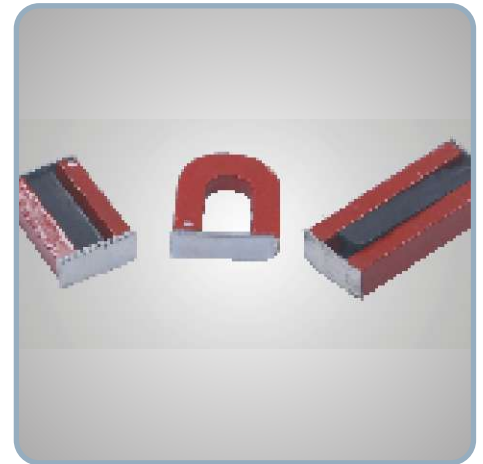




# PHYSICS



# About us

Started for more than 35 years ago in name of **M/s SHARMA ELECTRICAL ENTERPRISES, ESEL brand** has now grown into a 21st century international company with name **M/s ESEL INTERNATIONAL**, an Export Oriented Unit.

We are located at Ambala Cantonment (India), a town well known for import & export of Scientific Instruments, Laboratory Equipments. We categorize our products for the purpose of manufacture and export as below:

- Electronic Equipments.
- Physics Equipments.
- General Laboratory Equipments.
- Biological and Earth Science Equipments.
- Microscopes.
- Laboratory Glassware.
- Laboratory Plastic ware.
- Chemistry etc in the global market.

We enjoy a good brand reputation and are better known for our prompt deliveries and quality specifications.

We are highly dedicated towards International Business, which is spread worldwide, with the major chunk of export in United States of America, Middle East, Europe ( France, UK, Spain, Germany, Portugal ), South Africa, Malaysia, Thailand, Kenya etc to name a few.

## PRODUCTION FACILITY

M/s ESEL INTERNATIONAL has state of art production facility spread over 20,000 sq ft. The company is fully equipped to manufacture and assemble high volume of products.

## QUALITY CONTROL

M/s ESEL INTERNATIONAL believes in Quality control. We not only inspect product our material and its dimensions but also check them for operating, environmental safety, reliability and maintainability requirements.

The products as manufactured by us are one of the best in the Industry. Our efforts are continuously on to upgrade our products and services. Rates are quite reasonable, most competitive and lowest in the market.

We sincerely hope that our wide range of products, best quality, in time service and reasonable rates will satisfy the needs of our esteemed customers to whom we are ever grateful for their excellent support and continued patronage.

Please register our firm with your worthy company for the supply of Scientific Instruments.

With Warm Regards

Amit Sharma (Managing Partner)

Sumit Sharma (B. Tech & Managing Partner)

### EL-1501 Spring Balance (Tubular)

Tubular body made of plastic

Range  
250gm/2.5n to 5000gm/50n

### EL-1502 Spring Balance

Tubular body made of aluminium Same as EL-1501

### EL-1503 Spring Balance

Tubular body made of brass, Same as EL-1501

### EL-1504 Spring Balance

Flat form sheet metal case with suspension ring and load hook.

### EL-1505 Spring Balances

This series of spring balances are in flat form, sheet metal case with suspension ring and load hook.

### EL-1506 Kitchen Weighing Balance

Removable plastic pan with zero adjustment.

1kg, 2kg & 5kg  
Available in 6 colours.

### EL-1507 Physical Balance

Use in schools and colleges  
Double door, Wooden / glass showcase with levelling screw and plumb lime.

#### Specification

Capacity : 250g  
Sensitivity : 1mg

### EL-1508 Chemical balance

Suitable for use of students of high school  
brass beam, removable al-pans, rider arrangement.

#### Specifications

Capacity : 200g  
Sensitivity : 0.2mg

### EL-1509 Hydrostatic Balance

This is a basic general purpose balance for students.

Knife edges : Agate      Capacity : 250 gm  
Sensitivity : 25 mg      Dia. of pan : 10 cm

### EL-1510 Triple Beam Balance Cap 2610 gm

This is sliding mass single Pan Balance having die cast aluminium base, beautifully painted, 150 mm dia stainless steel pan, three notched weighing beams with center indicating calibrated sliders (sliding masses) to indicate weight at any point on the notched Beams Tare capacity 225 gm.

Capacity is increased to 2610 gm by hanging supplementary dust cover.



EL-1501



EL-1502



EL-1503



EL-1506



EL-1507



EL-1508



EL-1509



EL-1510

### EL-1511 Four Beam Balance Single Pan

Cap. 311g sensitivity 0.01g with four beams.

### EL-1512 Electronic Balance Digital

This balance is design specially for educational use featuring with built in overload protection tear function and twin board for weighing in gm.

Available capacities

200gm , 300gm, 500gm, 1kg, 2kg

### EL-1513 Slotted weight(masses)

Made of chrome plated brass. This set includes five slotted weight.

10g\*5=50gm

20g\*5=100gm

50g\*5=250gm

(Also available in a iron)

### EL-1514 Slotted weight(masses) iron

Used for sonometer experiment where bigger loads are required

Total weight 500gm \*5 =2.5kg

### EL-1515 Physical weight box

Chrome plated brass or iron with fractional masses and a forceps in wooden box.

Available ranges: 1mg to 1000gm

### EL-1516 Analytical weight box

Sets in chrome plated Brass or stainless steel with fractional masses and a forceps in polished wooden box.

Available ranges: 1mg to 200gm

### EL-1517 Fractional weight box

Available ranges: 1mg to 500 mg

### EL-1518 Wooden Scale (meter scales)

Made of hard wood, both edges divided into cms & mms.

Figure marked at every cm.

A) one meter long

B) half meter long

### EL-1519 Digital Stop Watch

With resolution upto 0.01 second.

### EL-1520 Stop Clock

With two hands indicating 60 minutes and 60 seconds dial

Clock has spring driven movement with one

start/stop lever and one zero setting or fly back action.

(a) Metal body.

(b) Plastic body.

### EL-1521 Trundle Wheel

With detachable handle, , figured at every 5cms.



EL-1511



EL-1512



EL-1513



EL-1515



EL-1517



EL-1514



EL-1516



EL-1519



EL-1520



EL-1518

### EL-1522 Opisometer

Comprising a knurled wheel, runs on a transversely mounted threaded spindle.

### EL-1523 Vernier Caliper

Made of steel, chrome plated size 5".

### EL-1524 Micrometer Screw Gauge

Made of Nickel plated brass, stainless steel screw with ratchet stop 25/20/15/10 x 0.01 mm without lever lock in protective case.

### EL-1525 Spherometer

Brass dial head with steel screw .5mm or 0.5mm pitch had divided in 100 division.

### EL-1526 Standard Wire Gauge

Circular, Range 0 to 36swg.

### EL-1527 Vernier Microscope

### EL-1528 Vernier Microscope(Student)

The type of Microscope suitable for Newton's ring experiment.

### EL-1529 Traveling Microscope

College grade , comprising 17 cm and 15 cm stainless steel scales, vernier reading to 0.01mm , provided with high class optical combination and superior fittings, with heavy base, nicely finished in metallic grey and black contrast housed in 12mm thick beautiful storing cabinet.

### EL-1530 Reading Telescope

This telescope is mounted on a specially designed carriage with support ring to stop abrupt falling fitted on a cast iron base. with leveling screws. A scale holder is provided with scale.

### EL-1531 Reading Telescope

It is fitted with an achromatic objective of FL 178mm, clear aperture 23mm and 8x Ramsden eye piece with a 90° cross line reticle. The focusing is done by rack and pinion mechanism, with a range from 1000mm to infinity.

### EL-1532 Drawing Board

Wooden, 12 mm thick, size 12 x 16 cm approx.

### EL-1533 Black Board Wooden

In a well polished wooden box with handle, containing protractor, one pair of triangles graduated, divider, compass, straight rule and a duster.



EL-1522



EL-1523



EL-1524



EL-1525



EL-1526



EL-1529



EL-1528



EL-1532



EL-1530



### EL-1534 Wooden Compass

Made of non-wrapping wood in lacquer finish or painted, with wing nut locking pivot.

Size (a) 30cm (b) 35cm



EL-1534

### EL-1535 Wooden Divider

Same as Compass, but on both legs metal points.

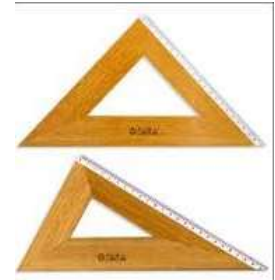
Size (a) 30 cm (b) 35 cm

### EL-1536 Wooden Triangle Set

Made of non-wrapping wood in lacquer finish or painted permanent markings and graduations having a good contrast and Visibility,

(a) Triangle  $45^\circ \times 45^\circ \times 90^\circ$

(b) Triangle  $30^\circ \times 60^\circ \times 90^\circ$



EL-1536

### EL-1537 Wooden Protractor

Made of non-wrapping wood lacquer finished or painted, graduations  $0^\circ$  to  $180^\circ$  in both directions and figured every  $10^\circ$ .

Size Approx. (a) 30 cm

(b) 35 cm



EL-1537

### EL-1538 Set of Geometrical Models

Hardwood, sixteen pcs models of various shapes and figures in box.

### EL-1539 Geometrical Models

Set of six wooden models, comprising cube, rectangular, cylinder, cone, square pyramid and sphere. Approx size 10cm.



EL-1538

### EL-1540 Pulley's

50 mm diameter, mounted in metal frame with two hooks.

- A) Single pulley
- B) Double pulley
- C) Triple pulley



EL-1539

### EL-1541 Pulleys (Single Hook)

Made of plastics, mounted in metal frame with hook on top for downward hanging, Dia 50 mm.

- A) Plastic 50mm dia
- B) Aluminium 50mm dia



EL-1540

### EL-1542 Z Pulley Clamp Fitting

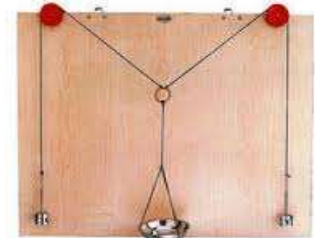
It consists of a 50 mm diameter plastic or aluminium pulley mounted on aluminium frame provided with clamping screw to clamp on the edge of a force board,



EL-1542

### EL-1543 Parallelogram Force Apparatus (Wall Type)

Comprises board 65 x 50cm, with two aluminium pulleys, 50mm dia, on clamp, for mounting in any position. Complete with three hangers iron nickel-plated 50gm and 12 slotted weights of 50gm each, supplied with reel of cotton thread and a ring.



EL-1543

### EL-1544 Parallelogram Force Apparatus (Stand Type)

For demonstrating the principle of the parallelogram law of forces and polygon of forces. A unit is a drawing board size : 75 x 60cm fitted on two side pillars for standing. The board is supplied complete with two pulleys (clamp pattern) 3 x 50gm hangers and 12 slotted weight of 50gm, reel of cotton thread and a ring.



EL-1544

### EL-1545 Universal Force Table

To verify the laws of triangle, parallelogram and polygon of forces.

It is provided with 4 frictionless adjustable pulleys having pivots of hardened steel, cords from central ring carries hangers for slotted weights. Pulley clamps have an index to show direction of forces. The base is of heavy cast iron with leveling screws and vertical rod is nicely polished supplied complete with 4 mass hangers and 12 masses (2 x 10 g, 2 x 20 g, 4 x 50 g, 4 x 100 g) 30cm disc is also available..



EL-1545

### EL-1546 Fly Wheel

200 mm diameter metal wheel mounted on a balanced Wooden board



EL-1546

### EL-1547 Simple Pendulum

Steel spheres with hook  
Dia (a) 13 mm (b) 19 mm (c) 25 mm

*Available in three metals  
steel, brass and lead with hook.*



EL-1547

### EL-1548 Compound Pendulum

This pendulum is used to investigate the relationship between the period of oscillation of a rigid bar pendulum and the distance of its suspension point from its centre of mass.

A removable steel knife edge, a wall bracket is provided for suspension.



EL-1548

### EL-1549 Kater's Compound Pendulum Reversible,

Comprising ungraduated steel bar 1200 x 10 mm with one pair each light and heavy masses, two steel knife edges set in adjustable metal holders and metal support bracket drilled for wall mounting.



EL-1549

### EL-1550 Solids Material Kit

Comprises quite a variety of materials in the form of rectangular blocks. This kit is used to familiarise the students with appearance, feel, Texture, hardness and density of a range of common substances.

### EL-1551 Set of Cubes, Metal, Assorted

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

### EL-1552 Hook Law Apparatus

It consists of a scale mounted vertically on stand, a spring with pointer and provision to hang set of slotted weights.

### EL-1553 Young's Modulus Apparatus

Consists of a brass scale 10cm long and a vernier reading to 0.1mm with V side clamp, guides for wire, ceiling attachment, 5 meter of wire and a rectangular tension weight.

#### EL-1553/1 Load Weight For Above Apparatus

18 x 1 Kg masses with 1 Kg hanger, hanger approximately 500 mm high, black painted.

#### EL-1553/2 Set of Wires, Spare

Set of wires one each of 21 SWG and 22 SWG of brass, copper and stainless steel each 2 meter long.

### EL-1554 Torsion Apparatus

Searles horizontal pattern.

With two aluminium scales graduated 30-0-30 degrees mounted on pillar supports, two pointers with clamps for attaching to specimen, one each brass and steel rods 5mm diameter, cord and hook for carrying weight, but without weight.

### EL-1555 Young's Modulus Apparatus (Searle's Pattern)

It comprises two metal frames connected by a link mechanism carrying a spirit level.

A Micrometer head reading to 0.01 mm is provided for re-adjusting the spirit level.

#### EL-1555/1 Iron Slotted Weight For Above

18 x 1 Kg weight with 1 Kg hanger, black painted.

### EL-1556 Bending of Beam Apparatus

For determining Young's modulus for a beam of metal when supported at its extremities.

### EL-1557 Maxwell's Vibration Needle

For experiment on rigidity. Two solid and two hollow cylinders each 10cm long accurately fitting the bore of a hollow brass tube 40cm long are provided.



EL-1552



EL-1554



EL-1555, EL-1555/1



EL-1556



EL-1557



### EL-1558 Inclined Plane

Wooden 60 x 10 cm, with pulley 22 mm dia  
Metal linear scale fixed to edge of the plane,  
vertical linear and 0-45° angular scale screwed to base.

### EL-1559 Friction Board Apparatus

It comprises a wooden friction board 480 x 75 x 18 mm, a wooden slider with hook 140 x 70 x 18 mm, a plain aluminium slider and with rubber *backing*.

### EL-1560 Ticker Tape Timer

This timer is useful for students to develop basic understanding of constant speed, acceleration and deacceleration. It operates on 12V a.c. and is therefore quite safe for work by students in the dynamics lab. This timer has an electromagnet with spring loaded, striker which strikes the paper tape drawn through guides. It is supplied along with a tape roll and carbon discs. Dots are spaced at 1/50 or 1/60 second intervals depending on a mains frequency.

With stand for tape but without tape



EL-1558



EL-1559



EL-1560

### EL-1561 Ticker Tape Timer

It operates on 12 volt d.c. It produces dots on 1/50s intervals only  
It is fitted with a pair of 4 mm sockets at 19 mm spacing.

### EL-1562 Pascal's Law Apparatus

With four vessels of different shapes. A pillar with rod is mounted vertically on a wooden base.



EL-1562

### EL-1563 Jar/Cylinder, Plastic

Plastic cylinder 340 x 58 mm having three orifices of the same size but at different heights, down one side. A wide base ensure stability.

### EL-1564 Hare's Apparatus

This apparatus is used to compare the densities of liquids.

Mounted on Wooden stand with a 45 cm long scale on both limbs with zero at bottom. The densities of liquid are compared by measuring heights of the two columns of the liquid by applying suction to centre limb.



EL-1564

### EL-1565 U-Tube and Hare's Apparatus Combined

Comprising a glass U-tube 50cm long x 1cm dia. mounted on one side of the stand. Hare's apparatus consisting of a three limbed tube, the central limb fitted with rubber tubing and Mohr clip and the two outer limbs connected to glass tubes 40cm long x 1cm dia. mounted on the other side, provided with pointers.



EL-1565

### EL-1566 U Tube on Stand

Comprising a glass U tube 45 cm long mounted on wooden stand with scales fixed to each side of the stand.

### EL-1567 Hydrometer Glass

A) Sp. Gr. 0.700 to 1.000.

B) Sp. Gr. 1.000 to 2.000

### EL-1568 Universal Hydrometers

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

### EL-1569 Battery Hydrometer

To measure the charge of lead-acid storage batteries by measuring specific gravity of the electrolyte.

### EL-1570 Boyle's Law Apparatus

With facility to connect or disconnect Jolly's Air bulb to use it as apparatus for carrying out experiments on gas laws or Boyle's law Respectively. Sliding clamp enable a glass air tube

200 mm long and closed at one end to be fixed alongside either the upper or lower portion of the scale, vertical clamping rod carrying holder for the mercury leveling tube with open end.

### EL-1571 Vacuum Air Pump

Fixed on polished wooden base, single barrel made of steel pipe with stopcock. Pump plate made of aluminium dia (a) 15 cm (b) 20 cm (c) 25 cm.

### EL-1572 Bell in Jar

Comprises an electric bell 3-6V, enclosed in a Glass Bell Jar 225mm high, 15cm dia, with ground flange, fitted with suitable cork and terminals on top.

### EL-1573 Magdeburg Spheres

Two metal hemispheres having removable handle and stopcock to a vacuum pump. This demonstrates atmospheric pressure.

Made of Iron (dia) (a) 62mm (b) 75mm

Made of Brass (dia) (c) 62mm (d) 75mm

### EL-1574 Capillary Apparatus

This apparatus is used to measure surface tension by Capillary rise in a small bore.

### EL-1575 Capillary Tubes

Five inter connecting glass capillaries of different bores Mounted on stand.

### EL-1576 Jaegar's Surface Tension Apparatus

This apparatus is useful for finding out variation of surface tension with temperature and also variation of surface tension with concentration of a dissolved substance. Complete with connecting tubing, 500 ml. beaker for water bath, adjustable pointer and three jets of different sizes, ends ground and polished.



EL-1566



EL-1567,1568,1569



EL-1570



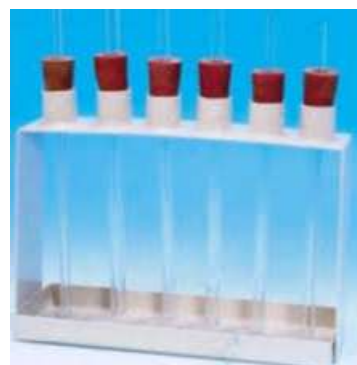
EL-1571



EL-1572



EL-1573



EL-1574



EL-1576

### EL-1577 U-Tube Manometer

Made of 10mm dia glass U-tube mounted on a stand,

- U Tube without stop cock
- U Tube with stop cock.

### EL-1578 U-Tube Manometer

Made of 10mm dia glass U-tube with built in stop cock, mounted on a plate suitable for wall hanging

### EL-1579 U-Tube Manometer

Made of 8mm dia glass U-tube mounted on a graduated plate suitable for wall hanging:

- Scale 150-0-150 mm, Div 1mm
- Scale 250-0-250 mm, Div 2mm

### EL-1580 Fortin Barometer

A glass tube of 6mm bore is enclosed in an enameled and lacquered brass case, mounted on a polished wooden board with plates for fixing on wall.

### EL-1581 Fortin's Barometer With Glass Case

Same as el-1618 but in wooden frame, glass case.

### EL-1582 Demonstration Barometer Aneroid

Demonstration type, fully enclosed in a transparent synthetic case for demonstration.

### EL-1583 Aneroid Barometer

Wall type in plastic/wooden case, fully enclosed, calibrated both in inches and millibars, fully air guided pattern.

### EL-1584 Hygrometer Wet and Dry Bulb

Comprising two -10 to -50°C x 1°C thermometers fitted on scale. One thermometer bulb is covered with muslin which kept moistened being connected to a water reservoir. Mounted in a case with hinged cover.

### EL-1585 Thermometer, Maximum and Minimum

Same as EL- but on wooden base plate, plastic scale.

### EL-1586 Wall Thermometer

Red spirit filled, mounted on wooden/plastic base

- On moulded plastic base plate.
- On wooden base plate
- Half meter on wooden base plate.

### EL-1587 Rain Gauge, Direct Reading

Single piece, made of clear plastic, dual scale to measure rain upto 120mm x 0.2mm and 5 inches x 0.1 inch division, can be mounted on a post.

### EL-1588 Wind Vane

Designed to produce maximum torque relative to its moment of inertia as for a given change in wind direction, it is rotated with the minimum of friction and is balanced to avoid bias towards any particular direction.

### EL-1589 Anemometer Simple

Economical Model, to determine wind velocity.



EL-1577



EL-1580



EL-1582



EL-1584



EL-1585



EL-1588

### EL-1590 Tuning Forks

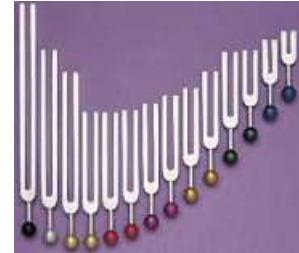
Made of nickel plated steel with plain shank. In eight different Frequency Hz 256 to 512

### EL-1591 Tuning Forks

Same as above but made of blue steel

### EL-1592 Tuning Fork Set

Set of 8 tuning fork of nickel plated steel with plain or screwed shank in case, frequencies marked



EL-1590

EL-1592

### EL-1593 Tuning Fork Electrically Operated (Melde's Exp.)

Mounted on sturdy streamlined base with provision for horizontal or vertical use. Fork is manufactured from selected steel. Prong is 10 x 25 x 300 mm. Accurate frequency adjustment, . Electromagnet can work on 8 Volts.



EL-1593

### EL-1594 Rubber (Hammer)

A rubber ring mounted on a metal disc with wooden rod.



EL-1594



EL-1595

### EL-1595 Wooden Hammer

With rubber sheet affixed on both ends.

### EL-1596 Slinky spring (helix spring)

For demonstration of wave motion, fully extended (3 to 5 meter



EL-1596

### EL-1597 Wave motion Apparatus

For demonstrating both longitudinal and transverse motions, comprising a number of eccentric discs supporting a series of metal rods on wooden base.



EL-1597

### EL-1598 Ripple Tank

A wooden framed tray with sloping position in side to minimize unwanted reflection from the sides of the tank with perspex plastic base and 4 detachable legs. Complete with 12V illuminator with clamp.



EL-1598

### EL-1599 Power Supply

Power supply to be used for operating motor and illuminant of Ripple tank (EL- 2013).

### EL-1600 Melde's Apparatus

This apparatus is an improvement over the conventional apparatus to show the effects of vibrations in a stretched cord and examine the relationship between frequency, tension and density.

Accessory :4V A.C. power apply



### EL-1601 Reflection of Sound Apparatus

Apparatus consists of two light metal pipes with plastic funnels at their ends, other ends of pipes are mounted in such a way that the angle in between can be varied from 0-180°



EL-1601

### EL-1602 Sonometer

Comprising a wooden resonance box of 114cm length, 12.5cm width and 10cm height, with two rules 1 mt. long sub-divided into Millimeter. Two wire of brass and steel attached to fixed bridge and Tensioned by fine adjustment pegs.



EL-1602

### EL-1603 Kundt's Tube

To determine the standing longitudinal waves in column of air and velocity of sound in air. It comprises a glass tube. Fitted on a wooden base board.



EL-1603

### EL-1604 Bell In Vacuum

Electric bell operating on 4-6 Volts AC/DC, suspended in bell jar with wire

- a) Bell Jar 225 x 150mm (h x d)
- b) Bell Jar 200 x 100mm (h x d)



EL-1605

### EL-1605 Resonance Apparatus

It consists of a brass tube 100cm long, mounted on a stand. The lower end of the rubber tubing provided is connected to the reservoir which slides on a metal rod and can be raised or lowered for adjusting the length of column of air.



EL-1606

### EL-1606 Linear Expansion Apparatus

The elongation of rod is measured by a micrometer screw. The metallic tube with inlet and outlet tubes for steam and opening for thermometer.



EL-1607

### EL-1607 Ring and Ball, apparatus

It consists of a brass ball, secured to a brass ring by a chain, with Baklite handle.

- A. Ball Dia 25 mm
- B. Ball Dia 18 mm

### EL-1608 Bar and Gauge

A casted brass / aluminium gauge with baklite handle.



EL-1608

### EL-1609 (Bi-Metallic Strip)

It is to demonstrate of two different metals. One in brass and iron plates riveted together from end to end with wooden handle.



EL-1609



### EL-1610 Thermocouple

Four copper and four iron wires 125mm long approx twisted together to form seven junctions, four on one side, three on other side with brass connectors.

### EL-1611 Hope's Apparatus

For determining the maximum density of water.  
Rubber Stoppers with hole (2 Nos.)

### EL-1612 Copper Calorimeters

Good quality, polished finish vessel with wooden/bakelite lid fitted with rubber stopper and metal stirrer.

### EL-1613 Joule's Calorimeter

To determine specific heat of a liquid by electrical method.  
Supplied without thermometer.

### EL-1614 Set Of Specific Heat Cylinders

Equal in size. It consists of six cylinders  
(Copper, Lead, Brass, Iron, Zinc and Aluminium.)  
Size 75mm\*100mm aluminium/ copper with insulating material between.

### EL-1615 Steam Heater

Cylindrical copper vessel with filling tube, steam vent and vertical tube terminating in chute passing through side of the vessel.

### EL-1616 Two-Stroke Petrol Engine Model

This is a sectional working model of 2-stroke petrol engine. All the parts are made of metal or Al-alloy nicely painted.

### EL-1617 Four-Stroke Petrol Engine Model

The model is same as above but the sectional detail of the 4-stroke petrol engine is nicely demonstrated.

### EL-1618 Two-Stroke Diesel Engine Model

In this sectional view of two-stroke diesel engine is demonstrated.  
Made of Al-ferrous metal alloy.

### EL-1619 Four-Stroke Diesel Engine Model

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

### EL-1620 Water Turbine with Dynamo

To show conversion of mechanical energy into electrical energy.  
Turbine with transparent cover, inlet and outlet tubes, directly connected to a dynamo. Fitted on base.



EL-1612



EL-1611



EL-1613



EL-1614



EL-1618



EL-1617



EL-1620



EL-1619

### EL-1621 Double Convex Lenses, (Spherical)

Made from worked glass,  
Diameter 38mm, 50mm, 75mm, 100mm  
and 5 to 100cmfl is available.



EL-1621

### EL-1622 Double Concave Lenses, (Spherical)

Made from optically worked glass.

Diameter 38mm, 50mm, 75mm, 100mm  
and 5 to 100cmfl is available.



EL-1622

### EL-1623 Lens Holder ( Wooden)

for lenses or mirrors upto 75 mm dia, 100 mm high  
upright with V-slot mounted on base.



EL-1623

### EL-1624 Lens Holder, ( Metal)

With sides grooved to take lenses or mirror, black painted



EL-1624

### EL-1625 Lens Holder, (Plastic)

Same as above for 50mm dia

### EL-1626 Glass Prisms

Made from molded glass, equilateral.

1. 25\*25mm approx.
2. 38\*38mm approx.
3. 50\*50mm approx.



EL-1626

### EL-1627 Perspex Prisms

Clear perspex polished surfaces.

1. 25\*25mm
2. 38\*38mm.



EL-1627

### EL-1628 Hollow, Prisms, Glass

60° x 60° x 60°, optically worked glass plate cemented together  
with filling vent and stopper,

	Side (mm)	Height (mm)
a)	38	25
b)	38	38
c)	50	50



EL-1628

### EL-1629 Prisms For Spectrometer Work

Equilateral, faces polished

Glass types	Size (mm)		
	1a	2a	3a
a) Crown glass R.I. 1.52	25x25	32x32	38x38
b) Dense Flint Glass Prism R.I. 1.62	1b 25x25	2b 32x32	3b 38x38
c) Extra Dense Flint Glass Prism R.I. 1.65	1c 25x25	2c 32x32	3c 38x38
d) Double Extra Flint Glass Prism R.I. 1.71	1d 25x25	2d 32x32	3d 38x38



EL-1629

### EL-1630 Mirrors Plane

Glass, unmounted,

- |                  |                 |
|------------------|-----------------|
| (a) 50 x 50 mm   | (b) 75 x 25 mm  |
| (c) 75 x 75 mm   | (d) 100 x 75 mm |
| (e) 150 x 25 mm  | (f) 150 x 50 mm |
| (g) 150 x 100 mm |                 |



### EL-1631 Wooden Mirror Block

Wooden with slot on one side to take mirrors.

- |                     |
|---------------------|
| (a) 50 x 50 x 50mm  |
| (b) 75 x 50 x 50mm  |
| (c) 100 x 50 x 50mm |

### EL-1632 Concave/Convex polished Mirrors,

Glass, optically worked, back silvered both concave & convex

FL 5cm to 100cm

### EL-1633 Glass slab

Rectangular, all sides polished, made from slightly greenish glass free from bubbles

Dimensions

- |                      |                      |
|----------------------|----------------------|
| (a) 75 x 50 x 12 mm  | (b) 75 x 50 x 18 mm  |
| (c) 100 x 60 x 18 mm | (d) 100 x 60 x 12 mm |

### EL-1634 Magnifier (Hand)

metal frame with bakelite handle.

Size 50mm to 100mm

### EL-1635 Magnifier Folding

Fitted in plastic frame

- (a) Single 4 x (b) double 7 x (c) Triple 10 x

### EL-1636 Optical Bench,( Metal)

One meter long, square stable graduated rod, Supplied with four sliders with index marking. Two of the sliders are provided with transverse fine motion knobs. Supplied complete with two lens holders and two sharp optical pins.

### EL-1637 Optical Bench,(metal)

Same as above both with 1.5meter rod .

### EL-1638 Optical Bench, (Wooden )

This bench for junior students.

Supplied complete with accessories mounted on 100 x 50mm bases.

(2nos object, 1nos plane mirror, 4nos lens holder),  
(1nos needle mounted vertically & 1 candle holder).

### EL-1639 Stand For Lens Holder

Comprises a stout metal pillar with clamping screw .

### EL-1640 Polariser and Analyser (Polaroid)

Comprises two identical unit each provided with a polaroid disc mounted in a rotatable mount with an 25 mm aperture.



EL-1632



EL-1633



EL-1634



EL-1635



EL-1636



EL-1638



EL-1640

### EL-1641 Filters

Coloured, gelatine film, 50x50mm mounted in card

(a) Red (b) blue (c) green (d) yellow (e) magenta  
(f) peacock blue (g) deep red (h) orange red (i)  
yellow green (j) pure green (k) blue green



EL-1641

### EL-1642 Ray Optics Kit

The kit comprises of 2 lamps and stands, 1 pair of housing shields, 2 combine single and triple slit plates, 2 multiple slit combs, 2 holders for combs and slits plates, 4 wooden light barriers



EL-1642

### EL-1643 Spectrometer

Good for many quantitative light experiments by students at Junior level, reading to 0.10 (6 minutes of arc)

Brass parts, most superior quality designed to give maximum accuracy with dico painting body in beautiful strong cabinet scale 6".



EL-1643

1. Brass Scale
2. Stainless steel scale.

### EL-1644 Advanced Spectrometer

Designed to give maximum accuracy protected circle of astainless steel. Vernier reading to 1 minute or 30 in the vertical plane for alignment adjustments. Highly recommended for precision work. Complete in polished cabinet with look and key scale 6".

1. Brass scale
2. Stainless steel scale



EL-1644

### EL-1645 Sodium vapour lamp with transformer & housing

Sodium lamp vapour mounted in wooden cabinet with transformer in box (3500 or 5500) as per your choice

### EL-1646 Sodium Lamp Spare

### EL-1647 Mercury Vapour Lamp

80 watt Mercury vapour lamp mounted.

### EL-1648 Mercury Vapour Lamp Choke

### EL-1649 Pinhole Camera

To illustrate images produced by small apertures. Comprises a pinhole in front and ground glass screen at back.

### EL-1650 Periscope

Made of wood, both ends mirrors fitted at 45° angle.

### EL-2106 Newton's Rings

A pair of glasses one plane and the other slightly convex of 50mm dia in metal frame with three screws for applying pressure.

### EL-2107 Newton's Colour Disc

With all the necessary arrangements for conducting newton's ring experiments. A standard microscope unit with 30x magnification and rotatable cross line complete with beautiful storing cabinet.

Diffraction grating

EL-2108 Student grating (with 15000 line)

EL-2109 Standard grating with 15000 line but made with imported glass.



EL-1646



EL-1647



EL-1649



EL-1650



EL-2106



EL-2107



### EL-2108 Vande Graff Generator, Hand Driven

This is a hand driven generator mounted on wooden base.

### EL-2109 Vande Graff Generator, Motor Driven

This is meant for automatic generation of electrostatic charges equivalent to 200 Kv for a spark length of 75 mm (Approx). The unit operates on 230 V, 50 Hz mains supply.

### EL-2110 Whimshurst's Machine

The two plates are supported in two rigid uprights and driven by belt in opposite direction. They are heavy, high resistance plastic with sectors of aluminium sheet.

### EL-2111 Proof Plane

This is for collecting small amounts of charge from a charged body. Made of a copper disc mounted coaxially on a 120 mm long perspex/ebonite rod.

Disc dia a) 18mm b) 25mm c) 50mm

### EL-2112 Cylindrical Conductor

As above but in cylindrical shape, mounted on an plastic stand.

### EL-2113 Cone (Brass)

Consists of a hollow cone and a hemisphere

The sharp end is rounded to make good contact with a proof plane.

### EL-2114 Sphere Conductor

For experiments on electrostatic induction chrome plated brass sphere on plastic stand.

### EL-2115 Gold Leaf Electroscope

This is to demonstrate the presence of electric charge over a charged body and its transfer by contact over the electroscope disc, The gold leaf is attached over a metal plate which is attached to an axle and a removable metal disc on top.

- A) In wooden frame
- B) In metal case

### EL-2116 Pith Ball Simple

Consist of pair of pith balls or metalised polystyrene spheres, suspended by cotton threads from a wire frame stand, upper part of the stand, is insulated from its base.

### EL-2117 Faraday's Butterfly Net

To show that electric charge resides on external, surfaces of a conductor. Nylon fabric net with cord on insulating pillar with base.

EL-2108



EL-2110



EL-2113



EL-2116



EL-2109



EL-2112



EL-2115

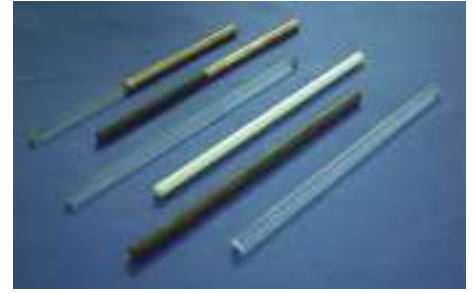


EL-2117



### EL-2118 Rods

- A) Polythene rod, 10mm x 300 mm (dia x length)
- B) Nylon Rod 10mm x 300 mm (dia x length)
- C) Ebonite friction Rod 10mm x 300 mm (dia x length)
- D) Glass rod 10mm x 300 mm (dia x length)
- E) Perspex rod, 10mm x 300mm (dia x length)
- F) Compound Rod Glass/Brass, 10mm x 300mm (dia x length)
- G) Compound Rod Ebonite/Brass, 10mm x 300mm (dia x length)
- H) Silk cloth, 300mm x 300mm
- I) Woolen Cloth, 300mm x 300mm
- J) Rubber Silk, 300mm x 300mm



EL-2118

### EL-2119 Bar Magnet

- A) 1.5" b) 2" c) 3" d) 4" e) 6"



EL-2119

### EL-2120 Cylindrical Magnets

Chrome steel,

- a) 2" b) 3" c) 4" d) 6"



EL-2120

### EL-2121 Alnico bar magnet (Rectangular) (Power Full)

Supplied in pairs with keepers, supplied in cardboard boxes.

- A) 1.5" b) 2" c) 3" d) 4" e) 6"



EL-2121

### EL-2122 Cylindrical Magnets

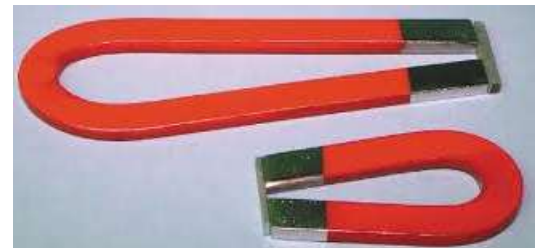
Alinco,

- A) 1.5" b) 2" c) 3" d) 4" e) 6"

### EL-2123 Magnet U shape, Alnico

With keeper,

- A) 2" b) 3" c) 4" d) 6"



EL-2124

### EL-2124 Horse- Shoe Magnets,, (Alnico ) (Power full),

Height

- (a) 1.5"
- (b) 2"
- (c) 3"

### EL-2125 Iron Fillings

It finds use in simpler field plotting experiments.

### EL-2126 Floating Ring Magnets

It comprises five numbers ceramic ring magnets each having 20 mm external diameter are put around a wooden rod on base.



EL-2125

### EL-2127 Magnetic Compass(18mm)

Magnetic needle mounted in metal case with hinged cover, glass,

### EL-2128 Deflection Magnetometer Compass

A small magnetic needle having 100 mm needle at right angle in a tough plastic case. Cord marked with points of the compass and degrees. Can be used in magnetometer experiments.

### EL-2129 Vibration Magnetometer

This is used to compare the magnetic moments of magnets and to determine moment of inertia.

### EL-2130 Magnetic Needles

Carbon steel with brass cup bearing for pivoting, accurately balanced

Length (a) 5 cm (b) 7.5 cm (c) 10 cms

### EL-2131 Stand For Magnetic Needle

- A) Plastic base
- B) Aluminium base

### EL-2132 Deflection Magnetometer Broad

Compass box fitted on polished wooden base made of non-wrapping wood with meter scale alongside its length.

### EL-2133 Dip Needle

(steel needle) 10 cm long, graduated

### EL-2134 Dip Circle

### EL-2135 Dip Circle, Precision Type

An accurately balanced magnetic needle strongly magnetised is fitted with hardened steel pivot marking in jewels cup bearings. The needle can be easily removed for reversal.

### EL-2136 Solenoid

Solenoid is wound with 250 turns of heavy gauge enameled copper wire on insulating bobbin 80 x 19 mm  
take 2 A

### EL-2137 Set Of Coils

Insulated copper wire wound on a hollow former with 4 mm sockets supplied complete with steel nails to act as cores.

Set comprises:

- a) 2 x 50 turns x 0.28 mm diameter,
- b) 2 x 100 turns x 0.40 diameter,
- c) 2 x 200 turns x 0.56 diameter,
- d) 8 x 150 mm



EL-2127



EL-2128



EL-2129



EL-2130



EL-2131



EL-2133



EL-2134



EL-2136

### EL-2138 Electromagnet

It comprises mild steel U-shaped bar of circular cross section fitted with bobbins, wound with heavy gauge copper wire and the ends are ground very flat to make good magnetic contact with the iron armature.



EL-2138

### EL-2139 HAND TOOLS

- |                               |                                  |
|-------------------------------|----------------------------------|
| <b>A.Set of Files</b>         | <b>L.Triangular File</b>         |
| <b>B.File Handle</b>          | <b>M.Drill Set</b>               |
| <b>C.Hand Drill Machine</b>   | <b>N.Screw Drivers</b>           |
| <b>D.Spanners</b>             | <b>O.Claw Hammer Steel Shaft</b> |
| <b>E.Hacksaw Frame</b>        | <b>P.Claw Hammer</b>             |
| <b>F.Spirit Level</b>         | <b>Q.Junior Hacksaw Frame</b>    |
| <b>G.Allen Keys</b>           | <b>R.Top Cutter</b>              |
| <b>H.Tin Snip with Spring</b> | <b>S.Pliers</b>                  |
| <b>I.Chisels, Bevel Edge</b>  | <b>T.G-Clamp</b>                 |
| <b>J.Adjustable Wrench</b>    | <b>U.Ring Spanner</b>            |
| <b>K.Side Cutting Plier</b>   |                                  |





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