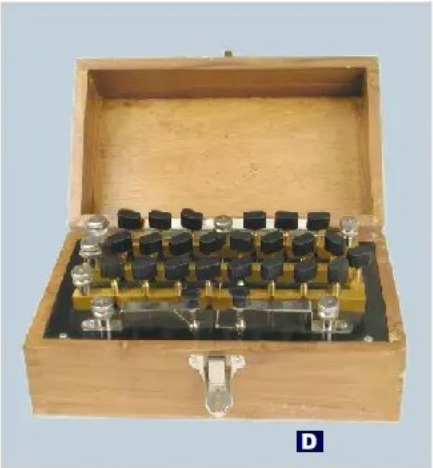


C

PLUG TYPE RESISTANCE BOXES C

Interchangeable taper plugs and having brass metal blocks. Using constantan wire resistances. Fitted in a nicely polished wooden box.

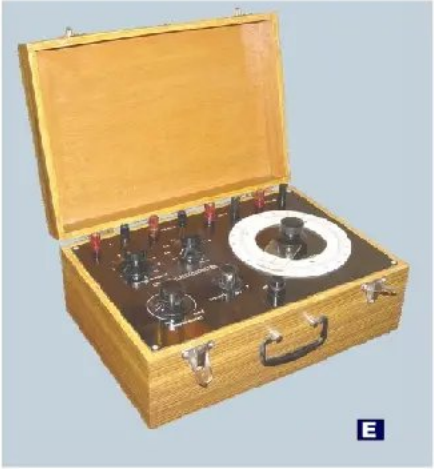
Cat. No.	No. of Coils	Range in ohms	Total Resistance
SE101	5	0.1-1	2
SE102	8	0.1-5	11
SE103	4	1-5	10
SE104	5	1-10	20
SE105	6	1-20	40
SE106	8	1-50	110
SE107	9	1-100	210
SE108	10	1-200	410
SE109	12	1-500	1,110
SE110	13	1-1,000	2,110
SA618	16	1-5,000	11,110
SE111	17	1-10,000	21,110



D

POST OFFICE BOX D
SE112

Each ratio arm has resistance of 10, 100 and 1000 ohms. The series arm has a resistance of 11110 x 1 ohm given by 16 coils. Battery and galvanometer keys are provided.



E

CROMPTON POTENTIOMETER E
SW131

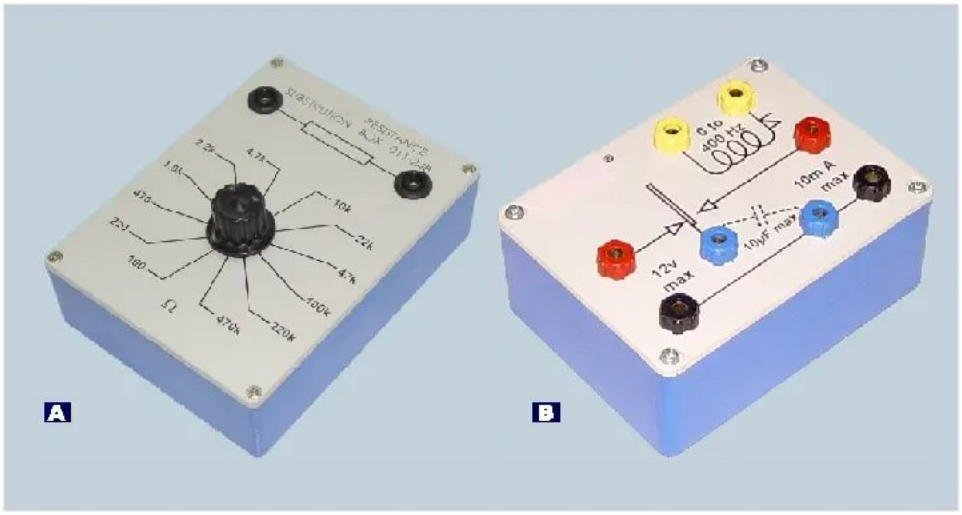
Suitable for educational and industrial purposes. Simple to understand, separate keys for standardisation and testing.

Total range : 0 to 1.75 volts in steps of 0.005V

Accuracy : ±0.5 %

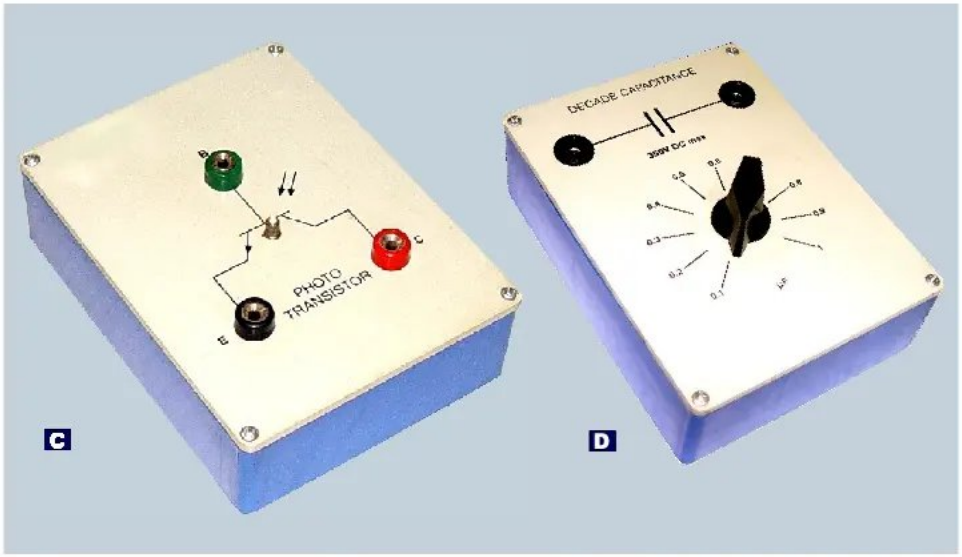
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RESISTANCE SUBSTITUTION BOX **A**
SH117
It is housed in a plastic case with 4 mm sockets. This unit include 12 - position switches which select resistance in the range 470 k ohm 220 k Ohm, 100 k Ohm, 47 k Ohm, 22 k Ohm, 10 k Ohm,2.2 k ohm, 4.7 k Ohm, 1 k Ohm, 470 Ohm, 220 Ohm and 100 Ohm.

REED SWITCH **B** **SH173**
Single pole changeover reed relay housed in a plastic box capable of up to 400 changeovers per second. Used with parallel plate capacitor,10µF. Sockets 4mm. Supplied without power supply & signal generator.
Box: Plastic, 100 x 75 x 40 mm (L x W x H)



PHOTOTRANSISTOR **C** **SH109**
It consists of a phototransistor mounted on a plastic box with 4mm sockets; with transistor symbol printed (Base, collector, emitter indicated).
Box: plastic, 13.8 x 10.4 x 4cm (approx.)

DECADE CAPACITANCE BOX **D**
Decade capacitance allows easy selection of capacitance of values in ten equal steps. The device is housed in a plastic box with 4mm safety sockets. Capacitor rating 350V DC.
SH125 :10 x100 µf
SH131 :10 x 1 µf
SH114 :10 X 10 µf
Box : Plastic, 14 x 10.5cm (L x W) approx.

CAPACITANCE SUBSTITUTION BOX **E**
SH116
Capacitance substitution box offers selectable values of 220, 470, 1000, 2200, 4700, 10000 pf; 0.022, 0.047, 0.1, 0.22, 0.47, 1.0 µf. The device is housed in plastic box with 4mm safety sockets.
Voltage : 250 V DC (max.)
Box : Plastic, 14 x 10.5cm (L x W) approx.

RESISTANCE SUBSTITUTION BOARD **F**
SE917
It consists of twelve resistors of 33 ohm, 100 ohm, 330 ohm, 1k ohm , 3.3k ohm, 10k ohm, 33k ohm, 100k ohm, 330k ohm, 1M ohm, 3.3M ohm, 10M ohm mounted on a board which can be easily selected by means of a rotary switch. Connections via 4mm sockets. Board dimensions: 120 x 65 mm (L x W)





CAPACITANCE SUBSTITUTION BOARD **G** **SH130**
It consists of twelve non polarized capacitors of values100pf, 220pf, 470pf, 1nf, 2.2nf, 4.7nf, 10nf, 22nf, 47nf, 0.1µf, 0.22µf, 0.47µf mounted on a board which can be easily selected by means of a rotary switch. Connections via 4mm sockets.
Max. Voltage : 250 V DC
Board dimensions : 120 x 65 mm (L x W)

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CELL HOLDER **A**

Plastic moulded holder with brilliant finishing to hold cell of 1.5 volt, big size. Individual units can be joined in a tandem to make a battery of required voltage. Sockets of 4mm are provided on the cell holder.

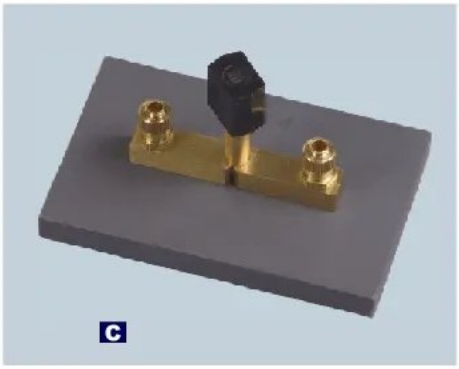
Dimensions: 74x38mm (L x W), Single holder

SE953	For Single cell
SE952	For Double cell
SE878	For Four cell



CONTACT KEY **B** **SE967**

Morse Key used for making & breaking of circuits for short durations. Recommended for voltage below 24 volts. Mounted on PVC sheet with adjustable spring.



PLUG KEY, ONE WAY **C** **SH108**

Consists of two brass blocks with socket terminals mounted on an insulated base. Contact is made by a tapered plug with an insulating top.
Base size: 100x62mm



TWO BATTERY HOLDER WITH PLUG TERMINALS **D** **SO598**

Provided with one no. 4mm red terminal and two nos. of 4mm black terminals. Provision for holding (2 x 1.5V) dry cells. Maximum capacity 3V.



FLEXIBLE PLUG LEAD GUN TYPE **E**

Cat. No.	Length	Colour
SN200	500mm	Black
SN201	1000mm	Black
SN202	2000mm	Black
SN203	500mm	Red
SN204	1000mm	Red
SN205	2000mm	Red
SN206	500mm	Yellow
SN207	1000mm	Yellow
SN208	2000mm	Yellow



SWITCH ON/OFF **F** **SV011**

Toggle switch on/off is mounted on acrylic base with 4mm sockets.



KNIFE SWITCH DOUBLE POLE (PLASTIC BASE) **G** **SN730**

It consists of double pole knife switch mounted on a plastic base with rubber feet and 4mm terminals facilitating connection by 4mm plug leads or bare ended leads.
Base: Plastic, 165 x 100 mm



FOUR BATTERY HOLDER WITH PLUG JACKS **H** **SO597**

Provided with one no. 4mm red terminal and four nos. of 4mm black terminals. Maximum capacity 6V. Provision for holding (4 x 1.5 V)dry cells.



SWITCH IN PLASTIC BASE **I** **SN796**

It consists of on/off switch mounted on a plastic box, with switch symbol printed. Provided with 4 mm safety sockets. Base: Plastic, 100x75x40 mm (l x w x h).

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A

BULB 6V, ON PLASTIC BASE A **SN698**
It consists of a bulb holder for 6 V incandescent lamps mounted on a plastic box, with bulb symbol printed. Provided with 4 mm safety sockets.
Base: Plastic, 100x75x40 mm (l x w x h).



B

CAPACITOR NON POLARISED TYPE B
Capacitor is mounted in a transparent box with terminals on its top. Module is ideal for use in electronic circuits where a fixed value capacitor is required. A wide range of capacitors is available.

Cat. No.	Capacity	Operating Voltage
SW372	1 µF	25 V
SW373	0.47 µF	25 V
SW374	0.22 µF	25 V
SW375	0.1 µF	25 V
SW376	47 nf	25 V
SW377	22 nf	25 V
SW378	10 µF	25 V
SW379	4.7 µF	25 V
SW828	2.2 µF	25 V
SW381	1 nf	25V

Box Dimension: 54x42mm (l x w) approx.

NOTE: Capacitor of other working voltages are also available as per requirement.



C



D E

RESISTANCE MODULE D
Resistance is mounted in a transparent box with terminals on its top. Module is ideal for use in electronic circuits where a fixed value resistor is required. A wide range of resistors is available.

Box dimensions: 5.4 x 4.2cm (L x W) approx.
All are ½ Watt M.F.R, Acc. 1%
NOTE: Other ranges are also available as per requirement.

Cat. No.	Resistance Ω
SW352	1
SW353	5
SW354	10
SW355	20
SW356	50
SW357	100
SW358	200
SW359	500
SW360	1000

DIODE / TRANSISTORS E
Diode/ transistor is mounted in a transparent box with terminals on its top. Module is ideal for use in electronic circuits where a component of some particular specification is required. A wide range of diode/ transistor is available.

SW297 Transistor P-N-P
SW298 Transistor N-P-N
SW361 Si - Diode
SW362 Ge - Diode
SW363 Zener Diode

Box Dimension: 5.4 x 4.2cm

Available on Request:
Capacitor, Resistance and Diode in a box can be made available with safety sockets



F

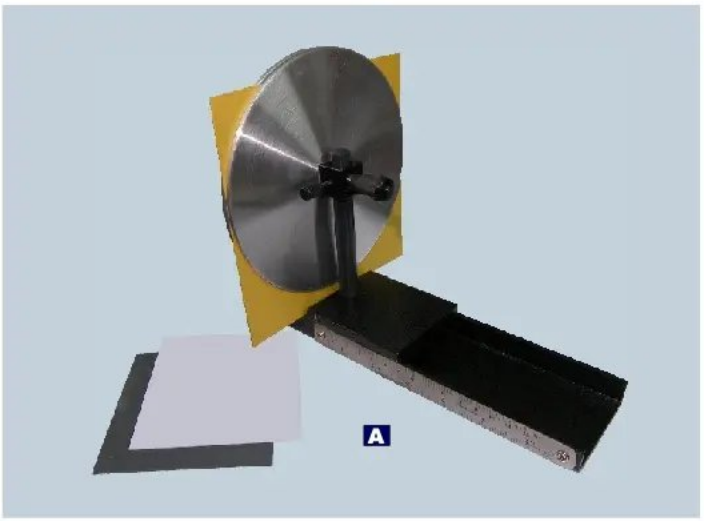
ELECTRONIC MODULES F

SA622 Transistor P-N-P
SA623 Transistor N-P-N
SA642 Light Dependent Resistor
SA643 P-N Junction Diode
SW363 Zener Diode

SEVEN RESISTANCES C **SV010**
Seven numbers of different resistances 1Ω/ 1/4W, 4.7Ω/ 1/4W, 10Ω/ 1/4W, 100Ω/ 1/4W, 1000Ω/ 1/4W, 10000Ω/ 1/4W, 100000Ω/ 1/4W mounted on acrylic base. Each resistances provided with two numbers of 4mm sockets.

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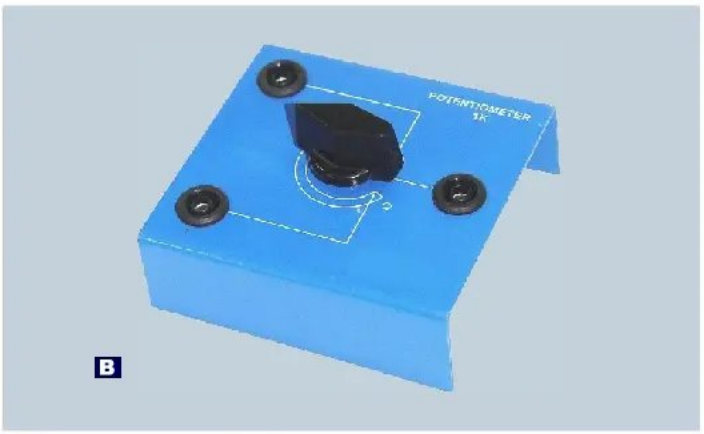
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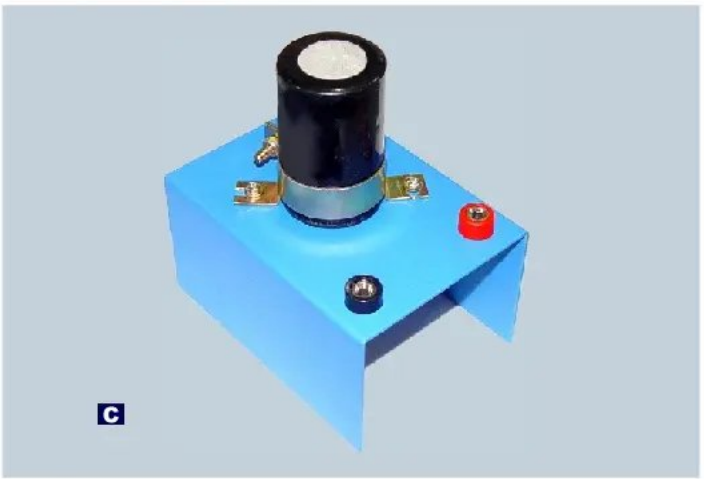
VARIABLE CAPACITOR **A** **SH300**
Plate capacitor used to investigate the relationship between charge, voltage and capacitance, as well as determining the dielectric constants. It is a high accuracy capacitor for electrostatic experiments. The fixed and mobile plate is highly insulated. The solid aluminum plate capacitor around 150mm diameter and 3mm thick. The capacitance is adjustable from 2.3 to 280pF. It consists of a fixed and a movable plate on a guide rail. A centimeter scale is used to read the plate spacing. The device is supplied with three dielectric sample plates made of acrylic, PVC and cardboard. Supplied without LCR meter.



AEPINUS CONDENSER **D** **SW130**
A device for demonstrating conductive & inductive electricity. It consists of two parallel plates mounted on insulated pillars so that the space between the plates can be adjusted and the glass or acrylic dielectric (insulated plates between them) can be removed or placed between the plates. Also included a pair of pith balls suspended by threads from pillars. Operatable on Wimshurst Machine.
Base: Wooden, 300mm x 175 mm (approx.)
Plates: Round, diameter 125mm (approx.)
Height: 250mm (approx.)



POTENTIOMETER 1K **B** **SH112**
Mounted in a metal base with 4 mm sockets.





TEMPERATURE COEFFICIENT OF RESISTANCE **E** **SH160**
An apparatus for determining the temperature coefficient of resistance. It consists of a coil of insulated iron wire wound non-inductively on an insulating former and connected to terminals. The coil is enclosed in a glass test tube with a stopper. Thermometer not included in the scope of supply.
Tube size : 150x 25 mm approx.
Dimensions: 200x 50 mm approx. (Overall)

SBC HOLDER MOUNTED LAMP **F** **S1020**
It has two 4mm safety sockets and 1 bulb 12V/21W, horizontal filament.

LARGE ELECTROLYTIC CAPACITOR **C** **SH127**
The electrolyte capacitor large (10000µf, 25V) mounted on a base, suitable for demonstrating stored energy.
Overall dimension: 105x75x115 mm approx.(L x W x H)

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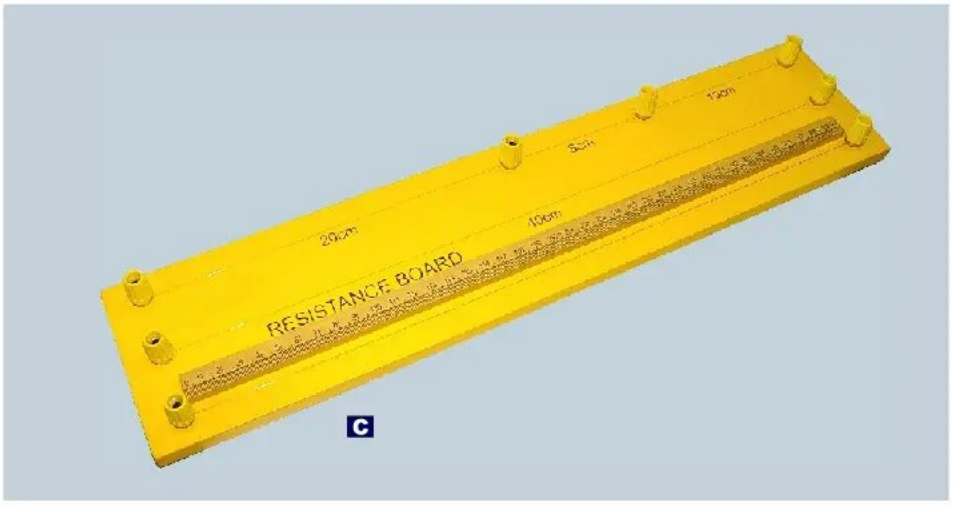
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POTENTIOMETER ONE METER SINGLE WIRE **A** **SH514**
It consists of a wooden base fitted with 4mm socket terminals, single wire and a 100cm wooden scale. Supplied without jockey.

WHEAT STONE BRIDGE TWO GAP ONE METER **B** **SH515**
It consists of nickel plated brass strips and connecting pieces with 4mm socket terminals, fitted on wooden base. Length 100cm long with plastic scale. Supplied without jockey.

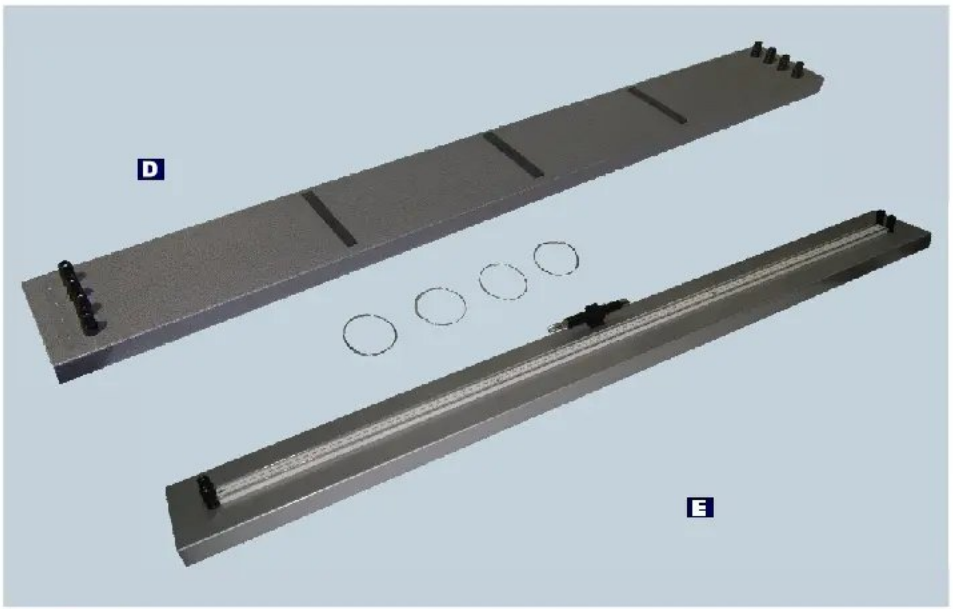
RESISTANCE BOARD **C** **SH124**
It is used for investigating resistivity. The board is fitted with 4 mm terminals connected to a length of resistance wire which runs along a scale. Three different resistance wires with ratios of cross sectional area 1:2:4 (approx.) are provided. Sockets are provided on it so that the board can be used as a 40 cm bridge or potentiometer.



LAW OF RESISTANCE BOARD **D** **SA619**
It is used to determine variation of resistance of a conductor with changes in length, material, diameter and the effect of series and parallel combination of resistances, this item is used. Ohm's Law may also be studied. The whole unit is mounted on a sheet-metal base, size: 12.5 x 110cm. There are 4 nos. of separate wires having length of 1 m each. The wires are constantan 24 swg, constantan 30swg, iron 30swg and Copper 30 swg. Each wire may be attached separately to binding posts. Ohm's Law may also be studied with the help of DC power supply and multimeters.

POTENTIOMETER METALLIC **E** **S1014**
It consists of a metal base fitted with 4mm socket terminals, Supplied with jockey.

JOCKEY PENCIL **F** **SE323**
For use with Meter Bridge Carey Fosters and potentiometer work. Provided with locating notch in the plated Brass contact. 4mm socket is present on the brass terminal.





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It's legacy goes back to 1919.

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INTERSCALE DEMONSTRATION METER **A** **SE069**

It is simple tabletop demonstration model of moving coil AC and DC voltmeter or ammeter. The scale dials are interchangeable with different ranges. It is housed in a plastic case with transparent front and rear, mounted on a plastic base with rubber feet.

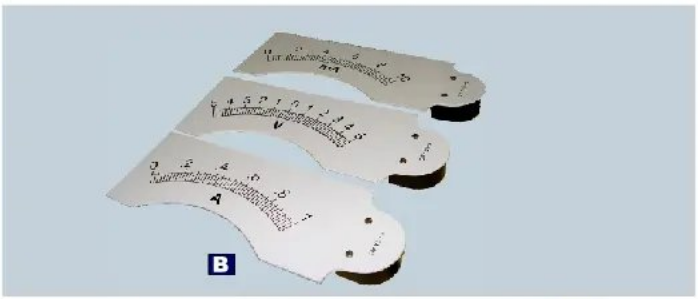
Salient features

•CE Marked .

•Wide viewing area.

Dimension : 30 x 30 x 15cm approx.
Sensitivity : 5mA, 100mV
Type : Moving Coil
Material : Plastic

Note : Economy model is also available.



DIALS FOR INTERSCALE DEMONSTRATION METER **B**

It is suitable to use with interscale demonstration meter SE069. Available in different ranges and type i.e. AC or DC.

Material : Plastic

Range	AC Scale	DC Scale
2.5-0-2.5 mA	–	SW191
0-10 mA	SW192	SW193
0-50 mA	SW194	SW195
0-100 mA	SW196	SW197
0-500mA	SW198	SW199
10-0-10 mA	--	SW200
0-1 A	SW201	SW202
0-5 A	SW203	SW204
0-10 A	SW205	SW206
5-0-5 V	–	SW207
0-1 V	SW208	SW209
0-5 V	SW210	SW211
0-10 V	SW212	SW213
0-30 V	SW214	SW215
0-50 V	SW216	SW217
0-100 V	SW218	SW219
0-500 mV	--	SW220
0-150 V	SW221	SW222
0-15 V	SW223	SW224



TANGENT GALVANOMETER **C** **SE070**

It is used to compare currents or to determine the value of 'H' (Horizontal component of earth field) if current is known. It consists of a Bakelite ring dia 17cm approx. wound with 3 coils of 2,50 and 500 turns of insulated copper wire. Compass Box is mounted at center of the ring and both can rotate independent of the base. Provided with terminals to put either of the three coils in circuit at a time. Base is supported on three levelling screws.



GALVANOMETER LONG SCALE **D** **SW623**

Highly sensitive galvanometer having multiple deflection system. Long scale of 18cm marked 0-18cm and 9-0-9cm rule divided into 180 division. Fitted with "Zero Setting" system to set the spot of the galvanometer. Fitted with a scale locking function marked as lock Shunts with reduction factor of X1,X0.1,X0.01,X0.001, direct S / C.

Mains working voltage : 230 Volts / 50Hz.

Socket resistance : 500 Ohms.

FOR YOUR INFORMATION More designs are also available with us which are produced on request. For more information, please contact us.

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A

METER ROUND A

Case : ABS Plastic Case
Accuracy Class : ± 2.5 FSD
Scale Length : 50mm(approx) with knife edge pointer
Desk Stand : Top Terminal ABS plastic moulded, Meters moving coil dc.
Size : 90 x 110 x 90 mm approx.

SE610 Ammeter DC 0-1Amp
SE612 Ammeter Double Range DC 0-1/5 Amp
SE615 Milliammeter DC 0-100mA
SE619 Voltmeter DC 0-10V
SA518 Millivoltmeter DC 0-50mV
SA520 Galvanometer DC 30-0-30 (20μA/Div)



C

METER SQUARE C

Case : Clear Acrylic front cover with ABS plastic box
Accuracy Class : ± 2.5 FSD
Scale Length : 60mm(approx) with knife edge pointer and anti parallax mirror scale.
Desk Stand : Front Terminal unbreakable ABS plastic moulded, Meters moving coil dc.
Size : 120 x 80 x 85 mm approx.

SE570 Ammeter DC 0-1Amp
SE572 Ammeter Double Range DC 0-1/5 Amp
SE575 Milliammeter DC 0-100mA
SE579 Voltmeter DC 0-10V
SA533 Millivoltmeter DC 0-50mV
SA535 Galvanometer DC 30-0-30 (20μA/Div)



E

METER RECTANGULAR E

Case : Clear Acrylic front cover with ABS plastic box
Accuracy Class : ± 2 FSD
Scale Length : 85mm (approx) with knife edge pointed and anti parallax mirror scale.
Desk Stand : Front Terminal unbreakable ABS plastic moulded, Meters moving coil dc.
Size : 100 x 100 x 140 mm

SE590 Ammeter DC 0-1Amp
SE592 Ammeter Double Range DC 0-1/5 Amp
SE595 Milliammeter DC 0-100mA
SE599 Voltmeter DC 0-10V
SA548 Millivoltmeter DC 0-50mV
SA550 Galvanometer DC 30-0-30 (20μA/Div)

Note: *More Ranges available on request.*



B

METER ROUND B

Case : ABS Plastic Case.
Accuracy Class : ± 2.5 FSD
Scale Length : 50mm(approx) with knife edge pointer
Desk Stand : Top Terminal ABS plastic moulded. Meters moving coil type AC/DC.

SA583 Ammeter 0-3Amp
SW234 Voltmeter 0-5V



D

METER SQUARE D

Case : Clear Acrylic front cover with ABS plastic box.
Accuracy Class : ± 2.5 FSD
Scale Length : 65mm(approx) with knife edge pointer and anti parallax mirror scale.
Desk Stand : Front Terminal unbreakable ABS plastic moulded. Meters moving coil type AC/DC.

SA585 Ammeter 0-3Amp
SW246 Voltmeter 0-5V



F

METER RECTANGULAR F

Case : Clear Acrylic front cover with ABS plastic box.
Accuracy Class : ± 2 FSD.
Scale Length : 85mm (approx) with knife edge pointer and anti parallax mirror scale.
Desk Stand : Front Terminal unbreakable ABS plastic moulded. Meters moving coil type AC/DC.

SA587 Ammeter 0-3Amp
SW258 Voltmeter 0-5V

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A

DEMONSTRATION METER A

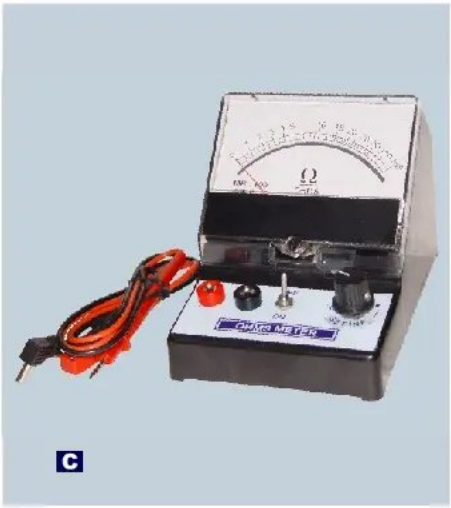
Vertical type. Fitted with transparent top mounted on wooden base. It is used in schools and colleges for demonstrating all parts of the meters and also to measure the current and voltage ranges.
Size : 12.5 x 12.5 x 19 cm (Approx.)

SA415 Voltmeter DC 0-3V
SA421 Millivoltmeter DC 0-100mV
SA425 Ammeter DC 0-3Amp
SA428 Milliammeter DC 0-10mA
SA433 Galvanometer DC 30-0-30 (20μA/Div)
SA434 Voltmeter Double Range DC 0-1/5V
SA438 Voltmeter Triple Range DC 0-3/15/30V


B

JOULE METER B SW458

A domestic electricity meter adopted to operate single - phase, maximum current 8.33Amp, input 12 V AC. And dials reading in joules. The meter is mounted on a robust bench stand with 4 mm input and output socket terminals. The aluminium disc rotates once for every 100 joules with the consumption recorded on three digits calibrated 100, 1000 and 10000 joules per division respectively. The instrument records a maximum of 99,900 Joules.


C

OHM'S METER C SA551

Ohm's meter is designed for measuring the resistance in electric circuits. It is housed in unbreakable ABS case with clear transparent front cover and operated in 1.5V AA cell.
Size : 100 x 100 x 140mm approx.

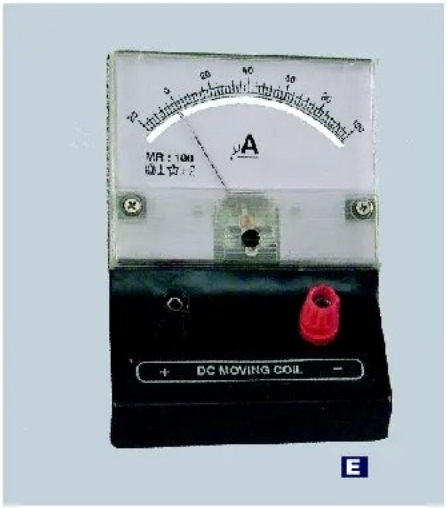

D

MULTIRANGE AMPERE-VOLTMETER D
SA336

Multi range ammeter, voltmeter is suitable for the laboratories of school & colleges to measure voltage and current in the DC circuit.

TECHNICAL SPECIFICATION

Indicating panel is in the horizontal type
Measuring ranges:
Ampere: 0-100uA-100mA-1A-5A
Voltage: 0-100mV-1V-10V-50V
Accuracy: ±2.5% FSD
Dimensions: 162x114x60mm approx
Scale lenght: 60mm approx
Damping time: not longer than 4s
The basic sensitivity of the curent of the meter is 35 μA.



E

MICROAMMETER MOVING COIL D.C E
SE568

Bench type meter with a rectangular case.

Case	: Clear acrylic front cover with ABS Plastic
Accuracy Class	: ± 2 FSD
Scale Length	: 85mm (approx) with knife edge pointer
Range	: 20 - 0 - 100 μA
Resistance	: 1000 Ohm



F

MULTIPLIERS AND SHUNTS F

It is used with code SE568. These can be fitted on the terminals of meter without using any additional wires.

SE681 Multiplier DC 0-10V
SA589 Double Range Multiplier DC 0-1/5V
SE686 Shunt DC 0-10mA
SA592 Double Range Shunt DC 0-1/5A

Note: *Multipliers and shunts in AC ranges can also be provided as per customer requirement.*

FOR YOUR INFORMATION

Our team of engineers and technicians are continuously working to improve existing products and develop new ones. We welcome suggestions of our valued customers.

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METER METALLIC A

It is provided with 4mm safety sockets. Large range of DC Voltages can be measured. The Voltmeter is provided with rubber feet.

Scale Length : 75mm approx.
Dimensions : 19 x 13.5 x7.9 cm approx.

TABLE FOR METERS MOVING COIL DC, METAL CASE

Type	Range	Cat. No.
Ammeter Double Range DC	0-1Amp & 0-5Amp	SE632
Ammeter Triple Range DC	0-50mA, 0-500mA & 0-5A	SE633
Voltmeter Double Range DC	0-5 & 0-15 Volts	SE640
Triple Range Voltmeter DC	3-15-30V	SE642
Galvanometer DC	50-0-50 µA	SE643
Galvanometer DC	3.5-0-3.5mA	SE644
Galvanometer DC	35-0-35mV	SE645



DIGITAL METER B

A digital ammeter with LCD display. The ammeter is provided with rubber feet. Connection via 4mm Safety Sockets. Operating voltage 9V DC battery. Supplied without battery.

SE271 : Ammeter 19.99 Amp. DC.
SE272 : Voltmeter 19.99 Volts DC.
Dimensions : 190 x 135 x 72mm (L x W x H)

DIGITAL METER C

Housed in rectangular shaped plastic body provided with LCD display. Size 14 x 10 x 10 cm approx. Fitted with two terminals and on / off switch. Operating voltage 9V DC battery. Supplied without battery.

Display : LCD type 3½ digit

Cat. No.	Ranges DC
SA594	199.9µA
SA595	1.99mA
SA596	19.99mA
SA597	199.9mA
SA598	1.99A
SW173	19.99A
SA599	199.9mV
SA600	1.99V
SW174	19.99V
SA601	199.9V
SA602	500V



DIGITAL MULTIMETER D **SE067**

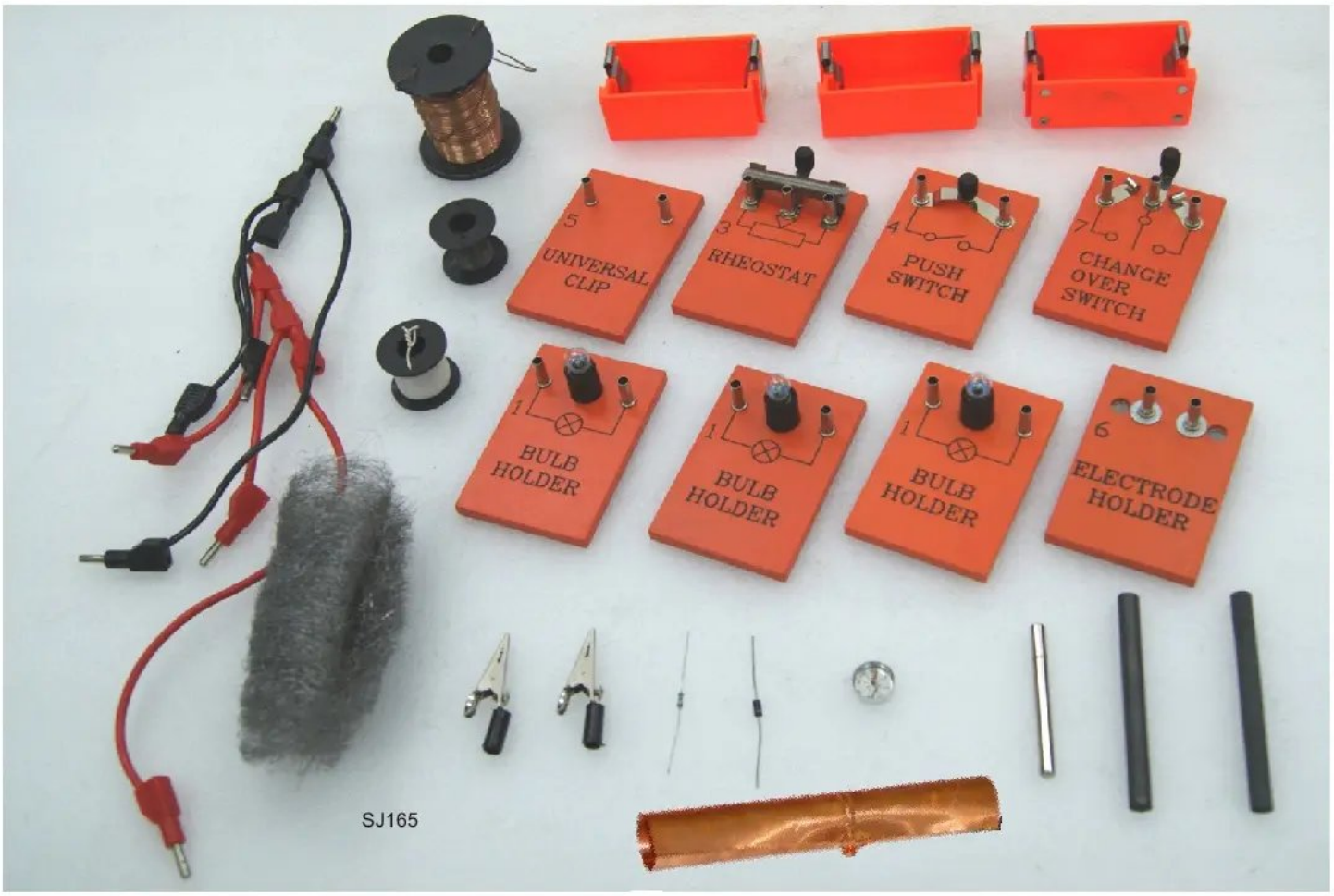
Resistance Range : 200 ohms, 2000 ohms, 20k, 200k & 2000k ohms.
D.C.Voltage : 200 & 2000 Milli volts
: 20, 200 & 600 volts
A.C.Voltage : 200 & 600 volts.
D.C.Current : 200 & 2000 micro ampere
: 20 & 200 milli ampere
: 10 ampere
Checking facility : Diode and transistor Battery operated.

Available on Request:
Analog Multimeters. Please contact us for more details.

OUR SPECIALITY

We have a very flexible manufacturing setup. We are regularly producing goods for various customers as per their design and samples often on exclusive basis.

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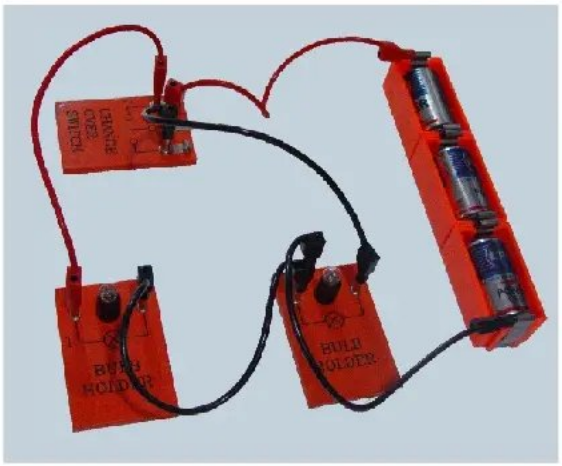
SJ165

BASIC ELECTRICITY KIT (TEACHER VERSION) **SJ165**
This kit is designed as a resource for understating the basic introductory electricity. It includes well structured instructional material and robust components mounted on tough, orange plastic base, each with two 4mm sockets. The panels are formed into circuit by connecting them together using 4mm leads.

BASIC ELECTRICITY KIT (STUDENT VERSION) **SN638**
Basic electricity kit provided with all the components as in SJ165 but the components are six times more in nos. so that six students can do the experiments at the same time.

This kit covers the following topics:

- Lightening a bulb.
- Function of a switch.
- Series and parallel combination of bulbs.
- Heat from electricity.
- Effect of variable resistance.
- Chemical effects on electric current.
- Making an electromagnet.
- Diode and resistance.
- Basic electric circuits.



Function of Change Over Switch

BASIC ELECTRICITY KIT WITH MAGNETS **SJ166**
It is same as SJ165 but components are fitted with magnet. So that it can be used with magnetic board. (Supplied without magnetic board).

CROSS REFERENCE



For Magnetic board
Please see page no. 189

Contents:

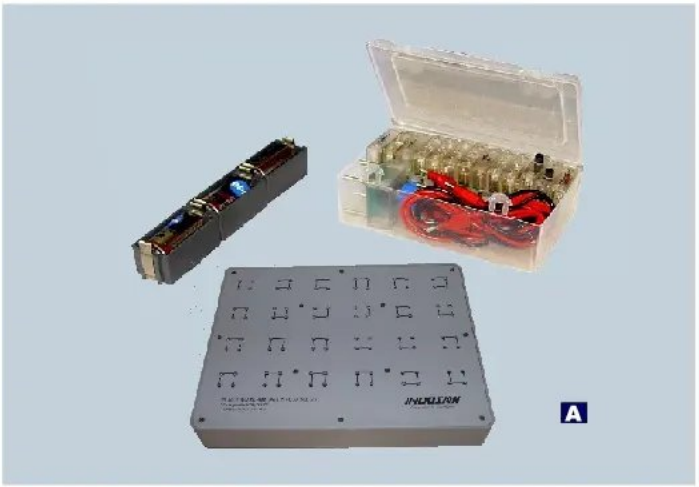
Item Name	Qty.	
	SJ165/SJ166	SN638
Cell with holder	3	18
Bulb with holder	3	18
Flexible lead pair	3	18
Push switch	1	6
Steel wool	1	6
Universal clips	1	6
Insulated wire	1	6
Electrode holder with 2 carbon rods	1	6
Soft iron bar & compass	1	6
Change over switch	1	6
Resistance	1	6
Diode	1	6
Crocodile clips	2	12
Copper foil	1	6

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WHY ELECTRONIC PLUG IN KIT

- Electronic plug-in kit is a comprehensive set of components for performing experiments in Analog and Digital Electronics.
- The plug-in modules include both passive and active electronic components with contacts formed by 4-mm plugs.
- The plug-in modules are design in transparent housing for visibility of the component placed.
- The symbols and name of the component printed on each plug-in module, so student can easily identify.
- Provide you best quality system with plug-in board and plug-in modules with detail working description.
- It is a "Do it yourself approach".
- Modular system is encourages thinking and learning process while student approach for self-designed circuits.
- The freedom to experiment is backed up by formal experiment literature.
- It leads to in-depth knowledge and eventually to the kind of practical skills.



ELECTRONIC PLUG-IN KIT (JUNIOR) **A** **SW932**

The kit consists of plug-in board modules and a bread board in which 4mm sockets are arranged in 2 x 2 matrix. Suitable for electronics experiments at introductory level. Supplied without battery.

Experiments: Series & parallel circuits, effect of resistance, switch, rectifier, LED.

Salient features:

- **Clear view of circuits**
- **Safe and easy to setup**
- **Reliable connections**

❑ Lamp Modules 9pcs ❑ Potentiometer Module 1pc ❑ Diode Module 1pc ❑ Resistor Module 1pc ❑ Push Switch Module 1pc ❑ Cell Holders 1pc ❑ Circuit Board 1pc ❑ Connecting Leads 1 set.



A KIT FOR ELECTRICITY EXPERIMENTS **B** **S0012**

Following experiments can be performed by using these components.

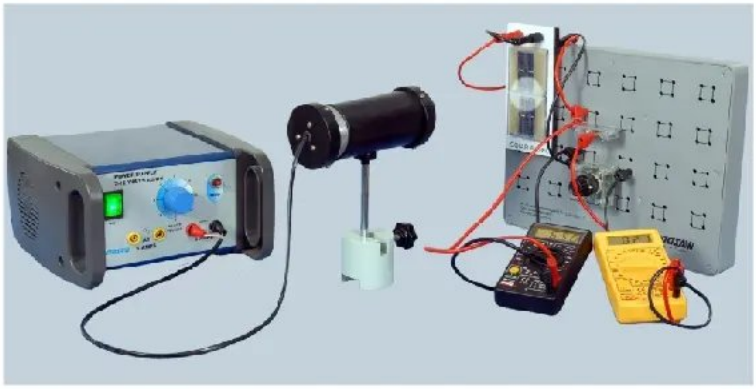
1. Design a simple circuit.
2. Study the series and parallel combination of resistor.
3. Study the series and parallel combination of capacitor.
4. Study the diode as forward and reverse bias.
5. Experiments of bar magnet Installed Inside a coil.
6. Relationship between volts and amps for electrolytes.
7. Charging an electroscope by conduction.

Contents of S0012:

S.No.	Descriptions	Qty.
1.	Experiment board ,size A4,4mm sockets	1
2.	A set of 10 connecting bridges	1
3.	Lamp Holder	1
4.	Reverse switch	1
5.	Operating Switch	1
6.	Lamp 6V,3W	2
7.	Connecting Clips	2
8.	Crocodile Clips	2
9.	Battery holder, Supplied complete with the battery	2
10.	Resistor 47 Ohm, in a plastic box with 4 mm terminals ,2 W	1
11.	Resistor 100 Ohm, in a plastic box with 4 mm terminals ,2 W	2
12.	Condenser 470 µF, in a plastic box with 4 mm terminals ,2 W	1
13.	Silicone Diode , in a plastic box with 4 mm terminals ,2W	1
14.	Bar Magnets, Strong , installed inside a coil	2
15.	Plotting Compass in a plastic Box	1
16.	Pocket compass ,with a pointer ,graduated	1
17.	Coil 500 turns ,with 4mm terminals	1
18.	Analyzing chemistry cell, made of plastic	1
19.	Copper electrode	2
20.	Iron electrode	2
21.	A pair of rubbing rods	2
22.	Thread for hanging	1
23.	Glass electroscope	1
24.	Digital Multimeter	2
25.	A pair of 25cm cable	2
26.	A pair of 50cm cable	2
27.	A pair of 100cm cable	2
28.	Resistor 10 ohm, in a plastic box, with 4 mm terminals ,2 W	2
29.	Resistor 330 ohm, in a plastic box, with 4 mm terminals ,2 W	2
30.	Condenser 100µF,in a plastic box, with 4 mm terminals ,2 W	1
31.	Condenser 1µF, in a plastic box, with 4 mm terminals ,2 W	1
32.	Experiment manual	1

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CURRENT AND VOLTAGE SOURCES SJ250

Exp-1 Recording the current-voltage characteristics of a solar cell as a function of the irradiance.

Exp-2 Recording the current-load characteristics of a solar cell as a function of the irradiance

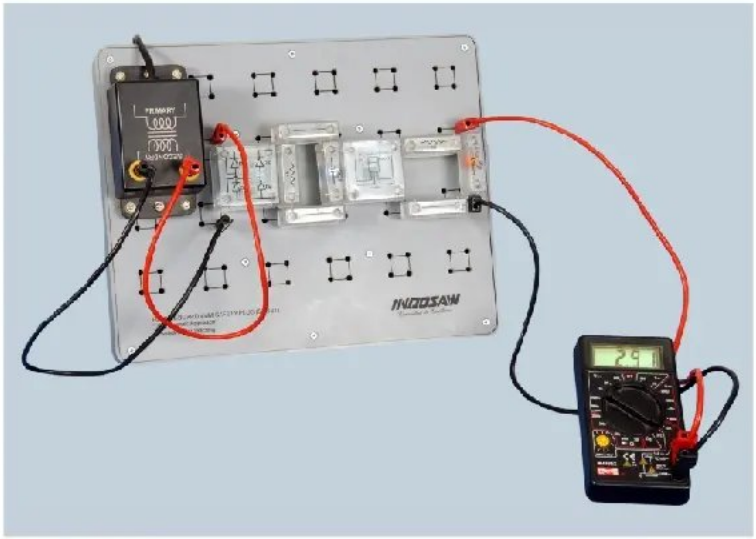


TRANSISTORS SJ251

Exp-1 Investigating the diode characteristics of transistor junctions.

Exp-2 Recording the characteristics of a transistor.

Exp-3 Recording the characteristics of a field-effect transistor



DIODE CIRCUIT AND POWER SUPPLY SJ252

Exp-1 To study half wave and full wave (bridge) rectifier

Exp-2 To study capacitor filter effect in power supply

Exp-3 To study unregulated and regulated power supply



TRANSISTORS AS AMPLIFIER SJ253

Exp-1 To study CE amplifier frequency response

Exp-2 To study RC-coupled amplifier (multistage amplifier)

Exp-3 To study differential amplifier circuits



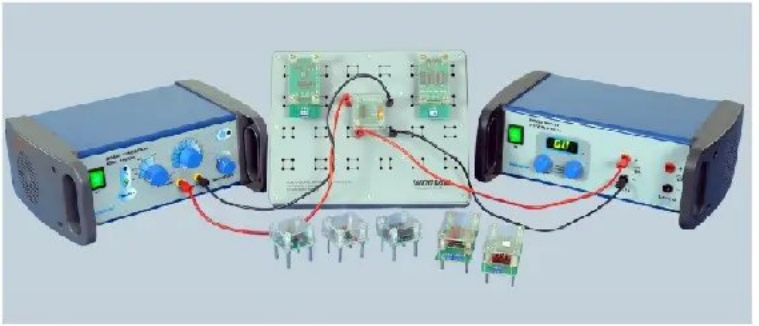
TRANSISTORS AS OSCILLATOR SJ254

Exp-1 To study Astable multivibrator circuit using transistor

Exp-2 To study Colpitt's oscillator

Exp-3 To study Hartley oscillator

Exp-4 To study UJT as relaxation oscillator



COMBINATORIAL AND SEQUENTIAL CIRCUITS SJ255

Exp-1 To study half adder and full adder circuit

Exp-2 To study half Subtractor

Exp-3 To study BCD to 7-segment decoder using 7segment display

Exp-4 To study decade counter

Exp-5 To study RS flip flop

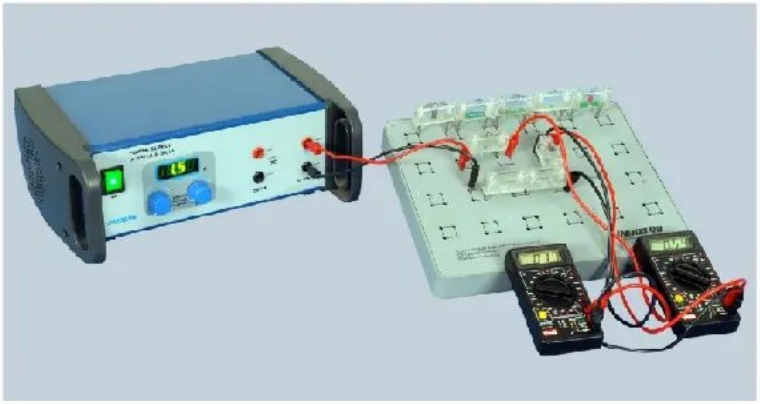
Exp-6 To study D flip flop

Exp-7 To study JK flip flop

Exp-8: To study shift registers

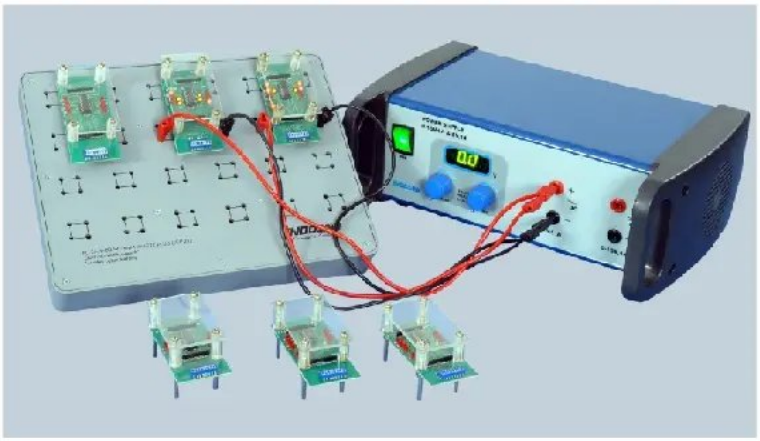
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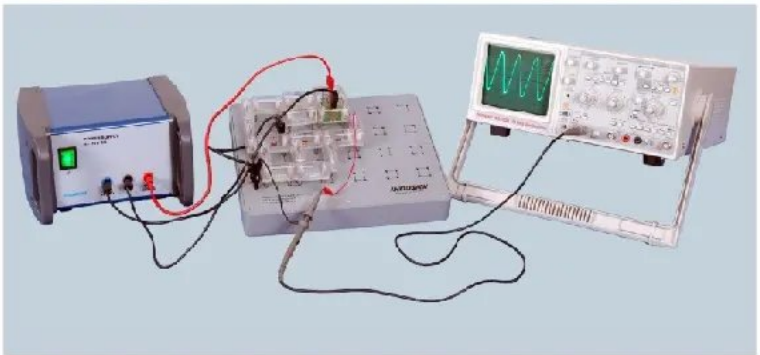
DIODES CHARACTERSTICS SJ256

Exp-1 Recording the current-voltage characteristics of diodes.
Exp-2 Recording the current-voltage characteristics of zener diodes.
Exp-3 Recording the current-voltage characteristics of light-emitting diodes (LEDs).



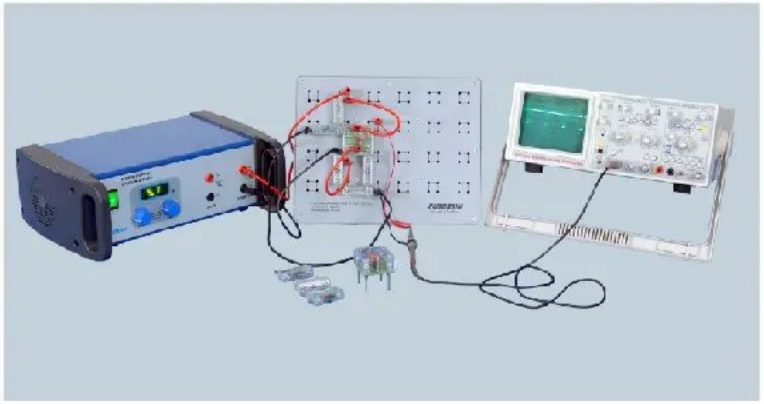
BASIC LOGICAL OPERATIONS SJ257

Exp-1 AND, OR, XOR, NOT, NAND and NOR operations.
Exp-2 De Morgan's laws
Exp-3 Logic operation using three and four variables.



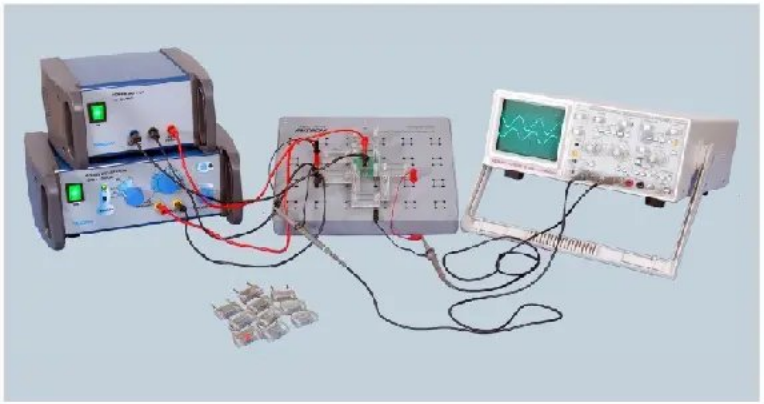
OSCILLATOR SJ258

Exp-1 To Study RC Phase Shift Oscillator Using Op-Amp
Exp-2 To Study Wein Bridge Oscillator Using Op-Amp



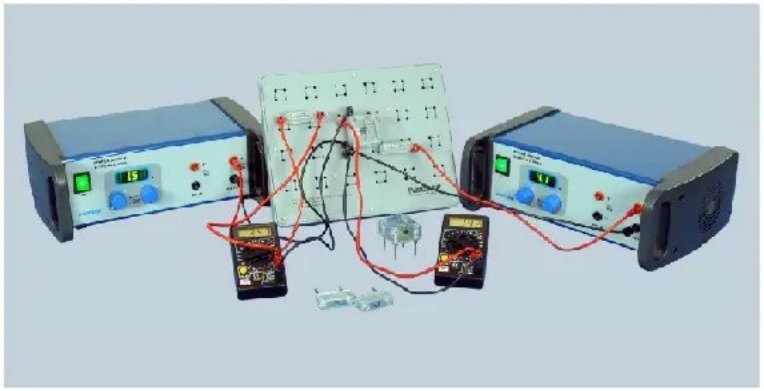
IC 555 SJ259

Exp-1 To Study Astable Generators Using IC555 Timer
Exp-2 To Study Monostable Generators Using IC555 Timer



OPERATIONAL AMPLIFIER SJ260

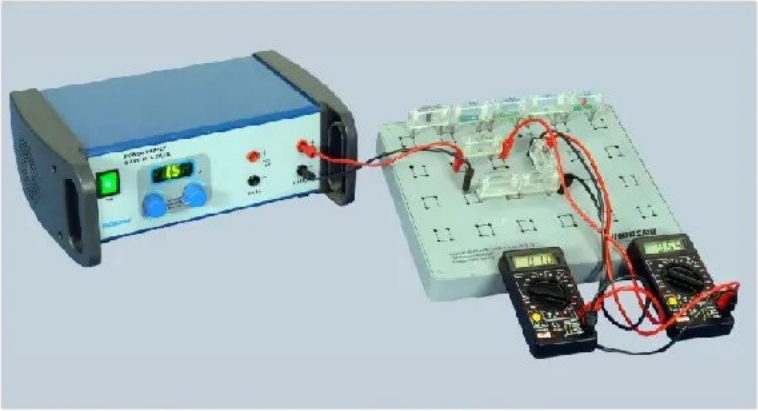
Exp-1 Op-Amp as Inverting/Non Inverting Amplifier
Exp-2 Op-Amp as Adder/Subtractor
Exp-3 Op-Amp as Integrator/ Differentiator
Exp-4 Op-Amp as a Comparator



SPECIAL DIODE SJ261

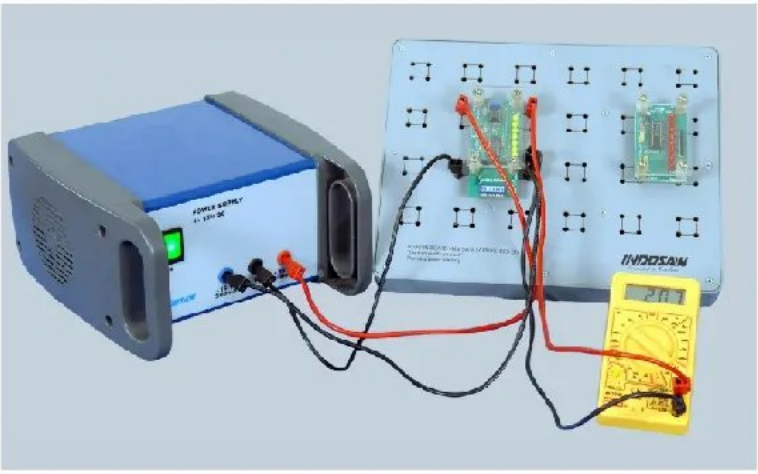
Exp-1 To study MOSFET characteristics
Exp-2 To study characteristics of SCR
Exp-3 To study characteristics of TRIAC

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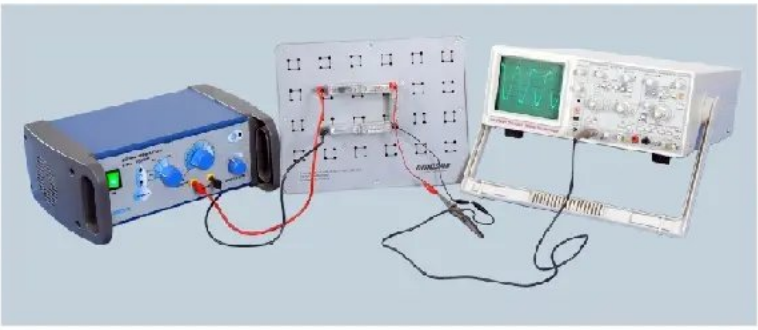
BASIC ELECTRONICS — SJ262

Exp-1 To Study Ohm's Law
Exp-2 To Study Kirchoff's Law
Exp-3 To Study Series & Parallel Effect Of Resistances
Exp-4 To Study Resistances As A Voltage Divider
Exp-5 To Study Ldr Characteristics
Exp-6 To Study Thermistor Characteristics



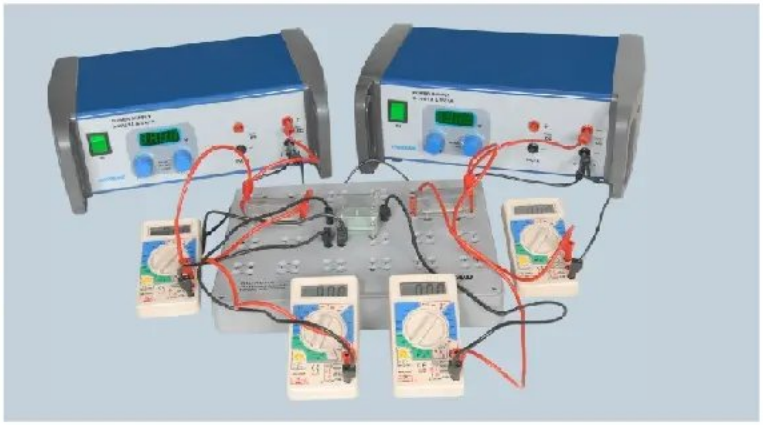
DIGITAL CONTROL — SJ263

Exp-1 To study ADC/DAC circuits



ALTERNATING CURRENT — SJ264

Exp-1 To study the R-C Circuit.
Exp-2 To study the L-R Circuit.
Exp-3 To study the L-C-R Circuit.
Exp-4 To study the Clipper and Clamper Circuit.
Exp-5 To study the Charging and Discharging of a Capacitor.



STUDY OF RESISTANCE, CAPACITOR, DIODE & TRANSISTOR SK041

Exp-1 To study PN junction diode characteristics.
Exp-2 To study LED characteristics.
Exp-3 To study Zener characteristics and application.
Exp-4 To study transistor characteristics.
Exp-5 To study JFET characteristics.
Exp-6 To study Charging & Discharging of a capacitor.
Exp-7 To study MOSFET characteristics.
Exp-8 To study characteristics of SCR.
Exp-9 To study characteristics of TRIAC.
Exp-10 To study Differential Amplifier
Exp-11 To study decade counter.
Exp-12 To study Op-Amp as adder/subtractor



WORCESTER CIRCUIT BOARD — SH503

For constructing variety of circuits quickly. The kit consists of a plastic base board with cell holders, terminals, connector strips etc.

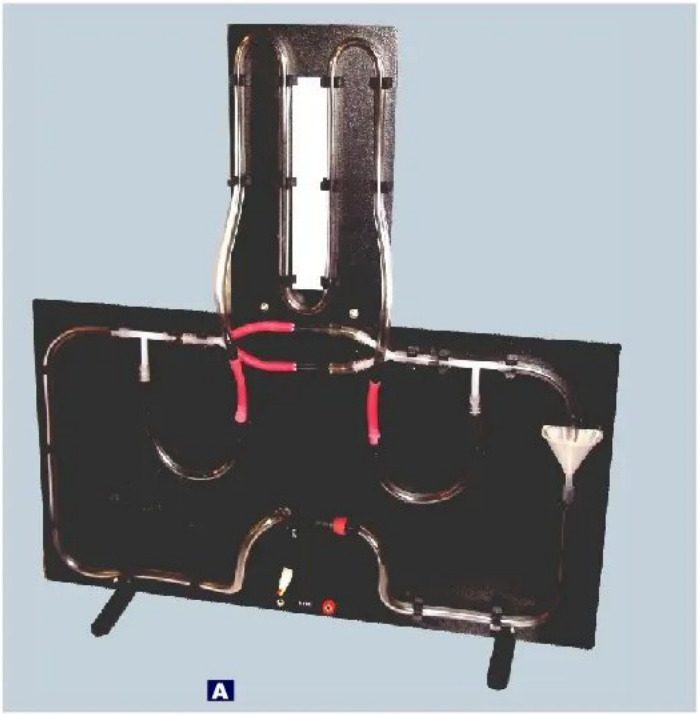
- **The connecter strips are designed in such a manner so that they can be slipped over the terminals holding them simultaneously maintaining a good electrical contact.**
- **All the components can be suitably placed in a tray provided with the kit.**
- **Connector clips with their shanks slipped over adjacent pegs on circuit board make it very convenient for holding & connecting**

❑ Board with battery holders & terminals 1pc ❑ Hardboard disc with three holes 1pc ❑ Pencil leads 4pcs ❑ Connector with rheostat 1pc ❑ Steel wool 1pc ❑ Bulb 18pcs ❑ Connector with bulb holder 9pcs ❑ Plain connector 12pcs ❑ Copper foil 1pc ❑ Connector with bell push 2pcs ❑ p-n junction diode (1N4007) 1pc ❑ LED 1pc ❑ Soft iron nails 4pcs ❑ Flexible lead with 4mm plug and crocodile clip 2pcs ❑ Flexible lead with crocodile clips 2pcs ❑ Eureka wire (34SWG) 1pc ❑ Bare copper wire (20SWG) 1pc ❑ Plastic covered wire 0.6mm 1pc ❑ Crocodile clip 2pcs.

Base Board Dimensions: 31x31cm (approx.)

Available on request:
We can also provide you an Electronic Plug in Kit with 50 experiments (Cat No.SK023). Please contact for more details.

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WATER CIRCUIT BOARD **A** **SH536**

An apparatus to demonstrate the flow of current by an analogy. It consists of a low voltage operated pump which makes the water to flow through the circuit made of transparent plastic tubing which are further connected to glass tubes of different diameter representing resistances. It also consists of a tube connected to a funnel representing the rate of flow of current. All the components are mounted on a metallic frame with legs. Top represents manometer. Apparatus is mounted on metallic frame and it can be placed on an experiment table without any additional supports.
Frame Dimensions: 61 x 59cm
Funnel : Plastic, 50 mm dia



INDUCTION COIL **B**

For generation of high voltage.

Cat. No.	Spark Length	Operating Voltage DC	Current A
SE136	25mm	6-8V	3
SE777	50mm	8-10V	5
SE778	100mm	10-12V	6



SIGNAL GENERATOR CE **C** **SW925**

A low distortion signal generator with four decade ranges selectable by rotary switch. Sine waveform and square waveform selectable by membrane switch with LED indicator. A built in speaker is provided for audible frequencies and is selectable by membrane switch.

TECHNICAL SPECIFICATION :

Parameters	Remarks
Range	10Hz to 110 KHz in four decade ranges.
Wave form	Sine & Square.
Output	Continuously variable from 0-7V p-p,5W.
Working Voltage	230V AC, 50Hz.



DIGITAL GAUSS METER **D**

Works on the principle of Hall Effect of semiconductors. Current carrying semiconductor when placed in a magnetic field of direction perpendicular to the current direction produces emf directly proportionate to the intensity of the magnetic field. Supplied complete with Hall Probe.
Range : 2k gauss & 20 k gauss
Resolution : 1 gauss at 0-2k gauss
Power : 230 V ± 10 %, 50 Hz AC

SEA20 230V AC, 50 Hz (Cat.No.SW926)
SN913 110V AC, 50/60 Hz (Cat.No.SN102)

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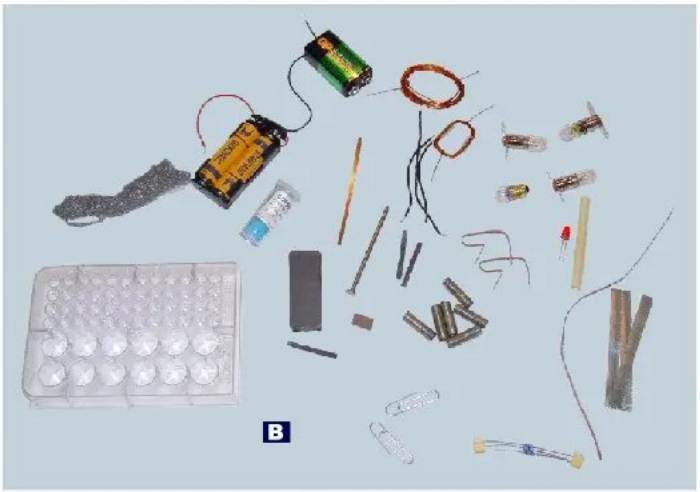
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ELECTRICITY KIT **A** **SN250**
It is an introduction to the basic principles of electricity through experiments.

Exp1: Battery and bulb to form closed circuit.
Exp2: Simple Circuit.
Exp3: Series Circuit.
Exp4: Parallel Circuit.
Exp5:Electrical Current carrying material.
Exp6: Heat Generation when electric current is produced.
Exp7: Electromagnet formation.
Exp8: Switch function in circuit.
Exp9: Filament in Glass Bulb

Contents;
❑ Wall thermometer Alcohol filled. ❑ Range -10° to 50° C x 1° C/-20°F to 120° F x 2°F 1pc ❑ Iron nail big 1pc ❑ Terminal clips made of Brass 2pc ❑ Plastic box small 1pc ❑ Copper ring 1pc ❑ Rubber rod 1pc ❑ Wooden block disc shape 1pc ❑ Brass screw 1pc ❑ Aluminium rivet 1pc ❑ Glass rod 1pc ❑ Piece of Porcelain block having 2 screw terminals countersunk 1pc ❑ Carbon rectangular block 1pc ❑ Nail 50mm long 1pc ❑ Piece of cord 1pc ❑ Bulb holders plastic 5pc ❑ Spool of copper wire PVC insulated, Bare copper wire, Nichrome wire grey cotton insulated 1pc each ❑ Bulbs 3.8 Volts screw type 10pc ❑ Battery, square, 4.5 Volt 1pc.



MICRO ELECTRICITY KIT **B** **SA298**
For learning basic experiments in electricity.
Contents :

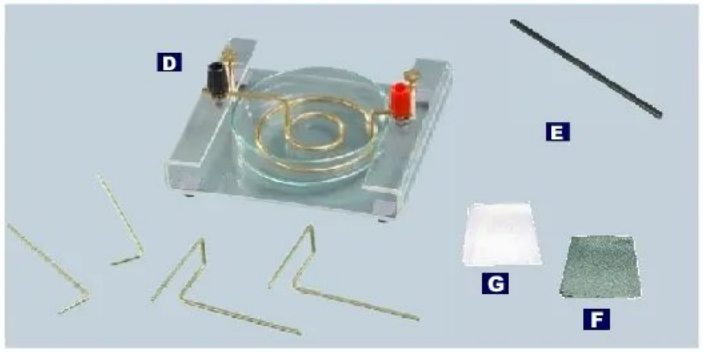
❑Bulb 3pcs ❑ Bulb holder 3pcs ❑ Cell 1.5V 2pcs ❑ Cell 9V 1pc ❑ Cell holder 1pc ❑ Comboplate 1pc ❑ Compass (Plotting) 1pc ❑ Connector for 9 V cell 1pc ❑ Copper strip 20cm 1pc ❑ Copper strip 8cm 3pc ❑ Copper sulphate 10g 1pc ❑ Copper wire coil 1pc ❑ LED red 1pc ❑ Magnet magnadur 2pc ❑ Magnesium ribbon 3pcs ❑ Nail 1pc ❑ Paper clips 2pc ❑ Resistor 20 ohm 2pcs ❑ Sand paper 1pc ❑ Springs 6pcs ❑ Steel wool 1pc ❑ Straw 1pc ❑ Wire black 1pc ❑ Zinc strip 3pcs.



MAGNETIC KIT **C** **SN735**
It is used for learning about properties of magnet.

List of Experiments:
Exp1 : Magnet has a force.
Exp2: Some items are attracted by a magnet, some are not.
Exp3: Magnetic Poles
Exp4: Magnetic Force pass through materials which do not contain iron
Exp5: The rule of pole
Exp6: Attraction and repulsion of poles.
Exp7: Compass construction.
Exp8: North -South Orientation of compass needle.
Exp9: North south direction by freely movable magnet.
Exp10: Compass needle is magnet
Exp11: North south Position of compass needle seeks position by a magnet.
Exp12: Magnetisation of knitting needle.
Exp13: Knitting needle as a compass needle.
Exp14: Utilization of compass.
Exp15: Use of a hiking compass with a map.

Contents:
❑ Test tube 1pc ❑ Bar magnet 1pc ❑ Bar Magnet with red marked north pole 1pc ❑ Cylindrical magnet 1pc ❑ Knitting needle 1pc ❑ Spool of thread 1pc ❑ Plastic box small 1pc ❑ Iron screws 3pcs ❑ Paper clips 10pcs ❑ Aluminium screws 10pcs ❑ Wooden disc 1pc ❑ Nails 10pcs ❑ Rubber eraser 1pc ❑ Sheet of copper 1pc ❑ Sheet of iron 1pc ❑ Sheet of cardboard 1pc ❑ Piece of cloth 1pc ❑ Floating platform for compass needle 1pc ❑ Bearing for compass needle 1pc ❑ Compass needle 1pc ❑ Compass card 1pc ❑ Hiking compass 1pc ❑ Mini wagon for magnets 1pc ❑ Floating platform for bar magnet 1pc ❑ Filter bowl 1pc.



ELECTRIC FIELD APPARATUS **D** **SH523**
It is used for demonstration of electric field. It consists of a plastic base which supports a plastic dish, 4mm terminals are provided which work as electrode holders also. It is supplied complete with 2 point source electrodes, 2 line source electrodes for parallel fields and 2 circular electrodes. Paraffin liquid not included.
Plastic Base Size: 140 x 125mm Plastic Dish: 90 x 12mm Approx (Dia. x H)
Optional Accessories: *EHT Power Supply Unit and Overhead Projector.*
EBONITE ROD **E**
SE184 200X12mm
SE317 300X12mm
WOOLEN CLOTH **F** **SN807**
30x30cm approx.
SILK CLOTH **G** **SN784**
30x30cm approx.

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WESTMINSTER KIT **A** **SE900**

Kit designed to perform the basic experiments in Electromagnetism. Some of the experiments covered by this kit are as under:

EXP. 1: Magnetic properties: attraction & repulsion
EXP. 2: Magnetic meridian
EXP. 3: Magnetic field due to different arrangements of magnet
EXP. 4: Field from electric current
EXP. 5: Electromagnetic induction
EXP. 6: Current in magnetic field
EXP. 7: Alternating current
EXP. 8: Eddy currents and damping
EXP. 9: Transfer of electrical energy to mechanical energy.

The parts supplied are enough for 8 students. The kit consists of :
❑ White Cotton Reel 4pcs ❑ Wooden Rods 4pcs ❑ Armature (44 x 30 x 12mm) 4pcs ❑ Mild steel yoke 4pcs ❑ Support base (100 x 47 x10mm) 4pcs ❑ Split pins 8pcs ❑ Rivets Plastic 24pcs ❑ Shafts 6pcs ❑ Slotted Aluminium Rings 4pcs ❑ Compass Holder 4pcs ❑ Plotting Compass 6pcs ❑ Resistors10 ohm, 100 ohm 4pcs ❑ Silicon Tubing (2.5mm Hole) 1pc ❑ Ferrite Magnet (50 x 19 x 6mm) 8pcs ❑ Alnico Magnet (31 x 6 x 6mm) 4 pair ❑ Bottle of iron filing 1pc ❑ Iron filing dispenser 4pcs.

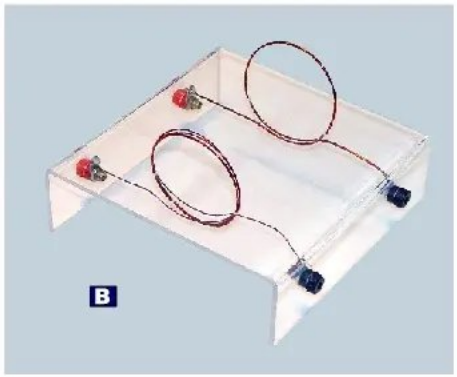


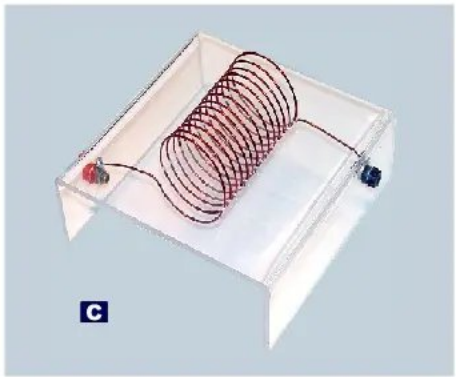
MOTOR CONSTRUCTION KIT **E** **SE901**

A kit designed for demonstrating the basics of electric motor. Some of the experiments covered by this kit are as under:

EXP. 1: Electric Motor Construction
EXP. 2: Magnetic field due to different arrangements of magnets
EXP. 3: Magnetic meridian
EXP. 4: Magnetic properties

❑ It consists of some of items from Westminster kit .
❑Mild steel yoke 6pcs ❑ Armature 6pcs ❑ Magnets 12pcs ❑ Support base 6pcs ❑ Shafts 6pcs ❑ Rivets 24pcs ❑ Split pins 12pcs ❑ Reel of copper wire 1pcs ❑ Tape roll 2pcs ❑ Tubing 30mm,2.5mm bore 1pcs.







MAGNETIC FIELD DEMONSTRATION COILS

Magnetic field demonstration coil to demonstrate field distribution of current carrying conductor. The pattern can be demonstrated on a large screen using an overhead projector. A wide range of demonstration coils having different number of turns is available.

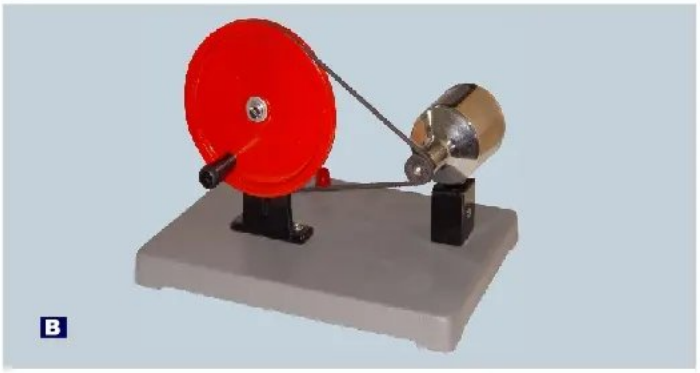
Type	Cat No.	Dimensions	Construction
Single Turn **B**	SW428	15 x 15 x 7.5 cm	1 & 5 Loop, wire thickness 1.5mm with 4mm socket constructed on thermoform sheet.
Solenoid **C**	SW429	15 x 15 x 7.5 cm	Multiple Loops (16), wire thickness 1.5mm with 4mm socket constructed on thermoform sheet.
Single straight conductor **D**	SW430	15 x 15 x 7.5 cm	Straight conductor, wire thickness 1.5mm with 4mm socket Constructed on thermoform sheet.

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DEMONSTRATION DYNAMO **A** **SE560**
Suitable for demonstration of a dynamo or a motor, having two pole armature wound with enamelled copper wire and a detachable permanent magnet (N-S indicated) mounted on a plastic base which also carries a hand driven pulley coupled to a small dynamo pulley by a belt. Electrical output is indicated by an LED.

Operating voltage: 4V, 2A DC (As motor)
Base: Plastic, 165 x 100 mm



BICYCLE DYNAMO **B** **SE342**
It shows the working of a Bicycle Dynamo. It is mounted on a stable plastic base (20 x 15 x 1.8 cm) approx with rotating pulley and lamp unit.

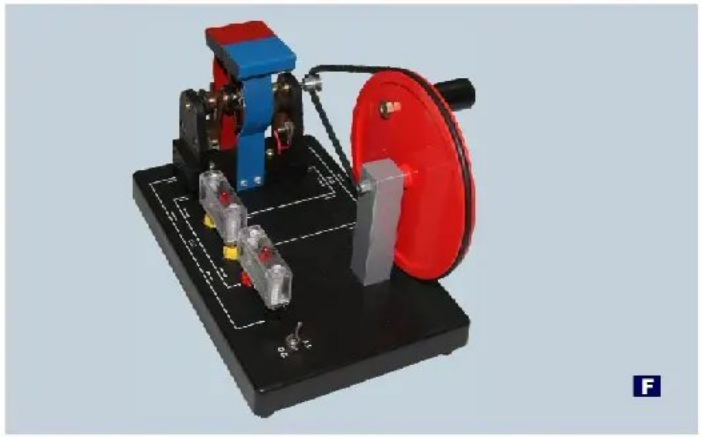


DEMONSTRATION MOTOR **C** **SH264**
Suitable for demonstration of a DC motor, having a two pole armature wound with enamelled copper wire and a detachable permanent magnet (N-S indicated) mounted on a base. External connections via 4mm sockets.
Operating voltage: 4-6 V DC
Height: 125mm(approx.)

DEMONSTRATION MOTOR **D** **SH534**
Same as SH264, only the magnet used is Bar magnet instead of U Shape magnet.



DEMONSTRATION DYNAMO **E** **SH263**
Suitable for demonstration of a dynamo or a motor, having two pole armature wound with enamelled copper wire and a detachable permanent magnet (N-S indicated) mounted on a base which also carries a hand driven pulley coupled to a small dynamo pulley by a belt. Electrical output is indicated by plug- in LED. Connections via 4mm sockets.
Operating voltage: 4-6 V DC (As motor)

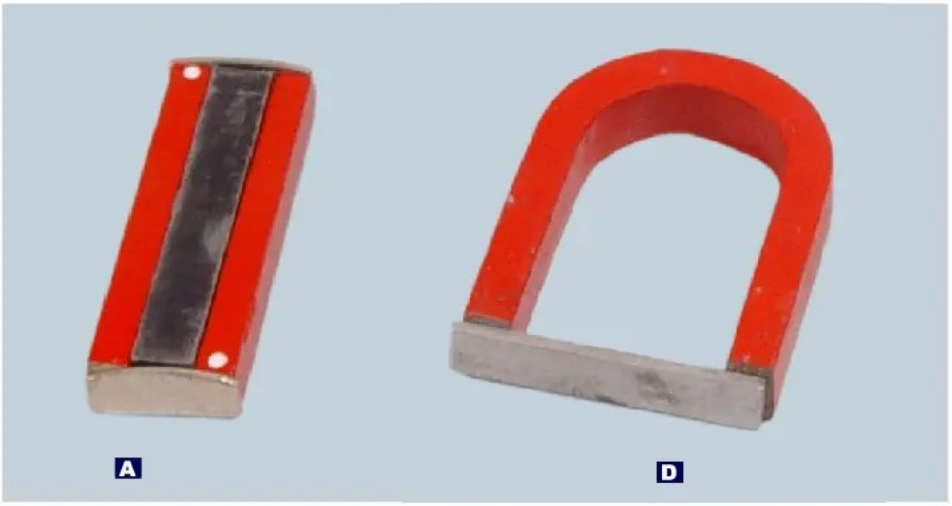


DEMONSTRATION DYNAMO AC/DC **F** **S1016**
It consists of a hand driven pulley attached to the pulley of dynamo by means of a rubber belt. It generates both a.c & d.c current. The whole unit is mounted on a plastic base. Provided with two pairs of 4mm sockets. Supplied with two nos. of LEDs.

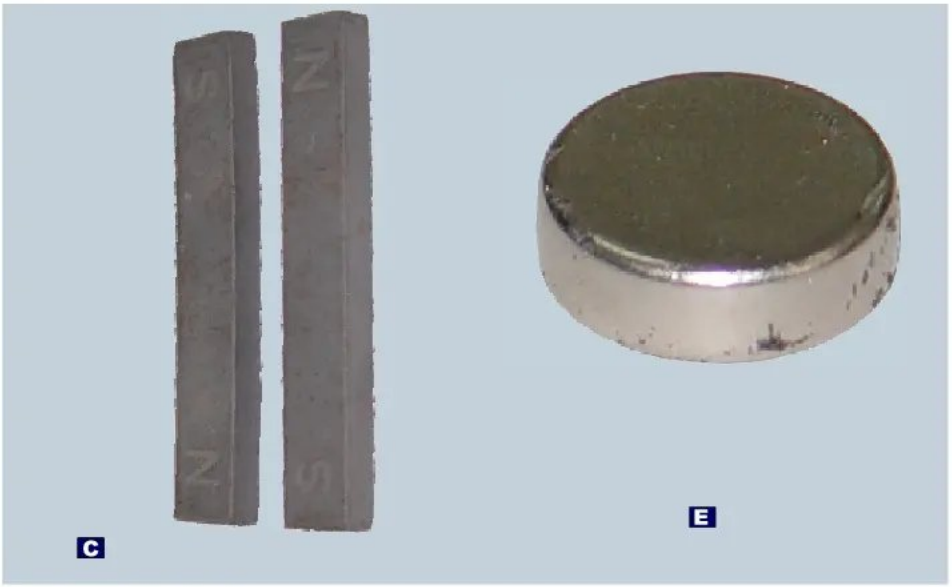


GENERATOR ASSEMBLY **G** **S3002**
Assembled in perspex transparent sheet, stable body, overall height 150 mm, thick rectangular base 170 mm x 120 mm attached with two coils, output 15 V and 500 mA.
Used as minipower house for experiments, to show conversion of energy, lightening bulb for experiment with light, in electrolysis of water, in experiments with set of resistors.

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BAR MAGNET A

SE214 Bar Magnet, 100X11X6mm(L x W x H) approx, Alnico
SE452 Bar Magnet, 100X12X5mm(L x W x H) approx, Steel

HORSE SHOE MAGNET B

SE794 Horse Shoe Magnet, 100X12X8mm (L x W x H) approx, Alnico
SE798 Horse Shoe Magnet, 100X12X5mm (L x W x H) approx, Steel

BAR MAGNET FERRITE PAIR C

SA652 50x12x8mm (LxWxH) approx
SA654 80x15x8mm (LxWxH) approx

U SHAPE MAGNET D

SE249 U Shape Magnet, 100x20x10mm (L x W x H) approx, Alnico
SE804 U Shape Magnet, 100X15X8mm (L x W x H) approx, Steel

NEODYMIUM DISC MAGNET E

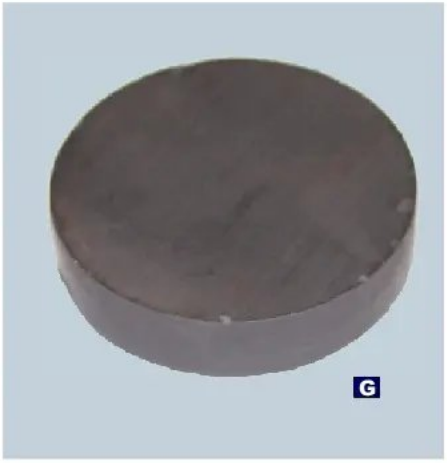
SA668 8x1.5 mm(Dia. x Thickness), approx
SA671 15x4 mm(Dia. x Thickness), approx

CYLINDRICAL MAGNETS F

SE781 Cylindrical Magnet,50X10mm (L x Dia.)approx, Alnico
SE435 Cylindrical Magnet, 100X11mm (L x Dia.)approx,Chrome Steel

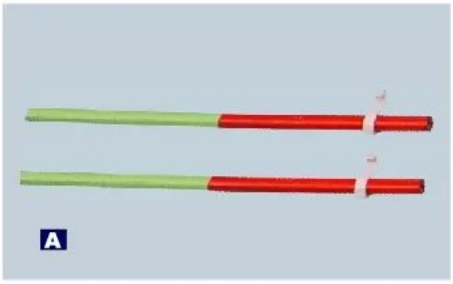
DISK MAGNET FERRITE G

SA657 17x5 mm(Dia. x Thickness), approx
SA659 28x5 mm(Dia. x Thickness), approx

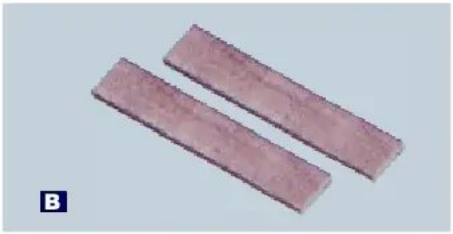


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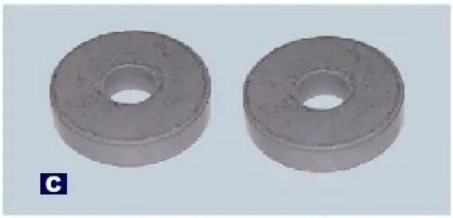
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CYLINDRICAL MAGNET WITH HOOK **A**
SW626
A pair of cylindrical magnets with a detachable S-shaped plastic clamp to allow easy suspension of the magnet by threads.
Material: AlNiCo
Dimension: Each magnet, 20 x 1cm (L x Diameter)



PAIR OF IRON KEEPER **B** **SW629**
Soft-iron pieces for extending the bar magnet to a long bar magnet or a horseshoe magnet.
Size of each Keeper : 60 x 12 x 5 mm (approx.)



PAIR OF ROUND MAGNETS **C** **SW628**

Round magnets	: ferrite
Shape	: round with axial bore
Outer Diameter	: 30 mm
Inner dia.	: 9mm
Height	: 6mm



OERSTED'S APPARATUS **D** **SE137**
It demonstrates the effect of current on a magnet and the direction of deflection. It consists of a magnetic needle 75mm long, pivoted at the center of a copper rod in a rectangular frame. Provided with terminals.

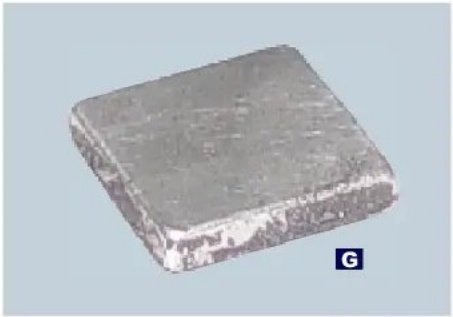


MAGNETIC FIELD APPARATUS **E** **SE205**
To demonstrate the production of a magnetic field by a current flowing in a solenoid. It consists of 3 coils of (5, 10 and 20 turns) of insulated copper wire, suitably supported at the center of a wooden base.



RING MAGNET FERRITE **F**

SA661 32x18x6 mm(O.D X I.D x Thick) approx
SA662 36x18x7 mm(O.D X I.D x Thick) approx



NEODYMIUM SQUARE MAGNET **G** **SA683**
10x10x2 mm(L x W x H) approx



NEODYMIUM CYLINDRICAL MAGNET **H**

SA680 40x10 mm(L x Dia.), approx
SA681 10x5 mm(L x Dia.), approx



FLOATING MAGNET **I** **SE254**
For demonstrating the magnetic repulsion. It consists of ring shaped ferrite magnets placed on a pillar which is mounted on a circular base.
Base: PVC, 70 mm diameter.
Overall height: 93mm



MAGNETIC HOLDER **J** **SE204**
For mounting the magnet. Span width 16 to 30mm. Rod Diameter 10mm.



STIRRUP BRASS **K** **SE252**
To suspend magnets, length 50mm.

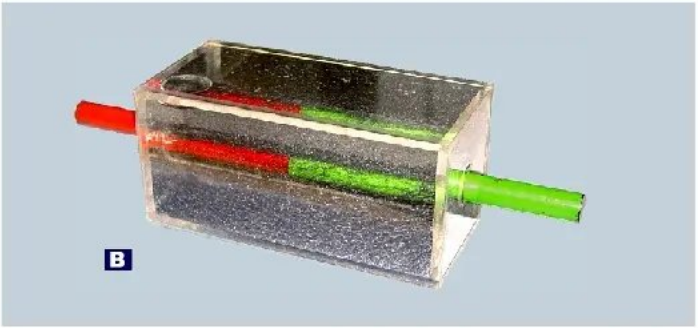
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MAGNETIC COMPASS IN AN ALUMINIUM CASE **A**

Cat No	Dia. approx	Type
SE202	12mm	Top transparent
SA686	16mm	Top transparent
SE199	20mm	Top transparent
SE200	25mm	Top transparent
SE201	37mm	Top transparent
SA687	50mm	Top transparent
SA688	75mm	Top transparent
SE203	20mm	Both side transparent



MAGNETIC FIELD APPARATUS 3 - D **B** **SN688**
This acrylic unit enables students to observe 3 dimensional magnetic fields. Filled with silicone oil and iron fillings moving in chamber, shapes whenever apparatus is subjected to magnetic field or electrical current.



MAGNETIC NEEDLE WITH BASE **C** **SE198**
For use with the magnetic needle, provided with protection cap. Supplied with needle.
Base diameter : 44mm
Overall height : 80mm



KIT FOR MAGNETISM EXPERIMENTS **D** **SA396**
Kit for magnetism experiments is designed for demonstrating the basic experiments of magnetism and is very useful for classroom demonstration purpose.

Exp 1: To observe the magnetic fields of a bar magnet, Horse shoe magnet & U-magnet.
Exp 2: To determine the value of 'H' (Horizontal component of earth field)

CONTENTS:
❑ Tangent galvanometer 1pc ❑ Iron filing 500gm 2pcs ❑ Horse-shoe magnet 1pc ❑ U-shape magnet 1pc ❑ Bar magnet 1 pair ❑ Magnetic compass 1pc.



COMPASS BOX **E** **SE268**
Diameter 100mm. Used with Tangent Galvanometer.

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A

DEMOUNTABLE TRANSFORMER A **SW290**

Used for demonstrating and investigating various parameters of a transformer. It consists of U & I core mounted on PVC base with clamp. It is supplied with coils of different number of turns and the primary & secondary coil are removable which can be changed easily with desired number of turns. The coil is covered and each coil has two 4mm safety sockets.

Coil: 300 turns-1
600 turns-1
1200 turns-2
3600 turns-1
12000 turns-1

U & I core: 40 x 40mm cross section
Base Dimensions: 11.5x11cm(L x W)

DEMOUNTABLE TRANSFORMER A **SW289**

Same as SW290, but with 'U' & 'I' core of 32 x 25mm cross section.



B

COILS B

It is used with demountable transformer. Provided with 4mm sockets.

Cat No. (Coil with cover)	Turns	Window size (mm)approx
SE157	300	32x25
SE158	600	32x25
SE159	1200	32x25
SE160	3600	32x25
SE161	12000	32x25
SW178	300	40x40
SW179	600	40x40
SW180	1200	40x40
SW181	3600	40x40
SW182	12000	40x40



C

DEMOUNTABLE TRANSFORMER C **SV171**

Used for demonstrating and investigating various parameters of a transformer. It consists of U & I core having size 40x40 mm cross section. It is supplied with two coils of different number of turns. Supplied with main coil 1000 turns with 230 V mains connector and 500 turns coil. The primary & secondary coil are removable which can be changed easily with desired number of turns (please see specification of coils D). It works well with the interscale demonstration meter.

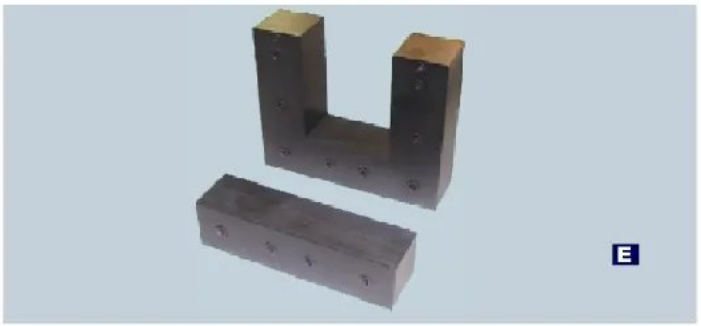


D

COILS D

It is used with demountable transformer SV171. The coil is covered with transparent cover. Provided with 4mm sockets.

Cat No Coil With cover	Turns	Window size mm
SV172	50	40x40
SV173	100	40x40
SV174	200	40x40
SV175	500	40x40
SV176	1000	40x40
SV177	2000	40x40
SV178	1000 (Main coil)	40x40



E

'U' & 'I' CORE E **SPA55**

U & I Core suitable for use in demountable transformer or hysterisis experiment.

Cross Section: 40 x 40mm
U-core: 150 x 130 mm (l x h)
I-core: 150 mm length

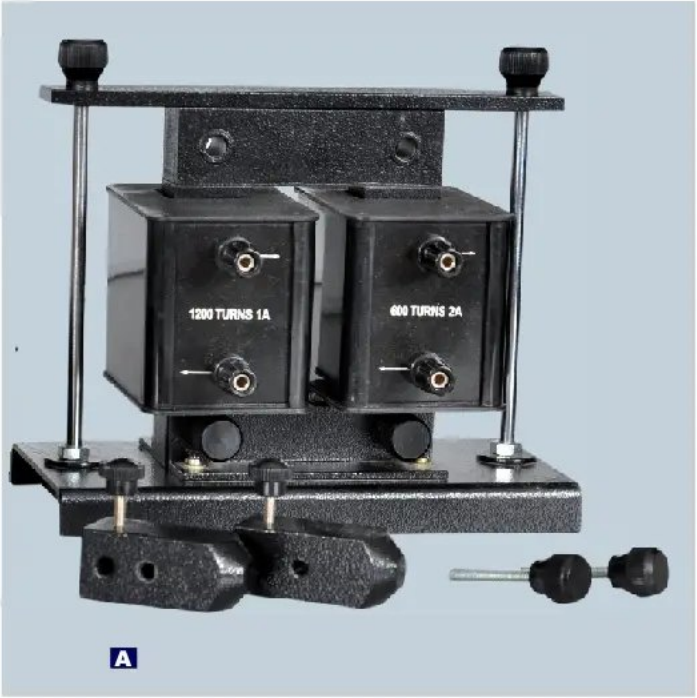
'U' & 'I' CORE E **SE981**

Same as SPA55 but cross section size: 32 x 25mm.

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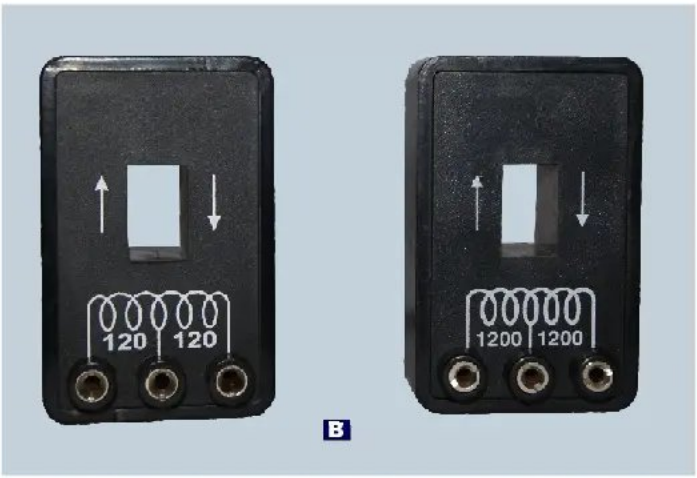
A

DISSECTIBLE TRANSFORMER A **SH311**

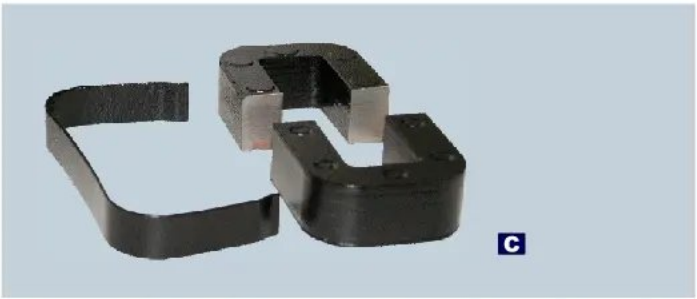
In order to demonstrate the basic principles of the A.C. Transformer and also the basics of various experiments in electromagnetism by means of different coils & cores using direct or alternating current, this apparatus is constructed. Coils are made of enamelled copper wire wound around on plastic bobbins with 4mm terminals connections.

Contents:

❑ Clamp base 1pc, ❑ 300 Turn Coil 1pc, ❑ 600 Turn coil 2pc, ❑ 1200 Turn coil 1pc, ❑ 3600 Turn coil 1pc, ❑ 12000 Turn coil 1pc, ❑ U Core, length of side 133mm base 95mm, section 32X25mm 1pc,.



B



C



D

COILS D

WINDOW SIZE: 32X25mm

Cat. No.	Turns	Window size (mm)approx
SJ176	300	32x25
SJ177	600	32x25
SJ178	1200	32x25
SJ179	2000 (Main Coil)	32x25
SJ180	3600	32x25
SJ181	12000	32x25

TRANSFORMER COILS B

These coils with c-core and a strong clip can be used as inductors and transformers. Each core is laminated from low loss iron strip forming rectangular core, from which two equal c's are obtained by cutting across the middle. For holding the two halves together, a spring steel clip is given. Thus coil may be fitted into c-core with clip.

Cat. No.	No. of Turns	Window size (mm)approx
SJ209	60+60	23x14
SJ210	5000+250	23x14
SJ211	120+120	23x14
SJ213	1200+1200	23x14
SJ214	500+125	23x14

These coils are provided with 4 mm sockets. The current ratings are based on 150 A per square cm. If short term currents of up to twice the specified value is given to the coil, the coil will become hot, but will not be damaged. Supplied without C-Core and Clip.

C-CORE AND CLIP C **SJ267**

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A

RING LAUNCHER A

Exp - Lenz's law and effects of electromagnetically induced currents can be demonstrated with the help of the Ring Launcher.

An iron core is placed in a solenoid. The ring fits over the coil at some height. The coil is energized by pressing a button on control panel. Thus a large magnetic induction builds up on the axis of coil generating oppositely directed induced current in the ring. The two oppositely directed inductions repel, thus a solid aluminium ring shoots upto several feet in air. No effect is seen when we use a slit aluminium or acrylic ring. Transformer principle may be observed by attaching a coil of wire with a low voltage lamp. The lamp lights briefly. Overheating of coil is prevented due to an automatic one-shot timing feature.

Ring launcher contains 32 x 24 LED dotmatrix graphic display and displays current and voltage. At the time of launch of the ring, the time waveforms of voltage and current and magnetic field is shown on display.

An additional secondary coil is also given. This coil is used to show step up and step down action of transformer. Primary & secondary voltages are displayed.

Due to insulation provided on all current carrying components, accidental contact is prevented.

S1002 Operatable on 220 VAC.
SV001 Operatable on 110 VAC.

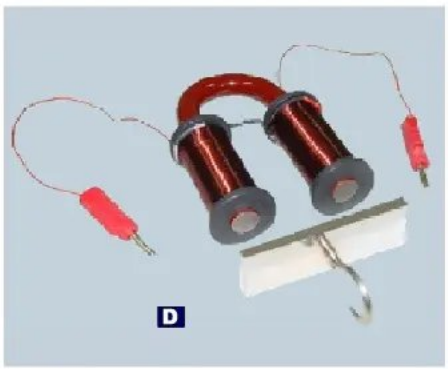


LAPLACE RAILS B SN731

It consists of two numbers of conductor rails with support and a moving brass made conductor. One or two no's of 'U' magnets are required with this set up, when a current placed in a magnetic field passes through a conductor, displacement of a conductor is observed. A partition of a current inside a conductor is also shown when current moves in an uneven magnetic field. Device is suitable for protection with a side lamp. It requires 2 to 3 amp. current.

FORCE ON A CONDUCTOR BALANCE C SW126

Comprising a strong U - Shaped magnet and a pair of brass rails with 4mm socket terminals. A brass axle with plastic discs is free to roll along the rails and complete 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 center of the magnetic field.
Size : 19.5 x 6 x 6 cm



ELECTROMAGNET D SE138

Electromagnet consists of U shaped core of soft iron. Windings are of enamelled copper wire which is wound on bobbins. It is used for demonstrating that electromagnet can be used to lift heavy weight. Supplied with armature.

Salient features:

- **The ends of the U-core are made flat so that a good contact with the armature is possible.**
- **It can lift weight upto 2.5 kg.**

Dimensions: 100x80mm (overall)
Winding Resistance: <1 ohm
Operating Voltage: 12 V DC
Current: 5 Amp maximum
Core : soft iron , 16 mm dia.
Lead: 230 mm each with 4mm banana plug having transverse hole.

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INDUCTION ACCESSORIES SET A **SH273**

It consists of 6 turns copper coil which shows the production of a heavy current at low voltage during melting of nail to demonstrate the induction heating effect. The unit consists of two rings and one split ring. A solder trough is provided for demonstrating the principle of induction furnace.



MOTOR ACCESSORIES SET B **SH284**

All the components fit together to allow for assembly of the arrangements required to demonstrate motor & braking effects on the dissectible transformer. Thus it is used to demonstrate the effects of eddy currents and the principles of the shaded pole motor. It consists of a pair of quadrant shaped eddy current plates (one plane and other slotted) and an aluminium motor disc. The hole given in one of the transformer pole pieces, accommodates a vertical support rod which has two transverse holes with clamping screws for fitting the spindles of motor disc and spindles of the quadrants.





VARIABLE SOLENOID (SUPERIOR) D **SE868**

Continuously variable solenoid with iron core. A scale is fitted to give the value of the inductance. Outer diameter of coil 75mm, thickness 1mm and length 21cm. Solenoid has inductor range 0.15 to 1.4 henry approx. within 20cm length scale. Its resistance 12 ohms approximately. The 1mm copper wire is wound on 20cm long & 75mm dia PVC tube. The henry scale covered from both sides of the solenoid. A henry indicating pointer moves with the center of transparent scale. It works on 250V, 2 Amp.



SOLENOID E **SE869**

For study of magnetic field created by a solenoid with discrete number of turns. Safety sockets are provided to obtain required number of turns. Coil, wound on a plastic tube which is clamped at both ends through clamp and placed on a metal base. Sensor not included in scope of supply.

Salient Feature:

•A sensor can be placed at the axis by mounting on sensor holder fixed on its base.

Turns: 200 turns (5, 10, 20, 30, 50, 100) on both side from center
V_{max}: 6V DC
I_{max}: 7Amp
Dimensions: 550 x 150 (L x W) overall.

MAGNETIZING/ DEMAGNETIZING COIL C **SH521**

Ideal for demonstration of magnetizing or demagnetizing iron bar or strips etc. It consists of a solenoid mounted on a plastic base with switch and 4mm sockets.

Solenoid: 250 x 25 mm approx. (L x ID)
Operating voltage: 12 V AC or DC at 6A

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We can provide complete solutions to our customers to plan, design and equip complete labs for Physics, Chemistry and Biology.

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INDOSAW POWER SUPPLIES







Salient Features

- Reliable
- Sturdy
- Stackable
- Excellent aesthetics
- Portable

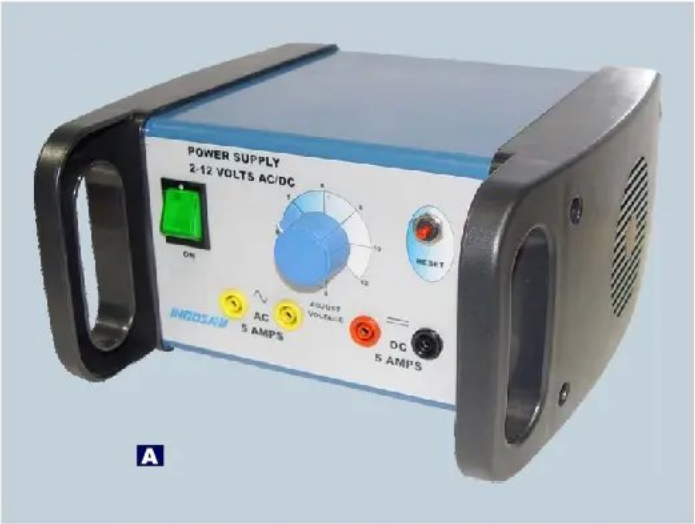
A trusted name in power supplies.

Available on Request:
Note: Input 110 Volts AC can also be provided, for more information, please contact us.

All Indosaw power supplies are tested for CE safety requirements. Like insulation resistance test, ground bond test and dielectric strength test etc.

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POWER SUPPLY 2-12V/5A AC/DC CE **A** **SE080**
Ideal for general purpose applications where a low voltage study power supply is required e.g. for equipments with lamps and resistances.

TECHNICAL SPECIFICATION :

Parameters	Remarks
Output Voltage	2,3,4,5,6,8,10 and 12 V AC full wave. rectified, unsmoothed and unregulated D.C. in maximum 8 steps.
Overload protection	Resettable thermal trip.
Working voltage	230V AC, 50Hz

POWER SUPPLY 1.5-24V/5A AC/DC **SN644**
Same as SE080, but output voltage is 1.5, 3, 4.5, 6, 9, 12, 24V AC.



POWER SUPPLY 0-24V AC/DC CE **B**
Ideal for general purpose applications. Provided with ON/OFF switch.

SALIENT FEATURES
- Output voltage selectable by dimmerstat. AC full wave rectified, unsmoothed and unregulated D.C.
- Overload protection by thermal resettable trip.
- Safety sockets are provided for both AC & DC Output.

TECHNICAL SPECIFICATION :

Parameters	Remarks
Voltage	Continuously variable by dimmerstat
Overload protection	By thermal trip
Current	Continuously variable from 10% to full rating.
Working voltage	220V AC, 50 Hz

SN847 2Amp, For both AC and DC
SN648 5Amp, For both AC and DC



POWER SUPPLY 2-12V AC/DC CE **C**
Ideal for general purpose applications where a low voltage sturdy power supply is required e.g. for equipments with lamps and resistances.

SALIENT FEATURES
- Output voltage selectable by rotary switch in maximum 8 steps.
- Fuse protection for the primary winding.
- Resettable electronic trip.
- Safety sockets are provided for both AC & DC Output,

TECHNICAL SPECIFICATION :

Parameters	Remarks
Output Voltage	2,3,4,5,6,8,10 and 12 V AC full wave rectified, unsmoothed and unregulated D.C.
Overload protection	Resettable electronic trip.
Working voltage	230V AC, 50Hz

SW927 5Amp. Max. for both AC and DC.
SW928 2Amp. max. for both AC and DC.

POWER SUPPLY 0-25V AC/DC. **SW930**
Same as SW927, but voltage is 0-25, 5A AC/DC in continuously variable by dimmer state output voltage is indicating by uncallibrated dial.



POWER SUPPLY 1.5-12V AC/DC, 3Amp. CE **D** **SV050**
Ideal for general purpose applications where a low voltage study power supply is required e.g. for equipments with lamps and resistances.

TECHNICAL SPECIFICATION :

Parameters	Remarks
Output Voltage	1.5, 3, 4.5, 6, 7.5, 9, 10.5 and 12 V AC full wave rectified, unsmoothed and unregulated D.C.
Overload protection	Resettable thermal trip.
Working voltage	220 V AC, 50 Hz single phase.
Output	1.5 to 12 V in 8 steps

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POWER SUPPLY 0-25V, 5AMP. AC/DC CE **A** **SW929**
AC/DC voltage is continuously adjustable with rotary variable transformer and is equipped with digital meter to monitor AC/DC & current selectable through membrane switch.

TECHNICAL SPECIFICATION :

Parameters	Remarks
Voltage	0-25V AC & DC continuously variable by dimmerstat.
Display	3 Digit LED display for both AC/DC voltage & current.
Current	5Amp. max. for both AC and DC.
Overload protection	Resettable electronic trip.
Working voltage	230V AC, 50 Hz.



POWER SUPPLY AC/DC (0-12V), 1.5 amp. CE **B** **SW169**
Provided with ON/ OFF switch.
Input Voltage: 220V 50Hz
Regulated DC Output: 0-12V, 0-1.5 Amp, stabilized and continuously adjustable voltage, electronic protection.
Fixed AC Outputs: 6V, 12V, max. 2.5 A, fuse protection.
CE marked.
Provided with EMI/ EMC filter.

Available on Request:
Input 110V can also be provided, please contact us for more information.



POWER SUPPLY ± 15 V CE **C** **SW938**
Dual tracking power supply is intended for use with study of operational amplifiers. Output Voltage is short circuit protected.

TECHNICAL SPECIFICATION :

Parameters	Remarks
Output voltage	±15V Fixed
Current	500mA
Overload protection	Current limiting.
Working Voltage	230V AC, 50Hz



E.H.T. POWER SUPPLY 0-5 kV CE **D** **SE909**
Power supply is continuously adjustable with rotary variable transformer. Output voltage is monitored with Digital meter provided on the panel.

SALIENT FEATURES
- Output voltage continuously variable from 0-5kV at a maximum current of 2 mA.
- Fuse protection for the primary windings.
- External earth socket for additional safety.
- Safety Sockets for the output voltage suitable for safety plugs.
- 6.3 V AC, 2 Amp. is provided for the filament supply.

TECHNICAL SPECIFICATION :

Parameters	Remarks
Working voltage	230 V AC, 50 Hz (Cat.No.SE909) 110V AC, 50/60Hz (Cat.No.SN906)
D.C. Voltage	Continuously variable from 0 to 5 kV.
D.C. Current	2mA(max.)
A.C. Voltage	6.3Volt (fixed)
A.C. Current	2 Amps.

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REGULATED POWER SUPPLY 0-30V, 5 Amp. DC CE **A** **SP650**
Suitable for all general purpose applications, laboratory use, experimental setups, circuit development, component/circuit evaluation, industrial applications. Good performance at low cost.

TECHNICAL SPECIFICATION :

Parameters	Remarks
Voltage	Continuously variable & stablized.
Ripple	Less than 25mV.
Overload protection	Current limiting.
Current	Continuously variable from 10% to full rating.
Display	Two separate displays (3 digit LED) are provided to monitor the output Voltage and load current continuously.
Working voltage	230V AC, 50 Hz

REGULATED POWER SUPPLY 0-30V, 8 Amp. DC **SP651**
Same as SP650, but maximum current 8 Amp.



REGULATED POWER SUPPLY 0-16 V, 1 A DC & 5 V, 1 A DC CE **B**
SW926
Suitable for all general purpose applications, laboratory use, experimental setups, circuit development, component/circuit evaluation, industrial applications. Good performance at low cost.

SALIENT FEATURES
- Continuously variable output 0 - 16 V DC.
- Big clearly readable bright LED Display of the output voltage 0 - 16 V DC.
- Coarse & fine controls for 0 - 16 V DC.
- Low ripple
- Fuse protection for the primary winding.
- Automatic crossover type protection against overload & short circuit for 0 -16 V DC.

TECHNICAL SPECIFICATION :

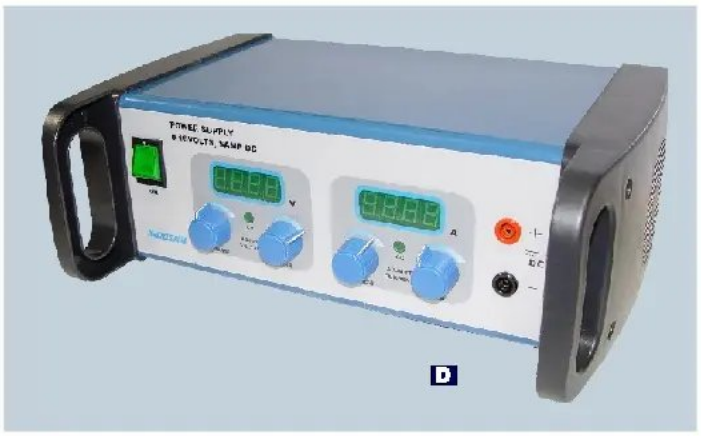
Parameters	Remarks
Voltage	0 -16V, 1 Amp DC continuously variable 5V. 1 Amp. DC Fixed
Ripple	Less than 25mV
Display	3 Digit LED for 0-16V DC
Working voltage	230V AC, 50 Hz



REGULATED DUAL POWER SUPPLY 0-30V, 2 Amp. DC CE **C** **SP649**
Suitable for all general purpose applications, laboratory use, experimental setups, circuit development, component/circuit evaluation, industrial applications. Good performance at low cost.

TECHNICAL SPECIFICATION :

Parameters	Remarks
Voltage	Continuously variable & stablized.
Ripple	Less than 25mV.
Overload protection	Current limiting.
Current	Continuously variable from 10% to full rating.
Display	Four separate displays (3 digit LED) are provided to monitor the output Voltage and load current continuously.
Working voltage	230V AC, 50 Hz



REGULATED POWER SUPPLY CE **D**
Suitable for all general purpose applications, laboratory use, experimental setups, circuit development, component/circuit evaluation, industrial applications. Good performance at low cost.

TECHNICAL SPECIFICATION :

Parameters	Remarks
Voltage	Continuously variable & stablized.
Ripple	Less than 25mV.
Overload protection	Current limiting.
Current	Continuously variable from 10% to full rating.
Display	Two separate displays(3 digit LED) are provided to monitor the output Voltage and load current continuously.
Working voltage	230V AC, 50 Hz

SE079 0-16 Volt DC, 5 Amp.
SE911 0-25Volt DC, 2 Amp.

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CALORIMETER JOULE'S A **SP738**

To determine the specific heat capacity of a liquid by electrical heating. It consists of an electroplated copper calorimeter. A thermometer and a stirrer can be clamped to a PVC lid provided with it. Connections are made using 4mm sockets connected to a heating coil. Thermometer is not included in the scope of supply.
Outer vessel: 7.6cm dia., 9 cm height approx.
Inner vessel : 6 cm dia , 8.5 cm height approx.

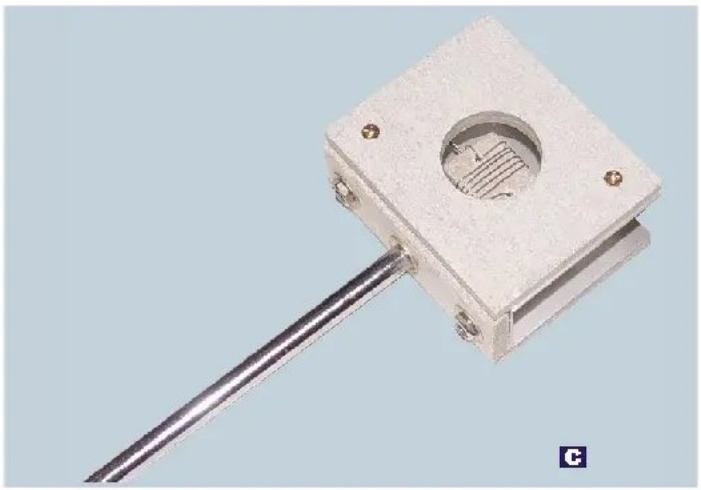


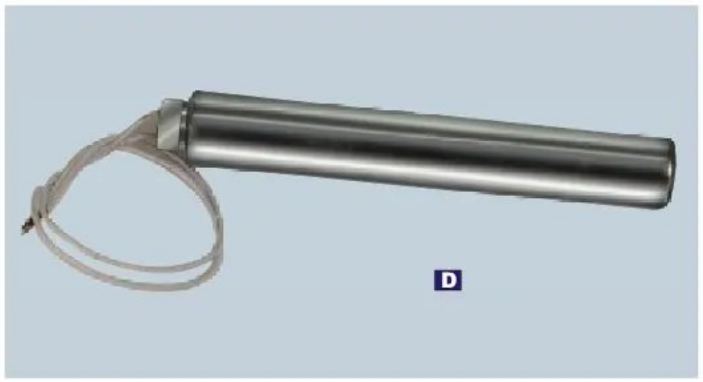
CALORIMETER BLOCK B

For determination of specific heats of different metals. Cylindrical metal blocks made of aluminium, brass, copper and steel. The blocks have a big central hole for immersion heater SP309 and a small hole for thermometer.

Metal	Cat No	Diameter/Height (mm)
Aluminium	SP703	75/86
Steel	SP704	44/91
Brass	SP705	44/86
Copper	SP706	44/81

Size of block may vary due to slight variations in the raw material.
Weight: 1kg each block, adjusted to ± 2% accuracy.





IMMERSION HEATER 12V D **SP309**

An immersion heater recommended for use with calorimeter blocks (SP703-SP706). The heating element is enclosed in a stainless steel tube.
Voltage : 10 V DC
Power : 35 Watt
Rod dia :12 mm



CALORIMETER VESSEL E

Vessel in one piece made of Copper or Aluminium.

Cat No	Size(mm) approx	Material
SP003	75X50	Copper
SP004	75X50	Aluminium
SP005	100X75	Copper
SP006	100X75	Aluminium

RADIANT HEAT SOURCE C **SH001**

It consists of a heating coil, wound over a rectangular former with 4mm sockets. It also contains a pair of Aluminium sheet lined with heat resistance screen having an aperture. Mounted on a rod.
Coil : 12 V, 100 W
Heat resistance Screen : 75 x 63 mm, 28 mm aperture
Power supply is not included in the scope of supply.

OUR SPECIALITY
We have a very flexible manufacturing setup. We are regularly producing goods for various customers as per their design and samples often on exclusive basis.

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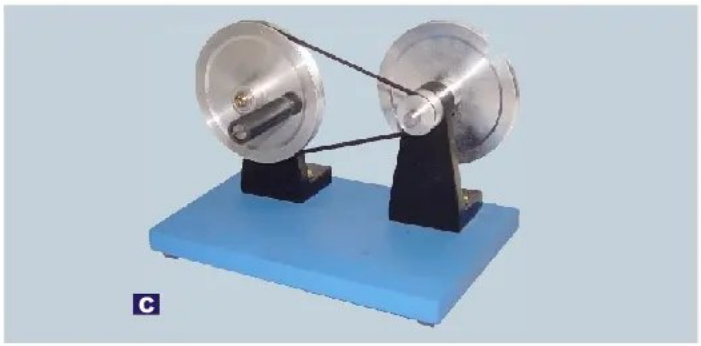
LINE SHAFT UNIT **A** **SH004**

To demonstrate the conversion from potential energy to electrical energy by winding up a weight on a cord. The falling weight drives a pulley which further drives a generator and a lamp. The unit consists of a steel shaft with pulley mounted on a plastic base.
Supplied with spring driving belt.
Base : 220x100mm (length x width)
Pulley : Made of aluminium dia. 55mm.
Shaft : Made of steel, 6mm dia.



SMALL MOTOR / GENERATOR **B** **SH161**

It is used with large motor / generator. Thus power input and output may be compared by driving each in turn with the other by observing the voltages and currents. It uses 1.5 to 4.5 V motor. Supplied with driving belt.



HAND WHEEL DRIVING UNIT **C** **SH032**

A hand wheel driving unit for driving dynamo, flywheel and line shaft. It consists of an inter-mediate pulley, a driving pulley and an output pulley. The pulleys are mounted on a plastic base. It gives a step-up ratio of 15:4.
Intermediate pulley : Made of aluminium dia. 20mm
Driving & output pulley : Made of aluminium dia. 75mm.
Base : 165 x 165 mm (length x width)

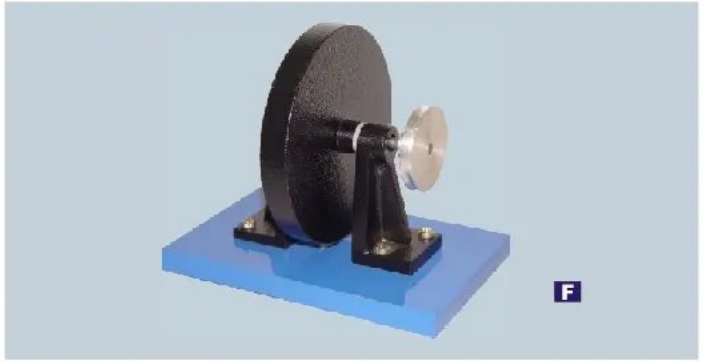


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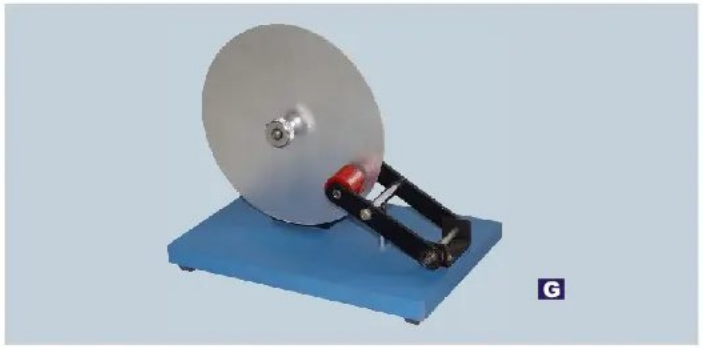
STORAGE BATTERY UNIT **E** **SH042**

To demonstrate the storage of electrical energy. The lead / acid cell can be charged using a dynamo and connected to a bulb unit using 4mm terminals mounted on a plastic base. It consists of a cylindrical jar made of borosilicate glass, held in position by clips, into which electrodes are dipped. The electrode rests on an acrylic plate.
Terminals : 4mm
Plate dimensions : 85x25x1.5mm.
Jar dimensions : 80x65mm (height x dia.)



FLY WHEEL UNIT **F** **SH030**

To demonstrate the conversion of electrical energy into kinetic energy and vice-versa with a motor / generator and a lamp unit. A flywheel made of iron is mounted in cast brackets with bearings. A pulley is attached with a shaft. Supplied with spring driving belt.
Flywheel : Made of iron, 115mm dia.
Pulley : Made of aluminium, 44mm dia.



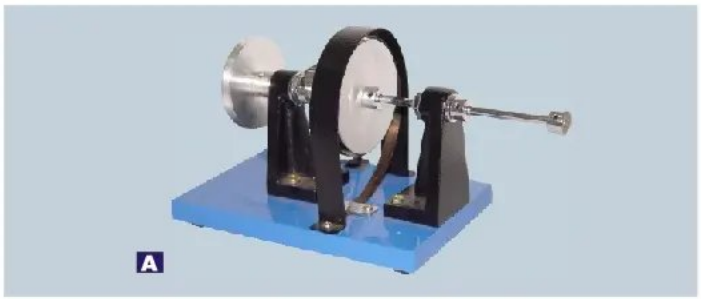
EDDY CURRENT UNIT **G** **SH530**

To demonstrate the eddy current braking. It is used with hand wheel driving unit. It consists of a metal disc with a driving pulley. A pivoted arm carries strong circular magnets which can be moved towards or away from the disc.
Disc : Made of aluminium, 120mm dia.
Driving pulley : Made of aluminium dia. 20 mm.
Base : 165 x 165mm (length x width)

HEAD OF WATER UNIT **D** **SH013**

It is used with turbine/ pump unit to demonstrate the conversion of electrical energy to kinetic energy in the pump and potential energy in the head of water. It consists of two bases and glass tubes. The upper platform acts as a reservoir. A hole is provided on the top to use it as re-circulation system with a single basin. The whole unit is mounted on a base with rubber feet.
Basin : Borosilicate glass, 80mm dia.
Upper platform : 38mm

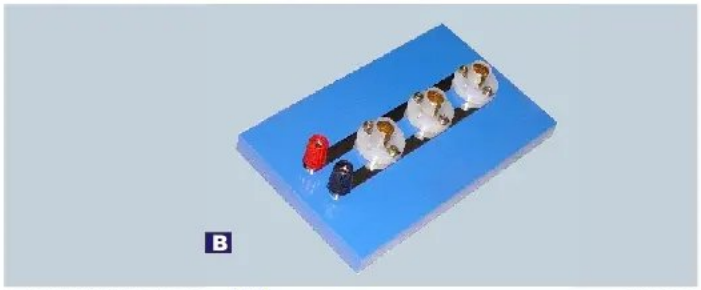
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SPRING UNIT A **SH039**

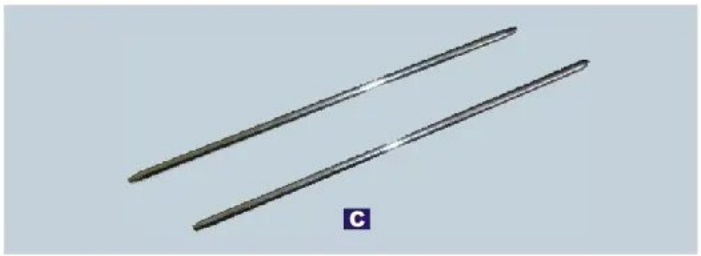
To demonstrate the potential energy of a wound up spring and its conversion into electrical energy by driving a dynamo and connecting its output to a bulb. It can also be used by winding up a weight on a cord to demonstrate the conversion of potential energy into kinetic energy and back to potential in the raised weight. It consists of a spring attached to free wheel which drives a pulley. Weight can be attached to the shaft by fixing a thread or using screw at the end of a shaft. Supplied complete with driving belt.

Base : Plastic, 220x 100 mm (length x width)
Pulley : Made of aluminium, 56 mm dia.



LAMP UNIT TRIPLE B **SH103**

It consists of three bulb holders connected in parallel with two 4mm sockets, mounted on a standard base. Complete with 1.25V, 0.25A bulbs. It is used with motor/generators for providing an indication of their output when used as dynamos. The lampholders are connected in parallel.



RODS FOR JOINING ENERGY KIT C **SW939**

A pair of rods to join various energy units, providing an easiest way to perform experiments using different energy units in which holes are provided at the base.

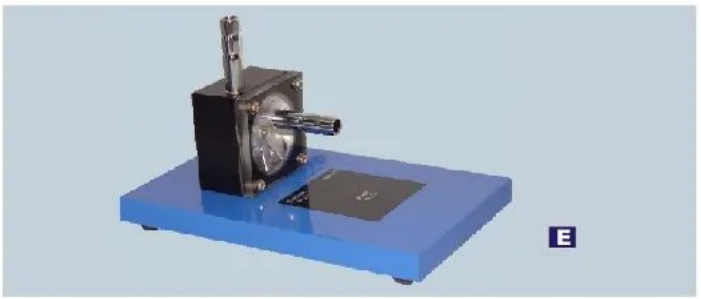
Material : Plated mild steel
Dimensions : 41x 0.8 cm (length x dia)



MOUNTED LAMP FOR SOLAR CELL D **SP716**

A bulb with holder mounted on a plastic box with 4mm sockets. It is used to energize the solar cell.

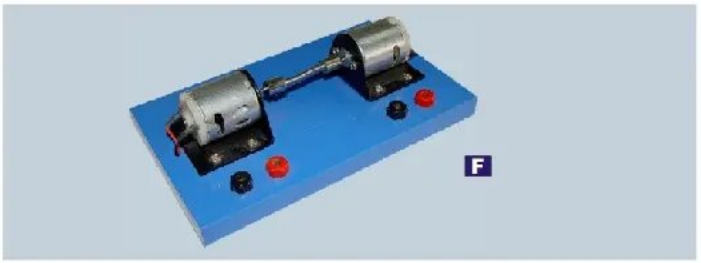
Bulb : 12 Volt, 21 Watt
Base : 100x75mm (length x width)



TURBINE PUMP UNIT E **SH056**

It is used to demonstrate the function of a turbine to drive a generator producing electricity or to show the working of a pump to raise the head of water to produce potential energy. It consists of an eight blade rotor housed in a block turbine chamber 50 x 50 x 25mm, with transparent cover and a pulley. The unit is mounted on a plastic base. Two inlet tubes (for turbine & pump operation) and one outlet tube are provided.

Pulley : Aluminium dia.15mm.



DYNAMO / ELECTRIC MOTOR UNIT F **SH158**

Two numbers of identical motors are mounted end to end. A flexible coupling joins their shafts. Both motors are provided with two numbers of 4mm sockets. Any motor may be used to drive the other as a dynamo. The whole unit is used for getting the degree of efficiency achieved when conversion of electrical energy to mechanical energy by a motor takes place. And also directly back to electrical energy by means of the motor to drive a dynamo. It is supplied complete with driving belt.



MOUNTED SOLAR CELL G **SP715**

A solar cell mounted on a plastic box with 4mm sockets. It can be connected to SP714 to demonstrate the conversion of solar energy into electrical energy.

Output : 0.8 Volt DC at 300 mA
Base : 100x75mm (length x width)



MOUNTED MOTOR FOR SOLAR CELL H **SP714**

A compact and low consumption motor mounted on a plastic base. Used to demonstrate the conversion of solar energy into electrical energy and finally to mechanical energy. Output of a solar cell is applied to the motor through 4mm sockets which drives the pulley of the motor.

Dimensions : 100x75mm (length x width)
Operating voltage : 0.8 volt DC

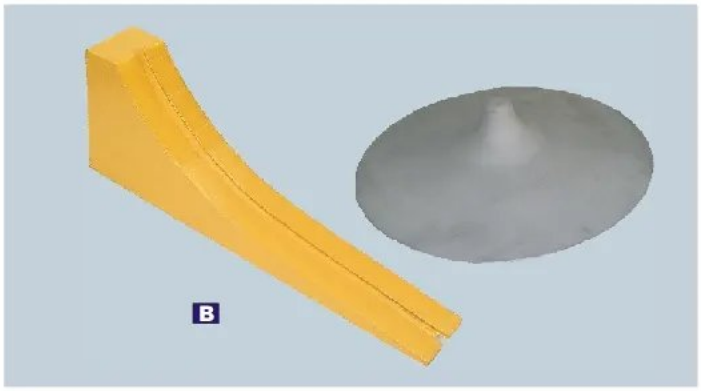
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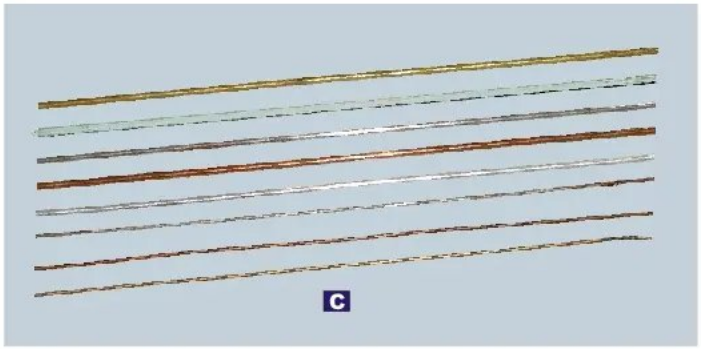
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CONVECTION IN AIR APPARATUS **A** **SH527**
It is used to demonstrate the convection currents produced by a lighted candle. The apparatus consists of a black painted box with a sliding front glass window and two detachable chimneys on top. Supplied without candles.
Box Dimension :225x75x80 mm approx (lxwxh)



ALPHA SCATTERING ANALOGUE **B** **SH044**
It is used to show Rutherford scattering with the help of a gravitational analouge of inverse square law repulsion. It consists of a spun aluminium hill, a steel ball and a wooden lauching ramp, which has a guide groove down its curved front face. Launching heights may be observed from its index marking at 40,60,80 and 100mm above the base.



THERMAL CONDUCTIVITY KIT **C** **SP702**
It is used to compare the thermal conductivities of different material. It consists of eight different rods having length 30cm.
Glass dia. 3mm - 1
Aluminium dia. 3mm - 1
Copper dia. 3 & 1.5 mm - 1
Brass dia. 3 & 1.5mm - 1
Iron dia. 3 & 1.5mm - 1



HALF LIFE ANALOGUE **D** **S1018**
It consists of one plastic jar consisting of 500 small plastic cubes. The cubes have one face identified and represent radioactive nuclei. Which have "decayed" when this face is uppermost. Ten groups shake their set of nuclei in the trays and roll them out onto the bench. For each throw the decayed nuclei are counted and removed from the set. Excellent result for an exponential decay curve are obtained with increased awareness of the link between activity and the number of nuclei present. Supplied without trays.



THERMOCOUPLE COPPER - CONSTANTAN (SINGLE) **E** **SH120**
Copper and constantan wires twisted and joined togther. Suitable to use upto 150°C.
Typical values : Hot-junction = 100°C,
Ambient Temperature = 16°C, emf = 2.5mV
Length : Coiled, 120mm approx. (Total)

THERMOCOUPLE COPPER - CONSTANTAN (DOUBLE) **F** **SH119**
It consists of two thermocouple connected to form Cu-Constantan-Cu hot & cold junctions. Suitable to use upto 150°C.
Typical values : Hot-junction = 60°C,
Cold-junction = 20°C, emf = 1.2mV



SPARK DISCHARGE APPARATUS **G** **SH286**
It is used to demonstrate ionising effect of radioactive emissions. There are two numbers of long parallel conductors. A wire mesh in a metal frame whereas other a narrow metal strip mounted on edge beneath the mesh insulated from each other. Both conductors are separated by means of a narrow gap and provided with 4mm socket terminals. A box, having a high voltage capacitor, is mounted with these conductors. Operatable with a supply of 5 to 6kV maximum.

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MELTING POINT APPARATUS **A** **SA198**
It can be used in determining repeatable melting point of different compounds up to 400°C in 5 minutes by continuously adjusting with built-in variable transformer. Temperature resolution 0.1°C with low mass thermocouple and precision thermometer. Its housing is made of aluminum. It accepts upto three capillaries. Samples are illuminated and clearly visible through the precision 6x-power lens. Operatable at 220VAC.

OPTIONAL ACCESSORIES:
MELTING POINT CAPILLARIES TUBE **B** **SJ150**
It has one end seal having length 75mm approx. Supplied in pkt of 100pcs.

DIGITAL THERMOMETER **C** **SJ151**
Range : -50°C to +500°C with On/Off Switch.



MODEL OF THERMOSTAT **D** **SP626**
A demonstration model of thermostat switch. It consists of Bi-metallic strip connected in series with a bulb. The unit is assembled on a plastic base with rubber feet. The model is connected to a suitable power supply and the Bi-metallic strip is heated with a hot air blower or flame. The Bi-metallic strip breaks the circuit thus demonstrating a thermostat.

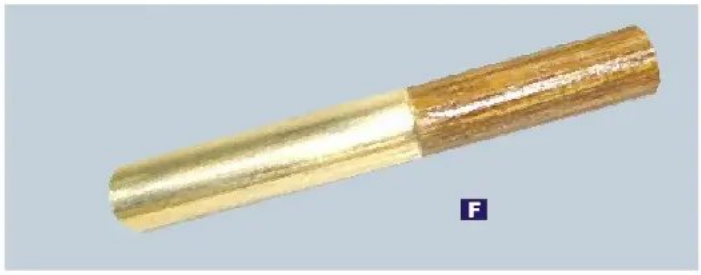
Base	: Plastic,165 x 100 mm
Sockets	: 4 mm
Power supply*	:4 -6 V,0.5 amp AC/DC

Note: * Not included in scope of supply



CONVECTION IN WATER APPARATUS **E**
A rectangular shaped tube for demonstration of convection in water. The apparatus can be clamped vertically on a retort stand. The tube is filled with water and some indicator is added to it. When the tube is heated at one of its lower corners, shows the convection. Clamp, retort stand and indicator are not supplied.

SP045	380 x 240x18mm (L x W x Tube dia.)
SW485	140 x 100 x 13mm (L x W x Tube dia.)



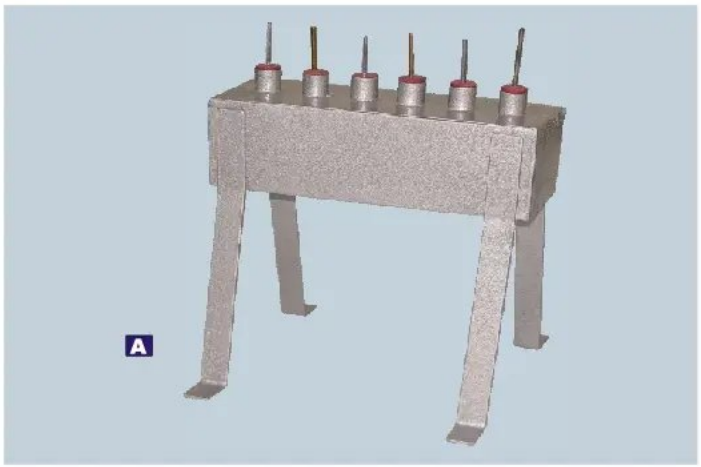
WOOD AND METAL CYLINDER **F** **SP627**
Comprising a cylinder 200 x 30 mm (L x Dia.) one half of which is wood, the other brass metal. If paper is wrapped tightly round the cylinder and the rod is held above the flame, the portion in contact with the wood will be quickly scorched while the portion in contact with the metal will remain uncharred.



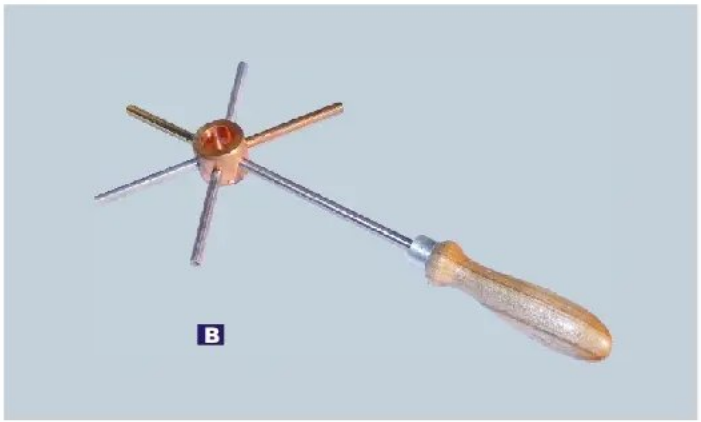
MELTING POINT APPARATUS **G** **SP709**
It is an aluminium cylindrical block of dia. 65mm and height 50mm with an oblique hole for accommodating thermometer upto 8mm. It is used by sprinkling a thin layer of substance on the block and then heating it.

Available on Request:
Analog mercury (Hg) thermometer (range 0-400° C) can also be provided for use with SA198, for more information, please contact us.

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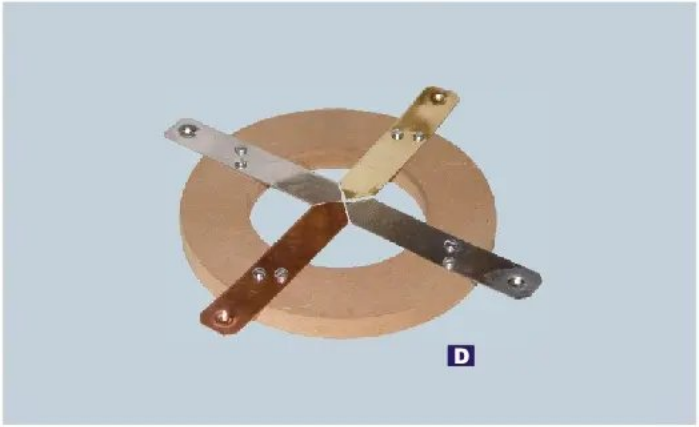
INGEN - HAUSZ'S APPARATUS **A** **SH516**
It consists of six metal rods mounted in corks with their lower ends in a chamber. The chamber size is 220 x 75 x 75 mm approx (L x W x H) supported on four legs having height 170mm approx.
Rods 130x3mm (L x dia): Copper, Iron, Lead, Brass, Zinc, Aluminium



THERMAL CONDUCTIVITY APPARATUS **B** **SW776**
For demonstrating thermal conductivity of different metals. It consists of five different metal rods with different thermal conductivity with wooden handle. Each rod has an indentation at the end into which wax fits.
Metal rods: Brass, Copper, Mild steel, Zinc, Aluminium : 60mm length each.



BIMETALLIC STRIP **C** **SP052**
It consists of brass and iron strip 200 x 25mm (Length x width) rivetted together with a wooden handle. It is used to demonstrate the curvature produced by unequal expansion.

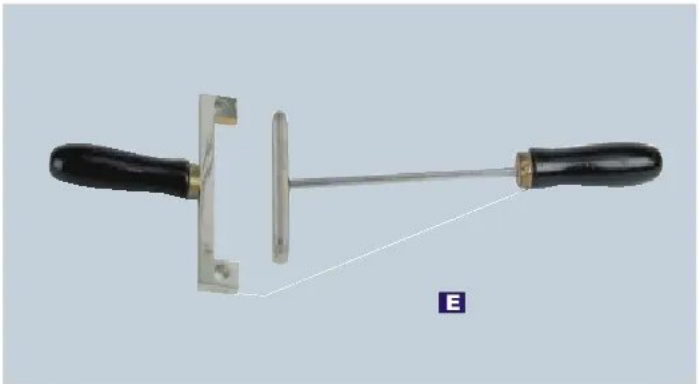


CONDUCTIVITY OF METALS APPARATUS **D** **SP383**
It consists of metal strips 90 x 13 x 1.5mm (length x width x thickness) of different thermal conductivities fixed on a wooden ring. Outer end of the strips have small cups for putting wax.



RING & BALL APPARATUS

Cat No	Material	Type
SP048	Brass	On two wooden handles
SP049	Brass	One wooden handle with chain
SP384	Aluminium	On two bakelite handles
SP385	Aluminium	One bakelite handle with chain



BAR AND GAUGE **E** **SP051**
Steel bar 110 x 12mm (length x dia) on a rod with wooden handle. Inverted U shaped gauge, sliding fit over ends of the bar with holes 10mm.

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SOLAR ENERGY KIT A **SF807**
It is housed in a wooden box. It consists of a solar panel. This model shows the conversion of solar energy into various forms like light energy (by glowing bulb), electrical energy (by meter), sound energy (by music) & electro-mechanical energy (by motor). This model can also be operated by 3V cells or solar panel. Supplied without cells.



HOPE'S APPARATUS B **SP191**
Inner cylinder 25x5cm (height x dia.) mounted on a base encircled midway along its length by a gallery 6 x 10cm (height x dia). Made of stout tin sheet, nicely painted. It is supplied without thermometer.

THERMOPILE C **SP015**
It consists of a group of thermocouples joined together in series. The thermocouples are enclosed in a metallic frame. It is supplied complete with metallic cone which is mounted on an adjustable stand. Leslie's Cubes can be used with these thermopiles (Bismuth-Antimony 12 Pairs).





LESLIE'S CUBE (TIN PLATE) E **SF809**
Tinplate box with 130mm sides. The vertical faces of the box are blackened, roughened, varnished and polished respectively. The top opening is 75mm diameter and is fitted with a lid. The apparatus is filled with water maintained at boiling point by a low bunsen flame. Infra red sensor may be used to compare the relative radiant heat output from each of the four faces.

LESLIE'S CUBE (COPPER PLATE) E **SV006**
Copper box with 125mm sides. The vertical faces of the box are nightblack, matt black, shiny black, white and buff respectively. The top opening is 75mm diameter and is fitted with a lid. The apparatus is filled with water maintained at boiling point by a low bunsen flame. Infra red sensor may be used to compare the relative radiant heat output from each of the four faces.



EXPANSION OF LIQUID APPARATUS F **SP054**
It consists of 5 glass tubes with bulbs of equal capacity mounted on a support, with scales and metal trough to hold hot water.

SPECIFIC HEAT OF LIQUIDS (NEWTON'S LAW OF COOLING) D **SP013**
This apparatus is used to determine specific heat of liquid by Newton's law of cooling. It consists of two aluminium calorimeters (75x50mm) resting inside a metal trough which stands in an outer metal tank fitted with a wooden top with two rubber stoppers with holes for thermometers. The inner container is lined with felt.

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METAL RIVETS A
For specific heat capacity experiments. Pack of 500 grams.

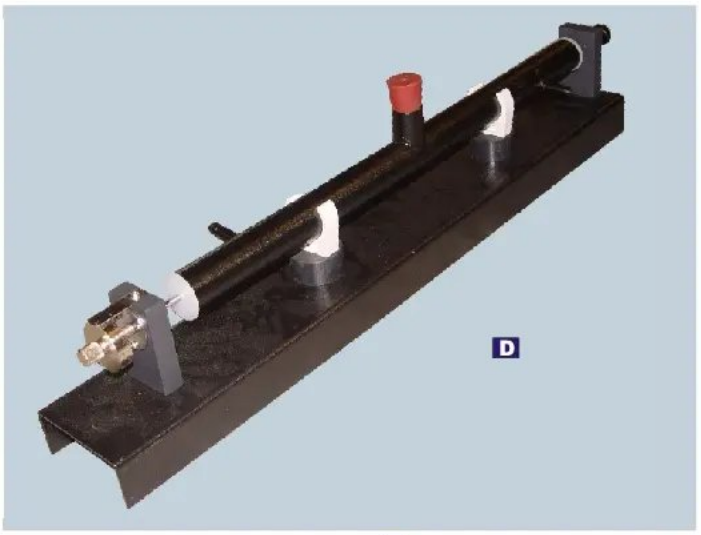
Cat No	Material
SW463	Aluminium
SW464	Brass
SW465	Copper
SW466	Iron



BAR BREAKING APPARATUS (SUPERIOR) B **SE976**
To demonstrate the force which is exerted during thermal expansion or contraction consists of a heavy frame with slotted end pillars to carry an iron bar. The bar is threaded at one end for a large tensioning nut and has holes at other end to accommodate cast iron bars. Supplied with ten breaking bars.
Dimensions: 380 x 100 x 100mm (L x W x H) overall



RADIOMETER CROOKE'S C **SA636**
It consists of one set of vanes having one side bright and the other black which rotate when placed in sun light as the air in contact with dark side becomes hot. Colour of base may vary.



LINEAR EXPANSION APPARATUS D **SP735**
To compare the linear expansion of rods of different materials. The apparatus implies a steam jacket with inlet and outlet tubes and an opening with rubber cork for a thermometer. One end of the test rod put against an adjusting screw and another end is free to expand against a micrometer screw. The steam jacket, micrometer screw and adjusting screw are mounted on a metal base.
Rods : Copper, brass, iron. Each 50 x 0.5cm dia.
Dimensions : 63 x 11 x 8.5mm (l x w x h) overall
Micrometer : Least count 0.01mm



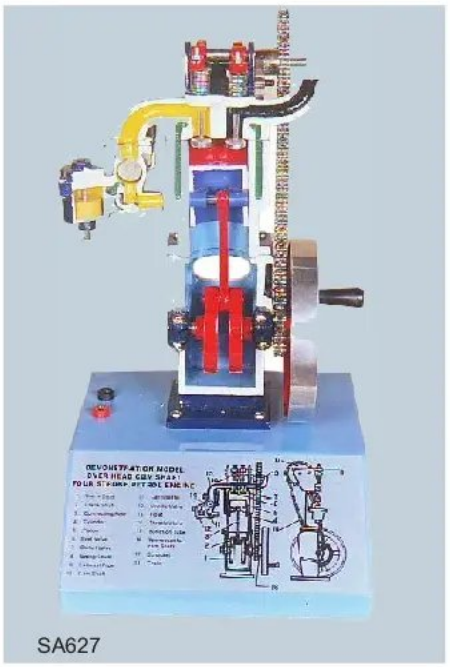
GUNTHER'S APPARATUS E **SPA01**
It is an apparatus useful for determining thermal expansions of metallic rods. It consists of borosilicate tube unit having pair of inlet, outlet opening for steam, A glass unit is clamped on both ends through metallic supporting base along with supporting rods and sliding block. The unit consists of two metallic rods, mild steel and brass for measuring linear expansion.

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Our team of engineers and technicians are continuously working to improve existing products and develop new ones. We welcome suggestions of our valued customers.

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SP018


SP019


SA627

FOUR STROKE PETROL ENGINE **SA627**
It is a demonstration model of over head cum shaft model of four stroke petrol engine.


SF802


SP020



SP021

WANKEL ROTARY ENGINE MODEL **SP021**
It is used to demonstrate the relation of operation of wankel engine and its circulation piston. It consists of a cylinder, water cooling jacket, piston and inlet & exhaust ducts. The operation is shown by turning the handle. All internal parts are clearly visible.

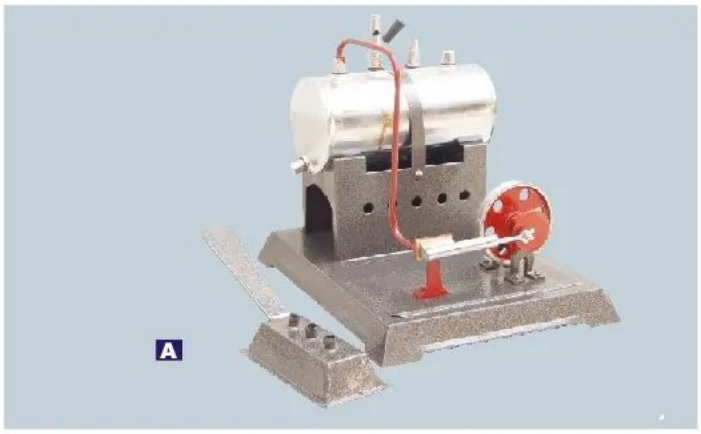
ENGINE MODELS
These sectioned models illustrate the theory of operation of internal combustion engines.

Cat No.	Strokes	Type
SP018	Four	Petrol
SP019	Four	Diesel
SP020	Two	Petrol
SF802	Two	Diesel


SP381

TURBINE WITH DYNAMO **SP381**
Body made of aluminium having inlet and outlet bores. It is provided with a fan rotor and Dynamo is coupled to the fan which demonstrates conversion of mechanical energy into electrical energy when water is supplied through inlet tube and fan rotates which in turn glows the LED fitted on the wooden base.

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STEAM ENGINE FUEL OPERATED A **SP023**
It is a working model of steam engine, provided with a safety valve, inspection window, whistle and throttle valve. It runs on liquid spirit fuel.

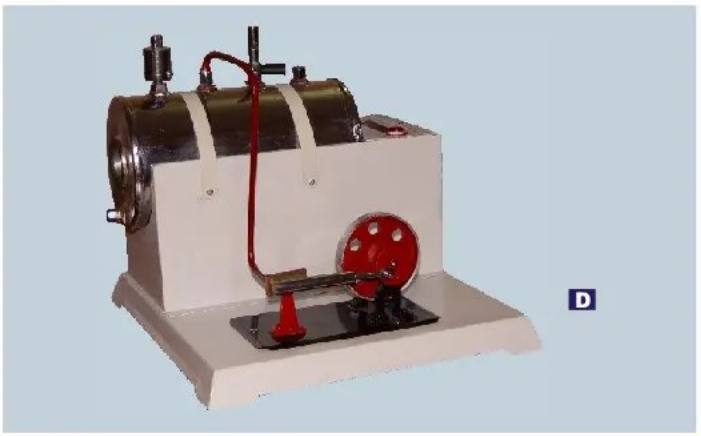
STEAM ENGINE A **SW830**
Same in specification as SP022 but operated with fuel tablets.



STEAM ENGINE LOCOMOTIVE B **SP086**
This model shows the actual working and is yet sectional. It shows cross section of the piston and slide valve, method of turning steam on and off. All parts such as crankshaft, valve-control, drive wheel etc. can be clearly seen. Size 39 x 9 x 17cm approx. (length x width x height).



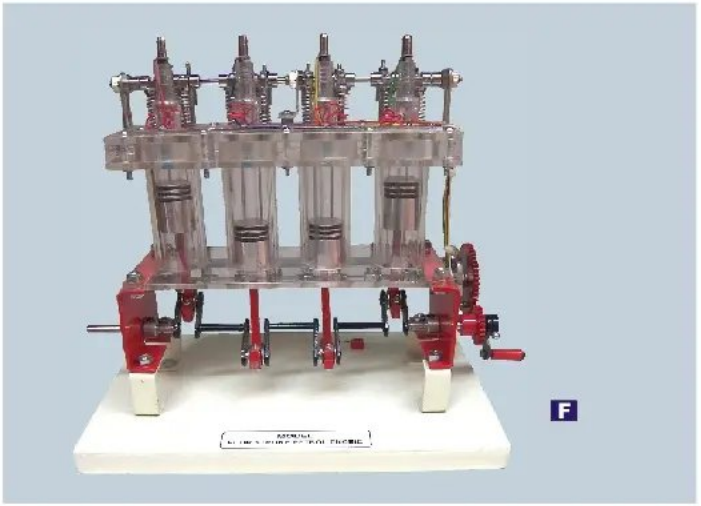
TURBO JET ENGINE C **SP624**
The section cut model is constructed of light and strong metal showing air intake, axial flow, double stage compressor, fuel supply, combustion chamber, turbine rotor, jet thrust, exhaust etc. Complete on base, with printed diagram showing working.



STEAM ENGINE ELECTRICAL D **SP007**
It is a working model of steam engine. It is provided with a safety valve, inspection window, whistle and throttle valve.
Working voltage : 230V, 50Hz.



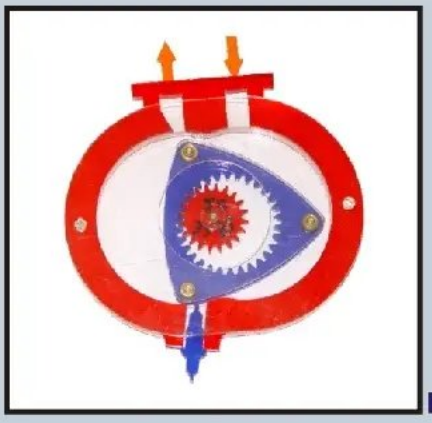
STEAM ENGINE WITH DYNAMO E **SP024**
It consists of a powerful fixed-cylinder engine with a slide valve driven from a eccentric crankshaft. Engine is provided with a double take-off pulley and mounted on a metal base.

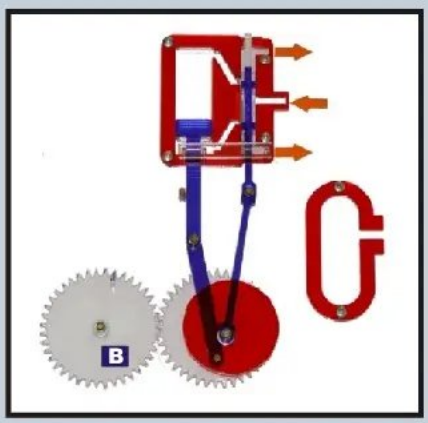


ENGINE MODEL F **SA626**
Four stroke petrol engine is mounted on base.

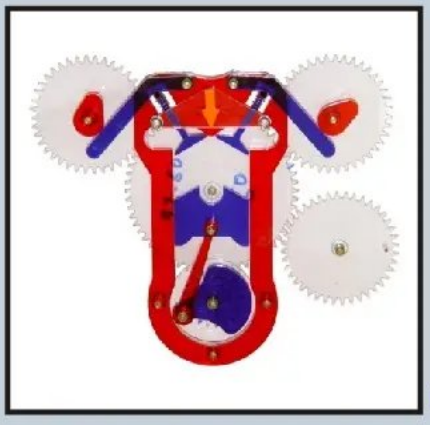
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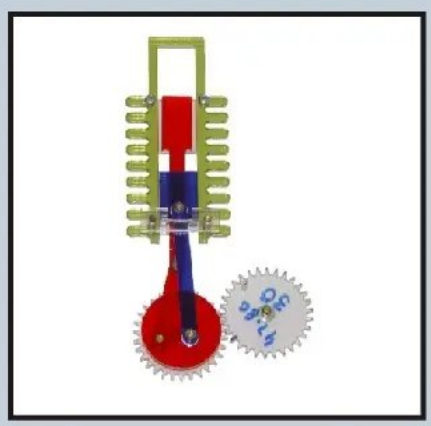

A


D


B


E


C


F

2-D ENGINE MODELS
Cut away engine models for demonstration on an overhead projector. Made of acrylic sheet. Rubber feet prevent the model from slipping.

Four stroke engine	(**SN721**)	A
Steam engine	(**SN792**)	B
Diesel engine	(**SN710**)	C
Rotary piston engine	(**SN777**)	D
Two stroke engine	(**SN802**)	E
Stirling engine	(**SN793**)	F

FOR YOUR INFORMATION

We can provide complete solutions to our customers to plan, design and equip complete labs for Physics, Chemistry and Biology.

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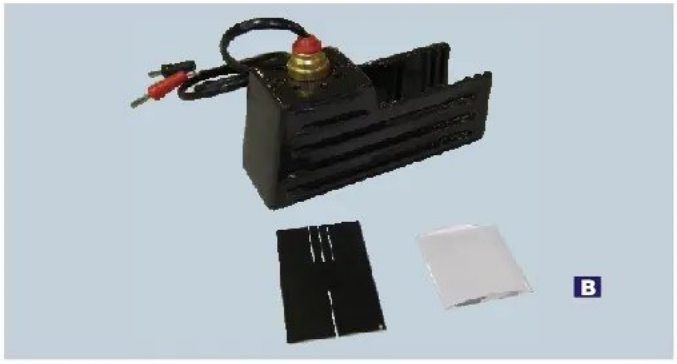
LIGHT BOX WITH FIXED MIRROR **A** **SL017**

Made of plastic for ray tracing & colour mixing experiments. It has a fixed condenser lens for providing parallel rays. Fixed mirrors are used to reflect light. This makes it easier to set up the experiment.

Standard Accessories:

* Tightly closing diaphragms	3
* Diaphragms with 1 & 2 slots	1
* Diaphragms with 3 & 5 slots	1
* Diaphragms with wide slot	1
* Halogen filament lamp 12V, 20W	1

Operating voltage: 10-12 V AC/DC.
Lamp: Halogen, 12 V, 21 W
Box Dimensions : 17.5 x 7 x 7 cm approx.



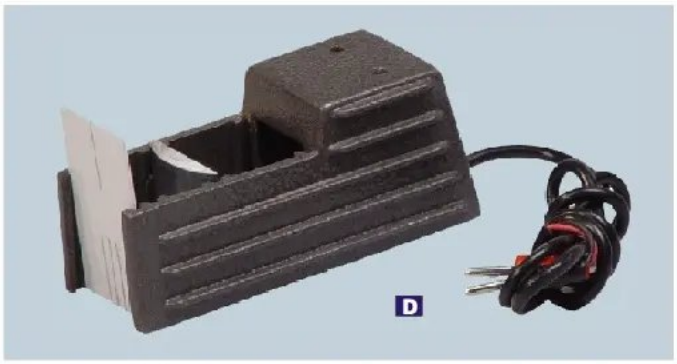
RAY BOX **B** **SV054**

It consists of a metal lamp house with holes for ventilation on its top. A 12V S.B.C. lamp in holder works as a light source. Its front open with extended finned sides and possess vertical grooves for inserting slit plate and collimating lens. An extra pair of grooves permit colour filters to be introduced into the light path during experiments. Provided with a slit plate which has single and triple slits, one side matt black whereas the other white. A flat two core wire (1M) lead terminating a pair of 4mm plugs.



RAY BOX PLASTIC **C** **S1017**

It is used for basic ray optics work. It consists of two slots for accomodating two no. of aluminum blanking plates, seven slots for lenses. Complete with bulb 12 V 24 W, two numbers of plastic slit plates and aluminum blanking plates.



RAY BOX **D** **SL023**

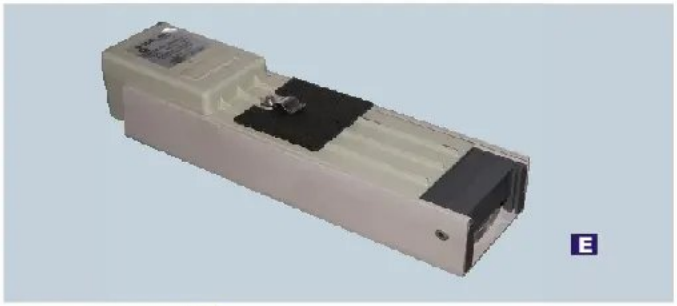
Ray box for demonstrating basic ray optics. It consists of a metallic box having a lamp housing with an open front and vertical internal slots to accommodate different diaphragms. It is fitted with a halogen lamp and a condenser lens for producing parallel rays. Connections are made through banana plugs.

Supplied with a slit plate having single and triple slits.

Operating voltage: 10-12 V DC
Lamp: 12 V, 10W
Dimensions: 150x70x65mm approx.

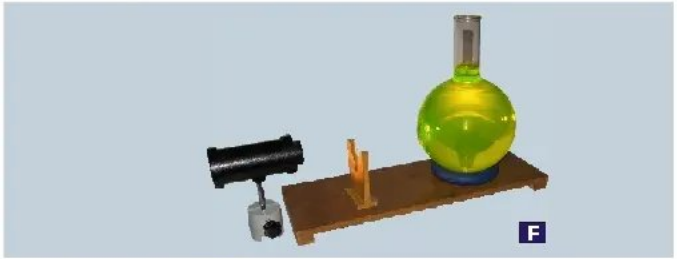
LED RAY BOX **D** **S1019**

Same as above SL023 but supplied with Power LED instead of bulb. Supplied without adaptor.



RIVE RAY BOX **E** **SV035**

Many experiments in optics can be performed using the rive ray box source which produces intense light of parallel, divergent or convergent rays. During experiment a piece of white paper is placed in front of the ray box, on a flat surface. Student can trace the position of optics and rays on the paper. It consists of an adjustable metal light box with mounted transformer. One, three or five thin rays or wide beam may be produced by an adjustable screen. Complete with a three wire cord. Operatable on 110VAC, 60 cycle.



EYE MODEL KIT **F** **SV139**

It consists of a 4 litre round bottom flask with round ring stand, modelling clay and each of under-mentioned 50mm dia lenses +11D, +8D, +5.5D, +2.5D, -3D values. Clay may be used to fix lenses to the flask. For showing short, normal and long sight. A beam of light is passed through them, the first three lenses are fixed whereas other two lenses are used for correction of the long and short sighted condition. Flask is filled with water and little of fluorescein indicator added in it for showing the path of light. Supplied without source, wooden stand, fluorescein indicator and lens holder.

EYE MODEL KIT **F** **SA628**

Specification same as above cat no. SV139 but supplied with source, fluorescein indicator, wooden stand and lens holder.

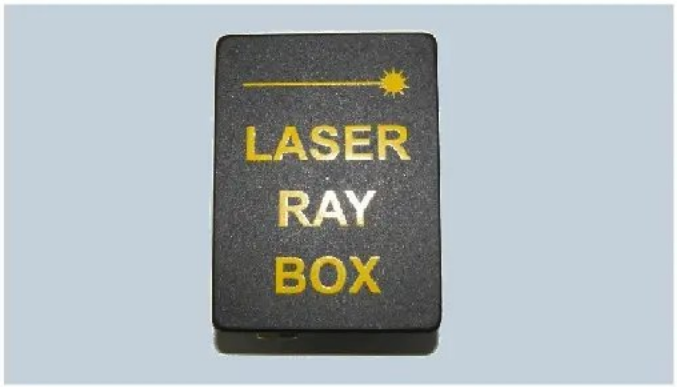
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LASER KIT A

In order to understand basic optical effects and its principle by means of a diode laser as a light source along with accessories, this kit is used. The laser ray box consists of five laser diodes. This box is a model of beam of parallel rays. Refraction, reflection, critical angle, total reflection, glass prism deviation, air prism deviation of light and many other basic experiments can be performed. Model of eye, telescope and camera etc. can also be constructed with the help of given working sheet.

SV144 Laser kit with magnetic board
SV143 Laser kit without magnetic board





Contents:

1.Ray Optics Demonstration Set

a) Biconvex lens no 1.
b) Biconvex lens no 2.
c) Biconvex lens no 3.
d) Biconvex lens no 4.
e) Biconcave lens no 5.
f) Plano convex lens R=45mm
g) Plano convex lens R=75mm
h) Plano concave lens
i) Concave mirror
j) Convex mirror
k) Plane mirror
l) Rectangular plane parallel plate
m) Prism
n) Optical fiber

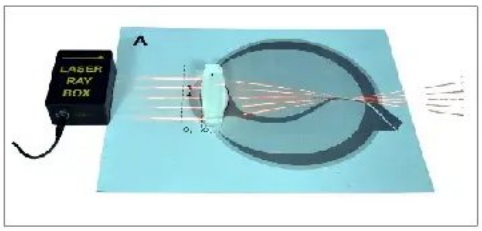


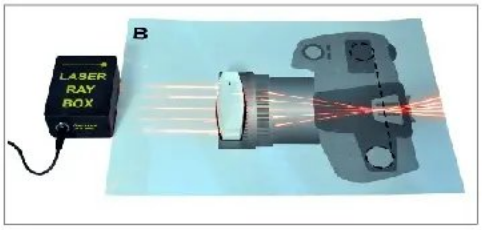
2.Working sheets

This is very simple and quick preparation of demonstration. The demonstration is ready quickly if the desired objects are located on assigned positions on the sheet.

a) Model of the human eye
b) Photo Camera
c) Galilean telescope
d) Keplerian telescope
e) Effect of the spherical aberration of a lens, and its correction
f) Hartle's circle for refraction and reflection

Laser ray box consists of five independent laser modules with peak wavelength 635nm. The laser is very effective in the demonstration of light trace. It also effectively demonstrates the transmission of rays through a combination of optical elements or components. Five clearly visible parallel lines light tracer can be seen when they are collimated by a cylindrical lens. This product refers to class II laser product. The laser diode modules used in the laser ray box emit visible beams of red light.





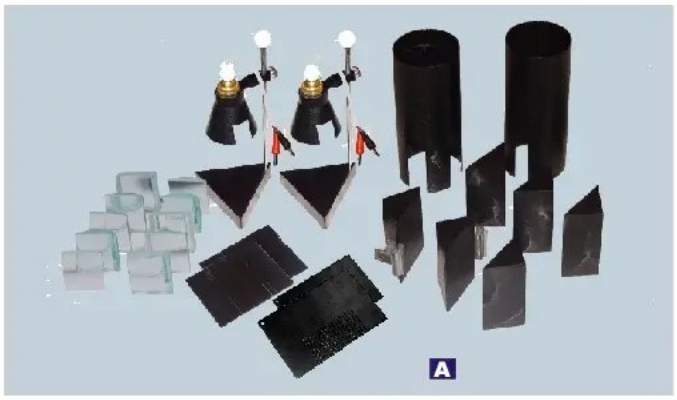


TECHNICAL SPECIFICATIONS

Peak wavelength	635nm
Operating voltage	3V DC
Operating current	250mA
Optical power (per beam)	0.4-0.8mW
Distance between beams	18mm
Dimension (LxWxH)	100x75x42mm
Laser product	class II
Laser type	diode
Wavelength	635nm
Operating temperature	0 - 40°C
Storage temperature	-10 to 50°C

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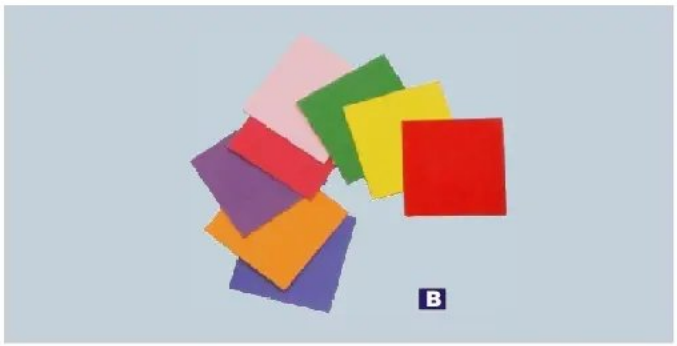
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RAY OPTICS KIT **A** **SH008**

A specially designed kit for demonstrating basic concepts of reflection, refraction, focussing using cylindrical lenses, aberration.

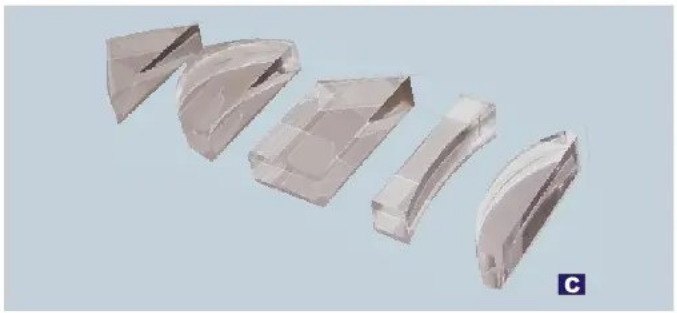
Plano cylindrical lenses(+7 D)	4
Plano cylindrical lenses(+10 D)	2
Plano cylindrical lenses(-17 D)	2
Plano cylindrical lenses (+17 D)	2
Lamp and stand	2
Pair of housing shield	1
Combined single & triple slit	2
Holder for combs & slit plates	2
Multiple slit combs	2
Wooden light barriers	4



SET OF COLOURED CARDS **B**

It is made of paper having side 50 x 50mm.

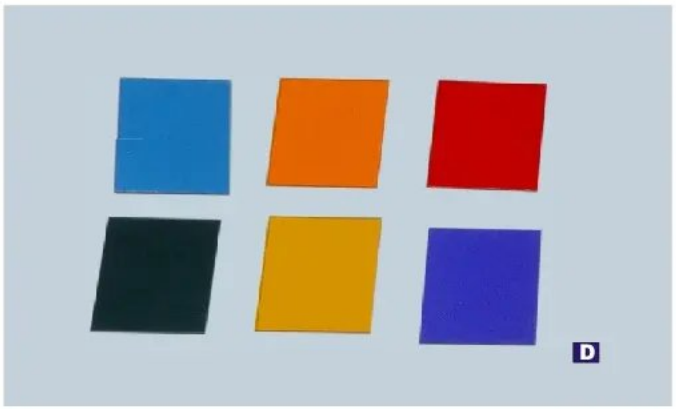
SL011 Set of 7 coloured cards
SA624 Set of 8 coloured cards



ACRYLIC BODIES (WHITE MATT BOTTOM) **C** **SO019**

A set of acrylic bodies with white matt bottom to provide a view of the ray inside the component. Suitable to use with a light box.

Planoconcave lens, f=-120 mm , l=60 mm
Planoconvex lens, f= +120 mm ,l=60 mm
Semicircular body, R=30 mm
Right angled prism , h=30 mm
Trapezoidal body, 60/45 x 30 mm



COLOUR FILTERS **D** **SL021**

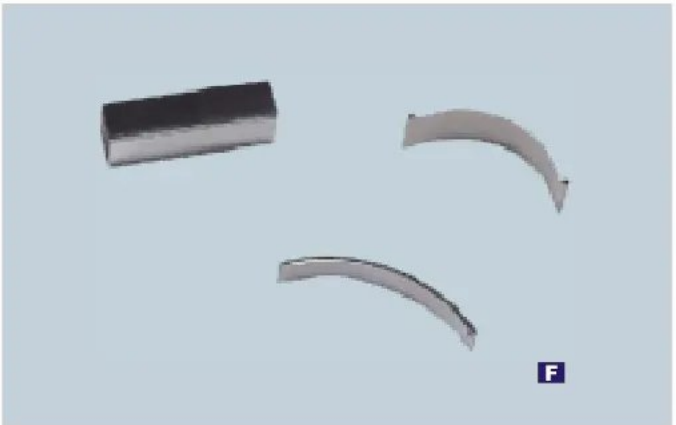
Set of 6 different colour filters used to demonstrate colour mixing using Light Box SL017.

Dimension:60 x 50 mm



SET OF MOUNTED COLOUR FILTERS **E**

SL020 Set of 7 coloured filters
SA625 Set of 8 coloured filters

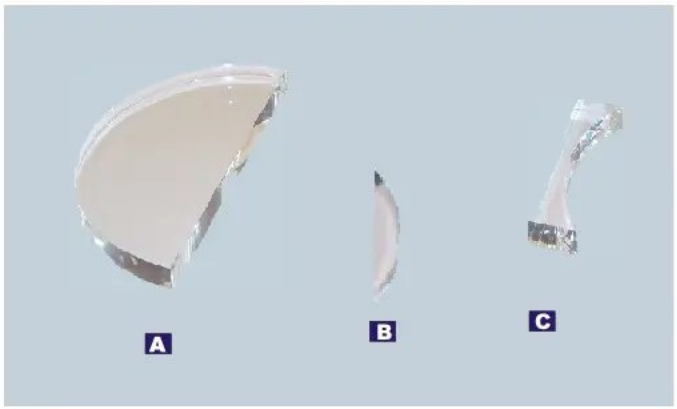


SET OF MIRRORS **F** **SL009**

Set of mirrors consisting of:

Metallic parabolic polished stainless steel	1
Semi circular mirror polished stainless steel	1
Plane glass mirror mounted on a wooden block	1

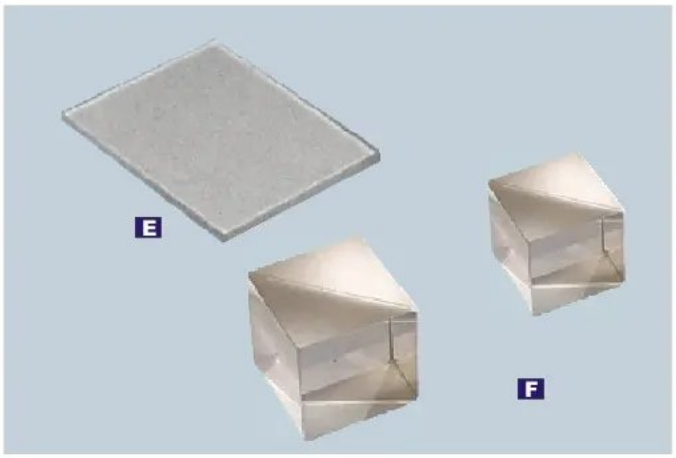
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SEMI CIRCULAR BLOCK A **SW435**
Semi circular block made of acrylic for use in ray optic demonstration. The blocks are nicely polished.
Diameter : 20cm approx.
Thickness : 2cm approx.

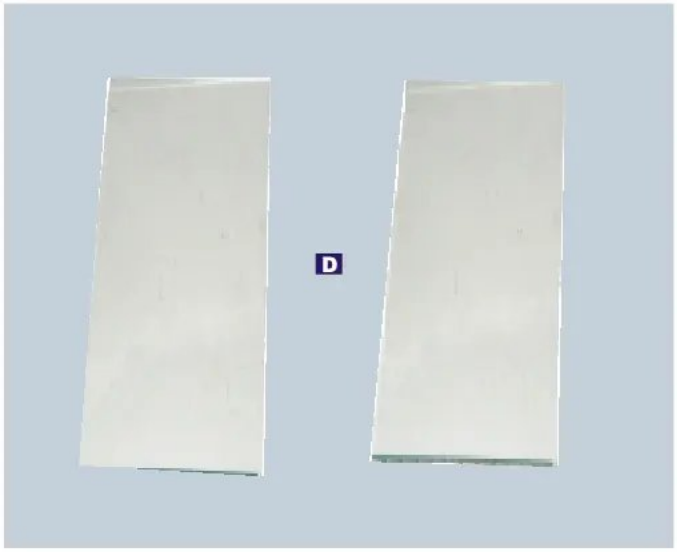
PLANOCONVEX BLOCK B **SW436**
Plano convex block made of acrylic for use in ray optic demonstration. The blocks are nicely polished.
Length :12cm approx.
Thickness : 2cm approx.

PLANOCONCAVE BLOCK C **SW437**
Plano concave block made of acrylic for use in ray optic demonstration. The blocks are nicely polished.
Length : 12cm approx.
Thickness : 2cm approx.



FRESNEL'S BIPRISM (RECTANGULAR) E **SL435**
For determination of the wavelength of light by measurement of interface fringes.
Rectangular : 40x30mm approx.
Prism angle : 178° approx.

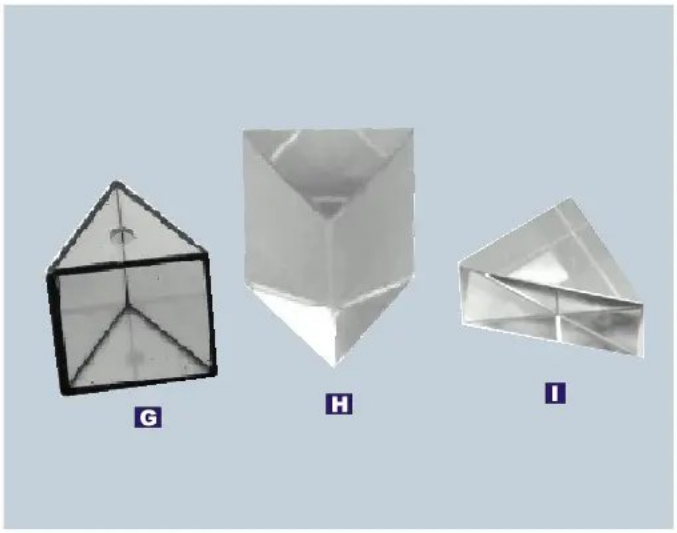
BEAM SPLITTER CUBE F
For dividing a laser beam or ordinary light beam into two beams of equal intensity, for geometrical optics, Interference studies etc.
It is a cube type beam splitter.
SW845 Size: 15mm
SW846 Size: 20mm



PLANE MIRROR D **SL100-SL107**
Mirror for use in optical experiments.

PLANE MIRRORS

Cat No	Size (cm)	Cat No.	Size (cm)
SL100	10x2.5	SL104	7.5X5
SL101	10X5	SL105	7.5X7.5
SL102	10X7.5	SL106	15X2.5
SL103	7.5X2.5	SL107	15X5



PRISM HOLLOW G
Made of glass.

Cat No.	Size(mm)
SL146	38
SL147	50

PRISMS EQUILATERAL H
Made of glass.

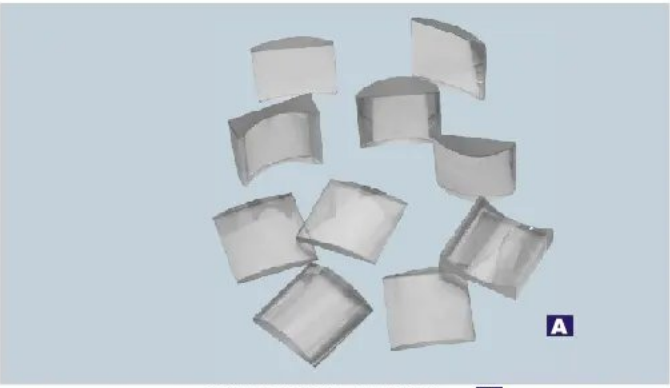
Cat No.	Size(mm)
SL151	25
SL152	38
SL153	50

PRISM RIGHT ANGLED I
Made of glass

Cat No.	Size(mm)
SL154	25
SL155	38
SL156	50

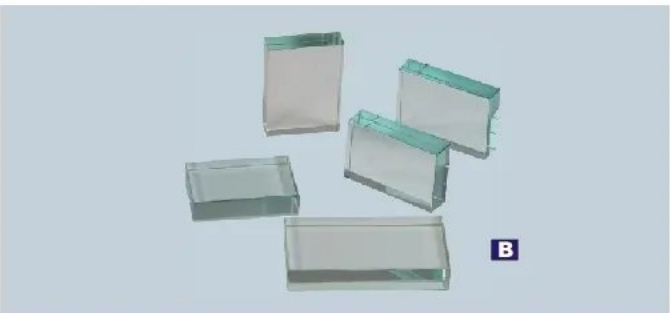
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CYLINDRICAL LENSES A

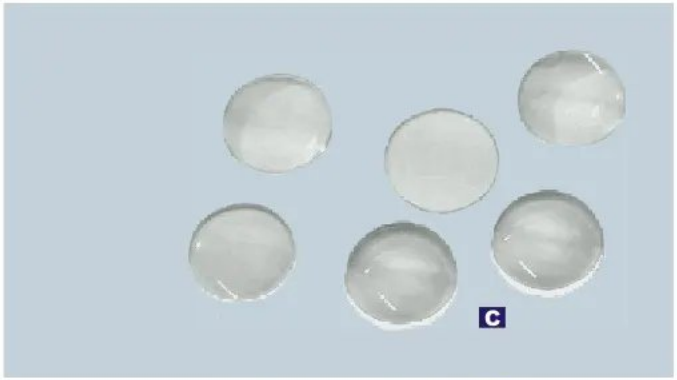
Cat No	Type	Size(mm)	F.L(mm)
SL110	Plano Convex	50x50	175
SL111	Plano Convex	50x50	100
SL112	Plano Convex	50x50	150
SL113	Plano Concave	50x50	60
SL114	Plano Concave	50x50	150
SL115	Plano Concave	50x50	300
SL116	Double Convex	50x50	75
SL117	Double Convex	50x50	150
SL118	Double Concave	50x50	75
SL119	Double Concave	50x50	150
SL120	Plano Convex	50x45	75
SL121	Plano Convex	50x45	100
SL122	Plano Convex	50x45	150
SL123	Plano Concave	50x45	60
SL124	Plano Convcave	50x45	150
SL125	Plano Concave	50x45	300
SL126	Double Convex	50x45	75
SL127	Double Convex	50x45	150
SL128	Double Concave	50x45	75
SL129	Double Concave	50x45	150
SL130	Plano Convex	50x22	75
SL131	Plano Convex	50x22	100
SL132	Plano Convex	50x22	150
SL133	Plano Concave	50x22	60
SL134	Plano Concave	50x22	150
SL135	Plano Concave	50x22	300
SL136	Double Convex	50x22	75
SL137	Double Convex	50x22	150
SL138	Double Concave	50x22	75
SL139	Double Concave	50x22	150



GLASS SLABS B

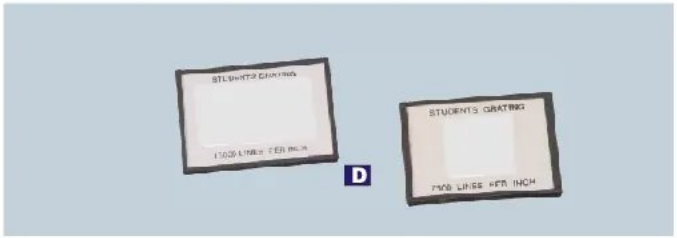
Made of glass.

Cat No.	Size(mm)
SL140	75X50X12
SL141	75X50X18
SL142	100X50X15
SL143	100X60X18
SL144	115X65X18
SL145	125X65X18



SPHERICAL LENSES C

Cat No	Type	Dia.(mm)	F. L(mm)
SL044	Double Convex	38	200
SL045	Double Convex	38	250
SL046	Double Convex	38	300
SL047	Double Convex	38	400
SL048	Double Convex	38	500
SL049	Double Convex	38	1000
SL050	Double Concave	38	50
SL051	Double Concave	38	60
SL052	Double Concave	38	100
SL053	Double Concave	38	150
SL054	Double Concave	38	200
SL055	Double Concave	38	250
SL056	Double Concave	38	300
SL057	Double Concave	38	400
SL058	Double Concave	38	500
SL059	Double Concave	38	1000
SL060	Double Convex	50	50
SL061	Double Convex	50	60
SL062	Double Convex	50	100
SL063	Double Convex	50	150
SL064	Double Convex	50	200
SL065	Double Convex	50	250
SL066	Double Convex	50	300
SL067	Double Convex	50	400
SL068	Double Convex	50	500
SL069	Double Convex	50	1000
SL070	Double Concav	50	50
SL071	Double Concave	50	60
SL072	Double Concave	50	100
SL073	Double Concave	50	150
SL074	Double Concave	50	200
SL075	Double Concave	50	250
SL076	Double Concave	50	300
SL077	Double Concave	50	400
SL078	Double Concave	50	500
SL079	Double Concave	50	1000

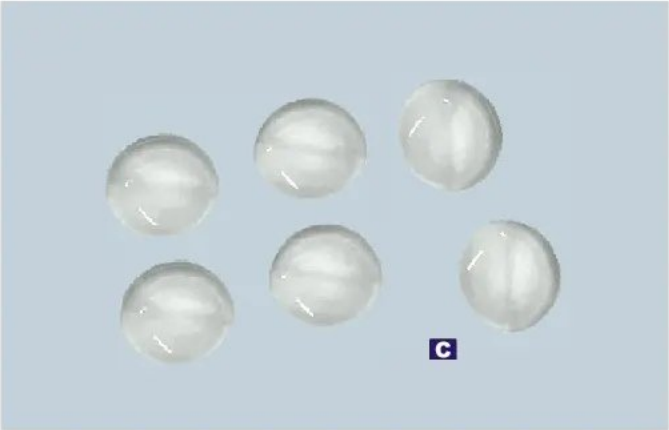


DIFFRACTION GRATING D

Cat No.	Size(mm)	Lines / Inch
SL795	38 x 50	15000
SL796	38 x 50	7500
SL797	38 x 50	2500
Sl798	38 x 25	15000

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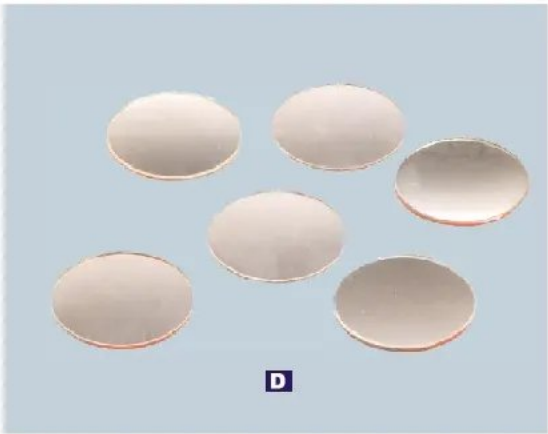
ACRYLIC BLOCKS A

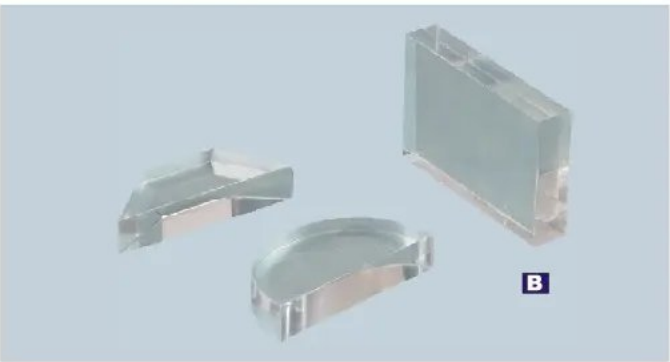
Type	Dimensions(mm) approx.	Thick 15mm approx.	Thick 12mm Approx.	Item Ref.
Rectangular	60x30	SL160	SL170	1
Semi circular	60 Dia.	SL161	SL171	2
Equilateral Prism	60x60x60	SL162	SL172	3
Right angled prism 45° x45 °x 90°	Hypotenuse=60	SL163	SL173	4
Right angled prism 60° x30° x90°	Hypotenuse=60	SL164	SL174	5
Double concave thin	Width60 X Radius60	SL165	SL175	6
Double concave thick	Width60 X Radius40	SL166	SL176	–
Double convex	Width60 X Radius60	SL167	SL177	7
Plano convex	Width60 X Radius60	SL168	SL178	–
Plano concave	Width60 X Radius60	SL169	SL179	8

SET OF 6 LENS C

One each double convex, double concave, plano-convex, plano concave, concavo-convex and convexo-concave lens.

SL080 Dia 38mm.
SL081 Dia 50mm.





MIRRORS(CONCAVE/CONVEX) D

Cat No	Type	Diameter (cm)approx.	Focal Length (cm) approx.
SL085	Concave	5	7.5
SL086	Concave	5	10
SL087	Concave	5	15
SL088	Concave	5	20
SL089	Concave	5	25
SL090	Concave	5	30
SL091	Concave	7.5	15
SL092	Concave	10	30
SL093	Convex	5	7.5
SL094	Convex	5	10
SL095	Convex	5	15
SL096	Convex	5	20
SL097	Convex	5	25
SL098	Convex	5	30

ACRYLIC BLOCKS B

Cat No	Type	Dimensions (mm)approx.	Thick (mm) approx.
SL180	Rectangular	75X50	25
SL181	Semi circular	75 Dia.	25
SL190	Trapezoidal	Parallel side 100 & 40 Height 38mm	15
SL191	Trapezoidal	Parallel side 100 & 40 Height 38mm	12

NOTE: Acrylic blocks can be made as per customer demands.

Do You Know
Indosaw was established in 1993
It's legacy goes back to 1919.

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LAMP HOUSE AND TRANSFORMER **A** **SH511**
It consists of an auto leak transformer giving a starting voltage of 470 V (approx) which automatically reduces when the current is regulated to 0.9A (approx.). To make it compact the transformer is placed in a housing and a support rod for the lamp house is provided on the housing of transformer. Spectral lamp not included in the scope of supply.

Spectral lamps Recommended: Make-Philips
Sodium 14 W, Mercury 12 W, Helium 60W



SPECTROSCOPE (DIRECT VISION) **B** **SL281**
It is used to observe dispersion of light. Body made of brass. Supplied in wooden case.
Length : 100 mm.



HOLDER FOR GEISSLER'S TUBE **C** **SH168**
It comprises a panel with two spring clips to hold the spectrum tubes. Two loose 4 mm socket fittings are provided for E.H.T connection to allow for variation in the tube lengths. The panel has one long plain end for holding in slotted base and a rod for holding in a retort stand boss. Holder is supplied without tube.



E.H.T. POWER SUPPLY **D** **SE909, SN906**
Power supply is continuously adjustable with rotary variable transformer. Output voltage is monitored with Digital meter provided on the panel.

SALIENT FEATURES
❑ Output voltage continuously variable from 0-5kV at a maximum current of 2 mA. ❑ Fuse protection for the primary windings. ❑ External earth socket for additional safety. ❑ Safety Sockets for the output voltage suitable for safety plugs. ❑ 6.3 V AC, 2 Amp. is provided for the filament supply. CE

TECHNICAL SPECIFICATION :

Parameters	Remarks
Working voltage	230 VAC, 50 Hz (Cat.No.SE909) 110VAC,50/60Hz(Cat.No.SN906)
D.C. Voltage/D.C. Current	Continuously variable from 0 to 5 kV. /2mA(max.)
A.C. Voltage/A.C. Current	6.3Volt/2Amps.



COMPACT LIGHT SOURCE **E** **SH040**
It consists of a quartz Iodine lamp in a ventilated housing mounted on a rod. It has a 19 mm aperture with a pivoted shutter so that it can be closed when not in use. Complete with 4 mm plug leads.
Lamp: 12 V, 100 W
Aperture: 19 mm diameter
Rod: 160 x 10 mm (length x diameter)

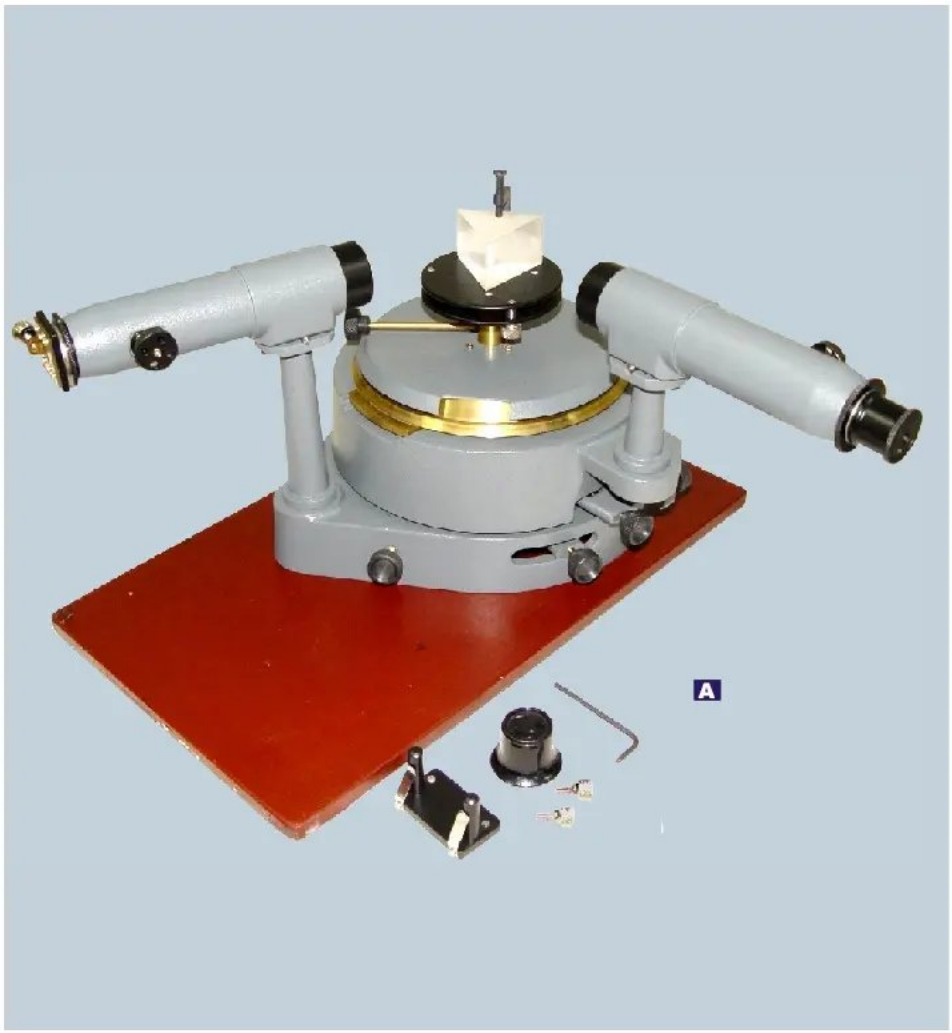
SPECTRUM TUBE POWER SUPPLY **F** **SW281**
Power supply is housed in a sheet metal enclosure designed for vertical placement. Spring loaded plastic sockets are provided for easy placement & removal of its tubes besides providing the maximum safety to its user. Provided with regulator for intensity control of light.
Specifications:
Output: 5 kV, variable (open circuit)
Working Voltage: 220V, 50 Hz, AC

Note : For bulk requirements, 110 V input can be provided.

SPECTRUM TUBES **G**
Spectrum tubes suitable for use with SW281.

Cat No	Gas	Cat No	Gas
SO024	Helium	SO029	Nitrogen
SO025	Neon	SO030	Oxygen
SO026	Argon	SO031	Carbon Dioxide
SO027	Mercury Vapours	SO032	Sulphur Dioxide
SO028	Hydrogen	SO033	Water Vapours
		SO037	Krypton

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ADVANCED SPECTROMETER A SL806

It is a very precise instrument with enhanced aesthetics. The graduated scale is fitted on the spindle and two double ended verniers. Both telescope and scale have provision for coarse and fine movement. The prism table has levelling screws and markings on it for positioning of prism. The spectrometer is mounted on a wooden base board. It is supplied with :

Prism (EDF)	1
Magnifier	1
Allen Key	1
Grating Holder	1
Prism Holder	1

Salient Features

- Heavy and large base with enhanced aesthetics for providing maximum stability during experiment.
- Provided with two double ended verniers (Four Verniers).
- Smooth & frictionless motion of telescope and collimator.
- Spindle & other critical components manufactured on CNC machine.

Scale	:	Brass, Dia. 175mm.
Objective	:	Achromatic, focal length 170mm, aperture 32mm
Slit	:	German silver.
Reticle	:	90° cross etched on glass.
Least count	:	20 seconds
Base	:	Aluminium Casting

Note: *The device is supplied in a wooden box.*

SPECTROMETER B SN583

For investigating emission & absorption spectra, to determine minimum deviation, refractive index. Telescope and collimator are provided with lateral and height adjustment screws. Magnifier lenses are provided on the spectrometer itself. Power supply for illumination device is not included in the scope of supply. It is supplied with :

Gauss eyepiece	1
Illumination device	1
Micrometer screw	1
Prism(EDF)	1
Prism holder	1
Grating holder	1

Scale: German silver,180 mm diameter
Least count: 1 minute
Objective : Achromat,FL=160mm, 16 mm aperture.
Reticle: 90° cross on glass.

Note: *The device is supplied in a wooden box.*



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INTERMEDIATE SPECTROMETER A
SL274A

It is a robust instrument with high performance. A double ended vernier is provided. Both telescope and table have a fine adjustment. Spectrometer table has lines marked to assist positioning of prism. Supplied complete with prism, magnifier, allen key, grating holder & prism holder.

Scale : Brass scale, Dia 150mm.
Objective : Achromatic, focal length178mm, aperture 32mm
Slit : German silver.
Reticle : 90° cross on glass.
Least count : 1 minute.
Base : Aluminium Casting





SPECTROSCOPE (BUNSEN-KIRCHOFF) B **SL807**

Spectroscope designed after Bunsen and Kirchoff for observing the spectral character of light emitted by sources. It consists of an adjustable slit, condenser, flint glass prism, telescope.
Objective : FL=16 cm
Eyepiece: 15 X WF
Lower base: Aluminium, 170 mm diameter
Total height: 25 cm (approx.)



SPECTROSCOPE C **SN637**

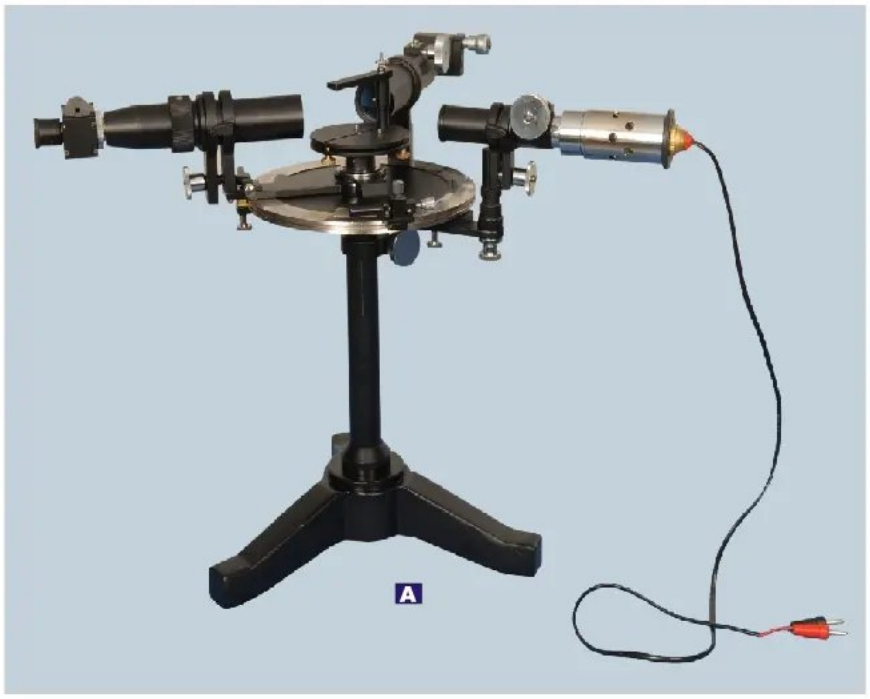
It uses a diffraction grating situated at narrow end for separating light into its component wavelengths known as spectrum. The wider curved end has a narrow slit that lets light into the spectroscope and a wide window with a numbered scale. When the slit is pointed directly at the light source, a continuous spectrum is seen. Each number on the scale indicates the wavelength of light.

OUR SPECIALITY
We have a very flexible manufacturing setup. We are regularly producing goods for various customers as per their design and samples often on exclusive basis.

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SPECTRO-GONIOMETER A **SW440**

The unit consists mainly of a Φ220mm plate divided at 0.5 degree around which other components can be moved. It allows carrying out adjustment with classical goniometer as well as wave length measuring in spectroscope uses. The unit is equipped with an auto collimator eye piece. Prism & grating holder are set on a prism table and can be stopped with a lock switch.



Technical Specifications

Least Count: 1 minute of Arc.
Collimator: adjustable to infinity, including one achromatic lens, Φ32 mm & one source slot, adjustable in width by knurled screw.
Micrograduated slot: enabling the measurement of the slot opening, accuracy: 0.01 mm. Maximum opening: 1mm on 6.3mm height.
Autocollimating view-finder: constituted of one achromatic lens & one sliding lens. Including one reticle& semi reflective device with 6V lighting enabling autocollimation experiments.
Micrometric view-finder: enabling the projection of one divided & numbered micrometer used for the wavelength calibration & measurement.



SPECTROMETER STUDENT B **SL273**

It is used for quantitative light experiments. The collimator is fixed on the base and the telescope can be rotated. Concealed helical focusing is provided on the telescope and collimator tubes. The collimator slit has spring loaded jaws. The graduated prism table has a vernier attached which is fixed on the telescope arm. The prism table is adjustable with the help of 3 knurled screws and it has screwed holes for attaching prism & grating holder.

Scale	: German Silver
Objective	: Achromatic, Focal Length178, Aperture 23mm
Slit	: Brass
Reticle	: 90° cross on glass
Least Count	: 6 minutes
Base	: Aluminium

SPECTROMETER STUDENT C **SL273A**

Same as SL273 but with plastic tubes and aluminium scale.

FOR YOUR INFORMATION

We can provide complete solutions to our customers to plan, design and equip complete labs for Physics, Chemistry and Biology.

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LAURENT'S HALF SHADE POLARIMETER A **SL289**

It consists of two polaroids (one used as polariser and the other as analyser), a laurent's half shade device and a 200mm observation tube of glass. The polariser and the half shade are fixed at one end. The analyser at the other end can be rotated along a circular scale graduated 0-360 degree with a vernier reading to 6 min. A fine motion tangent screw is provided for fine adjustments.

POLARIMETER TUBE B **SL290**

With center bulb, metallic screw caps & cover glasses packed in a velvet lined case. It can be used with SL289.
Length: 200mm.



COMPACT QUARTZ POLARIMETER D **SW441**

The polarimeter is a kind of instrument for measuring the optical rotation of a substance. It can be used to analyse the concentration, content & purity of substance. The light beam from the light source passes through the illuminating lens & filter and it becomes collimated polarized. The polarizer produces a triple shadow field on the ½ wavelength plate. The optical rotation can be measured through an optically active substance (sugar solution).

Measuring Range of Optical Rotation	: ± 180
Division Value	: 1°
Dial Vernier Value in Reading	: 0.05°
Magnifying Factor of the Magnifying Glass	: 4 times
Monochromatic Light Source	: 5893A°

Power Source of the Instrument

Power Line Voltage	: 220V, 50 Hz
Working Current	: 1.3A
Discharging Power	: 20W
Stabilization time (approx.)	: 5 minutes

POLARIMETER TUBE E **SW844**

Polarimeter tube Length 100mm and Diameter 14mm approx. Glass with nominal bore 8mm, screw-on end caps with glass cover discs and rubber washers. It can be used with SW441.

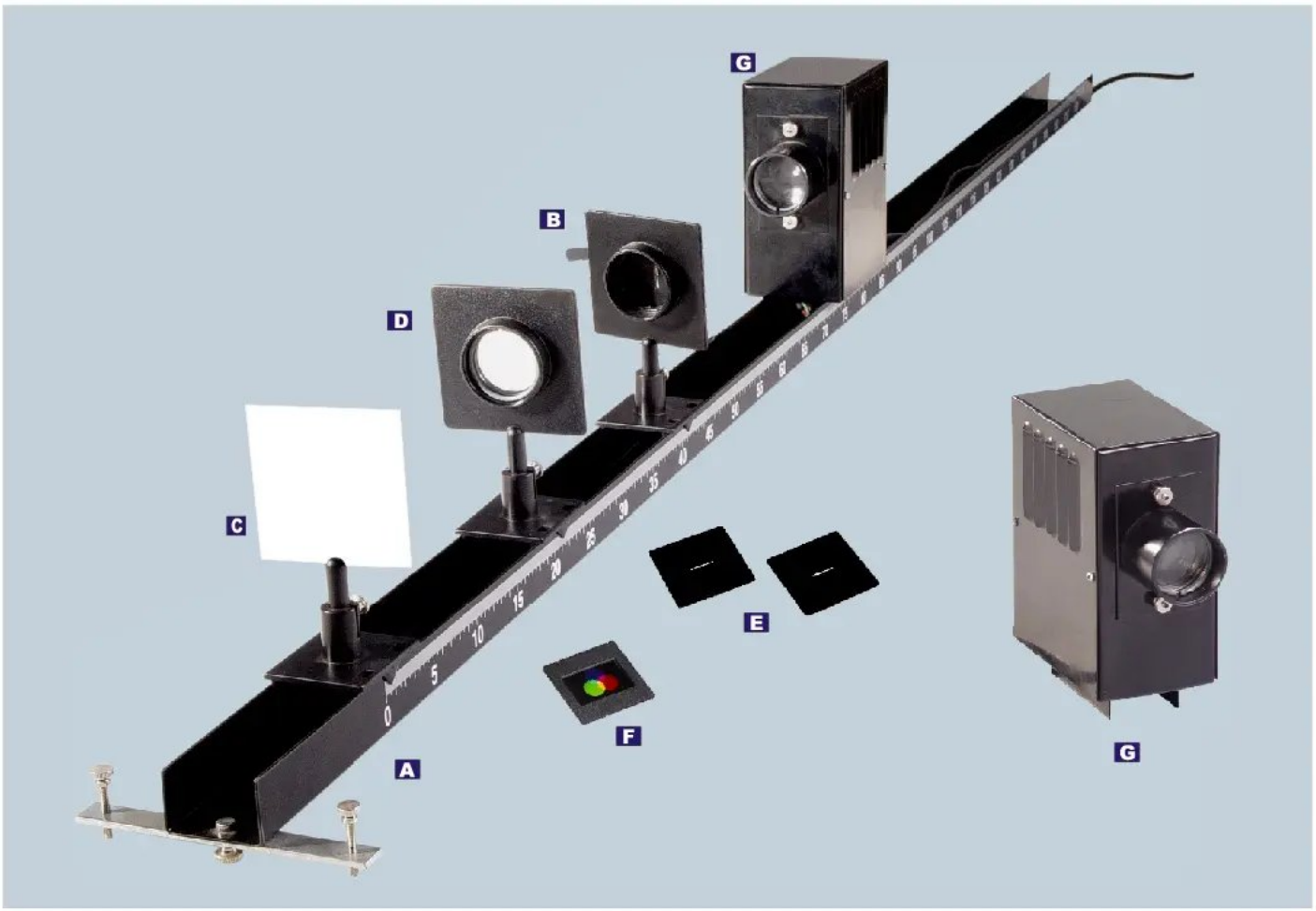
POLARIMETER TUBE F **SW843**

Polarimeter tube Length 200mm and Diameter 14mm approx. Glass with nominal bore 8mm, screw-on end caps with glass cover discs and rubber washers. It can be used with SW441.

POLARIMETER C **SH294**

It is a kind of instrument for measuring the optical rotation of optically active substances e.g. Sugar. The unit is mounted in a steel box. A 6V bulb present in the base works as a source of light. Light passes through a polarising filter and again through yellow filter to the sample tube. Rotation of the polarised light can be measured by rotatable analyser which is mounted in the top panel with a fixed 0-360° scale. The sample tube may be taken out for sample keeping purpose. Suppled with polarisers, yellow filter and sample tube.

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OPTICAL BENCH 'U' SHAPE A **SL668**

Optical Bench having a 'U' channel with scale printed. It has three feet of which two are adjustable and one is fixed. It is provided with four sliding saddles having pointer. The saddle accepts holders with 10mm dia rod. It is supplied complete with two Lens Holders, Light Source, Slit, White Screen, Translucent Screen (15 x 15 cm). Power Supply for Light source is not included in the scope of supply.

Scale: 160cm, graduated in mm.
Saddle: Plastic moulded, hole dia. 10mm
Holder: Plastic moulded, rod dia. 10mm, aperture 36 mm, Lens dia.40 mm

ADJUSTABLE SLIT B **SW751**
Rectangular plastic frame . With provision to hold Metallic slit plate and movable lever. Slit width 2mm. Height 15mm. Suitable to use with optical bench SL668.

WHITE SCREEN C **SW753**
Size: 15cm X 15cm. Suitable to use with optical bench SL668.

LENS HOLDER D **SW754**
Rectangular plastic frame lens holder. With provision to hold filters also. Lens of Dia 40mm can be held through round spring rings. Suitable to use with optical bench SL668. Focal length 10cm.

DIAPHRAGM – ARROW SLIT/SINGLE SLIT E **SO023**
The set consists of a single slit diaphragm and Arrow head diaphragm.
Length of Arrow : 1.5 cm
Length of Single slit : 1.5 cm
Dimensions : 5 x 5 cm (approx.)

FILTER FOR COLOUR MIXING F **SO022**
For experiment on colour mixing.
Dimensions : 5 x 5 cm (approx.)

LIGHT SOURCE HALOGEN ('U' BASE) G **SL674**
It is a high intensity halogen light source (12V, 50W). A condenser and a draw adjustment make it possible to obtain an adjustable convergent beam. Proper ventilation through side frame windows. Suitable to use with 'U' shaped optical bench SL668
Input: 12V DC through 4mm safety sockets.



LED MATRIX H **SV023**
The LED Matrix, housed in rectangular box, is suitable for many optics experiments. It acts as multipurpose LED light source. It is a substitute for traditional sources such as the filament lamp. A thumbwheel switch is provided for 8 selectable letters and shapes. It is a substitute for traditional sources such as the filament lamp. Supplied with adapter 5V DC.

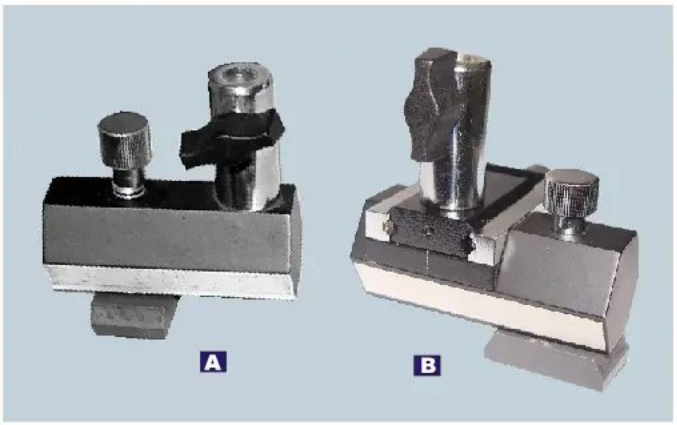
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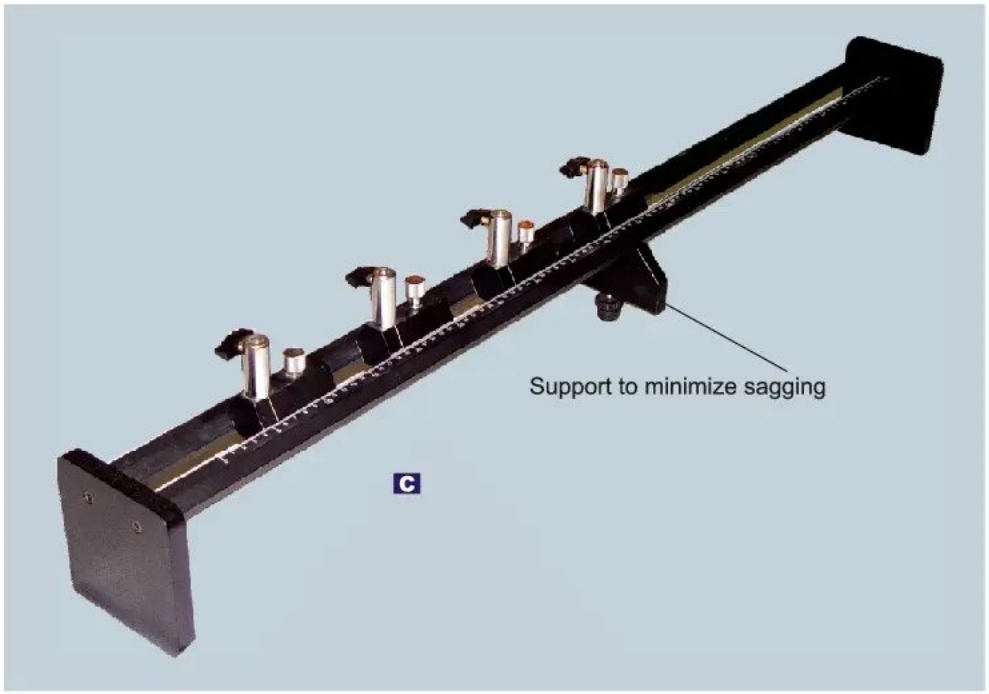
FIXED SADDLE A **SL216**

Suitable to use with optical bench SL214-SL215. Can be easily located on optical bench with the help of quick release facility.

TRANSVERSE SADDLE B **SL436**

Suitable to use with optical bench SL214-SL215. Can be accurately located on optical bench with the help of quick release facility. Transverse movement is made using a screw.





OPTICAL BENCH C

A high quality precision bench suitable for advanced work. Made of Aluminium alloy with hexagonal section carriage for accessories which can be easily located. Accepts the full range of optical accessories with 10 mm diameter mounted rods. It is supported at the ends, which ensures accuracy and stability. An additional support at the center minimizes the possibility of sagging. Supplied complete with 4 fixed saddles.

SL214 : 1 m
SL215 : 1.5 m





PRISM TABLE WITH CLAMP D **SL223**

For holding prism, glass blocks etc. It consists of a metal disc and clamp mounted on a rod. Suitable to use with optical bench SL214-SL215.

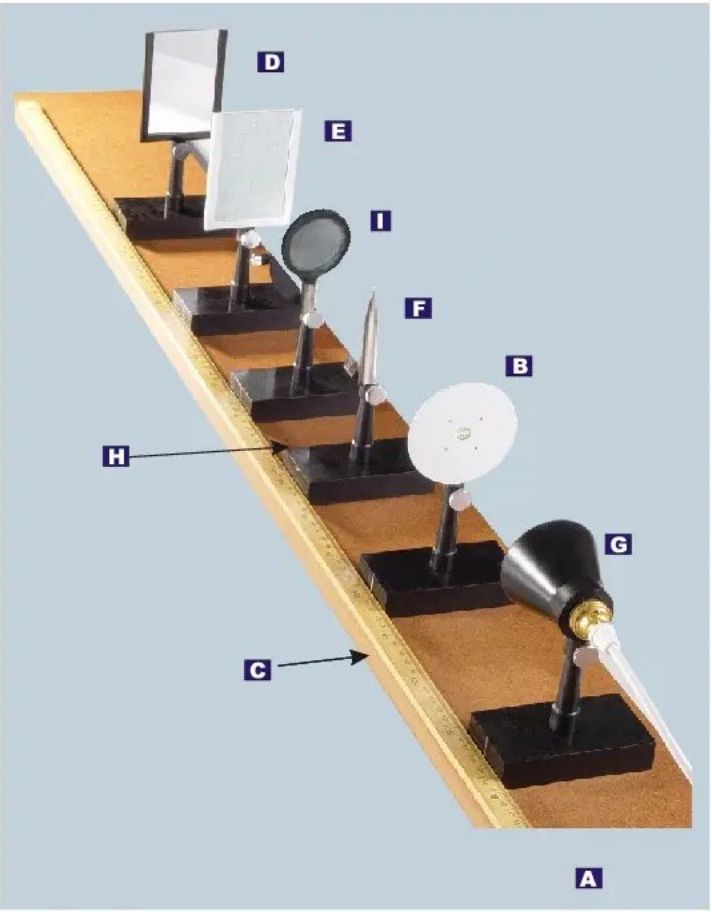
Rod : 10 mm diameter.

LIGHT SOURCE HALOGEN E **SW840**

It is a high intensity halogen light source (12V, 50W). A condenser and a draw adjustment make it possible to obtain an adjustable convergent beam. Proper ventilation through side frame windows. Suitable to use with optical bench SL214-SL215.

Rod : 10mm Diameter
Input : 12V DC through 4mm safety sockets.

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OPTICAL BENCH WOODEN WITH LAMP HOUSE A **SL701**

It is made of smooth (fine polished) wooden base board with a wooden scale fixed on it. All accessories are mounted on a rod and can be accommodated in holders. It is supplied complete with Pygmy Lamp in housing, Stands(6 Nos.), Lens holder clip type), Receiving screen, Object needle, Plane mirror and White metal object screen.

WHITE METAL OBJECT SCREEN B **SW665**
Round shaped Diameter 75 mm with gauze.

WOODEN BASE BOARD C **SW613**
Size: 1.6 meter x 14 cm. Having wide scale of 1500 x 10mm.

PLANE MIRROR D **SL666**
Rear silvered mirror mounted in metal frame.

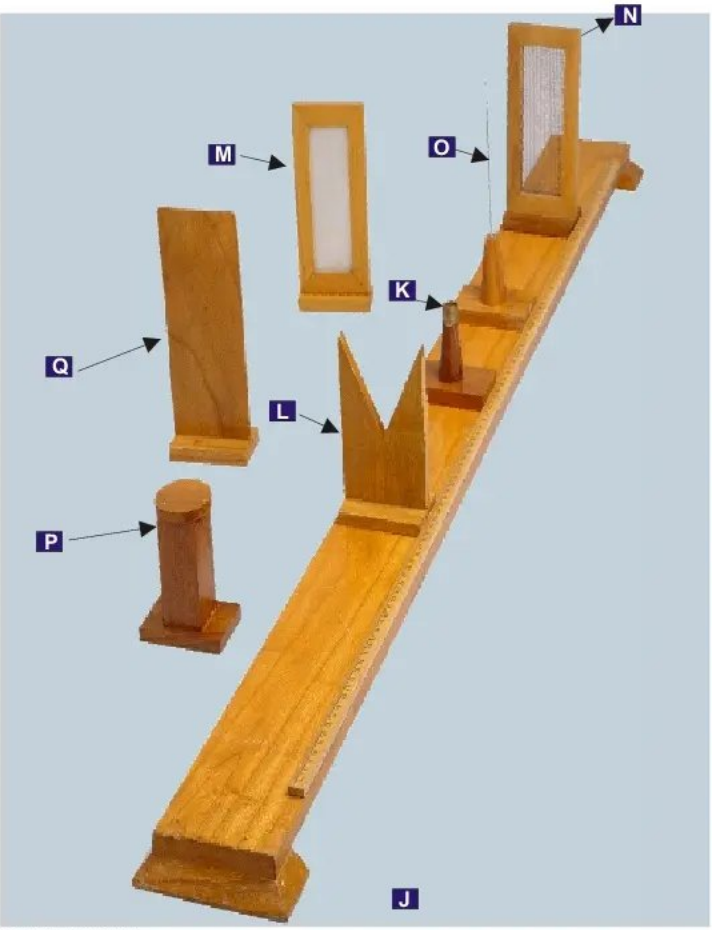
RECEIVING SCREEN E **SL665**
A White painted metallic frame 100 x 75mm with a graph paper.

OBJECT NEEDLE MOUNTED F **SL224**
A steel needle pointed at one end. Mounted on a rod.

PYGMY LAMP G **SL702**
A white BC type bulb housed in conical housing. It is fitted with a special grommet so that the wire is held securely and is properly earthed.
Operating voltage 220VAC

STAND PLASTIC H **SL703**
A plastic base of size 100 x 50mm and a pillar with clamping screw attached on it. An index line at one end has been provided for calculating center of base. It can accommodate any accessory mounted on a 10mm rod

LENS HOLDER SIMPLE I **SW841**
Lens holder with a plastic frame and metallic handle for accommodating lenses of 50mm diameter and clear aperture 45mm. A retaining ring is provided for holding the lenses.



OPTICAL BENCH WOODEN (1 METER) WITH CANDLE HOLDER J **SL200**
Wooden base of one meter length graduated in mm. Supplied with set of standard accessories: 2 wooden lens holders, candle holder, pin hole plate, wire gauze screen , ground glass screen, prism table and needle with index mark.

CANDLE HOLDER K **SL082**
A wooden pillar provided with top ring of diameter 15mm approx. for holding candle.

LENS HOLDER L **SL203**
Made of wood with V-slot to hold lens upto 80mm dia.

GROUND GLASS SCREEN M **SW452**
A translucent ground glass is mounted in a wooden frame. Size: 7. 5 cm X 15cm.

WIRE MESH SCREEN N **SW455**
A metallic wire mesh of Size: 7. 5 cm X 15cm. Enclosed in wooden frame.

NEEDLE O **SW453**
It is mounted on wooden sliding base.

PRISM TABLE WOODEN P **SW450**
A round wooden Disc is mounted on vertical support for holding prism. Disc diameter 4.5 cm.

PIN HOLE SCREEN WOODEN Q **SW451**
2mm Dia hole is provided on vertically mounted wooden frame. Size: 7. 5 cm X 15cm (W x H).

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DIODE LASER KIT SA006/SN611 A

Exp-1 To demonstrate Young's fringes.
Exp-2 To demonstrate diffraction pattern by pinhole, single slit, double slit & grating.
Exp-3 To demonstrate Fresnel's diffraction.
Exp-4 To determine the slit or pinhole width.
Exp-5 Light spreads when passed through a narrow aperture.
Exp-6 To measure wavelength using a millimeter scale as a grating.

Salient features
- Pen type **Diode Laser** operated by two "AAA" cells provided for all experiments.
- All the uprights are mounted on specially designed **U-channel optical bench**.

Diode Laser Kit
The kit has been designed to perform a lot of experiment related to the light experiments to find out the wavelength of the light, width of the narrow slit or any type of pattern.
Note: SN611 is same in all respects as SA006 but supplied with SL744 instead of R5199.

SETOF13 OBJECTS **R5199**
It consists of 13 Objects : Single slit, double slit, multiple slit 3, multiple slit 4, multiple slit 5,single tapered slit, fine grating, 4 holes, circular opaque spot, gray filter, mesh, coarse grating & grid pattern.



Contents:

❑ C0731 Diode Laser 1pc ❑ C7296 Optical Bench 1pc ❑ C1734 Object Screen with cylindrical base 1pc ❑ R5199 Set of 13 objects (supplied with SA006) 1pc ❑ SL744 Diffraction Slides (supplied with SN611) 1pc ❑ C4910 Slit holder 1pc ❑ SN938-10 cm Bi Concave lens in holder 1pc ❑ SN937 - 5cm Bi Concave lens in holder 1pc ❑ SN931 +10cm Bi convex lens in holder 1pc❑ SN934 +20 cm Bi convex lens in holder 1pc ❑ SL223 Prism table 1pc ❑ SP124 Measuring tape (3 m) 1pc ❑ C0496 Glass scale 1pc ❑ SG110 Cylindrical Base 1pc.

DIFFRACTION SLIDES B **SL744**
It consists of set of 18 slides : 6 slides of 1 to 6 slits, 3 gratings to match the slits, diffraction grating (80 & 300 lines per mm), single & double slits tapered, metal gauze 300 mesh, circular apertures 1.0, 0.60, 1.40, 0.30 mm nominal diameter, hologram & 2 polaroids. Each is mounted in slide frame and protected by two glass plates.

Note: ***He-Ne laser kit (SK027/SK038) is also available with us. Please ask for more information.***



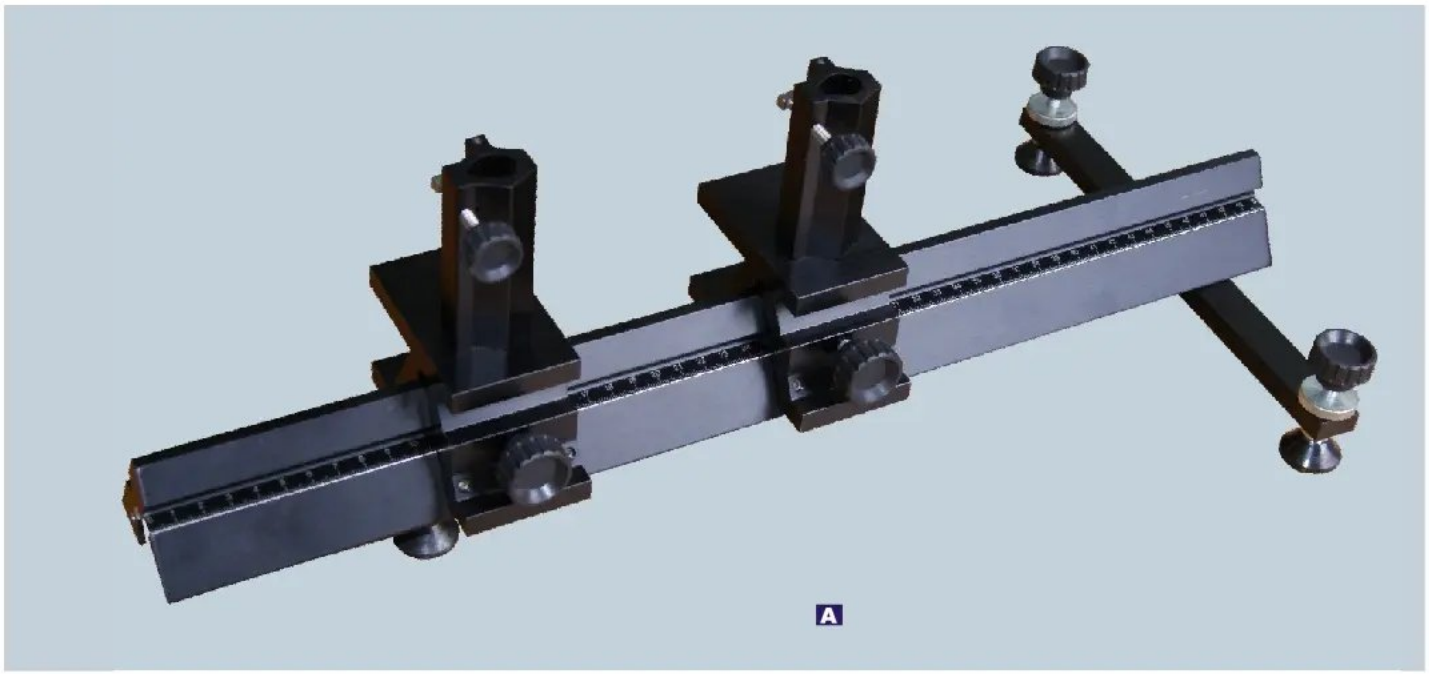
LASER ACCESSORIES SET C **SW477**
Designed for the use with a low power Helium Neon laser, to enable a wide range of experiments to be performed conveniently. Interference by division wave front, by division of amplitude effects (Fraunhofer and Fresnel). The diffraction by aperture and spherical pin holes and opaque objects.
A kit consists of set of 6 lenses Dia. 38mm Focal Length -10cm, -5cm, +5cm, +10cm, +20cm and +100cm. 3 lens holders, 1 slide holder, 1 Pin hole slide with set up of different hole Diameter, 1 slide single slit and double slit. Set of 6 Slides with 1,2,3,4,5 slits and 1 single tapered slit. Set of 3 grating slides. 4 microscopic slides. 1 glass scale. 1 Beam splitter, 1 support stand for glass scale. 1 slide with circular objects. Set of mapping pin and needle.



He-Ne LASER D **R3891**
It is a He-Ne laser with in built power supply. It can be mounted on rod or can be placed on a lab jack(SW655).It is provided with rubber feet with michelson interferometer SK025.

(1)Laser tube	
Wavelength	: 632.8 nm
Working current	: 4mA ~ 6mA
Output power	: > 2mW
Contour dimension	
(Outer diameter x length)	: f 40 mm x 250 mm
(2) Continuous working time	: > 8 hrs.
(3) working Power	
Voltage Rating	: AC 220 V ± 22 V
Frequency Rating	: 50 Hz
Input Power Rating	: <2 W
(4) Need no ground connection	
(5) Contour Dimension(lxbxh)	: 300x62x82 mm
(6) Weight	: 1.5 kg (approx.)

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OPTICS SYSTEM **A**

Comprises triangular optical bench made of Aluminium having anodized black finish. The optical components can be fixed on the riders by means of brackets provided on the riders. Riders have small width. Shafts having dia 8-14 mm.

SJ182 0.5 m
SJ183 1 m
SJ184 2 m



SWIVEL JOINT **B** **SJ186**

Scale having silver/black anodized finish. Least count 1°.



EXTENSION ARM **C** **SJ189**

Having distance between axis as 85 mm. Dia of the shaft 12 mm and height of the column is 29 mm. Long rider base is 148 mm having 4 threads.



OPTICAL RIDER **D**

Available in three different heights(height level above optical bench).

SJ209 : 60 mm
SJ210 : 90 mm
SJ211 : 120 mm



TIPPING RIDER **E** **SJ187**

Pivoting range: 90° to each
Height above optical bench: 90 mm

DISPLACING RIDER **F** **SJ188**

Height above optical bench: 90 mm

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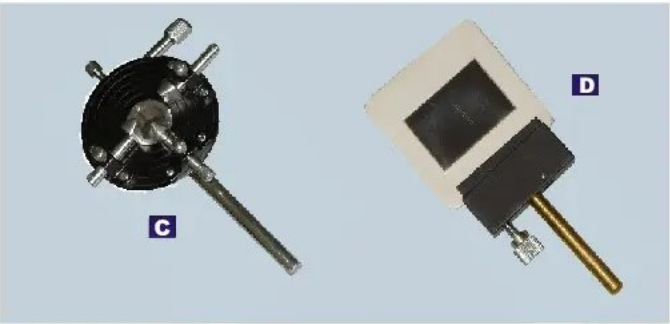
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CROSS WIRE A **SL672**
A circular metal frame painted black incorporating a cross wire. Suitable to use with optical bench SL214-SL215.

Clear Aperture : 10mm
Frame diameter : 75mm
Rod : 10mm diameter

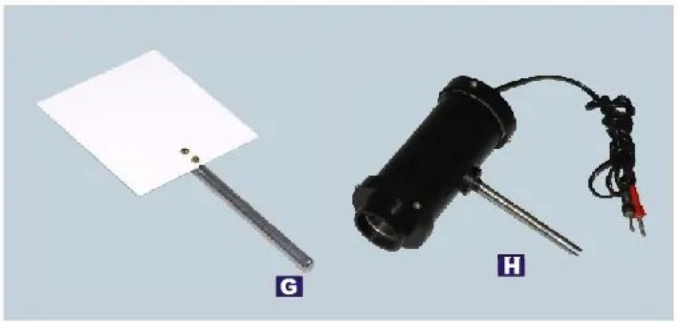
PHOTO RESISTOR LDR IN MOUNT B **SL804**
CdS(Cadmium sulphide) photo resistor is mounted in a black housing Provided with two safety Terminals. Housing has a clear 10 mm aperture and mounted on a 10 mm rod. The resistance is inversely proportional to the intensity of illumination.
Suitable to use with Optical bench SL214-SL215 and
Rod : 10 mm Diameter



UNIVERSAL LENS HOLDER C **SL885**
Suitable for round and square optical components upto 60mm(approx.) diameter or width. The component is held by 3 jaws at 90° to each other. A provision for fine rotation of the component is provided. Suitable to use with SL214-SL215.
Rod : 10 mm Diameter.

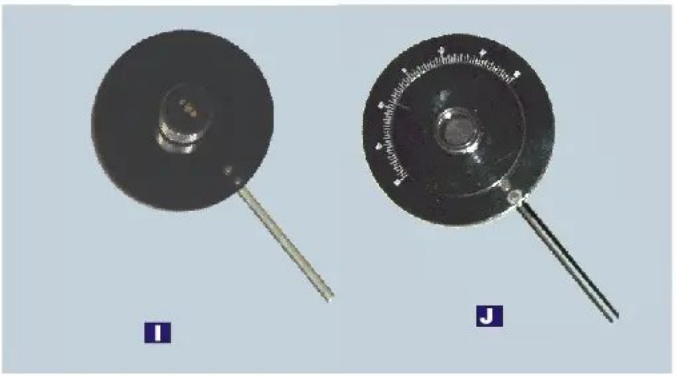
YOUNG'S SLIT D **SLA56**
Suitable for Young's double slit experiment. Slit is mounted on a slit holder with tilt arrangement. Suitable for use with optical bench SL214-SL215.
Rod : 100 x 10 mm (length x diameter)





OBJECT SCREEN G **SL226**
MS frame white painted. Suitable to use with optical bench SL214-SL215.
Screen Size : 150 x 150 mm.(Excluding Rod).
Rod : 10 mm Diameter

LAMP HOUSING H **SL803**
It is suitable for 12V AC/DC lamp with two connectors fitted in a metallic housing. It is fitted with a spherical condenser which can be adjusted. Housing is provided with proper heat ventilation arrangement. Suitable to use with optical bench SL214-SL215.
Rod : 10 mm Diameter



ADJUSTABLE SLIT SELF CENTERING I **SL802**

Both edges of slit move together so that centering is not disturbed. It is mounted in a frame with a rod. Suitable to use with optical bench SL214-SL215
Slit Width : 0-2 mm approx.
Slit Height : 6 mm approx.
Frame Diameter : 12 cm
Rod : 10mm Diameter

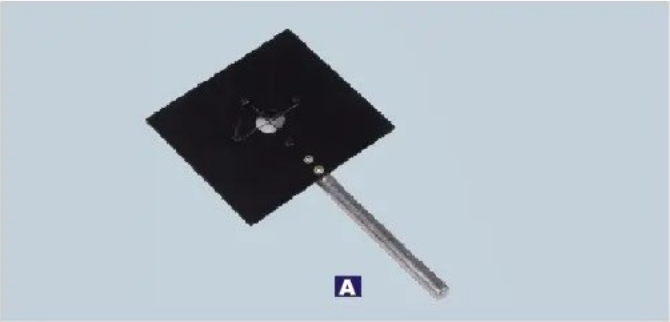
POLARIZER / ANALYZER J **SL801**
It is used to produce linearly polarized light. It is mounted on a holder with rod. The angle can be adjusted. Suitable to use with Optical bench SL214-SL215. Supplied in pair.
Angle : Adjustable from 0°-90°
Aperture : 21mm approx.
Rod : 10 mm Diameter

HOLDER FOR DIFFRACTION OBJECTS E **SL222**
For supporting the diffraction objects or other items of size 50mm square. It consists of a sliding arrangement. Suitable to use with optical bench SL214-SL215 and SL708-SL709. Mounted on a rod Dia. 10 mm.

PLANE MIRROR F **SL229**
Rear silvered mirror mounted in metal frame. Suitable to use with optical bench SL214-SL215, SL210-SL211 and SL708-SL709. Mounted on a rod, dia. 10 mm.

SETOF13 OBJECTS K **R5199**
It consists of 13 Objects : Single slit, double slit, multiple slit 3, multiple slit 4, multiple slit 5,single tapered slit, fine grating, 4 holes, circular opaque spot, gray filter, mesh, coarse grating & grid pattern.

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CROSS WIRE A **SL225**
A metal frame with a circular aperture and a metal cross wire. Suitable to use with Optical bench SL214-SL215, SL708-SL709 and SL210-SL211. Mounted on a rod Dia. 10 mm.



DOUBLE ROD LENS HOLDER B **SL221**
For lenses up to 62 mm diameter. Suitable to use with Optical bench SL210-SL211 and SL708-SL709. Mounted on a rod Dia. 10 mm.

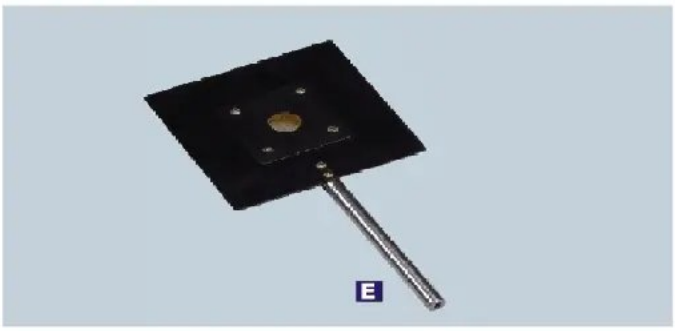


MICROMETER SLIT C **SL439**
For resolving spectral lines.
❑ Pitch 0.5 mm ❑ Least Count 0.005 mm ❑ Range 0 - 6.5 mm
❑ Diameter 38 mm approx.

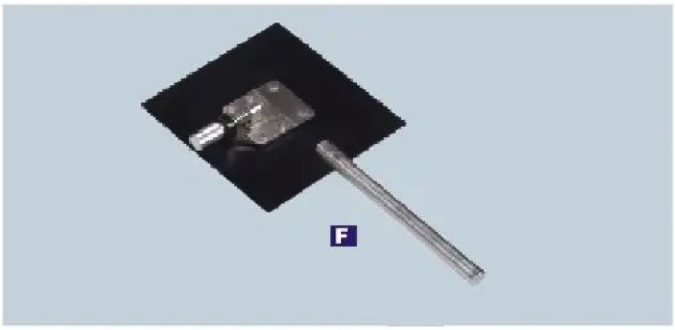


MICROMETER EYEPIECE D **SL233**
A Ramsden eyepiece fitted with cross wires actuated by a micrometer screw, giving a movement of 20mm.

Magnification	: 10X
Pitch of micrometer screw	: 0.5mm
Least count of micrometer screw	: 0.01mm



WIRE GAUGE E **SL307**
Metallic mounted on metal frame. Suitable to use with Optical bench SL214-SL215, SL210-SL211 and SL708-SL709. Mounted on a rod Dia. 10 mm.



ADJUSTABLE SLIT F **SL227**
Fine adjustment of light can be made with a spring loaded knurled knob mounted on a metal frame. Suitable to use with Optical bench SL214-SL215, SL708-SL709 and SL210-SL211. Mounted on a rod Dia. 10 mm.

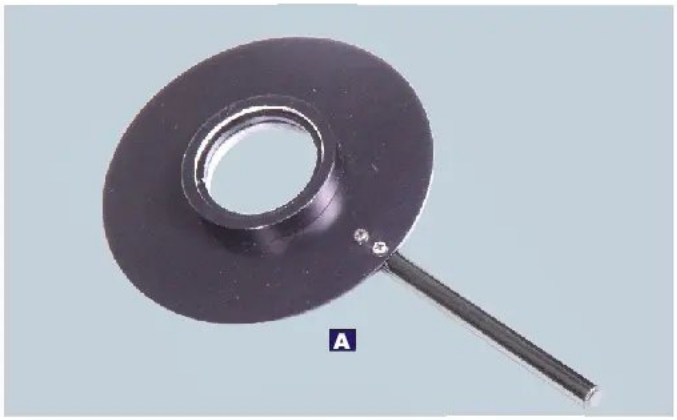


OBJECT NEEDLE MOUNTED G **SL224**
A steel needle pointed at one end. Suitable to use with Optical bench SL214-SL215, SL708-SL709 and SL210-SL211. Mounted on a rod Dia. 10 mm.



CANDLE HOLDER H **SL230**
Cavity Dia. 15mm. Suitable to use with optical Bench SL663 and SL210-SL211. Mounted on a rod Dia. 10 mm.

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LENS IN HOLDER ALUMINIUM **A** **SL752-SL772**

Lens is mounted in a round frame which is suitable for experiment and avoids scattering of light through the edge of lens metallic construction. Suitable to use with optical bench SL214-215.

Diameter of Lens : 50 mm
Frame Diameter : 130 mm
Rod Diameter : 10 mm



LENS HOLDER SIMPLE **B** **SW841**

A plastic moulded holder for accommodating lens of dia. 50mm. A metal ring is provided to hold the lens in the frame.

Rod : 8 mm Diameter
Clear Aperture : 45mm approx.



LENS/ MIRROR IN HOLDER **D**

For use with the optical bench. Lens/ Mirror is housed in a circular metallic frame with standard 10mm fixing rod suitable to use with optical bench SL214-SL215. The lens/ mirror is held in the frame using a metal ring.
Rod: Mild steel plated, 10mm dia
Clear Aperture: 45mm approx.

LENS IN HOLDER ALUMINIUM **A**

Cat No.	Type	Dia(mm)	F. L(mm)
SL752	Double Convex	50	50
SL753	Double Convex	50	60
SL754	Double Convex	50	100
SL755	Double Convex	50	150
SL756	Double Convex	50	200
SL757	Double Convex	50	250
SL758	Double Convex	50	300
SL759	Double Convex	50	400
SL760	Double Convex	50	500
SL761	Double Convex	50	1000
SL762	Double Concave	50	50
SL763	Double Concave	50	60
SL764	Double Concave	50	100
SL765	Double Concave	50	150
SL766	Double Concave	50	200
SL767	Double Concave	50	250
SL768	Double Concave	50	300
SL769	Double Concave	50	400
SL770	Double Concave	50	500
SL771	Double Concave	50	1000
SL772	Double Concave	50	75

LENSES IN HOLDER **C**

50mm dia lenses are factory fitted in the lens holder SW841.

Cat No.	Type	Dia(mm)	F. L(mm)
SL712	Double Convex	50	50
SL713	Double Convex	50	60
SL714	Double Convex	50	100
SL715	Double Convex	50	150
SL716	Double Convex	50	200
SL717	Double Convex	50	250
SL718	Double Convex	50	300
SL719	Double Convex	50	400
SL720	Double Convex	50	500
SL721	Double Convex	50	1000
SL722	Double Concave	50	50
SL723	Double Concave	50	60
SL724	Double Concave	50	100
SL725	Double Concave	50	150
SL726	Double Concave	50	200
SL727	Double Concave	50	250
SL728	Double Concave	50	300
SL729	Double Concave	50	400
SL730	Double Concave	50	500
SL731	Double Concave	50	1000
SL732	Double Concave	50	75

LENS/ MIRROR IN HOLDER **D**

Cat No.	FL(mm)	Dia(mm)	Type
SL237	+300	50	Lens
SL238	+100	50	Lens
SL239	+50	50	Lens
SL240	-200	50	Lens
SL242	200	50	Mirror
SW832	200	50	Mirror

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NEWTON'S RING APPARATUS WITH REFLECTOR A **SL269**

It consists of a black painted frame with a plane glass plate mounted at 45° to reflect the light downwards on a plano-convex lens of large focal length placed on a plane glass plate.

NEWTON'S RING APPARATUS (CIRCULAR) B **SL268**

It consists of a plano-convex lens of large focal length placed on a plane glass plate. The lens and plate are fixed in an aluminium frame and 3 screws are provided for adjustments.



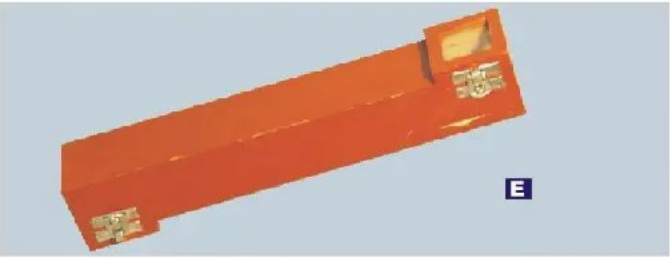
LUX METER C **SL283**

Available in 3 ranges:- 0-2,000 Lux, 2,000-20,000 Lux, 20,000-50,000 Lux.



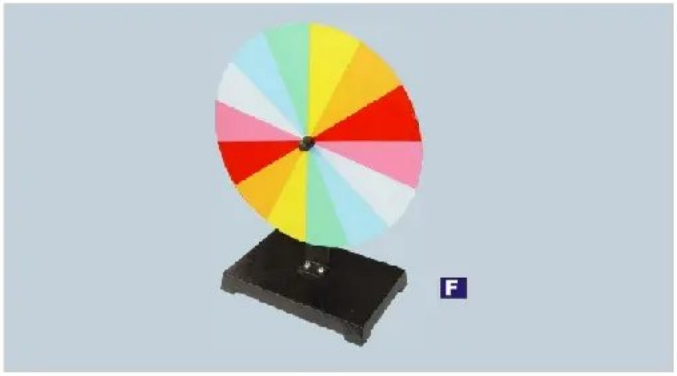
PIN HOLE CAMERA WOODEN D **SL004**

Polished wooden box, 140x75x75mm with pinhole in front and ground glass screen on back.



PERISCOPE WOODEN E **SN740**

It is an optical device used to observe objects from a concealed position. Thus demonstrating about reflection and ray diagram.



NEWTON'S COLOUR DISC F **SV073**

It consists of a disc with spectrum colours. Diameter of disc 20cm. Mounted on stand with turning wheel and handle.



FRESNEL'S BI-PRISM WITH HOLDER G

For the determination of the wavelength of light by the measurement of interference 'Fringes'. The fringes are produced by interference between two beams of light which originate as a single beam from a common source and are ' split' by the bi-prism. The bi-prism 40x30 mm, has an angle of 178 degree at the center line of the face.

SL799 For Size 40 x 30mm
SL234 For Size 50 x 40mm



SCREEN GROUND GLASS H **SL332**

Suitable to use with optical bench SL214-SL215, SL210-SL211 and SL708-SL709. Mounted on a rod Dia. 10 mm.



MIRROR STRIP WITH HOLDER I **SL039**

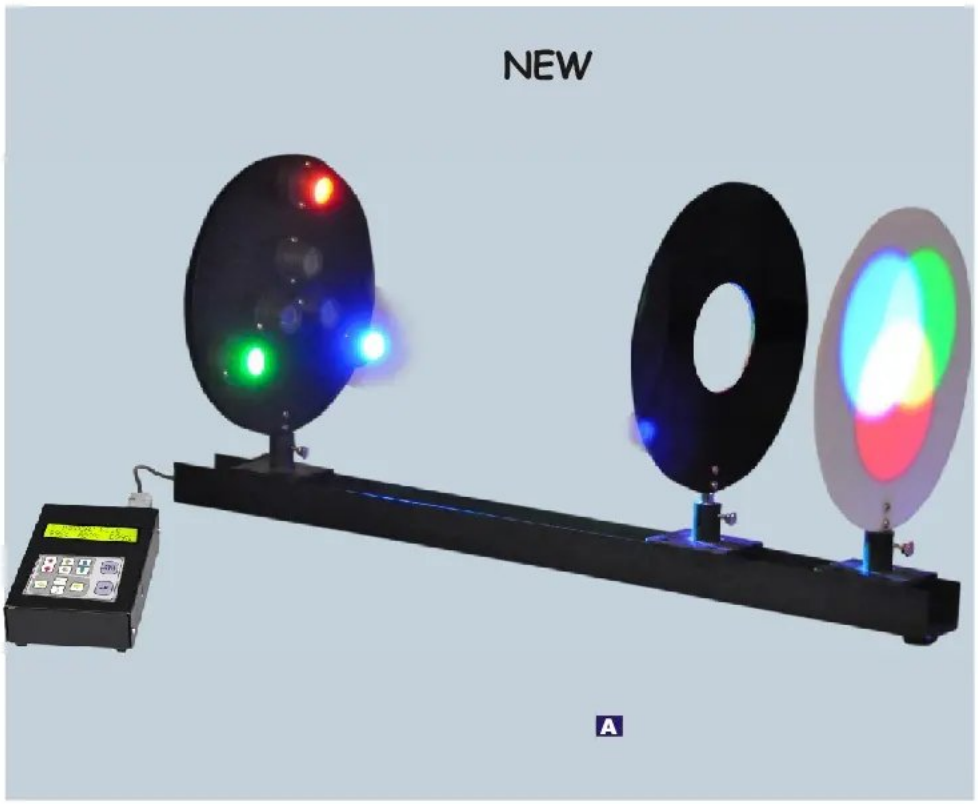
Wooden base with a mirror.

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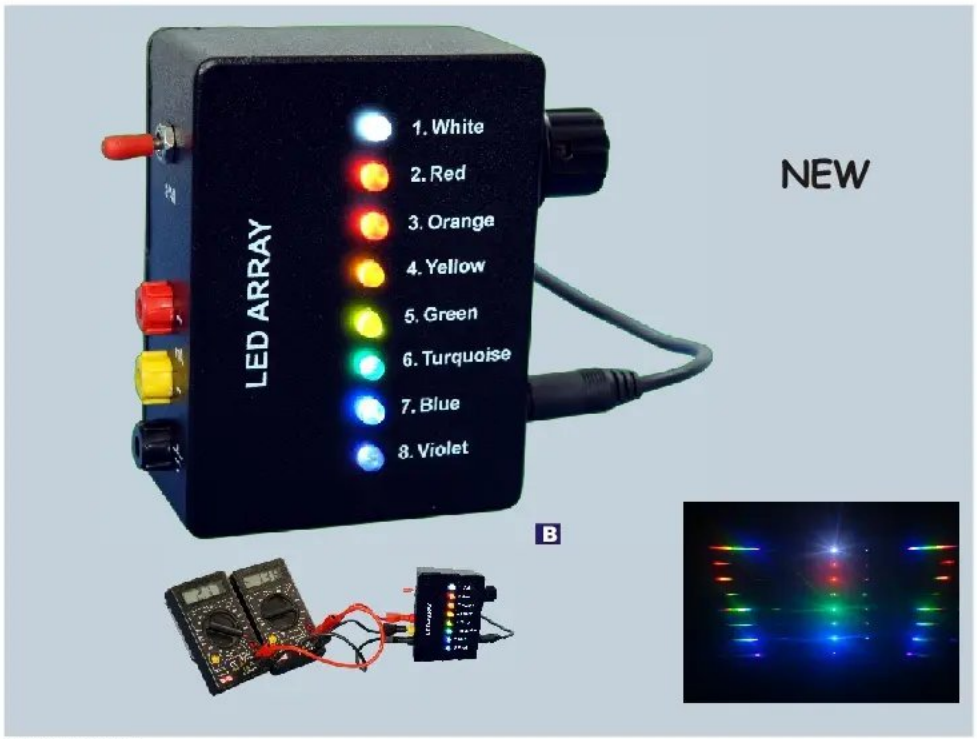


COLOUR MIXER **A** **SV195**

The phenomenon of colour mixing using innovative LED technology. The apparatus consists of six LEDs (three inner LEDs and three outer LEDs). Both three inner LEDs (Red, Green & Blue) and three outer LEDs (Red, Green & Blue) are placed in a circular frame at 120 degree separation having equidistance from the center. The radius of curvature for outer three LEDs lying at the same point from the center of the frame so that mixing of the color are in equal proportion. To intensify the ultra bright LEDs (red, green and blue) a control box is provided. This control box is able to operate LEDs in inner or outer mode, vary the intensity of each LED from 0-100 %. It has also the wide range of color selection or mixing the color in varying ratio. This kit is supplied with a U channel bench, a black aperture screen, a translucent screen and a control box. The demonstration is enhanced by the included circular aperture, creating circles of overlapping colors, and a translucent screen, so the effect is visible from two sides for both additive and subtractive colour mixing.

Salient Features:

- **Investigate colour vision and mixing.**
- **Demonstrate the nature of primary and secondary colour.**
- **Explore additive and subtractive colour mixing.**
- **A great alternative to the traditional ray box and fiters approach.**
- **Ultra bright LEDs prevent the need for full backout.**
- **Create own desire color by varying the intensity proportion.**
- **Explore the complete color wheel.**



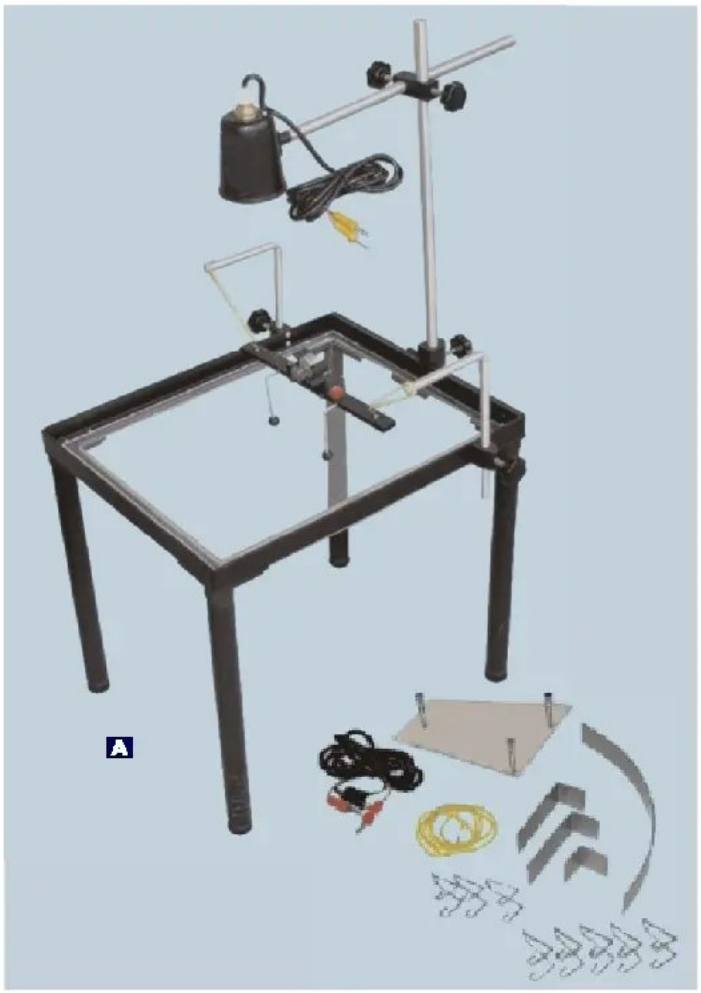
LED ARRAY **B** **SV194**

LED array is seven color LEDs & a white LED, used to demonstrate diffraction at different wavelength. Measure current & voltage across each LED and measure the Planck's constant graphically. LED array has a selector switch for all LED's or individual LED mode. A Rotary switch for selection of LED under investigation. Three 4mm socket provide for voltage and current measurement across each LED. By knowing voltage and current, actual forward voltage of each LED can be measured using LED characteristics curve. A variable power supply additionaly recommended for measurement of LED V-I characteristics. The LED can easily be viewed by whole class. Depending on the diffraction grating used, first, second and third order diffraction pattern can be observed and used for calculation. Supplied without multi-meter and diffraction grating.

EXPERIMENTS

- Calculate the wavelength of any LED.
- Measure voltage and current across each LED.
- Demonstrate diffraction of different wavelengths.
- Determine planck's constant.

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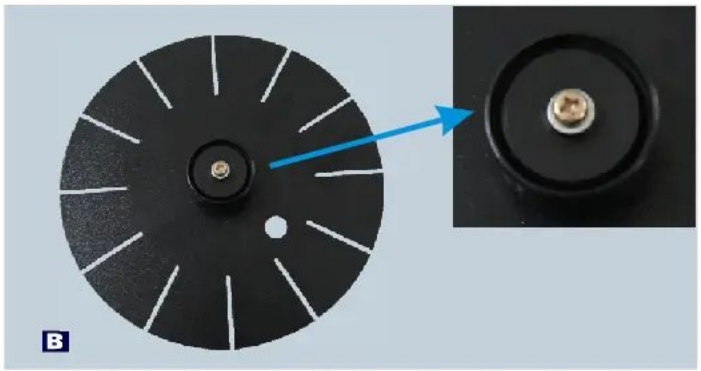
RIPPLE TANK **A** **SV523**

The apparatus is designed to study waves. It consists of a metal frame provided with a transparent acrylic tray and it can be used as standing bench model. This demonstration model can be used with an overhead projector or as an economical model. An illuminant unit is provided for illumination of ripples. Ripples are produced using a small motor fixed on a beam. Supplied with acrylic plates, barriers (4 Nos.) & Dippers. Power supply is not provided.

Salient features:

- A large and clear viewing area.
- A vertical light support.

Motor : 1.5 V - 4.5 V DC
Beam : Plastic 240 mm length



HAND STROBOSCOPE **B** **SH591**

It is made of cardboard disc having dia. 24cm, disc provided with 12 slots and finger hole, pivoted on a ball bearing mount which acts as a handle.



STROBOSCOPE **C** **SP077**

It has a microprocessor based circuit with a digital read out for inspecting & measuring speed of various equipment and for teaching in schools & colleges.

Flash Tube	: Xenon 4W
Flash Energy	: 4 Watts - Second
Display	: LED - 4 Digits
Flash Rate	: 100 to 10,000 flashes/minutes
Range Selection	: Automatic
Resolution	: 1 FPM for less than 10,000 FPM, 10 FPM for more than 10,000 FPM.
Working voltage	: 230V AC, 50 Hz.



POWER SUPPLY FOR RIPPLE TANK **D** **SV119**

It has one fixed AC output & one DC variable output for motor only. Suitable for the motor and the lamp. Provided with ON/OFF switch and motor speed regulator. One fixed AC output 12V, 21W is provided for illumination. Operatable at 220V AC, 50Hz.

Note: *For bulk requirements 110V AC input can be provided.*

Indosaw was estabilshed in 1993.
Its legacy goes back to 1919.

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VIBRATION GENERATOR **A** **SH507**

It provides mechanical vibrations when signal is applied from a signal generator. It can be used with Ripple Tank Digital (superior) or can be used with wave demonstration accessories. Electrical input is made through 4 mm sockets and a shaft provides output. Supplied complete with two spanners.

Salient Features:

- Works well in the whole audio spectrum and beyond.
- Vibrator can be used in clamped or freestanding position.

Coil impedance: 3 ohms

SIGNAL GENERATOR **B**

A low distortion signal generator with four decade ranges selectable by rotary switch. Sine waveform and square waveform selectable by membrane switch with LED indicator. A built-in speaker is provided for audible frequencies and is selectable by membrane switch.

TECHNICAL SPECIFICATION :

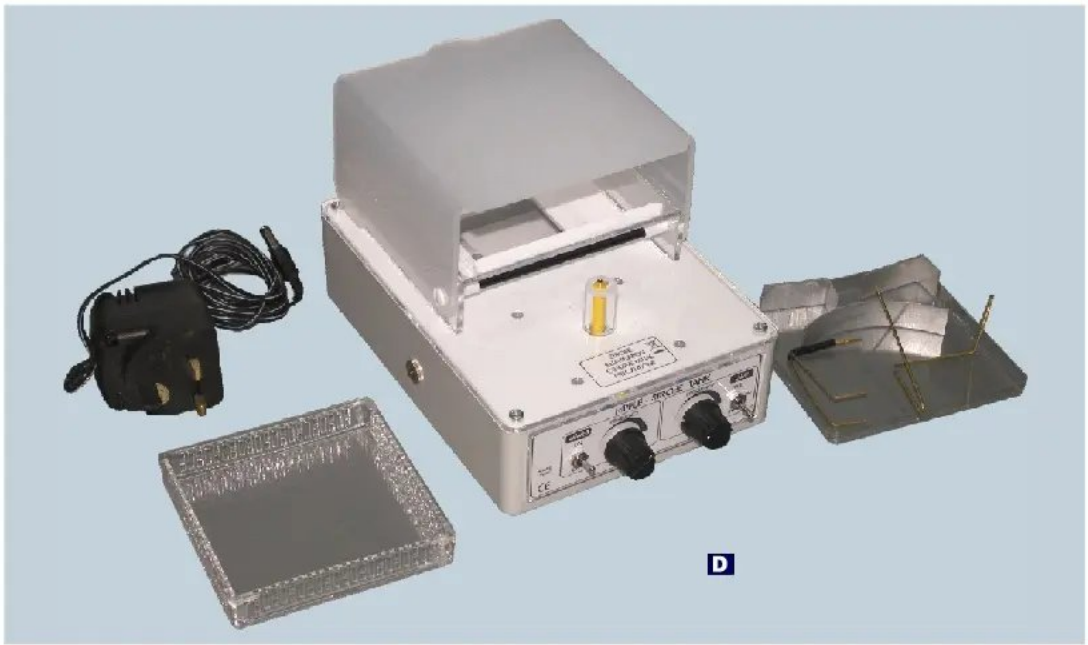
Parameters	Remarks
Range	10Hz to 110 KHz in four decade ranges.
Wave form	Sine & Square.
Output	Continuously variable from 0-7V p-p,5W.
Working Voltage	230V AC, 50Hz **(Cat. No. SW925).**
	110V AC, 50/60Hz **(Cat. No. SN908).**



VIBRATION GENERATOR ACCESSORIES **C** **SH535**

Suitable to use with vibration generator for wave motion demonstration. It consists of a long spring , thick and thin rubber cords, tapered rubber strip,chladni plate, loop of wire, steel strips, acrylic cylinder, plastic spheres, disc, transparent tray, single & double point dipper and bar dipper.





RIPPLE TANK, MINI **D**
SA630

In order to demonstrate wave phenomena of reflection, diffraction, refraction and interference with the help of ripple tank, this unit has been designed. Wave images may be seen on to the translucent screen. There are three settings light ON, 'SYNC' and FREE. Perfectly stationary images are observed by the 'SYNC' which has wave frequency synchronised to light frequency, independent control of the light frequency for slowly moving images are observed by 'FREE'. Supplied complete with dippers, barriers, refraction plate & plug-top power unit.

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RIPPLE TANK WITH VIBRATION GENERATOR HAVING INBUILT SIGNAL GENERATOR **A** **SJ157**

The apparatus designed to be the most effective way for students to study waves. It consists of a nicely manufactured steel structure with three sides covered and one side open. The wave phenomenon is demonstrated on a semi-transparent projection screen by an electronically controlled digital stroboscope and a vibration generator. The digital stroboscope is mounted on the top of the tank through L shaped clamping rod with a provision to move horizontally for clear observation of waves on screen. The vibration generator having inbuilt signal generator is placed on an easily adjustable jack. The apparatus is supplied with jack, vibration generator having inbuilt signal generator and all accessories. Supplied without power supply.

Salient features:

- Wave phenomena viewed on a large translucent screen.
- Vibration generator on adjustable jack.

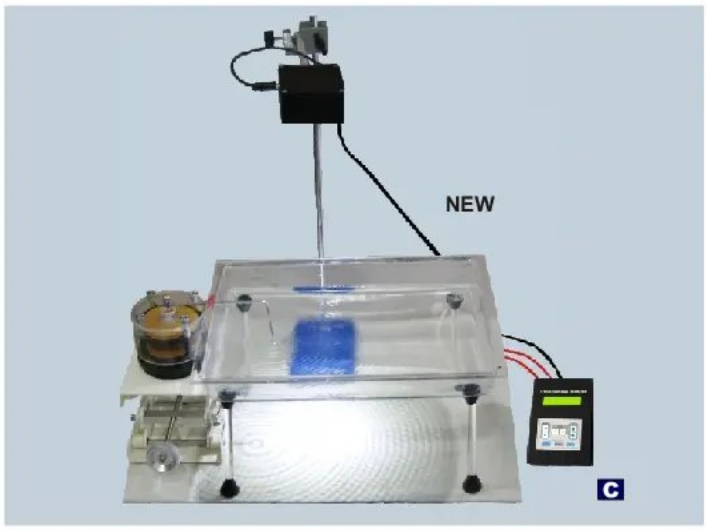
Stroboscope : 12 V DC, 5 Amp, Frequency control,4 digit display

Power supply : SN909/SE080 (Refer to electricity chapter)

RIPPLE TANK WITH ANALOGUE STROBOSCOPE **B** **SJ152**

Same as SJ157. Only the stroboscope is analogue instead of digital.





RIPPLE TANK **C** **SJ160**

This unique Water Ripple Tank apparatus provides a demonstration of the general properties of waves, wave propagation phenomena and interactions/interferences.

Salient features:

- **Integrated strobe cum ripple generator.**
- **Digitally controlled micro controller based accurate frequency and strobe duty cycle.**
- **Synchronous and nonsynchronous operation between strobe and vibration generator.**
- **Two line LCD display and membrane keypad**
- **Accurate small frequency difference (1 Hz) can be created so waves appear to move slower.**
- **The frequency range (1 Hz to 250 Hz) includes those important low frequencies that make refraction more prominent.**
- **Dual vibration output with 180 degrees phase difference.**
- **High power white LED light source which remains cool during use.**

Contents:

❑ Micro controller based strobe cum signal generator with power adapter. ❑ High power LED source❑ Ripple tank tray with detachable four legs ❑ Lab jack ❑ Vibration generator ❑ Base support for LED source ❑ Single and double point dipper ❑ Plane Wave bar dipper ❑ Curved reflector ❑ Diffraction barriers (2 long, 1 short)

STROBE CUM SIGNAL GENERATOR **SJ158**

This is a unique micro controller based versatile product suitable for use with ripple tank and wave demonstration accessories for accurate signal and strobe generation. The product has one strobe output and two signal generator outputs in built in the unit. The frequency of both the signal generator outputs can be digitally set at different values even with 1 Hz difference. The strobe frequency can be synchronized with any one of the signal generator outputs as well as from an external signal generator source. Additionally one of the signal generator can provide output at 180 degrees phase difference. It can be used with a wide range of accessories including ripple tank, long spring, rubber cords, steel strips etc. to comprehensively demonstrate wave phenomenon.

TECHNICAL SPECIFICATION

Frequency Range	: 0-250Hz
Frequency Step Up-Down	: 1Hz
Duty Cycle Range	: 5% to 50%
Duty Cycle Step Up-Down	: 5%

LED SOURCE **SJ159**

It is high power LED suitable for use with strobe cum signal generator.

STROBE CUM SIGNAL GENERATOR WITH LED SOURCE **SJ167**

It is supplied with strobe cum signal generator SJ158 and LED source SJ159.

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LOUDSPEAKER 5 W A **SH110**
Impedance 8 Ω in a plastic case with 4mm safety sockets.



WAVE FORM HELIX SLINKY C **SP254**
It is used for illustrating wave motion. A flat section anodized steel wire is wound in 75mm dia helix coil. Closed length 150mm and fully extended to approx. 3m.

SLINKY IN WOODEN STAND D **SN795**
A slinky spring for wave demonstration. Wooden stand for storage of spring minimizes changes of tangling and ensures easy retrieval also.
Dimensions: Base 150 x 150mm approx.
Height: 355mm approx.

SNAKY SPRING E **SN786**
For demonstrating transverse waves, wave propagation, wave reflection, standard waves & nodal points. Plated steel dia. 20mm and length 2 meters.





FORCED OSCILLATORS AND RESONANCE B **SP761**
It is used for studying static and dynamic oscillations. A plate is provided for applying weights with four weights which are included. Graduation is provided to note the spring elongations. A glass cylinder filled with fluid (Oil or Water) is used for studying damping. Friction ratio can be varied with the help of changing discs. The system has a provision for providing almost sinusoidal excitation. Excitation frequency is displayed.

WAVE DEMONSTRATION APPARATUS F
It demonstrates longitudinal and transverse motions, consisting of a number of eccentric discs supporting a series of metal rods. On revolving the handle, transverse waves are obtained with bent rods running in a metal guide.
SP251 18 nos. Aluminium pulleys
Sp252 24 nos. Aluminium pulleys

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BELL JAR APPARATUS A **SV136**
Supplied bell jar with bell SP758 & pump plate SH506.

BELL JAR WITH BELL B **SP758**
A classic demonstration of the fact that sound requires a medium to travel. It consists of an electric bell mounted in an acrylic jar. The jar is open at lower end and has a hole at the top, which accepts a rubber stopper with two holes. The stopper is fitted with two nickel plated brass rods, which act as terminals and also supports the bell within the jar. Supplied complete with rubber stopper, terminals and bell but supplied without pump plate.

Salient Feature:
- **Flat bottom, superior quality bell**

Jar: Clear plastic, 175mm (ID)
Bell: 5-8V AC/DC

ELECTRIC BELL FOR BELL JAR EXPERIMENT C **R4505**
Superior quality bell to withstand continuous operation, with crocodile clip suitable to use in bell jar experiment.
Operating voltage: 5-8V AC/DC



PUMP PLATE FOR BELL EXPERIMENT D **SH506**
A nicely painted metallic plate mounted on a tripod base. It has a stopcock for closing or opening. It can be used with bell jar. Bell jar is placed on the pump plate by applying some grease at the bottom of the Jar. Vacuum is created inside the Jar by connecting a vacuum pump.

Plate: Aluminium, 210mm dia
Tripod: Made of cast iron



MAGDEBURG HEMISPHERES PLASTIC E **SN732**
It consists of two hemispheres designed to fit together with an O ring seal. When fully evacuated using a vacuum pump, it requires a large force to separate them.

- **Salient Features:**
- Small in size and easy to demonstrate in a class room as
- compared to others which are too bulky.
- Fitted with an O-ring Seal thus ensuring achievement of an acceptable vacuum.

Hemisphere : Plastic, 97.5mm (ID)



MAGDEBURG'S HEMISPHERES ALUMINIUM F **SN178**

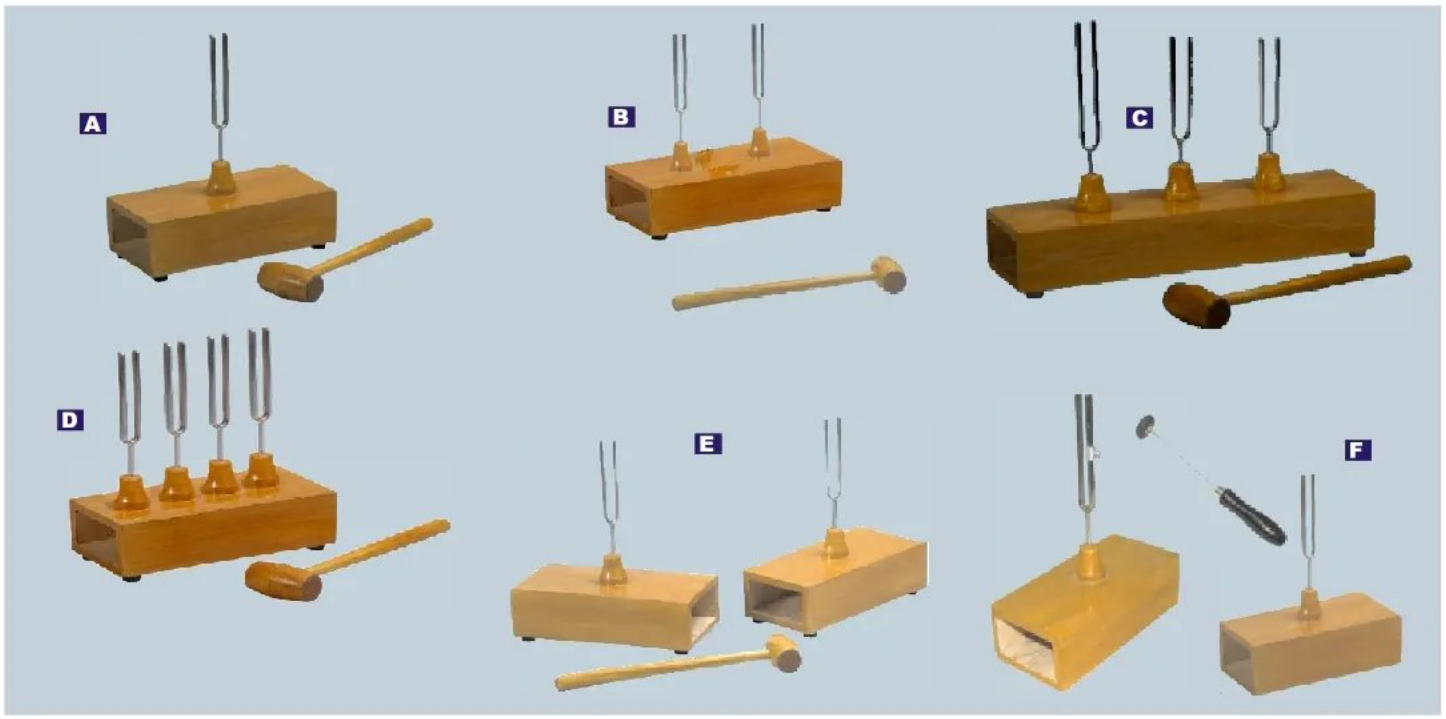
Same as SN732 but Hemisphere made of Aluminium, 79mm (ID).



VACUUM PLATE G **SN317**
A unit for studying the vacuum, composed of a vacuum plate, which can be connected to the vacuum pump. Round plate, covered with a rubber disk of same diameter allowing a high impermeability, two taps, and two sealed accesses for power supply. Incorporated with two safety plug leads for electrical connection.
Plate: 250mm diameter.

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TUNING FORK ON RESONANCE BOX

SP219: One Tuning Fork 256Hz, with wooden hammer **A**
SP240: Two Tuning Forks 256, 440Hz, with wooden hammer **B**
SP241: Three Tuning Forks 256, 440, 320Hz, with wooden hammer **C**
SP242: Four Tuning Forks 256, 440, 320, 384Hz, with wooden hammer **D**
SP243: Two tuning forks 256 Hz on individual resonance box. Supplied with one adjustable mass for varying frequency, with wooden hammer **E**

PAIR OF TUNNING FORK **F** **SW533**

Two tunning forks on individual resonance boxes for demonstrating the production of beat frequencies. It consists of two nickel plated tuning forks frequency 256Hz mounted on individual boxes. One tuning fork is provided with adjustable mass for varying frequency from normal frequency 256Hz. When both forks are set into vibration and brought close to each other from open end of boxes, an audible beat is produced. The rate of beat depends upon the frequency between forks.



TUNING FORK SET OF 8 ALLOY STEEL

Set of eight alloy steel tuning forks with frequencies 256, 288, 320, 341.3, 384, 426.6, 480 & 512 Hz in box.

SP790: Supplied in a wooden box with wooden hammer. **G**
SP218: Supplied in velvet box without hammer. **H**
SF857: Supplied in thermocoal box without hammer. **I**
SF856: Supplied in plastic box without hammer. **J**



SET OF 8 TUNING FORK ALUMINIUM **K** **SW850**

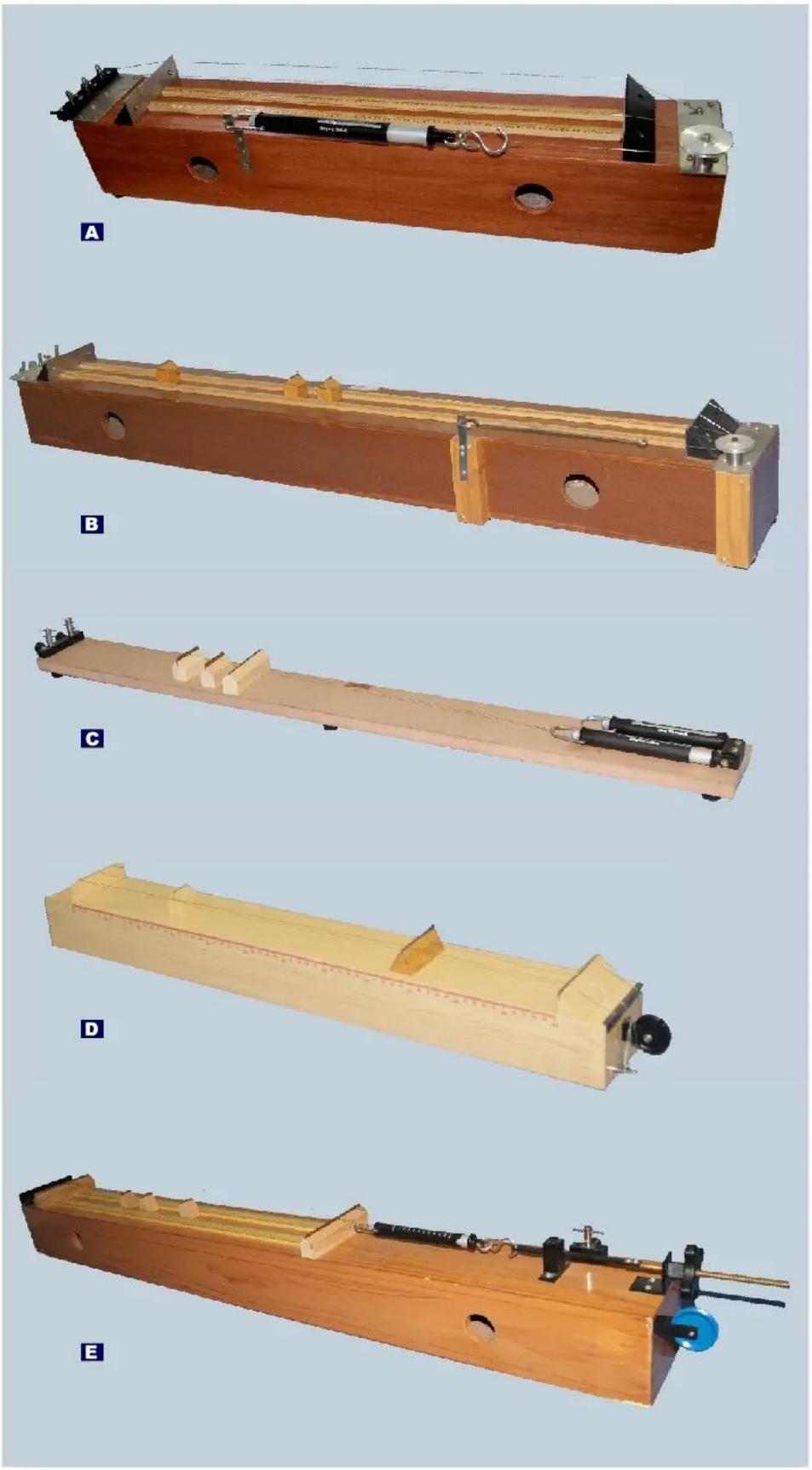
Made of Aluminium, plain shank with prong. Frequencies 256, 288, 320, 341.3, 384, 426.6, 480 & 512 Hz.

TUNING FORK ALLOY STEEL **L**

Cat. No.	Frequency (Hz)	Type (Alloy Steel)
SP220	256	Plain Shank
SP221	288	Plain Shank
SP222	320	Plain Shank
SP223	341.3	Plain Shank
SP224	384	Plain Shank
SP225	426.6	Plain Shank
SP226	440	Plain Shank
SP227	480	Plain Shank
SP228	512	Plain Shank
SP230	256	Threaded Shank
SP231	288	Threaded Shank
SP232	320	Threaded Shank
SP233	341.3	Threaded Shank
SP234	384	Threaded Shank
SP235	426.6	Threaded Shank
SP236	440	Threaded Shank
SP237	480	Threaded Shank
SP238	512	Threaded Shank

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SONOMETER WOODEN
It is a device developed in order to study vibrating strings. Investigation on the dependancy of the pitch on length, tension and thickness of a vibrating string can be done.



Cat No. A	SH250
Pattern	3 wires
Scale	2 no.
Scale length	50cm each
Spring balances	1no.
Capacity	100N
Bridges	2 fixed, 3 moveable
Pulley	one
Size(LxBxH)cm	67.5x10x10.5 approx

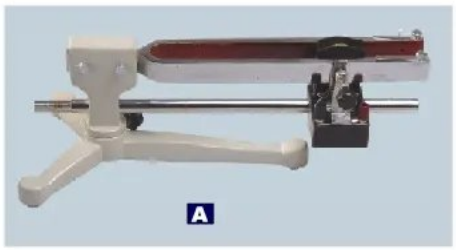
Cat No. B	SP606
Pattern	3 wires
Scale	2 no.
Scale length	100cm
Bridges	2 fixed, 3 moveable
Pulley	one
Size(LxBxH)cm	114.5x12x11 approx

Cat No. C	SP607
Pattern	2 wires
Spring balances	2 no.
Capacity	50N
Bridges	3 moveable
Size(LxBxH)cm	99x9x1.8 approx

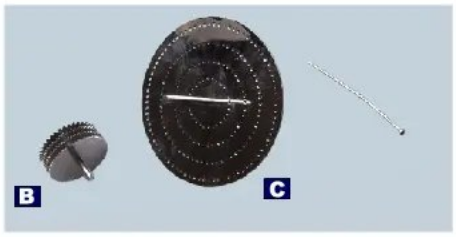
Cat No. D	SP800
Pattern	3 wires
Scale	1 printed scale
Scale length	60cm
Bridges	2 fixed, 3 moveable
Pulley	one
Size(LxBxH)cm	69.5x9x6.5 approx

Cat No. E	SJ171
Pattern	3 wires
Scale	2 no.
Scale length	72.5cm each
Spring balances	1 no.
Capacity	100N
Bridges	2 fixed, 3 moveable
Pulley	one
Size(LxBxH)cm	128.5x13x11 approx

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TUNING FORK, ELECTRICAL **A** **SP328**
A heavy steel fork of about 60 vibrations per second is mounted on a heavy cast iron base. The electromagnet is adjustable so that the amplitude of vibration may be varied between wide limits. Complete with mirror for Lissajou's figures experiments, working voltage is 6Volts DC .



SAVART'S TOOTHED WHEEL **B** **SP245**
It consists of a set of 4 toothed wheels 7.5cm dia, mounted on a spindle and spaced 6mm apart. The ratio of teeth is 4:5:6:8. It is used with Whirling Table.

SEEBECK'S SIREN DISC **C** **SP246**
It consists of a disc having four rows of holes arranged in a circle, all equally distant from one-another and a blow pipe to blow air on the holes to get a clear musical note. It is fitted with a spindle to attach it with the whirling table.



RESONANCE APPARATUS SIMPLE **F**
It consists of two sliding tubes sliding in each other for measuring the resonant length of an air column set up by a vibrating tuning fork. The length of the air column can be varied from 30 to 53cm approx. The tubes are mounted on a wooden base 150 x 150mm.
SP215 Mild Steel
SP216 Brass
SP217 Aluminium

WHIRLING TABLE **G** **SP247**
It can be used in vertical or horizontal position height 41cm. It is fitted with hand wheel, belt driven pulley and adaptor for mounting Newton's Colour Disc, Watt's Governor, Savart's Toothed Wheel, Seebeck's Siren Disc which need to be rotated.

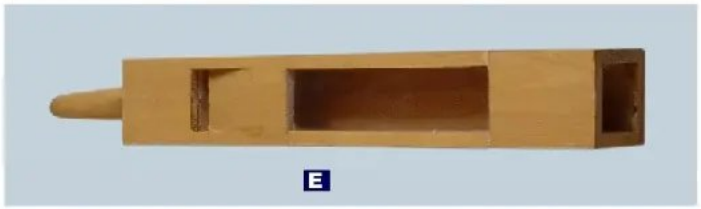


WATT'S GOVERNOR **H** **SW538**
Based on principle of a centrifugal machine. It is made of 'V' shape metallic rod with counter weight at its both open ends. A unit is loaded with spring through its axes of rotation. The longest center rod is clamped on centrifugal machine during demonstration. Suitable for SP245, SP246 and SP247.

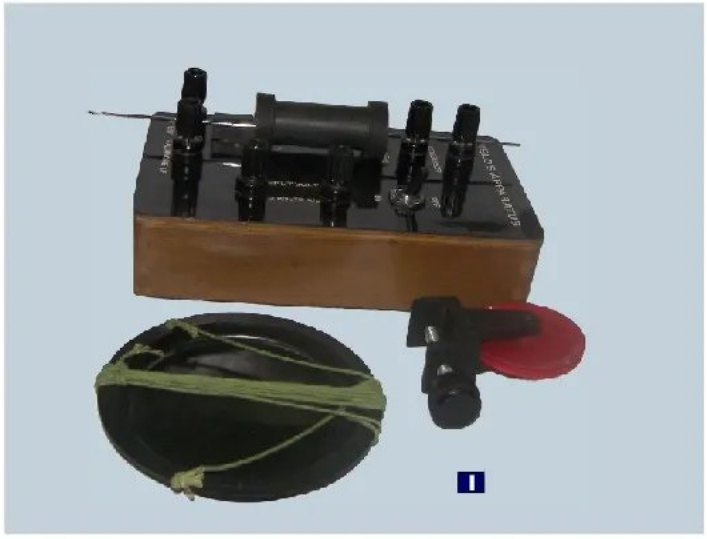




KUNDT'S APPARATUS (METAL ROD) **D** **SP244**
For determination of the velocity of sound in air using lycopodium powder in glass tube, 100 x 3.2cm approx, length x internal dia. One each long and short metallic rod with cork pistons. This assembly is mounted on a wooden base board. Apparatus supplied without lycopodium powder.



ORGAN PIPE WITH GLASS FRONT **E** **SP785**
Made of wood and fitted with a glass front. Supplied with scale pan for showing nodes and anti nodes. Overall length 50cm approx.



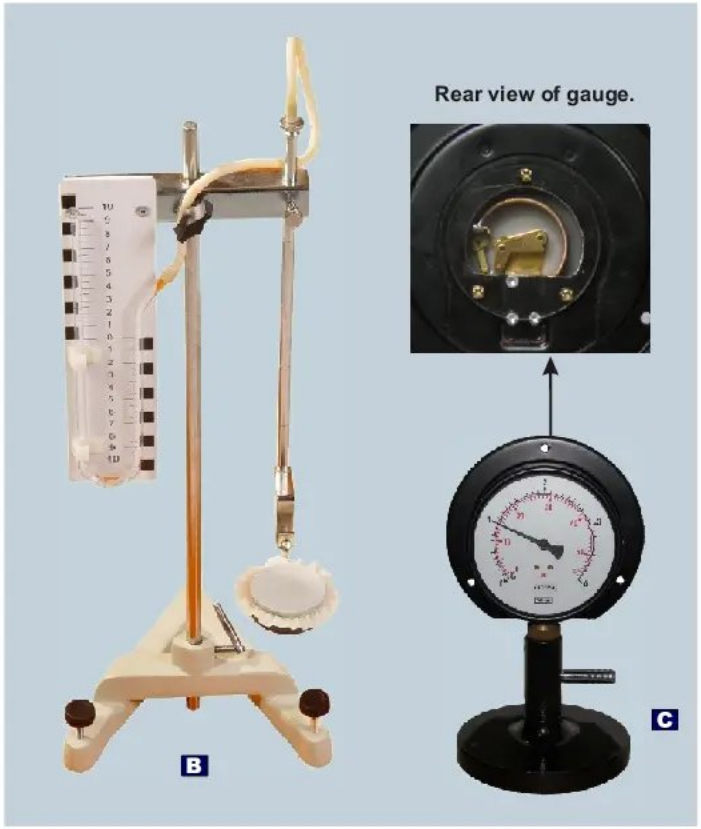
MELDE'S APPARATUS **I** **SP801**
Designed to show the effect of vibrations in a stretched cord and investigate the relationship between frequency, tension and density. In addition the provision of electrical contacts, opened and closed by the vibrating armature, allow the apparatus to be used as high speed changeover switch in. Comprises a thin steel rod armature, mounted in a clamp formed by a pair of 4 mm socket terminals, so that its free length may be adjusted as design. An AC energising coil surrounds the armature and a permanent magnet provides the magnetic polarisation. The free end of the armature equipped with a small boss and clamping screw for attachment of the cord and also serve as the moving contact when the apparatus is operating as a change over switch. Complete apparatus is fitted on a wooden base.

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A

MANOMETER (U-tube) A **SP802**
It consists of a 'U tube assembled on a plastic with scale printed on it and a metal rod.
Rod Mild steel plated, 10mm dia.



MANOSCOPE B **SP757**
It consists of a diaphragm on which bottom of vessels of different shapes can rest. An indicator is provided on a printed plastic scale. Pressure on the diaphragm is transmitted by the air enclosed behind. It is supplied without stand base, rod and glass containers.

BOURDON GAUGE C **SH517**
Used for the measurement of actual gaseous pressure. Circular gauge graduated in pascals and housed in a metallic case is fitted on a stand having riffled tube. Range: 0-4 x 10^5 Pa.



D

BOYLE'S LAW APPARATUS D **SH509**
For demonstrating the Boyle's law. The apparatus consists of a wide bore strong glass tube mounted in vertical position in front of scale graduated 0-65 cm^3. A bourdon gauge is provided for measurement of pressure. The gauge is fitted with a pressure chamber which contains coloured oil (supplied in separate container). With the increase of pressure in the oil chamber, oil moves into the glass tube. Volume and actual pressure of the contained air can be read directly. The tube is covered with a rigid safety screen. The tube, bourdon gauge and safety screen are fixed on a base.



E

BOYLE'S LAW APPARATUS E **SH302**
A horizontally mounted acrylic tube having a graduated scale (0-300cm^3) along one side. A gas tap closes the tube. Pressure gauge is present next to gas tap. By changing the position of rubber stopper, the effective length of the tube can be selected. The scale measures volume and pressure by means of pressure gauze. Boyle's law is investigated by changing position of the stopper.

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HYDRAULIC PRESS **A** **SH272**
It has two graduated syringes situated on a metal frame, having capacities of 100 cm^3 and 20cm^3 respectively with ground pistons. Both the syringes are connected through a 3 position tap. These syringes may be exposed to atmosphere through this tap, isolated or interconnected as desired. Both the pistons are provided with platforms for loading. This item is used for demonstrating how fluid pressure is transmitted and mechanical advantage can be achieved.



CHARLE'S LAW APPARATUS **B** **SP170**
Glass U-Tube with one plain limb and one graduated limb. Limb graduated 25-35ml x 0.2ml terminating in a bulb with third limb joined at right angles to the plane of the other two. A rubber tube with 2 mohr's clips is attached to the short length of glass tube. The long length glass with wide bore has a rubber cork with a glass tube inside and a stirrer. Supplied with a beaker capacity 1 liter, made of borosilicate glass.



DISPLACEMENT VESSEL LARGE **C** **SH532**
It is used for finding the volume of solid by displacement of water or other liquids. Made up of iron/G.I sheet with handle. Size 225 x 125 mm approx.



SPOUTING CYLINDER (THREE HOLES)
SH518 **D**
It is used to demonstrate that pressure increases with the depth. It consists of a cylinder with three 4mm dia tube in the same side from top to bottom.
Dimensions : 40 x 5 cm approx. (Length x Dia.)

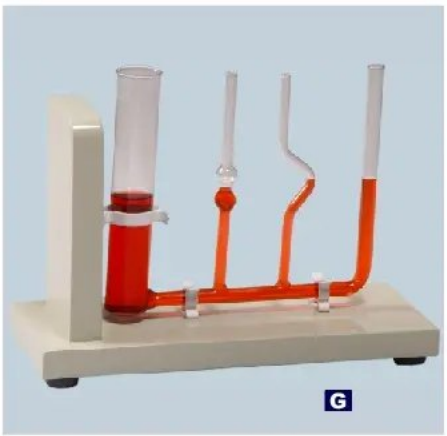


HYDROMETER **E**
It is used for measuring the density of liquids. Made of glass.

SP370	Range	700 - 2000
SP371	Range	700 - 1000
SP372	Range	1000 - 1500
SF862	Range	1000 - 2000



SUCTION PUMP MODEL ON METAL BASE **F** **SN794**
In glass for a clear view of valves, mounted on a metal base with rubber feet.



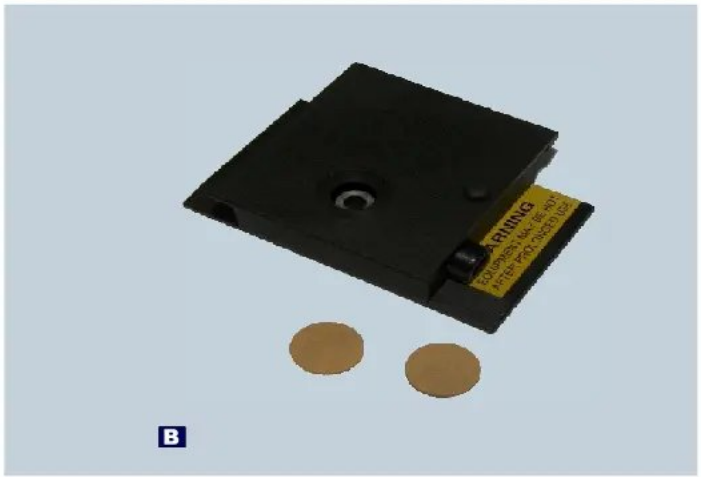
LIQUID LEVEL APPARATUS **G** **SP613**
It is used to demonstrate that the level of liquid is same irrespective of size or shape of vessel. A common horizontal tube is connected with 4 nos. of vertical tubes (different in shape & size). The unit is mounted on a wooden base 230 x 100 x 22 mm, total height 160mm.

Available on request:
Lift pump, Force pump & Bramah's hydrostatic press on wooden stand. For more information, please contact us.

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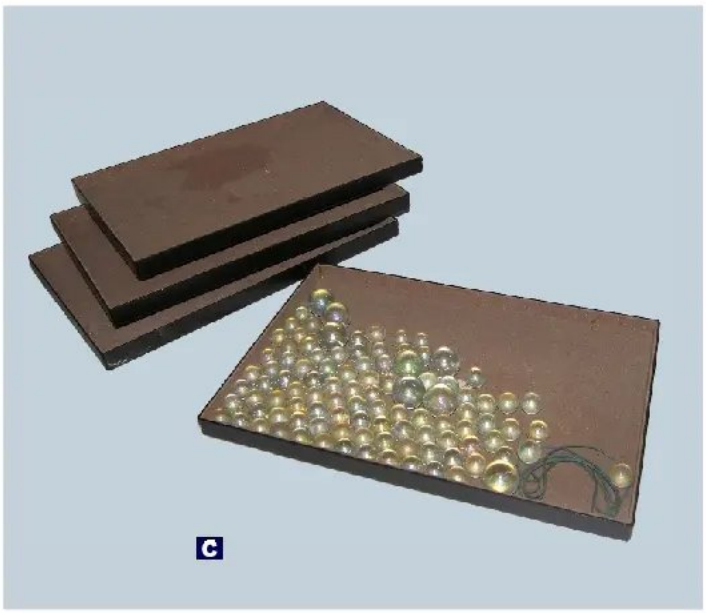


KINETIC THEORY MODEL **A** **SH510**
In order to find out various aspects of the kinetic theory of gases qualitatively, this kit can be used. It consists of a metal box and a perspex tube. A piston and a metal cap is provided in the tube. A low voltage DC motor drives the piston. Supplied with small spheres, two numbers of 4mm sockets.



SMOKE CELL **B** **SH201**
For the observation of Brownian Motion in smoke particles. It consists of a plastic box with lid. This box contains a smoke cell with two cover slips, cylindrical condensing lens and a 12V 3W festoon bulb. Connections via 4mm sockets. Power supply not included in the scope of supply.
Dimensions: 100 x 70 x 29mm approx (L x W x H).
Optional items: Power supply SE080/SN909, Microscope, Wash bottle.

Available on request:
Archimedies Principle with hydrostatic balance in different design. Please contact us for more information.



KINETIC THEORY KIT 2-D **C** **SH037**
There are four nos. of heavy metal trays having cork-lined surface and vertical sides. Two types of marbles are provided for demonstration of molecular motion in a liquid or gas. Crystal structure of solid may also be shown with the help of marbles. Supplied with 100 small colored marbles dia.17mm approx and 8 large marbles dia. 25mm approx..



ARCHIMEDIES PRINCIPLE **D** **SJ160**
It is used to observe the buoyancy force acting on a cylinder immersed in a liquid. Experimental comparison of the buoyancy force and the weight of displaced liquid can also be done. Supplied complete with lever with holes, one bosshead with stand, graduated glass cylinder, glass beaker and weight box.

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Fax:+91-171-2699102, 2699222, E-mail:eenquiry@indosaw.com (Foreign Customer), deducation@indosaw.com (Indian Customer)



A KIT FOR STUDYING MECHANICS EXPERIMENTS **A** **SH305**

This kit is designed to study basic principle of mechanics. The following experiments can be performed using this apparatus.

EXP-1 Hooke's Law Apparatus
EXP-2 Law of Parallelogram of Forces
EXP-3 Confirmation of Archimedes' Principle
EXP-4 Equilibrium Apparatus
EXP-5 Friction Experiments

CONTENTS :-

1. Base for carrying the experiment-2pcs.
2. Metal rod 25cm -1pc, 35cm-2pcs, 40cm rod with three holes -1pc and 50cm-2pcs.
3. Balance beam-1pc,pointer-1pcs, indicator scale-1pc, box of masses (100gm to 50mg) - 1set.
4. Scale pans-2pcs.
5. Aluminium pail-1pc., Aluminium solid cylinder -1pc.
6. Plastic beaker 250ml -1pc, Measuring cylinder plastic 100ml -1pc.
7. Inclined plane with pulley -1pc., protractor- 1pc. and plumb line -1pc.
8. Friction block (wood & rubber) - 1pc., cart-1pc.
9. Masses : individual with hook 10g x5pcs., 25gx8pcs. & 50gx 4pcs.
10. Masses : 10g hanger + 10g x5pcs. = 60gm- 1 set.
11. Hooks law vertical cm scale -1pc. & pointer with clips -2pcs.
12. Spring balance 1.5N & 3N - 1pc. each.
13. Springs 1N with attached pointer -1pc.
14. Springs 2.5N with attached pointer- 1pc.
15. Circular dial for triangle of forces - 1pc.
16. Tape measure & digital stopwatch -1pc. each.
17. Cord 8m - 1pc. & S-hooks- 2pcs. For general use in the kit.
18. Bosshead plastic -4pcs.
19. Ring -1pc.
20. Manual-1pc.



OPTIONAL:

MOTORISED CAR **C8031**
It is 3V battery operated car with on/off switch. It can be used with above mechanics experiments kit SH305.



CONFIRMATION OF ARCHIMEDES' PRINCIPLE



HOOKE'S LAW APPARATUS

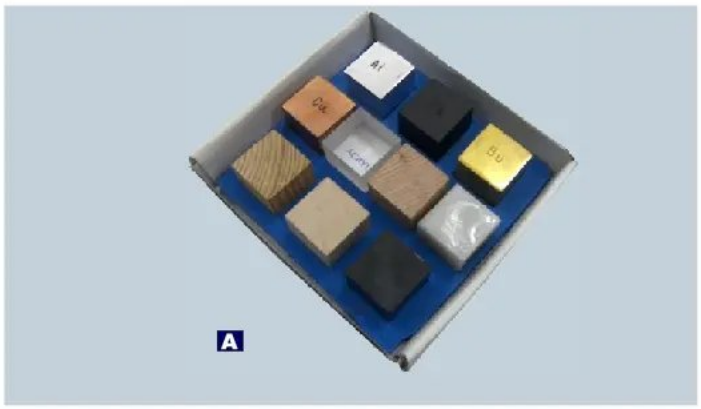


LAW OF PARALLELOGRAM OF FORCES

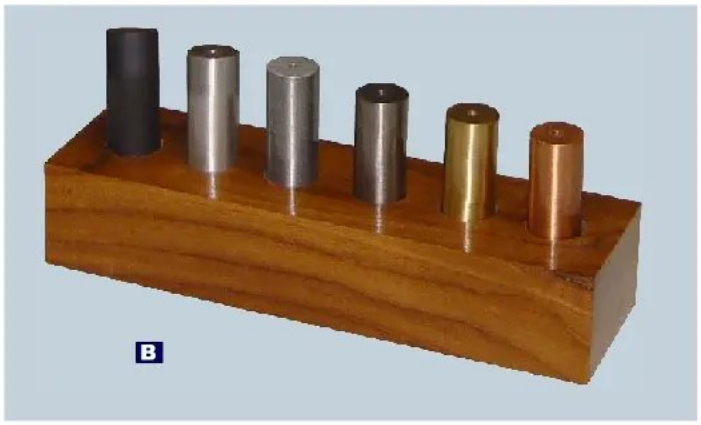


EQUILIBRIUM APPARATUS

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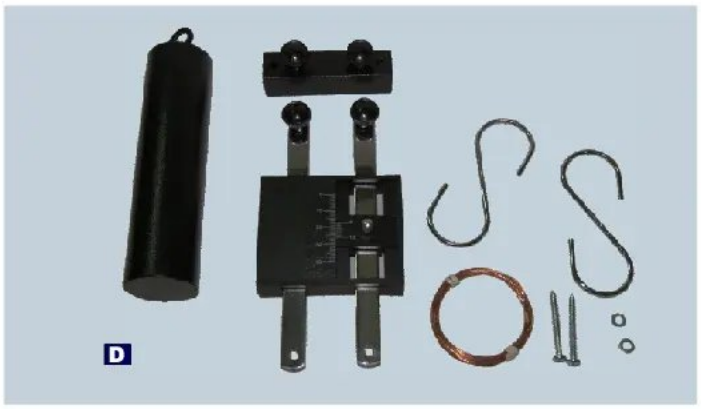


DENSITY SET **A** **SN575**
For investigating density; including a storage corrugated box with labels indicating each material.
Material: Copper, Brass, Aluminium. Mild steel, Acrylic, Nylon, PVC & three blocks of different type of wood
Edge length : 25.4 mm approx.



METAL CYLINDER SET EQUAL IN SIZE **B** **SV033**
It consists of a set of six metal cylinders of size 60 x 16mm (height x dia) tolerance ± 0.2mm. One each of Aluminium, brass, copper, iron, PVC and zinc in wooden housing. Cylinders are coated with transparent paint.





YOUNG'S MODULUS APPARATUS VERNIER TYPE **D** **SH159**
It consists of a plastic plate & plate carrying scale 0 - 30mm and moveable vernier reads to 0.1mm. A ceiling clamp is provided for upper ends of the wires. Supplied with cylindrical weight 1.3kg approx, screws & 1m of wire-2 nos.



YOUNG'S MODULUS APPARATUS SEARLE'S PATTERN **E** **SH306**
The instrument consists of two aluminium frames connected by a link. The frames are fitted with self centering collets. One of the frames is fitted with a micrometer screw which reads to 0.01mm and main scale of 10-0-10mm. On one end a sensitive spirit level is pivoted to one of the frames, the other end rests on the point of a micrometer screw fitted in the other frame. Provision for fixing on ceiling is provided. Supplied with 1 meter of wire-2 nos. and a cylindrical tension weight 1.3kg approx.

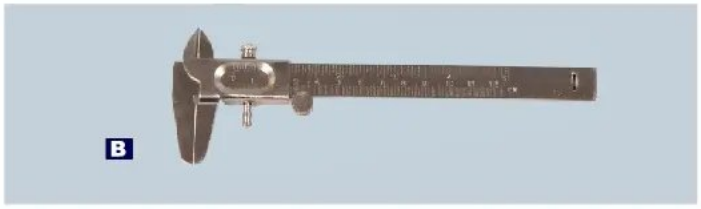
METAL CYLINDER SET EQUAL IN MASS **C** **SV032**
It consists of a set of six metal cylinders of mass 100g tolerance ±0.5g. Dia. of each cylinder 16mm. One each of Aluminium, Brass, Copper, Iron, PVC and Zinc in wooden housing. Cylinders are coated with transparent paint.

HOOKE'S LAW APPARATUS **F** **SJ161**
For investigating Hooke's law. It consists of a 12cm adjustable mirror scale on a sturdy support and a spring-suspended slotted weight with pointer.
Weights: 200gm (i.e. 10 nos. X 20gm)
Overall height: 37.5cm (approx.)

Available on request:
Many more models of Hooke's law apparatus can also be provided, please contact us for more information.

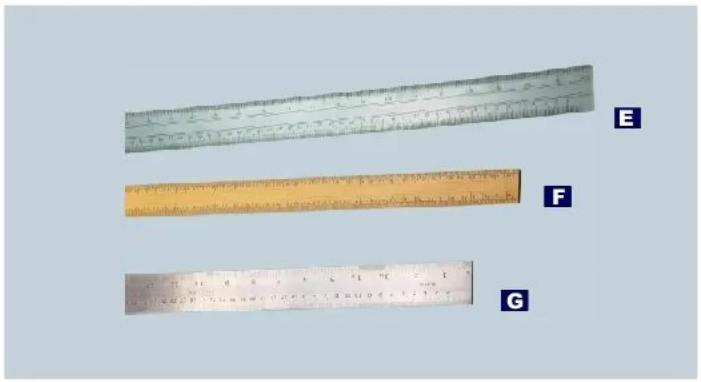
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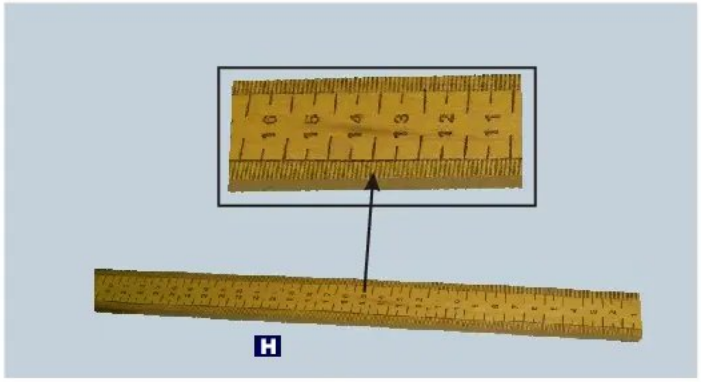












MICROMETER A

Made of nickel plated brass, stainless steel rod with ratchet stop. Provided with lock nut.

Cat No	Range(mm)	Least Count (mm)
SP149	0-10	1/100
SP152	0-25	1/100

VERNIER CALLIPER B **SP142**

Made of steel sheet with chrome plating. For internal, external & depth measurements upto 120mm x 0.1mm or 5" x 1/16".

VERNIER CALLIPER PRECISION C **SP146**

A high quality instrument for precision measurements. Made of hardened & ground Jaws & slides. For internal & external measurement upto 150mm x 0.02mm or 6" x 0.001".

MEASURING TAPE D

Figured & marked in cm/inch.

SP124 3 m.
SF881 5 m.

METRE RULE

These are graduated every mm and figured every cm.

Cat No.		Size	Material
SP133	F	30cm	Wooden
SP134		50cm	Wooden
SP135		100cm	Wooden
SP136	E	30cm	Plastic
SP139	G	30cm	Stainless Steel
SP140		50cm	Stainless Steel
SP141		100cm	Stainless Steel

METRE RULE H

These meter rules are used in boyle's law and resonance apparatus. These are graduated every mm and figured every cm. Numbering printed in the center.

SF879 50CM
SF880 100CM

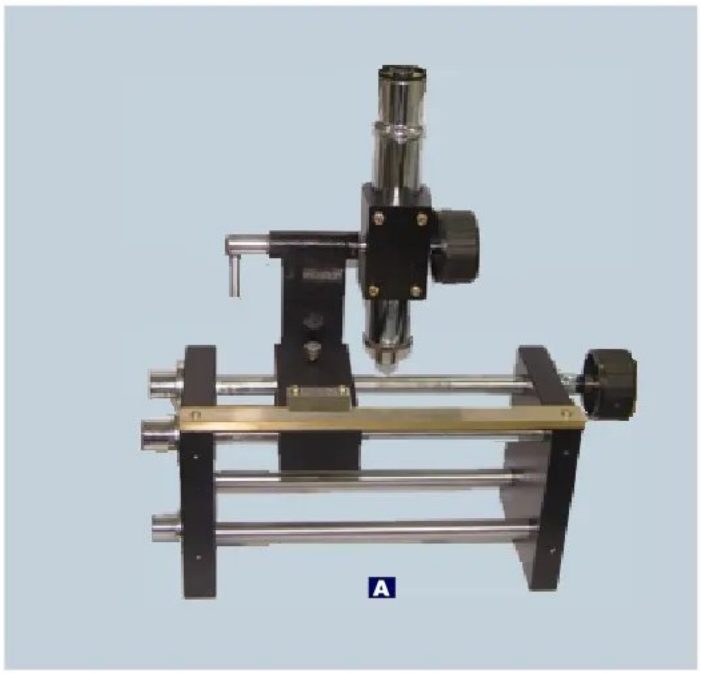


SPHEROMETER (TRIPOD) I

It consists of 3 legs. Scales and head disc are made of Brass. Vertical scale thickness 1mm approx. Diameter of micrometer head disc 35 mm approx. Head disc is made of brass. Tripod is made of brass with black powder finished. Supplied with glass plate.

Cat. No.	Range (mm)	Least count	Material of micrometer screw and legs
SP156	10-0-10	1/100 mm	Stainless Steel
SP157	10-0-10	1/100 mm	Steel
SP158	10-0-10	1/200 mm	Steel
SP159	10-0-10	1 /200 mm	Stainless Steel

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STUDENT VERNIER MICROSCOPE **A** **SH238**

Student vernier microscope is very simple and easy to use. The microscope carriage is mounted on a two parallel rods, along which it can be moved freely for coarse adjustment. Fine adjustment is made by means of a fine motion screw. The microscope can be swivelled. It is also possible to use the microscope horizontally or vertically.

Scale : 100mm
Least count : 0.1mm
Microscope : 50mm objective, 10x Ramsden eyepiece
Graticule : Crossline on glass



HORIZONTAL & VERTICAL TRAVELLING MICROSCOPE **SF908**

The vertical carriage slides on a brass pillar. In the vertical and horizontal at carriages a locking arrangement is provided to arrest coarse motion when slow motion screw is used. By successively locking and unlocking, motion in the total traverse can be provided by the slow motion screw.

Travel : horizontal travel 170mm, vertical travel 110mm
Least Count : 0.01mm
Working distance : 50mm
Eyepiece Ramsden : 8x
Reticle : 90° cross on glass



ADVANCED DIGITAL MICROSCOPE **C** **SN313**

The travelling microscope fitted with horizontal and vertical digital scales which allows to set 'zero' at any point. The base has three leveling screws and is machined to take a horizontal carriage which supports the vertical column. The carriage has a small circular spirit level. The microscope is provided with rack and pinion arrangement for focusing. The microscope tube can be swiveled to suit the user's requirement and can be set to the horizontal or vertical. Releasing the carriage locking screws allows free manual movement of the carriages. Fine adjustment is by means of the fine screw thread at the end of each slide. The base is fitted with a metal stage plate which can be removed to allow viewing through the base. The device is supplied in a wooden box.

Travel : 176mm horizontal, 175mm vertical
Digital readout : 0.01mm
Microscope : 50mm objective, 7x Ramsden eyepiece
Graticule : Crossline on glass
Base : Cast iron



SPHEROMETER **D** **SF907**

It consists of 3 legs. Top disc and vertical scale are made of painted Aluminium. Supplied with glass plate. Range 10-0-10mm, least count 0.002mm. Material of micrometer screw and legs are made of Aluminium.

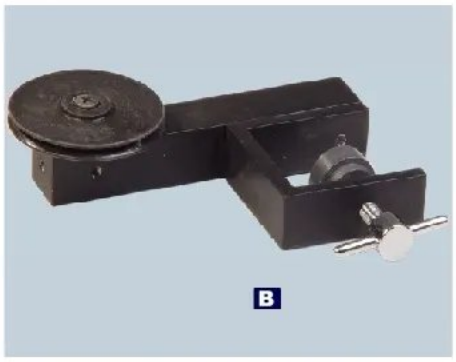
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STATIC AND DYNAMIC STUDY OF TORSION **A** **SF779**
Device designed for lab works study of torsion of couples and torsion pendulum.

The following parameters can be measured with this apparatus:
- Torsion constant using three lines of different diameters and length.
- Applied couple moment by changing distant forces of action lines.
- Inertia moment of torsion pendulum by moving additional weights on lever.

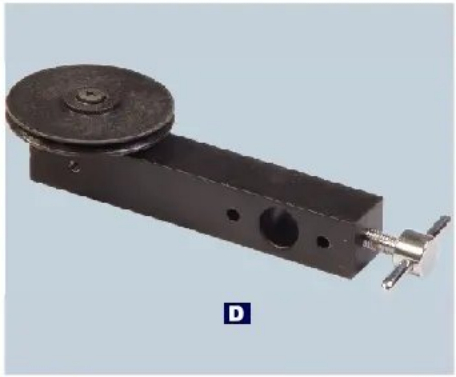
The constructional details are given below:
A plate with central hole equipped with two pulleys with ball bearing. Lines traced on plate give the direction of action lines. A dented lever with central core allows hanging torsion line. A hanger bracket holding a graduated drum on which axis the torsion line is fixed. A set of 7 torsion lines with tips. Six round weights and two plates (weights: 10x2g) to apply forces to lever are provided.



PULLEY BENCH CLAMP FITTING **B** **SP609**
An aluminium frame is fitted with ball bearing plastic pulley of 50mm diameter. It is used for clamping to the edge of bench or force board. The clamp can be separated from the bar which carries the pulley making it pulley rod mounting. Clamp opening is approx. 25mm.



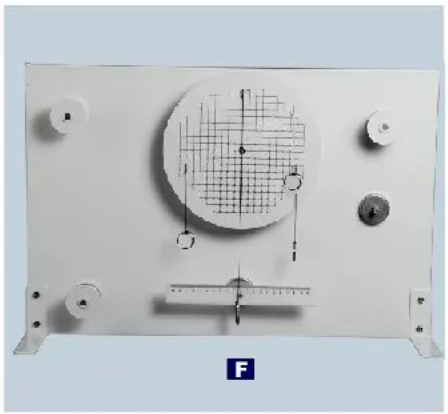
TORSION APPARATUS **C** **SF805**
Stress and strain forces surrounding Torque can be investigated by means of this apparatus. A brass or steel rod may be fixed at either end and apply known forces to one end. The degree of rotation across the length of rod at different points can be measured by using three angle measures. Supplied with 2 no. of mounting rods, 3 levelling screws, 2 T-shaped assemblies, 2 no. of experimental rods (each of brass & steel), tripod base and 3 angle measurer attachments.



PULLEY ROD MOUNTING **D** **SP608**
An aluminium boss, 20x20x110mm long is fitted with 50mm diameter ball bearing plastic pulley. The rods upto 13mm diameter can be clamped in the hole provided with a clamping knob. The pulley can be screwed in any one of 3 planes.



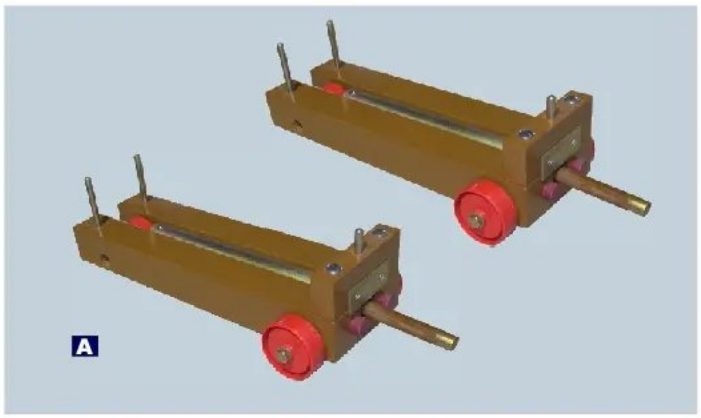
FORCE TABLE **E** **SN720**
To demonstrate the vector addition of forces. Dual scale allows students to take reading clockwise or counterclockwise, 4 complete weight sets with hanger, 4 pulleys with clamps, two set strings, that allows students to investigate forces in either 3 or 4 forces, durable aluminium table on a large tripod aluminium base with levelling screws.
Disc diameter: 400 mm
Set of slotted weights : (50gx9nos + 50g hanger =500g). Supplied complete with 4 sets of slotted weight, made of brass.



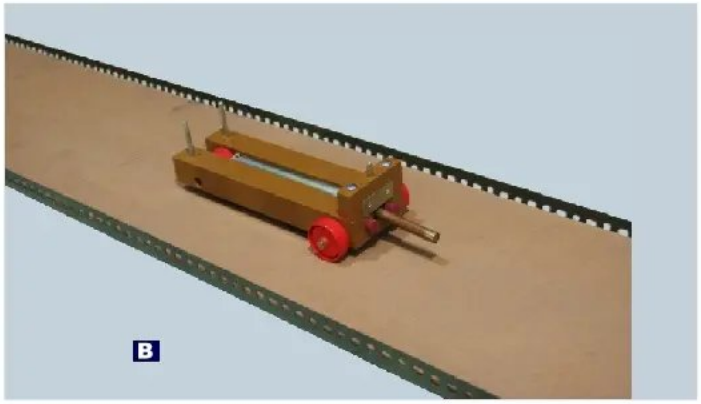
STUDY OF COPLANAR FORCES AND MOVEMENTS **F** **SP778**
It consists of a metal sheet panel fitted on feet, three pulleys on ball bearings with ferrite magnetic studs which ensure perfect fitting, plastic disc with drilled holes at 10mm spacing fitted on magnetic stud for the study of moment, a graduated ruler, a hook and a set of 10 spigots.
Disc : Diameter 23cm
Pulley: Diameter 50 mm

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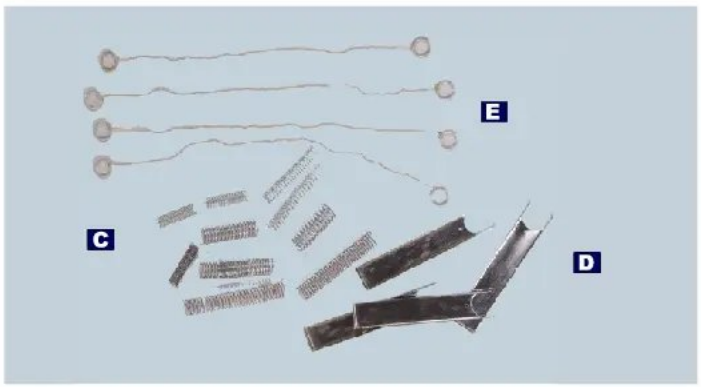
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DYNAMIC TROLLEY WOODEN A **SF837**
The trolley consists of a rectangular wooden body carried upon three low-friction plastic wheels and is supplied with one strong spring plunger and three dowel pegs. It has a provision for stacking the trolleys on top of each other with removable pins. Length 300mm approx. Supplied in pair.



TRACK FOR DYNAMIC TROLLEY B **SP736**
Used for dynamics experiments using wooden trolleys. Smooth flat surface with metal side rails. Dimensions:240x30cm approx. Suitable for SF837. Supplied without trolley.

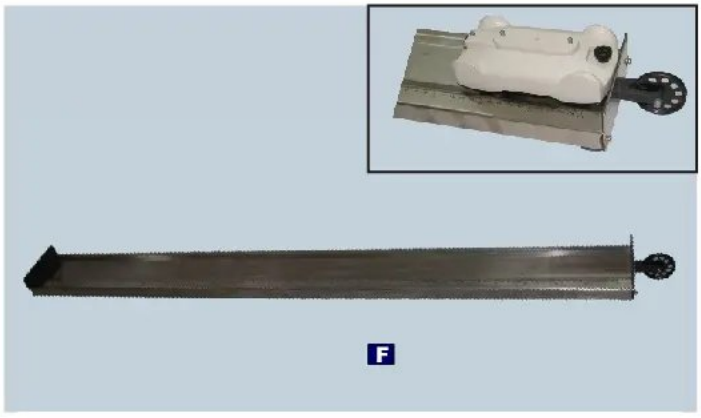


TROLLEY'S ACCESSORIES

SPRING OPEN WOUND C **SP396**
It can be attached to the front or back of the trolley on spring holders.
Pack of 5.

SPRING HOLDER D **SP397**
Made of metallic sheet.
For clamping springs more than one by placing springs side by side.
Pack of 2.

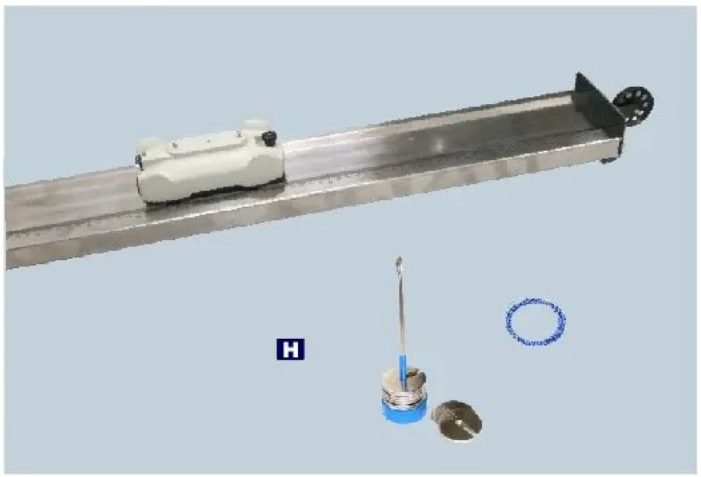
ELASTIC CORDS E **SP398**
Two plastic rings attached to elastic cords.
Pack of 5.



TRACK FOR DYNAMIC TROLLEY F **SP067**
Track for dynamic trolley experiments. The track is made of Stainless Steel having smooth surface with linear grooves for smooth motion of the trolley and it has Stainless Steel Stoppers with a rubber sheet at ends. A plastic pulley is fixed at one end. Track supplied without trolley.



DYNAMIC TROLLEY METALLIC WITH MASS G **SP075**
Dynamic trolley made of Aluminium is perfect for studying elastic & inelastic collision, momentum and impulse.
Salient features:
- The cart is fitted with ultra low friction bearings and tapered wheels providing extremely low friction.
- Wheels are protected against overload by an inbuilt spring system.



DYNAMIC TROLLEY METALLIC WITH TRACK H **SH296**
It is supplied with two dynamic trolleys, one cord, one stainless steel track with pulley and one set of 100gm slotted weights.

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DIGITAL STOP WATCH
Digital display : 6 digits. Accuracy : ± 0.01 sec.
The digits display size 5 mm start, stop, and reset knobs.
SP816 A Digit size 5mm
SP817 B Digit size 7mm



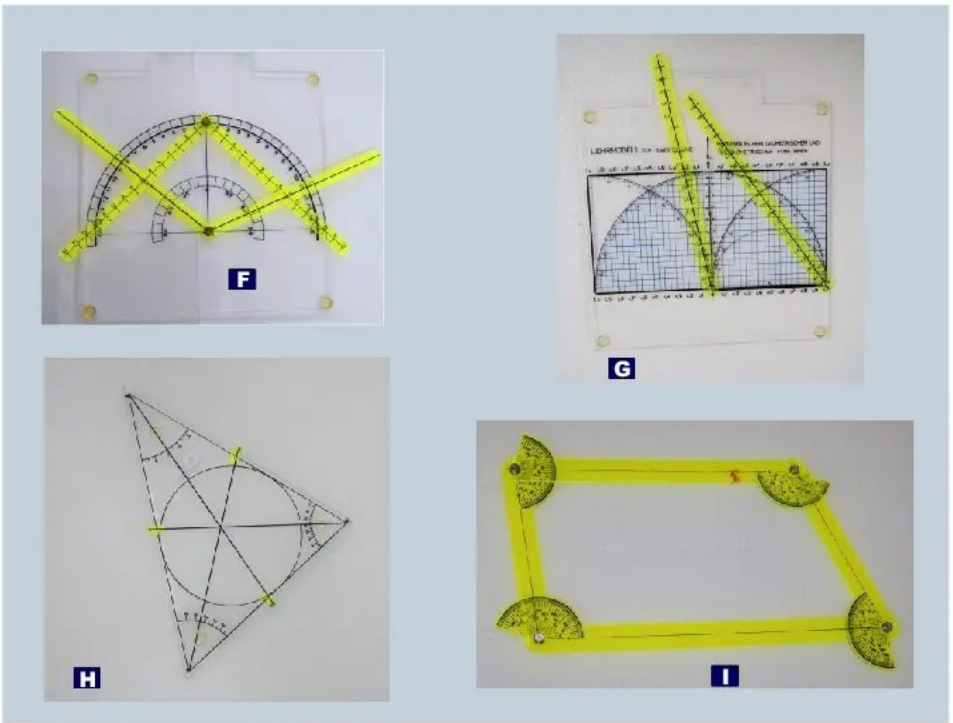
STOP CLOCK D **SP274**
With two hands indicating 60minutes. and 60 secs, dial dia approx. 100mm. Clock has spring driven movement with one start/stop push lever and one zero setting metallic lever.



DECIMETER CUBE C **SJ173**
Cubic centimeter cube(100mm)with squares ,sticks of various length and 100 small cubes of 1cm^3.



SET OF GEOMETRICAL MODELS E **SF874**
Consists of twelve pieces of various geometrical models and figures. Made of hard wood and supplied in plastic box.



MATHEMATICAL MODEL F **SJ171**
Model of equal arcs, chords and angles subtended at the center of the circle.

MATHEMATICAL MODEL G **SJ172**
Model for geometrical and trigonometrical functions.

MATHEMATICAL MODEL H **SJ174**
Triangle with elastic thread and movable mountings on the edges (halving the angle).

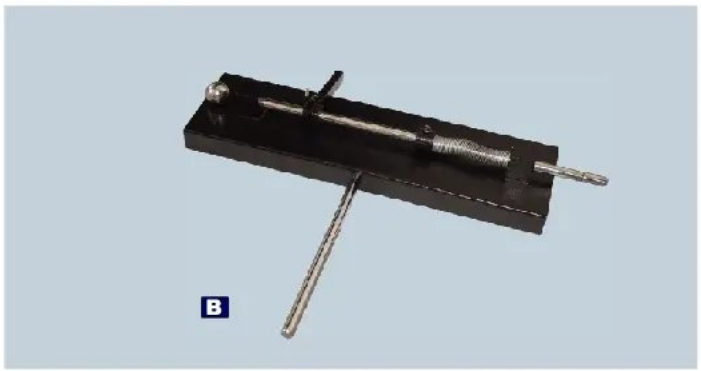
MATHEMATICAL MODEL I **SJ175**
Variable quadrangle 390*240mm with four protractors for the determination of the sum of angles.

Available on Request:
Other Mathematical models can also be provided, Please contact us for more information.

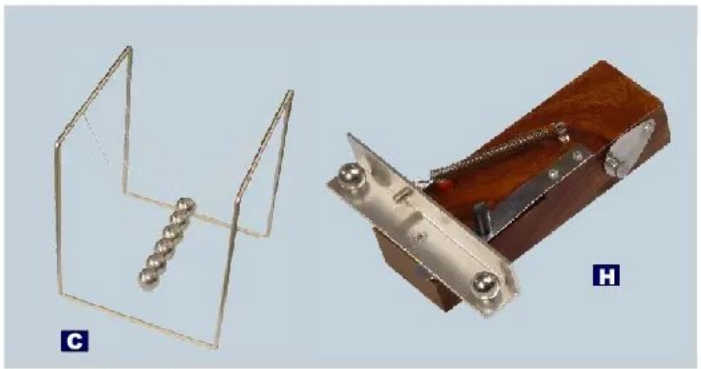
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INERTIA APPARATUS **A** **SF838**
It demonstrates Newton's first law of motion-a body at rest tends to remain at rest. When the metal spring bar is snapped, the cardboard square is shot through the air while the metal ball remains in place on the stand.



NEWTON'S SECOND LAW APPARATUS **B** **SF840**
This apparatus effectively demonstrates newton's second law of motion. It comprises of a metal base that mounts a spring-loaded bar and two metal spheres. The spring is compressed and locked into place by a lever. One of the spheres slides onto one end of the bar while the other is mounted in the depression adjacent to the opposite end.
On release of the lever the rod imparts a horizontal velocity on the second sphere whilst the other sphere simply falls vertically. Thus, this proves that the vertical and horizontal velocities are independent, as both spheres should fall at the same rate.



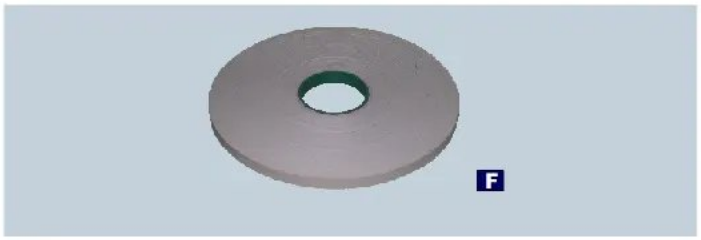
NEWTON'S DEMONSTRATOR **C** **SF149**
It demonstrates that for every action there is an equal and opposite reaction. Lift and drop one ball to see one ball pop out from the other side. Lift two balls and two pop out. Six steel balls dia. 19mm approx, suspended from a chrome steel frame.



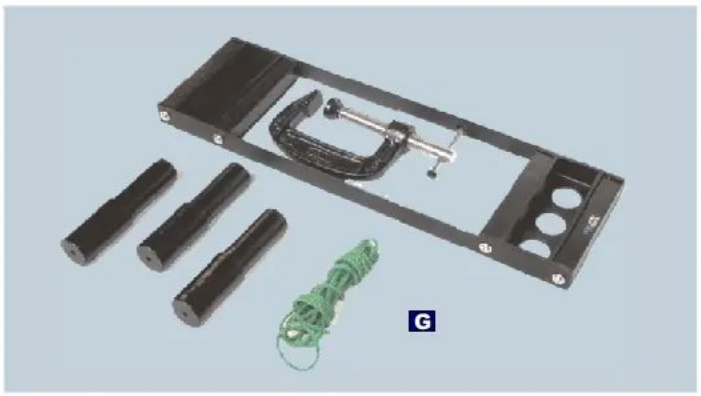
TICKER TAPE- TIMER WITH STAND **D** **SW537**
Mechanism for measurement of velocity and acceleration. The vibrating unit is mounted in a plastic housing and a pair of 4mm sockets are provided. Dots are spaced at 1/50 or 1/60 intervals depending on mains frequency. Mounted on a metallic frame & base.

Input : 12 V AC,250 mA

TICKER TAPE TIMER **E** **SH073**
The whole unit is housed in a moulded case along with mounting flanges. A vibrating striker makes timing marks on a moving paper tape. A carbon paper disc support and an adjustable anvil for the striker point are present in a tape guide which is situated on the top of the case. Operatable on a 12V AC supply and mains frequency as its timing standard. Provided with 4mm sockets.



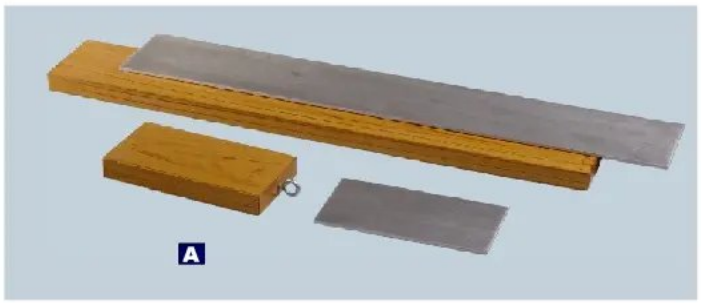
PAPER ROLL FOR TICKER TAPE TIMER **F** **SP073**
The width of the paper roll is 9.5mm and roll length approximately 250 meter.



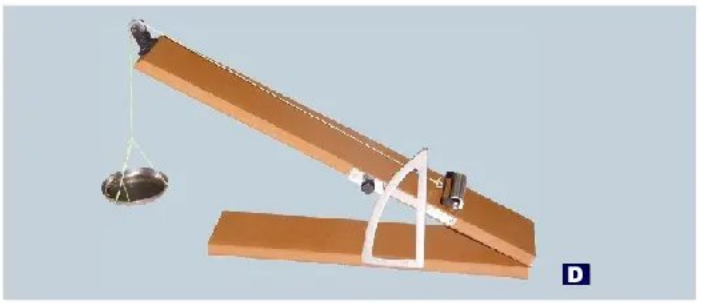
INERTIA BALANCE **G** **SH228**
For investigating the general properties of mass, as well as the differences between mass and weight. Consists of two metal trays 215mm apart linked by steel spring strips.

FALLING BODY APPARATUS **H** **SP093**
To demonstrate that a body impelled horizontally will have vertical acceleration same as that of a body falling freely. Two 19mm approx. dia steel balls are launched by releasing a push button. This projects one ball forward and the other falls freely. This mechanism is mounted on a wooden block 17 x 6cm (length x width) approx.

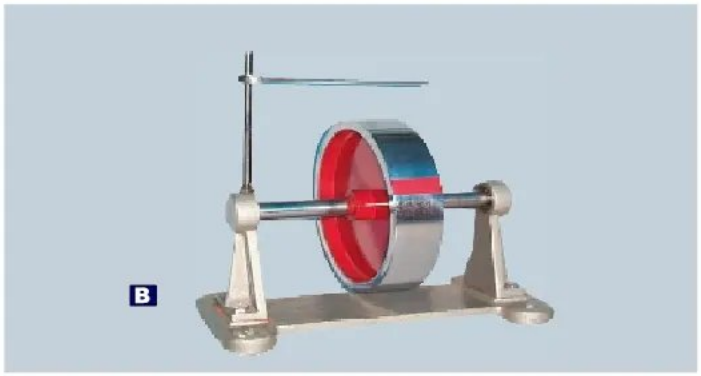
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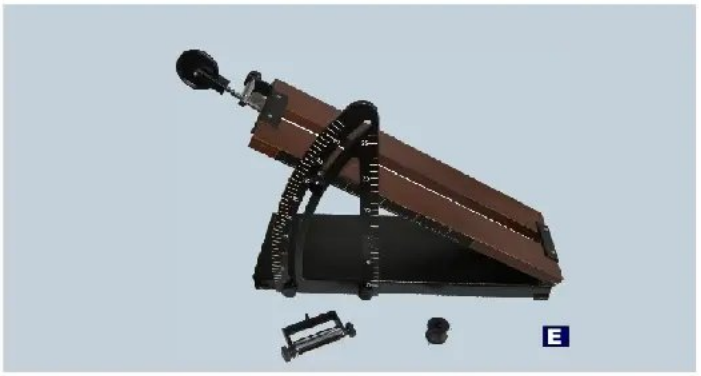
FRICTION BOARD APPARATUS A **SH141**
Wooden friction board 490 x 75 x 20 mm (L x W x H), a wooden slider 140 x 70 x 20 mm with a hook, a plain aluminium slide and an aluminium slide with rubber on the back. Aluminium slide can fit over the friction board to provide an alternative type surface.



INCLINED PLANE WITH SCALE **SP088**
Wooden inclined plane 60x10cm (length x width) with pulley 22mm dia hinged to a wooden base 45x10cm (length x width). Provided with linear scale along the inclined plane and a vertical and angular scale fixed to the base. Complete with pan and roller.



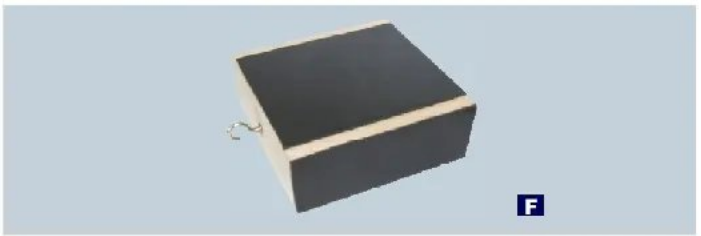
FLY WHEEL B **SP122**
Comprising of a machined and balanced cast iron wheel and the steel spindle which is supported on ball bearings in strong iron brackets. A pointer is fixed to one of the brackets. Diametric hole is drilled in the shaft to take a pin and cord. The base is provided with holes so that the apparatus can be fixed to wall. Wheel diameter 19cm approx.



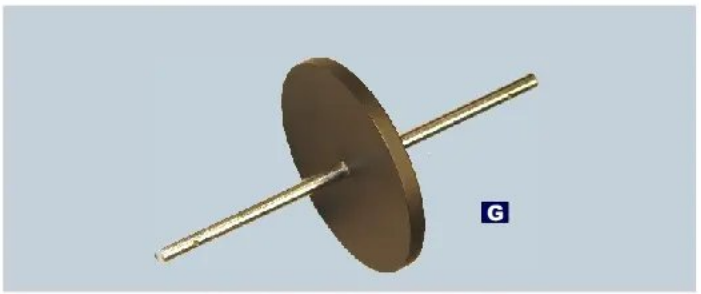
INCLINED PLANE WITH SCALE E **SH186**
It consists of a metal base board 45 x 14cm which supports a plane board with scale. Inclination of plane board can be done and fixed at desired angle from 0 - 43°. The angle may be measured on the angle measurer. A pulley is attached at the end, which is used in attaching masses. Supplied with brass roller. Supplied without mass, trolley or pan.



MAXWELL WHEEL WITH STAND C **SW524**
A metallic wheel is fitted tightly on the center of a steel shaft. Hang on metallic support of stand by a thread.

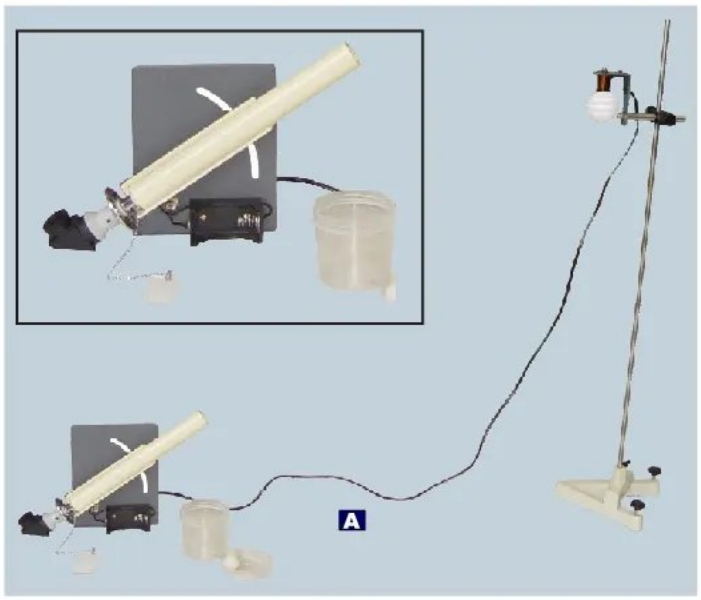


FRICTION BLOCK WOODEN F **SP574**
It is made of wood. Size 90 x 90 x 38mm aprox. Provided with hook.

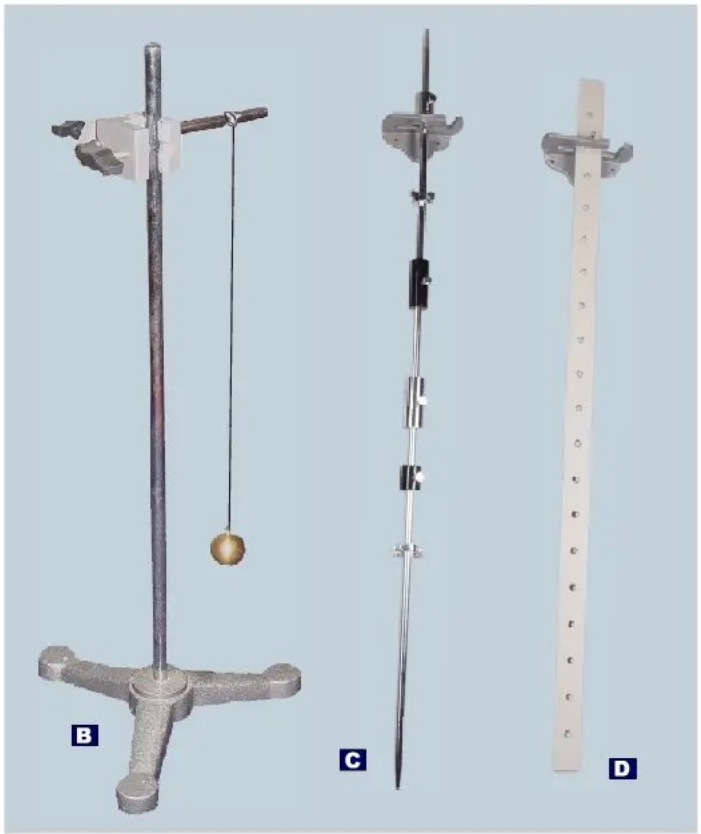


MAXWELL WHEEL G **SW172**
A metallic wheel is fitted tightly on the center of a steel shaft. The rod contains two holes at the extreme ends for suspension of thread. This wheel can be hanged with threads to horizontal shaft fitted on metal stand for demonstration of the transformation of the potential energy into kinetic energy and vice-versa. The diameter of the wheel 12cm, thickness 8mm and horizontal axle length 25cm. Supplied without metal stand and horizontal shaft.

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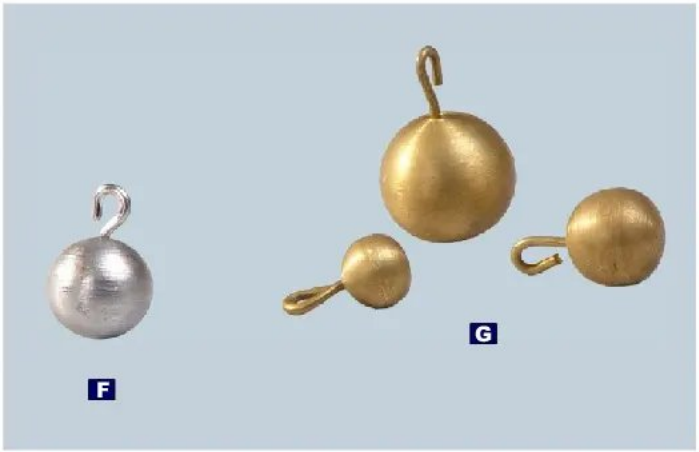
MONKEY HUNTING APPARATUS **A** **SA702**
It demonstrates collision & parabolic trajectories. The tube (hunter's gun) is a spring loaded launching piston allowing to adjust launch angle of ball. An electromagnet, which is battery operated, attracts a ball (monkey). After firing the projectile, the electromagnet circuit breaks, the ball falls & collision between projectile & ball occurs. An angle mirror situated at right side speeds the aiming process. A mounting plate is provided for "hunter's gun". Supplied complete with launcher, electromagnetic free fall unit, two no. of projectile balls, angle mirror accessory & instruction manual. Supplied without support stand & 1.5 V dry cell.



SIMPLE PENDULUM **B** **SW488**
To demonstrate the oscillations of a simple pendulum and shows how time period varies with increase in length of pendulum. Supplied complete with base, rod 500 mm length, bosshead, clamping rod, thread roll and bob.



CENTRIPETAL FORCE APPARATUS ELECTRICAL **E** **SP082**
A tabletop model for demonstration of centripetal force and relationship between the angular velocity and distance from the center. The apparatus consists of a turntable mounted on a metallic base. The turn table is rotated with a motor which has speed control knob.



PENDULUM BOB
Spherical with hook.

Material	Dia 13mm	Dia 19mm	Dia 25mm
Brass **G**	SP351	SP352	SP353
Copper	SP262	SP263	SP264
Iron	SP308	SP306	SP310
Aluminium **F**	SF841	SF842	SF843

COMPOUND PENDULUM KATER'S REVERSIBLE **C** **SP272**
It consists of a electroplated brass rod (120cm long, 10mm dia), one pair each of small and large adjustable brass and wooden masses, two steel knife edges set in adjustable metal holders and a metal support bracket for mounting on walls.

COMPOUND PENDULUM **D** **SP394**
It consists of a steel bar (1 Meter long) drilled at 50mm intervals, removable knife edges and a support bracket for mounting on walls.

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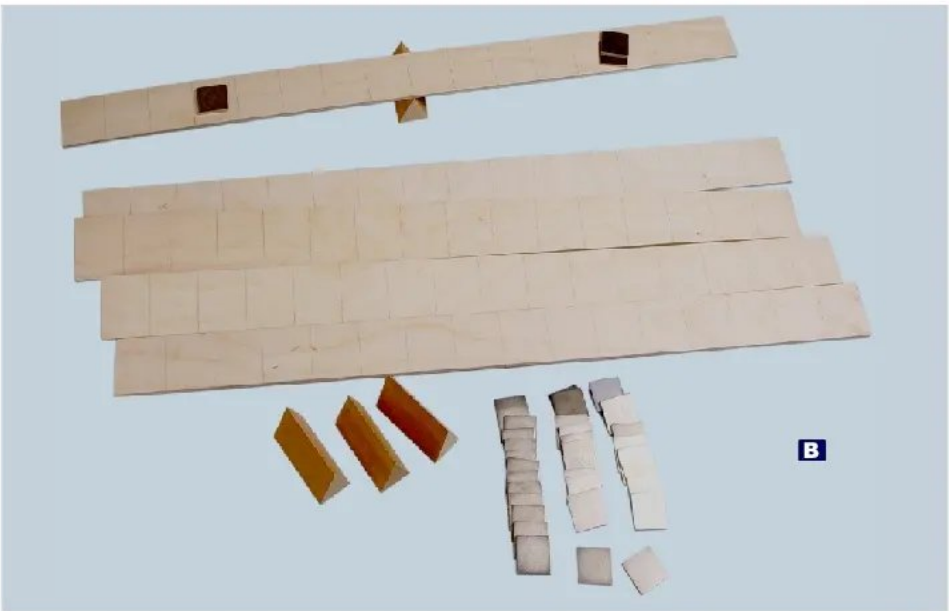


PULLEYS A

Cat No	Material of Pulleys	Type	Frame	Diameter (mm) approx.
SP094	Aluminium	Single Pulley Single Hook	Casting	50
SP095	Plastic			
SP104	Aluminium	Double Pulley Parallel	Casting	50
SP105	Plastic			
SP110	Aluminium	Triple Pulley Parallel	Casting	50
SP111	Plastic			
SP096	Aluminium	Single Pulley Double Hook	Casting	50
SP097	Plastic			
SP100	Aluminium	Double Pulley Long	Casting	50/38
SP101	Plastic			
SP116	Aluminium	Triple Pulley Long	Casting	50/38
SP117	Plastic			
SP098	Aluminium	Single Pulley Single Hook	Sheet Metal Frame	50
SP099	Plastic			
SP102	Aluminium	Single Pulley Double Hook	Sheet Metal Frame	50
SP103	Plastic			
SP106	Aluminium	Double Pulley Parallel Double Hook	Sheet Metal Frame	50
SP107	Plastic			
SP108	Aluminium	Triple Pulley Parallel Double Hook	Sheet Metal Frame	50
SP109	Plastic			



PULLEYS WITH HOOK SET C **SP286**
It consists of two pulleys. Pulleys made of plastic and fitted in aluminium frame. One plastic pulley of dia 45mm and another of 35 mm fitted in aluminium frame. One set having two strong stainless steel hooks at either ends of frame and another set having one hook. Supplied as a pack of two per set.



LEVER KIT B **SP870**
This kit can be used by eight pupils at a time. It consists of five plywood beams 600 x 44 x 3mm approx. graduated every 38mm and with a groove across its center to locate the fulcrum point. Also included are four fulcrums 32 x 32 x 64mm approx. and forty metal blanks 25mm square.

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'g' by FREE FALL APPARATUS **A** **SP062**

This apparatus consists of a solenoid (for prompt release of the sphere on being disconnected) and gate switch unit mounted on a base which is clamped on 12mm diameter retort stand rod. Connections are made through 4mm sockets. The gate switch unit consists of a hinged metal plate held against an adjustable contact by means of small permanent magnet so that by proper adjustment, the plate falls promptly at the impact of the falling sphere. Supplied without timer.



'g' BY FREE FALL APPARATUS **B** **SP603**

It is used for determination of value of 'g' by measurement of fall time of a steel ball. Measurement of time can be performed with the help of timer. The apparatus consists of the release unit which has a plate with a pair of metal spring clips. Connections are made through 4mm sockets. Cable release opens the clips, thus ball releases and breaks the contact between clips. The second trip unit situated on baseboard, consists of a trip plate and a microswitch. It is designed to break an electrical circuit when struck by the steel ball. It is supplied with plumb line and two steel balls of different diameters. Supplied without timer.

Available on request:
A suitable timer can be provided for 'g' by free fall apparatus SP062/SP603. For more information please contact us.



Salient features:

- **Innovative car for measurements of time, distance, speed, acceleration and direction of motion parameters.**
- **In built data logging capability to accurately record motion parameters up to 150 time events while in motion.**
- **Capability to perform motion experiments without using photo-gate and timer.**
- **Very low friction in motion.**
- **In built rechargeable battery.**
- **USB port for computer interface.**

TIMING CAR WITH DATA LOGGING **C** **SJ155**

It is a very low friction car with in-built electronics and sensors for data logging and time measurement. During motion this car logs up to 150 time event points. The recorded time event points can be transferred to PC via its USB port. The graphical analysis of the time, distance, speed, acceleration and direction of motion can be analyzed for recorded data. Precise studies can be made regarding motion in one dimension, incline plane and up-down sloping planes. The car is also useful in study of collision based experiments.

Additionally the logged data points can be directly displayed and analyzed on the 2 line LCD display for time, distance, speed and acceleration. This car has in-built rechargeable battery which can be charged by the external adaptor.

The car is provided with spring loaded striking pin for collision. It has front loading of various kinds of bumpers for conducting elastic or in-elastic collision experiments.

Technical Specifications:

Display	: Two line LCD
Function Key	
Start/Stop	: To start and stop recording the time data in motion.
Review	: To review the recorded time data stored in the memory and is displayed point by point along with distance, speed and acceleration.
Memory clear	: To clear the stored data in the memory for new experiments.
Data Transfer	: To transfer time data to PC via USB port for graphical analysis on PC for distance, speed and acceleration Vs time.
Dimensions	: 190x85x80mm
Weight	: 800gm approx.

Note: Supplied without track.

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FREE FALL APPARATUS SK021 / SJ153

Exp-1 Determination of the value of 'g' at a place using a steel ball

Exp-2 Determination of the value of 'g' using 2L picket.

Exp-3 Determination of the value of 'g' using picket fence with ten slits.

Exp-4 Determination of the value of 'g' using pendulum



Free fall instrument is the necessary instrument for the quantitative analysis of free falling objects. The instrument is made of MS and is very sturdy. The instrument includes vertical pole, iron ball, catcher & plumb - line.

Contents of SK021/SJ153

Cat. No.	Item Name	Qty.
SP775	'g' by free fall apparatus	1
SJ162 with SK021	Digital Timer & Photogate Pair or	1
SJ163 with SJ153	Intelligent Timer with Photogate Pair	1
SN202	Flexible Plug Leads, black(200cm)	1
SN205	Flexible Plug Leads, red(200cm)	1
SW923	2 L Picket	1
SW924	Steel Ball for free fall	2
SN612	Picket fence with ten slits	1
SJ164	Solenoid Driver with SJ162	1



2 L PICKET **SW923**

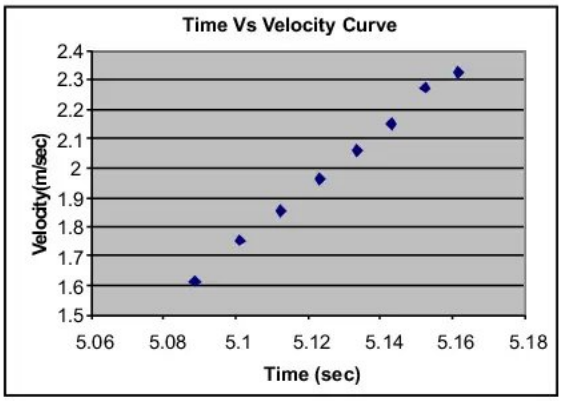
Note: Solenoid driver SJ164 is not supplied with SJ163.

FREE FALL APPARATUS SK061 / SJ154

Exp-1 To find out the value of 'g' using picket fence with ten slits.

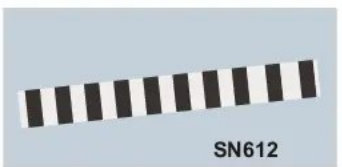


The value of "g" may be obtained with the help of photogate, picket fence with ten slit and an intelligent timer by using the equation, $g= (v_f^2 - v_i^2)/2s$, where v_f final velocity, v_i initial velocity and s distance between leading edge of first black strip & leading edge of last black strip.



Contents of SK061/SJ154

Cat. No.	Item Name	Qty.
SJ163 with SK061	Intelligent Timer & Photo-gate Pair or	1
SJ162 with SJ154	Digital Timer & Photo-gate Pair	1
SN612	Picket fence with ten slits	1
SG100	Base	1
SG022	Rod	1
SW092	Boss head	1



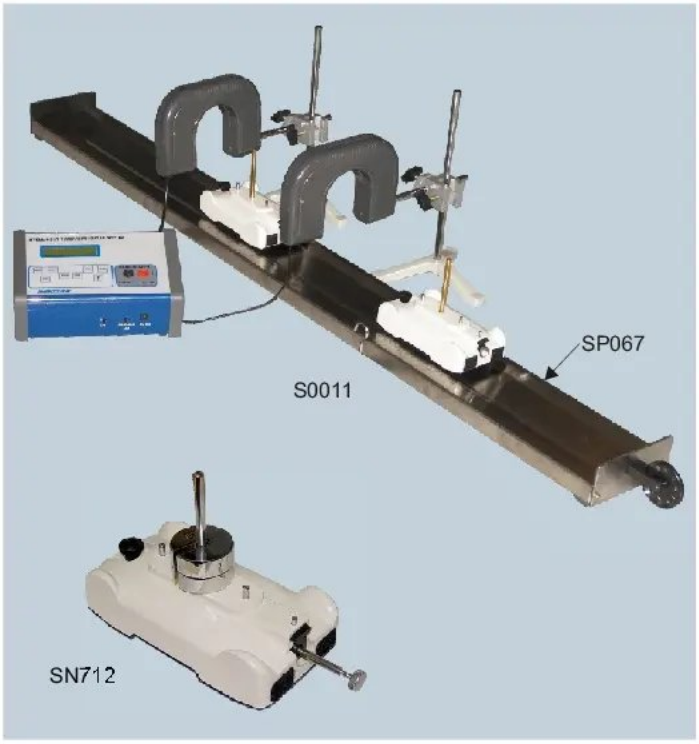
PICKET FENCE WITH TEN SLITS SN612

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LAW OF MOTION KIT SO011/SJ168

Exp-1 To find the velocity of an object.
Exp-2 To determine the average speed of an object.
Exp-3 To determine the instantaneous speed of an object.
Exp-4 To determine the acceleration of a moving object.
Exp-5 To demonstrate the elastic collision.
Exp-6 To demonstrate the law of conservation of energy.
Exp-7 To demonstrate the transfer of energy.
Exp-8 To plot a graph between velocity and time using picket fence.

It has been designed to study the linear motion of the object, elastic collision, Newton's law of motion and recording the path time diagram of linear motion using phototiming gates. The runway used for all experiments is made of superior quality stainless steel having smooth surface with linear grooves for smooth motion of trolley and it has stainless steel stoppers with rubber sheet at ends. A plastic pulley is fixed at one end to hang a weight.



DYNAMIC TROLLEY METALLIC WITH MASS **SN712**
Dynamic trolley made of Aluminium is perfect for studying elastic & inelastic collision momentum and impulse. The cart is equipped with a socket on its top to accommodate detachable rod which can be used for loading additional weights and also the same socket can be used for attaching various speed module accessories. The trolley is also provided with two guide pins on its top for stacking. One end of the cart has a clamping screw for attaching ticker tape. Other end has Velcro pads and a redesigned plunger for producing impulses and explosion. Provided with mass and detachable rod. Supplied single.

Salient Features:
•The cart is fitted with ultra low friction bearings and tapered wheels providing extremely low friction.
• Wheels are protected against overload by an inbuilt spring system.

Dimensions: 155 x 77 x 55 mm (l x w x h) approx. without rod.
Weight: 600gm approx.

TRACK FOR DYNAMIC TROLLEY **SP067**
Track for dynamic trolley experiments. The track is made of superior quality stainless steel having smooth surface with linear grooves for smooth motion of the trolley and it has S.S. with rubber sheet at ends. A plastic pulley is fixed at one end.
Dimension : 119.5 x 10cm (L x W) excluding pulley.
Pulley : Plastic, 50mm dia
Scale : 0 to 115cm, graduated in mm.





Supplied with SJ168.



Supplied with SO011.

PHOTOGATE ACCESSORIES **SN360**
Modules set comprising: 1b picket, 2b picket, 3b picket & 10b picket.

MASSES & DETACHABLE ROD **SN581**
Slotted masses 2x 100g and a detachable rod.

Contents of SO011/SJ168

Item Name	Qty.
Dynamic trolley metallic	2
Track for dynamic trolley	1
Intelligent timer & Photo-gate pair (SJ162 or SJ163)	1
Tripod base	2
Bosshead (bilateral)	2
Stand rod	2
Mass set with hanger (100gm) and string	1
Photogate accessories	1

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DIGITAL TIMER WITH PHOTOGATE PAIR SJ162



DIGITAL TIMER SN029A

It is based on microcontroller having crystal controlled time base to accurately measure the time intervals, speed and acceleration in various modes. It has built-in test function for the photogates. Least count time resolution is 0.1millisecond. It can also calculate acceleration due to gravity 'g'. Instrument is self contained that requires no computer. USB port is provided for connecting to the computer. The system has in-bult storage for 99 experiment readings through several modes. It can be used with Air track and trolley to comprehensively study several experiments on kinematics and dynamics. Working Voltage 9V DC adaptor.

1) TIME MODES
a) Using single gate
b) Using two gates
c) Stop-watch - measures time between pressing start/stop button. Time measurement upto 99 Seconds.
d) Pendulum - measures pendulum period.
e) Fence - measures 10 time values

2) SPEED MODES
a) One gate - Instantaneous
b) Two gates - Average
c) Collision - I, Initial & final speeds of the cart
d) Collision - II, Initial & final speeds of two carts
e) Pulley - Lin - Linear speed of cart using pulley
f) Pulley - Rad - Angular speed in radians/second
G) Pulley - Rev - Angular speed in revolutions/second

3) ACCELERATION MODES
a) One gate - Instantaneous
b) Two gates - Average, Initial & Final
c) Pulley - Lin - Accelration with pulley
d) Pulley - Ang - Angular accelration

PHOTOGATE SZ023A

Photogate is narrow-beam infrared radiation detector connected directly to timer and used to provide the timing signals. The LED in one arm of the photogate emit a narrow infrared beam. It is used for making time measurement with timer when used with dynamic trolley, air track and g by free fall apparatus. It can be clamped on a boss head.

SOLENOID DRIVER SJ164

Solenoid driver provided for 'g' by free fall experiments. This can drive an external solenoid and integrate with digital timer for time measurements in 'g' by free fall experiment.

INTELLIGENT TIMER WITH PHOTOGATE PAIR SJ163



INTELLIGENT TIMER SP774

It is based on microcontroller having crystal controlled time base to accurately measure the time intervals. speed and acceleration in various modes. It has built-in test function for the photogates. Least count resolution 0.1millisecond. It can also calculate acceleration due to gravity 'g'. Instrument is self contained that requires no computer. RS232 port is provided for connecting to the computer. It can be used with Air track and trolley to comprehensively study several experiments on kinematics and dynamics.

Technical Specifications:

Display	:	2 line LCD
Operating Voltage	:	9V DC, 1.5A.
Dimension	:	210x130x65mm.

1) TIME MODES
A) Using single gate
B) Using two gates
C) Stop-watch - measures time between pressing start/stop button. Time measurement upto 99 Seconds.
D) Pendulum - measures pendulum period.
E) Fence - measures 10 time values

2) SPEED MODES
A) One gate - Instantaneous
B) Two gates - Average
C) Collision - I, Initial & final speeds of the cart
D) Collision - II, Initial & final speeds of two Carts
E) Pulley - Lin - Linear speed of cart using pulley
F) Pulley - Rad - Angular speed in radians/second
G) Pulley - Rev - Angular speed in revolutions/second

3) ACCELERATION MODES
A) One gate - Instantaneous
B) Two gates - Average, Initial & Final
C) Pulley - Lin - Accelration with pulley
D) Pulley - Ang - Angular accelration
E) g - Free fall

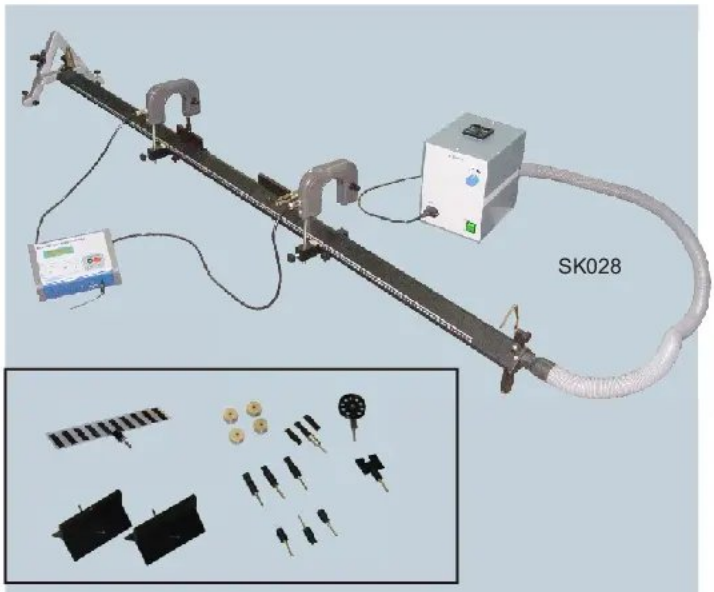
PHOTOGATE SZ023

Photogate is narrow-beam infrared radiation detector connected directly to timer and used to provide the timing signals. The LED in one arm of the photogate emit a narrow infrared beam. It is used for making time measurement with timer when used with dynamic trolley, air track and g by free fall apparatus. It can be clamped on a boss head.

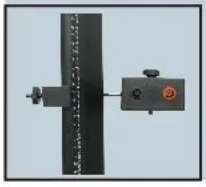
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TWO-IN-ONE LINEAR AIR TRACK AND 'g' BY FREE FALL SK028/SK169

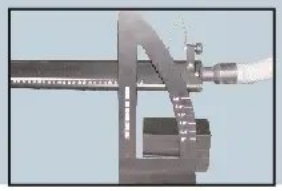
Exp-1 To find the velocity of an object.
Exp-2 To measure the time between successive interruption of photogate.
Exp-3 To determine the instantaneous speed of an object.
Exp-4 To determine the average speed of an object.
Exp-5 To determine the acceleration of a moving object.
Exp-6 To determine the linear motion or rotatory motion.
Exp-7 To study conservation of linear momentum.
Exp-8 To determine the value of 'g'.
Exp-9 To plot a graph of velocity vs time using picket fence with10 slits for 'g' determination.



Accessories for linear air track



Solenoid attachment



Protractor for inclined measurement

Linear Air Track accessories consist of:

Item Name	Qty.
Vehicle 200 g	Two
Plug with screen	One
Plug with clay Holder	One
Plug with pin	One
Weight 50 g	Four
Plug with card(black Al bifurcated sheet)	One
Plug with hook for attaching cord	One
Plug with pulley	One
Plug with Picket fence having 10 slits	One
2-L Picket	One

Note: All the experiments can be conducted in an horizontal or inclined or perpendicular position.

Salient features:

- Well constructed **uniform track & Supports** for levelling.
- Performs **Air Track experiments and 'g' by free fall** with same Equipment.
- Height of ball release mechanism **adjustable**.

2-IN-1 LINEAR AIR TRACK AND 'g' BY FREE FALL SK028

Triangular section track made of aluminium with perforations. An inlet cover is given at one of the ends, which is connected to hose of an air blower. The gliders move on an air cushion thus minimizing friction. Used for performing experiments to investigate law of motion, speed, acceleration, and momentum. All the experiments can be conducted in an inclined or horizontal position. It can also be used to determine 'g' by free fall when made to stand on 'A' shaped base. Adjustable solenoid may be clamped on a holder. Picket fence without plug and 2-L picket may be used to obtain value of 'g' as in SK021.



SJ162

Supplied with SK169.



SJ163

Supplied with SK028.

Note: Solenoid driver SJ164 is also supplied with SK169.

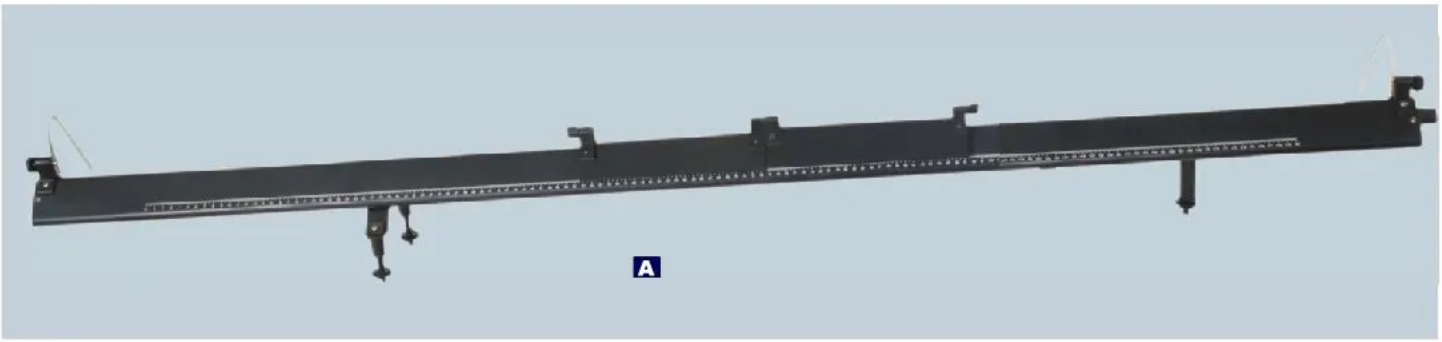
Contents :

Item Name	Qty.
Linear air track & 'g' by free fall	1
Air Blower	1
Linear Air track accessories	1
Steel Ball	1
Holder for photo-gate (pair)	1
Intelligent Timer & Photo-gate Pair (SJ162 or SJ163)	1
Adjustable Solenoid	1
Protractor	1

FOR YOUR INFORMATION
Our team of engineers and technicians are continuously working to improve existing products and develop new ones. We welcome suggestions of our valued customers.

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LINEAR AIR TRACK SJ190



LINEAR AIR TRACK A **SJ190**

It is used for study of frictionless motion, elastic and inelastic collisions, velocity, acceleration, conservation of momentum etc. Triangular section aluminium alloy track, length 200cm, with two rows of air holes through which air emerge forming air cushion on which the vehicles float. The vehicles show linear motion under virtually frictionless condition. Supported on three adjustable feet. At one end of track an air inlet tube connection is given. Supplied without accessories.



AIR BLOWER B **SV041**

A compact air blower designed to work with air track experiments. The blower has an air outlet, which is connected to a hose. Supplied complete with flexible hose and adaptor for hose. Provided with speed regulator and ON/OFF switch.

Salient features:

- Regulator for airflow control.
- Portable.

Hose: plastic, 35 mm dia
Operating voltage: 220 VAC, 50 Hz
Air speed: 30 ± 1 ms^{-1}
Dimension : 230 x 185 x 250mm (L x W x H)

AIR BLOWER C **SV041A**

A compact air blower designed to work with air track experiments. The blower has an air outlet, which is connected to a hose. Supplied complete with flexible hose and adaptor for hose. Provided with speed regulator and ON/OFF switch.

Technical Specifications:

Power	: 250W
Flow	: >25M^3h
Pressure	: >600mm Hg
Noise	: <56db



Linear Air Track accessories D **SP059**

Vehicle 200 g	Two
Plug with aluminium strip	Three
Plug with screen	One
Plug with clay	One
Plug with pin	One
Fork with rubber band	Three
Weight 50 g	Four
Plug with card(black Al sheet)	One
Plug with hook for attaching card	One
Plug with pulley	One



SJ212

OPTIONAL:
RING **SJ212**

For better collision rings in place of fork can be used. It is supplied in pack of two.

Available on request:
These accessories are compatible with our New Photo-gate (SZ023A) & Timer (SN029A) and Intelligent Timer (SP774) & Photo-gate (SZ023) respectively. For more information please see page no. 93.



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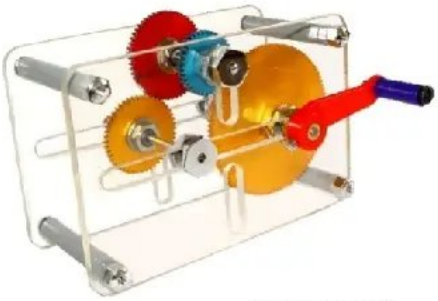
SMU/SMA301

SMA / SMU 301 SINGLE STAGE SPUR GEAR



SMU/SMA302

SMA / SMU 302 SINGLE STAGE SPUR GEAR WITH INTERMEDIATE GEAR



SMU/SMA303

SMA / SMU 303 TWO STAGE SPUR GEAR



SMU/SMA304

SMA / SMU 304 THREE STAGE SPUR GEAR



SMU/SMA305

SMA / SMU 305 THREE SPEED AND REVERSE GEAR



SMU/SMA306

SMA / SMU 306 WORM GEAR



SMU/SMA307

SMA / SMU 307 BEVEL GEAR



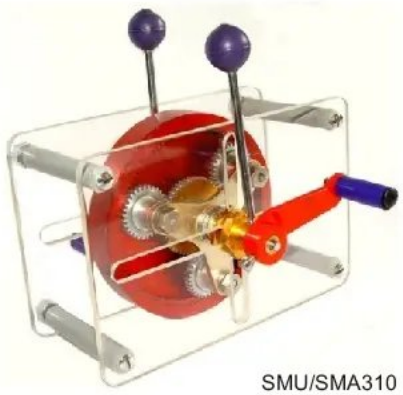
SMU/SMA308

SMA / SMU 308 RACK AND QUADRANT GEAR DRIVE



SMU/SMA309

SMA / SMU 309 REVERSING GEAR



SMU/SMA310

SMA / SMU 310 EPICYCLIC GEAR (SUN AND PLANET)



SMU/SMA311

SMA / SMU 311 CYCLOIDAL MOTION



SMU/SMA312

SMA / SMU 312 INTERNAL ROLLING GEAR DRIVE

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SMU/SMA313

SMA / SMU 313 INTERNAL GEAR AND PINION DRIVE



SMU/SMA314

SMA / SMU 314 HELICAL GEAR



SMU/SMA315

SMA / SMU 315 SPIRAL GEAR 90 DEGREE



SMU/SMA316

SMA / SMU 316 SPIRAL GEAR SINGLE STAGE WITH INTERMEDIATE GEAR SIDE - I



SMU/SMA317

SMA / SMU 317 HERRINGBONE GEAR



SMU/SMA318

SMA / SMU 318 CRANK DRIVE TO OSCILLATING LINK



SMU/SMA319

SMA / SMU 319 CRANKSHAFT AND SLIDER MECHANISM



SMU/SMA320

SMA / SMU 320 TWO CRANK AND LINKAGE DRIVE (VARIABLE VELOCITY)



SMU/SMA321

SMA / SMU 321 CRANK AND SLOTTED LINK DRIVE (OSCILLATOR)



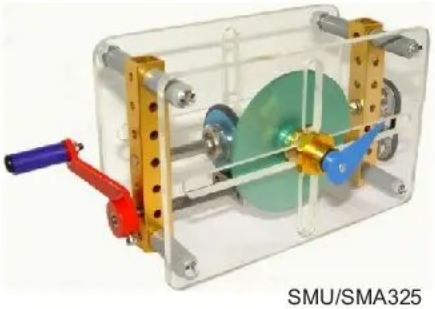
SMU/SMA323

SMA / SMU 323 FRICTION WHEEL DRIVE (CIRCUMFERENCE)



SMU/SMA324

SMA / SMU 324 CENTRIFUGAL MECHANISM AND CLUTCH DRIVE



SMU/SMA325

SMA / SMU 325 FRICTION WHEEL DRIVE (VARIABLE SPEED)

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SMU/SMA326

SMA / SMU 326 CONE CLUTCH DRIVE (SINGLE SIDED)



SMU/SMA327

SMA / SMU 327 CONE CLUTCH DRIVE (TWO SPEED)



SMU/SMA328

SMA / SMU 328 DOG CLUTCH DRIVE (SINGLE SIDED)



SMU/SMA329

SMA / SMU 329 DOG CLUTCH DRIVE (TWO SPEED)



SMU/SMA330

SMA / SMU 330 FLAT BELT DRIVE (WITH TENSIONER)



SMU/SMA331

SMA / SMU 331 BELT DRIVE TOOTHED



SMU/SMA332

SMA / SMU 332 BELT DRIVE SINGLE SPEED



SMU/SMA333

SMA / SMU 333 BELT DRIVE - TWO STAGE



SMU/SMA334

SMA / SMU 334 BELT TYPE CONTRA ROTATION



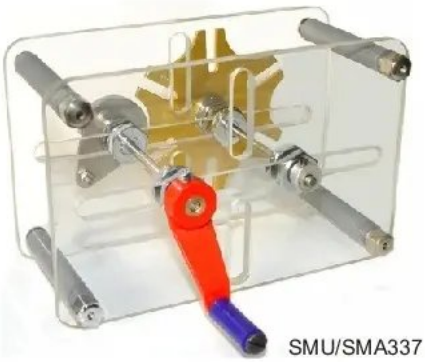
SMU/SMA335

SMA / SMU 335 BELT DRIVE MULTI SPEED



SMU/SMA336

SMA / SMU 336 CHAIN DRIVE (WITH TENSIONER)



SMU/SMA337

SMA / SMU 337 GENEVA DRIVE (MALTESE CROSS)

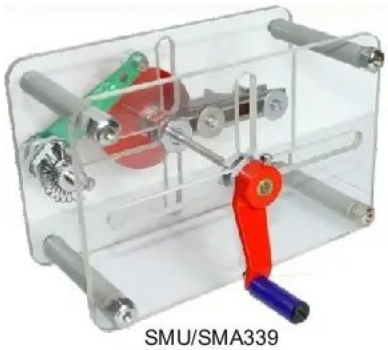
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SMU/SMA338

SMA / SMU 338 SLIDING WEDGE GEAR WITH STRAIGHT LINE AND ARCUATE OUTPUT



SMU/SMA339

SMA / SMU 339 CAM WITH STRAIGHT LINE AND LEVER FOLLOWER



SMU/SMA340

SMA / SMU 340 FACE CAM DRIVE (FREE FOLLOWER)



SMU/SMA341

SMA / SMU 341 FACE CAM DRIVE (DOUBLE SIDED TRAPPED FOLLOWERS)



SMU/SMA342

SMA / SMU 342 OLDHAM COUPLING



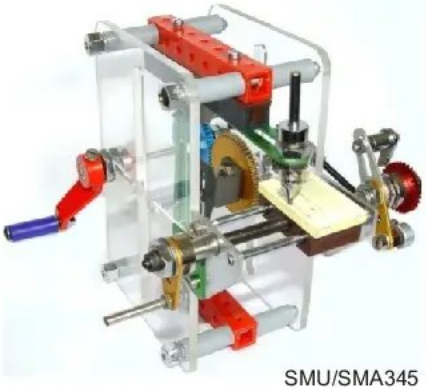
SMU/SMA343

SMA / SMU 343 DIFFERENTIAL GEAR



SMU/SMA344

SMA / SMU 344 LATHE SCREW CUTTING MODEL



SMU/SMA345

SMA / SMU 345 SHAPER



SMU/SMA346

SMA / SMU 346 CRANK AND CONNECTING ROD



SMU/SMA347

SMA / SMU 347 FOUR BAR LINK MECHANISM



SMU/SMA348

SMA / SMU 348 BEVEL GEAR TYPE REVERSING MECHANISM



SMU/SMA349

SMA / SMU 349 SCOTCH YOKE MECHANISM

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SMU/SMA350

SMA / SMU 350 ELIPSE TRACER



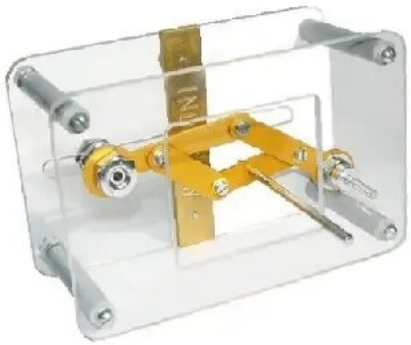
SMU/SMA351

SMA / SMU 351 WATT MECHANISM



SMU/SMA352

SMA / SMU 352 PEAUCELLIER LINKAGE DRIVE



SMU/SMA353

SMA / SMU 353 PANTOGRAPH MECHANISM



SMU/SMA354

SMA / SMU 354 ALLEN LINK MOTION



SMU/SMA355

SMA / SMU 355 HOBBING



SMA/SMU 356

DO IT YOURSELF, '55 IN ONE' TRAINING MODULE. SMA/SMU 356
All modules can be assembled from this. At any one time upto 2 can be assembled. Packed in a wooden box, supplied complete with illustrations and tool kit.



SMU358

TRAINING KIT - GEAR BASE SKILL SMU358
Consists of eight assembled model components enable to make one model out of above eight (one at a time). Packed in a attractive rigid plastic partioned storage case with transparent cover.

NAME OF THE 8 MODELS WHICH CAN BE ASSEMBLED ONE AT A TIME
SMA/SMU 323 Friction Wheel Drive (Circumference)
SMA/SMU 330 Flat belt drive (with tensioner)
SMA/SMU 331 Belt Drive Toothed
SMA/SMU 332 Belt drive-Single speed
SMA/SMU 333 Belt drive-two stage
SMA/SMU 334 Belt drive (Contra-Rotation)
SMA/SMU 335 Belt drive-Multispeed
SMA/SMU 336 Chain drive (with tensioner)



SN357

TOOL KIT SN357
Used for assembly/disassembly of Mechanical Training Modules.

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STUDENT MICROSCOPE **A** **SB101**

U-shaped, well balanced base with heavy inclinable body. It has two spring clips, built-in condenser, disc-diaphragm. It has provision for fitting mechanical stage. Separate coarse and fine focussing is provided by rack and pinion arrangement. (Triple revolving nosepiece has accurate click stop arrangement for perfect centering and identical repeated settings).
Objectives 5x, 10x and 45x, Eyepieces 10x, 15x.



STUDENT STEREO MICROSCOPE **B** **SB106**

It comprises of an Inclined Binocular Head with interpupillary distance adjustable within 50-75mm. One of the two eyepiece tubes is provided with dioptric adjustment to compensate different visual facilities to both eyes. Provided with two pairs of wide field eyepieces 10x and 15x and paired parafocal objectives 2x and 4x giving a total magnification of 20x - 60x. The lighting arrangement fitted on a base has 6V, 20 Watt lamp.



STUDENT INCLINED MICROSCOPE **C** **SB102**

This microscope has a built-in illumination system and both coarse and fine focussing arrangements. It has an angled head that is rotatable through 360° for easy viewing. Objectives 5x, 10x,45x and 100x, Eyepieces 5x, 10x and 15x.



BINOCULAR RESEARCH MICROSCOPE **D** **SB103**

It is similar to SB102 but with a binocular head which has an independent focussing adjustment of eyepiece tubes and interpupillary distance adjustment. Objectives 5x,10x, 45x, & 100x. Eyepieces 5x, 10x WF (Paired). Supplied without mechanical stage.

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MONOCULAR CO-AXIAL MICROSCOPE **A** **SW676**
Monocular microscope for use with electric light or daylight with mirror replacement. Monocular observation tube, 45 ° inclined and 360° rotatable. Rectangular built in graduated mechanical stage unit provided. Equipped with abbe's N.A. 1.3 moveable condenser with iris diaphragm and filter, focussed by rack and pinion motion. Objectives : 4x, 10x, 40x, 100x oil immersion DIN. 10x paired wide field anti reflective DIN eyepiece. Separate coarse & fine focussing knobs provided. Built -in illuminator 6V-20W halogen lamp and light intensity regulator. Mains supply : 220 V AC, single phase, 50Hz.



DISSECTING MICROSCOPE **B** **SB108**
Round base and stage clips are provided. Focussing is done by rack & pinion arrangement. Eyepieces 10x & 20x.



BINOCULAR CO-AXIAL MICROSCOPE **C** **SW677**
It is similar to SW676 in specifications but with binocular head.



MICROSCOPE LAMP WITH A FIXED STOP **D** **SH200**
Lamp 220 V, 40 W housed in metallic case and fitted with 1.5 meter 3 core cable. Mounted ona steel pillar which is further attached to metallic stand. The height of lamp is adjustable by means of square bosshead.

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MECHANICAL STAGE STANDARD A
SB124

Both horizontal and vertical movements are made by a rack and pinion arrangement provided. It has a movement of 70mm in X-axis and 30mm in Y-axis. Its vernier reads to 0.1mm.

MECHANICAL STAGE COAXIAL B
SB125

In this model both X & Y movements can be made from knobs provided on the same X-axis. The horizontal movement is made by a lead screw guidenut arrangement and vertical movement is made by a rack and pinion arrangement. It has a movement of 70mm in X-axis and 30mm in Y-axis. Its vernier reads to 0.1mm.

MICROSCOPE OBJECTIVES C

Cat. No.	Objectives
SB138	5X
SB139	10X
SB140	45X
SB141	100X, Oil immersion



EYEPIECES

Magnification	Huygenian D	Wide Field E	Pointer F
5X	SB128	--------	SB133
10X	SB129	SB131	SB134
15X	SB130	SB132	SB135

MIRROR FOR MICROSCOPE G SB126

LIGHT SOURCE FOR MICROSCOPE H
SB127

A substage attachable illuminator with air holes for cooling. Working voltage is 230V AC/DC, 15Watts.



EYEPIECES WITH RETICLE I

Cat. No.	Eyepiece	Reticle
SB136	10X	Micrometer
SB137	15X	Micrometer
SB250	10X	Graph
SB251	15X	Graph





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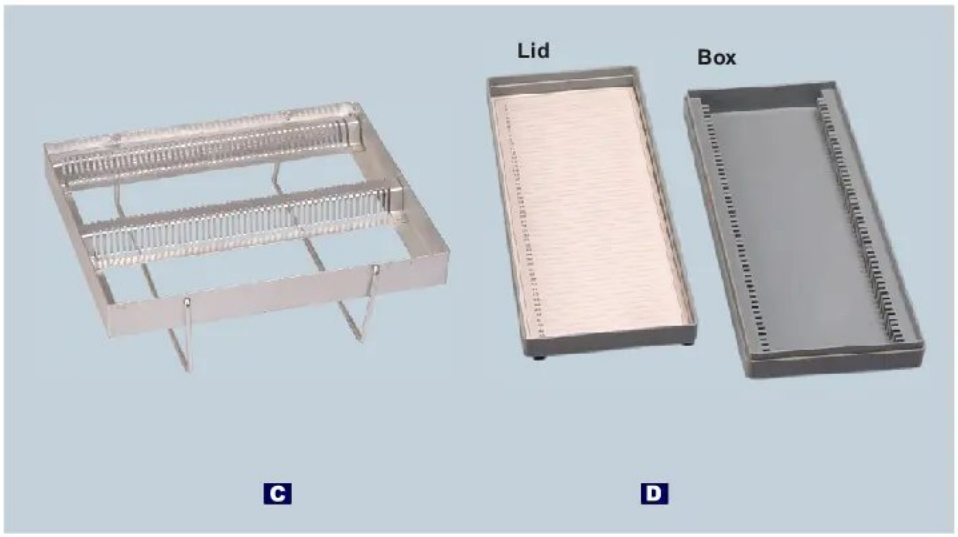


MICROSLIDE BOX A
Made of wood with sunmica top.

Cat No	Capacity
SB 119	25 slides with plastic groove
SB 120	50 slides with plastic groove
SB 121	100 slides with plastic groove
SJ017	25 slides with wooden groove
SJ018	50 slides with wooden groove
SJ019	100 slides with wooden groove

MICROSLIDE CABINET WOODEN B
Microslide Cabinet for storing 75x25mm microslides. Cabinet is made from laminated board. The drawers are serially numbered. Each drawer has index card frame and knobs. A lock is provided.

Cat No	Capacity
SB116	500 slides
SB 117	1000 slides
SJ020	2000 slides
SB 118	10000 slides



MICROSLIDE TRAY C
Made out of anodised aluminium sheet.Slides of 75x25mm can be kept.This is useful for drying of slides.

Cat No.	Capacity
SB122	100 slides
SJ086	50 slides
SJ087	25 slides

MICROSLIDE BOX D
Made of polystyrene.

Cat No	Capacity
SB 440	50 slides
SB 441	100 slides

SLIDE STAINING JAR (RECTANGULAR) SB112 E
Made of soda glass.

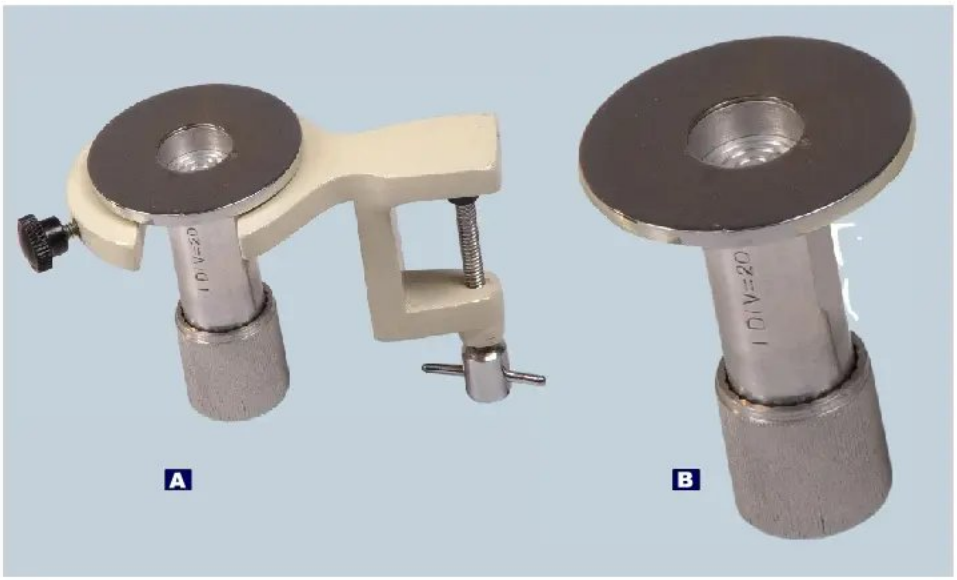
COPLIN'S SLIDE STAINING JAR F
SB113 Made of soda glass.
SCA14 Made of polypropylene. Capacity 10 slides



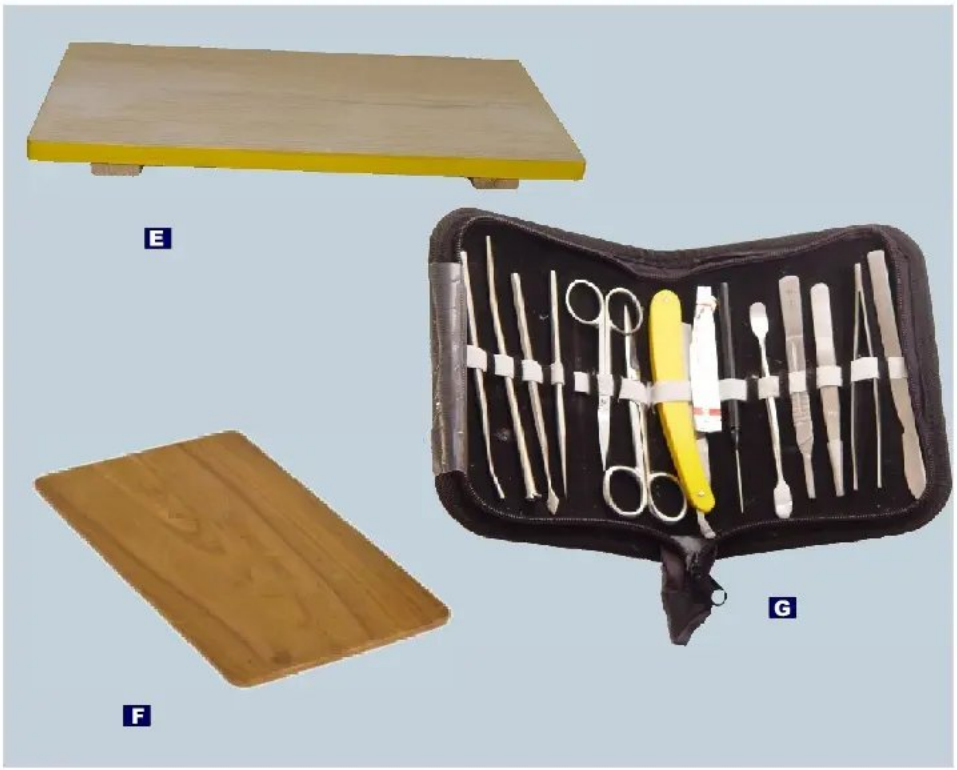
OUR SPECIALITY
We have a very flexible manufacturing setup. We are regularly producing goods for various customers as per their design and samples often on exclusive basis.

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HAND AND TABLE MICROTOME A

It is a combination of hand and table microtome. An excellent device for study of cutting sections of unembodied specimens. The pitch of the screw is 0.5mm and drum has 50 divisions. Maximum clamp opening is 40mm.
SB142 Diameter 68mm approx.
SW826 Diameter 85mm approx.

HAND MICROTOME B **SB427**

It is similar to SB142. Supplied without Clamp.

STAGE MICROMETER **SW681**

For calibrating eyepiece graticules, glass scale set in a matt black finish aluminium slide, 75 x 25mm. Micrometer scale 0-1 mm x 0.01mm.

DISSECTING TRAY C

Made of Stainless Steel.

Size Approx.	Without Wax	With Wax
25x20cm	SJ021	SJ023
27x17.5cm	SJ022	SJ024
30x25cm	SB055	SJ025

PLASTIC DISSECTING DISH D **SW674**

The inner size of the plastic dissecting dish is 29 x19 x 12cm approx. (L x W x H).

DRAWING BOARD E

Made of soft wood.

Cat. No.	Size (approx)
SN826	40 x 40 cm
SJ027	45 x 30 cm

DISSECTING BOARD F **SB060**

Made of Wood, size 45x30cm approx.

DISSECTING SET G

The dissecting instruments included in this set are as follows:-

1. Forcep 125mm Straight Fine Point.
2. Forcep 125mm Straight Blunt tip.
3. Forcep 125mm curved fine point.
4. Needle metal handle 95mm.
5. Needle 35mm straight.
6. Scalpel 38mm.
7. Scalpel 45mm.
8. Scissors 125mm Straight fine point.
9. Scissors 125mm blunt.
10. Magnifier 10x.
11. Seeker 130mm.
12. Section lifter 150mm.
13. Full spear dissecting needle 140mm.
14. Hook & Chain.
15. Section cutting razor (Made of carbon steel).
16. Scalpel handle.

Supplied in rexine roller case.

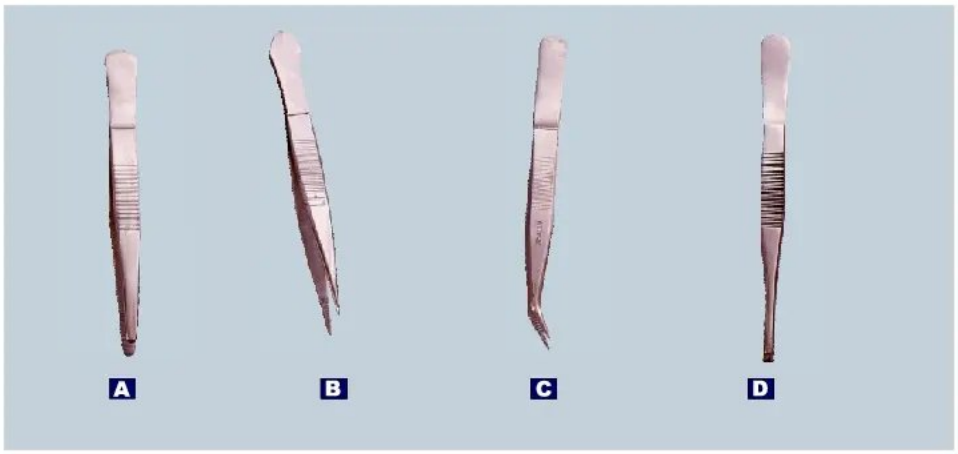
SB056 Set of 16 instruments.
SJ026 Set of 13 instruments.

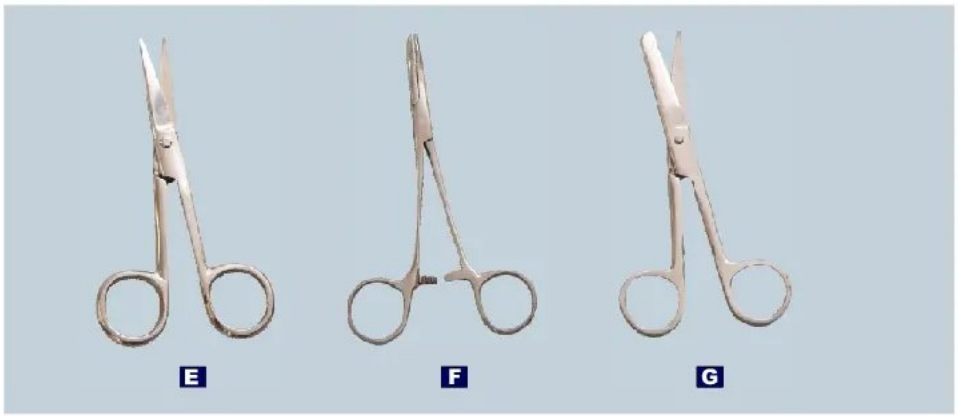
CROSS REFERENCE

For plastic tray Please see page no.165

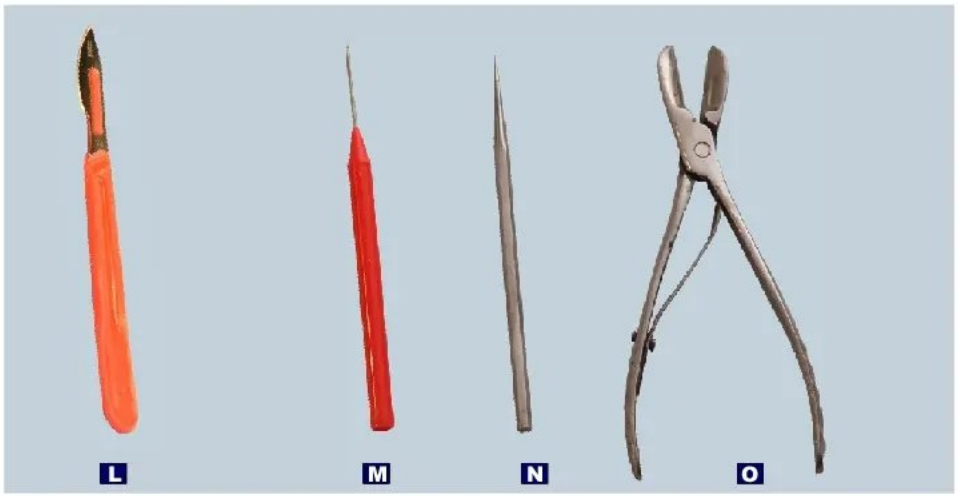


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DISSECTING FORCEPS
These are made of stainless steel.

Size(cm)	Blunt A	Fine point B	Curved C	Toothed D
10	SB043	SB046	SB049	SB052
12.5	SB044	SB047	SB050	SB053
15	SB045	SB048	SB051	SB054

SCISSORS
These are made of stainless steel.

Size(cm)	Straight Pointed E	Straight Blunt F	Curved G
10	SB009	SB012	SB015
12.5	SB 010	SB013	SB016
15	SB011	SB014	SB017

SCALPEL H **SB018**
It is made up of stainless steel.

SCALPEL HANDLE I **SB019**
It is made up of stainless steel having size no 3.
It can be used with blade no. 10, 11, 12, 15.

SCALPEL HANDLE J **SB020**
It is made up of stainless steel having size no 4.
It can be used with blade no. 20, 21, 22, 23, 24, 25.

SCALPEL BLADE

No.	Scalpel blade K	Scalpel blade with plastic handle disposable L
10	SB021	SB032
11	SB022	SB033
12	SB023	--------
15	SB024	--------
20	SB026	--------
21	SB027	--------
22	SB028	SB039
23	SB029	SB040
24	SB030	SB041
25	SB031	--------

DISSECTING NEEDLE
SB057 M Plastic
SB058 N Stainless steel

BONE CUTTER O
It is made up of stainless steel.

Cat No.	Length (Approx.)
SJ028	125mm
SJ029	150mm
SJ030	175mm
SB059	200mm

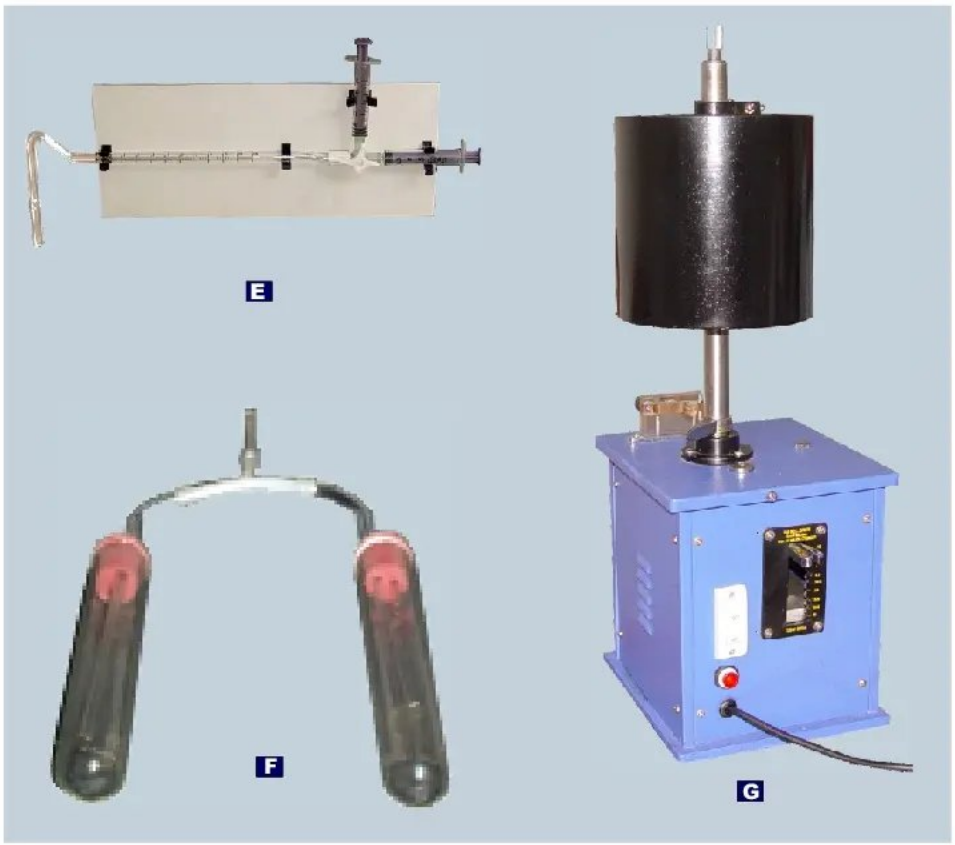
FOR YOUR INFORMATION
We can provide complete solutions to our customers to plan, design and equip complete labs for Physics, Chemistry and Biology.

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Fax:+91-171-2699102, 2699222, E-mail:eenquiry@indosaw.com (Foreign Customer), deducation@indosaw.com (Indian Customer)







FOOD CALORIMETER FOR HEAT OF COMBUSTION A **SB417**
It is used to determine the energy value of foods & fuels. It consists of a calorimeter vessel (made of borosilicate glass) 205x100mm, height & diameter, comprising of integral water jacket and combusting chamber open at the bottom. At the top of combustion chamber a lid is provided. A heat exchanger (copper tubing) is connected and passes through the lid. The lid has holes for a wire stirrer and for inserting thermometer. It is supplied without stand, rod & supply unit.

SPECIMEN JAR B **SN788**
Glass with stopper, tall form, height 300 mm diameter 75 mm.

CLINOSTAT C **SB422**
It is used for demonstration of geotropism & heliotropism. An electric motor revolves at 4 rev. per hour. The specimens are pinned to the cork table. The plane of the table can be set at any angle by a thumb screw provided. Provided with cover for the cork table.

TUBE HOLDER D **SB423**
It can be attached to a clinostat for geotropism experiment with germinating seedling. It has provision for clamping 15 numbers of tubes.

PHOTOSYNTHESIS APPARATUS E **SB421**
Under different light conditions it can measure and analyze the gas evolved by water plants. The gas is circulated into a calibrated capillary tube with the help of one syringe, it is collected into second plastic syringe and taken for further analysis. It consists of a white plastic panel (240 x 100 mm length x height) with miniature 3 way plastic tap, 2 syringes and a calibrated capillary tube approx. 1mm bore. The specimen can be connected to the open end of the tube which is bent downwards.

RESPIRATION APPRATAUS F **SB420**
This is used for testing the air which is consumed or given off. It consists of two nos. of test tubes made of borosilicate glass. The tubes are fitted with stopper. There are two nos. of glass tubing not similar in length, connected by PVC tubes and plastic T.

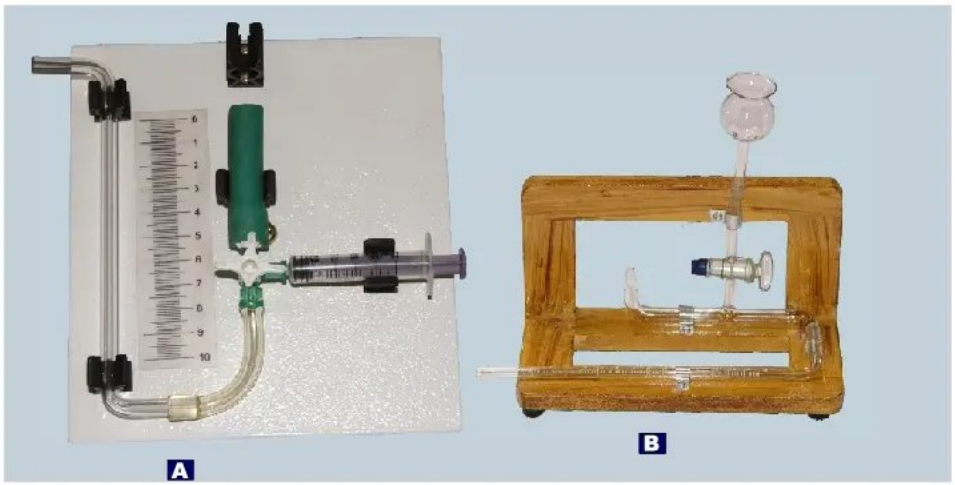
KYMOGRAPH ELECTRICAL G **SB454**
Electro device recording drum with stainless steel axle with screw lift 150 x 150 mm approx. Cylinder. All the eight speeds are obtained from the metallic gear train: speed mm / second- 640, 320, 25, 12.5, 2.5,1.25, 0.25 and 0.12 with 150 mm dia. Cylinder. 2.5,1.25, 0.25 and 0.12 with 150 mm dia. Cylinder. The drum is fitted with electric contact block, contact arms and neutralising clutch as standard fixture. Complete with levelling screws to work on 220 V AC.

Also available Stimuli generator and Transfer chamber.


Stimuli generator


Transfer chamber

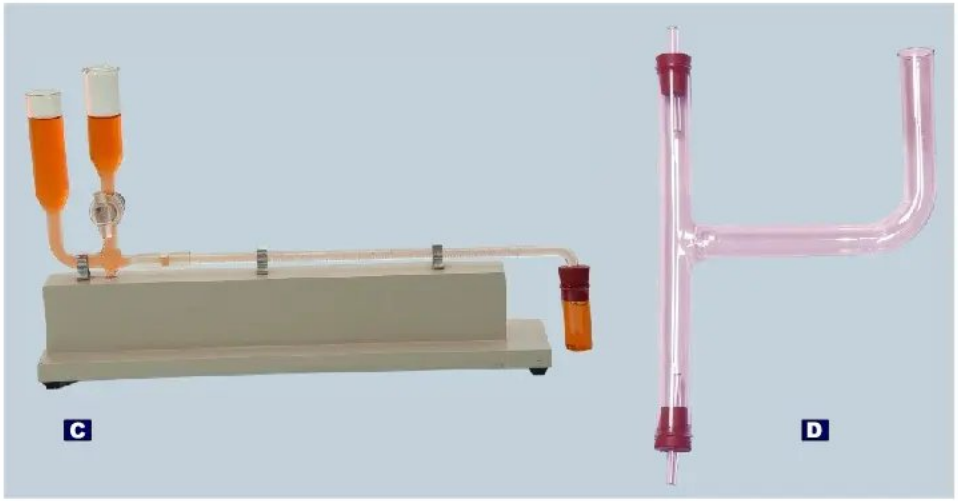
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POTOMETER A **SN726**
For measuring transpiration in laboratory and field, There is only one capillary tube (with millimeter scale) connected to a syringe through 3 way tap. Third outlet is meant for cut shoot. Porous pot can also be connected to third outlet for humidity measurement.

THODAY'S POTOMETER B **SB451**
Made of borosilicate glas. Mounted on wooden stand base.

GANONG'S POTOMETER C **SB416**
It is used for studying transpiration. It consists of graduated, narrow bore, horizontal glass measuring tube. A plant shoot can be fitted in end of the tube. The whole unit is mounted on a wooden base. Supplied with a vessel.



DARWIN POTOMETER D **SB452**
Glass tube with upper end of straight limb closed with rubber stopper, lower end of limb with bored rubber stopper to take length of capillary tubing.

GANONG'S POTOMETER E **SB003**
It is used for studying transpiration. It consists of graduated, narrow bore, horizontal glass measuring tube with a vessel. A plant shoot can be fitted in end of the tube. Supplied with bakelite base.

GAUZE PLATFORM F **SB419**
It is used for supporting small organisms in respirometer. It is made of copper mesh.

SIMPLE RESPIROMETER WITH WIRE BASKETS. G **SB418**
It is used for measuring the oxygen consumption of small organisms at different temperatures. It consists of two test tubes with copper wire baskets (for supporting small organisms) rubber corks with three way taps, one graduated manometer mounted on plastic panel and 1ml graduated syringe.



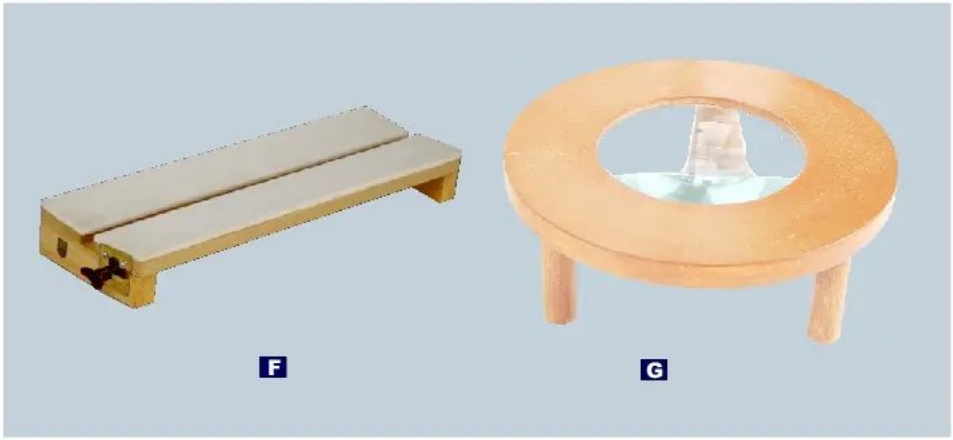
GANONG RESPIROMETER H **SB006**
For measuring the oxygen uptake in typical respiring material like germinating seeds. It consists of glass bulb vessel graduated 75-100x1ml with levelling tube, stand and clamps.

FOR YOUR INFORMATION
Our team of engineers and technicians are continuously working to improve existing products and develop new ones. We welcome suggestions of our valued customers.

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INSECT NET A **SB148**
It is held on a strong wire ring (dia 30cm) with an Aluminium pipe.

PLANKTON NET B **SB149**
It is 87.5cm long collection bag made of strong bolting netting cloth suspended by muslin reinforcement and mounted on a strong wire ring dia.30cm. Three braided strong leads are attached to swivel front. Lower end of bag is provided with 5cm opening with strong cloth pocket for tying the collection vial.

AQUATIC NET C **SB152**
Strongly built for sweeping up of aquatic Fauna and useful as a general utility aquatic net. Net ring and handle can be separated for easy carriage. It has strong 'D' shaped ring frame dia. 30cm with stout handle. Supplied with a pocket for storage of a vial.

INSECT SETTING SHOWCASE D
Frame work fabricated out of wood joints are tongs and groove type glass frame lid and 3 mm plywood bottom with tongs & grooves type joints. The inner side lined with EVA sheet suitable for repeated pinning without leaving pin marks. Double walled and perforated fumigation chamber has been provided on all slides of bottom frame for storing pesticide.

Cat No.	Size(approx) (LxWxH) cm.
SN671	38 x 25 x 6.5
SJ031	45 x 30 x 6.5

MICROSLIDE VIEWER E **SJ265**
It is made of plastic to see micro slides and strips having size 50 x 50mm. No power requirement, no focussing problem.
It uses low power magnification, high quality images. Light weight, compact viewing system. Its white reflector provides a bright, good image in natural light.

INSECT SPREADING BOARD F **SB150**
Made of seasoned wood which is covered with non-scaring, washable, synthetic EVA sheet suitable for repeated pinning without leaving pin marks. Grooves smoothly adjustable in width for various sizes of abdomen of various insects upto 12mm. Size 35 x 12cm approx.

TRIPOD MAGNIFIER G **SA120**
It is used for examination of large specimen and dissection work. Lens diameter 100mm (approx), overall width 180mm. Mounted in wooden frame with three legs.

PLANT PRESS H **SB151**
Heavy duty wooden planks finished in green colour are used as pressure plates. Tightening screws and fly-nuts have been provided for strong and uniform pressure. A tilting arrangement has been made so that the fly-nuts need not be removed completely to lift the upper plank for keeping and removing plants. Size 45x30cm approx.

Indosaw was established in 1993
Its legacy goes back to 1919.

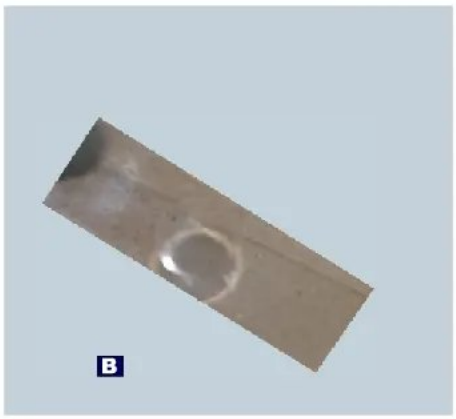
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MICRO BIOLOGY KIT A **SJ088**

This kit is ideal for basic experiments in biology.
Contents:

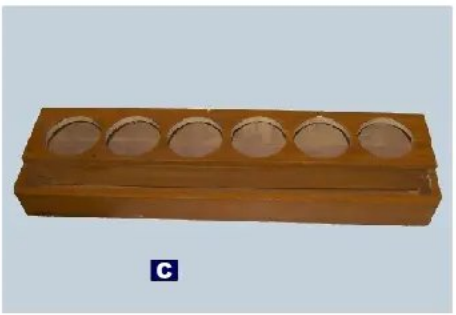
Item	Quantity
Comboplate	1
Filter paper	3
Forceps	1
Funnel	2
Gas collecting lid	1
Gas collecting tube	1
Gas lid1	1
Gas lid 2	1
Glass rod	1
Glass tube 10cm	1
Large glass sample vial	1
Lid adapter	1
Lid stopper	2
Magnifying glass	1
Matches	1
Microburner	1
Paper clip	1
Petri dish	1
pH guide	1
Pipette tip	1
Propettes	6
Retort stand cross arm	1
Retort stand upright	1
Ruler	1
Silicone 10cm	1
Silicone 4.5cm	2
Small vial	1
Spatula	8
Syringe 2.5ml	1
Thermometer 0-50°c	1



MICROSCOPIC CONCAVITY SLIDES B

It has a size 75x25mm approx, thickness 1.4mm approx.

Cat. No.	Capacity
SJ038	Single hole
SJ039	Double hole
SJ040	Tripple hole



SLIDE STAINING RACK C

It is made of wood, suitable for dropping bottles of different size. Space is provided for keeping other instruments.

Cat. No.	Capacity to hold
SJ035	30ml
SJ036	60ml
SJ037	125ml



SLIDE TRAY D **SJ034**

It is made up of aluminium anodised sheet by die -press system. 20 slides of 75 x 25mm can be kept in flat position.



COVER SLIPS E

Perfect for preparing permanent mounts. It is packed in 10gm.

Cat. No.	Size(mm)
SB109	22X22 Square shape
SB110	18X18 Square shape
SJ032	22X40 Rectangular shape
SJ033	22mm Round shape



MICROSCOPE SLIDES F **SJ095**

Good quality glass slides 75x25mm for general classroom use. Supplied in a packet of 100 pcs.

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We can provide complete soultions to our customers to plan, design and equip. Complete labs. For Physics, Chemistry and Biology.

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PROJECTION SLIDES
The size of plastic frame is 50x50mm approx.



Various topics available: **A**

- Zoology
- Botany
- Nursing
- Health
- Agriculture

Available in sets of 20/30/50/60.
Please contact for your requirement.

OHP TRANSPARENCIES **B**
Various topics available:

- Zoology
- Botany
- Animal cell and tissues
- Chick embryology
- Frog embryology
- Mitosis
- Meiosis
- Mathematics
- Human physiology

Please contact for your requirement.

PREPARED MICROSLIDES **C**
Various topics available:

- Pathology
- Zoology
- Mollusca
- Porifera
- Coelentrata
- Botany
- Mitosis Cell Division Plant
- Leaf Structure
- Root Structure
- Stem structure
- Virology & Bacteriology
- Algae

Please contact for your requirement.

Available on request:
More variety of slides.

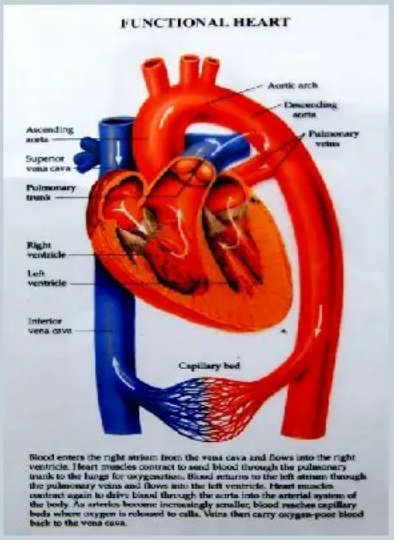
A

Example



B

Example



C

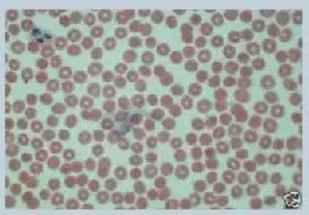
Examples



Ficus (dicot) leaf slide, c.s



Lily anther slide, with pollen, c.s.



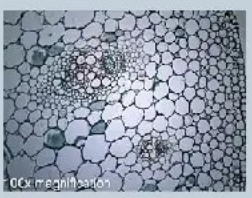
Microscope Prepared Blood smears



(Buttercup) slide, roots, c.s.



Zea Mays (Corn) slide, root, c.s.



Ranunculus (Buttercup) slide, stem, c.s.

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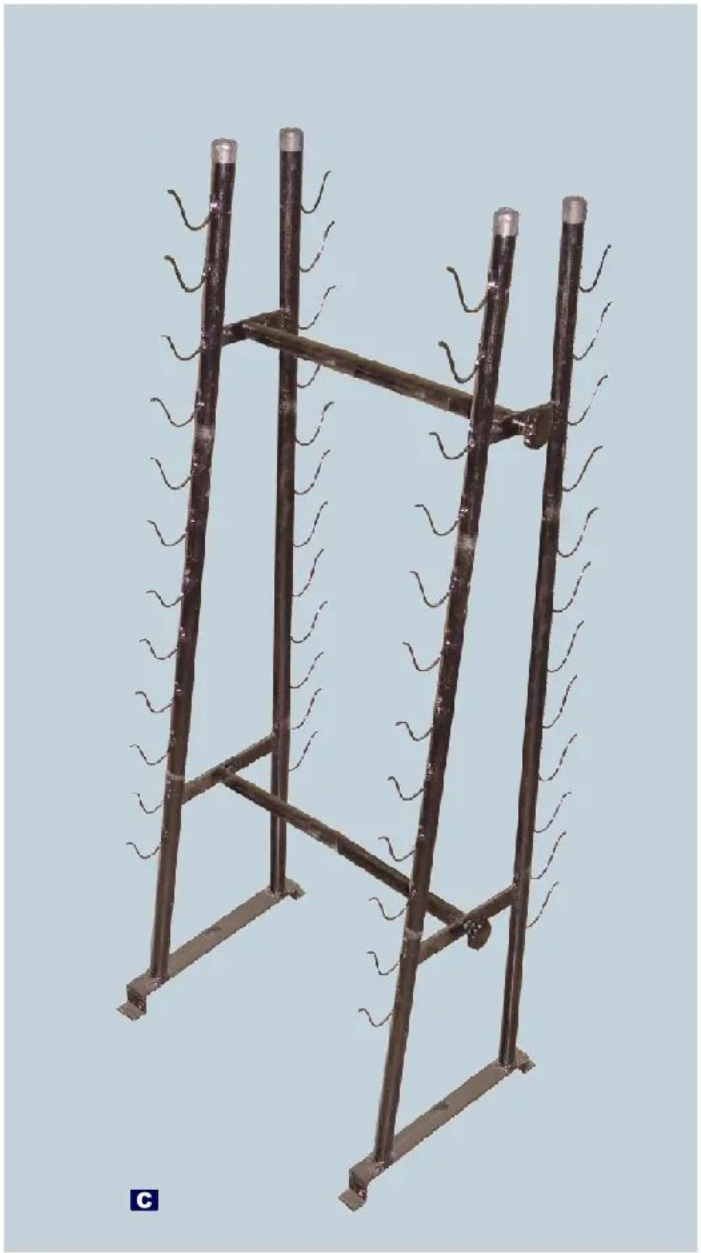
CHARTS
MADE OF POLYART SHEET A
MADE OF REXINE B

Various topics available:

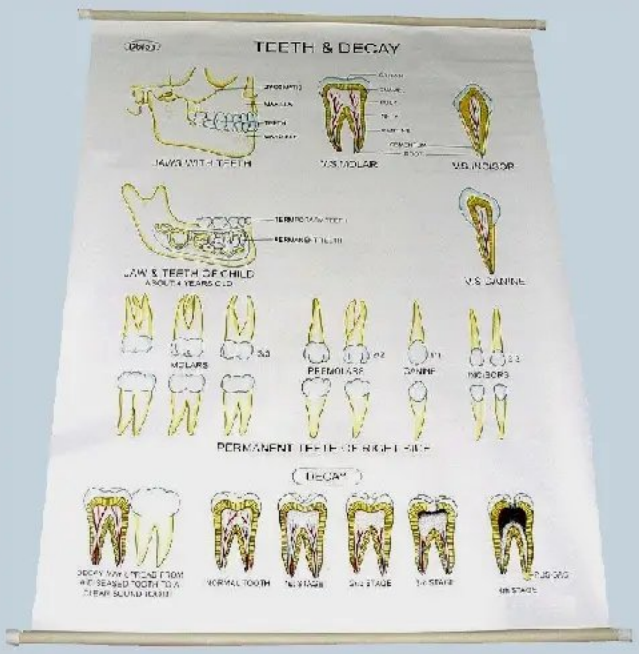
- Genetics
- Physislogy
- General
- Botany charts
- Bryophyta , Pteridophyta
- Gymnosperms
- Seeda fruits
- Roots, stems, leaves
- Angiosperms
- Flowers and embryology
- Histology
- Papeaveraceae
- Malvaceae
- Rutaceae
- Leguminosae
- Rosaceae
- Cucurbitaceae
- Chenopodiaceae
- Euphorbiaceae
- Polygonaceae
- Solanaceae
- Asvlepiadaceae

Please contact for your requirement.

CHART STAND C **SJ041**
Used for keeping charts horizontally. It has capacity to accommodate 24 charts.



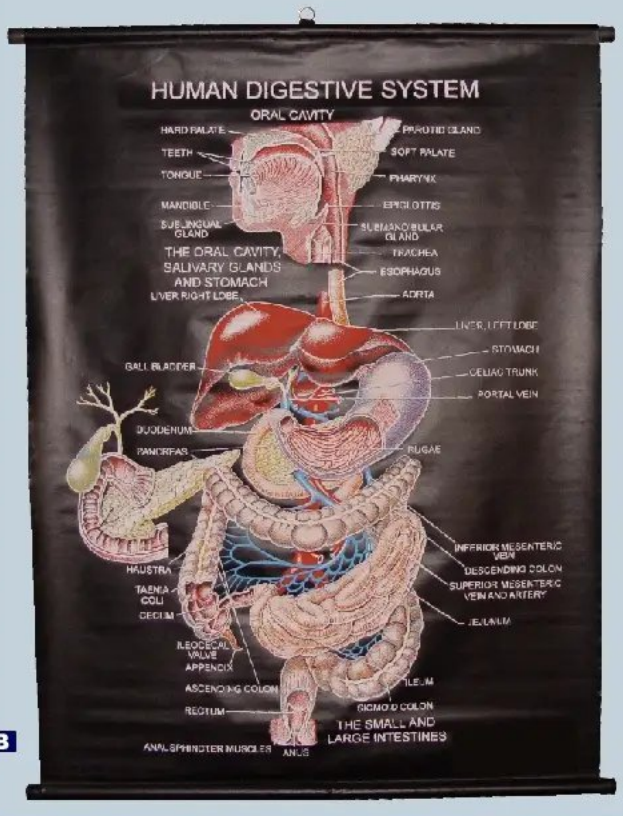
Polyart



A

CHART A
Made of Polyart sheet. Size 100 x 75 cm.

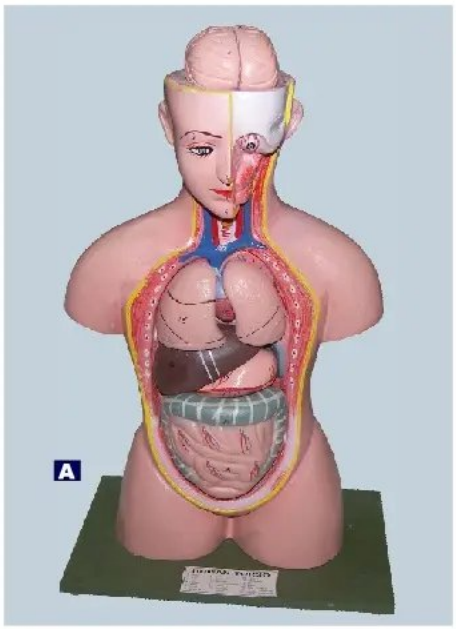
Rexine



B

CHART B
Made of Rexine. Size 100 x 75 cm.

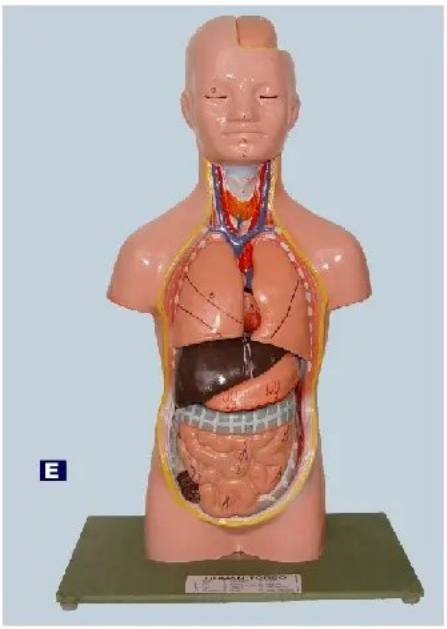
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MINI HUMAN TORSO (FEMALE) **A**
SB062
Made of Fibre Glass. Various details shown include :-
Brain, Eyes, Ear, Nose, Lips, Chin, Wind pipe, Diaphragm, Spleen, Kidney, adrenal gland, Ureters, Bladder, Heart, Lungs, Stomach, Liver, Gall Bladder, Large Intestine & Small Intestine. Mounted on a wooden board.



HUMAN TORSO (MALE) **C**
SB061
Made of Fibre Glass. Various details shown include :-
Brain, Eye, Tongue, Hyoid Bone, Trachea, Superior Vena Cava, Aorta, Heart, Right Lung, Left Lung, Duodenum, Pancreas, Spleen, Kidney, Adrenal Gland, Liver, Gall Bladder, Stomach, Large Intestines, Small Intestines, Urethra, Penis, Symphysis Pubic, Urinary Bladder & Testis. Mounted on a wooden board.



MINI HUMAN TORSO **E** **SB603**
Made of Fibre Glass. Various details shown include :-
Brain, Eyes, Ear, Nose, Lips, Chin, Wind pipe, Diaphragm, Spleen, Kidney, adrenal gland, Ureters, Bladder, Heart, Lungs, Stomach, Pancreas, Liver, Gall Bladder, Large Intestines & Small Intestines. Mounted on a wooden board.



HUMAN SKELETON WITH STAND
SB063 **B**
It has a movable folding stand. Skeleton is complete upto Phalanges. Every part is made in a manner so that all joints move freely. Made of fibre glass and moulded plastic.

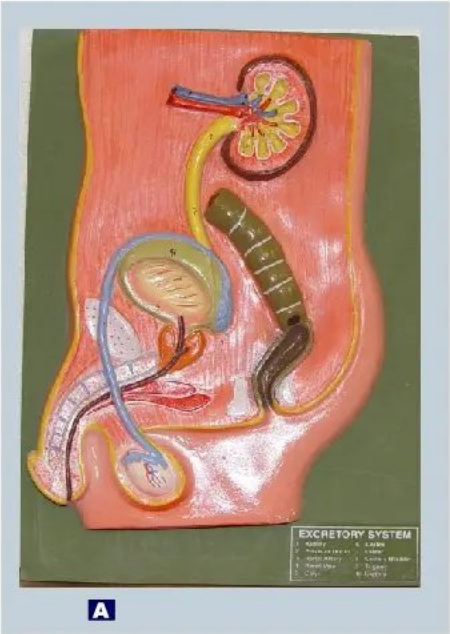


HUMAN HEART (4PARTS) **D**
SB071
Made of Fibre glass. This model is dissectable into four parts,easy identification of all parts. Model shows :
Right Atrium, Left Atrium, Right Ventricle, Left Ventricle, Superior Vena Cava, Inferior Vena Cava, Aorta, Pulmonary Arteries, Pulmonary Vein, Pulmonary Valve, Mintral Valve, Tricuspid Valve, Aortic Valve. Mounted on a plastic base.



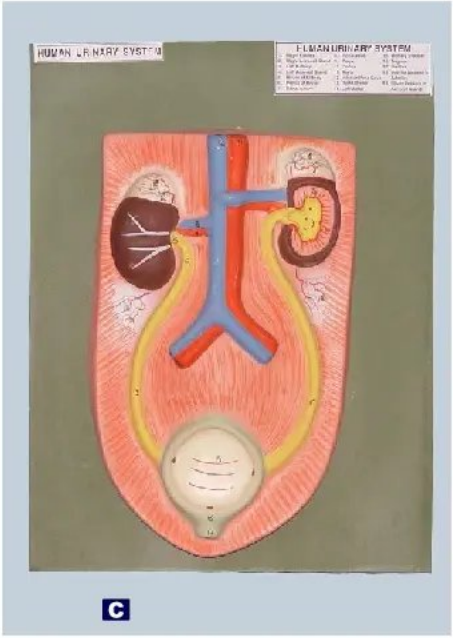
HEART MODEL **F** **SJ083**
This model is made of PVC plastic. It is suitable for teaching human anatomy and physiology. External features and internal structure of the heart, and its relation with the large blood uessels can be understood. The internal structures of the heart are dissectible into right atrium, right ventricle, left atrium and left ventricle.

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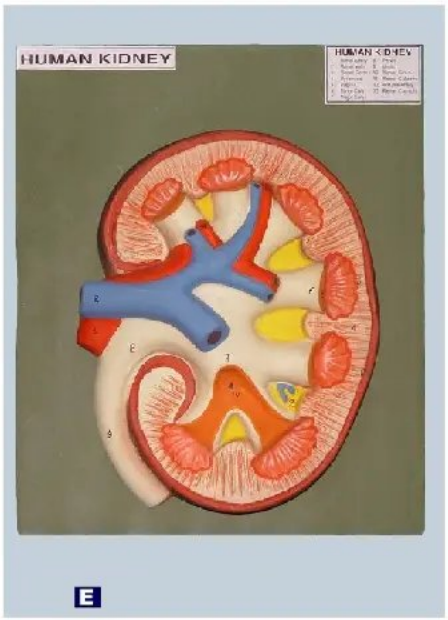
A

HUMAN EXCRETORY SYSTEM **A** **SJ046**
Made of Fibre Glass. Various details shown include :-
Kidney, Pelvis of Ureter, Renal Artery, Renal Vein, Calyx, Cortex, Ureter, Urinary Bladder, Trigone, Urethra. Numbered with english key card.
Mounted on a wooden board.



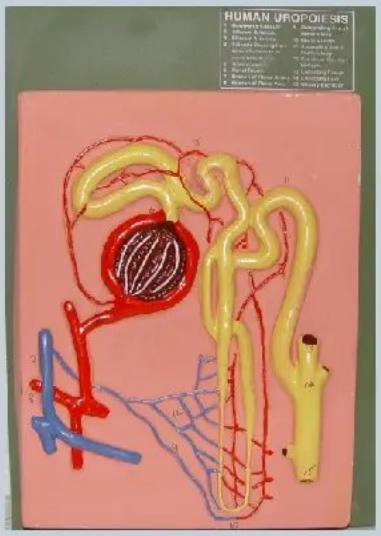
C

HUMAN URINARY SYSTEM **C** **SJ054**
Right Kidney, Right Adrenal Gland, Left Kidney, Left Adrenal Gland, Pelvis of Ureter, Renal Artery, Renal Vein, Calyx, Cortex, Aorta, Interior Vena Cava, Right Ureter, Left Ureter, Urinary Bladder, Urethra and Blood Vessels in adrenal gland.



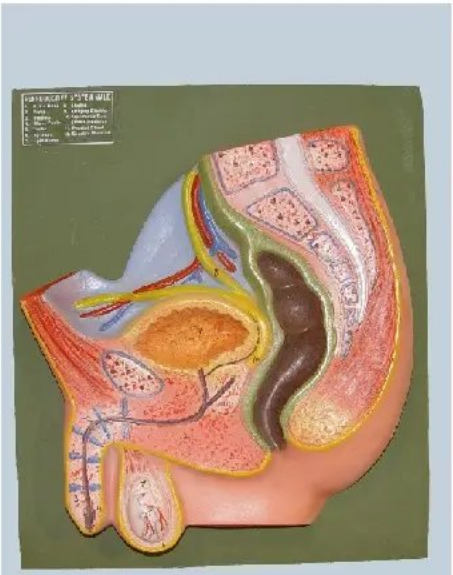
E

MODEL OF HUMAN KIDNEY, L.S. **E** **SB073**
Made of Fibre Glass. All important structures are numbered and identified. Various details shown include :-
Ureter, Pyramid, Major Calyx, Cortical Substance, Minor Calyx, Artery and Vein, Pelvis & Papilla. Mounted on a wooden board. Mounted on wooden board.



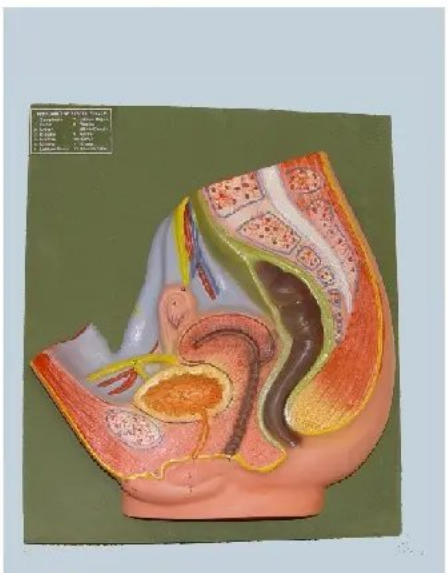
B

HUMAN UROPOIESIS **B** **SJ045**
Made of Fibre Glass. Uropoiesis is production & excretion of urine from body. Various details shown include:
Bowman's Capsule, Afferen t Arteriole, Efferent Arteriole, Filterate Passing from Blood System into Renal Tubule, Glomerulus, Renal Tubule, Branch of Renal Artery, Branch of Renal Vein, Descending lind of Henle's loop, Henle's loop, Ascending lind of Henle's loop, partibnlar Capillary Network, Collecting Tubule, Collecting Duct and Urinary Excretion. All parts are numbered for easy identification.



D

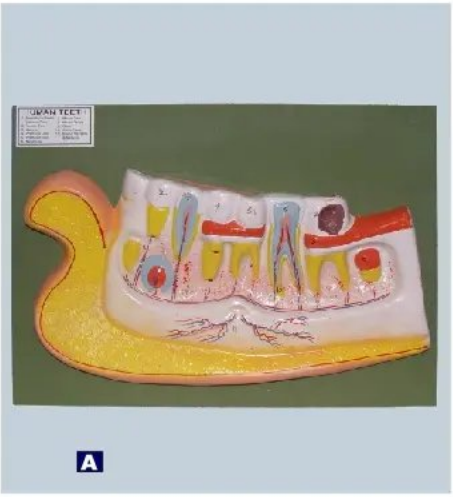
REPRODUCTIVE SYSTEM MALE **D** **SB076**
Made of Fibre Glass. Various details shown include :-
Pubic Bone, Penis, Urethra, Glans Penis, Testis, Scrotum, Epididymis, Ureter, Urinary Bladder Spermatic Duct (Vas Deferens), Prostat Gland & Erectile Muscles. Mounted on a wooden board.



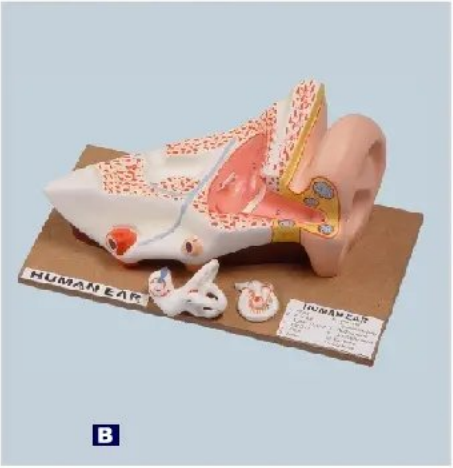
F

REPRODUCTIVE SYSTEM FEMALE **F** **SB077**
Made of Fibre Glass. Various details shown include :-
Symphasis Pubic, Ureter, Bladder, Urethra, Clitoris, Labium Minus, Labium Majus, Vagina (Birth Canal), Uterus, Cervix, Ovary & Uterine Tube.Numbered with english key card. Mounted on a wooden board.

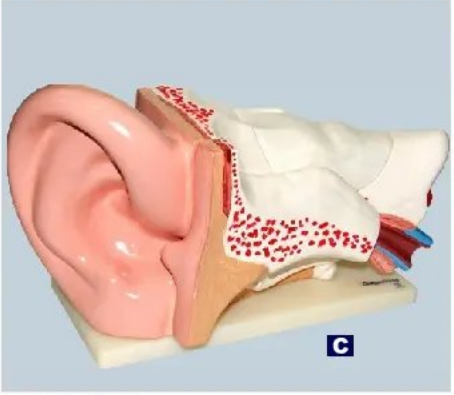
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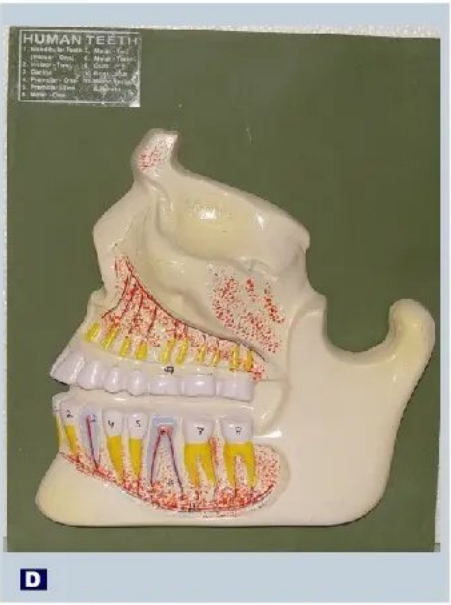


HUMAN TEETH **A** **SB069**
Made of Fibre Glass. Various details shown include :-
Mandivular Teeth (Incisor-One), Incisor-Two, Canine, Premolar-One, Premolar-Two, Molar-One, Molar-Two, Molar-Three, Gum, Root Canal and Blood Vessel & Nerves. All parts are numbered for easy identification.
Mounted on a wooden base.



MODEL OF HUMAN EAR **B** **SB068**
Made of Fibre glass. It represents outer, middle and inner ear. Various details shown include :-
Pinna, External Auditory Canal, Middle ear cavity, Eustachian Tube, Semicircular Canals, Stapes, Anvil and Hammer, Eardrum, Cochlea, Auditory Nerve, Tympanic Cavity & Cartilage etc.Numbered with english key card. Mounted on a wooden board.



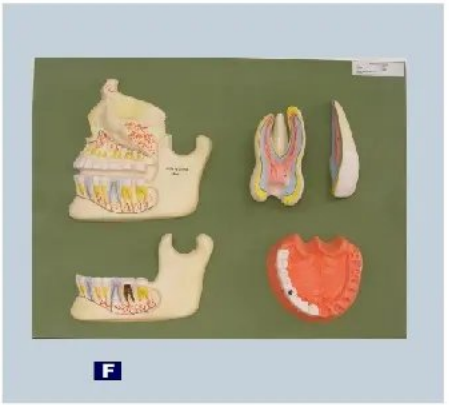


HUMAN TEETH **D** **SJ044**
Made of Fibre Glass. Various details shown include :-
Mandibular Teeth (Incisor-One), Incisor-Two, Canine, Premolar-One, Premolar-Two, Molar-One, Molar-Two, Molar-Three, Gum, Root Canal and Blood Vessel & Nerves. All parts are numbered for easy identification.
Mounted on a wooden base.



EYE MODEL **E** **SJ085**
Made of PVC plastic, shows structure of the eyeball, i.e. the three tunicae, the refracting media, the lens and the vitreous body etc.. Supplied with stand.

EAR MODEL **C** **SJ084**
Made of PVC plastic. This model shows external ear (shape of auricle & primary features of the external auditory meatus) , middle ear (hammer, anvil, stirrup and the eustachian tube) & internal ear (vestibule, cochlea & 3 semi circular canals of osseous labyrinth) .



CARIOUS TOOTH **F** **SJ042**
Made of Fibre Glass. Various details shown include :-
Pulp Cavity, Enamel, Dentine, Blood Vessels & Nerves, Crown, Neck, Root, Cavity and Caries. All parts are numbered for easy identification.
Mounted on a wooden base.



DENTAL CARE **G** **SJ043**
Enlarged model to demonstrate cleaning techniques with tooth brush.



MODEL OF HUMAN EYE **H** **SB067**
Made of Fibre Glass. Various details shown include :-
Sclera, Cornea, Lens, Muscles, Iris, Retina, Vitreous Humour, Blind Spot, Optic Nerve, Pupil.Numbered with english key card.
Mounted on a plastic base.

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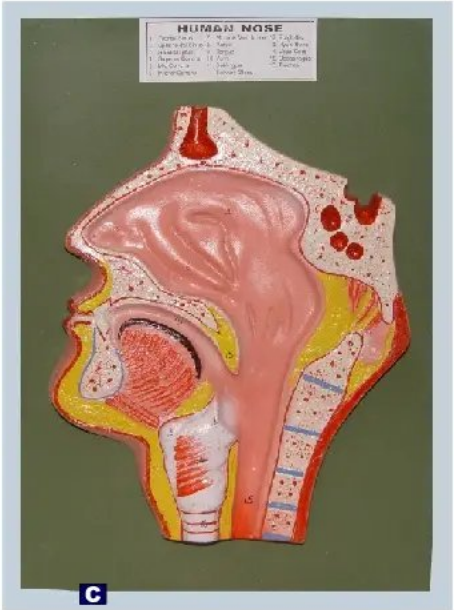
A

NEURON A **SJ081**
Made of Fibre Glass. All important structures are numbered and identified. Various details shown include:
Dendron, nucleus, nerve cell, neurilemma, axon, schwann cell, medullary sheath, node of ranvier,direction of impulse and nerve ending.



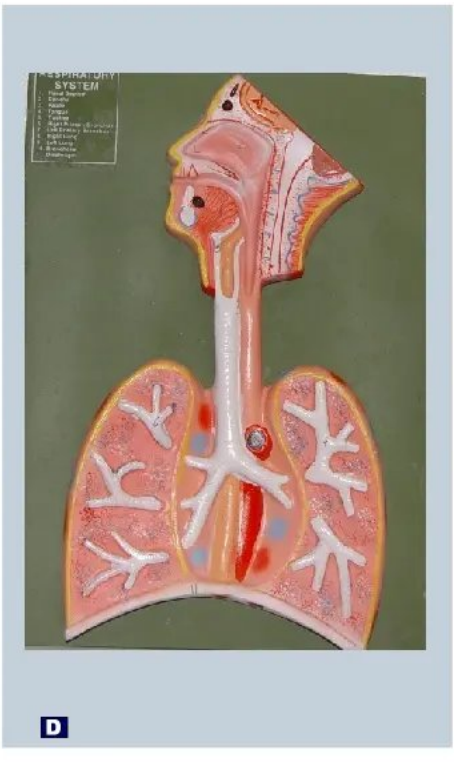
B

DIGESTIVE SYSTEM B **SB078**
Made of Fibre Glass. Various details shown include :-
Mouth, Teeth, Palate, Tongue, Pharynx, Oesophagus, Stomach, Liver, Gall Bladder, Duodenum, Pancreas, Spleen, Large Intestines, Small Intestines, Appendix and Rectum.All parts are numbered for easy identification.



C

HUMAN NOSE C **SJ048**
Made of Fibre Glass. Various details shown include :-
Frontal Sinus, Sphenoidal Sinus, Nasal Septum, Superior Concha, Mid Concha, Inferior Concha, Mucous Membrane, Palate, Tongue, Vulve, Sublingual Salivary Gland, Epiglottis, Hyoid Bone, Vocal Cord, Oesophagus & Trachea.
Mounted on a wooden board.Numbered with english key card.



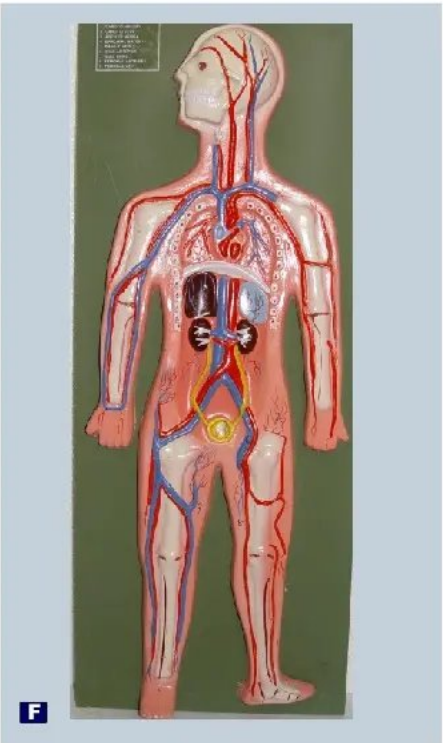
D

RESPIRATORY SYSTEM D **SB079**
Made of Fibre Glass. Various details shown include :-
Nasal Septum, Concha, Palate, Tongue, Trachea, Right Primary Bronchus, Left Primary Bronchus, Right Lung, Left Lung, Bronchiole and Diaphragm.All parts are numbered for easy identification.
Mounted on a wooden board.



E

HUMAN SKIN E **SB070**
Made of Fibre Glass. Various details shown include :-
Epidermis, Horni Layer, Germinal Layer, Hari Shaft, Basal Calls, Subaceous Gland, Merkels Discs, Hair Bulb, Hair Follicle, Capillary Knot in Papilla, Arterial Capillary, Venous Capillary, Sweat Gland, Sweat Pores & Duct, Root Hair Plexes, Pacinian Corpuscle, Subcutaneous Fat and Dermis.All parts are numbered for easy identification.
Mounted on a wooden board.



F

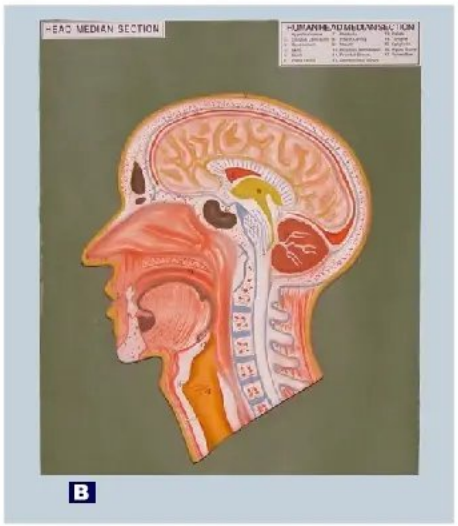
BLOOD CIRCULATORY F **SB074**
Made of Fibre Glass. Various details shown include :-
Carotid Artery, Carotid Vein, Arch of Aorta, Brachial, Artery, Basilic Vein, Iliac Arteries, Iliac Veins, Femoral Arteries and Femoral Vein.All parts are numbered for easy identification.
Mounted on a wooden board.

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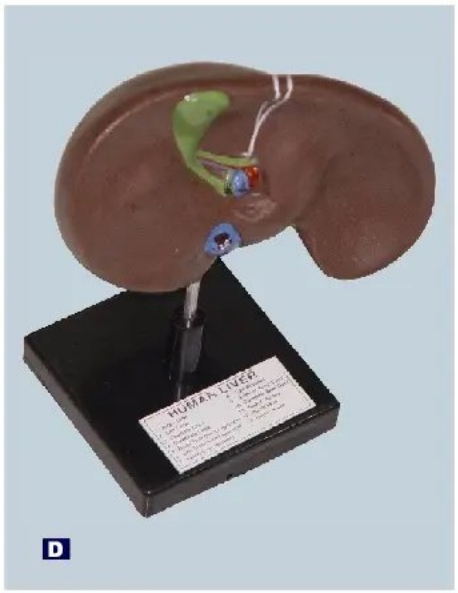


HUMAN STOMACH **A** **SJ052**
The oesophagus continues into the stomach which is a muscular bag located in upper left part of the abdominal cavity just below diaphragm. Stomach opens in duodenal part of intestine. All parts numbered with english keycard. Provided with plastic base.



HUMAN HEAD MEDIAN SECTION **B**
SJ050
Hypothalamus, Corpas Callosum, Cerebellum, Skin, Skull, Medulla, Nasal Cavity, Mouth, Mucous Membrane, Frontal Sinus, Sphenoidal Sinus, Palate, Tongue, Epiglottis, Hyoid Bone and Voice Box.



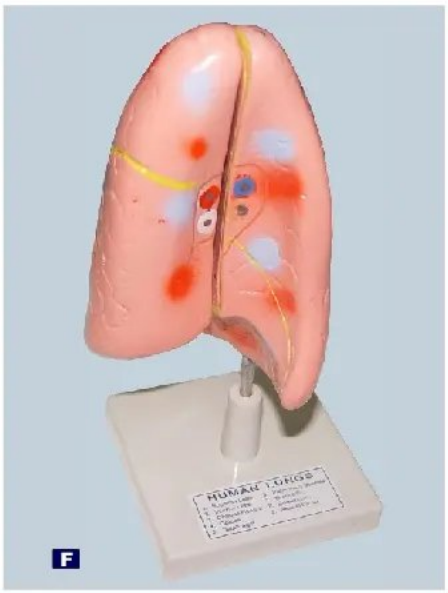


HUMAN LIVER **D** **SJ053**
Carbohydrates, proteins and fats are digested into simpler forms which, inturn, are stored or converted for storage in the liver. It is human body's most vital organ. The liver failure causes fall in blood sugar level leading to brain damage, failure of protein synthesis, excessive bleeding etc. Various details shown include: Right Lobe, Left Lobe, Caudate Lobe, Quadrate Lobe, Right Triangular Ligament, Left Triangular Ligament, Falciform Ligament, Gall Bladder, Inferior Vena Cava, Common Bile Duck, Heptic Artery, Portal Vein and Heptic Veins.



BABY WITH PELVIS **E** **SJ056**
Made of Fibre Glass. All important structures are numbered and identified. Various details shown include:
L-5 Vertebra, ampulla of rectum, anal canal, anus, vaginal orifice, vaginal canal(birth canal), labium minus, labium Majus, urinary bladder, urethral orifice, symphysis pubis, clitoris, pelvis, utorus, placenta,foetus, umblical cord and peritoneum.

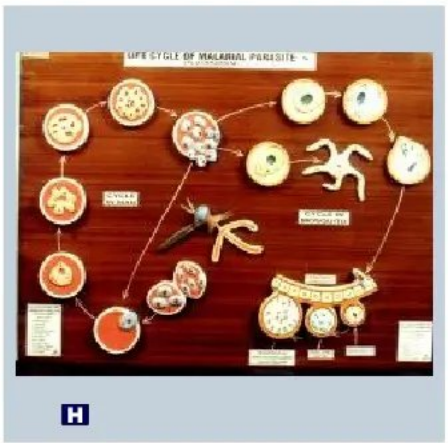
SPINAL CORD **C** **SJ055**
Showing sections of spinal cord. Mounted on board.



HUMAN LUNGS **F** **SB072**
Made of Fibre Glass, Dissectable into two parts. Various details shown include :-
Superior Lobe, Inferior Lobe, Oblique Fissure, Opices, Diaphragm, Pulmonary Vessels, Bronchioles & Pleural Cavity. Mounted on plastic base. Numbered with English key card.

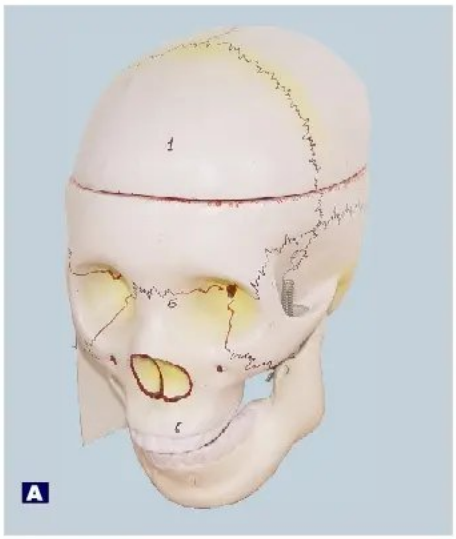


FIFTH CERVICAL VERTEBRA **G** **SJ051**
It is found in the neck. Group of seven cervical vertebra are present in the neck. It has a short axis like peg of bone around which the head and atlas pivot during shaking.

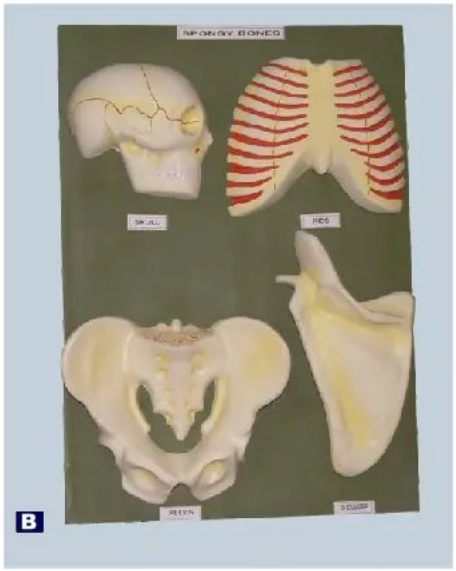


LIFE CYCLE OF MALARIAL PARASITE
SJ049 **H**
The model shows various stages of malaria.

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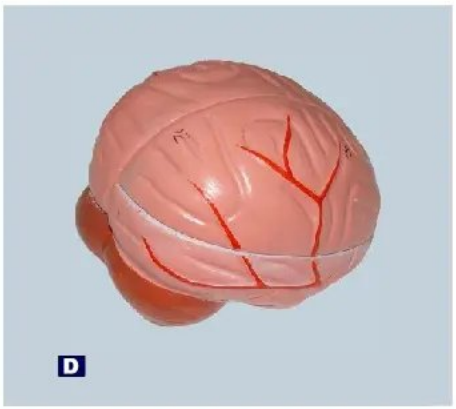


HUMAN SKULL **A** **SJ057**
Frontal Bone, Temporal Bone, Parietal Bone, Occipital Bone, Lacrima Bone, Maxilla, Mandiblel.

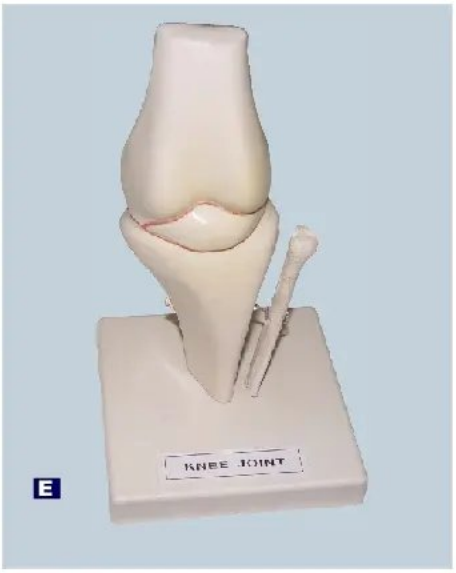


SPONGY BONGS **B** **SJ060**
All the spongy bones of human body shown.





HUMAN BRAIN 4 PARTS **D** **SB066**
Made of Fibre Glass. All structures are numbered and identified. Various details shown include :-
Spinal Cord, Cerebellum, Corpus callosum, Lateral ventricle, Temporal & Frontal lobe, Parietal and occipital lobe, Medulla Oblongata, Thalamus & Pituitary Gland.



KNEE JOINT **E** **SJ061**
Accurately moulded articulated model on plastic base. Showing lateral femoral condyle, patella, tibia and fibula.

ELBOW JOINT **C** **SJ063**
Accurately moulded articulated model on plastic base. Radius and ulna are the two bones of the lower part of the arm. Radius is concerned with bending and straightening of the elbow. Showing radius and ulna. Upper end of ulna grasp the lower end of the humerous.

SHOULDER JOINT **H** **SJ064**
Accurately moulded articulated model on plastic base. Humerous is the bone of the upper arm with a knob like upper end forming a ball to fit into the ball & socket joint of shoulder. Showing humerous, scapula and clavicle.



BRAIN MODEL & ARTERIAL SUPPLY PLASTIC **F** **SJ082**
Made of plastic and can be dissected into 8 parts, with stand. This model shows
(a) External features of the brain i.e. cerebral hemisphere, brain stem & cerebellum.
(b) The arterial supply of the brain.
(C) Arteria supply of the cerebellum and cerebrum.



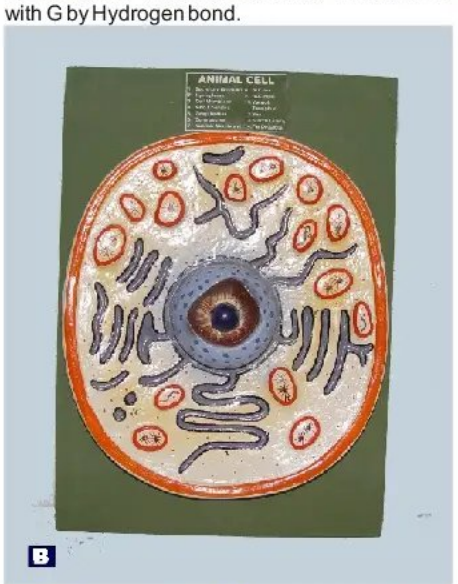
HIP JOINT (BALL & SOCKET JOINT) **G** **SJ062**
Accurately moulded articulated model on plastic base. Showing ilium, head of femur (ball) and acetabulum (socket).



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A

DNA MODEL (HELICAL) **A** **SB425**
It is plastic moulded and mounted on wooden board. The parts of Deoxyribonucleic acid (DNA) model is coloured. The DNA molecule consists of two long parallel chains or stands which are joined together by short cross bars at regular intervals. The two chains are spirally coiled about each other to form double helix. The bases face interior of the double helix whereas sugar and phosphate components form a backbone on the outside. Bases are: Adenosine, Guanine, Cytosine and Thymine. They are represented as A, G, C and T and A is linked with T whereas C with G by Hydrogen bond.



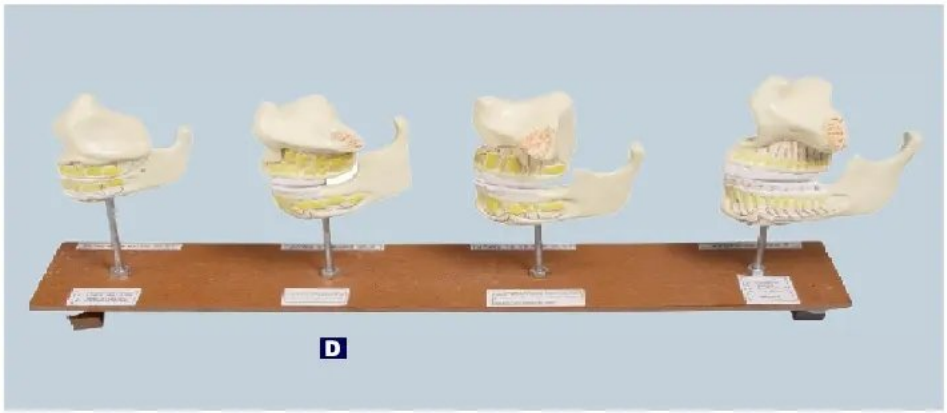
B

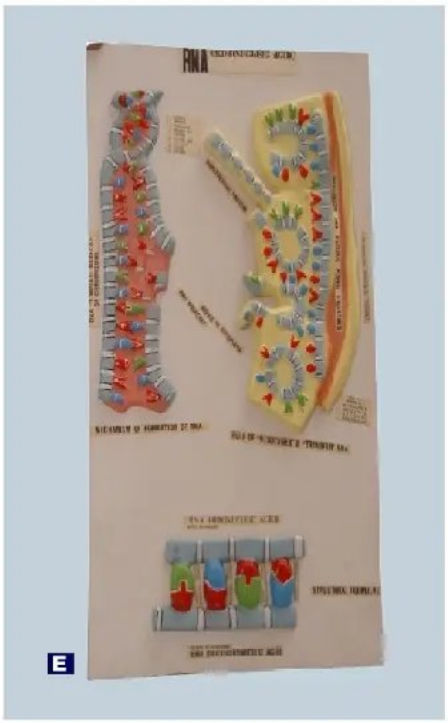
ANIMAL CELL **B** **SJ072**
Made of Fibre Glass. Various details shown include :-
Secretory Granules, Endoplasmic reticulum, Hyaloplasm, Cell Membrane, Mitochondria, Golgi Bodies, Centrosome, Nuclear Membrane, Nucleus, Nucleolus, Vacuole, Tonoplast, Sap, Starch Grains and Fat Droplets. All parts numbered with english key card. Mounted on a wooden base.


C

DNA MODEL (HELICAL) **C** **SB425A**
It is plastic moulded and mounted on wooden board.

JAWS OF NEW BORN BABY **D** **SB438**
Made of fibre. Set of four. Mounted on a rectangular base.


D



E

R.N.A.(RIBO NUCLEIC ACID) **E** **SB084**
Made of Fibre Glass. Various details shown include :-
Alanine, Arginine, Asparagine, Aspartic Acid, Cysteine, Glutamic Acid, Glutamine, Glycine and Histidine. Mounted on a wooden board.

Available on request:
Large variety of plastic moulded models.

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A

FROG DISSECTION **A** **SJ065**
Made of Fibre Glass. Various details shown include :-
Premaxilla, Maxilla, Cranium, Bulging of Eye Ball, Vomer, Nasal, Squamosal, Quadrate Cartilage, Heart, Liver, Lungs, Pancreas, Spinal Cord, Stomach, Ovary, Small Intestines, Rectum, Urinary Bladder, Cloaca, Cloacal aperture. Mounted on a wooden base.



B

ANIMAL CELL MITOSIS **B** **SJ070**
Made of Fibre Glass. All the stages of mitosis are shown. Various details shown include :-
Interphase Cell, Early Prophase, Mid Prophase, Early Telophase, Middle Telophase, Early Anaphase, Late Anaphase, Early Metaphase, Late Metaphase and Cytokinesis.
Mounted on a wooden base.



C



D

ASCARIS **D** **SJ066**
The model shows male and female Ascaris. All parts are numbered for easy identification.



E

FISH DISSECTION **E** **SJ069**
Made of Fibre Glass. Various details shown include :-
Mouth, Upper Jaw, Lower Jaw, Nostril, Gill Backers, Gill Cavity, Gill Arch (operculum), Heart, Liver, Spinal Cord, Kidney, Swim Bladder, Intestines, Roe, Pelvic Fin, Ventral Fin, Dorsal Fin, Lateral Fin, Scales, Caudal Fin.
Mounted on a plastic base.

CAT SKULL **C** **SJ058**
Mounted on plastic base.



I

RABBIT SKULL **I** **SJ059**
Mounted on plastic base.



F

PIGEON DISSECTION **F** **SJ067**
Made of Fibre Glass. Various details shown include :-
Showing all internal structures. All structures are numbered and identified. Mounted on a wooden base.



G

STAR FISH **G** **SJ068**
Showing arms, spines, stomach, intestinal, caeca, pyloric caica, ampullae, ring canal, polian vesicles, skeleton of arm with nervous system. Stomach, axial organ, stone canal and madreporite are seen in the cut section. All parts are numbered for easy identification.



H

ANIMAL CELL MEIOSIS **H** **SJ071**
Made of Fibre Glass. This model clearly shows all stages of meiosis in animal cell. Various details shown include :-
Leptotene, Zygotene, Pachytene, Diplotene, Diakinesis, Metaphase-I, Anaphase-I, Telophase-I, Prophase, Metaphase-II, Anaphase-II and Telophase-II.
Mounted on a wooden base.

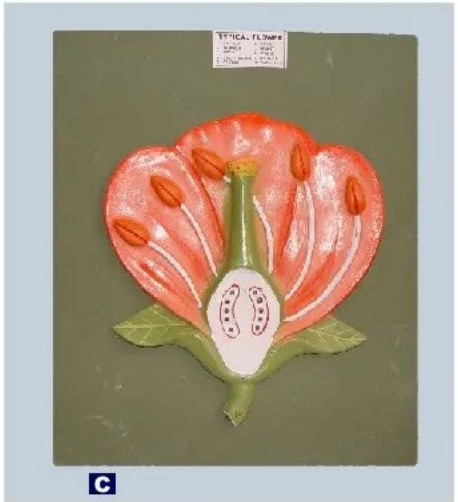
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MONOCOT STEM **A** **SJ076**
Made of Fibre Glass. All important structures are numbered and identified. Various details shown include:
Epidermis, Hypodermis, Ground Tissue, Vascular Bundle, Phloem, Cambium and Xylem.

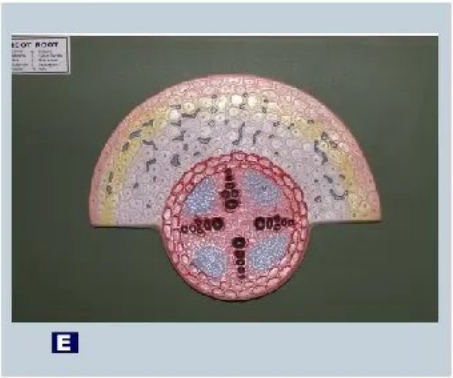


T.S. DICOT LEAF **B** **SB228**
Made of Fibre Glass. Various details shown include :-
Cuticle, Upper Epidermis, Palisade Parenchyma, Xylem, Medullary Ray, Phloem, Inter Cellular Spaces, Lower Epidermis. Mounted on a wooden board.





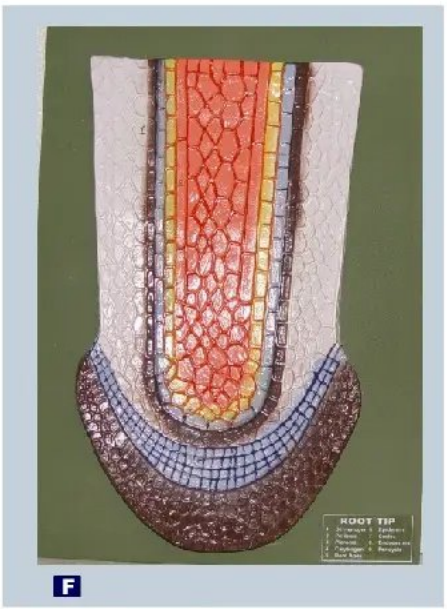
DICOT ROOT L.S **D** **SJ075**
Made of Fibre Glass. Various details shown include :-
Root Hair, Epidermis, Collenchyma, Parenchyma, Endodermis, Sclerenchyma, Phloem, Cambium, Metaxylem, Protoxylem, Wood Parenchyma & Pith. Mounted on a wooden board.



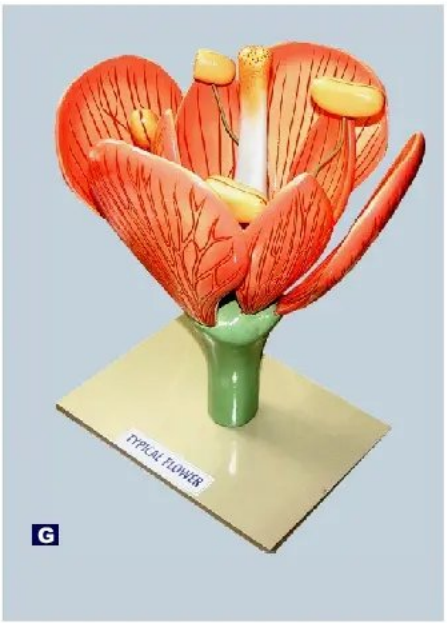
DICOT ROOT **E** **SJ073**
Made of Fibre Glass. Various details shown include :-
Epiblema, Exodermis, Cortex, Endodermis, Pericycle, Phloem, Xylem Bundle, Metaxylem, Protoxylem, Pith. Mounted on a wooden board.

TYPICAL FLOWER **C** **SB093**
All important structures are numbered and identified. Various details shown include:
Anther, Filament, Petal, Calyx (Sepal), Stigma, Style, Ovary, Ovule, Pedicel and Thalamus.





ROOT TIP **F** **SJ074**
Made of Fibre Glass. All important structures are numbered and identified. Various details shown include:
Dermatogen, Periblem, Plerome, Calytrogen, Root Apex, Epidermis, Cortex, Endodermis and Pericycle.



FLOWER SECTION MODEL **G** **SB424**
This is a flower model made of moulded plastic showing all parts of flower. The whole unit is situated on a rectangular base. Model clearly shows 5 petals of corolla, 5 sepals of calyx, Ovary and 5 Anthers. All parts can be taken out separately.

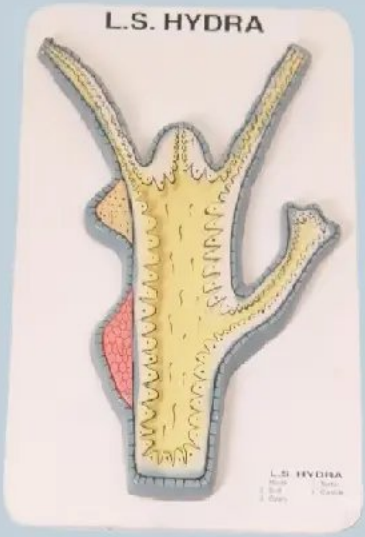
FLOWER SECTION MODEL **H** **SB424A**
This is a flower model of moulded plastic showing all parts of flower. The whole unit is situated on a rectangular base. Model clearly shows 5 petals of corolla, 5 sepals of calyx, ovary and 5 anthers. All parts can be taken out separately.

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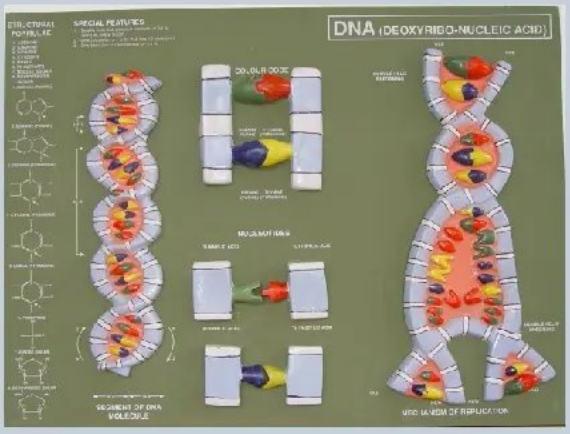
A



B



C



PLANT CELL **A** **Sj077**
Made of Fibre Glass. All important structures are numbered and identified. Various details shown include:
Cell wall, microtubules, plasma membrane, plasmodermis, chloroplast, mitochondria, golgi complexes, free ribosomes, vacuole, cytoplasmic matrix, smooth endoplasmic reticulum, nucleolus, nucleus and rough endoplasmic reticulum.

DNA (DEOXYRIBO-NUCLEIC ACID) STRUCTURAL FORMULA **B** **SJ079**
Adenine, Guanine, thymine, Cytosine, Uracil, Phosphate and Deoxyribose Sugar.
SPECIAL FEATURE
- Double helix has constant diameter of 20A° along its entire length.
- One complete turn is 34A° & has 10 base pairs.
- One base pair represented by 34A°.

HYDRA L.S. **C** **SB086**
Made of Fibre Glass. Various details shown include :-
Mouth, Bud, Ovary, Testis and Clavicle.All parts numbered with english key card. Mounted on a wooden board.



D



E

PLANT CELL MITOSIS **D** **SJ080**
Made of Fibre Glass. All important structures are numbered and identified. Various details shown include:
Interphase, Prophase, Mid Prophase, Late Prophase, Metaphase, Anaphase, Telophase, Mid Telophase, Late Telophase and cytokinesis.

PLANT CELL MEIOSIS **E** **SJ078**
Made of Fibre Glass. All important structures are numbered and identified. Various details shown include:
Leptotene, Pachytene, Diakinesis, Anaphase-I, Anaphase-II, Telophase-I, Telophase-II, Zygotene, Diplotene, Metaphase-I, Metaphase-II and Tetrad.

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BURNER BUNSEN
Nickel plated burner tube of 12mm dia with air regulator and a riffled connector. Mounted on a painted cast iron base. Only the air supply port can be adjusted.
SC005 without stopcock A
SC006 with stopcock B



SPIRIT LAMP GLASS C SF019
Spirit lamp glass with aluminum cover.
Capacity : 125ml



SPIRIT LAMP STAINLESS STEEL, D SC009
Capacity : 100ml



MEKER BURNER
It is required where an extremely hot flame is needed. It produces a higher temperature than a bunsen burner. Nickel plated burner tube with grid at the top. It is provided with air regulator and riffled connector. Mounted on a painted cast iron base.
SC007 without stopcock E
SF001 with stopcock F



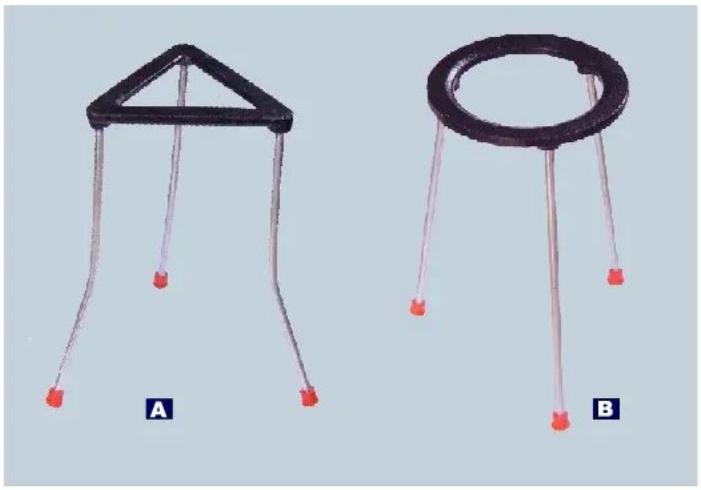
TECLU BURNER G SF010
Chrome plated brass tube with air regulator. Gives very high temperature. Mounted on a painted cast iron base. One spare gas nipple is provided for use with LPG gas.

BURNER BUNSEN H SF013
Nickel plated burner tube dia 12mm approx with air regulator and a riffled connector. Burner tube mounted on a powder coated base cutaway. Without stopcock.



SPIRIT LAMP GLASS I
SC003 60ml
SC004 125ml

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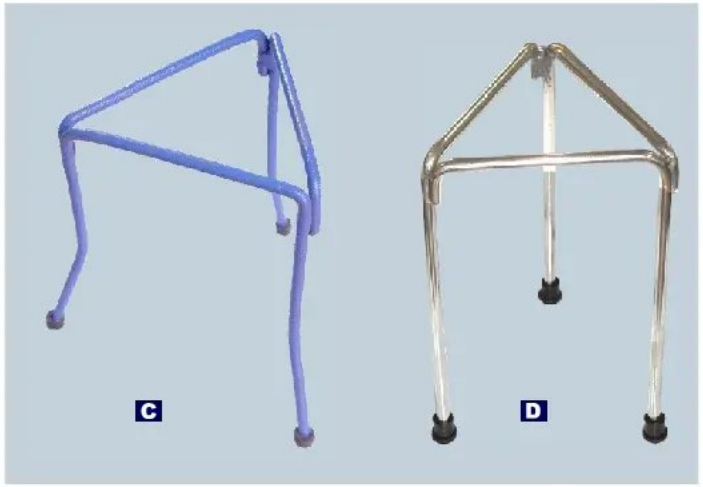
TRIPOD STAND TRIANGULAR (CAST TOP) A

Cat No.	(Height x Side of Triangle)	Type
SC010	15 x 12.5	Triangular
SC011	20 x 12.5	Triangular
SC012	20 x 15	Triangular

TRIPOD STAND CIRCULAR (CAST TOP) B

Cat No.	(Height x Dia.)	Type
Sc013	15 x 12.5	Circular
SC014	20 x 12.5	Circular
SC015	20 x 15	Circular



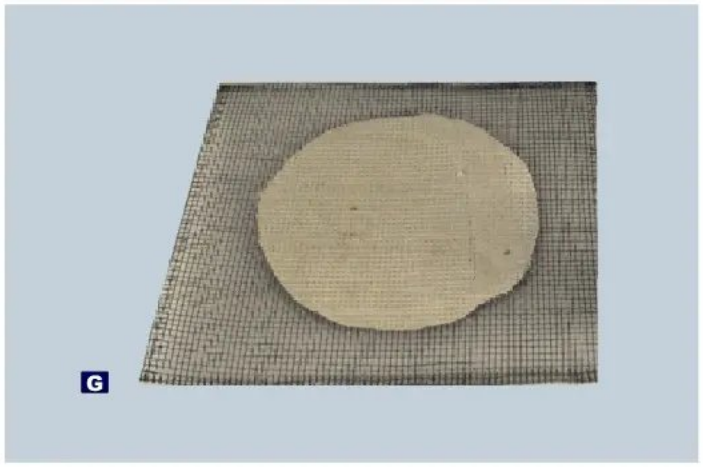


TRIPOD STAND TRIANGULAR(POWDER COATED) C **SF015**
Made of mild steel. Powder coated. Size 17cm x 12.5cm (overall height x length of one side), provided with rubber feet.

TRIPOD STAND TRIANGULAR (CHROMED PLATED) D **SW077**
Made of mild steel. Chromed. Size 17cm x 12.5cm (overall height x length of one side), provided with rubber feet.

TRIPOD STAND TRIANGULAR (STAINLESS STEEL) E **SJ003**
Made of stainless steel. Side length 13cm, height 20cm, provided with rubber feet.

TRIPOD STAND FLAT TOP (TOP PRESSED STEEL) F **SJ004**
Made of mild steel. Side length 12.5cm, height 20cm, provided with rubber feet.



WIRE GAUZE G
Flat gauze ceramic filled centre for use on tripods.
SF006 Square size : 12.5 x 12.5cm.
SF007 Square size : 15 x 15cm.

FOR YOUR INFORMATION
Our team of engineers and technicians are continuously working to improve existing products and develop new ones. We welcome suggestions of our valued customers.

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A



B



C

RUBBER CORKS RED

Rubber (Without Hole) A	Rubber (One Hole) B	Rubber (Two Hole) C	No.	Top Dia (mm)	Bottom (mm)	Height (mm)
SC030	SC050	—	000	9	6	16
SC031	SC051	—	0	13.0	9	15.5
SC032	SC052	—	1	14.0	11.0	18.5
SC033	SC053	SC073	2	16.5	13.0	20.0
SC034	SC054	SC074	3	19.0	14.0	21.0
SC035	SC055	SC075	4	21.0	15.0	22.0
SC036	SC056	SC076	5	22.5	17.5	23.0
SC037	SC057	SC077	6	24.5	20.0	24.0
SC038	SC058	SC078	7	26.0	20.0	27.5
SC039	SC059	SC079	8	26.5	21.0	27.5
SC040	SC060	SC080	9	28.0	21.0	31.0
SC041	SC061	SC081	10	30.0	26.0	33.0
SC042	SC062	SC082	11	33.0	29.0	32.0
SC043	SC063	SC083	12	34.5	30.0	34.5
SC044	SC064	SC084	13	38.5	31.0	37.0
SC045	SC065	SC085	14	41.5	32.0	42.5
SC046	SC066	SC086	15	42.0	38.0	40.5
SC047	SC067	SC087	16	45.0	35.0	36.5
SC048	SC068	SC088	17	49.5	40.0	40.5
SC049	SC069	SC089	18	53.5	48.0	33.5
SC664	SC666	SC668	19	58.0	44.0	45.0
SC665	SC667	SC669	20	60.0	51.0	56.5

RUBBER CORKS ORANGE

Rubber (Without Hole) D	Rubber (One Hole) E	Rubber (Two Hole) F	No.	Top Dia (mm)	Bottom (mm)	Height (mm)
SV081	—	—	0	13	9	16
SV082	SV158	—	1	14	10	18.5
SV084	SV083	—	2	16	14.0	20.0
SV085	SV159	—	4	20.5	15.0	22.5
SV087	—	—	5	22.0	17.5	24.5
SV161	SV088	SV160	6	24.5	18.0	24.5
SV091	SV089	SV090	9	26.5	21.0	31.0
SV092	SV162	—	10	28.0	24.0	32.0
SV163	SV168	—	11	31.0	27.0	33.5
SV094	SV093	—	12	33.5	29.0	36.0
SV096	SV095	SV111	13	39.0	31.0	37.5
SV165	—	—	16	45.0	35.0	36.5

Special sizes can be produced for bulk orders.



D



E



F

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SILICONE RUBBER TUBING A

Silicone rubber tubing is suitable for use over a temperature range of - 50°C to 250°C, hence useful for transfer of hot liquids. It can be sterilized by steam or by hot air.

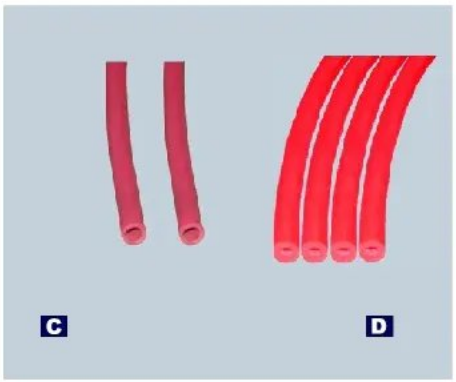
Cat No.	Inner Dia ± 0.5mm	Wall Thickness ± 0.2mm
SF022	2	1
SF023	3	1
SF024	3	1.5
SF025	4	1
SF026	4	1.5
SF027	5	1
SF028	5	1.5
SF029	6	1
SF030	6	1.5
SF031	6	2
SF032	6	3
SF033	7	1.5
SF034	7	2
SF035	8	1.5
SF036	8	2
SF037	8	3
SF038	9	2
SF039	10	2
SF040	10	3
SF041	12	3.5
SF042	12.5	2.5
SF043	14	3
SF044	15	4
SF045	16	3



WATER TAP B

Made of Brass.

Cat No.	Type
SC161	One Way
SC162	Two Way
SC163	Three Way

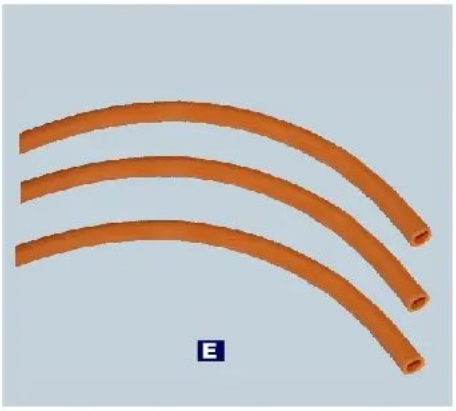


RUBBER TUBING (RED) C

Cat No.	Bore (mm)	Type	Wall thickness (mm)
SC016	4.0	Laboratory	1
SC017	5.0	Laboratory	1.5
SC018	6.0	Laboratory	1.5
SC019	7.0	Laboratory	1.5
SC020	8.0	Laboratory	1.5
SC021	9.0	Laboratory	2
SC022	10.0	Laboratory	2
SC023	12.0	Laboratory	2.5
SC024	3.0	Ordinary Pressure	3
SC025	4.5	Ordinary Pressure	3
SC026	6.0	Ordinary Pressure	3
SC027	8.0	Ordinary Pressure	3
SC028	9.0	Ordinary Pressure	3
SF046	10.0	Ordinary Pressure	3.5
SC029	12.5	Ordinary Pressure	4.5

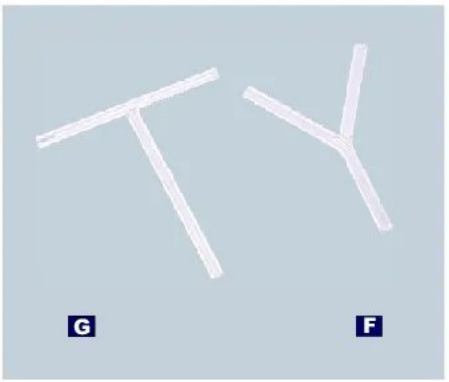
RUBBER TUBING (RED) D

Cat No.	Bore (mm)	Type	Wall Thickness (mm)
SF047	3.0	High Pressure	4.5
SF048	4.5	High Pressure	4.5
SF049	6.0	High Pressure	4.5
SF050	8.0	High Pressure	4.5
SF051	9.0	High Pressure	4.5
SF052	12.0	High Pressure	6.5



RUBBER TUBING (ORANGE) E

Cat No.	Bore (mm)	Type	Wall thickness (mm)
SV099	6.0	Laboratory	1.5
SV100	5.0	Laboratory	1.5
SV101	8.0	Laboratory	1.5
SV102	10.0	Laboratory	2.0
SV103	16.0	Laboratory	3.0
SV166	4.0	Laboratory	1.0



TUBE CONNECTOR (GLASS)

Type	Glass
Y F	SC602
T G	SC603



TUBE CONNECTOR (PLASTIC) H

The crest & valley structure provided at all the ends of the connectors give excellent leakproof grip to the tube.

Material : Polypropylene

Cat No.	Item Name
SC148	T Connector-6mm
SC147	Y Connector-6mm
SF565	T Connector-8mm
SF566	Y Connector-8mm
SF567	T Connector-10mm
SF568	Y Connector-10mm



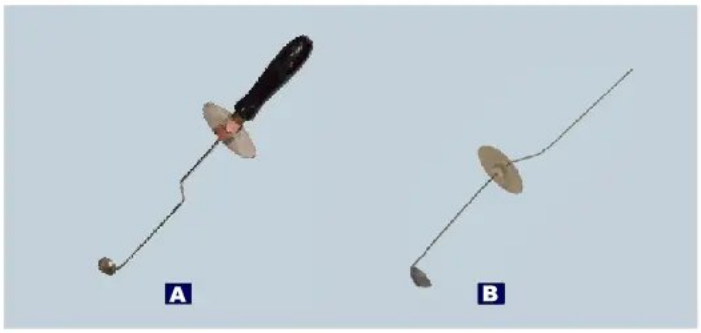
FILTER PUMP I SW076

Edward type.
Made of extruded Brass.
Its mechanism creates vacuum while connected with water tap.

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DEFLAGRATING SPOON **A** **SF070**
With spoon and brass disc dia 7cm. With wooden handle. Used for rapid combustion with evolution of heat and light.

DEFLAGRATING SPOON **B** **SC164**
With spoon and brass disc dia 7cm.



GAS TAP **C**
Made of nickel plated brass.

Type	Without Nozzle	With Nozzle
One Way	SC157	SF079
Two Way	SC158	SF080
Three Way	SC159	SF081
Four Way	SC160	SF082



WOODEN HOLDER **D**

Cat No.	Size	Suitable for	Opening Capacity (Approx.)
SN882	240mm	Flask	45 - 54mm
SN892	250mm	Test tube	30mm



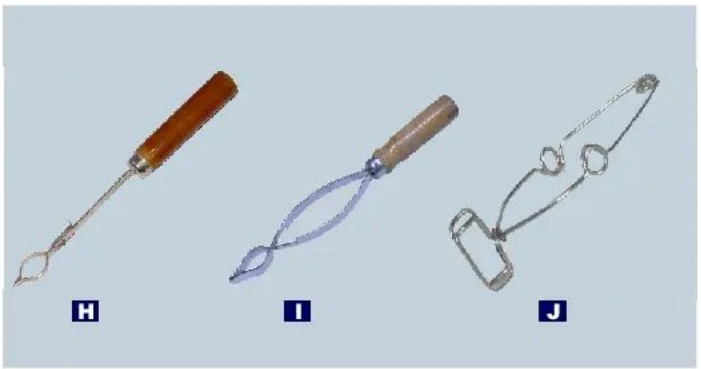
BUNSEN SCREW (HOFFMAN CLIP) **E** **SC663**
Made of nickel plated brass to hold tubing. Length 50mm.

MOHR'S CLIP **F**
Used to hold tubing. Length 50mm.
SC142 Made of nickel plated steel
SW825 Made of Brass



GAS TAP **G**
Made of brass, powder coated finish.

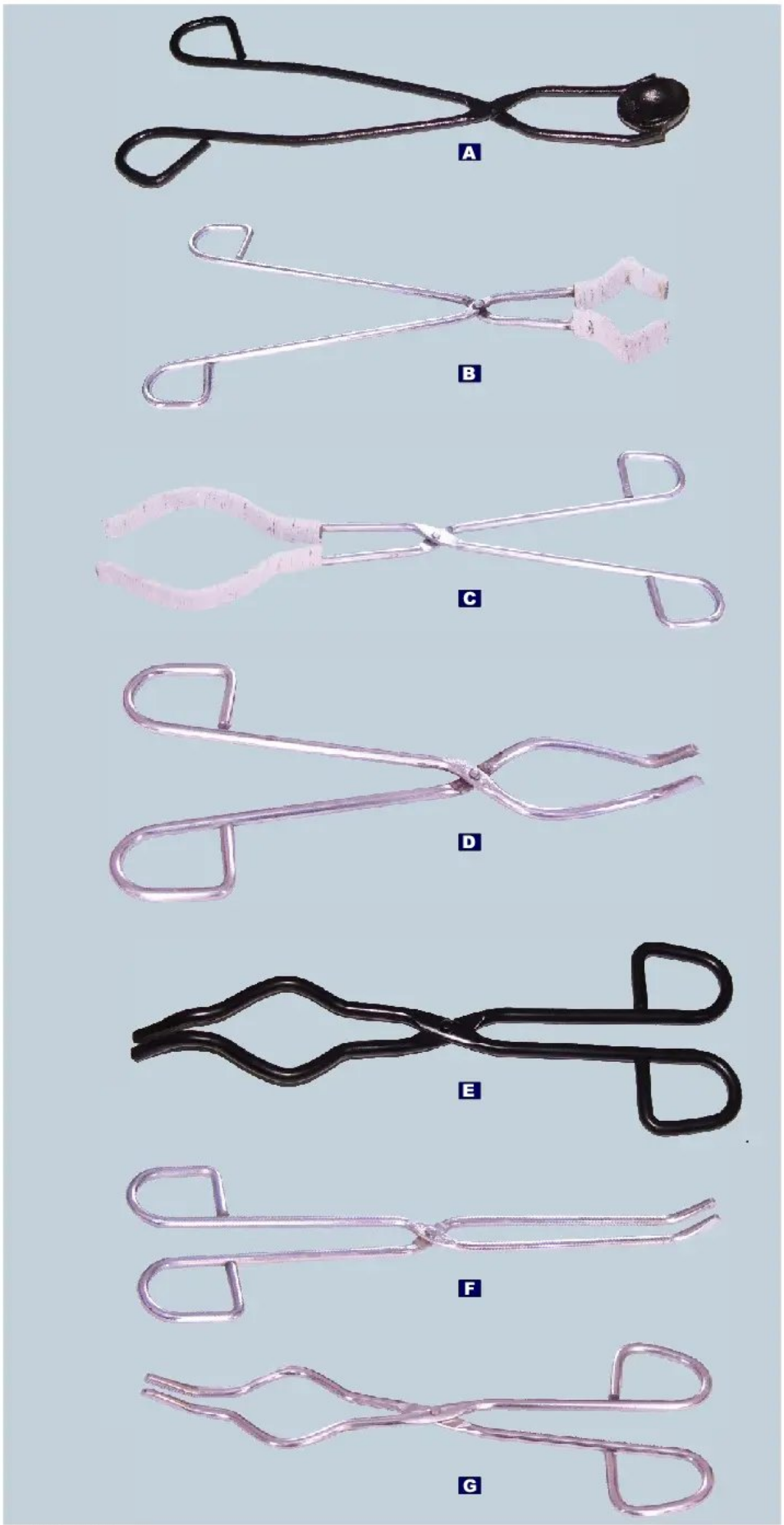
Type	Without Adapter	With Adapter
One Way	SF071	SF075
Two Way	SF072	SF076
Three Way	SF073	SF077
Four Way	SF074	SF078



TEST TUBE HOLDER

Cat No.	Pattern
SC477 H	Wooden
SF084 I	Cross Pattern Brass
SC478 J	Cross Pattern Steel

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MERCURY TONG A **SN274**
Powder coated steel, approximately 200mm long for lifting globules of mercury.

TONGS FOR FLASK B

Cat No.	Size (cm)	Material
SC149	30	Steel
SC150	30	S.S

TONGS FOR BEAKER C

Cat No.	Size (cm)	Material
SC151	30	Steel
SC152	30	S.S

TONGS FOR CRUCIBLE D

Cat No.	Size (cm)	Material
SC153	15	Steel
SC154	15	S.S
SC155	20	Steel
SC156	20	S.S
SF085	25	Steel
SF086	25	S.S
SF087	30	Steel
SF088	30	S.S

TONGS FOR CRUCIBLE E

Cat No.	Size (cm)	Material
SF089	15	Powder coated steel
SF090	20	Powder coated steel
SF091	25	Powder coated steel
SF092	30	Powder coated steel

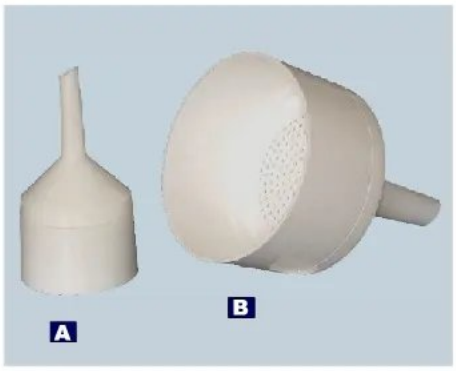
TONGS FOR CRUCIBLE STRAIGHT TYPE F

Cat No.	Size (cm)	Material
SF093	15	Steel
SF094	15	S.S
SF095	20	Steel
SF096	20	S.S
SF097	25	Steel
SF098	25	S.S
SF099	30	Steel
SF100	30	S.S

TONGS FOR CRUCIBLE BOW TYPE G

Cat No.	Size (cm)	Material
SF101	15	Steel
SF102	15	S.S
SF103	20	Steel
SF104	20	S.S
SF105	25	Steel
SF106	25	S.S
SF107	30	Steel
SF108	30	S.S

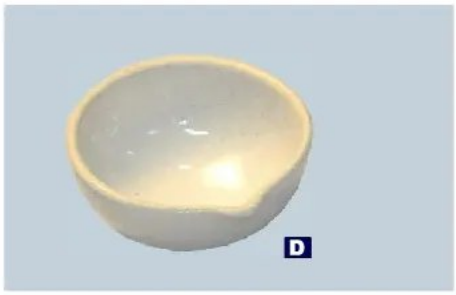
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BUCHNER FUNNEL
Moulded in Polypropylene, these two piece funnels are light weight, easy to clean & autoclavable. The top portion can be snap fitted with the lower one forming a vacuum seal which does not require greasing. The base of the top portion has a perforated filter plate.
SW012 Dia 70mm A
SW699 Dia 110mm B

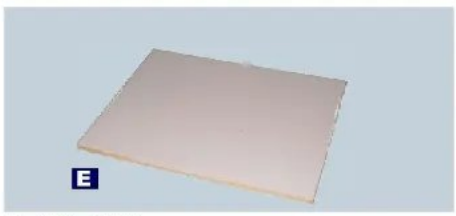


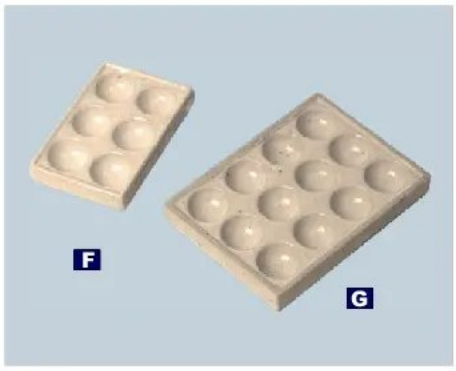
PIPE CLAY TRIANGULAR C
Made of Porcelain.
SC505 Length of side 50mm
SC506 Length of side 60mm
SC507 Length of side 75mm



CHINA DISH D
Made of Porcelain.

Cat No.	Size
SC185	75mm
SC186	100mm
SC187	125mm
SC188	150mm
SC189	175mm



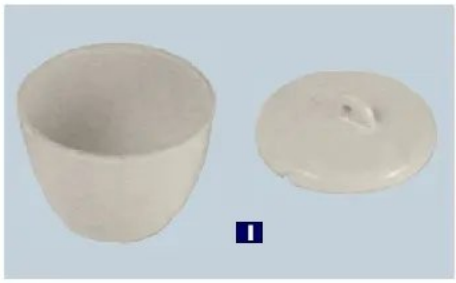


PORCELAIN CAVITY TILES
Made of Porcelain. Glazed, cavity used for spot test. It can hold liquid or precipitate in each well at the time of reactions.
SC508 No. of Depression 6 F
SC509 No. of Depression 12 G



BEEHIVE SHELVES H
Made of Porcelain, used in pneumatic troughs for gas collection.

Cat No.	Diameter
SC495	60mm
SC496	75mm
SC497	85mm
SC498	100mm



CRUCIBLE WITH LID I
Made of Porcelain, used in gravimetric analysis. It works well for drying or dehydration experiments.

Cat No.	Capacity
SC500	10ml
SC501	15ml
SC502	25ml
SC503	50ml
SC504	100ml

TILE E **SF109**
Made of Porcelain, used in titrations.
Size 200 x 200mm approx.



BUCHNER FUNNEL J
Made of Porcelain, fixed perforated plate used in filtration.

Cat No.	Diameter
SC490	50mm
SC491	75mm
SC492	100mm
SC493	125mm
SC494	150mm



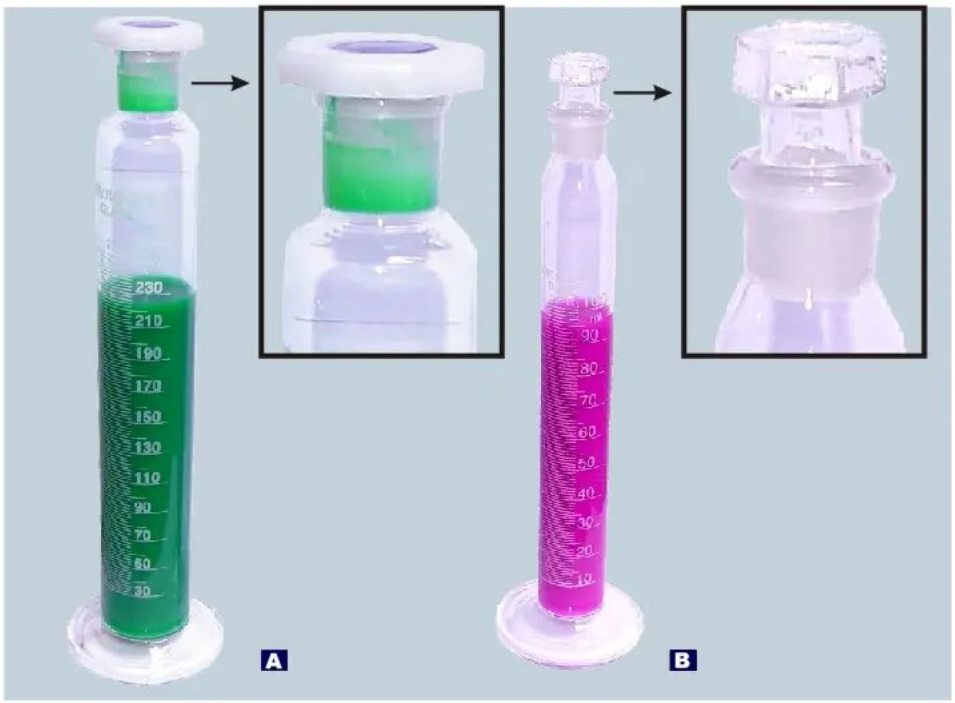
FUNNEL CONE (SET OF 7) K **SF053**
Made of natural rubber, these set of seven numbers of sealing cones provide air tight seal for buchner funnels.



MORTAR AND PESTLE L
Made of Porcelain used for grinding a sample.

Cat No.	Diameter
SC510	75mm
SC511	100mm
SC512	125mm
SC513	150mm
SC514	175mm

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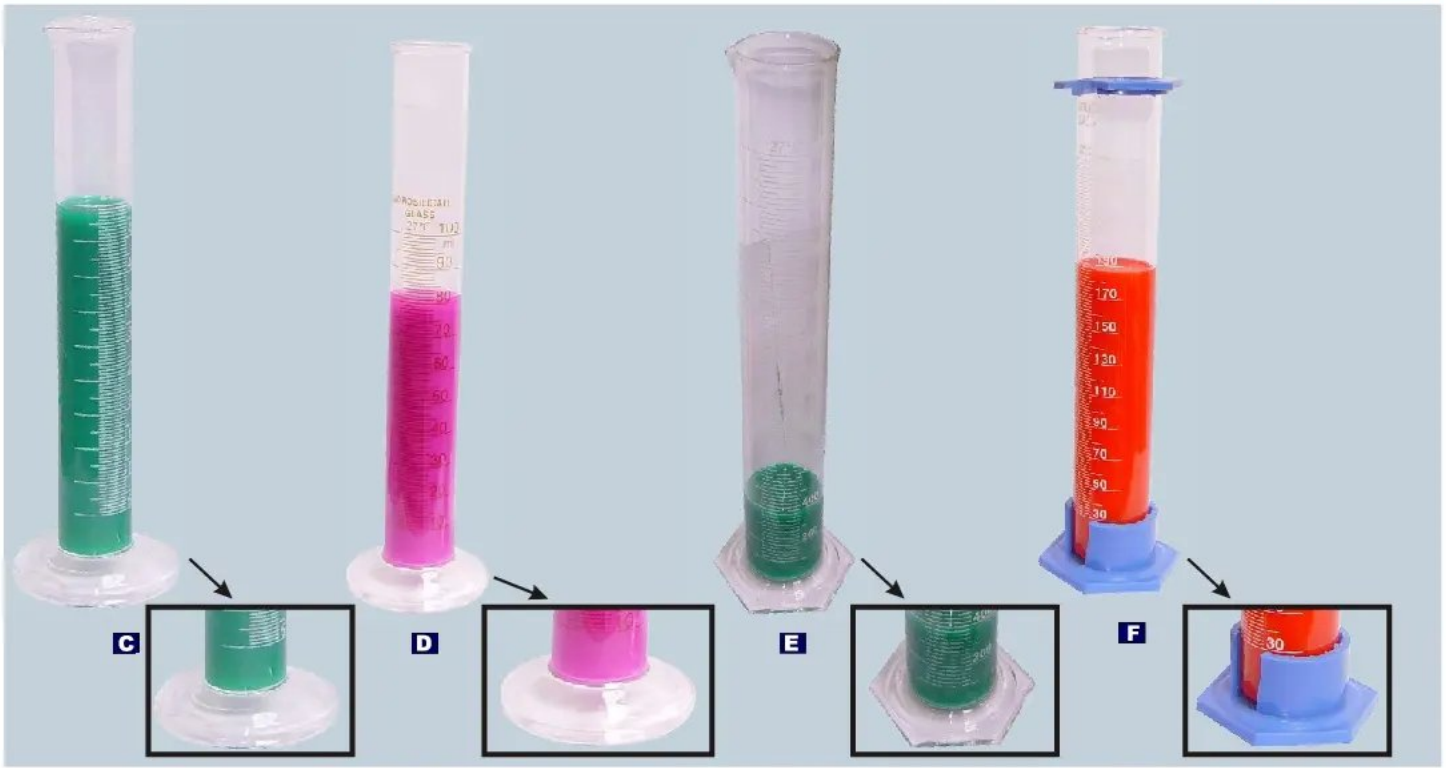
MEASURING CYLINDER WITH STOPPER
Borosilicate Glass, provided with stopper & have good contact clarity. Available in wide range.

Capacity	Cat No. plastic stopper A	Cat No. glass stopper B
5ml	SF176	SF167
10ml	SF177	SF168
25ml	SF178	SF169
50ml	SF179	SF170
100ml	SF180	SF171
200ml	SF181	SF172
250ml	SF182	SF173
500ml	SF183	SF174
1000ml	SF184	SF175

CROSS REFERENCE

For plastic cylinders
Please see page no. 163





MEASURING CYLINDER WITH SPOUT (ROUND BASE)
Borosilicate glass with prominent graduation & contact clarity for easy reading.

Capacity	Round base C	Round base amber graduation D
5ml	SF139	SF159
10ml	SF140	SF160
25ml	SF141	SF161
50ml	SC210	SF162
100ml	SC211	SF163
250ml	SC212	SF164
500ml	SC213	SF165
1000ml	SC214	SF166
2000ml	SC717	-----

MEASURING CYLINDER WITH SPOUT (HEXAGONAL BASE)
Borosilicate glass with prominent graduation & contact clarity for easy reading.

Capacity	hexagonal base E	Plastic hexagonal base detachable with collar F
5ml	SF151	SF142
10ml	SF152	SF143
25ml	SF153	SF144
50ml	SF154	SF002
100ml	SF155	SC555
250ml	SF156	SC661
500ml	SF157	SC568
1000ml	SF158	SF145

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BEAKERS LOW FORM WITH SPOUT, GRADUATED A

Available in wide range.

Capacity	Borosilicate glass
50ml	SC225
100ml	SC226
150ml	SF124
200ml	SF125
250ml	SC227
400ml	SF126
500ml	SC228
600ml	SF127
1000ml	SC229
2000ml	SF128

BEAKERS, TALL FORM, GRADUATED WITH SPOUT B

Have excellent clarity & pouring of solution becomes easy due to its tapered spout.

Capacity	Borosilicate glass
50ml	SF129
100ml	SF130
150ml	SF131
250ml	SF132
400ml	SF133
500ml	SF134
600ml	SF135
1000ml	SF136

CONICAL BEAKER WITH SPOUT C

Without graduation.

Capacity	Borosilicate glass
250ml	SF137
500ml	SF138



MELTING POINT APPARATUS, THIELE D **SF187**

It is made of borosilicate glass with side tube. A non volatile liquid is filled in the tube just above the side limb. Using drilled cork, capillary with sample and thermometer are mounted in the tube. Heated liquid circulates and increases the temperature of the sample when the bend of the side limb is heated.

Size: Dia x length (25 x 150mm)

SALT BRIDGE E **SN370**

Made of borosilicate glass. An inverted 'U' tube with sintered discs with its ends. Used in making reversible cells.



GAS PREPARATION KIT F **SC136**

Oxygen, Hydrogen and CO_2 gas can be collected over water with the help of this kit. It consists of 5 test tubes 150 x 24mm with stoppers, thistle funnel, test tube stand, test tube with side arm and one hole stopper, glass chimney shelf with delivery tube and connectors. All components are included in a plastic box (work as a plastic tank), provided with lid.

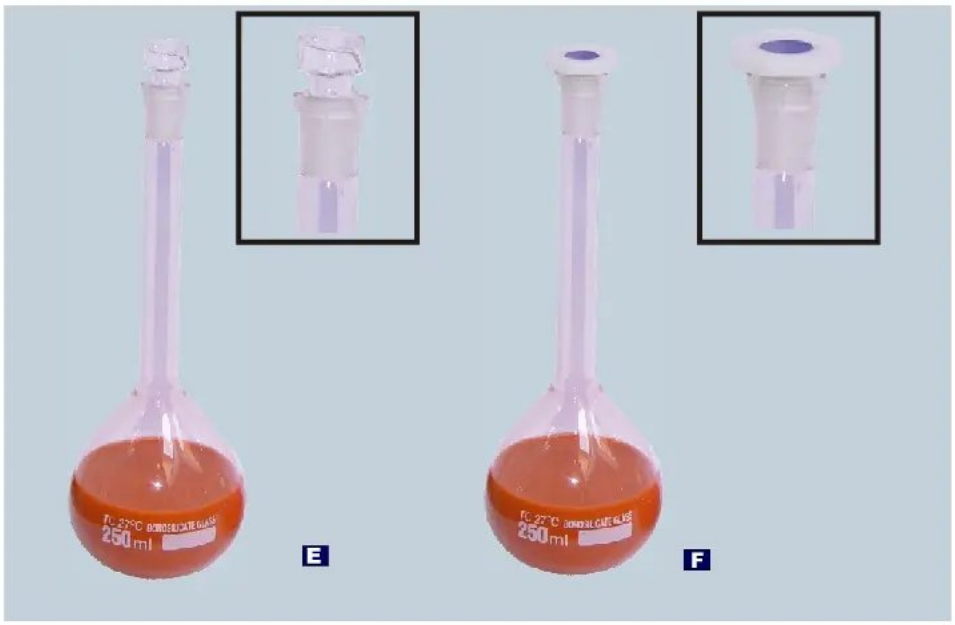
CROSS REFERENCE

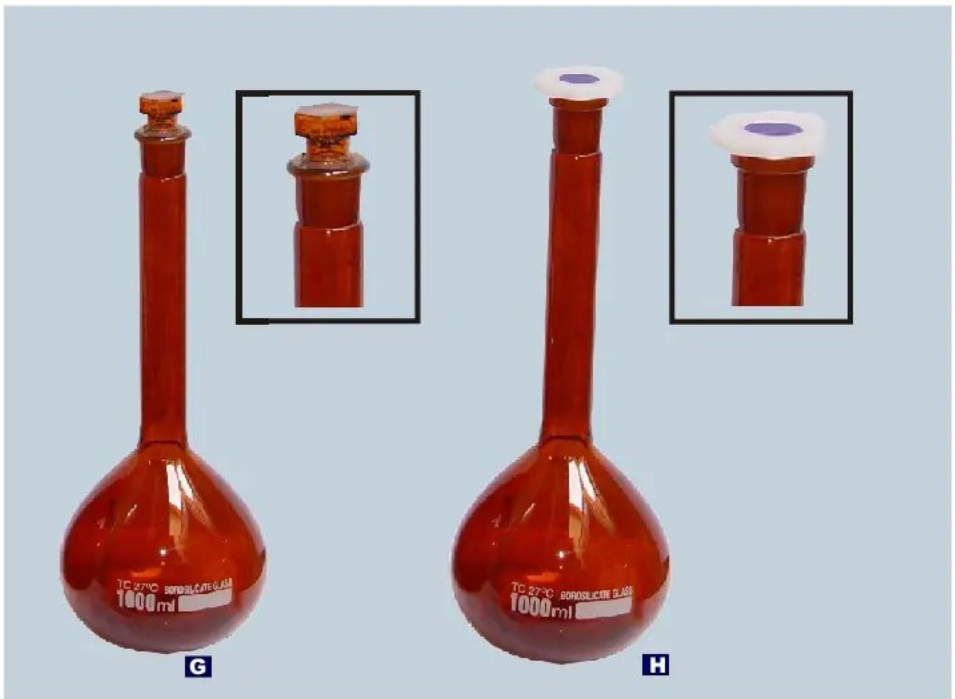
For plastic beakers Please see page no. 152



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FLASK CONICAL, GRADUATED

Capacity	Borosilicate glass	
	Graduated narrow mouth A	with screw cap B
50ml	SC325	SF192
100ml	SC326	SF193
150ml	SF190	SF194
250ml	SC327	SF195
500ml	SC328	SF196
1000ml	SC329	SF197
2000ml	SF191	SF198

FLASK BOILING, BOROSILICATE GLASS

Capacity	Flat bottom C	Round bottom D
50ml	SF200	SF205
100ml	SC344	Sc334
150ml	SF201	SF206
250ml	SC345	SC335
500ml	SC346	SC336
1000ml	SC347	SC337
2000ml	SF202	SF207
3000ml	SF203	SF208

FLASK VOLUMETRIC

Available in wide range, with graduation line for accurate measurements.

Capacity	Borosilicate glass	
	Hollow glass stopper E	Plastic stopper F
5ml	SF210	SF215
10ml	SF211	SF216
25ml	SF212	SF217
50ml	SC355	SF218
100ml	SC356	Sf219
200ml	SF213	SF220
250ml	SC357	SF221
500ml	SC358	SF222
1000ml	SC359	SF223
2000ml	SF214	SF224

FLASK VOLUMETRIC(AMBER COLOUR)

Available in wide range, with graduation line for accurate measurements.

Capacity	Borosilicate glass	
	Hollow glass stopper G	Plastic stopper H
5ml	SF225	SF235
10ml	SF226	SF236
25ml	SF227	SF237
50ml	SF228	SF238
100ml	SF229	SF239
200ml	SF230	SF240
250ml	SF231	SF241
500ml	SF232	SF242
1000ml	SF233	SF243
2000ml	SF234	SF244

CROSS REFERENCE

For plastic flask volumetric
Please see page no.159



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BOILING FLASKS (BOROSILICATE GLASS) ROUND & FLAT BOTTOM WITH QUICK FIT JOINT

Flat A	Round B	Capacity	Socket
SF245	SF264	25ml	14/23
SF246	SF265	50ml	14/23
SF247	SF266	50ml	19/26
SF248	SF267	50ml	24/29
SF249	SF268	100ml	14/23
SF250	SF269	100ml	19/26
SF251	SF270	100ml	24/29
SF252	SF271	150ml	19/26
SF253	SF272	150ml	24/29
SF254	SF273	150ml	29/32
SF255	SF274	250ml	19/26
SF256	SF275	250ml	24/29
SF257	SF276	250ml	29/32
SF258	SF277	500ml	19/26
SF259	SF278	500ml	24/29
SF260	SF279	500ml	29/32
SF261	SF280	1000ml	24/29
SF262	SF281	1000ml	29/32
SF263	SF282	2000ml	24/29

FLASKS ROUND BOTTOM, TWO NECK (BOROSILICATE GLASS) C

Cat No.	Capacity	Centre neck	Side neck at parallel
SF283	100ml	24/29	14/23
SF284	250ml	24/29	14/23
SF285	500ml	24/29	14/23
SF286	1000ml	34/35	14/23
SF287	2000ml	34/35	19/26

FLASKS ROUND BOTTOM, THREE NECK (BOROSILICATE GLASS) D

Cat No.	Capacity	Centre neck	Side neck at parallel
SF288	100ml	24/29	14/23
SF289	250ml	24/29	14/23
SF290	500ml	24/29	14/23
SF291	1000ml	24/29	14/23
SF292	2000ml	24/29	19/26

BUCHNER FLASK (FILTER FLASK) E

Made of borosilicate glass. With side tube & heavy wall construction for vacuum filtration.

Cat No.	Capacity
SC110	50ml
SC111	100ml
SC112	250ml
SC113	500ml
SC114	1000ml
SF307	2000ml

DISTILLATION FLASK F

Made of borosilicate glass, with side tube at an angle.

Cat No.	Capacity
SF308	50ml
SC315	100ml
SC316	250ml
SC317	500ml
SC318	1000ml
SC319	2000ml

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FLASK RETORT WITH GLASS STOPPER
Made of borosilicate glass. A

Cat.No.	Capacity
SC365	100ml
SC366	150ml
SC367	250ml
SC368	500ml
SF309	1000ml

FLASK SUPPORT (POLYPROPYLENE)
SC299 B
Dia 160mm.



CRYSTALLIZING DISH C
Made of borosolicate glass. Without spout.

Cat. No.	Size (Dia x Height)
SC190	100 x 50mm
SC191	150 x 75mm
SC192	190 x 100mm

CRYSTALLIZING DISH WITH LIP D
Made of borosolicate glass.

Cat No.	Size (Dia x Height)
SF310	100 x 50mm
SF311	150 x 75mm
SF312	190 x 100mm



DROPPING BOTTLE WITH RUBBER TEAT
It dispenses small uniform drops of liquids.

Capacity	Borosilicate Glass E	Amber colour glass F
30ml	SC280	SF314
60ml	SC281	SF315
125ml	SC282	SF316

DROPPING BOTTLE, GLASS
It dispenses small uniform drops of liquids.

Capacity	Borosilicate glass with screw cap G	Amber glass with screw cap H
30ml	SF317	SF320
60ml	SF318	SF321
125ml	SF319	SF322



EVAPORATING DISHES GLASS I
Flat bottom with pour - out, Made of borosilicate glass.

Cat. No.	Size(Dia x Height)
SC182	80x45mm
SC183	105X55mm
SC184	150X80mm
SF313	200X100mm

CROSS REFERENCE

For plastic reagent bottle and Pneumatic trough
Please see page no. 152 & 165

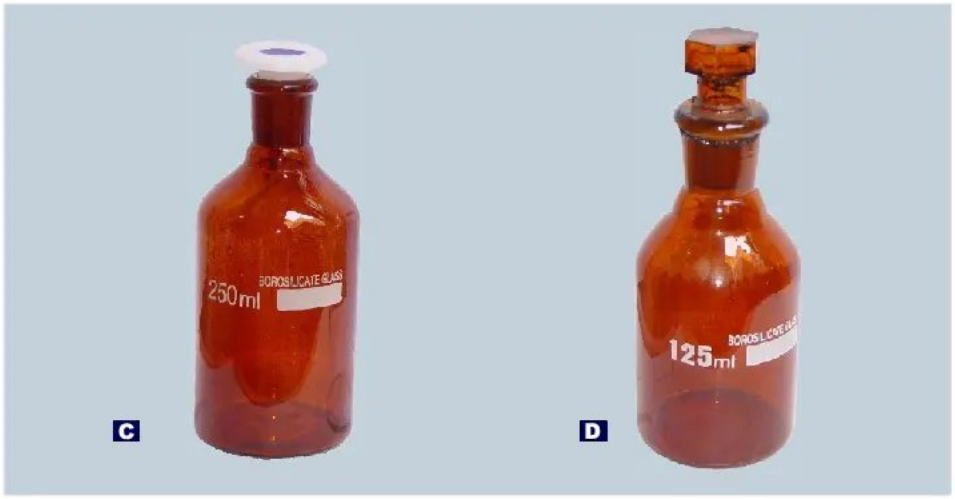


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A B



C D



E F G

REAGENT BOTTLE WITH SCREW NECK
Made of borosilicate glass, narrow mouth. A

Cat No.	Capacity
SC264	100ml
SC265	250ml
SC266	500ml

REAGENT BOTTLE B
Made of borosilicate glass, narrow mouth glass stopper.

Capacity	Borosilicate Glass
60ml	SC255
125ml	SC256
250ml	SC257
500ml	SC258
1000ml	SC259

REAGENT BOTTLE AMBER COLOUR
Made of borosilicate glass, narrow mouth.

Capacity	Plastic stopper C	Glass stopper D
30ml	SF323	SF329
60ml	SF324	SF330
125ml	SF325	SF331
250ml	SF326	SF332
500ml	SF328	SF333
1000ml	SF328	SF334

REAGENT BOTTLE E
With dust proof hexagonal plastic stopper. Made of borosilicate glass, narrow mouth. It can be used for storing & transferring chemicals & other reagents.

Clear Glass	Amber Glass	Capacity
SF335	SF341	30ml
SF336	SF342	60ml
SF337	SF343	125ml
SF338	SF344	250ml
SF339	SF345	500ml
SF340	SF346	1000ml

REAGENT BOTTLE WIDE MOUTH F
Clear glass with plastic screw cap.

Cat No.	Capacity
SF347	100ml
SF348	250ml
SF349	500ml
SF350	1000ml

REAGENT BOTTLE WIDE MOUTH GRADUATED G
Clear glass with plastic screw cap.

Cat No.	Capacity
SJ005	100ml
SJ006	250ml
SJ007	500ml
SJ008	1000ml

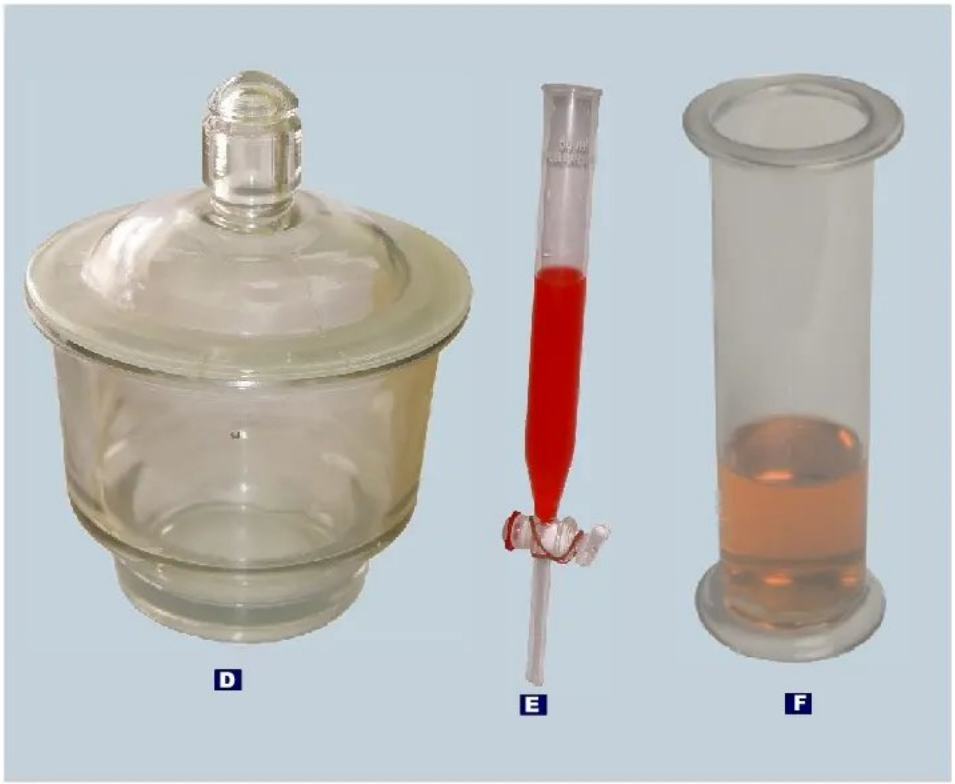
CROSS REFERENCE

For plastic reagent bottle
Please see page no. 153



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Available on request:
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WEIGHING BOTTLE TALL FORM A

Made of borosilicate glass. With interchangeable glass stopper.

Cat No.	Size (Height x Dia)	Capacity (Approx.)
SC271	40 x 20mm	5ml
SC272	50 x 25mm	15ml
SC273	60 x 30mm	25ml
SC274	80 x 40mm	60ml

REAGENT BOTTLE B

Made of borosilicate glass, narrow mouth hexagonal glass stopper.

Capacity	Con.HNO_3	Con.H_2SO_4	Dil. HCl
60ml	SF355	SF359	SF363
125ml	SF356	SF360	SF364
250ml	SF357	SF361	SF365
500ml	SF358	SF362	SF366

GAS WASHING BOTTLE C

Made of boroslicate glass.

Cat No.	Capacity
SC137	125ml
SC138	250ml
SC139	500ml

DESICCATOR D

Made of soda glass with glass knob top cover. Porcelain plate is also provided.

Cat No	Top Internal Dia.
SF375	150mm
SF376	200mm
SF377	250mm
SF378	300mm

DROPPING FUNNEL E

Made of borosilicate glass. Cylindrical, open top.

Capacity	Glass Key Stopcock	Rotaflow stopcock	PTFE stopcock
50ml	SF367	SC125	SF371
100ml	SF368	SC126	SF372
250ml	SF369	SC127	SF373
500ml	SF370	SC128	Sf374

GAS JAR WITH COVER F

Made of soda glass.

Cat No.	Height	Diameter
SC230	150mm	50mm
SC231	200mm	50mm
SC232	250mm	50mm
SC233	300mm	50mm
SC234	375mm	75mm

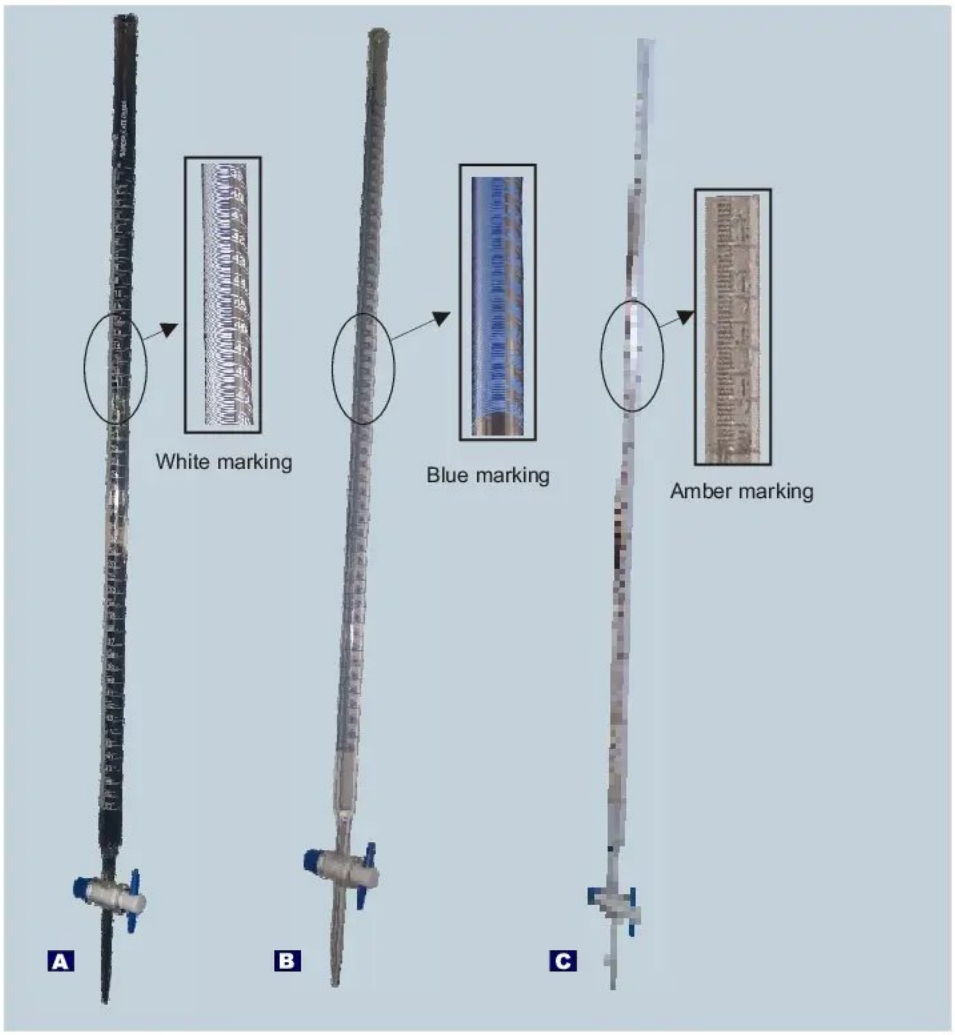
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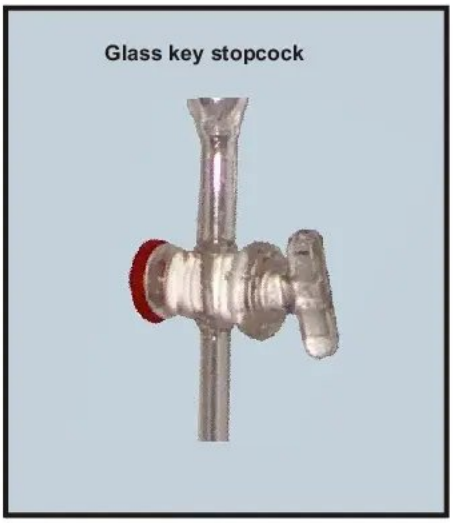
For plastic desiccator
Please see page no.156

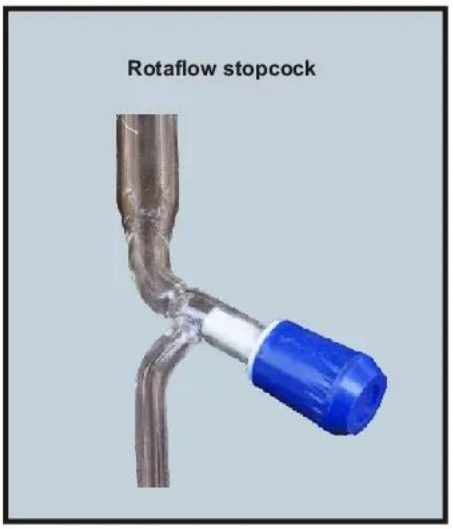


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BURETTE WITH STOP COCK **A**
Made of borosilicate glass. With white marking.

Capacity	Rotaflow stopcock	Glasskey stopcock	PTFE stopcock
25ml	SC296	SC301	SF383
50ml	SC297	SC302	SF384
100ml	SC298	SC303	SF385

BURETTE WITH STOPCOCK **B**
Made of borosilicate glass. With blue marking.

Capacity	Rotaflow stopcock	Glasskey stopcock	PTFE stopcock
25ml	SF386	SF389	SF392
50ml	SF387	SF390	SF393
100ml	SF388	SF391	SF394

BURETTE WITH STOPCOCK **C**
Made of borosilicate glass. With amber marking.

Capacity	Rotaflow stopcock	Glasskey stopcock	PTFE Stopcock
25ml	SF785	SF788	SF791
50ml	SF786	SF789	SF792
100ml	SF787	SF790	SF793

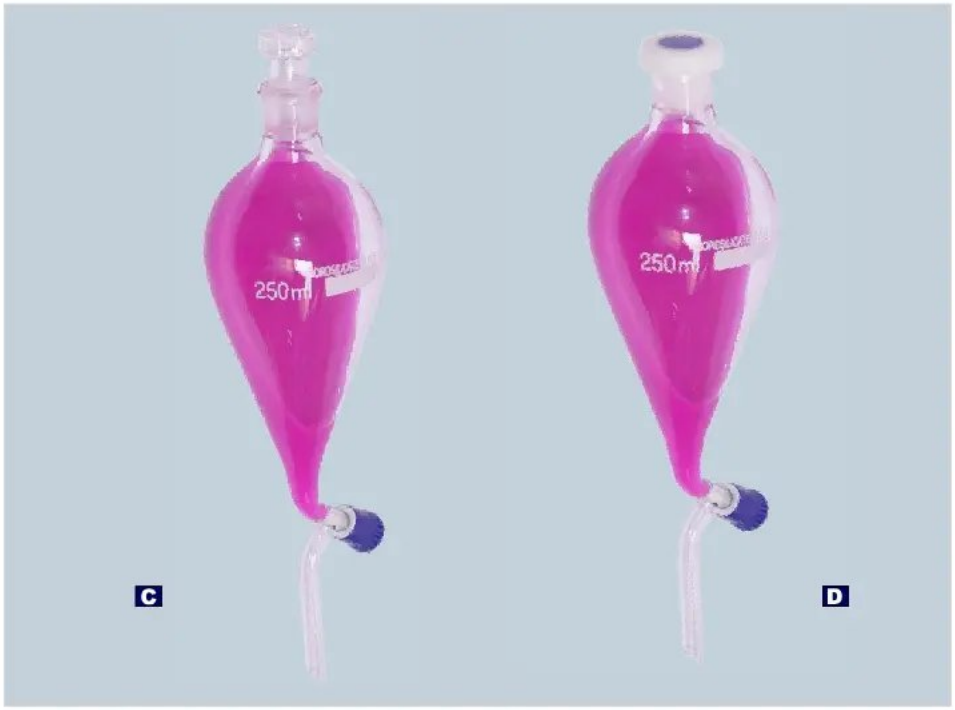
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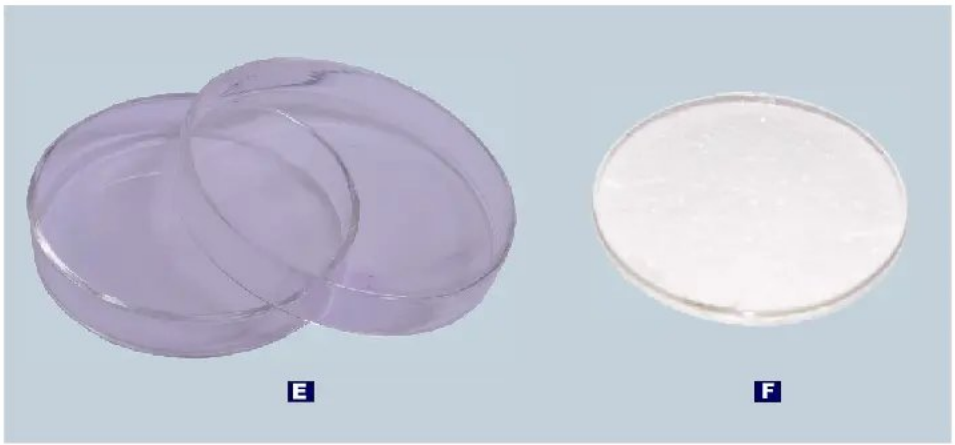
For plastic burette
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FUNNELS A

Diameter	Borosilicate glass
50mm	SC379
75mm	SC380
100mm	SC381

POWDER FUNNEL B

Made of borosilicate glass. Used for transferring powdered reagents. Parallel stem minimizes bridging of powder.

Cat No.	Diameter
SC382	75mm
SC383	100mm
SC384	125mm
SC385	150mm

SEPARATING FUNNEL WITH ROTAFLOW STOP COCK

Made of borosilicate glass.

Cat No.		Capacity
Glass stopper C	Plastic stopper D	
SC395	SF379	50ml
SC396	SF380	100ml
SC397	SF381	250ml
SC398	SF382	500ml

PETRI DISH E

Diameter (Approx.)	Borosilicate glass
50mm	SC409
75mm	SC410
100mm	SC411
125mm	SF395
150mm	SC412

WATCH GLASS F

Made of soda glass.

Dia. (Approx.)	Cat. No.
75mm	SJ091
100mm	SJ092
125mm	SJ093
150mm	SJ094

THISTLE FUNNEL G

Used in gas preparation, osmosis etc.

SC386 Neutral glass length 300mm.
SC387 Borosillicate glass length 300mm.

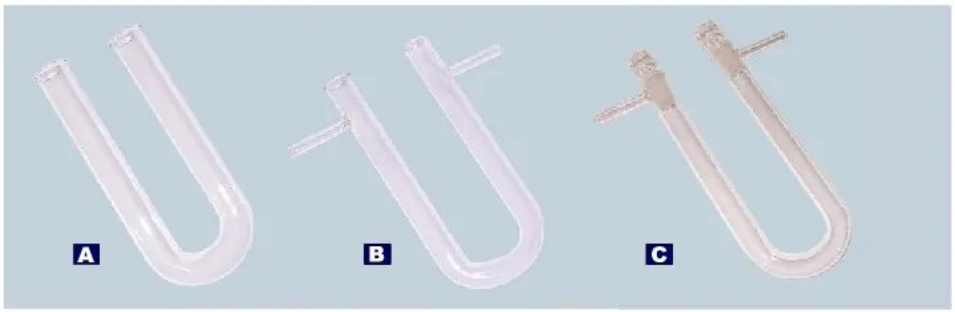
CROSS REFERENCE

For plastic funnels
Please see page no.
164 & 157

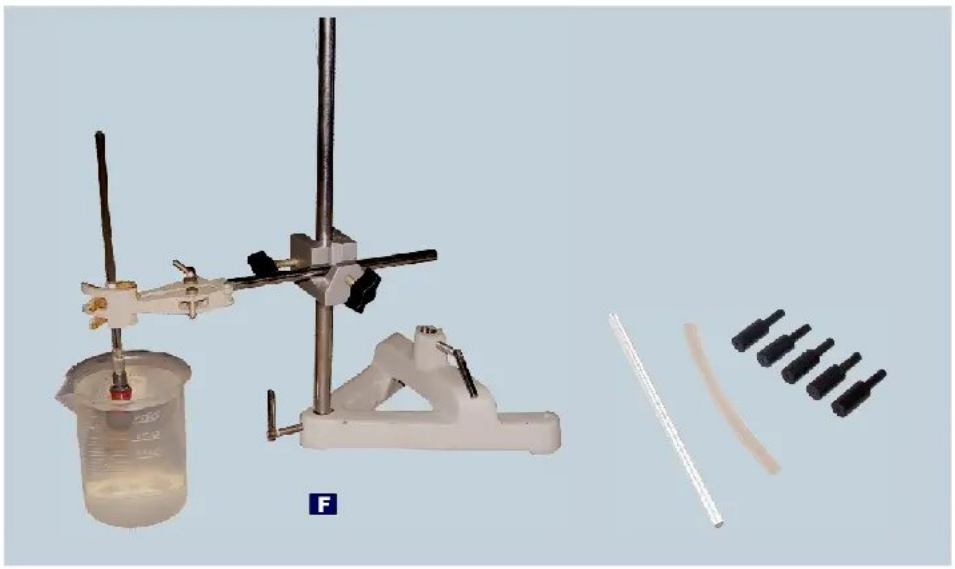


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ABSORPTION U-TUBE, $CaCl_2$
Made of borosilicate glass.

Size	without side arm A	with side arm B	with side arm & glass stopper C
100x12mm	SC418	SC420	SF398
125x15mm	SC419	SC421	SF399
150x18mm	SF396	SF397	SF400

ABSORPTION TOWER D
Used for drying of chemicals.

Cat No	Capacity	Material
SC424	250ml	Borosilicate glass
SC425	500ml	Borosilicate glass
SC426	1000ml	Borosilicate glass

ABSORPTION TUBE, $CaCl_2$ E **SC422**
Straight with one bulb. Used during distillation.

OSMOSIS APPARATUS F **SF402**
To show movement of water from the region of lower concentration to higher concentration (sugar soln) through visking tube. There is a capillary tube (7mm dia.) with a connector to fit 14mm visking tube closed by rubber band. Supplied with 5 connectors. 5 nos of 200mm x 5mm capillary tubes, rubber band. Supplied without base, rod, visking tube, bosshead & clamps.

CENTRIFUGE TUBE
Made of Borosilicate Glass. Conical bottle.

Capacity	Without stopper G	With stopper H	Graduated I
15ml	SC470	SC473	SF431
25ml	SF429	SF430	SF432
50ml	SC471	SC474	SF433

OSTWALD VISCOMETER J **SF434**
It consists of 'U' tube with two no. of glass bulbs which are joined by a capillary tube. A simple device for measuring relative viscosities of different liquids. A large bore receiving tube and bulb at one side whereas short bore capillary and bulb on other side.

FOR YOUR INFORMATION
We can provide complete solutions to our customers to plan, design and equip complete labs for Physics, Chemistry and Biology.

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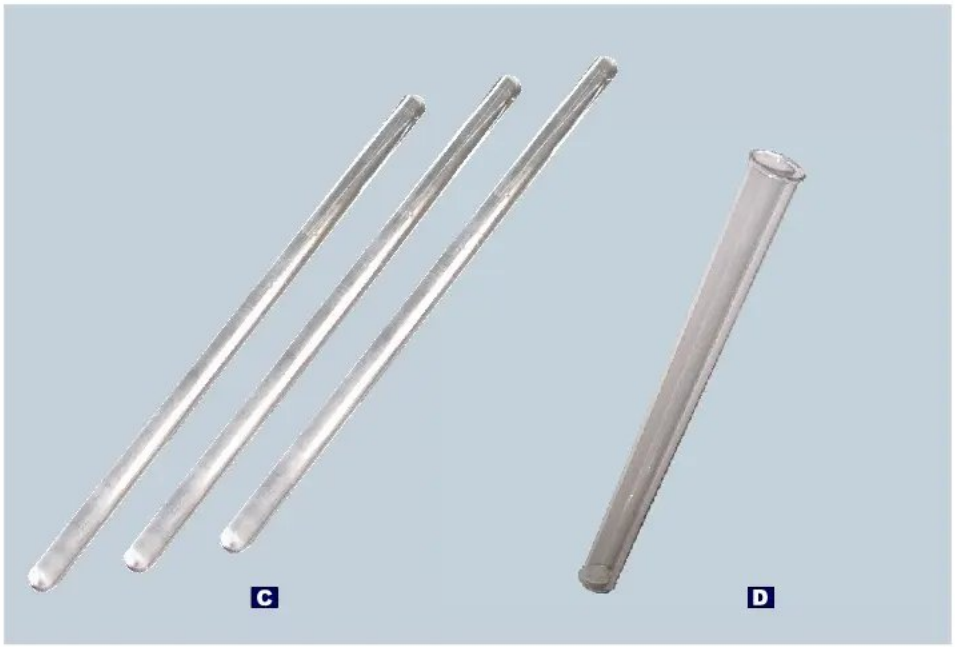
TEST TUBE GLASS A

O.D. x L	Capacity (Approx.)	Borosilicate glass with rim	Neutral glass with rim
10X75mm	3ml	SC465	SF415
12X75mm	5ml	SF403	SF416
12X100mm	8ml	SC466	SF417
15X125mm	10ml	SC467	SF418
15X150mm	15ml	SF404	SF419
18X150mm	25ml	SF405	SF420
25X100mm	35ml	SC468	SF421
25X150mm	50ml	SW013	SF422
32X200mm	100ml	SC469	SF423

TEST TUBE WITH SIDE ARM B

Made of borosilicate glass. The sidearm may be used to connect rubber tubing.

Cat. No.	Dia x Length
SF424	25 x 150 mm
SF425	18 x 150 mm



GLASS ROD C

Used for stirring solutions during experiments.

Size Approx. Dia x Length	Borosilicate Glass
1 x 300 mm	SF447
1.5 x 300 mm	SF448
2 x 300 mm	SF449
2.5 x 300 mm	SF450

COMBUSTION TUBE STRAIGHT D

Made of borosilicate glass, used for reduction and oxidation of chemical substances. Open both ends.

Cat. No.	Dia x Length
SF451	25 x 300 mm
SF452	18 x 300 mm
SF453	18 x 250 mm



FRACTIONATING COLUMN ROD AND DISC TYPE E

Made of borosilicate glass.
SC130 No. of disc 15
SC131 No. of disc 20

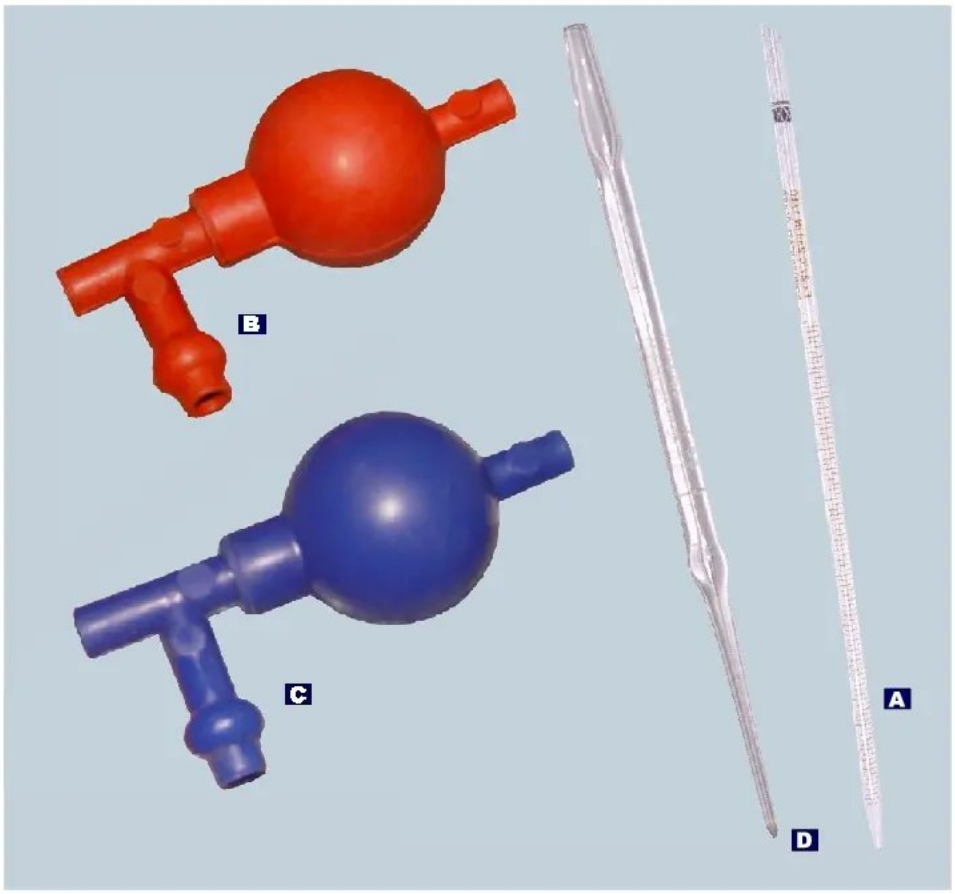
LIEBIG CONDENSER F

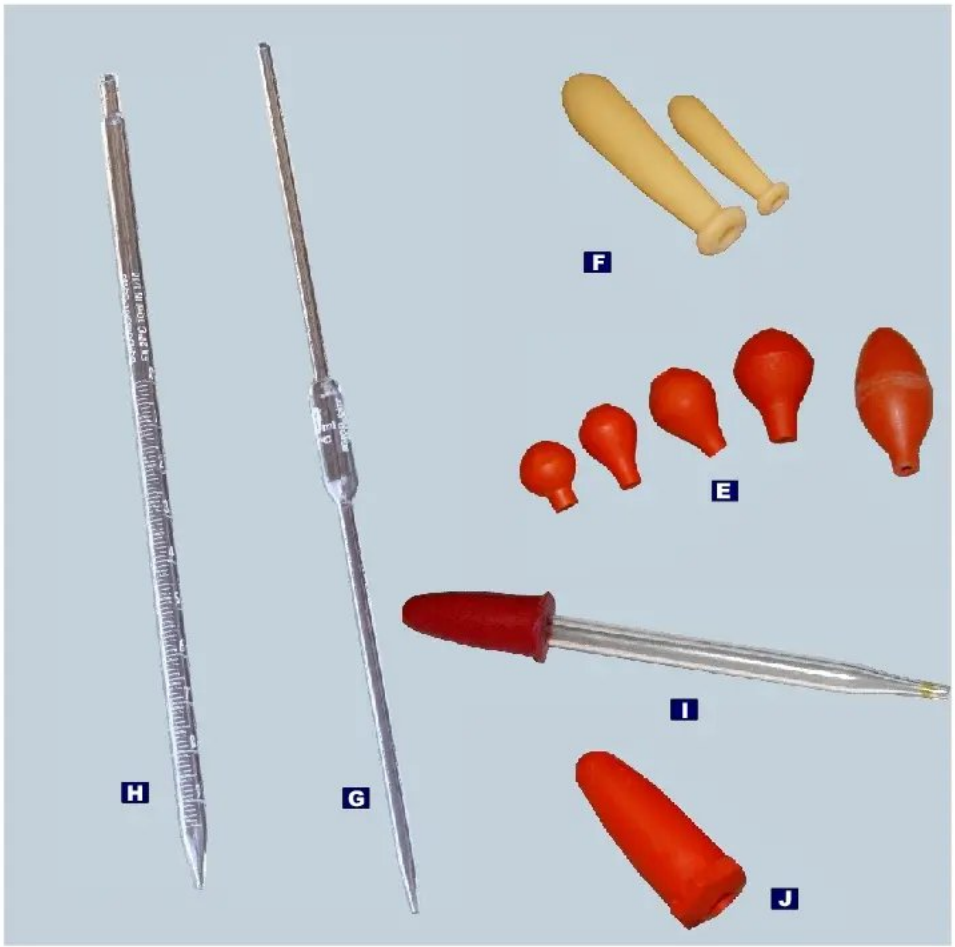
Made of borosilicate glass. Used in distillation.

Cat. No.	Size
SC120	150mm
SC121	200mm
SC122	250mm
SC123	300mm
SC124	500mm

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MICRO PIPETTES A
Made of borosilicate glass. Micro liter.

Cat No.	Micro liter	Tolerance ± %
SF458	5	1.0
SF459	10	1.0
SF460	25	1.0
SF461	50	0.6
SF462	100	0.6

PIPETTE FILLER BULB TYPE B **SW610**
Made of natural rubber. Used for pipetting harmful solutions. Comprises a bulb and three way.

PIPETTE FILLER BULB TYPE C **SF060**
Made of silicone rubber. Used for pipetting harmful solutions. Comprises a bulb and three way.

PIPETTES MEASURING, GRADUATED, BOROSILICATE GLASS D

Cat No.	Capacity Ml	Sub. Div. ml
SF463	0.2	0.01
SF464	0.5	0.02
SF465	1.0	0.01
SF466	2.0	0.02
SF467	5.0	0.05

PIPETTE BULBS NATURAL RUBBER E
These rubber teats may be used in the dropping pipettes. By compressing the teat the liquid is expelled.

Cat No.	Capacity
SF054	5ml
SF055	10ml
SF056	15ml
SF057	20ml
SF058	25ml

TEATS LATEX F
These teats may be used in the dropping pipettes. By compressing the teat the liquid is expelled.

Cat No.	Capacity
SF067	2ml
SF068	10ml

PIPETTES
Made of borosilicate glass. Supplied without stand.

Capacity	With one Mark G	Graduated H
5ml	SC435	SC440
10ml	SC436	SC441
20ml	SCA37	SC442
25ml	SC437	SC443
50ml	SC438	--------
100ml	SC439	--------

DROPPER WITH TEAT I
Made of glass.
SJ015 Length : 100mm
SJ016 Length : 150mm

CONICAL TEAT NATURAL RUBBER SF059 J
Used with glass droppers. Capacity 1ml.

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KIPP'S GAS GENERATOR **A**

Used in Chemistry Practical Classes. Metal sulphide can be put in the base of apparatus. Dil. Acid can be poured from top. H_2S gas thus evolved and collected through middle dome. The base is provided with an outlet for cleaning.

Capacity	Borosilicate Glass
250ml	SF478
500ml	SF479
1000ml	SF480



POWER SUPPLY FOR HOFFMAN'S VOLTAMETER **B** **SN542**

Power supply unit with EMI/EMC filter for Holffman's voltameter.

Parameters

Output Voltage	12 V DC unregulated
Output Current	2.5 Amp
Working Voltage	230 V AC, 50 Hz



POWER SUPPLY FOR HOFFMAN'S VOLTAMETER **C** **SF481**

Power supply unit for Holffman's voltameter.

Parameters

Output Voltage	12 V DC unregulated
Output Current	2.5 Amp
Working Voltage	230 V AC, 50 Hz



HOFFMAN'S VOLTAMETER **D** **SC140**

Chemical composition of water by volume and the electrochemical equivalent of hydrogen by electrolysis of water can be demonstrated using this. It is provided with a platinum electrode pair, carbon electrode pair, two stop cocks and a graduated limbs (capacity 50ml). Platinum electrodes can be mounted in rubber stoppers at the base of two limbs for electrolysis of water. After electrolysis hydrogen and oxygen gas will be collected in two limbs at the apex. Carbon electrodes are used for electrolysis of HCl or NH_3 solutions. It is fixed on a metal stand. Operatable at 12 V DC, 2.5 Amp.

HOFFMAN'S VOLTAMETER **SA395**

Same as above SC140 but supplied without stand and clamp.

ELECTRODES PAIR MOUNTED IN STOPPER **E**

SC672	Platinum
SC673	Carbon



WATER VOLTAMETER **F** **SC141**

It is provided with Platnium electrode and two graduated limbs (capacity 10ml). It is mounted on a base with terminals.

CROSS REFERENCE

For plastic kipp's gas generator
Please see page no. 157



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TEST TUBE STAND

Cat. No.	Pattern
SC621 A	Wooden, 12 Holes 12 pegs
SC551 B	Wooden, 6 Holes 6 pegs

TEST TUBE STAND C

It is made of wooden with plastic side supports. The outer two holes dia are 25mm and the inner four holes dia 18mm.

Cat. No.	Pattern
SF483	Wooden, 6 Holes, with 6 pegs
SF484	Wooden, 12 Holes, with 12 pegs



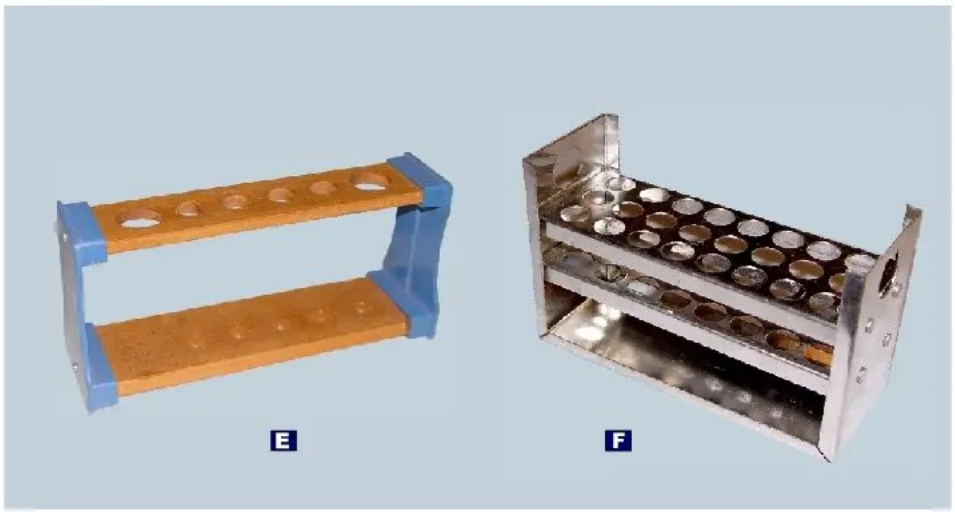
BURETTE STAND, WOODEN D SN699

Base dimension 430 x 90 mm approx.

TEST TUBE STAND E

It is made of wooden with plastic side supports. The outer two holes dia are 25mm and the inner four holes dia 18mm.

Cat. No.	Pattern
SF485	Wooden, 6 Holes
SF486	Wooden, 12 Holes



TEST TUBE RACK, ALUMINIUM F

Having three tiers.

Cat .No.	No. of holes	Diameter
SC484	12	10mm
SC485	18	12mm
SC486	24	15mm
SC487	36	18mm
SC488	48	25mm

TEST TUBE RACK, STAINLESS STEEL G

Having three tiers.

Cat. No.	No. of holes	Diameter
SF487	12	11mm
SF488	12	16mm
SF489	12	20mm



TEST TUBE STAND, Z PATTERN H SJ014

Made of Aluminium. Z- pattern with three rows of holes. Dimension : 200x125x 75mm.

Diameter of hole

In five holes : 28mm diameter (Approx.)
In six holes : 19mm diameter (Approx.)
In eight holes : 13mm diameter (Approx.)

CROSS REFERENCE

For plastic Test tube stand
Please see page no. 160



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PIPETTE STAND A

It can hold 12 pipettes, 6 on each side.

Cat. No.	Capacity	Pattern
SC463	12nos.	Wooden horizontal

FUNNEL STAND WOODEN

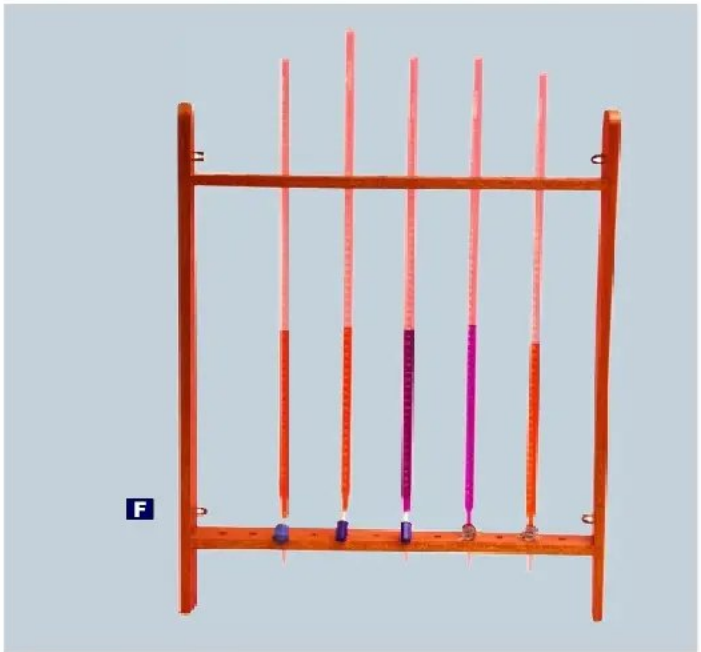
SC553 B Single
SC554 C Double

BURETTE STAND WOODEN

SC292 D Single
SC293 E Double







BURETTE DRAINING AND STORAGE RACK F **SH219**

Made of hard wood. Wall mounting type. Capacity 12 burettes of 50ml each. Burettes can be vertically positioned.

CROSS REFERENCE



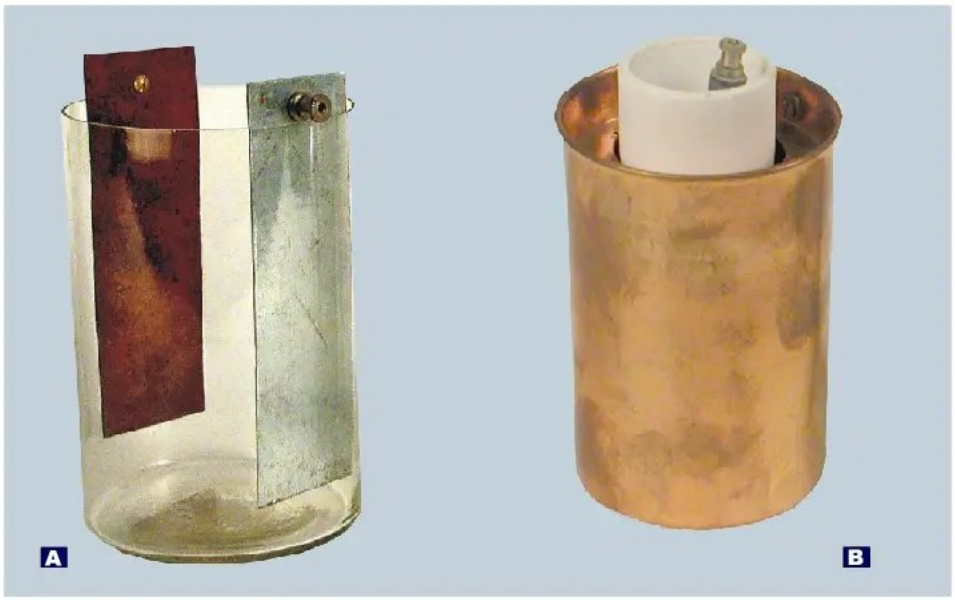
For funnel holder and pipette stand

Please see page no. 155 & 162

Indosaw was estabilished in 1993.
It's legacy goes back to 1919..

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Fax:+91-171-2699102, 2699222, E-mail:eenquiry@indosaw.com (Foreign Customer), deducation@indosaw.com (Indian Customer)



SIMPLE CELL A **SE001**
Consists of a glass jar (Size 15x10cm), one copper plate and one zinc plate (Size 15x5cm each). Plates are fitted with terminals.

DANIELL CELL B **SE004**
Stout and polished copper pot with terminal and perforated shelf near the top to carry copper sulphate crystals, Zinc rod fitted with terminal. Supplied without chemicals.

LECLANCHE CELL C **SE003**
Porous pot and Zinc rod with terminal, in glass vessel.
Capacity 1 Liter approx. Without chemicals.

LECLANCHE CELL POT D **SF523**
Blown in Polypropylene, this Pot is used for making Leclanche Cell. This Pot too has very good contact clarity & excellent chemical resistance.

POROUS POTS E **SE005**
Empty for Daniel cell.

ACCUMULATOR CELL F
SE006 2V, 20amp per hour
SE263 2V, 45amp per hour

COPPER VOLTAMETER G **SP410**
Consists of 3 copper plates suspended from an insulated cover in a plastic jar. The outer plates form anode and the central one is cathode. The cathode plate is so mounted that it may be taken out or put into the holder without being touched by the fingers. Plates are interchangeable.







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ELECTRODES 'S' TYPE (SET OF TWO)
SH021 **A**
Can be hanged on side of a small beaker. Carbon is attached to connectors having plastic insulation. Crocodile clips may be used for connection during experiments.

ELECTROLYSIS CELL **B** **SH198**
Used for demonstration of electrolysis qualitatively. It consists of open-ended glass tube, in which two numbers of carbon electrodes are fitted with the help of bored rubber cork. Both electrodes are separated by means of a plastic strip. Crocodile clips may be used for making connections. The shorting of clips are prevented by strip during experiments.
Glass tube : 74 x 24mm
Collecting tubes : 75 x 10mm
Rubber cork size : 21 No.

ELECTRODE (STAINLESS STEEL WIRE)
SW121 **C**

POROUS POTS **D** **SE808**
Filled for Leclanche cell.

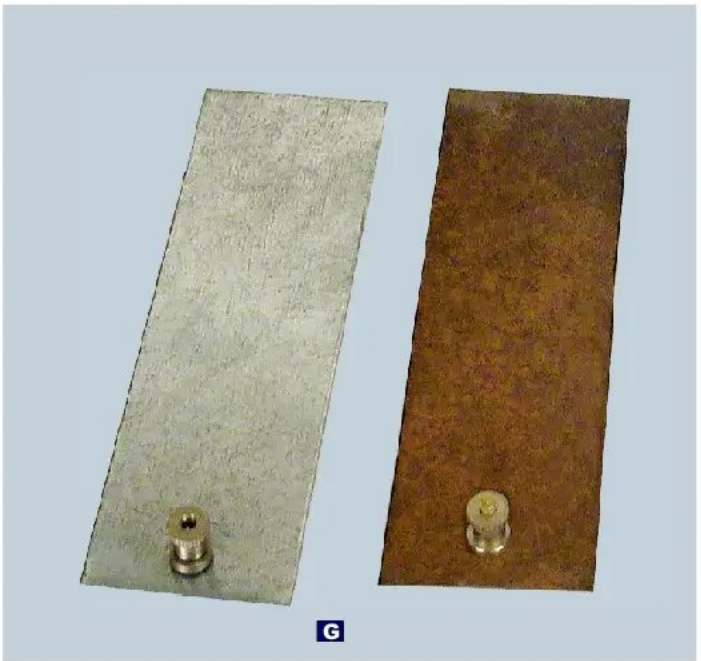
ZINC ROD **E** **SE825**
Dia 1.2cm approx. Length 15 cm.



CARBON ELECTRODES, PAIRED **F**
SH033
A flexible plastic holder contains two carbon electrodes. It may be used in a beaker or boiling tube for electrolysis.

ELECTRODE WITH TERMINAL **G**
SE002 Copper size : 15 x 5cm. (L x W)
SE260 Zinc size : 15 x 5cm. (L x W)





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SPATULA, STAINLESS STEEL
Available in different sizes and shapes. Used for lifting or transferring samples. Available in wide range as under:
A - With flat end & other end spoon type.
B - Both end flat.
C - One end flat whereas other end spoon shaped.

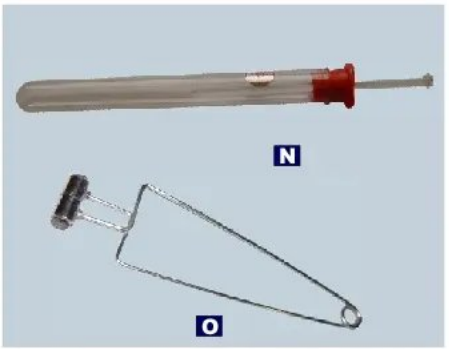
Length	A	B	C
125mm	—	SF494	SC143
150mm	SF491	SF495	SC144
200mm	SF492	—	SC145
250mm	SF493	SF496	SC146
300mm	—	—	SF497



SPATULA, STAINLESS STEEL SJ009-SJ013
Available in different sizes and shapes. Used for lifting or transferring samples. Available in wide range as under:
D - Spatula length 160mm
E - Trowel spatula, for lifting large quantity of material, length 170mm.
F - Chattaway's, one end bent up and other end small spoon shaped, length 210mm.
G - Nuffield pattern raised centre, one end flat and other end spoon form, length 140mm.
H - Bifurcated shaped, length 150mm.

PLATINUM WIRE LOOP HOLDER N SC970
It is suitable for flame test. Platinum wire fused in a glass rod.

SODIUM TONG O SN273
Made of steel, chrome plated, used for lifting sodium pieces. Size 200mm long approx.



BRUSHES
Burette brush nylon with GI wire
SF502 I

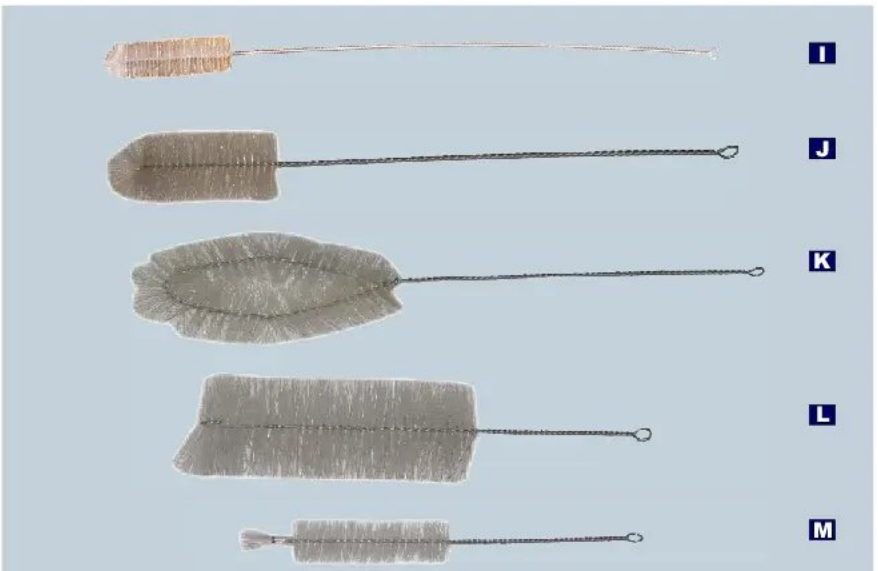
Measuring cylinder brush nylon with GI wire, overall length 450mm (Approx.)
SF503 J

Flask Brush nylon with GI wire, overall length 375mm (Approx.)
SF504 K

Beaker brush nylon with GI wire, overall length 300mm (Approx.)
SF505 L

Test tube brush nylon with GI wire, overall length 200mm (Approx.)
SF506 M

Test tube brush nylon with GI wire, overall length 250mm (Approx.)
SF507 M



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SAFETY SPECTACLES **A** **SN780**
Full view with single clear polycarbonate lens. Lens framed in flexible plastic frame. Provided with wraparound adjustable head band with retained ends. Used for general purpose protection from chemicals, dust etc in laboratories. Standard size fits all.



SAFETY GOGGLES **B** **SN778**
Eyes protection from chemical reagents.



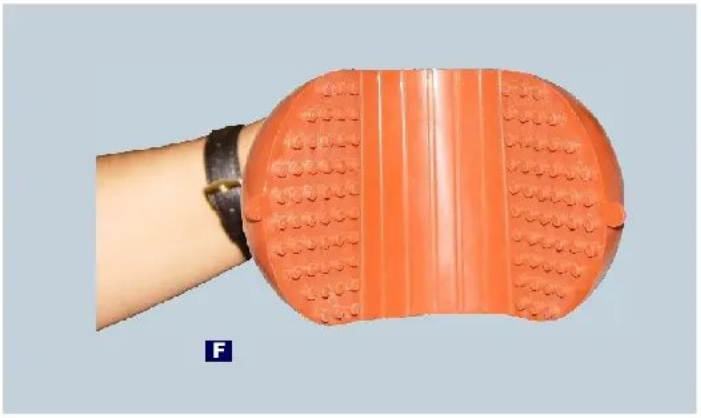
LABCOAT **C** **SF509**
Cotton made white. With two bottom pocket.
Size 72 x 43cm approx. (L x W).

FIRST AID BOX **D** **SF510**
Packed in a plastic case, all necessary items are included for first aid emergency. Contents are:

Cotton crepe bandage	:1pc
Cotton wool 75gm	:1pc
Bandage	:2pcs
Surgical tape	:1pc
Dettol 50ml	:1pc
Clinical thermometer 35-42°C	:1pc
Scissor	:1pc
Burnol 20gm	:1pc
Cipladine ointment 10g	:1pc
Band-aid	:5pcs



RUBBER GLOVES PAIRED **E** **SN272**
Vinyl Gloves. Multi purpose. For handling chemical substances.



HAND PROTECTOR GRIP **F** **SN279**
Made of silicone rubber. Used for protection from temperature while carrying hot glassware. Provided with non slip grip.

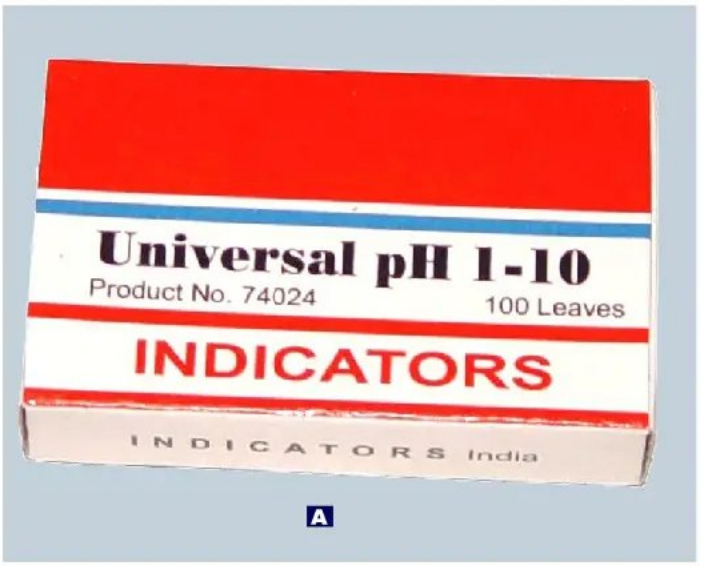


MASK **G** **SF508**
Provides protection against polluted air, dust and fumes etc.



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UNIVERSAL INDICATOR PAPER pH 1-10 **A** **SF516**
100 leaves per pack. It indicates sharp colour change. Provided with colour chart.

UNIVERSAL INDICATOR PAPER pH 1-14 **B** **SF517**
100 leaves per pack. It indicates sharp colour change. Provided with colour chart.

POTASSIUM IODIDE PAPER **C** **SF518**
100 leaves per pack.

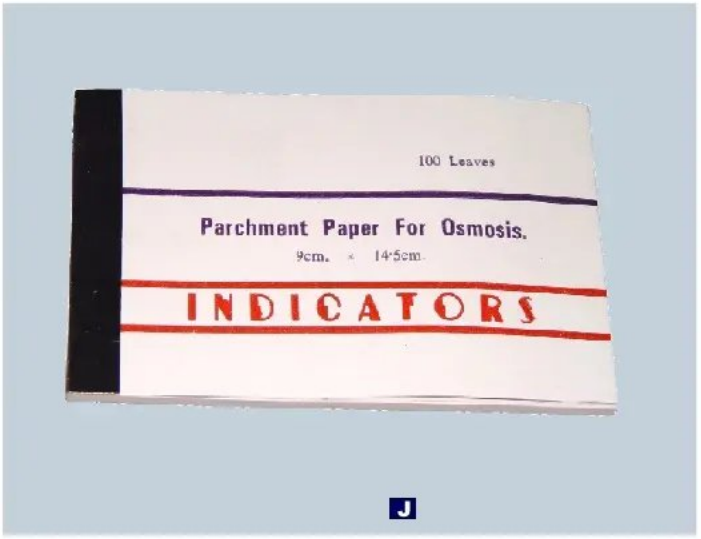
COBALT CHLORIDE TEST PAPER **D** **SF513**
100 leaves per pack. Dry before use. Colour change indicates relative humidity. Pink colour for high and blue for low humidity.

TURMERIC PAPER **E** **SF514**
100 leaves per pack. Used to test for alkalinity. Colour changes from yellow to brown.

LEAD ACETATE PAPER **F** **SF515**
100 leaves per pack. Used for testing hydrogen sulphide vapours. Dip the paper in water before use.

STARCH PAPER **G** **SF520**
100 leaves per pack.

LITMUS PAPER **H**
Red - Colour changes from red to blue when dissolved in base solution. 100 leaves per pack.
SF521
Blue - Colour changes from blue to red when dissolved in acid solution. 100 leaves per pack.
SV029



PARCHMENT PAPER FOR OSMOSIS **J** **SF522**
Size 14.5 x 9cm, 100 leaves per pack. Water can pass from higher to lower concentration through this.



FILTER PAPERS **I**
Available in different sizes. Per pack 100 pieces.

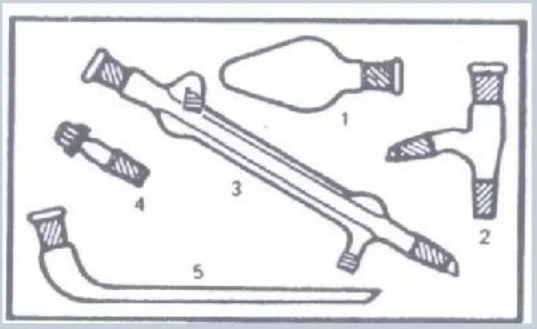
Cat. No.	Diameter
SN275	70 mm
SC731	90 mm
SC587	110 mm
SN276	125 mm
SF511	150 mm
SF512	185 mm



CHROMOTOGRAPHY PAPER **K**
Made of pure cellulose sheet. Available in various sizes and grades.

Cat. No.	Size (Approx.)	Grade	Packing
SB287	100x300 mm	1	100 Pcs.
SN277	460x570 mm	1	100 Pcs.
SN278	460x570 mm	20	25 Pcs.

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A

ORGANIC CHEMISTRY SET OF 5 **A** **SF524**

This set is ideal for introducing student to the principal techniques of preparative organic chemistry. Although the set is very simple, a surprising number of preparations on the 30 g scale can be carried out. Complete set comprising five items.

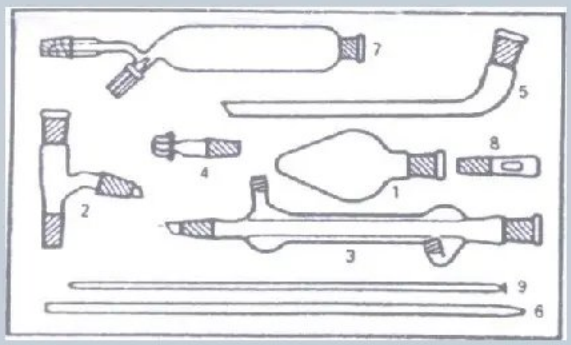
S. No.	Components	Socket Size	Cone Size
1.	Pear shaped flask, 50 ml	14/23	—
2.	Stillhead	14/23	14/23
3.	Liebig condenser	14/23	14/23
4.	Screwcap adapter	—	14/23
5.	Receving adapter, bent	14/23	—



C



D



B

ORGANIC CHEMISTRY SET OF 9 **B** **SF525**

A highly popular set in schools, colleges and universities. It has been purposely designed to cover the essential requirements for the teaching of organic chemistry and is suitable for preparations up to 30 g. This is a set which is difficult to beat for versatility. Complete set comprising nine items.

S. No.	Components	Socket Size	Cone Size
1.	Pear shaped flask, 50 ml	14/23	—
2.	Stopper	—	14/23
3.	Dropping funnel, 50 ml	14/23	14/23
4.	Stillhead	14/23	14/23
5.	Liebig condenser	14/23	14/23
6.	Screwcap adapter	—	14/23
7.	Air leak/steam inlet tube	—	14/23
8.	Receving adapter, bent	14/23	—
9.	Thermometer 0° to 360°C	—	---

FUSION TUBE OR IGNITION TUBE **C** **SF526**

Made of soda glass. Per packet 144 pcs.

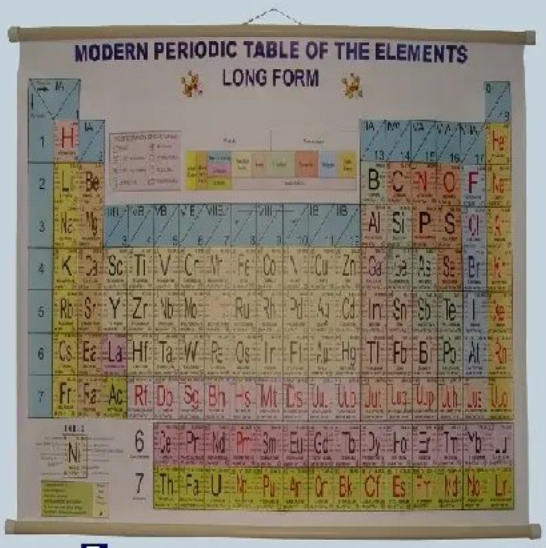
CAPILLARY TUBE FOR MELTING POINT **D** **SF528**

Made of soda glass. Per packet 100 pcs.

MODERN PERIODIC TABLE OF THE ELEMENTS, LONG FORM **E** **SF527**

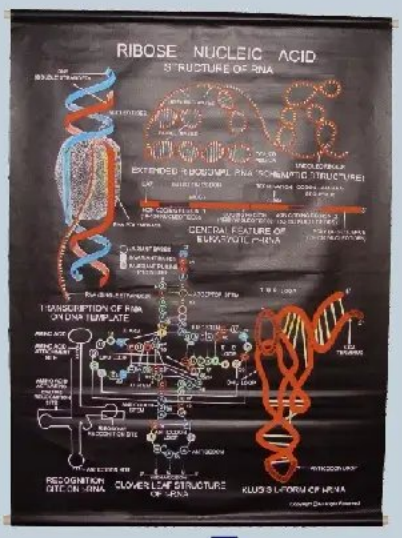
Made of polyart paper. Provided with roller . Size 100x70mm.

Polyart



E

Rexine



F

RIBOSE NUCLEIC ACID CHART **F** **SJ096**

Made of rexine. Provided with roller. Size75 x100cm approx.

Available on request:
Many more charts on rexine and polyart.

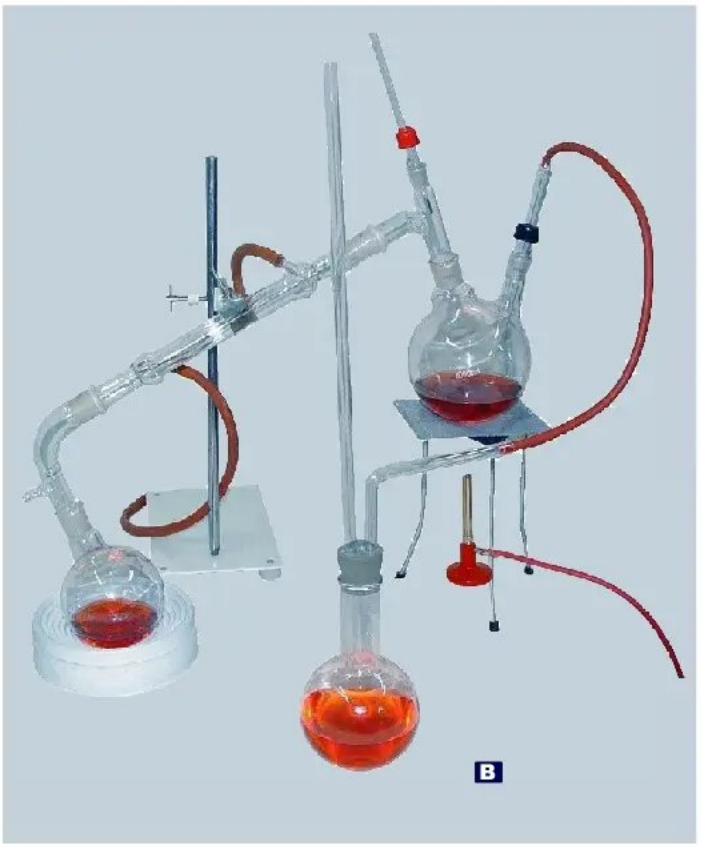
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FRACTIONAL DISTILLATION SET **A** **SW829**

It consists of various glass parts.
Factional column, Two thermometers,Distill head, Liebig condenser Receiving adapter, Two round bottom flasks, Two-necked round bottom flasks, Bunsen burner, Wire net with ceramic coatin and Tripod stand metallic triangular .
All components are made of borosilicate glass, and well fitted without vapour leakage when assembled.



STEAM DISTILLATION SET **B** **SN599**

Two-necked round bottom flasks, Adapter ground, Steam generator, Distilling head, Liebig condenser, Receiving adapter, Round bottom flask, short necked, Bunsen burner, Wire net with ceramic coating and Tripod stand metallic triangular.
All glass components are borosilicate glass, equivalent quality to pyrex glass and well fitted without vapour leakage when assembled.



TITRATION SET **C** **SW827**

This set allows students to conduct titration precisely and effectively in less time. Simply put the solution in the flask and titrate with the solution contained in the burette. Before placing liquid in the burette, keep the stopcock in the "off" position. Before putting the solution in the flask, rinse the walls of the flask several times using a wash bottle. During titration gently swirl the flask. Nearing the end point dispense burette solution dropwise. For more visibility of colour change put a white paper under flask during titration.

It consists of the following item:
One Burette, Two Pipettes, Two Safety Pipette Filler, Six Conical Flasks, Burette Clamp and Stand.

FOR YOUR INFORMATION
We can provide complete solutions to our customers to plan, design and equip complete labs for Physics, Chemistry and Biology.

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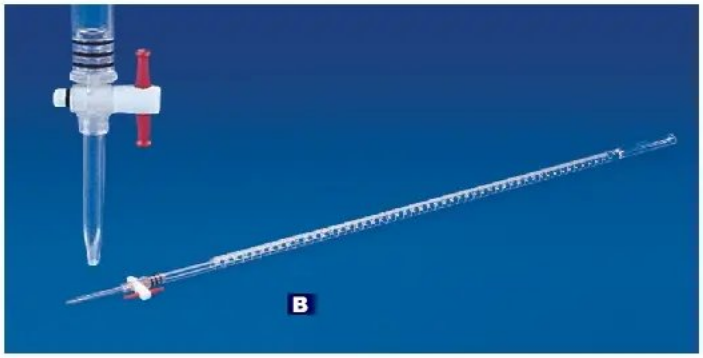


BEAKERS A

Material : Polypropylene

Beakers, moulded in Polypropylene, have excellent clarity and very good chemical resistance. These autoclavable Beakers have prominently raised graduations on the outer surface. Pouring a solution becomes very convenient because of its tapered spout.

Cat No.	Capacity	Least Count
SC215	50ml	5ml
SC216	100ml	5ml
SC217	250ml	10ml
SC218	500ml	10ml
SC219	1000ml	25ml
SC988	2000ml	250ml



BURETTE B

Material : Polymethyl Methacrylate/TPX

This Burette has a transparent acrylic body and a leakproof stopcock fitted with a self lubricating PTFE plug. Each Burette is individually calibrated to give maximum accuracy. Acrylic body is unaffected by dilute mineral acids & bases except Hydrofloric Acid & Ammonium Hydroxide.

Cat No.	Capacity
SF543	25ml
SF544	50ml
SF545	100ml





BEAKERS (EURO DESIGN) D

Material : Polypropylene

Cat No.	Capacity	Least Count
SF530	25ml	5ml
SF531	50ml	5ml
SF532	100ml	5ml
SF533	250ml	10ml
SF534	500ml	10ml
SF535	1000ml	20ml
SF536	2000ml	50ml
SF537	5000ml	200ml

Material : TPX

Cat No.	Capacity	Least Count
SF538	50ml	5ml
SF539	100ml	5ml
SF540	250ml	10ml
SF541	500ml	10ml
SF542	1000ml	20ml



PIPETTE PUMP E

Material : Acrylonitrile Butadiene Styrene

It presents a fast release pipetting device for precise pipetting & zip quick emptying. The Knurled thumbwheel can be rotated to draw up or dispense liquids while the releaser may be pushed in for zip-quick emptying. The moulded chuck has a silicon rubber collet inside to hold various pipettes of standard sizes. It resists acids & alkalies and can be easily disassembled for thorough cleaning.

Cat No.	Capacity
SW833	2ml
SC458	10ml
SW411	25ml

DROPPING BOTTLES C

Material : Low Density Polyethylene

Blown in Low Density Polyethylene, The Dropping Bottles dispense small uniform drops of liquids when pressed lightly.

Cat No.	Capacity
SF546	60ml
SF547	125ml

CROSS REFERENCE

For glass beakers
Please see page no. 131



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REAGENT BOTTLES (NARROW MOUTH) A

The PP bottles are rigid, translucent and have excellent contact clarity. These bottles can be autoclaved filled as well as empty. The Polypropylene Cap has a built in seal ring to make these bottles leakproof.

Material : Polypropylene

Cat No.	Capacity
SF548	60ml
SF549	125ml
SF550	250ml
SF551	500ml
SF552	1000ml

REAGENT BOTTLES (WIDE MOUTH) B

These Wide Mouth Reagent Bottles are available in Polypropylene. The PP bottles are rigid, translucent and have excellent contact clarity. These bottles can be autoclaved filled as well as empty. The Polypropylene Cap has a built in seal ring to make these bottles leakproof.

Material : Polypropylene

Cat No.	Capacity
SC245	60ml
SC246	125ml
SC247	250ml
SC248	500ml
SC249	1000ml

NARROW MOUTH BOTTLE C

This autoclavable bottle, made of polypropylene, can be used for storing & transfering chemicals and other reagents safe & sound.

Material : Polypropylene

Cat No.	Capacity
SF553	4000ml

WIDE MOUTH SQUARE BOTTLE D

This autoclavable bottle, made of polypropylene, can be used for storing & shipping chemicals & reagents. Being wide mouthed, it is always convenient to pour in & take out the reagents. The built in depressions on two sides provide excellent grip while holding this bottle.

Material : Polypropylene

Cat No.	Capacity
SF554	4000ml

CARBOY E

Carboys, made of polypropylene, are much lighter than glass. These autoclavable, dependable & durable Carboys are provided with wide handles making it convenient while carrying or pouring purposes.

Material : Polypropylene

Cat No.	Capacity
SF556	10 litre
SF557	20 litre

CARBOY WITH STOP COCK F

Adding in line of Aspirators, these polypropylene Carboys are autoclavable, dependable & durable. These are also equipped with a leak proof spigot screwed to the body. These carboys are an excellent replacement for glass carboys and are used for storing & dispensing distilled water & other laboratory solutions.

Material : Polypropylene

Cat No.	Capacity
SF558	10 litre
SF559	20 litre



ASPIRATOR BOTTLES G

Aspirator Bottles are made of Polypropylene and are therefore much lighter than glass. These are autoclavable, durable & dependable. The leakproof spigot screwed to the bottle body requires only a half turn to open or close. These bottles are used for storing or dispensing distilled water & other laboratory solutions. Threads should be totally disengaged before autoclaving.

Material : Polypropylene

Cat No.	Capacity
SW047	5 litre
SW048	10 litre
SW049	20 litre

CROSS REFERENCE

For glass reagent bottles
Please see page no. 135



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WASH BOTTLES A

Wash Bottles are made of Low Density Polyethylene which gives these bottles a translucent & unbreakable character. Solutions can be poured easily by squeezing the bottle lightly. The cap is fitted with a flexible polyethylene delivery tube which can be aimed wherever required.

Material : Polyethylene

Cat No.	Capacity
SW809	125ml
SC235	250ml
SC236	500ml
SC237	1000ml

WASH BOTTLES (New Type) B

These Bottles are also made of Low Density Polyethylene and are therefore translucent & unbreakable. The distinguishing feature that these bottles contain is the built in delivery tube making it a one-piece Wash Bottle. These Bottles are graduated on the outer surface to give an approximate idea about the volume of solution filled or dispensed.

Material : Low Density Polyethylene

Cat No.	Capacity
SCA43	125ml
SCA44	250ml
SCA45	500ml



WIDE MOUTH WASH BOTTLES C

These wash bottles, made of polyethylene have wide mouth that enables easy filling as well as cleaning. The unique feature of the cap is through the top closure and stem.

Material : Polyethylene

Cat No.	Capacity
SF560	500ml

CONICAL FLASK D

Made of Polypropylene, these cone shaped flasks are rigid, translucent & autoclavable. The screw cap keeps the contents of the flask contamination free and makes the flask leakproof. Threads should be disengaged before autoclaving.

Material : Polypropylene

Cat No.	Capacity
SW031	100ml
SW032	250ml
SW033	500ml



SPECIMEN JAR (Gas Jar) E

These transparent Specimen Jars, used for preserving different specimens in the lab are provided with a cap that fits in tight. These jars provided excellent protection to the species preserved in it.

Material : Polystyrene

Cat No. Capacity

SF561 Dia. 50mm x HT.150mm





RECTANGULAR JAR F

These transparent rectangular jars are multipurpose jars. On one hand these jars are very useful for preserving specimens, on the other hand these are really useful for chromatography purposes.

Material : Polycarbonate

Cat No.	Capacity
SF562	200 x 150 x 100 mm
SF563	225 x 200 x 200 mm
SF564	225 x 225 x 125 mm

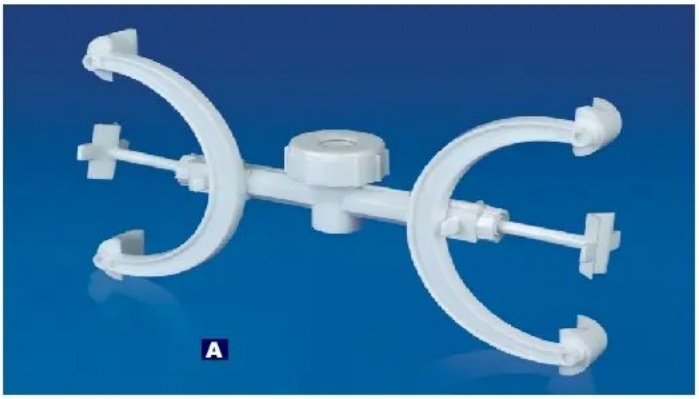
CROSS REFERENCE

For glass flasks
Please see page no. 133



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FISHER CLAMP A

These Clamps are moulded in Polypropylene making it completely corrosion-proof. The spring loaded jack in the middle provides a vice like grip to the Burette and prevents it from slipping. Two tapered wedges are provided to ensure firm grip on rods having dia 1/2"or 3/8".

Material : Polypropylene

Cat No.	Item Name
SCA09	Fisher Clamp - Single
SCA10	Fisher Clamp - Single



FUNNEL HOLDER B

Made of Polypropylene, these corrosion free Funnel Holders can hold funnels with dia 3" to 6". The extra plate provided can be placed to hold funnels bearing dia 1" to 3". Two tapered wedges are provided to ensure firm grip on Rods having dia 1/2" or 3/8".

Material : Polypropylene

Cat No.	Item Name
SCA12	Funnel Holder

SEPARATORY FUNNEL HOLDER C

This non-corrosive Seperatory Funnel Holder, moulded in Polypropylene, has a front opening which provides clear view of the solution and allows unobstructed placement of seperating funnels. Two tapered wedges are provided to ensure firm grip on rods having dia 1/2"or 3/8".

Material : Polypropylene

Cat No.	Item Name
SCA13	Separatory Funnel Holder

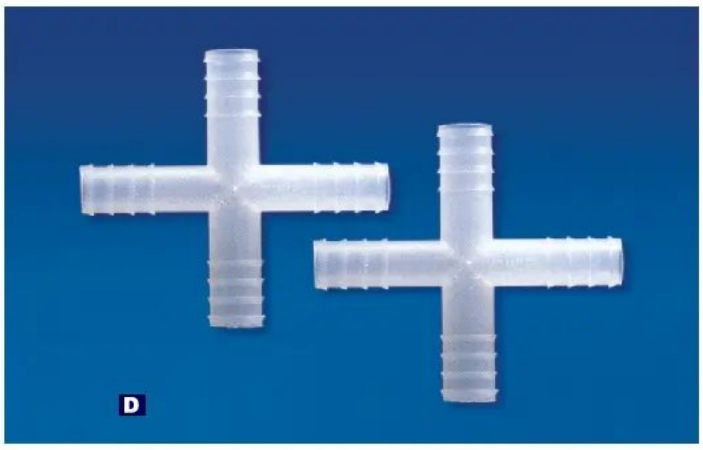


CONNECTORS (Cross) D

These four way connectors prove to be an excellent option for achieving leakproof joints in tubing connections.

Material : Polypropylene

Cat No.	Item Name
SF569	Cross Connector-6mm
SF570	Cross Connector-8mm
SF571	Cross Connector-10mm





CONNECTORS (L Shaped) E

These L shaped connectors also add to the range of different connectors committed to provide excellent leakproof tube arrangements.

Material : Polypropylene

Cat No.	Item Name
SF572	L Connector-6mm
SF573	L Connector-8mm
SF574	L Connector-10mm

CROSS REFERENCE

For wooden funnel stand
Please see page no. 144



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ANIMAL CAGE A

Available in two different sizes, these Cages provide excellent shelter for different animal species in the laboratory. The metallic top provides proper ventilation and has provisions for feeding the species.

Material : Polypropylene / Stainless Steel

Cat No.	Capacity
SW415	290 x 220 x 140mm
SB153	430 x 270 x 150mm
SF575	Water Bottle-125ml
SF576	Water Bottle-250ml

RETORT STAND B

These non-corrosive, moulded Retort Stands provide excellent replacement for the metal ones. Even the metallic rod has a polypropylene covering making it non-corrosive. The rod measuring 12.5 mm x 750 mm can be screwed into the heavy base giving way to a perfectly stable Retort Stand.

Cat No.	Capacity
SF579	255x150mm-Side Hole
SF580	300x200mm-CentreHole
SF581	300x200mm-Side Hole

DESICCATOR (VACUUM) C

Desiccators are made of Polypropylene and Polycarbonate. These autoclavable vacuum desiccators can hold vacuum upto 740 mm of Hg for 24 hrs. without any greasing. The top dome, moulded in rigid and transparent Polycarbonate, gives a crystal clear view of the desiccant placed inside. The Knurled knob on the top provides easy handling of the dome. The lower part is made of Polypropylene. An internal groove is provided on the flange to hold a silicon rubber O-Ring. The Polypropylene stopcock is fitted with a self lubricating PTFE plug. This plug works three way i.e. vacuum creation, shutting off & vacuum releasing.

Material : Polystyrene/ Polypropylene

Cat No.	Size (mm)	Flange (mm)	I.D. (mm)
SF582	150	171	150
SF583	200	232	199
SF584	250	276	240
SF585	300	340	300

DESICCATOR (VACUUM) - ALL CLEAR D

These Vacuum Desiccators are provided with a transparent polycarbonate bottom that makes it more robust and provides excellent view of the desiccator. All the other features are same as PP/PC vacuum desiccators.

Material : Polystyrene/ Polypropylene

Cat No.	Size (mm)	Flange (mm)	I.D. (mm)
ST166	150	171	150
ST167	200	232	199
ST168	250	276	240
ST330	300	340	300

DESICCATOR (PLAIN) E

Plain Desiccators are physically the same as Vacuum Desiccator. Only difference is the absence of stop cock. Grease should be applied on the flanges to make it air tight.

Material : Polystyrene/ Polypropylene

Cat No.	Size (mm)	Flange (mm)	I.D. (mm)
ST158	150	171	150
ST159	200	232	199
ST160	250	276	240
ST160	300	340	300



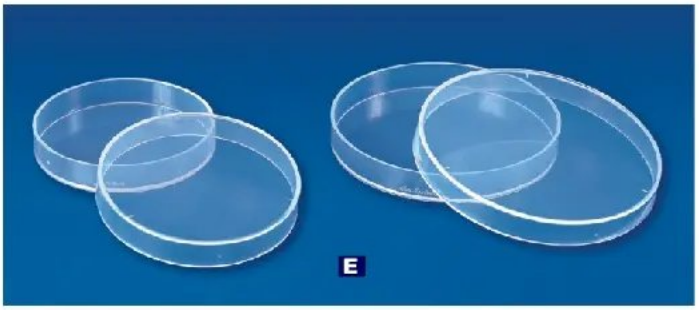
OUR SPECIALITY
We have a very flexible manufacturing setup. We are regularly producing goods for various customers as per their design and samples often on exclusive basis.

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KIPP'S APPARATUS A

Kipp's Apparatus made of Polyethylene has three main portions. The top portion is fitted with a thistle funnel and a bulb structure through which dilute acid can be poured which reacts with a metal sulphide in the base of the Apparatus. H_2S gas then evolved collects in the middle dome from where it can be released through a leakproof stopcock fitted with a self lubricating PTFE plug. The base is provided with a residual outlet fitted with a cap for easy cleaning.

Material : High Density Polyethylene

Cat No.	Capacity
SCA40	250ml
SCA41	500ml
SCA42	1000ml

FUNNEL - LONG STEM B

These long stem funnels have smooth walls, 60^0 cone angle and external ribs to prevent air lock. Moulded in Polypropylene, these clear funnels can also be steam autoclaved.

Material : Polypropylene

Cat No.	Dia.	Inside Dia.	Stem Length
SC373	50mm	50	39
SF591	62mm	61	67
SC374	75mm	74	69
SC375	100mm	93	84
SF590	150mm	148	55

ANALYTICAL FUNNEL C

Designed specifically for analytical chemistry, the body of the funnels is 60^0. Moulded in PP, these funnels are provided with internal & external ribs to prevent air blockage.

Material : Polypropylene

Cat No.	Dia.	Inside Dia.	Stem Length
SF586	50mm	50	50
SF587	62mm	62	67
SF588	75mm	75	77
SF589	100mm	100	95

POWDER FUNNELS D

These polypropylene funnels are best suited for transferring powdered reagents. The unique feature of these funnels is its parallel stem that minimizes bridging of powder. These funnels are steam autoclavable at 121°C.

Material : Polypropylene

Cat No.	Dia.	Inside Dia.	Stem Length
SF592	65mm	65	22
SF593	80mm	78	30
SF594	100mm	100	33
SF595	150mm	145	30



PETRI DISH E

These Polypropylene Petri Dishes are clear, unbreakable & autoclavable.

Material : Polpropylene

Cat No.	Dia. Approx.
SC400	50mm
SC401	75mm
SC402	100mm
SC403	125mm

CROSS REFERENCE

For glass funnel
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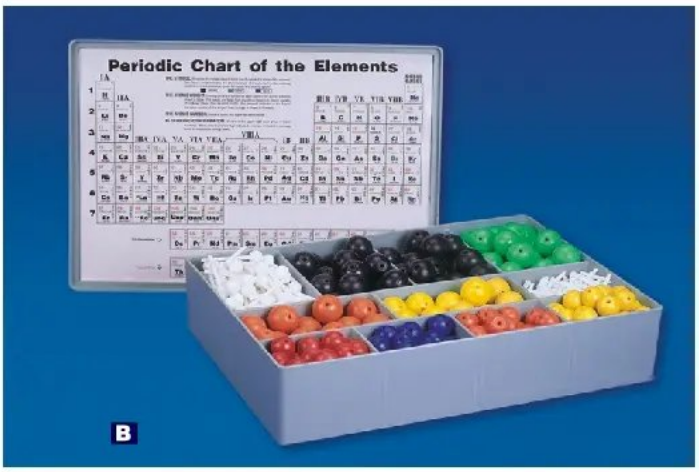


PETRI DISH (Culture) A

Material : Polystyrene

These PS Petri Dish with fitting proves excellent for culture exp. Made in polystyrene, this transparent Petri Dish provides excellent inside view.

Cat No.	Dia. Approx.
SF598	110 mm



ATOMIC MODEL SET B

Material : Polystyrene

These sets consist of moulded balls of different colours and sizes along with connecting lugs of different sizes. These sets are very helpful in modelling different organic & Inorganic compounds.
SENIOR SET : This set consists of 185 lugs & 370 balls of prescribed colours & sizes packed in a moulded box having separate space for every particular colour & size of ball.
JUNIOR SET : This set consists of 37 connecting lugs & 75 balls of different colours & sizes packed in a moulded box.

Cat No.	Item Name
SCA50	Senior Set
SCA27	Junior Set

SET OF 60 ATOMIC BALLS C SC178

It consists of 60 balls of various colours and 26 legs as per details given below:

1. Balls represents tetra hydro carbon ethanic, ethenic & acetylenic	10 Balls
2. Green represents halogens	4 Balls
3. Yellow represents sulphur, selenium etc.	3 Balls
4. Orange represents sodium, potassium etc.	3 Balls
5. Red represents oxygen	5 Balls
6. Blue represents nitrogen, phosphorus etc.	5 Balls
7. Yellow represents aluminium, chromiun etc.	4 Balls
8. Orange represents calcium, magnesium etc.	5 Balls
9. White represents hydrogen	21 Balls
10. White leg represents valency bond	26 Nos.

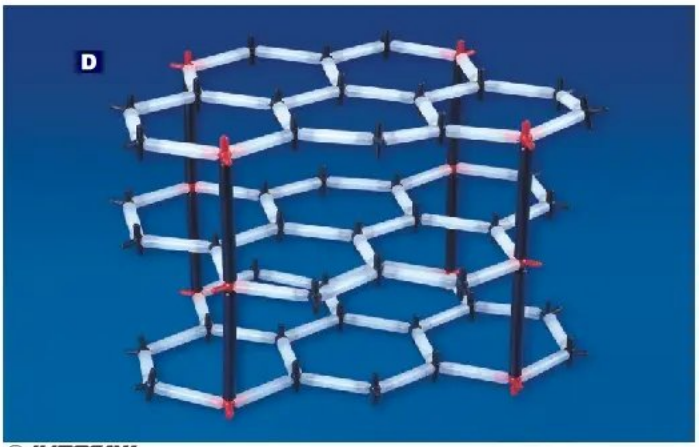


CRYSTAL MODEL SET D

Material : Polyethylene

These Crystal Model Sets contain different coloured jacks (Red, Black & White) & connectors (long & short) in a prescribed number to be joined together in an illustrated way to form structures like Diamond, Graphite & Sodium Chloride.

Cat No.	Item Name
SC177	Diamond
SC176	Sodium Chloride
SC175	Graphite





COPLIN JAR E

Material : Polypropylene

Coplin Jar made of Polypropylene can hold 10 slides of the size 1"x3" back to back. The interior of the Coplin Jar is grooved in a way to hold slides in erect position. Domed & shallow thread screw cap provides protection to the slides.

Cat No.	Item Name
SCA14	Coplin Jar

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SLIDE MAILER A

Slide Mailers present the best option to carry prepared slides from one place to another. Moulded in Polypropylene, these Slide Mailers are available in four sizes i.e. 1, 2, 5 & 10 slides.

Material : Polypropylene

Cat No.	Capacity
ST329	1 Slide
ST141	2 Slide
ST142	5 Slide
ST352	10 Slide

SLIDE BOX B

These Slide Boxes are durable, compact & provide utmost protection to 1"x3" slides. Heavy walls will not warp, splinter or crack. Boxes are unaffected by humidity and are thoroughly insect proof. Base of the slide Box has a numbered index for easy slide Identification.

Material : Polystyrene

Cat No.	Capacity
SB195	25 Slides
SB218	50 Slides
SB441	100 Slides

CENTRIFUGE TUBE CONICAL BOTTOM C

Centrifuge tubes with conical bottom are available in two sizes i.e. 15 ml. & 50 ml. Moulded in Polypropylene, these tubes are clear, strong & safe. These autoclavable tubes are provided with printed graduations on the outer surface. The built in seal ring in the cap makes these tubes absolutely leakproof. These tubes can withstand forces upto 7500xG & 12000xG for 15 ml. & 50 ml. tubes respectively. These tubes are available sterilized as well as non-sterilized.

Material : Polypropylene

Cat No.	Capacity
ST242	15ml
ST244	50ml
ST243	15ml-Sterile
ST245	50ml-Sterile

CENTRIFUGE TUBE ROUND BOTTOM D

Centrifuge Tubes with round bottom are moulded in Polypropylene & Polycarbonate These tubes have excellent clarity and are strong enough to be used upto 50,000xG. These tubes can be autoclaved, however, repeated autoclaving in PC tubes reduces their mechanical strength.

Material : Polypropylene / Polycarbonate

Cat No.	Capacity
ST248	16ml Cent. Tube PP
ST249	50ml Cent. Tube PP
ST250	16ml Cent. Tube PC
ST251	50ml Cent. Tube PC
ST252	Cap for 16ml Cent. Tube
ST253	Cap for 50ml Cent. Tube



VOLUMETRIC FLASK E

Volumetric Flasks, blown in Polypropylene, are strong, unbreakable and have good contact clarity. These autoclavable flasks are provided with screw caps to prevent leakage.

Material : Polypropylene

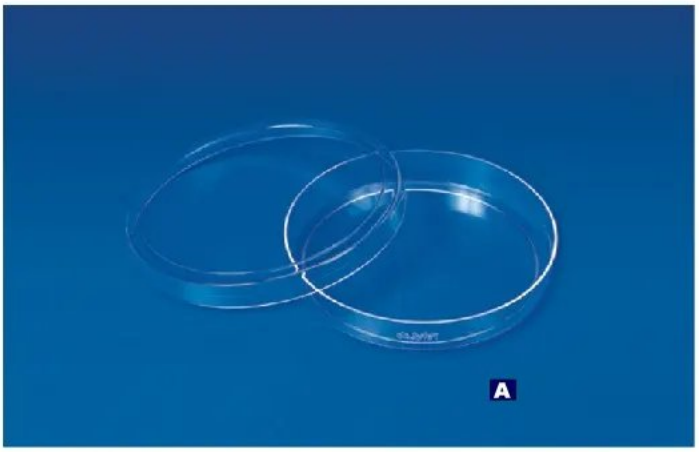
Cat No.	Capacity
SW041	25ml
SW042	50ml
SW043	100ml
SW044	250ml
SW045	500ml

CROSS REFERENCE

For glass volumetric flasks
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PETRI DISH (Disposable) A

These transparent, ready to use, disposable Petri Dishes are made of optically clear, non-toxic, Polystyrene. These Petri Dishes packed individually in polyethylene bags are sterilized by radiation.

Material : Polystyrene

Cat No.	Capacity
SF635	90mm Radiation Stz.
SF636	60mm Radiation Stz.
SF637	35mm Radiation Stz.



RACK FOR PETRI DISHES B

These Racks are clear acrylic construction with polycarbonate posts. ST337 has a capacity to hold 60 petri dishes of 90 mm size while ST183 one can hold 56 petri dishes of 60mm. These racks are very useful during inoculation, incubation & Storage. Visibility from all sides enables the culture to be seen & checked during incubation.

Material : Polymethyl Methacrylate / Polycarbonate

Cat No.	Capacity
ST183	Rack for 90mm Petri Dishes
ST337	Rack for 60mm Petri Dishes



NESTLER CYLINDER STAND C

This stand, as the name suggests, is used for keeping nestler cylinders. Made of polypropylene, this stand is available in two sizes, one for 50ml nestler cylinder & other for 100ml. nestler cylinder.

Material : Polypropylene

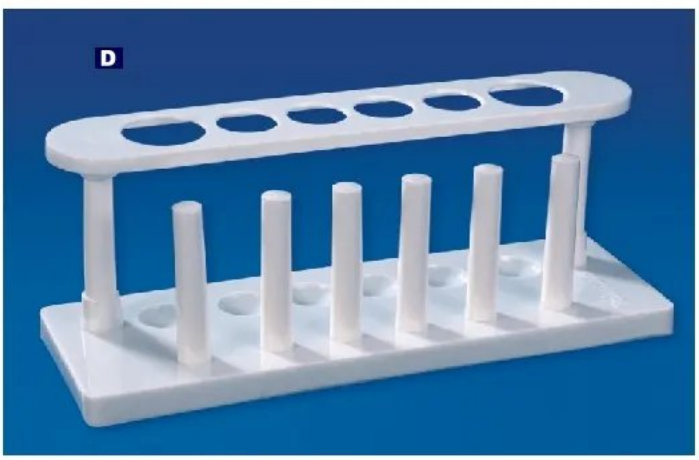
Cat No.	Capacity
ST133	50ml
ST134	100ml

TEST TUBE STAND D

This autoclavable Stand is perhaps the most commonly used Test Tube Stand in various laboratories. For better visibility, this 6 place rack is end supported by 2 columns. The top plate has 2 holes for holding 25 mm dia test tubes, four holes to hold 16 mm dia tubes where as the base has corresponding hemispherical wells. It also has six vertical pins for drying tubes.
Another option available in this section is a test tube stand in which all the holes in the top plates can hold 25 mm dia tubes.

Material : Polypropylene

Cat No.	Capacity
SC480	16mm & 25mm Dia. Tubes
SF639	25mm Dia. Tubes





TEST TUBE STAND (ROUND) E

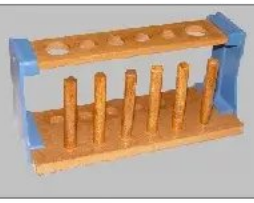
A handy, little, space saver, this circular twelve place Polypropylene Test Tube Stand has four 25 mm dia holes & eight 19 mm dia holes in its top plate. The base has matching hemispherical wells & 16 vertical pins for drying tubes surrounded by a trough to catch drippings. This autoclavable rack can be easily disassembled for cleaning

Material : Polypropylene

Cat No.	Capacity
SCA19	19mm & 25mm Dia. Tubes

CROSS REFERENCE

For wooden test tube stand
Please see page no. 143



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RACK FOR MICRO CENTRIFUGE TUBES A

Moulded in Polycarbonate, these autoclavable racks are made for holding 1.5 ml. micro centrifuge tubes. These racks have a unique stacking feature which prevents movement in any direction. The holes are numbered & lettered for easy identification.

Material : Polycarbonate

Cat No.	Capacity
SF640	24 Tubes
SF641	48 Tubes



TEST TUBE STAND (3 TIER) B

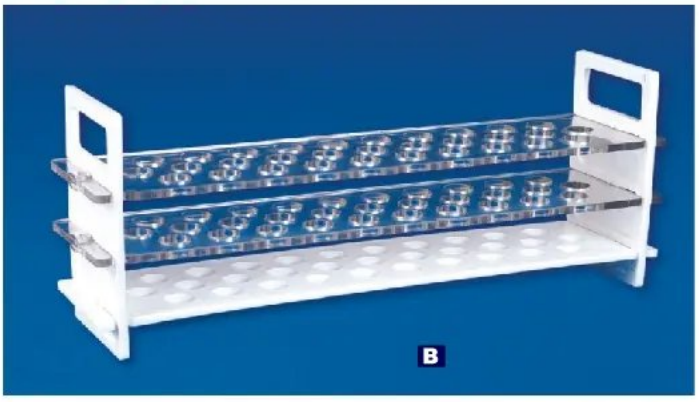
These ingenious racks with a 3-tier design provide clear view of the tube contents & convenient insertion & removal of tubes. The PC rack has transparent upper & middle plates where as in PP racks, every part is coloured & opaque. These autoclavable Racks can withstand sub-freezing temperatures.

Material : Polypropylene

Cat No.	Capacity
SW057	13mm x 31 Tubes
SW058	16mm x 31 Tubes
SW059	20mm x 20 Tubes
SW060	25mm x 12 Tubes
SW061	25mm x 18 Tubes
SW062	32mm x 12 Tubes
SW063	25mm x 36 Tubes
SW064	13mm x 18 Tubes
SW065	15mm x 18 Tubes
SW066	18mm x 12 Tubes
SW067	13mm x 62 Tubes
SW068	16mm x 62 Tubes
SW069	20mm x 40 Tubes

Material : Polycarbonate

Cat No.	Capacity
ST121	13mm x 31 Tubes
ST123	16mm x 31 Tubes
ST125	20mm x 20 Tubes
SF642	25mm x 12 Tubes
ST122	13mm x 62 Tubes
ST124	16mm x 62 Tubes
ST126	20mm x 40 Tubes
SF643	25mm x 24 Tubes
ST127	25mm x 18 Tubes
ST128	25mm x 36 Tubes
ST129	32mm x 12 Tubes

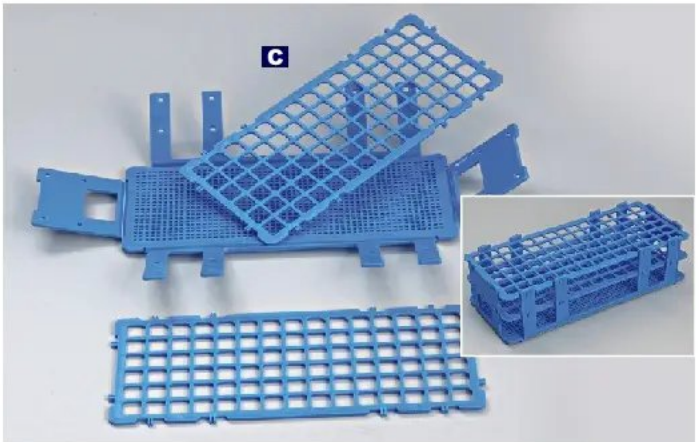


TEST TUBE STAND (WIRE PATTERN) C

An economical substitute for wire racks, here are these submersible, autoclavable racks which are stackable when empty. These are available in different colours and are made of a special blend of Polypropylene that makes it sink in a water bath and maintain their stability even in agitated water. These space saving racks can easily be disassembled for cleaning purposes. The base is in the form of a grid with square openings and has fold up sides and end bars that lock into rack tops.

Material : Polypropylene

Cat No.	Capacity
SW052	13mm x 90 Tubes
SW053	16mm x 60 Tubes
SW054	20mm x 40 Tubes
SW055	25mm x 24 Tubes
SF646	30mm x 21 Tubes





TEST TUBE BASKETS D

These Test Tube Baskets are made of Polypropylene. These autoclavable, unbreakable and non-corrosive Baskets are ideal for rinsing & draining glassware. These are also useful for storage of test tubes or culture tubes during sterilization or incubation.

Material : Polypropylene

Cat No.	Capacity
SW056	140 x 120 x 110mm
SW403	160 x 160 x 160mm

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PIPETTE STAND (HORIZONTAL) A

This detachable Stand can hold 12 pipettes, 6 on each side, in a horizontal position. Moulded in Polypropylene, this autoclavable stand has two sides which are attached to each other with three metallic rods coated with Polypropylene. This stand can be easily disassembled for space saving storage.

Material : Polypropylene

Cat No.	Capacity
SC462	For 12 Pipettes



PIPETTE STAND (VERTICAL) B

This is a stable, non-corrosive, detachable Stand which can hold 28 pipettes with maximum dia 14 mm. The heavy base measures 225 mm in diameter and a Polypropylene coated square rod measuring 375 mm in length is screwed into the base. The top disc that can be fixed on the rod has holes for holding pipettes while the lower one has pilot holes where the pipette tips rest and liquids drain down to the base. These discs can be adjusted on the rod according to the length of the pipette. The arrows provided on the discs should be kept parallel to ensure that corresponding holes are being centered.

Material : Polypropylene

Cat No.	Capacity
SC460	For 28 Pipettes

PIPETTE STAND (94 PIPETTES-ROTARY) C

Moulded in Polypropylene, this unique Stand holds a maximum of 94 pipettes and rotates on a central vertical axis for convenient selection of any particular pipette. The lower rotating disc has four concentric troughs with tapered sides and open bottoms which cradle the pipette tips protectively and permit water drops to run off. The upper disc has a grid pattern concentric with the bottom disc and keeps the pipettes vertical. Liquids draining off the pipettes are retained on the top of the stationary base by the outer ring. This stand can be easily disassembled & reassembled.

Material : Polypropylene

Cat No.	Capacity
SF648	For 94 Pipettes



ICE BUCKET D

This Ice Bucket is made of a durable rigid material bearing excellent insulating properties. Contents can be stored in it using dry ice, liquid nitrogen or acetone etc.

Material : Polypropylene

Cat No.	Item Neme
SF652	Ice Bucket

FOR YOUR INFORMATION

We can provide complete solutions to our customers to plan, design and equip complete labs for Physics, Chemistry and Biology.

CROSS REFERENCE

For wooden pipette stand
Please see page no 144



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MEASURING CYLINDERS A

The Measuring Cylinders, moulded in Polypropylene & TPX, are single piece cylinders. These autoclavable cylinders have raised prominent graduations for easy reading and have excellent contact clarity. The broad base provides good stability.

Material : Polypropylene

Cat No.	Capacity	Least Count
SF653	10ml	0.2 ml
SF654	25ml	0.5 ml
SC200	50ml	1 ml
SC201	100ml	1 ml
SC202	250ml	2 ml
SC203	500ml	5 ml
SC204	1000ml	10 ml
SF794	2000ml	20 ml

Material : TPX (Poly Methyl Pentene)

Cat No.	Capacity	Least Count
SF655	10ml	0.2 ml
SF656	25ml	0.5 ml
SF657	50ml	1 ml
SF658	100ml	1 ml
SF659	250ml	2 ml
SF660	500ml	5 ml
SF661	1000ml	10 ml



MEASURING CYLINDER HEXAGONAL B

These measuring cylinders are now available with hexagonal base also. The hexagonal base provides excellent stability to the cylinder where as the tapered spout works really well while pouring any reagent.

Material : Polypropylene

Cat No.	Capacity	Least Count
SF662	10ml	0.2 ml
SF663	25ml	0.5 ml
SF664	50ml	1 ml
SF665	100ml	1 ml
SF666	250ml	2 ml
SF667	500ml	5 ml
SF668	1000ml	10 ml

MEASURING CYLINDER PENTAGONAL C

Adding to the range of round & hexagonal base cylinders are the pentagonal ones. We now offers you a wide range of cylinders with different bases to choose from. Prominently raised graduation & excellent contact clarity are among the other features of these cylinders.

Material : Polypropylene

Cat No.	Capacity	Least Count
SF669	10ml	0.2 ml
SF670	25ml	0.5 ml
SF671	50ml	1 ml
SF672	100ml	1 ml
SF673	250ml	2 ml
SF674	500ml	5 ml
SF675	1000ml	10 ml

CROSS REFERENCE

For glass cylinders
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It's legacy goes back to 1919.

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MEASURING JUGS A

These handy Jugs, moulded in Polypropylene, are clear, autoclavable and have good chemical resistance. These jugs are provided with a handle for easy & convenient lifting and have raised graduations for easy reading.

Material : Polypropylene

Cat No.	Capacity	Least Count
SF676	250ml	10 ml
SF677	500ml	10 ml
SF678	1000ml	10 ml
SF679	2000ml	20 ml



MEASURING JUGS (EURO DESIGN) B

Adding to the existing range of Jugs, these short form transparent jugs, made of polypropylene are autoclavable and have non-drip spout. These jugs have raised graduations, provide excellent contact clarity & are provided with excellent thumb grip on handle.

Material : Polypropylene

Cat No.	Capacity
SF680	500ml
SF681	1000ml
SF682	2000ml
SF683	3000ml
SF684	5000ml

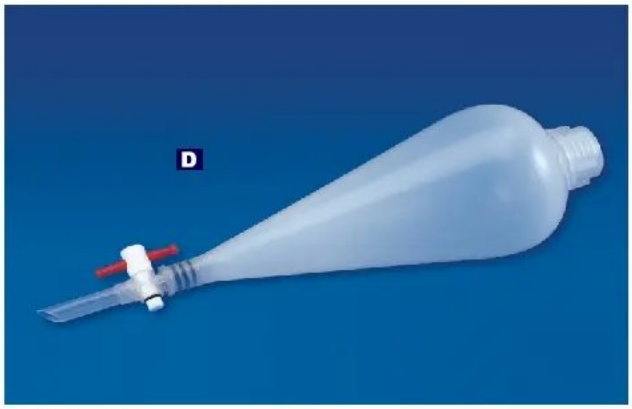


CONICAL MEASURES C

These Conical Measures are very good for measuring small quantities of reagents. Moulded in Polypropylene, these autoclavable Measures have a hexagonal base which provides it excellent stability. The Measures are clear, have good chemical resistance and have raised graduations for easy reading.

Material : Polypropylene

Cat No.	Capacity	Least Count
SW034	12ml	1 ml
SW035	25ml	1 ml
SW036	50ml	2 ml
SW037	125ml	5 ml
SW038	200ml	5 ml



SEPARATORY FUNNEL D

These Separatory Funnel is made of Polypropylene, giving it excellent contact clarity and strength. This pear shaped, autoclavable seperating funnel has a leakproof threaded screw cap. The Polypropylene stopcock, fitted with a self lubricating PTFE plug, is push fitted to the stem of the seperatory funnel

Material : Polypropylene

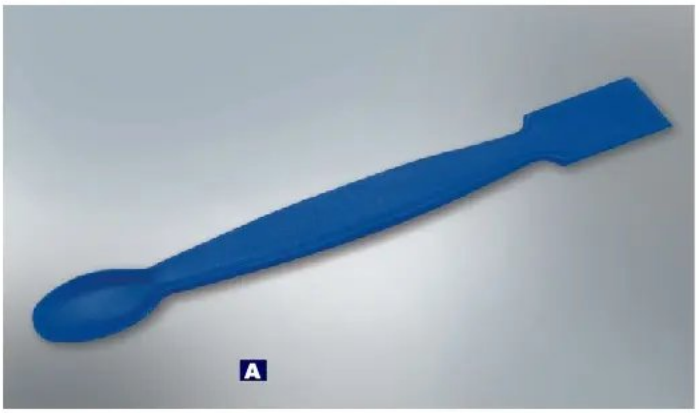
Cat No.	Capacity
SC392	100ml
SC393	250ml
SC394	500ml

CROSS REFERENCE

For glass separatory funnel please see page no. 138



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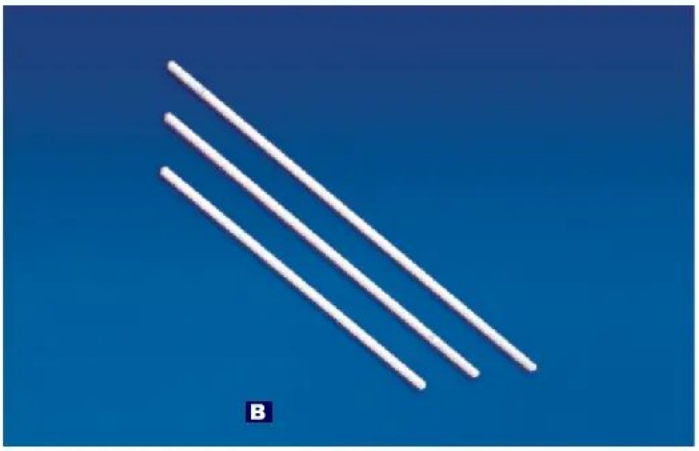
SPATULA

A

Moulded in Polypropylene, Spatula consists of a spoon on one side while the other end is a flat construction with a knife edge. This edge is helpful in breaking up crystals of different salts while the spoon is used to draw salts from the containers.

Material : Polypropylene

Cat No.	Capacity
SCA38	150 mm
SCA39	200 mm



STIRRER

B

Made of polypropylene, these Stirrers are very useful for stirring different solutions in the laboratory. These Stirrers prove to be tough and long lasting.

Material : Polypropylene

Cat No.	Capacity
SF685	Dia.-10 mm x h-250 mm
SF686	Dia.-6 mm x h-150 mm
SF687	Dia.-7 mm x h-200 mm
SF688	Dia.-7 mm x h-250 mm
SF689	Dia.-7 mm x h-300 mm

PNEUMATIC TROUGH

C

These Troughs, made of polypropylene, are autoclavable and are available in different sizes. These can be used for a wide range of purposes including storage, sterilizing & drying labware etc.

Material : Polypropylene

Cat No.	Capacity
SW020	Dia.-180 x h-60 mm
SW021	Dia.-200 x h-100 mm
SW022	Dia.-250 x h-100 mm

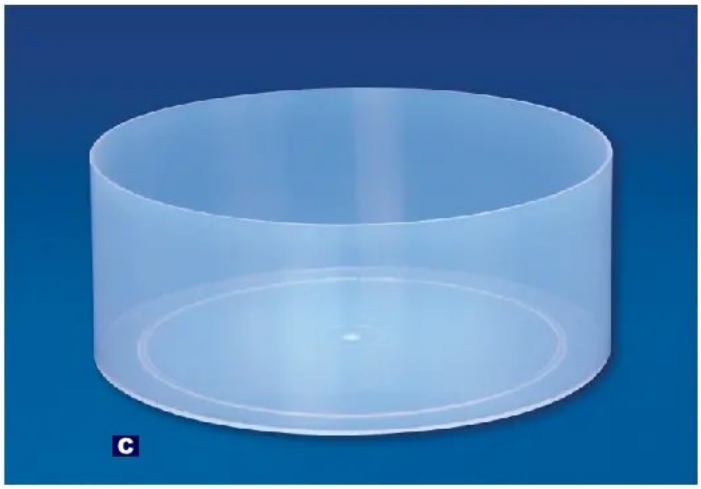
PLANTATION POTS

D

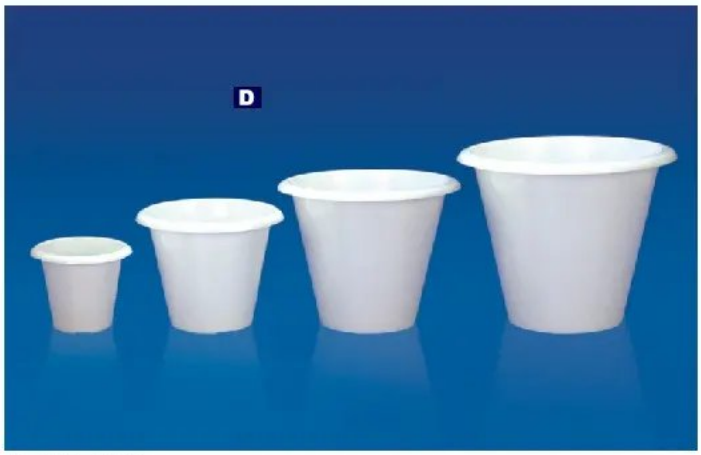
These Plantation Pots, moulded in polypropylene, are available in four different sizes. These pots have a downward extended rim which provide convenient lifting even if the pot is filled. The bottom of the pot is provided with holes for drain purpose.

Material : Polypropylene

Cat No.	Capacity
SF696	100 mm
SF697	150 mm
SF698	200 mm
SF699	250 mm







LABORATORY TRAY

E

Needless to say, Laboratory Tray moulded in polypropylene is a multipurpose tray that can be used for sterilizing, drying glassware, porcelainware & other laboratory instruments. These steam autoclavable trays have tapered walls which prove good for nesting.

Material : Polypropylene

Cat No.	Capacity
SF700	450 x 350 x 75 mm
SF701	375 x 300 x 75 mm

OUR SPECIALITY
We have a very flexible manufacturing setup. We are regularly producing goods for various customers as per their design and samples often on exclusive basis.

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UTILITY TRAY A

Adding to the already existing range of autoclavable laboratories trays, is the Utility Tray and as the name suggests this Polypropylene Tray can be utilized for purposes ranging from drying glassware to sterilizing and to store any laboratory apparatus.

Material : Polypropylene

Cat No.	Capacity
SF702	375 x 350 x 130 mm



CARRIER TRAY B

This autoclavable Polypropylene Tray has a unique feature i.e. its handle which proves really helpful in carrying reagents or laboratory apparatus from one place to another, single handedly.

Material : Polypropylene

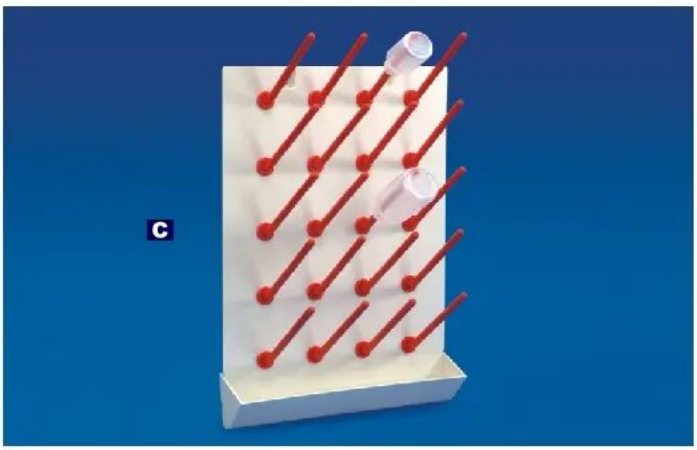
Cat No.	Capacity
SF703	380 x 240 x 115 mm

DRAINING RACK C

Draining Rack provides an excellent option for post wash draining of tubes & bottles in the laboratory. The back plate has 20 holes into which pegs are tightened with the help of screw-nuts. Bottom of the rack is provided with a tray which collects all the waste water drained down which can further be collected in a container via drain tube. This rack does not rot, stain or rust.

Material : Acrylopitrile Butadiene Styrene / Polycarbonate

Cat No.	Item Name
SF706	Draining Rack



SIMPLE CELL POT D

Simple Cell Pot, as the name suggests, is used for making Simple Cells & Voltmeters etc. Moulded in Polypropylene, this Pot has very good contact clarity and excellent chemical resistance. Being in Polypropylene, this Pot is much durable than the one used conventionally.

Material : Polypropylene

Cat No.	Item Name
SW028	Simple Cell Pot





LECLANCHE CELL POT E

Blown in Polypropylene, this Pot is used for making Leclanche Cell. This Pot too has very good contact clarity & excellent chemical resistance.

Material : Polypropylene

Cat No.	Item Name
SF523	Leclanche Cell Pot

CROSS REFERENCE

For leclanche cell
Please see page no. 145



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MICRO-PIPETTES with Tip ejector & Click Stop

- A new range of specially designed micro pipettes with variable digital volume deliveries.
- The variable digital are an adjustable, air displacement pipette manufactured in highest quality to give long and accurate service, precisely and safely.
- The new range has a high degree of accuracy due to its advance in trouble free operation and maintenance.
- Each pipette is individually calibrated and specifications confirm to din 12650 standards.

VARIABLE VOLUME A

Economy Model	Superior Model	Volume Range	Increment	Accuracy ±%
SF712	SF726	0.2 - 2µl	0.1 µl	0.1
SF713	SF727	0.5 - 5µl	0.1 µl	0.1
SF714	SF728	0.5 - 10µl	0.1 µl	1.0
SF715	SF729	2 - 20µl	0.1 µl	1.0
SF716	SF730	5 - 40µl	1 µl	2.0
SF717	SF731	5 - 50µl	1 µl	0.5
SF718	SF732	10 - 100µl	1 µl	0.5
SF719	SF733	20 - 200µl	1 µl	0.5
SF720	SF734	40 - 200µl	1 µl	0.6
SF721	SF735	50 - 200µl	1 µl	0.6
SF722	SF736	50 - 500µl	10 µl	0.6
SF723	SF737	100 - 1000µl	10 µl	0.6
SF724	SF738	200 - 1000µl	10 µl	0.6
SF725	SF739	1 - 5ml	100 µl	1.5





MICRO-PIPETTES with Tip ejector & Click Stop

- A new range of specially designed micro pipettes with variable digital volume deliveries.
- The variable digital are an adjustable, air displacement pipette manufactured in highest quality to give long and accurate service, precisely and safely.
- The new range has a high degree of accuracy due to its advance in trouble free operation and maintenance.
- Each pipette is individually calibrated and specifications confirm to din 12650 standards.

FIXED VOLUME B

Economy Model	Superior Model	Volume Range
SF740	SF754	0.5µl
SF741	SF755	2µl
SF742	SF756	5µl
SF743	SF757	10µl
SF744	SF758	20µl
SF745	SF759	25µl
SF746	SF760	50µl
SF747	SF761	100µl
SF748	SF762	200µl
SF749	SF763	250µl
SF750	SF764	500µl
SF751	SF765	1000µl
SF752	SF766	2000µl
SF753	SF767	5000µl

Note : Any intermediate volume in fixed volume can be supplied upon request.

MULTI-CHANNEL MICRO PIPETTE (8-Channel) C

Less ejection force is required with this 8 channel pipettor.

Cat No.	Volume Range
SF768	5-50µl
SF769	10-100µl
SF770	20-200µl
SF771	30-300µl

FOR YOUR INFORMATION

Our team of engineers and technicians are continuously working to improve existing products and develop new ones. We welcome suggestions of our valued customers.

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COUNTER BALANCE **A**
Design and colour may vary.

Cat No.	Capacity	Sensitivity	Pans
SG194	5kg	5g	S.S
SG196	2kg	5g	S.S

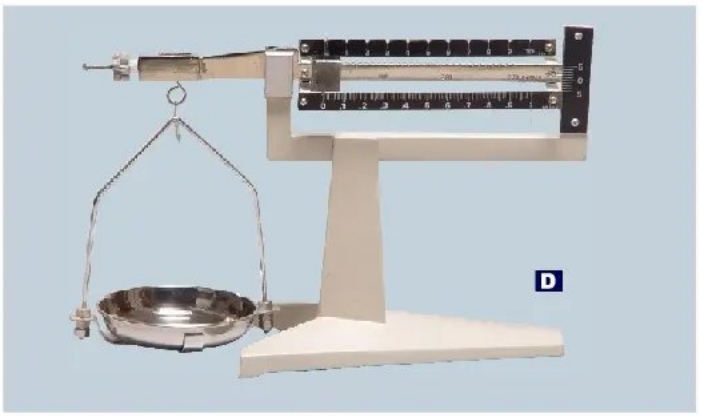


TRIPLE BEAM BALANCE **B**

Cat No.	Capacity	Sensitivity	Type
SG201	610g	100mg	Top Pan
SG202	2610g	100mg	Top Pan



LEVER BALANCE **C** **SG198**
With arc scale having dual ranges and scale reading cursor. Change from one range to other is made by moving two position counter pointer. Range 250x1gm/1000x10gm.



TRIPLE BEAM BALANCE **D**

Cat No.	Capacity	Sensitivity	Type
SG199	111g	10mg	Hanging Pan
SG200	310g	100mg	Hanging Pan



BALANCE SINGLE PAN DIAL-O-GRAM **E** **SG639**
Capacity 311g x 10mg. Same as SG638 but with three beams graduated 0 to 200g x 100g, 0 to 100 x 10g, 0 to 10 x 1g and direct dial graduated 0 -1g x 10mg.



STUDENT BALANCE **F**
This balance is a basic general purpose balance for students. The hangers have double hooks for specific gravity experiments and the pans are detachable. The whole assembly is fitted on wooden base provided with levelling screws. Provided with Agate Knife edges and bearings. Pan Dia 10cm.
SG640 Capacity 250 gm, Sensitivity 2 mg
SW720 Capacity 500 gm, Sensitivity 5 mg

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ELECTRONIC WEIGHING BALANCE E
Body made of aluminium press diecast, no plastic. These are rugged and sturdy balances which can be used within harsh laboratory environment.

Model LCD	Model LED	Capacity	Resolution	Pan Size
7663	7763	20000g	5g	160x200mm
6310	7010	16000g	1g	160x200mm
6317	7017	10000g	1g	160x200mm
6308	7008	5000g	1g	160x200mm
6367	7067	2000g	0.1g	160x200mm
6324	7024	1000g	0.1g	160x200mm

COMPRESSION BALANCE KITCHEN SCALE A

Cat No.	Capacity	Sensitivity
SG213	1kg	5g
SG214	2kg	10g
SG215	5kg	25g

PERSONAL WEIGHING SCALE B **SG707**
Highly accurate and sensitive. Portable & light in weight with zero adjustment. Size 26 x 26 x 5cm. Colour may vary. Capacity130kg / 0.5kg.

WEIGHT BOXES (PHYSICAL) C
These are general purpose weights made of nickel plated brass. Provided fractional weights are made of Aluminium. The fraction weights are housed in a separate plastic box. Forcep is provided. Housed in wooden box.
SG204 Set of 8 weights 1mg to 50gms.
SG205 Set of 9 weights 1mg to 100gms.
SG208 Set of 10 weights 1mg to 200gms.
SG211 Set of 11 weights 1mg to 500gms.
SG212 Set of 12 weights 1mg to 1000gms.

BALANCE WEIGHTS D
Polished brass weights. No. Of weights 13. Weights having capacity 1g to 1kg. Wooden box housing is provided with brass hinged clips unlike the conventional design wherein the clips are made of mild steel. Inside of housing is covered with sponge. Supplied without forcep and fractional weight. Weights are arranged as:

Weights	Qty.	Weights	Qty.
1g	1	50g	1
2g	2	100g	1
5g	1	200g	2
10g	1	500g	1
20g	2	1000g	1

SW563 Filled with lead.
SW941 Made of brass.



ELECTRONIC WEIGHING BALANCE F
Body made of aluminium press diecast, no plastic. These are rugged and sturdy balances which can be used within harsh laboratory environment.

Model LCD	Model LED	Capacity	Resolution	Pan Dia.
7661	7761	500g	0.05g	125mm
7662	7762	500g	0.1g	125mm
6329	7029	300g	0.01g	125mm
6342	7042	300g	0.02g	125mm
6314	7014	160g	0.01g	125mm
6325	7025	160g	0.02g	125mm

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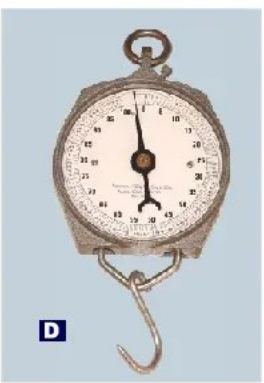


SPRING BALANCE TUBULAR PLASTIC **A**
Made of Transparent acrylic pipe. Spring mechanism is clearly visible. Provided with zero adjustment and two hooks. Scaled and calibrated in both grams and newtons. The clear plastic tube allows student to see how the spring balance works.
NOTE: *Different colours of tubular balances can also be provided as per customer requirement.*

SPRING BALANCE TUBULAR METAL **B**
Made of Aluminium pipe. Superior model. Provided with zero adjustment and two hooks. Scaled and calibrated in both grams and newtons. High contrast markings make readings easy.

SPRING BALANCE SQUARE PLASTIC **C**
Made of Transparent acrylic square pipe. Spring mechanism is clearly visible. Provided with zero adjustment and two hooks. Scaled and calibrated in both grams and newtons. With suspension ring at top and hook at bottom.

Cat No. A	Cat No. B	Cat No. C	Capacity	Subdivision
SG776	SG792	SG810	100g / 1N	1g / 0.01N
SG777	SG793	SG811	200g / 2N	2g / 0.02N
SG778	SG794	SG812	250g / 2.5N	2.5g / 0.025N
SG779	SG795	SG813	500g / 5N	5g / 0.05N
SG780	SG796	SG814	1000g / 10N	10g / 0.1N
SG781	SG797	SG815	2000g / 20N	20g / 0.2N
SG782	SG798	SG816	3000g / 30N	30g / 0.3N
SG783	SG799	SG817	5000g / 50N	50g / 0.5N
NIL	SG800	NIL	10kg / 100N	100g / 1N
SG784	SG801	SG818	100g / 1N	2g / 0.02N
SG785	SG802	SG819	200g / 2N	4g / 0.04N
SG786	SG803	SG820	250g / 2.5N	5g / 0.05N
SG787	SG804	SG821	500g / 5N	10g / 0.1N
SG788	SG805	SG822	1000g / 10N	20g / 0.2N
SG789	SG806	SG823	2000g / 20N	40g / 0.4N
SG790	SG807	SG824	3000g / 30N	60g / 0.6N
SG791	SG808	Sg825	5000g / 50N	100g / 1N
Nil	SG809	Nil	10kg / 100N	200g / 2N



SPRING BALANCE SQUARE HANGING TYPE **D** **SG871-SG877**
With suspension ring at top and hook at bottom.

Cat No	Capacity	Subdivision
SG871	10kg	50g
SG872	20kg	100g
SG873	50kg	200g
SG874	100kg	500g
SG875	150kg	1000g
SG876	200kg	1000g
SG877	500kg	2000g



SPRING BALANCE TUBULAR PLASTIC SET OF SIX **E** **SV193**
Made of Transparent acrylic pipe. Spring mechanism is clearly visible. Provided with zero adjustment and two hooks. Scaled and calibrated in both grams and newtons. Capacity 250gm/2.5N Blue, 500gm/5N Green, 1000gm/10N Biege, 2kg/20N Red, 3kg/30N White & 5kg/50N Yellow.



SPRING BALANCE METAL BODY FLAT SCALE **F**
Flat scale made of brass. Provided with sliding type zero adjuster.

SPRING BALANCE ALUMINIUM METAL BODY RECTANGULAR **G**
Scale made of brass. Provided with rotational knob zero adjuster.

SPRING BALANCE PLASTIC BODY **H**
Flat scale made of aluminium. Provided with sliding type zero adjuster.

SPRING BALANCE (RANGES)

Cat No. F	Cat No. G	Cat No. H	Capacity	Subdivision
SG830	SG840	SG850	100g / 1N	1g / 0.01N
SG831	SG841	SG851	200g / 2N	2g / 0.02N
SG832	SG842	SG852	250g / 2.5N	2.5g / 0.025N
SG833	SG843	SG853	500g / 5N	5g / 0.05N
SG834	SG844	SG854	1kg / 10N	10g / 0.1N
SG835	SG845	SG855	2kg / 20N	20g / 0.2N
SG836	SG846	SG856	3kg / 30N	30g / 0.3N
SG837	SG847	SG857	5kg / 50N	50g / 0.5N
SG838	SG848	NIL	10kg / 100N	100g / 1N
SG839	SG849	NIL	25kg / 250N	250g / 2.5N

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A

WEIGHT SETS (SET OF 7 WEIGHTS) A
SG716
Made of cast iron, provided with hook and traverse bar at the bottom of each base for attaching further weight.

Weight		Nos.
100g	-	1Pc
200g	-	2Pcs
500g	-	1Pc
1kg	-	2Pcs
2kg	-	1Pc


B

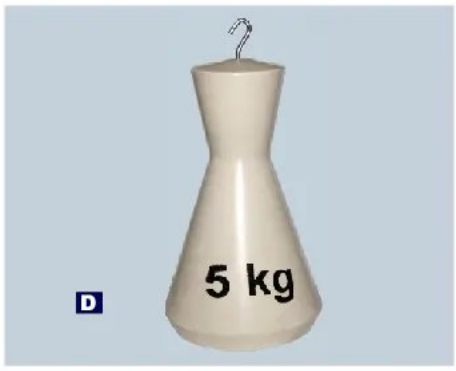
MASSES B **SG709, SG710**
Iron weights, hexagonal, painted with lifting ring.

Cat No.	Capacity
SG709	500g
SG710	1000g


C

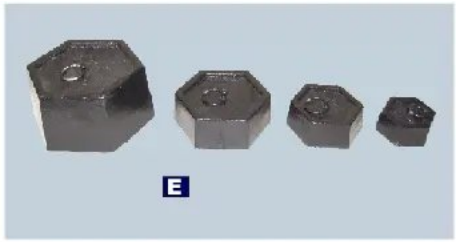
SET OF 10 IRON WEIGHT SET C
Mild steel weights set having powder coated finish placed in painted wooden box. The set consists of following weights:

Weight	Qty.	Weight	Qty.
10g	1	200g	1
20g	1	250g	1
40g	1	500g	1
50g	1	1000g	1
100g	1	2000g	1



D

WEIGHT D **SG717**
Made of cast iron, capacity 5 kg provided with hook and traverse bar at the bottom for attaching further weight.


E

MASSES E
Made of iron, hexagonal with lifting ring.

Cat No.	Capacity
SG718	100g
SG719	200g
SG720	500g
SG721	1kg
SG722	2kg
SG723	5kg
SG724	10kg



HOOKED WEIGHT
Brass, chrome plated.

SINGLE HOOK F	DOUBLE HOOK FIX G	Capacity
SW079	SW085	5g
SW080	SW086	10g
SW081	SW087	20g
SW082	SW088	50g
SW083	SW089	100g
SW084	SW090	200g
SG733	SG735	500g
SG734	SG736	1kg



MASSES, SLOTTED H **SG555-SG558**
9 weights and one hanger of equal weight. Made of Brass, chrome plated.

Cat No	Set of	Total Weight
SG555	10g weights	100g
SG556	20g weights	200g
SG557	50g weights	500g
SG558	100g weights	1000g

MASSES, SLOTTED I **SH504**
9 slotted weights of 10gm each and one plastic hanger of equal weight 10gm, total weight 100gm. Made of Stainless Steel.


J

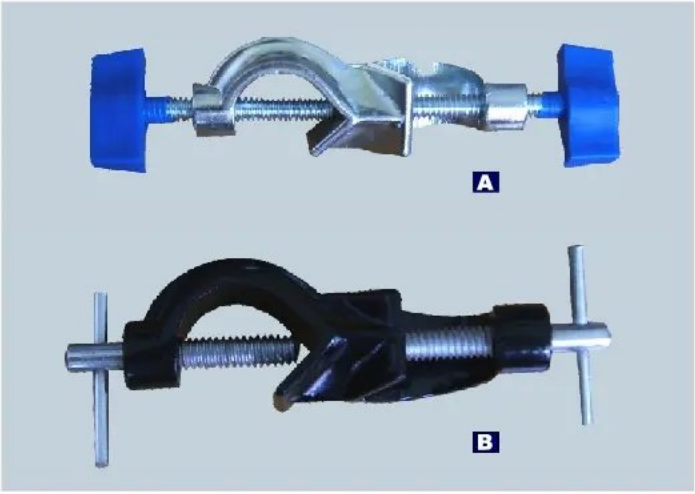
MASSES, SLOTTED J
SV025 Masses slotted set of 10gm weight, total 100gm. Accuracy ±0.2g.
SV026 Masses slotted set of 20gm weight, total 200gm. Accuracy ±0.2g.
SV027 Masses slotted set of 50gm weight, total 500gm. Accuracy ±0.5g.
SV028 Masses slotted set of 100gm weight, total 1000gm. Accuracy ±1.0g.


K

SLOTTED WEIGHT CAST IRON K
Weights are stackable. Black Painted.

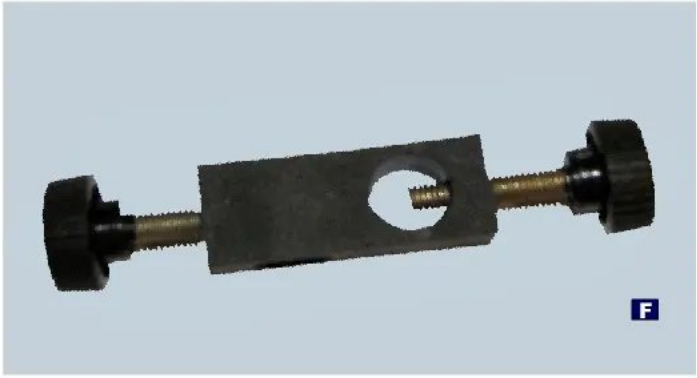
SG741 2.5kg (4Nos. x 500g +1 hanger 500g)
SG559 5kg (9Nos. x 500g + 1 hanger 500g)

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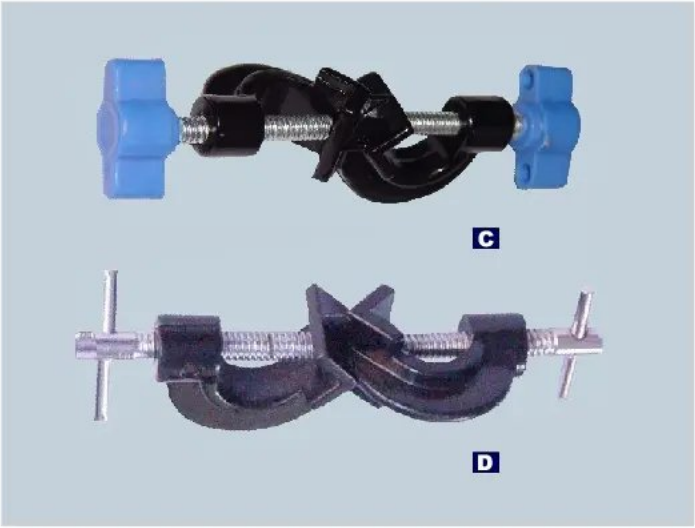


BOSSHEAD **A** **SV051**
Made of Zinc alloy diecast, useful in laboratory stand. Double ended plastic knobs.

BOSSHEAD **B** **SV052**
Made of Zinc alloy diecast painted, useful in laboratory stand. Double ended T- type knobs made of chromed Iron.



BOSSHEAD PALSTIC **F** **SV188**
Provided with two knobs. Knobs are linearly aligned to each other. Holds up to 12.5mm rod.



BOSSHEAD (PLASTIC KNOBS) **C** **SW618**
For laboratory stand, for use in school and colleges. Made of aluminium & provided with plastic thumb knobs fitted on mild steel screws.

BOSS HEAD 'S' TYPE **D** **SG140**
Double ended, made of Aluminium for holding square/round rod perpendicular to each other. Clamp opening 16mm. 'T' thumb screws made of chromed Iron .



BOSSHEAD GYRATORY **G** **SN694**
Made of aluminium, holds upto 13-14mm rod.

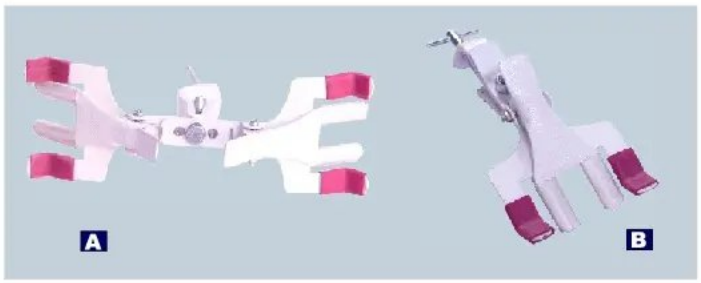


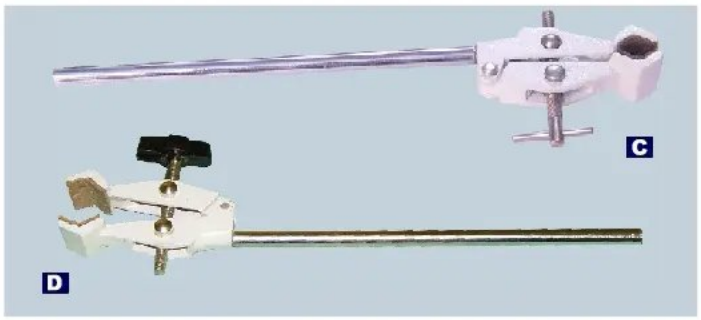
BOSSHEAD SQUARE (BILATERAL) **E** **SW092**
it is made of aluminium alloy as pressure die casting and stove painted. Two separate plastic tightening knobs are provided to clamp rods right angled to each other. Bosshead is suitable to clamp both square & round shape rods diameter up to 13 mm.



BOSSHEAD SQUARE **H** **SV189**
Made of Zinc alloy diecast, holds two rods at a time. Provided with two separate knobs right angled to each other. Suitable to clamp both square and round shape rods up to 15mm.

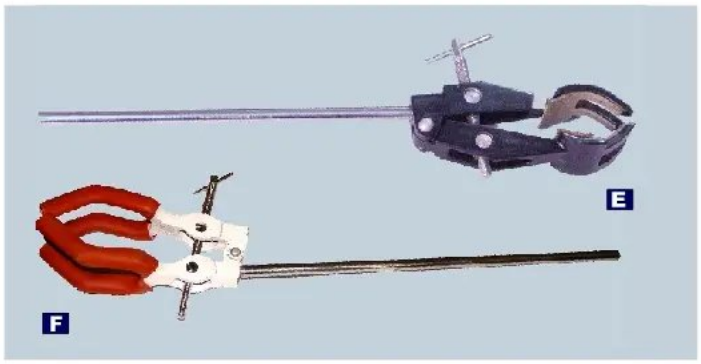
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BURETTE CLAMP C **SG153**
Inner cork lined. Made of Aluminium die casting. Powder coated finish. Provided with 'T' type tightening screw. Fitted on chrome plated rod having length 160 mm approx. Holds up to 50mm diameter approx.

BURETTE CLAMP D **SW619**
Similar to SG153 but having plastic knob instead of 'T' type tightening screw.



UNIVERSAL CLAMP E **SG152**
Four pronged Inner cork lined. Made of Aluminium die casting with long 'T' type tightening screw. Powder coated finish. Fitted on chrome plated rod having length 160 mm approx. Holds up to 75mm diameter.

FOUR FINGER JUMBO CLAMP (RUBBER SLEEVED JAWS) F
SG886
Jaws made of Aluminium casting with rubber sleeves, powder coated finish. Holds up to 125 mm dia. Fitted on chrome plated rod having length 300 mm approx.



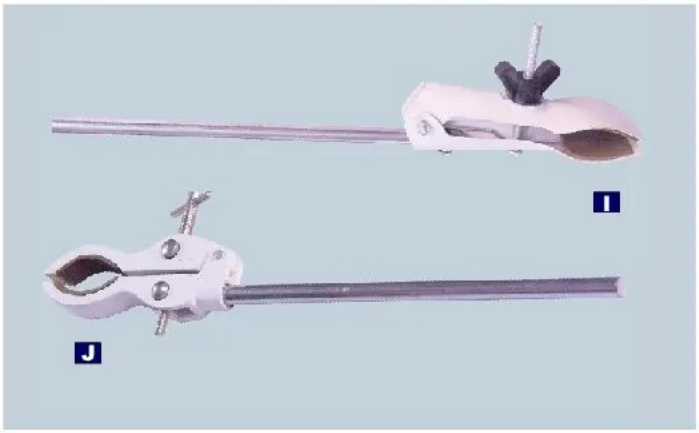
THREE FINGER CLAMP (RUBBER SLEEVED JAWS) G **SG155**
Jaws made of Aluminium die cast with rubber sleeves, powder coated finish. Holds up to 75mm dia. Fitted on chrome plated rod having length 160 mm approx.

BURETTE CLAMP FISHER TYPE A **SC707**
To hold two burettes, mild steel die-pressed sheet powder coated, rubber covered having spring action which effects positive grip. A 13mm dia rod may be clamped using provided thumb screw.

BURETTE CLAMP FISHER TYPE B **SG881**
To hold one burette, mild steel die-pressed sheet powder coated, rubber covered having spring action which effects positive grip. A 13mm dia rod may be clamped using provided thumb screw.

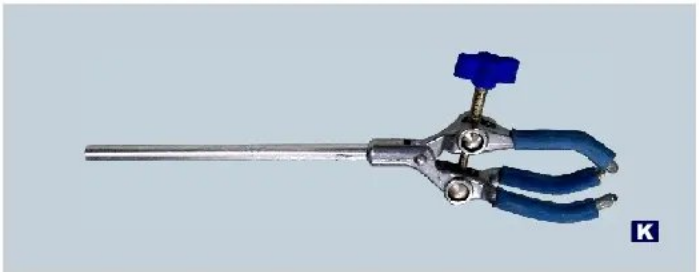


FISHER CLAMP H **SCA09-SCA10**
These Clamps are moulded in Polypropylene making it completely corrosion-proof. The spring loaded jack in the middle provides a vice like grip to the burette and prevents it from slipping. Two tapered wedges are provided to ensure firm grip on rods having dia ½"or 3/8".
SCA09 Fisher clamp Single
SCA10 Fisher Clamp Double



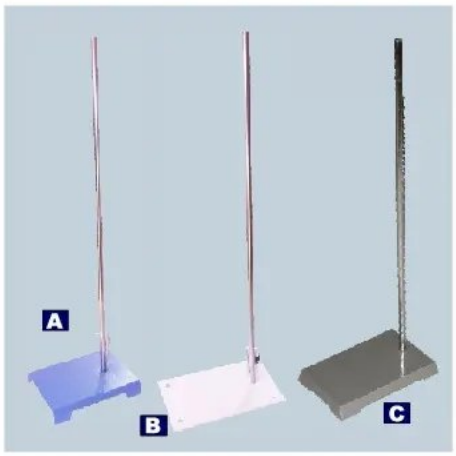
CLAMP UNIVERSAL I **SW620**
Made of sheet metal with inner cork lined jaws which can accept 75 mm diameter articles, with plastic fly nut locked by spring. Fitted on chrome plated rod having length 160 mm approx.

CONDENSER CLAMP J **SG885**
Made of Aluminium casting with powder coated finish. Fitted on chrome plated rod having length 160 mm approx.



THREE FINGER CLAMP K **SV190**
Made of zinc diecast alloy, rubber sleeved jaws are provided for strong gripping upto 75mm. Fitted on chrome plated rod and a plastic knob.

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RETORT STAND BASE SHEET METAL
Made of mild steel sheet bending type having approximate thickness 2.5mm. Powder coated finish. Supplied without rod.

RETORT STAND BASE WITH FEET
Retort stand base made of mild steel sheet having approximate thickness 4mm. Powder coated finish. Fitted with 3 fixed feet and other feet used as levelling screw. Supplied without rod.

RETORT STAND BASE CAST IRON C
Made of Cast iron metal with corrosion resistant finish. Supplied without rod.



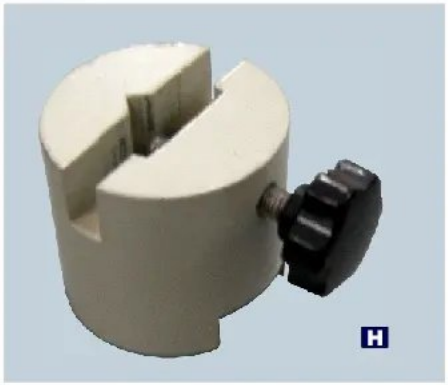
RETORT STAND BASE PRESSED 5mm THICKNESS E
Made of Mild Steel sheet. Finished in blue and fitted with rubber feet. Supplied without rod.
Note: *Rod dia 12mm approx. with threading are suitable for these bases.*

Cat No	Size(mm) Approx
SV121	160 x 100
SG680	200 x 130
SG682	255 x 160



RETORT STAND BASE PRESSED 5mm THICKNESS. SIZE 200X125mm G **SH310**
Made of Mild Steel sheet. Finished in blue and fitted with rubber feet. Supplied without rod.
Note: *Rod dia 12mm approx. with threading are suitable for these bases.*

Cat No. A	Cat No. B	Cat No. C	Size(mm)
SG888	SW395	SG001	150 X 100
SG889	SW396	SG002	175 X 125
SG890	SW397	SG003	200 X 125
SG891	SW398	SG004	225 X 150
SG892	SW399	SG005	250 X 150
SG893	SW400	SG006	300 X 175
SG894	SW401	SG007	300 x 200



CYLINDRICAL BASE H **SG110**
Made of ferrous metal with corrosion resistant paint. Provided with a groove to slide over meter scale. Suitable for rods upto 14mm dia and flat object upto 10mm wide.

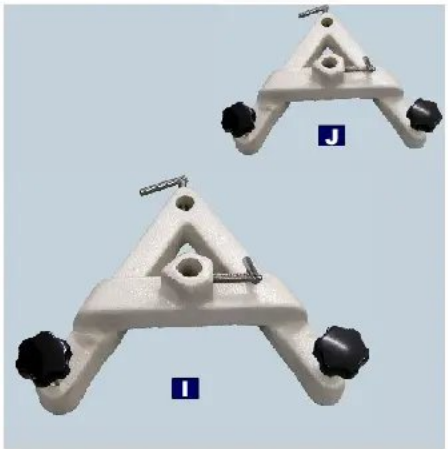


TRIPOD BASE D
Made of cast iron with corrosion resistant finish.

With Threading (M10)	Spread from center approx.
SG114	87mm
SG115	110mm
SG116	140mm
SG117	165mm
SG118	200mm
SG119	250mm



CHANNEL BASE F **SV191**
It is made of cast iron, painted. It accepts the flat objects upto 13mm thickness.



STAND BASE, A - SHAPE
Cast iron base of 'A' shape with provision to hold two retort stand rods of dia upto 8-14mm.
SG100 I 280mm
SG101 J 200mm



STAND BASE, A - SHAPE 280MM K **SJ090**
Cast iron base of 'A' shape with provision to hold one retort stand rod.

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MILD STEEL ROD PLATED/STAINLESS STEEL DIA 10MM APPROX. **A** **SG030-SG069**

Length(mm)	Mild steel (plated) Threading (M10)	Mild steel (plated) w/o Threading	Stainless steel Threading (M10)	Stainless steel w/o Threading
100	SG030	SG035	SG060	SG065
250	SG031	SG036	SG061	SG066
750	SG032	SG037	SG062	SG067
1000	SG033	SG038	SG063	SG068
1500	SG034	SG039	SG064	SG069



MILD STEEL ROD PLATED /STAINLESS STEEL DIA 12MM APPROX. **B** **SG020-SG059**

Length(mm)	Mild steel (plated) Threading (M10)	Mild steel (plated) w/o Threading	Stainless steel Threading (M10)	Stainless steel w/o Threading
100	SG020	SG025	SG050	SG055
250	SG021	SG026	SG051	SG056
750	SG022	SG027	SG052	SG057
1000	SG023	SG028	SG053	SG058
1500	SG024	SG029	SG054	SG059



STORAGE BOX **C** **SG636**

Box is made of CRCA material and the trays are made of HD polythene. It can be hanged on wall & can be placed on the top of the table. It is used to store Seeds, Hand tools, Electric components etc. Overall dimensions are 31 x 13 x 45cm (LxWxH). It contains 38 trays with different size, which can be further partitioned in two parts.

Tray type	Quantity	Dimensions
Small	35	14.4x5.4x3.6cm
Medium	02	14.4x13.5x5.9cm
Large	01	14.4x2.7x5.9cm



PLASTICINE **E**

SG906 200g (approx.) per packet
SW096 500 g (approx.) per packet



INSTRUMENT TROLLEY **D** **SW093**

Push handle. Trays made of Stainless Steel. Rest made of mild steel pipe. Fitted on antistatic castors Dia 75mm. Removable upper and lower stainless steel shelves. Size 80 x 55 x 100 cm (L x W x H). Tray size 75 x 55 cm.

OUR SPECIALITY

We have a very flexible manufacturing setup. We are regularly producing goods for various customers as per their design and samples often on exclusive basis.

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LABORATORY JACKS **A**

It is made of mild steel. It is knob operated scissor action lifting mechanism for quick and easy height adjustment. Painted with chemical resistant matt black paint. The jack is suitable for supporting or elevating hot plates, burners, baths, glassware and other laboratory equipments.

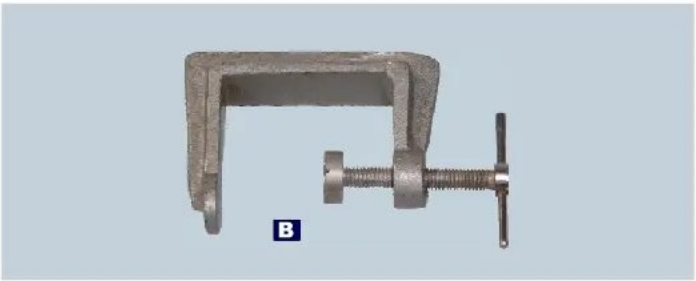
SG898, SG162-SG165 Fitted with hylum sheet
SW652-SW655 Fitted without hylum sheet

Cat No.	Cat No.	Size	Capacity(Approx)
SG898	–	8 x 7cm	8kg
SG162	SW652	12 x 14cm	8kg
SG163	SW653	20 x 20cm	25kg
SG164	SW654	25 x 25cm	30kg
SG165	SW655	30 x 30cm	35kg

LABORATORY JACKS

Same as SW652. But made of stainless steel. It is knob operated scissor action lifting mechanism for quick and easy height adjustment. The jack is suitable for supporting or elevating hot plates, Burners, Baths, Glassware and other laboratory equipments. Supplied without hylum sheet.

Cat No.	Size	Height
SG899	12 x 14cm	230mm
SG900	20 x 20cm	330mm
SG901	25 x 25cm	400mm



G-CLAMP **B**

Strong cast iron with powder coated. Painted to reduce corrosion. Cross pin is nickel plated. Maximum jaw opening.

Cat No.	Length (mm)
SG454	75
SG632	100
SG878	125
SG591	150



LABORATORY JACKS

Suitable for hot plates, burners, baths, glasswares etc. Operated by scissor action lifting mechanism through a knob for quick, easy & accurate height adjustment. Metallic construction. Top & Bottom plates made of Aluminium. The bottom plate comprises four rubber feet provided on corners for stable & strong grip.

Cat No.	Top Plate Size	Static Loading	Vertical Elevation Capacity
SW978	32 x 22cm	20kg	70 to 270mm
SW658	20 x 20cm	20kg	65 to 260mm
SW979	16 x 13cm	30kg	65 to 260mm

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HAND MAGNIFIER METALLIC
Reading glass magnifier with brass frame and metal handle chrome plated.

Cat No. A (Metal Handle)	Cat No. B (Bakelite Handle)	Dia.	Magnification
SG120	SA104	40mm	3.5x
SG121	SA105	50mm	2.25x
SG122	SA106	50mm	3.5x
SG123	SA107	60mm	2.25x
SG124	SA108	60mm	3.5x
SG125	SA109	75mm	2.25x
SG126	SA110	75mm	3.5x
SG127	SA111	100mm	2.25x



FOLDING MAGNIFIER C **SG137**
Having unbreakable plastic lens holder & has an aluminium anodized cover. Magnification 10x.



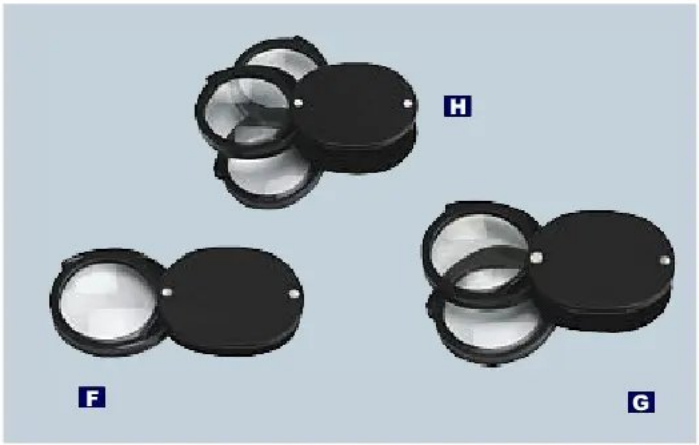
TRIPOD MAGNIFIER D
Having an aluminum frame with plastic cover and three legs provided with adjustable screw at top.

Cat No.	Dia.	Magnification
SA113	32mm	4x
SA114	32mm	6x
SA115	32mm	10x



HAND MAGNIFIER ABS PLASTIC E

Cat No.	Dia.	Focal Length
SA100	50mm	20cm
SA101	65mm	20cm
SA102	75mm	20cm
SA103	100mm	20cm



FOLDING MAGNIFIER PLASTIC

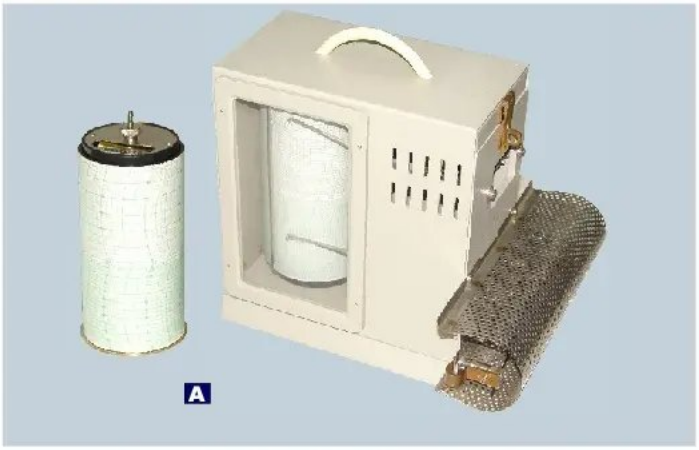
Cat No	Type	Dia.	Magnification
SG134 F	Single	25mm	4x
SG135 G	Double	25mm	7x
SG136 H	Triple	25mm	10x



LINEN TESTER I
Our pocket magnifiers are an inexpensive version of classic "Linen Tester". A single double convex lens is mounted in a black plastic housing that folds to fit into your pocket. Scales are marked on the base so you can measure the magnified subject. Available in three versions.

Cat No.	Aperture of lens	Magnification
SA117	29 mm	5x
SA118	20 mm	7x
SA119	13 mm	10x

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THERMO HYGROGRAPH A **SW595**

Dual purpose instrument, measures relative humidity & air temperature at the same time. Provided with daily weekly printing facility and fitted with mechanical clock that works for 7 days and 24 hours.

Sensing element : Bimetallic strip .
Accuracy : ± 0.5° C
Measuring Range : 10 to 60° C
Clock Drive : Spring Wound
Drum rotation : 24 Hours and 7 Days
(Changeable by attached gear)



DIAL HYGROMETER B **SG177-SG178**

Encased in metallic body. Measures relative humidity.

Cat No.	Dia	Range	Type
SG177	85mm	0-100%RH	Hair Type
SG178	105mm	0-100%RH	Spring Type



RAIN GAUGE C **SG179**

Used for collection & recording of rainfall. The outer body has a 5 inch funnel, an inner receiving vessel and a plastic measuring cylinder graduated 0-10 x 0.1mm (100 divisions).

Size : 300 x 125mm (approx.)
SG179 Made of G.I. Sheet
SG180 Made of copper
SA124 Made of brass



ANEROID BAROMETER DEMONSTRATION D **SG170**

This barometer is housed in a perspex frame. Dial diameter 100mm. Dial reads from 960 to 1060 mbar. Air tight sealed all round, a pressure rubber bulb is provided to force the movements. The scale is designed with maximum clarity and ease of reading.

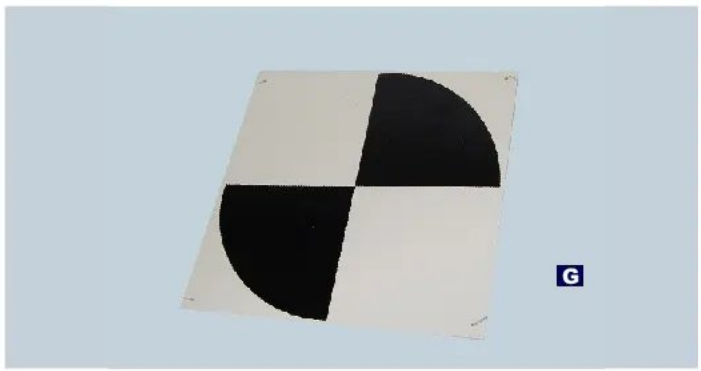
FORTIN'S BAROMETER E **SG186**

With tube of about 5 to 6mm bore. The scales are graduated on nickel plated brass tube, protected by a glass tube with vernier reading to 0.002 inch and 0.05mm. The vernier is actuated by rack and pinion. The two scales read from 25 to 32 inches and from 640 to 810mm. The cistern is made of glass. The change in the level of mercury to touch the zero ivory point, is affected by means of a thumb screw at the base. The whole assembly is mounted on a polished wooden board fitted with milk glass reflector and thermometer. It is supplied without mercury and glass case.

FORTIN'S BAROMETER (GLASS TYPE) F **SW097**

Provided with glass tube. The scales are graduated on milky white plate. The two scales read from 840 to 1070 mbar and 630 to 800 mm Hg. Another scale graduated on the same plate reads 0 to 1500 M showing altitude. The cistern for mercury is made of plastic provided with a cap. The change in the level of mercury is displayed by a pointer. The whole assembly along with a thermometer having reading -10° C to 50°C x 1°C is mounted on a polished wooden board. It is supplied without mercury and glass case.





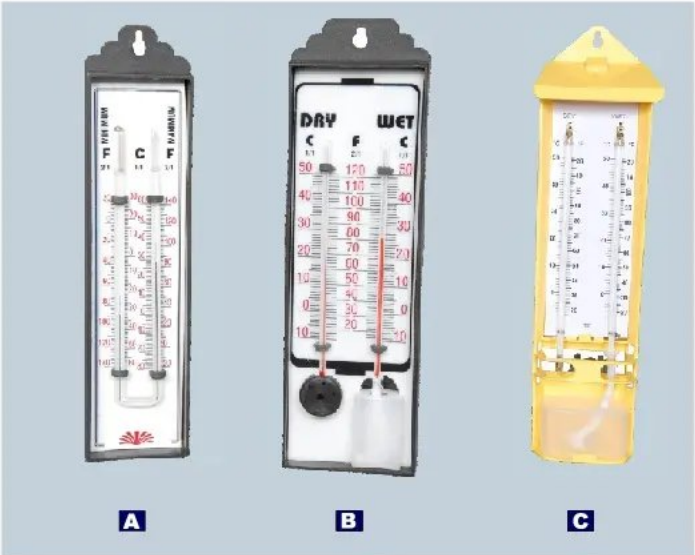
SECCHI PL G **SH003**

A metal pla nating the relative turbidity of water in river, ponds. Supplied with cord.
Dimensions: 205 x 205mm approx.

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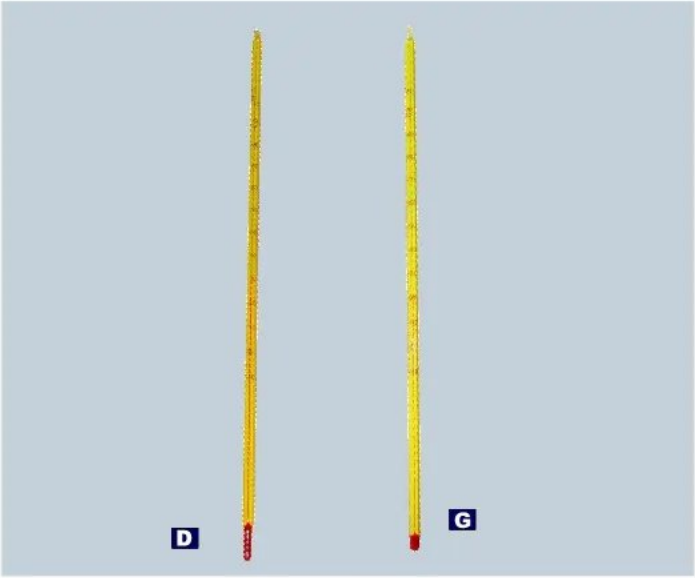
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MAXIMUM & MINIMUM THERMOMETER A **SG168**
Base made of plastic.
Temperature Range -30°C to + 60°C.

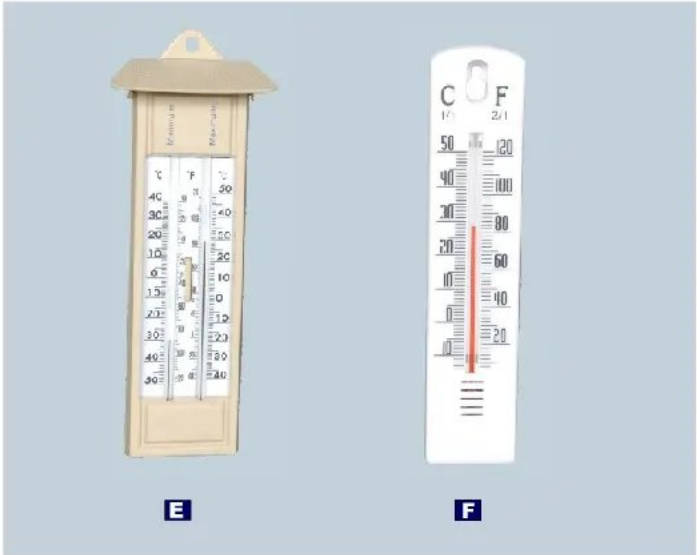
DRY & WET BULB HYGROMETER B **SG173**
Base made of plastic.
Temperature range -10°C to 50°C.

DRY & WET BULB HYGROMETER C **SG175**
Base made of plastic shade type.
Temperature range -10°C to 50°C.



THERMOMETERS, IMMERSION D
It is the general purpose stirring thermometer having yellow back. 76mm immersion approx. Length 300mm approx.

Mercury	Alcohol	Temp. Range	Subdivision Degrees
SA161	SA166	-10 to 50°C	1/2
SA162	SA167	-10 to 110°C	1/2
SA163	SA168	-10 to 110°C	1
SA164	--------	-10 to 250°C	1
SA165	--------	-10 to 360°C	2



MAXIMUM & MINIMUM THERMOMETER E **SA125**
Made of plastic body, Reset push button type.
Temperature Range - 50°C to + 40°C. Reset the thermometer by using a small magnet to rejoin mercury column.

WALL THERMOMETER MOUNTED F **SG386**
On plastic base, Temperature Range - 10°C to + 50°C.

THERMOMETERS G
Yellow back with screen printing. A yellow backing makes these thermometers easy to read. Scale is fused into the glass and can not be removed. Length 300mm approx.

Mercury	Alcohol	Temp. Range	Subdivision Degrees
SG390	SG400	0 to 50°C	1
SG391	SG401	0 to 50°C	1/2
SG392	SG402	-10 to 110°C	1
SG393	SG403	-10 to 110°C	1/2
SG394	SG404	0 to 150°C	1
SG395	SG405	0 to 200°C	1
SG396	--------	0 to 250°C	1
SG397	--------	0 to 300°C	2
SG398	--------	0 to 360°C	2
SG399	SG409	0 to 220°F	1



DIGITAL THERMOMETER H **SJ151**
Range : -50°C to +500°C with On/Off Switch

FOR YOUR INFORMATION
We can provide complete solutions to our customers to plan, design and equip complete labs for Physics, Chemistry and Biology.

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CORK BORER **A**

Made of nickel plated brass with cleaning rod/ejector. Used for boring holes in rubber stoppers & corks.

Cat. No.	No of borers	Diameter
SG388	Set of 6	4-10mm
SG389	Set of 12	4-18mm



CORK BORING SHARPENER **B** **SG534**

Plated metal cone with hinged cutter blade set in slot and wooden handle. Borer restored to circular shape by cone, edge cut to correct angle by depressing blade, using thumb pressure and rotating borer.



MICROPROCESSOR BASED WATER & SOIL ANALYSIS KIT
SA185 **C**

SALIENT FEATURES

Microcontroller Based
Measures pH, mV/ORP, Cond., TDS, Salinity, DO, Temperature
Battery/ Mains Operated
16 X 2 Line LCD Display
Storage of 90 Samples
Printer Attachment facility



CORK BORER(GERMAN PATTERN)

Made of nickel plated brass with cleaning rod/ejector. These cork borers have large grips and pipes of thick gauge as compared to ordinary cork borers.

Cat. No.	No of borers	Diameter
SG678 **D**	Set of 6 Round handle	4-10mm
SG255	Set of 12 Round handle	4-18mm
SG690 **E**	Set of 6 Hexagonal handle	4-10mm
SG691	Set of 12 Hexagonal handle	4-18mm



COLORIMETER **F** **SA179**

Wave length range	:400 to 700 nm
Resolution	:1%t, 0.01abs., 0.01 conc., 0.01 k factor
%transmission	:0 – 100% t
Absorbance	:0 – 1.99a
Concentration	:0 – 1.99
K factor	:1 – 19999
Photo detector	:Silicon photodiode / photo cell
Display	:16x2 line alphanumeric LCD display with backlit
Keyboard	:8 keys, soft touch membrane keys
Data storage	:Up to 100 samples
Light source	:6.8V, 0.3amp. Tungsten lamp
Sample system	:10mm path length matched glass test tubes
Filters	:400, 420, 480, 500, 520, 540, 620, 680nm
Printer interface	:Parallel printer interface for any dot matrix printer
Rs232 interface	:Available (on request)
Weight	:2.5 kg
Power supply	:230VAC ±10%, 50Hz. With in-built stabilizer

CROSS REFERENCE



For rubber stopper
Please see page no. 125

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pH METER TABLE TOP **A** **SG379**

Display	: 3 ½ digit LED
Ranges	: pH 0 to 14.00 & mV 0 to ±1999
Resolution	: pH....0.01 & mV....1
Accuracy	: pH ± 0.01pH / mV ± 1 mV
Temperature	: Auto 0 to 100°C, Manual 0 to Compensation 100°C.
Input Impedance	: > 10^{13} ohms
Slope Control	: 80 to 120%
Recorder	: o to 10 mV/pH, 0 to 10 mV/100mV Output Adjustable
Working voltage	: 230 Volts AC 50Hz
Dimensions	: 76x275x175mm.
Accessories	: Combination pH Electrode, Buffer Tablets 4pH & 7pH, Instruction Manual, Buffer Bottles (4&7pH) Temperature Probe, Electrode Stand, Dust cover.



DIGITAL UV-VIS SPECTROPHOTOMETER (MICROPROCESSOR BASED) **B** **SW101**

For reliable and highly accurate determination of absorbency, transmission and concentration of liquids.

Wavelength range	:190 to 1000nm
Spectral bandwidth	:2 nm
Accuracy	:± 0.5 nm
Read out (wavelength)	:4 digit 7 segment led, resolution 0.1nm
Photometric range	:%t: 0 to 100%, abs.: 0 to 1.999, conc. & k factor: 0 :to 19999
Accuracy	:±0.005abs at 1.0 abs, +0.010abs at 1.5 abs
Stray light	:less than 0.1% at 220 nm
Readability	:±1 count
Data readout	:16x2 line lcd back-lit display
Key board	:8 keys, soft touch membrane type
Data storage	:up to 100 samples
Interface	:printer interface for any centronics dot matrix printer
Serial interface	:RS 232 interface (optional)
Light source	:tungsten halogen lamp, deuterium lamp (d2)
Detector	:wide range silicon photodiode
Optics	:complete mirror optics with resolution 1200 grooves/mm grating
Sample holder	:4 position adjustable sample holder
Power	:230V ±10% 50Hz AC



pH METER TABLE TOP MICROPROCESSOR BASED **C** **SG381**

The instrument uses the latest microprocessor technology and advanced engineering techniques so as to give enhanced accuracy and reproducibility. The system has user friendly prompts, which guide you throughout the measurement process.

Technical specifications

Parameter	pH	mv	Temp
Range	0 to 14.00pH	0 to 1999.9mv	0 to 100°c
Resolution	0.01pH	0.1mv	0.1°c
Accuracy	±0.01pH±1digit	±0. 1mv±1digit	±0.1°c
Temp. Compensation	0 to 100°c (Auto/Manual)		
Calibration	Auto \ Manual		
Auto buffer	4.00, 7.00 & 9.20 pH		
Read out	16 x 2 line alphanumeric LCD display with backlit		
Storage	up to 90 samples		
Printer attachment	provision for any dot-matrix printer with centronic interface		
Keyboard	8 keys, soft touch membrane type		
Power	230v ± 10% AC, 50 Hz		

Accessories : Combination pH electrode, Temperature probe, pH electrode stand, Buffer tablets (7.0 & 4.0 pH), Operational manual and dust cover.



pH METER HAND HELD **D** **SG380**

Display	: 3 ½ digit LCD
Ranges	: pH 0 to 14.00
Resolution	: pH 0.01
Accuracy	: pH ± 0.01pH
Working voltage	: 9V Battery
Temperature Compensation	: Manual 0 to 100°C
Input Impendance	: >10^{13} ohms
Slope Control	: 80 to 120% Pre-adjustable
Working Voltage	: 9V battery
Dimensions	: 85 x 165 x 28mm.
Sensor	: Combined pH electrode

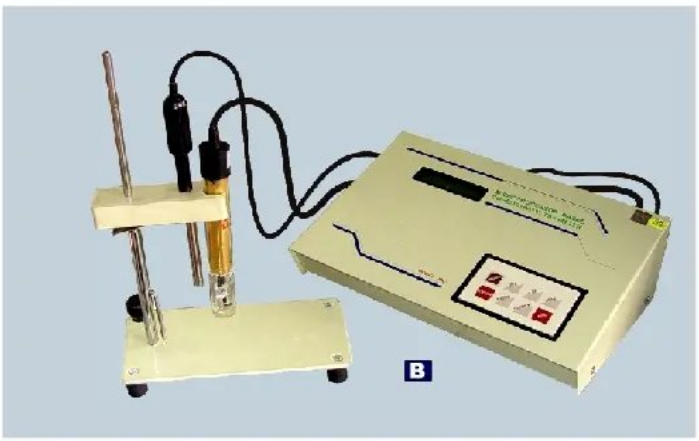
Provided with 4 & 7 pH buffer tablets, buffer bottles and combination pH electrode.

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DIGITAL pH METER **A** **SA187**
pH meter measures full scale pH (0.00 - 14.00), water resistant, 2 point calibration, ±0.2 pH accuracy, resolution 0.01 pH, Battery life 3,000 hours.



MICROPROCESSOR BASED CONDUCTIVITY / TDS METER **B**
SG384
It is a table top microprocessor based system for accurate measurement of Conductivity, TDS and Temperature measurements. The system has user-friendly prompts which guide you through out the measurement process. It has 8 soft touch membrane type keys for ease of operation. Storage facility for 90 samples has been provided, which are retained in the system's memory. It also has the provision for attachment of dot-matrix printer with centronics interface.

Parameter	Conductivity	TDS	Temperature
Range selection	Automatic	Automatic	--
Range:	0-20, 0-200 microS, 0-2,0-20,0-200 milliS	0-20,0-200ppm 0-2,0-20,0-200ppt	0-100°C
Accuracy:	± 0.5 % FS ± 1 digit	± 1 % FS ±1 digit	± 0.1°C
Resolution:	0.01 microS	0.01ppm	0.1°C
Cell Constant	:Adjustable (0.05-10.5)	Adjustable (0.05-10.5)	--
Temperature Compensation	:Auto /Manual (0-50° C)	Auto / Manual	--
Temperature Coefficient	:Adjustable (0.1 - 4.0%)	Adjustable (0.1 - 4.0%)	--
Readout	:16 x 2 Line Alphanumeric LCD Display		
Storage	:Upto 90 samples		
Key board	:8 soft touch membrane type keys		
Printer Interface	:Dot-Matrix Printer with Centronics Interface		
Power	:230V ±10% AC, 50Hz		
Accessories	:Conductivity / TDS Cell, Temperature Probe, Dust Cover & Instruction Manual.		

DIGITAL COLONY COUNTER **E** **SA180**
110mm Dia Magnifying Glass
Audible Confirmation of each count
Uniform glare free illumination
Digital Readout from 0 - 9999
Auto Marker pen
Wolffhuegel glass grid with focusing facility



CONDUCTIVITY METER HAND HELD **C** **SG383**

Display	: 3 ½ digit LCD
Ranges	: 0 to 2000 micro S/cm, 0 to 20 mS/cm
Resolution	: 1 microS/cm
Accuracy	: ±2% FS ±1digit
Cell Constant	: Preadjustable
Measuring Cell	: Platinum Dip type
Power	: 9V Battery
Dimensions	: 85x165x25mm.
Accessories	: Conductivity Cell, Instruction Manual



CONDUCTIVITY METER TABLE TOP **D** **SG382**

Display	: 3 ½ digit LED
Ranges	: 0 to 200 micro S/cm, 0 to 2 mS/cm, 0 to 20 mS/cm, 0 to 200 mS/cm and 0-1000 mS/cm
Resolution	: 0.1 microS/cm.
Temperature Compensation	: Auto 0 to 50°C, Manual 0 to 50°C.
Cell Constant	: Adjustable
Measuring Cell	: Platinum Dip type
Power	: 230V±10% AC, 50Hz
Dimensions	: 160 x 85 x 25mm.
Accessories	: Conductivity Cell, Instruction Manual and Dust Cover.



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SEROLOGICAL WATER BATH **A**

Doubled walled. Inner made of stainless steel and outer mild steel powder coated. Temperature can be controlled from few degree above ambient to 80°C. Supplied without stirring arrangement and racks to work on 230V AC.

SG349 300X250X175mm
SG350 450X300X175mm



WATER BATH **B**

Water bath round. Single wall with water level arrangement having four concentric rings. Heating element 1kW electrically operated 230V AC, 50Hz. Size 8" x 6" (dia. x depth) approx.

SA201 Stainless Steel
SA202 Aluminum



MAGNETIC STIRRER **C**

It is fitted with speed regulator. Body made of mild steel and top stainless steel cover . Provided with energy regulator. Working voltage is 230V AC, 50Hz.

With Hot plate	Without Hot plate	Size	Capacity
SA189	SA190	15x15cm	2 litre
SG321	SG320	20 x 20cm	5 litre



WATER BATH ELECTRIC **D**

Outer body made of mild steel with white stoved enamel paint. Double wall inside made of stainless steel. Temperature is controlled by thermostat from ambient temperature to 100°C. Top of the bath and concentric rings are made of stainless steel having dia 75mm. Working voltage is 230V AC 50Hz.

SG347 With 6 holes.
SG348 With 12 holes.



HOT PLATE **E**

Outer body made of mild steel, powder coated to protect from rust. Electrically operated with energy regulator. Working voltage is 230V AC, 50Hz.

Cat No	Size(mm)	Type
SG351	200	Round
SG352	150	Round



MAGNETIC STIRRER **F** **SN584**

It consists of top plate made of white coloured ceramic plate internally fitted with heater of 1000 watts. Speed of stirrer can be varied maximum upto 1000 rpm. It is designed to work with 230V AC, 50Hz. For bulk requirements 110V input can be provided (SW301).



WATER BATH **G**

Made of thick aluminum sheet with two handles and a set of concentric rings. Ideal for heating flask, bottles, tubes etc.

Cat No.	Dia. (mm)
SA203	125
SA204	150
SA205	200



HEATING MANTLE **H**

Outer round housing made of aluminum having glass Yarn with ON/OFF switch and energy regulator.

Cat No	Capacity	Wattage
SG370	500ml	200
SG371	1 litre	300
SG372	2 litre	450
SG376	3 litre	450
SG373	5 litre	600
SG374	10 litre	2x600
SG375	20 litre	3x600



HEATING MANTLE **I**

Outer housing made of metal having glass Yarn with ON/OFF Switch and energy regulator.

Cat No	Capacity	Wattage
SA191	500ml	200
SA192	1 litre	300
SA193	2 litre	450
SA194	3 litre	450
SA195	5 litre	600
SA196	10 litre	2x600
SA197	20 litre	3x600

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A


B


D

INCUBATOR

The outer chamber is made of mild steel, powder coated to protect from rust. Inner chamber is made of stainless steel. A glass window door is fitted with transparent glass and the outer & inner chamber is insulated by good quality glass wool to protect heat loss. Temperature 5° c above ambient to 80°c. Accuracy ± 2°C approx. Heat distribution system inside the chamber to maintain temperature uniformity. Heating elements are connected in three sides of the chamber. Operating voltage 220VAC, 50 Hz.

Size (cm)	No. Of S.S Shelves	INCUBATOR Provided with thermostat with forced Air Blower A	INCUBATORS Provided with digital temperature with forced Air Blower B
30X30X30	2	SG290	SW905
27X40X27	2	SG291	SW906
35X35X35	2	SG292	SW907
40X40X40	2	SG293	SW908
45X45X45	2	SG294	SW909
60X45X45	2	SG295	SW910
60X60X60	2	SG296	SW911
90X60X45	2	SG297	SW912
90X60X60	2	SG298	SW913
90X90X90	2	SG299	SW914



C

OVEN

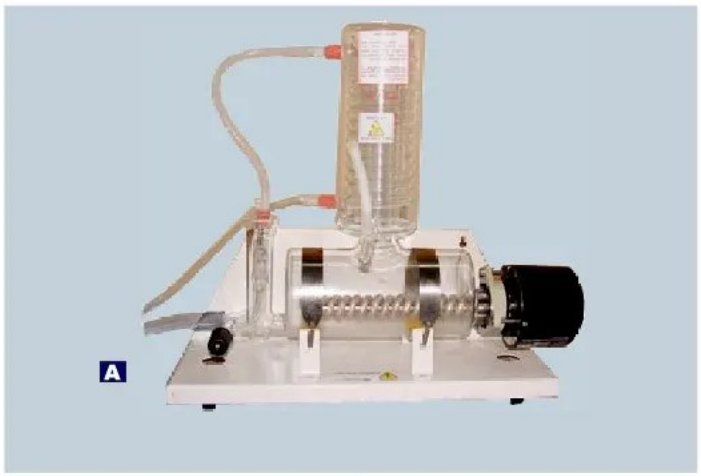
The outer chamber is made of mild steel, powder coated to protect from rust. Inner chamber is made of stainless steel. The outer & inner chamber is insulated by good quality glass wool to protect heat loss. Temperature range 50°c to 250°c. Accuracy ± 2°c approx. Heat distribution system inside the chamber to maintain temperature uniformity. Light bulb indicating heater operation at the front. Heating elements are connected in three sides of the chamber. Operating voltage 220VAC, 50 Hz.

Size (cm)	No. Of S.S Shelves	OVENS Provided with thermostat With forced Air Blower C	OVENS Provided with digital temperature with forced Air Blower D
30X30X30	2	SG270	SW885
27X40X27	2	SG271	SW886
35X35X35	2	SG272	SW887
40X40X40	2	SG273	SW888
45X45X45	2	SG274	SW889
60X45X45	2	SG275	SW890
60X60X60	2	SG276	SW891
90X60X45	2	SG277	SW892
90X60X60	2	SG278	SW893
90X90X90	2	SG279	SW894

Options :

1. Incubator and oven are also available without forced air blower.
2. Inner chamber made of aluminium instead of stainless steel is also available.

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WATER STILL (GLASS MODEL) **A** **SW109**

Designed for reliable continuous operation incorporating a host of features unmatched by comparable stills. It is easy to use, safe to operate, thoroughly reliable and above all low cost. A borosilicate glass boiler with heating element.

Distillate Quality

Ideal for general laboratory use - capable of producing pyrogen free water.

Output	: 4 litre/hour
Conductivity (Using raw water)	: 3.0 - 4.0 µs/cm
Conductivity (Using Treated water)	: 1.5 - 2.0 µs/cm
PH	: 5.5 - 6.0
Distillate Quality	: Pyrogen free
Supply	: Main 220/240 V, 50/60 Hz



AUTOCLAVE PORTABLE (PRESET AUTOMATIC DIGITAL) **B** **SV031**

This Autoclave is used for sterilization purpose. Sterilization is the statistically complete destruction of all micro organisms including the most resistant bacteria and spores. It uses a heater assembly at the bottom for making dry saturated steam for effective sterilization. Fitted with ON/OFF illuminated rocker switch, preset temperature controller linked to a preset timer, with a digital display (preset at approx. 121°c / 15-16 psi) and one stainless steel drum. Pressure is indicated by pressure gauge. LED for the heater is provided.

Supply : 230 VAC 50 Hz, single phase
Heater : 1800W
Timer : Preset at approximately 20 minutes



DISTILLATION APPARATUS (COMPACT) **C**

It has a unique space saving design with boiling chamber at bottom and condenser at top. Table top or wall mounted. Made of stainless steel. Press fit condenser and boiling chamber are easily openable for daily cleaning. Supplied with all accessories including input water flow rate meter, tap adapter, PVC tubing, Hoffman clip, mounting screws and silicone tubing for distilate. Uses a single kettle heater with low water level cut off device. The distillate is free from pyrogens and dissolved salts, clear, colories, odories and tasteless, meant for general laboratory purpose. Size 20x40cm. Working voltage is 230VAC, 50Hz.

SG360 2 litre/hour
SG361 4 litre/hour



MELTING POINT APPARATUS **D** **SA198**

It can be used in determining repeatable melting point of different compounds up to 400°C in 5 minutes by continuously adjustable with built-in variable transformer. Temperature resolution 0.1°C with low mass thermocouple and precision thermometer. Its housing is made of aluminum. It accepts up to three capillaries. Samples are illuminated and clearly visible through the precision 6-power lens. Operatable at 220V AC.

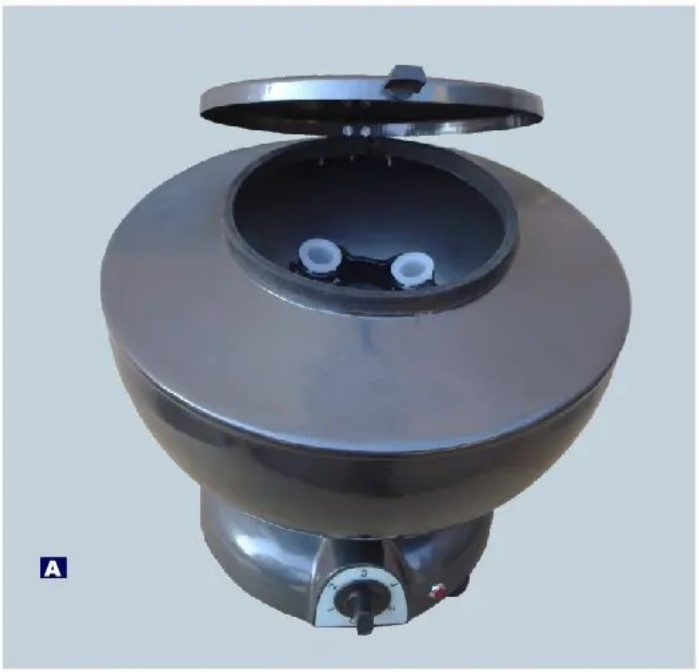
NOTE: Digital thermometer optional available . Please see page no.179.

DISTILLATION APPARATUS **E**

Made of stainless steel. Wall hanging type. Working voltage is 230V AC 50Hz.

Cat No	Capacity
SG358	2 litre/hour
SG359	4 litre/hour

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CENTRIFUGE ROUND **A**

Electrically operated with speed regulator. Maximum speed 3500 rpm. Provided with speed regulator in steps. Working voltage is 230V AC, 50Hz. Ideal for school lab, electrophoresis & low volume work.

Cat No.	Capacity	Rotar Head	Outer Shape
SG331	4X15 ml	Swing out	Round
SG322	4X15 ml	Fixed Angle	Round
SG332	6X15 ml	Swing out	Round
SG323	6X15 ml	Fixed Angle	Round



CENTRIFUGE DIGITAL **B** **SW110**

Electrically operated with speed regulator having capacity of 12 x 15ml tubes. Maximum speed 5250 rpm. Provided with a digital timer of 60 minutes, fuse protection, digital rpm and stepless speed regulator. Powder coated outer body. Operation indicating light and safety lid. Working voltage is 230V AC, 50Hz.



DOCTOR CENTRIFUGE ROUND **C**

Maximum speed 3800 rpm. Provided with speed regulator in steps. Electrically operated, working voltage 230V AC, 50Hz.

Cat No.	Capacity	Rotar Head	Outer Shape
SA213	4X15 ml	Fixed Angle	Round
SA214	6X15 ml	Fixed Angle	Round
SA215	8X15 ml	Fixed Angle	Round



CENTRIFUGE RECTANGULAR **D**

Electrically operated with speed regulator. Maximum speed 4500 rpm. Provided with a manual timer of 60 minutes, fuse protection and a stepless speed regulator. Working voltage is 230V AC, 50Hz.

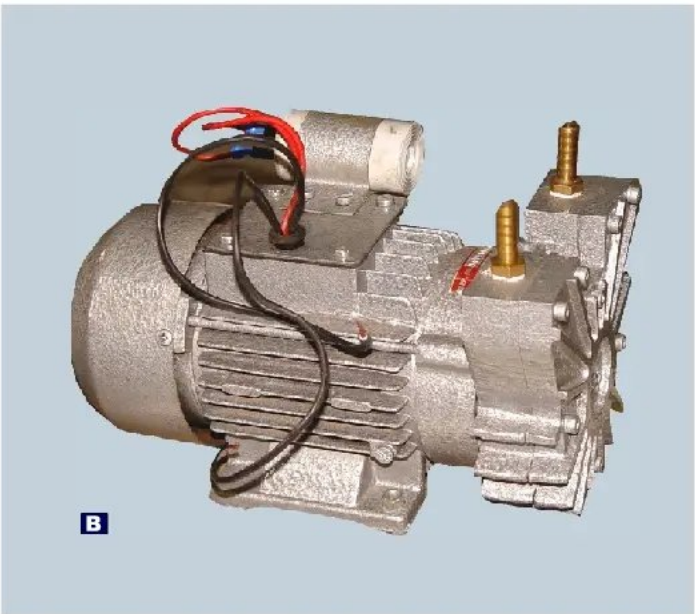
Cat No.	Capacity	Rotar Head	Outer Shape
SA216	4X15 ml	Swing out	Rectangular
SG333	6X15 ml	Swing out	Rectangular
SG334	6X15 ml	Fixed Angle	Rectangular
SG335	16X15 ml	Swing out	Rectangular
SG336	16X15 ml	Fixed Angle	Rectangular

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HAND CENTRIFUGE METALLIC **A**
Simply fix on the table through knob & operated by hand.

Cat No.	Size	Tubes
SG343	2x15ml	2
SG344	4x15ml	4



MOTOR VACUUM PUMP **B** **SN365**
Type : Oil Less Rotary Carbon Vane
Capacity : 70 litre per minute (approx.)
Max. Vacuum : mm of Hg 660 (approx.)
Motor : 1/3 HP (approx.)

MOTOR VACUUM PUMP **D** **SV524**
Power source Voltage; 220V/50Hz
Ventilation rate Bleed(CFM); 1
Ultimate pressure Max.pressure (microns) : 75×10^{-2}
Rotational speed Rotating speed: 1440
Oil cost Oil capacity<ml>: 170



MUFFLE FURNACE **C** **SG300-SG307**
Working temperature 940°C, maximum temperature 1000°C. Fitted with energy regulator and thermo couple with pyrometer, thermal fuse.

MUFFLE FURNACE **C** **SG308-SG340**
Working temperature 1100°C, maximum temperature 1150°C. Fitted with energy regulator and thermo couple with pyrometer.

Cat No.	Cat No.	Muffle Size(cm)
SG300	SG308	22.5X10X10
SG301	--------	25X12.5X12.5
SG302	SG309	30X12.5X12.5
SG303	SG338	30X15X15
SG304	SG339	30X20X20
SG306	--------	47.5X17.5X12.5
SG307	SG340	45X22.5X22.5



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Its legacy goes back to 1919.

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WIND VANE **A** **SG183**
The vane is fitted with four arms (N S E W) and moves on a bearing. It can be balanced by a counter weight nut. Provided with a locking nut.

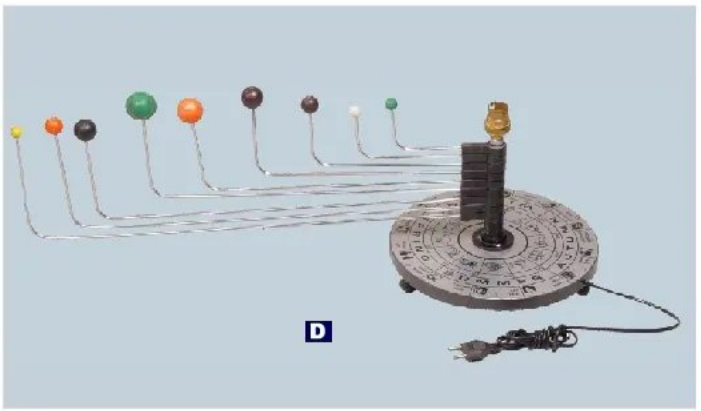


THE NEW SCHOOL TELLERIUM **B** **SG190**
This apparatus demonstrates the relative movements of the Sun, Earth and Moon. Thus causes of various phenomena can be understood such as seasons of the year, day and night, changing length and direction of different shadows, seasons, phases of the Moon, eclipse etc.

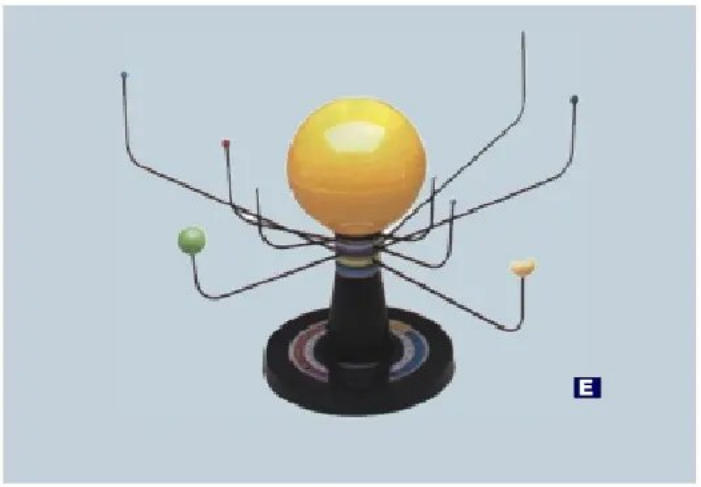


GLOBE **C**
Political globe with steel/unbreakable ABS plastic graduated arc and base.

Cat No.	Dia.	High
SA234	20cm	32cm
SA235	30cm	46cm
SA236	40cm	59cm



SOLAR SYSTEM APPARATUS **D** **SG188**
To teach identification of planets and give an understanding of sizes and divisions. It is a three dimenstional colourful model which shows the Sun and nine planets.



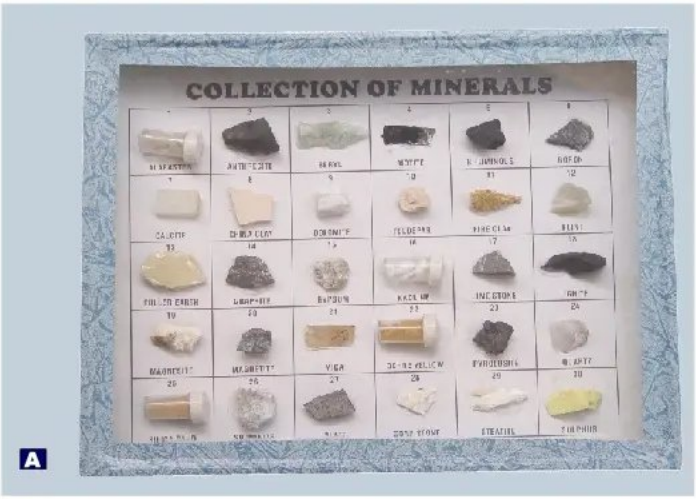
SOLAR SYSTEM MODEL **E** **SA232**
An illuminated three dimension model of the Sun and planets teaches planet identification, sizes, distances and colors. The planets may be set by month to show their relative positions. A sturdy base supports the 6-in. diameter Sun with the outer planet 18 inches from the Sun. Illustrated study guide includes planet position tables. All plastic, good quality with electric fitting to illuminate the Sun.



AQUARIUM **F**
Glass aquarium complete with fibre glass cover having a light provision. Supplied without poster, bulb & tube etc. These tanks offer unobstructed viewing.

Cat No.	Size (cm)	Thickness of Glass
SA253	18 x 9 x 9	5.5mm
SA254	18 x 12 x 12	5.5mm
SA255	48 x 18 x 18	8mm

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SET OF 30 MINERALS **A** **SA244**
It is packed in a showcase paper mounted having size 225 x 300mm. All are labelled for easy identification.



SET OF 12 ROCKS **B**
It is packed in a wooden polished showcase having size 250 x 350mm. All are labelled for easy identification.



MAGNETIC BOARD **C**
Magnetic display boards are framed in an aluminium section, which attracts and grips the alphabets firmly. This system is the easiest and best way of displaying your valuable data or information in offices, board-rooms, conference-rooms, schools, training sessions, hotels, shops etc.

Cat No	Size (approx.)
SA631	120x60cm
SA632	120x90cm
SA633	120x120cm
SA634	150x120cm
SA635	180x120cm

STEEL BALLS **G**
Chrome plated steel.

Cat No.	Dia. Approx.	Packet Size
SF868	6mm	100 nos
SF869	12mm	10 nos
SF870	16mm	10 nos
SF871	20mm	5 nos
SF872	25mm	5 nos



SET OF 12 METALS **D** **SA246**
It is packed in a showcase paper mounted having size 225 x 300mm. All are labelled for easy identification.



SET OF 50 ROCKS **E** **SA247**
It is packed in a wooden polished showcase having size 250 x 350mm. All are labelled for easy identification.



HAND TALLY COUNTER **F** **SG387**
Registers to 9999, with finger ring for comfortable fitment in either hand. Chrome plated knob.

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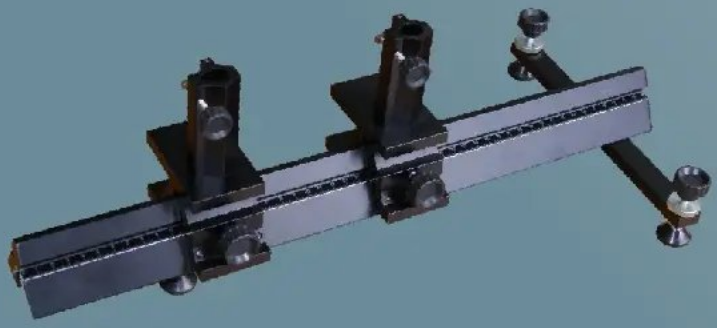
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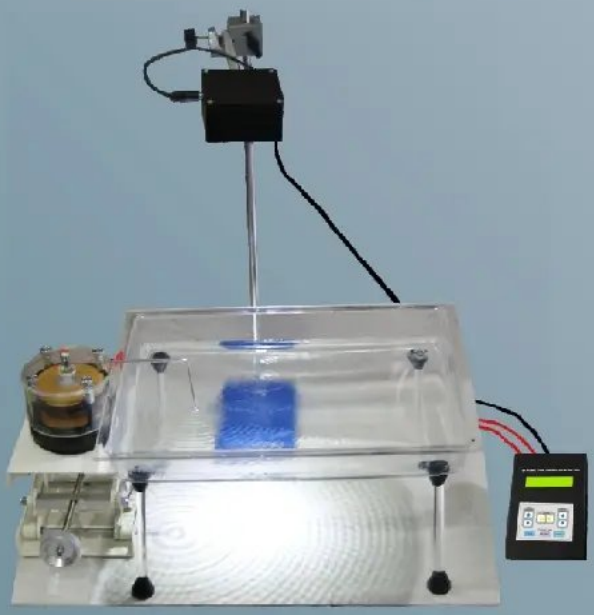
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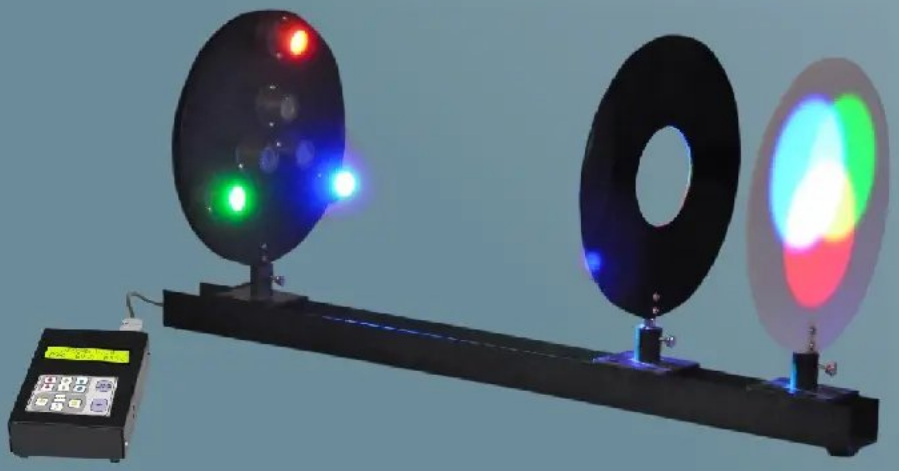
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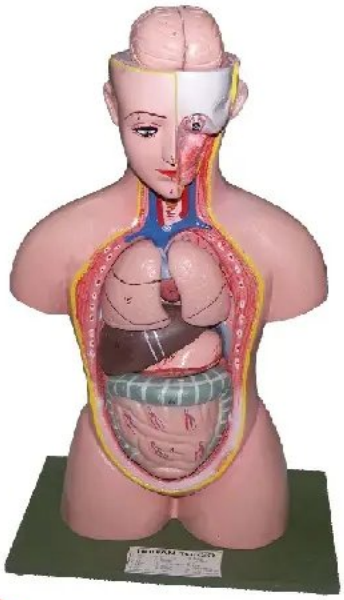


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