

Physics



BALANCE**CHEMICAL**

Code No. :10010

With metallic beam, flat form, nicely lacquered / nickelled and graduated in 100 divisions with Zero at centre. With selected and ground agates. Housed in polished wooden case with counter poised sliding front. Capacity : 200 gms , Sensitivity : 5 mg , Length of beam : 125 mm. Diameter of pan 75 mm,with zero adjustment and stainless steel pan 90 mm diameter with two pouring spouts and handle. Height of stirrup 175 mm. Magnetically-damped beam movement ensures rapid weighing. A platform housed in the base can be used for density determination.

Chemical Balance is also available without case. Code No:10011

**PHYSICAL WITHOUT CASE**

Code No. :10020

With metallic beam engraved with a rider scale and provided with Agate edges. Detachable pans (metallic or bakelite) are suspended from double hooks. Fitted on polished wooden base and provided with levelling screws. Capacity : 250 gms
Sensitivity : 2 mg

Physical Balance is also available with case. Code No:10021

**TRIPLE BEAM**

Code No. :10030

A single pan low form balance with three tiered beams, which can weigh upto 2610 gms. when used with supplementary masses, the balance has three notched weighing beams with centre indicating sliding masses giving total capacity of 610 gms. Triple beam balance comes with Magnetic Damping and Additional masses are hung on the end of the beam increasing the capacity upto 2610 gms. and they can be stored in the recessed base, when not required.

Beams 0 to 500 g x 100 g, 100 g x 10 g, 0 to 10 g x 0.1g

Supplementary masses 2 x 1000g, 1 x 500g

Pan stainless steel dia. 150 mm

**DOUBLE BEAM**

Code No. :10040

Two pan balance for accurate and rapid weighing upto 2 kg. when used with supplementary masses. The balance has a cast alloy base and features angled beams with centre reading pointer, magnetic damping, spring loaded zero adjustment compensator, precision ground knives and cross braced aluminium alloy beam. Equipped with facility for under balance weighing.

Beams 0 to 200g x 10g

0 to 10g x 0.1g

Pan, stainless steel dia - 150 mm

ACCESSORY optional - Tare (Code No. 10041)

Rod (Code No. 10042)



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**SINGLE PAN**

Code No. : 10050

Balance Single Pan capacity 311g x 10mg with Four Beams each provided with a non-removable slider and graduated 0 to 200 x 100g, 0 to 100 x 10g, 0 to 10 x 1 g. and 0 to 1g x 10mg respectively. Additional masses are not required, With zero adjustment and stainless steel pan 90 mm diameter with two pouring spouts and handle. Height of stirrup 175 mm. Magnetically-damped beam movement ensures rapid weighing . A platform housed in the base can be used for density determination.

**DIAL-O-GRAM**

Code No. :10055

Capacity 310g x 10mg with two beams graduated 0 to 200g x 100 g and 0 to 100g x 10g. respectively and a direct reading dial graduated 0 to 10 x 0.1 g having a vernier reading with least count 0.01g.

**COMPRESSION TYPE**

Accurate & sensitive balance, wide view dial fitted with anti-rust protected parts.

CAPACITY	SUBDIVISION	CODE
5 Kg	25 gm	10060
2 Kg	10 gm	10061
500 gm	2 gm	10062

ELECTRONIC BALANCE**MA SERIES**

Simple battery operated model with precise & accurate reading.

LCD display with optional power supply.



CODE	MODELS	CAPACITY	READABILITY	PAN SIZE(mm)
10070	MA 200	200 gms	0.01 gm	120 mm dia
10071	MA 300	300 gms	0.01 gm	155 x 155 mm
10072	MA 500	500 gms	0.05 gm	
10073	MA 1000	1000 gms	0.1 gm	
10074	MA 1500	1500 gms	0.1 gm	
10075	MA 2000	2000 gms	1 gm	
10076	MA 5000	5000 gms	1 gm	

CA SERIES

This model has built-in rechargeable battery with LCD display. Piece counting function is also available.



CODE	MODELS	CAPACITY	READABILITY	PAN SIZE(mm)
10090	CA 600	600 gms	0.1 gm	120 mm dia
10091	CA 1200	1200 gms	0.2 gm	180 x 140 mm
10092	CA 2000	2000 gms	1 gm	
10093	CA 3000	3000 gms	0.5 gm	
10094	CA 5	5000 gms	1 gm	

CB SERIES

Backlight LCD/LED display with 8 different weighing units such as g, ct, tola etc. Piece counting & percentage weighing function

CODE	MODELS	CAPACITY	READABILITY	PAN SIZE(mm)
10110	CB 302	300 gms	0.01 gm	118 mm dia
10111	CB 602	600 gms	0.01 gm	
10113	CB 1202	1200 gms	0.01 gm	
10114	CB 3001	3100 gms	0.1 gm	118 x 140 mm

**POCKET SCALES**

Simple battery operated model with precise & accurate reading. LCD display with optional power supply.

CODE	MODELS	CAPACITY	READABILITY	PAN SIZE(mm)
10130	PA 100	100 gms	0.01 gm	65 x 75
10131	PA 200	200 gms	0.01 gm	
10132	PA 250	250 gms	0.05 gm	
10133	CC 50	50 ct/10 gms	0.01 ct/0.001 gm	35 mm dia
10134	CC 100	100ct/20 gms	0.01 ct/0.002 gm	

LEVER ARM BALANCE

Code No. : 10150

The balance is useful for trial weighing, reading directly in gm. Double range, change from one range to another is accomplished by rotating a hinged arm. Index is of edge reading type to avoid parallax error.

- Capacity - 250 gm and 1000 gm
 Ranges - First range 250 x 1gm
 Second range 1000 x 10gm.

**SPRING BALANCE****DIAL TYPE**

Dial type, circular scale, heavy pattern, suspension and load hooks.

TYPE	CAPACITY	CODE
Outer plastic body	25 kgs x 50g	10160
Outer metal body	25 kgs x 50g	10170

**RECTANGULAR PLASTIC BODY**

Rectangular Plastic Body, metal scale with zero adjuster, suspension ring and load hook, available in Gram, Newton & Gram/Newton range :

CODE	Dual scale N/Gms	CODE	Newton (Grad.)	CODE	Grams (Grad.)
10200	1N/100 gms	10210	1N 0.1 N	10220	100gms 1 gm
10201	2.5N/250 gms	10211	2.5N 0.25 N	10221	250gms 2.5 gms
10202	5N/500 gms	10212	5N 0.5 N	10222	500gms 5 gms
10203	10N/1000 gms	10213	10N 1 N	10223	1000gms 10 gms
10204	20N/2000 gms	10214	20N 2 N	10224	2000gms 20 gms



METAL BODY RECTANGULAR

In flat form, metal case with large easily readable scales both in Dual and single scale.

Code	10230	10231	10232	10233	10234	10235	10236	10237
Capacity	100gm	250gm	500gm	1000gm	2000gm	5000gm	10kgs	12.5kgs
Graduation	1 gm	2.5 gm	5gm	10gm	20gm	50gm	100gm	125gm

Code	10240	10241	10242	10243	10244	10245	10246	10247
Capacity	1N	2.5N	5N	10N	20N	50N	100N	125N
Graduation	0.1N	0.25N	0.5N	1N	2N	5N	10N	12.5 N

Code	10250	10251	10252	10253	10254	10255	10256	10257
Capacity	1N/100gms	2.5N/250gms	5N/500gms	10N/100gms	20N/2kg	50N/5kg	100N/10kg	125N/12.5kg
Graduation	0.1N	0.25N	0.5N	1N	2N	5N	10N	12.5 N

METAL BODY

In flat form, metal case with large easily readable scales both in Dual and single scale.

Code	10260	10261	10262	10263	10264	10265	10266	10267
Capacity	100gm	250gm	500gm	1000gm	2000gm	5000gm	10kgs	12.5kgs
Graduation	1 gm	2.5 gm	5gm	10gm	20gm	50gm	100gm	125gm

Code	10270	10271	10272	10273	10274	10275	10276	10277
Capacity	1N	2.5N	5N	10N	20N	50N	100N	125N
Graduation	0.1N	0.25N	0.5N	1N	2N	5N	10N	12.5 N

Code	10280	10281	10282	10283	10284	10285	10286	10287
Capacity	1N/100gms	2.5N/250gms	5N/500gms	10N/100gms	20N/2kg	50N/5kg	100N/10kg	125N/12.5kg
Graduation	0.1N	0.25N	0.5N	1N	2N	5N	10N	12.5 N

TUBULAR METAL

Aluminium body, black, anodized and with engraved graduation, available With Metric and Newton ranges.

Code	10320	10321	10322	10323	10324
Capacity	1N/100gm	2.5 N/250gm	5 N/500gm	10 N/1000gm	20 N/2000gm

Code	10330	10331	10332	10333	10334
Capacity	1.0N	2.50N	5.0N	10N	20N
Graduation	0.1N	0.25N	0.5N	1.0N	2.0N

BABY BALANCE

Tubular Aluminium body graduated, with zero adjuster, and provided with top suspension loop and hook and spring mechanism. With scale on both sides, in grams and kilograms.

Capacity	Graduation	Code
7 kgs	200 gm	10340
11 kgs	500 gm	10341

**ROUND PLASTIC BODY**

Plastic tubular Spring balance with double scale. Each range is colour coded for convenience and scaled in both grams and Newtons. The spring mechanism is clearly visible and zero adjustment is incorporated

CODE	Grams	(Grad.)	CODE	Newton	(Grad.)
10310	100gms	1 gm	10300	1N	0.1 N
10311	250gms	2.5 gms	10301	2.5N	0.25 N
10312	500gms	5 gms	10302	5N	0.5 N
10313	1000gms	10 gms	10303	10N	1 N
10314	2000gms	20 gms	10304	20N	2 N

CODE	Dual scale N/Gms
10290	1N/100 gms
10291	2.5N/250 gms
10292	5N/500 gms
10293	10N/1000 gms
10294	20N/2000 gms

**WEIGHT BOX****FOR ANALYTICAL BALANCE**

Class B accuracy Brass Plated Weights in velvet lined seasoned wooden box with forceps, fraction weights and two riders.

Code	Capacity	Accuracy
10400	1 mg - 50 gm	0.1 gm
10401	1 mg - 100 gm	0.1 gm
10402	1 mg - 200 gm	0.1 gm

**FOR PHYSICAL BALANCE (SUPERIOR)**

Polished brass in hardwood case with varnish finish and hinged lid. Divided compartments with dust cover. Holds nickel-silver and aluminium fractions. Supplied with chrome plated brass forceps.

Code	Capacity
10410	1 mg - 100 gm
10411	1 mg - 200 gm



▶ PHYSICS

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▶ WEIGHTS



FOR PHYSICAL BALANCE (REGULAR)

Polished, plated brass in hardwood case (deco polish), hinged lid with weights and forceps.

Code	Capacity
10420	10 mg - 100 gms
10421	10 mg - 200 gms

WEIGHTS

IN WOODEN BLOCK

Balance weights, brass finished, with wooden block, as illustrated.

- A Capacity 500 gm. Code : 10430
Comprising 1 x 200 g, 2 x 100g, 1 x 50g,
1 x 20g, 2X 10 g, 1 x 5g, 2 x 2 g, 1 x 1 g.
- B Capacity 1000gm. Code : 10431
Comprising 1 x 500g, 1 x 200g, 2 x 100g,
1 x 50g, 1 x 20g, 2 x 10g, 1 x 5g, 2 x 2 g, 1 x 1 g.
- C Capacity 2000 gm. Code : 10432
Comprising 1 x 1000g, 1 x 500g, 1 x 200g, 2 x 100g, 1 x
50g,
1 x 20g, 2 x 10g, 1 x 5g, 2 x 2 g, 1 x 1 g



SPARES WEIGHTS FOR PHYSICAL BALANCE

Made from Brass (Chrome plated) and in flat form.
Available in various capacities :

Code	10440	10441	10442	10443	10444	10445	10446	10447	10448	10449
Capacity in gms	1	2	5	10	20	50	100	200	500	1000

FRACTIONAL WEIGHT SET

Code No. :10460

Physical fractional weights made from Special Alloy, complete set in plastic round case.

With Capacity available are :
1mg x 1, 2mg x 2, 5mg x 1, 10mg x 1,
20mg x 2, 50mg x 1, 100mg x 1,
200mg x 2, 500mg x 1.



PHYSICS

PHYSICS

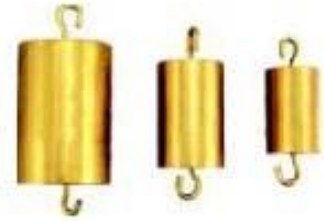
MECHANICS

WEIGHTS

WITH DOUBLE HOOK

Made in brass finish with double hooks on both sides.

Code	10480	10481	10482	10483	10484	10485
Capacity in gms	5	10	20	50	100	200

WITH SINGLE HOOK

Made in brass finish with single hook

Code	10490	10491	10492	10493	10494	10495
Capacity in gms	5	10	20	50	100	200

**SLOTTED WEIGHTS**BRASS

Weights made in brass with a slot running upto the centre hung on a hanger made of brass rod of 5 mm dia.

Available regular quality with Tolerance of $\pm 3\%$ Goldcross with tolerance $\pm 1\%$ superior Heuer.

Total capacity	Description	Tolerance (1 %)		Tolerance (3 %)	
		Codes	Codes	Codes	Codes
50g Set	9 x 5 gm + 1 Hanger of 5gm	10500	10510		
100g Set	9 x 10 gm + 1 Hanger of 10 gm	10501	10511		
200g Set	9 x 20 gm + 1 Hanger of 20 gm	10502	10512		
500g Set	9 x 50 gm + 1 Hanger of 50 gm	10503	10513		
1000g set	9 X 100 gm+ 1 Hanger of 100 gm.	10504	10514		

Weight spares	Code	
	Tolerance 1 %	Tolerance 3 %
5 gm	10518	10524
10 gm	10519	10525
20 gm	10520	10526
50gm	10521	10527
100gm	10522	10528

Hanger	Code
5 gm	10530
10 gm	10531
20 gm	10532
50gm	10533
100gm	10534

IRON

Slotted weights in iron, chrome plated and black painted.

Total capacity	Description	Chrome plated
100 gm set	9 weight x 10 gm. + 1 hanger (10 gms)	10540
200 gm set	9 weight x 20 gm. + 1 hanger (20 gms)	10541
500 gm set	9 weight x 50 gm. + 1 hanger (50 gms)	10542
1000 gm set	9 weight x 100 gm. + 1 hanger (100 gms)	10543

Total capacity	Black painted	Weight spares	Chrome plated	Black painted
100 gm set	10547	10 gm	10551	10560
200 gm set	10548	20 gm	10552	10561
500 gm set	10549	50 gm	10553	10562
1000 gm set	10550	100gm	10554	10563

Spare Hanger	Chrome plated	Black painted
10 gm	10570	10575
20 gm	10571	10576
50 gm	10572	10577
100 gm	10573	10578

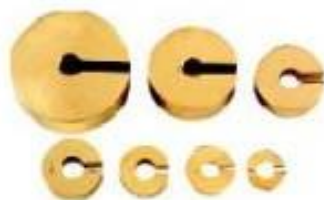


**IN BRASS 11 STEPS - SET**

Code No. :10580

Slotted weight set of 11 in brass 250 gms including hanger made from 7 mm brass rod

- 50 gm x 1 Hanger
- 50 gm x 2 Weight
- 20 gm x 3 Weight
- 10 gm x 2 Weight
- 5 gm x 4 Weight

**SPARE BRASS**

Slotted weights in brass.

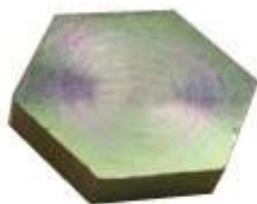
Sizes are:

Code	Capacity	Code	Capacity
10590	1 Gram	10595	50 Gram
10591	2 Gram	10596	100 Gram
10592	5 Gram	10597	200 Gram
10593	10 Gram	10598	500 Gram
10594	20 Gram		

**HEXAGONAL WEIGHT WITH RING**

Hexagonal weight with ring painted.

Code	10620	10621	10622	10623	10624
Capacity in gms	20	50	100	200	500

**WITHOUT RING**

Hexagonal weight without ring zinc plated.

Code	10630	10631	10632	10633	10634
Capacity in gms	20	50	100	200	500

METRE SCALE**HARDWOOD**

Metre Scale Rules (Dual Reading) made from seasoned wood, both edges divided in mm, polished numbered every 10mm.

Rule in mm/mm:

100cm long Code : 10700

50cm long Code : 10701

One edge reading 0-100 Left to right & the other reverse.

Rule in mm/Inches:

100 cm long Code : 10710

50 cm long Code : 10711

**VERNIER CALIPER****THUMB WHEEL TYPE**

Code No. :10730

Dual scale capacity 125mm x 0.1 mm and 5 x 1/128 inches for internal , external reading and depth.Made of plated steel with thumb wheel for easy motion of jaws.

**IME TYPE**

Code No.: 10760

Improved design,steel(chromium plated) double scale graduated 150mm, vernier reading 0.1mm and inch scale graduated to 6 inches, vernier reading 1/128 inch. Provided with thumb movement individually packed in velvet lined box plastic case.

Also available in 300mm/12 Inches. Code No.: 10761

**4" BRASS**

Code No. :10780

For direct reading 60 mm graduated in 1mm, made of brass.





CALIPER

INSIDE OUTSIDE COMBINED

Caliper for internal and external measurement made of special steel/ zinc plate.

Available in following sizes:

Length	Zinc plated	Stainless Steel
100 mm	10800	10806
150 mm	10801	10807



INTERNAL

For measuring internal diameter of circular and spherical objects. Available in lengths of :

Code	Length
10820	100 mm
10821	150 mm
10822	200 mm



EXTERNAL

Metal nickel plated for external measurements, available in lengths 100mm, 150mm and 200mm.

Code	Length
10830	100 mm
10831	150 mm
10832	200 mm



SPHEROMETER

WITH SINGLE DISC

Brass dial head divided in 100 parts with steel screw resting on a black painted frame with a vertical scale reading, 10-0-10 or 7-0-7.

Code	Screw pitch
10850	1 mm x 0.01 mm
10851	0.5mm x 0.005 mm



WITH DOUBLE DISC

With Stainless steel screw head divided in 100 parts, lead screw travel 20mm, with read out on vertical scale 10-0-10, distance between stainless steel legs approximately 40mm

Code	Screw pitch
10860	1 mm x 0.01 mm
10861	0.5mm x 0.005 mm

MICROMETER**WITH SS ROD (SUPERIOR)**

Micrometer screw gauge with stainless steel spindle, ratchet stop, brass body, metric, with lock
Supplied in wooden box.

Code	Size	Pitch
10900	25 mm	1 mm
10901	25 mm	0.5 mm

**WITH SS ROD (REGULAR)**

Micrometer screw gauge with stainless steel spindle ratchet stop brass body metric
Supplied in plastic case.

Code	Size	Pitch
10920	25 mm	1 mm
10921	25 mm	0.5 mm

**WITH STEEL ROD**

Micrometer screw gauge with ratchet stop brass body plated, threaded oxidised rod, metric
Supplied in cardboard box.

Code	Size	Pitch
10930	25 mm	1 mm
10931	25 mm	0.5 mm

**MEASURING TAPES**

Code	Measuring tapes	Length
10960	Plastic body with Key Ring	1 Mtr
10961	In metal	1 Mtr
10962	In metal	2 Mtr

**OPISOMETER**

Code No. : 10980

Comprises of a knurled wheel for measuring the length of curved lines, running on a transversely mounted threaded spindle.



VERNIER MICROSCOPE**HORIZONTAL & VERTICAL**

Code No. : 11000



Horizontal and vertical scales of stainless steel. The cast iron base is fitted with levelling screws with the top machined, over which slides a metal carriage. The slide travel is 165 mm horizontally and 140 mm vertically & can be clamped at any position by means of clamping screw. Fine adjustment for final reading is done with a micrometer screw. A vertical slide operating in a similar way is fitted on the horizontal carriage. The microscope with rack and pinion is fitted on this vertical carriage and can be clamped in a vertical or horizontal position. The stage is fitted with a perspex or ground glass plate for placing objects for measurement. The microscope uses Achromatic lenses. Scales are accurately divided with Vernier reading 0.02 or 0.01 mm. The unit is packed in wooden polished case with lock & key.

ADVANCE TYPE

Code No. :11010



The heavy cast base is fitted with leveling screws with the top machined over which slides a metal carriage. The slide travel 165 mm horizontally and 140 mm vertically & can be clamped at any position by means of clamping screw. Fine adjustment for final reading is done with a micrometer screw. A vertical slide operating in a similar way is fitted on the horizontal carriage. The microscope with rack and pinion is fitted on this vertical carriage and can be clamped in a vertical or horizontal position. Special arrangement is provided for the transverse movement of the microscope. The movement can be measured with the help of scale and vernier. The stage is fitted with a perspex or ground glass plate for placing objects for measurement. The microscope uses Achromatic lenses. Scales are accurately divided with Vernier reading 0.01 mm. It can also be used as co-ordinating microscope. The unit is packed in wooden polished case with lock & key.

SPECIAL TYPE

Mounted on a travelling carriage, fitted with 10x Ramsden eye piece with cross line graticule. Achromatic objective glass lens is of 75mm focal length. Focusing by rack and pinion. Scale graduated in half millimeter on inlaid strip of nickel silver, vernier attached. Microscope traverse 16.5cm. BASE : Heavy cast Iron. Accurately machined. Travelling carriage on the top, which can be clamped in any position. Fine motion screw for finer adjustment. Complete with case.



A. Vernier reading to 0.02 mm. Code No. :11020

B. Same as above reading 0.01mm Code No. :11021

C. Same as above, but fitted Code No. :11022

with micrometer head giving direct reading to 0.01 mm

PULLEY**METAL**

Aluminium in metal frame, with two hooks.

Code	Pulley 50 mm Dia
11030	Single
11031	Double
11032	Triple
11033	Triple in line

Code	Pulley 38 mm Dia
11040	Single 1 hook
11041	Single 2 hooks
11042	Double parallel 2 hooks
11043	Double in line 2 hooks

Pulley in 25 mm dia are also available.

**PLASTIC**

In metal frame, with two hooks.

Code	Plastic Pulley 50 mm Dia
11060	Single
11061	Double Parallel
11062	Triple Parallel

Code	Plastic Pulley
11080	Single 25 mm dia
11081	Single 38 mm dia
11082	Double in line
11086	Triple in line

**DIFFERENTIAL TRIPLE**

Code No. : 11100

One piece aluminium, mounted in a metal frame with hook.

**BENCH CLAMP FITTING**

Code No. : 11110

Aluminium pulley diameter 50mm, in metal frame for clamping to board or bench upto 25mm thick.



▶ PHYSICS

▶ MECHANICS

▶ PENDULUM

PHYSICS



PENDULUM

SIMPLE

Code No. :11120

With iron ball about 5 cms. in dia. suspended by steel wire, clamps for altering length of the same, steel knife edge support and bracket for fixing to a shelf.

COMPOUND REVERSIBLE

Code No. :11130

A metal bar 1000x19x6 mm with holes at every 50mm along the centre line. A steel knife edge is mounted in wall bracket for suspension of the bar.

KATER

Code No. :11140

Stainless steel rod 1200 mm long, 10 mm diam. with one pair each of small & large, light & heavy masses, two steel knife edges set in adjustable holders & a metal bracket support for wall mounting.

Also available in brass chrome/ nickel plated. Code No. :11141

PENDULUM BOB WITH HOOK

Made of Brass, Lead, Copper, Iron, Aluminium.

Sizes	CODES				
	Brass	Lead	Copper	Iron	Aluminium
12 mm	11150	11155	11160	11165	11170
18 mm	11151	11156	11161	11166	11171
25 mm	11152	11157	11162	11167	11172

FLY WHEEL METAL

Code No. :11180

Cast iron, approx. 200 mm diameter, 35mm thick at rim, mounted on balanced horizontal shaft on ball bearing. The wheel is marked & a pointer is fixed on the bracket. The bracket has four holes for wall mounting.

WHEEL & AXLE WOODEN

Code No. :11190

Two wheels of about 150 mm and 50 mm diameter. Made from solid hardwood with flat bottom grooves and metal axle supplied without stand & mass.

TICKER TAPE TIMER

Code No. :11200

For the measurement of velocity & acceleration by providing dots on moving tape at $1/50$ or $1/60$ second intervals, depending on the frequency of the mains supply. Operates on 12 V. a.c. It has an electromagnet spring loaded armature which vibrates above a support table. Paper tape, drawn through guides on the table is stuck by a dotting screw, carried on the armature. A peg on the table is provided to allow full use of carbon paper disc.



TAPE FOR TICKER TIMER

Code No. :11210

9mm width, 300 meter roll



STOP WATCH

MECHANICAL TYPE

Code No. :11230

Stop Watch- non rusting, dust & damp proof chrome plated. 7 jewelled lever movement. Start, Stop & Reset function.



DIGITAL TYPE

Code No. :11220

Digital Stop Watch with LCD Display.

Display Modes :

- Normal - Minutes/ Seconds
- Split Seconds - Seconds/100th's of Second



STOP CLOCK

Code No. :11240

Smith type, stop, start and fly back action, 100mm projected dial. Entire assembly housed in metal case nicely finished. Reading 60 seconds and 60 minutes.



▶ PHYSICS

▶ MECHANICS

▶ FRICTION & FORCE

PHYSICS

**INCLINED PLANE**

Code No. :11250

Made of hard wood with base 600 x 100x20 mm with pulley hinged to a wooden polished base 450x100x20 mm. The plane can be fixed at any height by clamping the wing nut. Complete with aluminium graduated arc, cylindrical metal roller 38mm diameter. Supplied with scale pan but without weight

**FRICTION BOARD APPARATUS**

Code No. :11260

One wooden friction board with hook & one wooden slider with balance pan & string with pulley.

**BALANCE PAN**

Code No. :11270

Made of light alloy, diameter 150 mm along with chains & ring .

**PARALLELOGRAM OF FORCE APPARATUS**

Code No. :11280

Board of dimension 65 x 50 cms along with two numbers 50mm diameter pulleys made of aluminium along with clamps for mounting at any position. Supplied with 3 hangers of iron nickle plated weighing 50 grams and 12 slotted weights of 50 grams each.

**DYNAMIC TROLLEY****WOODEN**

Code No. :11290

Hardwood, 300 mm long, metal reinforced ends three low friction ball bearing wheels, quick release triple impulse spring, 4 removable metal legs to enable stacking of trolleys, mass 0.9 kg. Approx.

SPECIFIC GRAVITY BOTTLE

Available in various sizes in neutral or borosilicate glass.

Sizes	CODES	
	Neutral glass	Borosilicate glass
10 ml	11500	11510
25 ml	11501	11511
50 ml	11502	11512
100ml	11503	11513

**DISPLACEMENT VESSEL**GLASS

Code No. : 11520

For specific gravity experiments made from neutral glass or borosilicate glass with overflow spout . Capacity : 250 ml

COPPER

Code No. :11525

For specific gravity experiments displacement vessel copper with overflow spout

Size dia 75 x height 100 mm

METAL PAINTED

Overflow vessel, metal, hammertone finish with overflow spout in :

SIZE	CODE
Large	11530
Medium	11531

**YOUNG'S MODULUS OF WIRES APPARATUS**SEARLE'S PATTERN

Code No. :11550

The apparatus comes with black stove-enamel finish. Consists of spirit level mounted in two rectangular metal frame. At one end is micrometer screw & the other end of spirit level is pivoted in second frame. Micrometer with vertical scale & vernier reading 0.01 is provided with ceiling bracket having two self-centering chucks & tension weight.





HOOKE'S LAW APPARATUS

Code No. :11560

To demonstrate that the amount of elongation or bending of a spring is directly proportional to the force that is applied. Consist of a 12 cm long mirror scale with support spring, weight holder and slotted weight of 250 gm capacity.



SET OF GEOMETRICAL MODELS

Code No. :11570

Consists of sixteen pieces of various geometrical models and figures. Made of hardwood and supplied in wooden box.



BUCKET AND CYLINDER

Code No. :11580

To demonstrate Archimedes principle, all brass, bucket with suspension loop at top and a hook at bottom, with the cylinder having a suspension hook at top. Cylinder is 50 x 16mm dia, overall length including hook and suspension loop is 110mm approx.

HYDROMETER

For specific gravity. Shot loaded. Overall length approx. 250mm, sub-divided in 0.01.



RANGE	CODE
0.70 to 1.00 / 0.01	11590
1.0 to 2.00 / 0.01	11591
0.7 to 2.00 / 0.01 (UNIVERSAL)	11592

HARE'S APPARATUS

Code No. :11600

For comparing the density of liquids by measuring the height of two columns of liquid produced by applying suction to the short centre limb. Glass tube 45 cm of corning glass mounted on graduated wooden stand.



HOPE'S ARRARATUS

Code No. :11610

To show maximum density of water at 4°C. It consists of a sheet metal cylinder with two tubes in the upper & lower regions for inserting thermometers. Mounted on a base & encircled midway by an outer trough for holding mixture of ice & salt..

**NICHOLSON'S HYDROMETER**

Code No. :11620

For density experiments on solids & liquids, hollow metal body, upper loading pan & weighted lower loading pan, made of brass.

**FORCE PUMP**

Code No. :11630

Working model made from clear corning glass 40 x 15 cms approximately.

**LIFT PUMP**

Code No. :11640

Working model made from clear corning glass with overall height of 35 cms approximately.

**PRESSURE PUMP**

Code No. :11650

Comprises of glass flask with holes and glass piston. Made from corning glass.

**FILTER PUMP GLASS**

Code No. :11660

With riffled inlet & outlet tube. The pump vacuum nozzle is 7 mm made from corning glass.





BERNOULLI TUBE APPARATUS

Code No. : 11670

Demonstrates the Bernoulli effect produced by water flow. Tube comes with central construction, a constant bore gradient tube, 6 lengths glass tubings, 2 swan neck outlet tubes & 8 pre-cut lengths of rubber connecting tubings. The two flow tubes, each 500 x 13 mm length, 25 x 150 mm spacing, extended to form 500 mm manometers with the length of glass tubings.



LIQUID LEVEL APPARATUS

Code No. : 11680

To demonstrate that the pressure in liquid is transmitted equally in all directions. Made from corning glass.



CAPILLARY TUBE APPARATUS

Code No. : 11690

For demonstrating the relationship between capillary pressure and the bore diameter of the capillary tube. The Apparatus comprises of a metal frame, the base of which takes the form of a trough 115x 40x 10 mm. The upper part of the frame supports six capillary tubes, each of a different bore, their lower ends resting in the bottom trough. The trough is filled with water & the difference in the heights of the resulting columns of water in the tubes is readily apparent. Overall frame height: 90 mm & capillary tubes length: 150 mm.



MEGDEBURG HEMISPHERE

To demonstrate the effect of atmospheric pressure, fitted with stopcock and handles. Made of brass and Nickel plated.

Diameter	Code
62 mm	11700
75 mm	11701

BAROMETER**ANEROID**

Code No. :11900

A circular, 10-cm dial is graduated 960 -1065 x 1hPa. Also marked in inches and mm. Plastic body with resetable index pointer. Can be wall-mounted.

**ANEROID DEMONSTRATION**

Code No. :11920

With a transparent, plastic case for demonstration. With rubber bellows to show the effect of increasing or decreasing pressure.

**FORTIN'S**

Code No. :11930

Mercury barometer made of brass with plated and painted finish mounted on polished wooden base, mercury thermometer-10 to 50 x 1°C. Barometer is suitable for altitude upto 600 metres.

The dual scale reads 675 to 810 mm, 26" to 32" in 1 mm and 0.05" respectively, vernier reading 0.05mm and 0.002" provided with adjustable knob. The barometer tube, cistern and scale covering glass are of corning glass. Supplied without mercury.

**RAIN GAUGE****COPPER**

Code No. :11940

It comprises of a copper metal funnel 12.5 cm x 25 cm, with an inner receiving & outer body cylindrical with 20 x 7 cm & 40 x 12.5 cm diameter respectively and a glass measuring cylinder graduated 0 to 10mm x 0.1 mm(100 divisions)

**SYMON'S PAINTED**

Code No. :11950

It comprises of a Galvanised Iron metal funnel 12.5 cm x 25 cm with brass collar which fits into the top and drains into an inner cylinder. When the inner cylinder fills the vessel collects the overflow. Complete with glass measure.

**WIND VANE**

Code No. :11960

Fully balanced, mounted on bearing on steel pivot with cut out of a weather cock on top.





SONOMETER

(3 WIRE TYPE)

Code No. :12100

Comprising a wooden resonance box, with two meter rules (scale) 1000 x 1mm, having metal fittings. Complete with two moveable bridges, pulley and three different wires. Without stand and weights.



ORGAN PIPE

Code No. :12110

Made from varnished wood overall length 760mm



POWELL'S WAVE MACHINE

Consists of a number of eccentric disc & series of metal rods to demonstrate Transverse & longitudinal motion. Eccentric discs supporting a series of metal rods on revolving the handle shows transverse waves. Longitudinal waves are obtained with bent rods running in metal guide.

Wave Machine	Code
12 pulley	12120
18 pulley	12121
24 pulley	12122

WAVE FORM HELIX

Code No. :12130

Close wound, steel wire helix of 19 mm dia. Closed length 3 meter & extended length 9 meters with ends looped. Photo not shown.



CLINOSTAT

Code No. :12140

To run 24 hrs. in vertical or horizontal position to carry weights with clock movement fitted on a heavy metal stand.



WHIRLING TABLE

Code No. :12150

Stand for use in vertical or horizontal position with height of 43 cms, fitted with handwheel and wire helix belt drive to pulley. Suitable for use with Savart wheel and disc and adapter to accommodate colour discs.

TUNING FORK**ALUMINIUM (TOP QUALITY ,SET OF 8)**

Code No. :12160

Top quality,frequency as in German type.Supplied in plastic case.
Individual codes for different tuning forks are mentioned below:

Frequency Hz	Note	Code
256	C	12161
288	D	12162
320	E	12163
341	F	12164
384	G	12165
426	A	12166
480	B	12167
512	C	12168

**ALUMINIUM SET OF 8 (SUPERIOR)**

Code No. :12170

Superior quality,frequency as in German type. Supplied in plastic case.
Individual codes for different tuning forks are mentioned below:

Frequency Hz	Note	Code
256	C	12171
288	D	12172
320	E	12173
341	F	12174
384	G	12175
426	A	12176
480	B	12177
512	C	12178

**C.P. SET OF 8 (REGULAR)**

Code No. :12180

Regular quality, frequency as in German type. Supplied in velvet case.

Individual codes for different tuning forks are mentioned below:

Frequency Hz	Note	Code
256	C	12181
288	D	12182
320	E	12183
341	F	12184
384	G	12185
426	A	12186
480	B	12187
512	C	12188

**SET OF 13**

Code No. :12190

Tuning fork in special steel giving chromatic scale of C3 & C4 with each fork marked with its pitch & numbers of vibrations. Supplied in a velvet box.



▶ PHYSICS ▶ SOUND ▶ TUNING FORK & RIPPLE TANK



STANDING MODEL

Made of special steel with frequency from 128 to 512 cycles per second. Also available with frequency 128 cycles/sec.

Frequency Hz	Code
128	12200
256	12201
288	12202
320	12203
341	12204
384	12205
426	12206
480	12207
512	12208



ELECTRICAL

Code No. :12210

Prong size : 300 x 25 x 10 mm

Electro magnetically operated working with 6 volt D.C. supply. Vibration amplitude can be varied by adjusting the position of the electro magnet.



WITH STAND ON RESONANCE BOX

Threaded shanks, mounted on a common resonance box and having frequencies of C3(256), E(320), G384, C4(512), Hz. Size of box 285 x 115 x 63mm. approx., Complete with hammer.

Tuning Fork on Resonance Box	Code
Single	12220
Double	12221
Triple	12222
Quadruple	12223



WIRE HELIX (SLINKY)

To illustrate wave motion, flat section steel wire in helical coil.

Diameter	Length	Code
75 mm	75 mm	12230
75 mm	100 mm	12231



RIPPLE TANK

Code No. :12240

To demonstrate the rectilinear & circular propagation, refraction, diffraction & interference of wave phenomena using ripple on water surface with wave generator and light source. The frame work of the tank is made of seasoned material and is provided with four adjustable legs. The level of the tank can be set easily. The base is of glass plate. A parabolic reflector and lamp are adjustable for accurate adjustment. The wave generator works on 220V/50Hz electric supply. Complete with a simple rheostat, crocodile clip and complete working instructions.

MIRROR

CONCAVE & CONVEX

Spherical, optically worked and back silvered, unmounted

F.Length in mm	Codes			
	Convex Mirror		Concave Mirror	
	50 mm dia	75 mm dia	50 mm dia	75 mm dia
100	12400	12410	12420	12430
150	12401	12411	12421	12431
200	12402	12412	12422	12432
300	12403	12413	12423	12433



STRIPS

Back silvered with protective coating unmounted.

Dimensions in mm	Codes
75 x 25	12450
75 x 50	12451
75 x 75	12452
100 x 25	12453
150 x 25	12454
150 x 50	12455



LENS

Spherical, optically worked glass, with ground edges, highly polished.

F.L.length in mm	Codes			
	Concave lens		Convex lens	
	50 mm dia	75 mm dia	50 mm dia	75 mm dia
50	12460	12470	12480	12500
100	12461	12471	12491	12501
150	12462	12472	12492	12502
200	12463	12473	12493	12503
250	12464	12474	12494	12504
300	12465	12475	12495	12505
500	12466	12476	12496	12506
1000	12467	12477	12497	12507



F.L.length in mm	Codes					
	Double Concave lens			Double Convex lens		
	38 mm dia	50 mm dia	60 mm dia	38 mm dia	50 mm dia	60 mm dia
100	12540	12550	12560	12580	12590	12600
150	12541	12551	12561	12581	12591	12601
200	12542	12552	12562	12582	12592	12602
250	12543	12553	12563	12583	12593	12603
300	12544	12554	12564	12584	12594	12604
500	12545	12555	12565	12585	12595	12605
1000	12546	12556	12566	12586	12596	12606



WATCH GLASS

Polished, ground edges, made from selected glass sheet.

DIA. Cms	5	6	7.5	9	10	12.5	15
CODE	22700	22701	22702	22703	22704	22705	22706



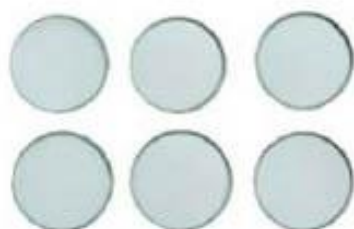
▶ PHYSICS ▶ OPTICS ▶ LENS & MAGNIFIERS



CYLINDRICAL

Optically worked faces, ground edges, white glass, well polished, size : 50 x 45 mm

F.L. length in mm	Codes for Cylindrical lens of Sizes 50 x 45 mm			
	BiConvex	BiConcave	Plano Convex	Plano Concave
60	12610	12620	12630	12640
75	12611	12621	12631	x
100	12612	12622	12632	12642
150	12613	12623	12633	12643
200	12614	12624	x	x
300	x	x	x	12645



SET OF 6

Code No. : 12650

Comprises of Converging concavo-convex, Diverging concavo-convex, Double concave, Plano concave, Double Convex, Plano Convex. In 50 mm diameter with ground and polished faces and ground edges. Supplied in a box.

MAGNIFIER

SUPERIOR QUALITY

Magnifier (Reading Glass) with handle. In nickel plated metal mount with bakelite handle, individually packed.

Code	Diameter	Focal length	Magnification
12660	50 mm	100 mm	3.5 x
12661	60 mm	150 mm	2.5 x
12662	60 mm	200 mm	2.25 x
12663	75 mm	150 mm	2.5 x
12664	75 mm	200 mm	2.25 x
12665	100 mm	150 mm	2.5 x
12666	100 mm	200 mm	2.25 x



REGULAR QUALITY

Magnifier with plastic moulded frame with plastic handle

Diameter in mm	38	50	62	75
Codes	12670	12671	12672	12673

SINGLE, DOUBLE & TRIPLE

Magnifier folding. Pocket type with 25mm diameter lens, mounted in plastic case.

Magnifier	Magnification	Codes
Single	3.5x	12680
Double	7x	12681
Triple	10x	12682



FOLDING IN POUCH

Code No. : 12690

Single, diameter 40 mm, magnification 3.5x.

IN FOLDING BOX

Pocket type. A pair of plano convex lenses arranged to provide 10 x magnification in plastic lens holder with anodised aluminium cover. Available in :

Magnifier Folding Box	Code
Superior	12700
Regular	12701



ON TRIPOD STAND

Magnifiers seated with adjustable screw top. Diameter 38 mm

Magnification	Code
4x	12710
5x	12711
6x	12712



FOR THREAD COUNTERS

Linen Prover, Double fold lens system.

Diameter	Code
10 mm	12720
20 mm	12721



FOR WATCH MAKERS

Code No.: 12730

Plastic lens, comes in black plastic eye-grip frame. Magnification 3.5x With a focal length of 75 mm & diameter 25 mm.



BLOCK RECTANGULAR GLASS / ACRYLIC

For refraction experiments. Polished on all sides, edges, slightly Beveled and glass is free from bubbles.

Size in mm			
Glass	Codes	Acrylic	Codes
75x50x12	12740	75x50x20	12750
75x50x18	12741	75x50x25	12751
100x60x18	12742	100x60x20	12752
115x65x18	12743	100x60x25	12753
125x65x18	12744	115x60x20	12754
		115x60x25	12755



PRISM**EQUILATERAL- GLASS :**

Non-optically worked with polished faces, edges slightly bevelled.

Sizes in	Equilateral prism 60 x 60 x 60 Deg.					
	Glass			Acrylic		
	Regular Quality	Superior Quality	Extra white Quality	Regular Quality	Superior Quality	Extra white Quality
25	12760	12770	12780	12790	12800	12810
38	12761	12771	12781	12791	12801	12811
50	12762	12772	12782	12792	12802	12812

RIGHT ANGLE- GLASS :

Right angled, Non-optically worked with polished faces, edges slightly bevelled.

Sizes in mm	Right angle prism 90 x 45 x 45 Deg.			
	Glass		Acrylic	
	Regular	Superior	Regular	Superior
38	12830	12835	12840	12845
50	12831	12836	12841	12846

PRISM FOR SPECTROMETER:

Optically worked glass prism. Equilateral with two faces polished 32x32mm height.

Material	Code
Borosilicate crown glass	12850
Dense flint glass prism	12851
Extra dense flint glass prism	12852
Double extra dense flint	12853

BLOCK SEMICIRCULAR**GLASS / ACRYLIC**

For refraction experiments. Polished on all sides, edges, slightly Beveled and glass is free from bubbles.

Glass block		Acrylic block	
Dia x thickness	Codes	Dia x thickness	Codes
90x18	12860	90x20	12870
100x18	12861	90x25	12871
100x50	12862	100x20	12872
90x45	12863	100x25	12873

STROBOSCOPE

Code No.: 12880

For optically slowing or completely stopping any object in motion and for measuring the frequency of periodic motion. Simple model, hand driven to show the student stroboscopic effects.

PIN HOLE CAMERA

Code No. :12885

To demonstrate image produced by small aperture. Comprises of a polished wooden box with a hole at one end and crown glass screen at the opposite end.



SPECTROMETERINTERMEDIATE

Code No. :12890

Reads to 1 minute of arc. 150mm diam. Scale with protective cover and acrylic windows to read verniers is fixed to the telescope movement. The table is attached to the double ended verniers reading to 1 minute of arc with magnifiers provided for the purpose. Both telescope and table rotations have fine adjustments. Collimator is on a fixed pillar with 175 mm focal length achromatic objective of 25mm aperture and an adjustable slit. The telescope is on a movable pillar with 175mm achromatic objective x8 Ramsden eye-piece and glass crossing graticule. Both telescope and collimator have rack and pinion focussing and their optical axes can also be adjusted. Prism table has lines to assist prism placement and has three levelling screws. With prism clamp diffraction grating holder & one tommy bar for axis adjustment, in a wooden case.

STANDARD

Code No. :12900

Reads to 6 minutes of arc (0.1°) 170 mm diam. Metal scale graduated $360^\circ \times 1^\circ$, independently rotatable, with locking screw, vernier attached to the telescope reads to 0.1° (6 minutes of arc) Collimator is mounted on a fixed pillar, with an achromatic objective of 150 mm focal length and 21 mm aperture and has an adjustable slit 6mm long. The telescope is on a movable pillar, with a fine adjustment screw, an achromatic objective of 170mm focal length, 21 mm aperture, Ramsden eye-piece and glass crosswire graticule. Both collimator and telescope have spiral focussing system and have axis adjusting arrangement. The table has 3 levelling screws, with lines marked to assist prism placement. With prism and grating holders, one small screw driver and one tommy bar for axis adjustment. Without prism in wooden case.

**NEWTON'S COLOUR DISC**

Code No. :12910

For demonstration of composition of white light. 150 mm multi-coloured disc mounted on metal stand, rotated by a hand wheel.

**OPTICAL BENCH**ON WOODEN BASE

Code No. :12920

Comprising of a wooden baseboard 1.12 m x 115 mm with 1 metre scale divided in millimeters. Fixed along the front edge and complete with the accessories.

METAL (SUPERIOR)

Code No. :12930

One metre long, single square steel rod accurately graduated fitted on two sturdy metal feet with levelling screws. Four special designed heavy sliders having fine index marks. Two of the sliders are having fine transverse slow motion arrangement complete with four accessories (two lens holders and two optical pins).



Also available in 1.5 meters Code No. :12931

▶ PHYSICS ▶ OPTICS & LIGHT ▶ RAY BOX, TELESCOPE

WITH DOUBLE ROD

Code No. :12940

One meter long, double steel rod accurately graduated, other details are same as single rod optical bench.



RAY BOX

Code No. :12950

A ventilated lamp house having an open front with extended sides finned externally for heat dissipation and vertical internal grooves to accommodate a slit plate and a cylindrical lens. It has a light source comprising a 12 volts lamp in a holder with one metre of twin flex having banana plugs. Complete with metal plate having single and triple slits and whitened on one side and other side black matt. With instructions and without lens.



PERISCOPE

Code No. :12960

Made of seasoned wood, nicely polished.



RESONANCE APPARATUS

Code No. :12970

chrome plated brass tube, 100 cm long with a meter scale mounted on metal stand. Complete with brass reservoir 250 ml and rubber tubing.



READING TELESCOPE MODEL

Code No. :12980

Consists of an achromatic objective of f.l. 178 mm, clear aperture 23 mm and 8X Ramsden eye piece with a 90 deg. Cross line reticule. The focussing is done by rack & pinion mechanism with a range from 1000 mm to infinity.



MAGNET**BAR SUPERIOR(ALNICO)**

In pairs, very strong, with special keepers, packed in beautiful card box.

Sizes	Codes
50 x15x 10 mm	13200
75 x15x 10 mm	13201
100x 15x 10 mm	13202

**BAR SUPERIOR**

With keepers. Dimensions are nominal. Supplied in

Sizes	Codes
50 x 12 x 8 mm	13210
75 x 12 x 8 mm	13211
100 x 12 x 8 mm	13212

**BAR CHROME STEEL**

With keepers. Dimensions are nominal. Supplied in cardboard boxes.

Sizes	Codes
50 x 12 x 5 mm	13220
75 x 12 x 5 mm	13221
100 x 12 x 5 mm	13222
125 x 12 x 5 mm	13223
102 x 12 x 5 mm	13224

**HORSE-SHOE**

Steel, red spray painted, with keeper. Sizes are given in the table below:

Length	Codes
50 mm	13230
75 mm	13231
100 mm	13232
150 mm	13233

**U-SHAPE**

Available in Alnico superior & regular quality with following sizes:

Alnico Superior Quality		Regular Quality	
Sizes	Codes	Sizes	Codes
37x13x10 mm	13240	50 mm	13250
50x13x10 mm	13241	75 mm	13251
75x13x10 mm	13242	100 mm	13252



**CYLINDRICAL**

In pairs, very strong, with special keepers, packed in beautiful card box.

Cylindrical magnets	
Sizes in mm	Codes
50x6	13260
75x6	13261
100x6	13262

**RING CERAMIC**

Magnetised.

Sizes	Codes
32 x 18 x 8 mm	13270
32 x 18 x 6 mm	13271
36 x 18 x 8 mm	13272
36 x 18 x 6 mm	13273
45 x 18 x 11 mm	13274
46 x 18 x 9 mm	13275

**FLOATING RING**

Code No. : 13280

Comprises five ceramic ring magnets, 32 mm external diameter to demonstrate magnetic repulsion and a wooden rod on a base, overall height 160 mm. If the magnets are placed on the rod so that they mutually repel, the 'floating' effect is readily apparent.

**ELECTRO MAGNET U FORM**

Soft iron, with armature and carrying hook, wound with insulated copper wire and provided with barrel connectors for use on 3-6 volt d.c.

Length in mm	75	100	150
Code	13290	13291	13292

MAGNETISING & DEMAGNETISING COIL

Code No. :13300

Low voltage, comprises a solenoid wound with insulated copper wire suited for magnetising and demagnetising ordinary magnets, iron bars, strips etc. and mounted on a base, complete with switch and 4 mm, terminals.

Magnetising by A.C. or D.C.

Demagnetising by D.C only



MAGNETOMETER

Code No. :13310

Consists of a stout metal box, 100 mm diameter mounted on wooden base with meter scale. Aluminium dial graduated in degrees 0-90deg in each quarter of dial, anti parallellex mirror slot, but made of bakelite case .



MAGNETIC NEEDLE

NEEDLE ONLY

Carbon steel with brass cup bearing for pivoting.

Length	50 mm	75 mm	100 mm
Code	13320	13321	13322



NEEDLE ON STAND

For magnetic needles, with plastic base and metal pillar which supports a steel needle pivot, overall height 100 mm. Available length of needle are given below:

Length	50 mm	75 mm	100 mm
Code	13330	13331	13332



DIP NEEDLE

10 CM.LONG GRADUATED QUADRANT

Code No. : 13340

Steel needle Brass Stand, graduated quadrant fully rotatable on metal base marked every 45 degree with special needle, 10 cm.



DIP CIRCLE

Code No. :13350

The case is made of non-magnetic cast alloy, duco painted and has easily removable plate glass window and rotates fully on a heavy base, its rotation being measured by a brass silvered dial reading 0-360°. It is fitted with levelling screw. Accurately balanced magnetic needle, strongly magnetised is fitted with hardened steel pivot working in agate cup bearings. The needle can be easily removed for reversal. Inclination scale is of silvered brass graduated in degrees 0 - 90° four times.



► PHYSICS ► MAGNETISM ► COMPASS & COIL



COMPASS

PLOTTING

Code No. : 13360

With two clear glass faces and needle pivoted between top and bottom glass plates, Size 18mm diameter. Pack of 10 pieces.



ALUMINIUM REGULAR

With dial marked with principal points of the compass, one glass face only in plastic/aluminium case.

Sizes in mm	20	25	38	50	75
Codes	13370	13371	13372	13373	13374



ALUMINIUM SUPERIOR

Code : 13380

Magnetic needle with metal dial body. Marked aluminium body 43 mm dia superior.



MAGNETOMETER COMPASS

Code No. :13400

A plastic box with aluminium dial graduated in 0-90° in each quarter, anti-parallax mirror and steel pivot. The short magnetic needle has a synthetic sapphire bearing and a light aluminium pointer designed for precise readings and maximum damping. The compass box has a hollow circular cavity to fit tangent galvanometer stand or deflection magnetometer base.



DEMONSTRATION INDUCTION COIL

Code No. :13420

Primary coil of heavy gauge enamelled copper wire has resistance 0.5 ohms wound on former 121 x 35 mm, length x diameter. Secondary coil same as primary with resistance 100 ohms on former 110 x 82 mm, length x diameter. Both coils fitted with 4mm sockets, Iron core 125 x 16 mm. length x diameter..

INDUCED CURRENT APPARATUS

Code No. : 13430

Consisting of a primary coil of insulated copper wire wound upon cylinders with terminals, secondary coil wound upon cylinder into which primary fits. A soft iron core fits the cylinder of the primary. Complete with terminals.



WIMSHURT MACHINE

Code No. : 13450

250 mm dia discs with radial aluminium segments driven in opposite directions by hand wheel complete with layden jar.



MAGNETIC FORCE APPARATUS

Code No. : 13460

Comprises of a u - magnet & a brass axle with two wheels which can roll on brass rails positioned on the outer sides of the magnet, to show force on the brass axle.



BARLOW'S WHEEL

Code No. : 13470

To illustrate the motion of a movable conductor carrying current in a magnetic field. Star shaped copper disc rotates vertically between horse shoe magnet on wooden base having groove for mercury, disc adjustable vertically on metal pillar.



▶ PHYSICS

▶ ELECTRICITY

▶ POTENTIOMETER &
WHEATSTONE BRIDGE

PHYSICS



WHEAT STONE BRIDGE

4 GAPS

Code No. :13700

Four gap bridge plated brass strips mounted on polished hardwood base. Terminals with 4mm. Gaps are closed by removable plated brass strips which are held in position by the terminals. Sockets are provided to reduce unwanted resistance to a minimum. The 24SWG constantan wire is stretched along the top of a metre scale subdivided into millimeters and numbered every centimeter. The ends of the wire are securely clamped to the terminating strips to reduce end errors to a negligible level. Supplied with jockey of approx. dimensions 1.10 x 79 x 48 mm.



POTENTIO METER

1 WIRE

Code No. :13710

A one metre long single resistance wire passes over a metre scale and is firmly clamped to stout brass end-plates, on wooden base. Complete with knife-edge jockey.



4 WIRE

Code No. :13720

On polished plywood base with white sunmica sheet, having 4 wires of 24 SWG constantan wire connected in series give effective length of four metre, two bakelite terminals lock type and wood rule graduated 0-100 and 100-0 cm x 1 mm. The wires are stretched over pulleys and rigidly fixed to prevent any loosening or misalignment, with end corrector strips eliminating zero end error. With multiple metallic jockey having four correctly aligned, independent spring contacts each operated by its own key knob. Jockey slides on rods.



PENCIL JOCKEY

Code No. :13730

With brass metal knife edge, ebonite handle and terminal at top over all length 100mm

POST OFFICE BOX

PLUG TYPE "A GRADE"

Code No. : 13740

Coils of manganin wire, double silk covered are wound non-inductively and have a negligible temperature co-efficient. Three pairs of ratio arms are each 10, 100, 1000 ohms and resistance arms contains 16 coils from 1 to 5000 ohms with infinity plug (total value 11,110 ohms). Two spring keys having special contact for battery and galvanometer are biased off. Accuracy of coils 100 to 500 ohms $\pm 0.05\%$ and of the rest other coils $\pm 0.1\%$



RESISTANCE BOX

PLUG TYPE

In polished teak wood box and bakelite panel figured in white. Split brass contact blocks hold precision cut, interchangeable plug having moulded black bakelite, fluted tops. Coils of constantan wire, double silk covered are wound non-inductively and have a negligible temperature co-efficient. Coils are connected with double nut system. Accuracy $\pm 0.1\%$.

Range of ohms	Total ohms	Codes
1 to 50	110	13750
1 to 100	210	13751
1 to 500	1110	13752
1 to 1000	2110	13753
1 to 5000	11110	13754



▶ PHYSICS ▶ ELECTRICITY ▶ RHEOSTATS



RHEOSTAT PLASTIC LEG

Diameter 43 mm, current carrying capacity from 0.3 to 2.8 amps.

Amps	Lenght in mm											
	150 mm		200 mm		250 mm		300 mm		400 mm		500 mm	
	Resistance in ohms	Codes	Resistance in ohms	Codes	Resistance in ohms	Codes	Resistance in ohms	Codes	Resistance in ohms	Codes	Resistance in ohms	Codes
2.8	19	13770	28	13785	38	13801	48	13820	66	13836	86	13855
2.3	26	13771	41	13786	56	13802	71	13821	102	13837	128	13856
1.8	47	13772	70	13787	93	13803	116	13822	160	13838	210	13857
1.6	64	13773	96	13788	125	13804	160	13823	225	13839	290	13858
1.4	82	13774	120	13789	160	13805	200	13824	285	13840	360	13859
1.2	115	13775	170	13790	230	13806	290	13825	400	13841	500	13860
1	148	13776	225	13791	295	13807	365	13826	520	13842	675	13861
0.8	200	13777	300	13792	400	13808	500	13827	700	13843	925	13862
0.6	345	13778	510	13793	676	13809	835	13828	1165	13844	1500	13863
0.5	500	13779	750	13794	1000	13810	1250	13829	1800	13845	2300	13864
0.4	840	13780	1250	13795	1650	13811	2270	13830	2900	13846	3750	13865
0.3	1350	13781	2100	13796	2350	13812	3600	13831	5100	13847	6750	13866



RHEOSTAT BAKELITE LEG

Diameter 43 mm, current carrying capacity from 0.3 to 8.0 amps.

Amps	Lenght in mm											
	150 mm		200 mm		250 mm		300 mm		400 mm		500 mm	
	Resistance in ohms	Codes	Resistance in ohms	Codes	Resistance in ohms	Codes	Resistance in ohms	Codes	Resistance in ohms	Codes	Resistance in ohms	Codes
8	1.5	13870	2.5	13890	3.5	13910	4.5	13930	6.5	13950	86	13970
6.5	3	13871	4.4	13891	6	13911	7.5	13931	10.5	13951	13	13971
5	4.5	13872	6.5	13892	9	13912	11	13932	15	13952	20	13972
4.2	8	13873	12	13893	16	13913	20	13933	28	13953	36	13973
3.3	11	13874	16	13894	22	13914	27	13934	37	13954	50	13974
2.8	15	13875	22	13895	29	13915	36	13935	50	13955	64	13975
2.3	23	13876	34	13896	45	13916	56	13936	80	13956	100	13976
1.8	36	13877	55	13897	74	13917	92	13937	128	13957	165	13977
1.6	50	13878	75	13898	100	13918	125	13938	175	13958	225	13978
1.4	64	13879	96	13899	128	13919	160	13939	220	13959	290	13979
1.2	89	13880	135	13900	180	13920	225	13940	315	13960	395	13980
1	115	13881	175	13901	235	13921	290	13941	405	13961	515	13981
0.8	160	13882	240	13902	320	13922	400	13942	560	13962	720	13982
0.6	270	13883	400	13903	540	13923	670	13943	930	13963	1200	13983
0.5	400	13884	600	13904	800	13924	1000	13944	1400	13964	1800	13984
0.4	660	13885	975	13905	1300	13925	1625	13945	2275	13965	2950	13985
0.3	1150	13886	1700	13906	2250	13926	2850	13946	3950	13966	5150	13986

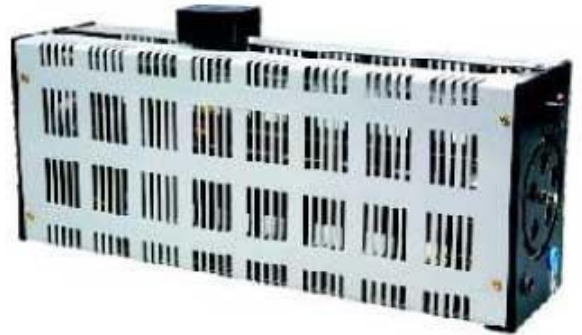
PHYSICS

RHEOSTAT

METAL LEG (WITH COVER)

Diameter 43 mm , current carrying capacity from 0.8 to 12 amps. Single tube, for use with high voltage upto 220 V. fitted with 4 mm socket terminals.

Resistance in ohms	Current in amps	Codes
3	12	14000
10	8	14001
33	4.4	14002
100	2.5	14003
330	1.4	14004
1000	0.8	14005



METAL LEG

Diameter 43 mm, current carrying capacity from 0.3 to 8.0 amps.



Amps	Length in mm											
	150 mm		200 mm		250 mm		300 mm		400 mm		500 mm	
	Resistance in ohms	Codes	Resistance in ohms	Codes	Resistance in ohms	Codes	Resistance in ohms	Codes	Resistance in ohms	Codes	Resistance in ohms	Codes
8	1.5	14020	2.5	14040	3.5	14060	4.5	14080	6.5	14100	86	14120
6.5	3	14021	4.4	14041	6	14061	7.5	14081	10.5	14101	13	14121
5	4.5	14022	6.5	14042	9	14062	11	14082	15	14102	20	14122
4.2	8	14023	12	14043	16	14063	20	14083	28	14103	36	14123
3.3	11	14024	16	14044	22	14064	27	14084	37	14104	50	14124
2.8	15	14025	22	14045	29	14065	36	14085	50	14105	64	14125
2.3	23	14026	34	14046	45	14066	56	14086	80	14106	100	14126
1.8	36	14027	55	14047	74	14067	92	14087	128	14107	165	14127
1.6	50	14028	75	14048	100	14068	125	14088	175	14108	225	14128
1.4	64	14029	96	14049	128	14069	160	14089	220	14109	290	14129
1.2	89	14030	135	14050	180	14070	225	14090	315	14110	395	14130
1	115	14031	175	14051	235	14071	290	14091	405	14111	515	14131
0.8	160	14032	240	14052	320	14072	400	14092	560	14112	720	14132
0.6	270	14033	400	14053	540	14073	670	14093	930	14113	1200	14133
0.5	400	14034	600	14054	800	14074	1000	14094	1400	14114	1800	14134
0.4	660	14035	975	14055	1300	14075	1625	14095	2275	14115	2950	14135
0.3	1150	14036	1700	14056	2250	14076	2850	14096	3950	14116	5150	14136

PHYSICS

ELECTRICITY

RESISTANCE COIL & INDUCTION COIL

RESISTANCE COILTRANSPARENT

Non-inductively wound double silk covered, constantan coils on plastic rod enclosed in transparent plastic tube with two terminals and values are figured in white. Accuracy $\pm 0.2\%$ rating 1 watt. Individually.

Range of ohms	Codes	Range of ohms	Codes
0.1	14150	5	14155
0.2	14151	10	14156
0.5	14152	20	14157
1	14153	50	14158
2	14154	100	14159

BOBBIN TYPE

In bakelite case with 4mm socket captive head terminals. Bobbin non inductively wound with double silk covered constantan wire.

Range of ohms	Codes	Range of ohms	Codes
0.1	14170	5	14175
0.2	14171	10	14176
0.5	14172	20	14177
1	14173	50	14178
2	14174	100	14179

RECTANGULAR SUPERIOR

In black plastic rectangular case, with two 4 mm socket terminals, accuracy $\pm 0.5\%$

Range of ohms	Codes	Range of ohms	Codes
0.1	14190	5	14195
0.2	14191	10	14196
0.5	14192	20	14197
1	14193	50	14198
2	14194	100	14199

INDUCTION COIL

Box form, coils are wound from insulated copper wire and paraffin wax insulation is provided throughout with condenser, in polished case. A fully adjustable trembler system is incorporated & spark suppression capacitors are housed in a base. A pair of pointer electrodes are supplied with the instrument, the pointer electrode having an insulating handle for adjustment of the spark gap. Low voltage input is via a pair of baseboard mounted 4mm. sockets.

Spark in air in	Codes	Spark in air in	Codes
10mm	14210	50mm	14214
15mm	14211	75mm	14215
20mm	14212		
37mm	14213		

PHYSICS

PLUG KEY**TWO WAY**

Code No. : 14230

Comprising three brass blocks fitted with plated brass 4 mm, socket terminals and mounted on a moulded bakelite base. Two accurately tapered plugs fluted plastic tops are supplied and fit into the holes between the blocks providing contacts with very low resistance.

**ONE WAY**

Code No. : 14231

Comprising two brass blocks fitted with plated brass 4 mm. Socket terminals and mounted on a moulded base. An accurately tapered plug with a fluted plastic top is supplied and fits into the hole between the block providing a very low contact resistance.

**CONTACT KEY SINGLE**

Code No. : 14240

A spring arm, press knob, contact stud and a connecting strip with two 4 mm terminals on plastic base of 100 x 60 mm size.

Also available contact key double Code No: 14241

**REVERSING SWITCH**

Code No. : 14250

To change polarity rapidly. A plastic bar with two terminals and two phosphorus bronze brushes is pivoted to rotate over two contact strips so that its rotation reverses polarity of connections on the base.

**KNIFE SWITCH****KNIFE SWITCH SINGLE**

Code No. : 14260

Low voltage, double pole double throw, may be used as changeover switch with appropriate connections, moulded base with plated spring metal contact and screw connectors.

**KNIFE SWITCH DOUBLE**

Code No. : 14261

Low voltage, single pole double throw. Moulded base with plated spring metal contacts and screw connectors.





MOTOR OPEN MODEL

Code No. : 14270

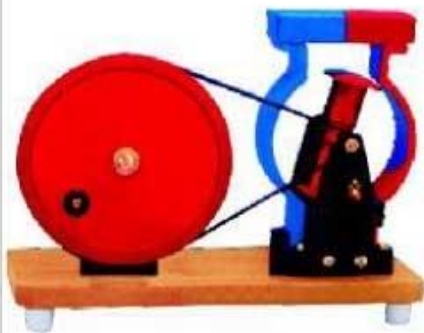
Open construction, shows all parts, operated by 4-6 V battery. Mounted on a wooden base. Can be fitted with Newton's colour disc.



DEMONSTRATION MOTOR ST. LOUIS

Code No. : 14280

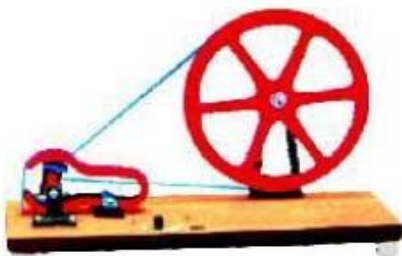
For demonstrating the fundamental principles of electric motor and generators. The motor consists of a two pole D.C armature with a rotatable brush holder, with two binding post terminals. Permanent magnets are supported by spring brass clamps, which are not adjustable in the horizontal plane, so that the effects of pole separation can be demonstrated. The set comes complete with two bar magnets and a two pole D.C. Armature.



DEMONSTRATION DYNAMO

Code No. : 14300

Same arrangement as the Demonstration motor, but is mounted on a base plate 220 x 85 mm. Approx. which also carries a hand driven pulley 120mm diameter, coupled to the smaller dynamo pulley by a rubber belt to increase the speed of the dynamo. Electrical output is through a pair of 4mm socket. An LED is provided as a simple output indicator. The model may also be used as a motor when connected to a 6-8 V D.C. Supply.



DYNAMO

Code No. : 14290

With driving wheel, to generate current, mounted on polished wooden base with driving wheel in vertical position, a lamp holder and a lamp.

STEP DOWN TRANSFORMER

Code No. :14310

With 240 V A.C. mains input, this transformer provides outputs of 2,4,6,8 and 12 V at 8A (96VA maximum power loading) via 4mm sockets, thus covering most low voltage a.c. requirements. Complete with 1.5 metre detachable 3 core mains cable.



BATTERY ELIMINATOR

Code No. :14320

A substitute for (batteries secondary cells) or source of d.c. voltage. Out put 2,4 and 6 volts d.c. maximum current 1 Amp in metal case synthetic hammer finish with mains on/off switch, indicator lamp and fuse. Complete with mains cable with plug, for operation on 230 volts a.c. 50 Hz supply.



BATTERY CHARGER

Battery charger are designed to give constant output & are having wound transformers & full wave rectifiers. Built in nicely polished box with on/off switch, jewel light & fuse etc.

Input: 220 V AC 50 c/s

Output	Code
2-12 volts at 1 Amp	14333
2-12 volts at 2 Amp	14334
2-12 volts at 3 Amp	14335

FULLY AUTOMATIC BATTERY CHARGER :

The instrument is designed to give constant output & has solid-state circuit. Built in a nicely polished box with indicator, Meter, etc.

Input : 230 Volts AC.

Output	Code
12 volts DC at 3 Amp	14340
12 volts DC at 4 Amp	14341
12 volts DC at 6 Amp	14342



METER-MOVING COIL**DC RECTANGULAR**

VOLTMETER, AMMETER, GALVANOMETER

Accuracy : Class ± 2 F.S.D. Case : Clear transparent front cover. Scale length : 85 mm (Approx) with knife edge pointer and anti parallex mirror scale. Desk Stand : Front terminal unbreakable ABS black. Overall Size : 100 x 100 x 140 approx. Packing : Thermocol box.



Current (Amps)	AMMETER Code		Voltage (volts)	VOLTMETER Code		Range in mA/mV	GALVANOMETER Code	
	Single Range	Dual Range		Single Range	Dual Range		Single Range	Dual Range
1	14360	14355	1	14370	14375	30-0-30 mV	14390	14395
2	14351	14356	2	14371	14376	35-0-35 mV	14391	14396
3	14362	14357	3	14372	14377	1-0-1mA	14392	14397
5	14353	14358	5	14373	14378	3.5-0-3.5 mA	14393	14398
10	14364	14359	10	14374	14379	x	x	x

DC SQUARE

VOLTMETER, AMMETER, GALVANOMETER

Accuracy : Class ± 2 F.S.D. Case : Clear transparent front cover ABS black. Scale length : 60 mm (Approx) with knife edge pointer and anti parallex mirror scale. Desk Stand: Front terminal unbreakable ABS black/cream white. Overall Size : 90 x 110 x 125 approx.

Current (Amps)	AMMETER Code			Voltage (volts)	VOLTMETER Code			Range in mA/mV	GALVANOMETER Code		
	Single Range	Dual Range	Triple Range		Single Range	Dual Range	Triple Range		Single Range	Dual Range	Triple Range
1	14400	14405	14410	1	14420	14425	14430	30-0-30 mV	14440	14444	14448
2	14401	14406	14411	2	14421	14426	14431	35-0-35 mV	14441	14445	14449
3	14402	14407	14412	3	14422	14427	14432	1-0-1mA	14442	14446	14450
5	14403	14408	14413	5	14423	14428	14433	3.5-0-3.5 mA	14443	14447	14451
10	14404	14409	14414	10	14424	14429	14434	x	x	x	x

**DC ROUND**

VOLTMETER, AMMETER, GALVANOMETER

Accuracy : Class ± 2 F.S.D. Case : Black ABS plastic case. Scale length : 50 mm (Approx) with knife edge pointer. Desk Stand: Top terminal unbreakable ABS black/cream white. Overall Size : 90 x 110 x 90 approx.

Current (Amps)	AMMETER Code			Voltage (volts)	VOLTMETER Code			Range in mA/mV	GALVANOMETER Code		
	Single Range	Dual Range	Triple Range		Single Range	Dual Range	Triple Range		Single Range	Dual Range	Triple Range
1	14460	14465	14470	1	14480	14485	14490	30-0-30 mV	14500	14504	14508
2	14461	14466	14471	2	14481	14486	14491	35-0-35 mV	14501	14505	14509
3	14462	14467	14472	3	14482	14487	14492	1-0-1mA	14502	14506	14510
5	14463	14468	14473	5	14483	14488	14493	3.5-0-3.5 mA	14503	14507	14511
10	14464	14469	14474	10	14484	14489	14494	x	x	x	x

METER MOVING IRON

Voltmeter Size : 72 x 72 mm

Ammeter Size : 96 x 96 mm



TYPE	RANGE	CODE
Voltmeter	0-300 V	14520
Ammeter	0-30 A	14521
Galvanometer	0-35 mV	14522

METER MOVING COIL

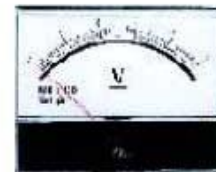
Case - Clear Transparent front cover
 Scale length - 65 mm, Desk Stand - ABS Plastic Black
 Overall Size - 120 x 80 x 85
 Voltmeter - Code : 14530,
 Ammeter - Code : 14531,
 Galvanometer - Code : 14532



Size - 65 x 65 mm, Scale length - 50 mm
 Mounting - Rear type, Range : 0-15 Volt
 Voltmeter - Code : 14534,
 Ammeter - Code : 14535,
 Galvanometer - Code : 14536



Size - 80 x 100
 Scale Length - 85 mm, Mounting - Flush type
 Voltmeter - Code : 14537,
 Ammeter - Code : 14538,
 Galvanometer - Code : 14539

**DIGITAL METERS**

Display - LCD type 3 1/2 digit
 Power - 9 volt battery operated



AMMETER Range	199.9μA	1.99 mA	19.99 mA	199.9 mA	1.99 A	19.99 A
Codes	14545	14546	14547	14548	14549	14550

Voltmeter Range	199.9mV	1.99 V	19.99 V	199.9 V
Codes	14551	14552	14553	14554

MULTIMETER(DIGITAL)

Code No. : 14570

SPECIFICATIONS

DC Voltage	: 200mV-1000V ± 0.5% + 2
AC Voltage	: 200V-750V ± 1.2% + 10
DC Current	: 200μA-10A ± 1% + 2
Resistance	: 200Ohm-2000kOhm ± 0.8% + 2
Range	: Manual
Transistor Test	: Yes
Standard Accessories	: Battery, Testing probes with Instruction Manual

**SPOT GALVANOMETER**

Code No. : 14575

High quality, very useful as null detector. Housed in sturdy plastic case with in built lamp and scale arrangement, taut band type movement, with Alcomax magnet, clamp and free arrangement for safe transportation, easy replacement of the 6V lamp, working on 220V a.c. with internal transformer. With a rotary switch for selecting any of the five shunt powers : 1, 1/10, 1/100, 1/1000 and short circuit.

Galvanometer resistance	: 125ohms
Current per mm deflection	: 5×10^{-8}
Volts per mm deflection	: 6.25×10^{-6}
Critical damping resistance	: 1000 ohms



DEMONSTRATION METER

VERTICAL TYPE

Code No. : 14580

With interchangeable scales. A versatile instrument and demonstration meter that can be converted to an a.c. d.c voltmeter or ammeter with selection of various ranges to each mode. With a high quality moving coil, spring controlled movement with full scale deflection of 5 mA or 100mV d.c. The long pointer has a spade end and is clearly visible from a distance. Fitted in case with glass front and back.

The instrument can be used with different dials to give different voltage and current ranges. All dials are interchangeable and each has a plug coupler to fit the instrument. The coupler connects appropriate resistors, shunts or rectifiers to convert the instrument to the range as given on the scale of the particular dial. The scales have clear bold figures and are marked on both sides to enable the lecturer also to observe the reading from the back of the instrument. A zero adjuster allows the instrument to be used for centre zero dials. One dial of range 0-5V d.c.

DIALS INTERCHANGEABLE

For use with demonstration meter. Each dial comprises of plastic panel with sealed moulded capsule on one side containing appropriate shunts, or voltage multipliers. Available in the following range :

A.C CURRENT		D.C CURRENT	
Range	Codes	Range	Codes
0-10 mA	14590	2.5-0-2.5 mA	14600
0-50 mA	14591	10-0-10 mA	14601
0-100 mA	14592	0-10 mA	14602
0-500 mA	14593	0-50 mA	14603
0-1 A	14594	0-100 mA	14604
0-5 A	14595	0-500 mA	14605
x	x	0-1 A	14606
x	x	0-5 A	14607
x	x	0-10 A	14608

A.C VOLTAGE		D.C VOLTAGE	
Range	Codes	Range	Codes
0-5 V	14613	0-1 V	14620
0-10 V	14614	0-5 V	14621
0-15 V	14615	0-10 V	14622
0-50 V	14616	0-15 V	14623
0-300 V	14617	0-300 V	14624
0-100 mV	14618	5-0-5 V	14625
0-500 mV	14619	10-0-10 V	14626

HORIZONTAL TYPE

Horizontal type in transparent case bakelite base.

Scale length : 85 mm

Overall size : 140 x 100 x 45 mm

Voltmeter - Code : 14585, Ammeter - Code : 14586,

Galvanometer - Code : 14587

TANGENT GALVANOMETER

Code No. : 14630

The bakelite ring or bobbin, 162.5 mm overall diameter wound with three coils of insulated copper wire with 2,50 and 500 turns, mounted on black bakelite moulded platform fitted with 4 terminals, rotating on a tripod non-magnetic metal base, supported by brass N.P. levelling screws. Complete with compass box (magnetometer) mounted at the centre of the ring.



OSCILLOSCOPE

Code No. : 14640

SINGLE CHANNEL OSCILLOSCOPE- 1210

Band width : DC-110 Mhz

Vertical deflection : 5 mv/div to 20 v/div

Horizontal deflection : 300ns/div to 30ms/div

130 mm CRT.

Input :220 volts

Also available in dual channel Code No.: 14641

**POWER SUPPLY IC REGULATED**

Code No. :14650

SPECIFICATIONS :

Input : 230 volts AC

Output : 0-30 volts at 1 Amps

Load regulation : $\pm 0.05\%$ Line regulation : $\pm 0.01\%$

Ripple : Less than 1 mv r.m.s.

Protection : Protected against short circuit.

Meters : Two meters are provided to read volts % Amps.

**WIRE, BARE**

Available in following sizes :

Dia .in		Manganin	Nichrome	Constantan/Eureka	Copper
mm	s.w.g.	wire(100 gms)	wire(100 gms)	wire(100gms)	wire(100 gms)
2	14	x	x	x	14690
1.6	16	x	x	14680	14691
1.25	18	x	14670	14681	14692
0.9	20	14660	14671	14682	14693
0.71	22	14661	14672	14683	14694
0.56	24	14662	14673	14684	14695
0.45	26	14663	14674	14685	14696
0.4	28	14664	14675	14686	14697
0.31	30	14665	14676	14687	14698
0.28	32	x	14677	14688	14699
0.25	34	x	x	14689	x



Wire Double Rayon covered is also available in above diameters & s.w.g.

► PHYSICS ► ELECTRICITY ► ACCESSORIES



CROCODILE CLIP

Code No. : 14760

With strong spring, clamping screw for wire. The shank will accept 4 mm plugs. Available in black and red colour.

Quality	Economic	Regular	Superior
Code	14760	14761	14762



MES BULB HOLDER

Rolled shell of brass mounted in moulded black bakelite base. Code No. :14770

Also available in plastic. Code No. :14771



BANANA PLUGS

Plugs of length 40mm.having 4 mm Pin and 18mm long spring insert and hard plastic body.

Quality	Economic	Regular	Superior
Code	14780	14781	14782



SOCKET FOR BANANA PLUGS

Hard plastic body of 4 mm moulded is threaded with fixing nut. Maximum panel thickness 5 mm. Plated brass insert with solder pin. Requires 8 mm diameter panel hole.

Colour	Black	Red	Yellow	Green
Code	14800	14801	14802	14803



SOCKET FOR TERMINAL INSULATED

Spade terminals comes in black and red colour with moulded captive head, 4 mm Socket, nuts and washers. The screw top will clamp ordinary connecting wires.

Quality	Economic	Regular	Superior
Code	14800	14801	14802



BELL PUSH

Moulded plastic body, superior quality.

Quality	Economic	Regular	Superior
Code	14810	14811	14812



ELECTRIC BELL

Code No. :14820

With detachable "snap-on bakelite cover, metal thread terminals, silver contacts. Dome gang dia.75 mm. Approx. For use on 3 to 6V AC/DC supplies.

ELECTRIC BELL DEMONSTRATION MODEL

Code No. :15000

Electric bell with individual component for easy understanding.
Works on 6 volt DC.

**BUTTERFLY NET, FARADAY**

Code No. :15010

Net with cord, on insulated pillar on a metal tripod base, to show electric charge resides on outer surface of a conductor.

**ELECTROSCOPE GOLDLEAF**RECTANGULAR WOODEN Code No. :15020

In rectangular wooden case, with removable glass window and fitted with 4 mm earthing socket. A metal disc is fitted on the top of a rod which passes through an insulating polythene bush and ends in a flat support for "gold leaf" with a transparent scale to show quantum of deflection. Supplied with a spare leaves and instructions for fitting.

RECTANGULAR - METAL

Code No. :15030

In rectangular sheet metal case, with removable glass window and fitted with 4 mm earthing socket. A metal disc is fitted on the top of a rod which passes through an insulating polythene bush and ends in a flat support for "gold leaves" with a transparent scale to show quantum of deflection. Supplied with spare leaves and instructions for fitting.

IN CONICAL FLASK

Code No. :15040

Conical flask with rubber stopper which holds a metal rod with disc top & lower flat end to which two gold leaves are pasted. Supplied with two leaves and instructions for fitting.



▶ PHYSICS

▶ ELECTROSTATICS ▶ ELECTROSCOPES

**VAN DE GRAFF GENERATOR**

Code No. :15040

It consists of a metal sphere which surrounds the upper pulley assembly and charge accumulates on the sphere, which is insulated by a plastic column supporting the pulley assembly. The charge builds up until electrical break down of air surrounding the sphere occurs. Supplied with a discharging sphere. Generator is hand operated on the base.

PLATES FOR SIMPLE CELL

Plate Copper : With brass terminal for construction of a simple cell. Size 125 x 50mm.

Plate thickness in swg	22	20	16
Codes	15060	15061	15062

Plate Zinc : With brass terminal for construction of a simple cell. Size 125 x 50mm.

Plate thickness in swg	22	20	16
Codes	15065	15066	15067

Plate Carbon : With brass terminal for construction of a simple cell. Thickness of the plate is 6 mm.

Code No: 15070

SIMPLE CELL

Code No. : 15080

For experiments in electrolysis 3 thick copper plates suspended from bakelite cover in a PP jar 150 x 100mm, height x diameter. The outer plates form anode and the central one is cathode. The central plate may be taken out or put into the holder without being touched by the fingers.

CONDUCTORCONICAL

Code No. :15090

Brass cone 10 x 5 cm dia. fitted with insulator of ebonite on metal base.

CYLINDRICAL

Code No. :15100

Brass cylinder 12.5 x 5 cm. dia fitted with insulator of ebonite on metal base.

SPHERICAL

Code No. :15110

Brass sphere 5 cm. dia. fitted with insulator of ebonite on metal base.



DANIEL CELL

Code No. :15120

Stout cylindrical copper vessel jointless 135 x 100 mm fitted with terminal perforated shelf with porous pot & wooden cover fitted with zinc rod & terminal, EMF 1.08 volt individually packed.



POROUS POT CYLINDRICAL

Cylindrical in shape and available in various sizes below :

Height	Diameter	Codes
75mm	25mm	15130
100mm	25mm	15131
150mm	50mm	15132
150mm	60mm	15133



LECLANCHE CELL

Code No. : 15140

Charged porous pot 140 x 60 mm (height x diameter) , with brass terminal, having e.m.f. 1.5 volts and zinc rod 12.5mm diameter in rectangular plastic jar.



CHARGED POROUS POT SPARE

Code No. :15150

150x60 mm height x diameter ,with brass screw & emf 1.5 volts for leclanche cell



▶ PHYSICS ▶ ELECTROCHEMISTRY ▶ ACCUMULATOR



ACCUMULATOR

Accumulators (batteries, storage) Mass type. 2 Volts plastic container with terminals. without acid, uncharged.

Single Plate		Multiplate		
Capacity Ah.	Code	Capacity Ah.	No. of Plates	Code
20	15250	30	7	15255
40	15251	40	9	15256
X	X	50	11	15257



COPPER VOLTAMETER

Code No. :15270

Consists of a copper plate with insulated cover polypropylene jar



BATTERY HYDROMETER

Pipette type, comprising glass float calibrated having coloured zones to indicate charged, partly charged and uncharged conditions. Compressible bulb and rubber tube is fitted to glass body.

Size	Code
Large	15280
Medium	15281
Small	15282



CARBON ELECTRODE WITH TERMINAL

Available in sizes :

Sizes	150 x 10 mm	150 x 12 mm
Code	15290	15291



CARBON ELECTRODE

Code No. :15300

Having dia of 6mm and available in different lengths, such as 10 cm, 15 cm and 20 cm.

Sizes	10 cm	15 cm	20 cm
Code	15290	15291	15292



FOUR STROKE DIESEL ENGINE

Code No. :15450

A model of four stroke water cooled diesel engine. This is of the chain driven overhead camshaft type and all functional components like camshaft, rocker-arms, tappets etc. are clearly demonstrated. The functioning of fuel injection system is also shown. Ignition is shown by means of a miniature bulb. Mounted on base, with printed diagram showing working.



TWO STROKE DIESEL ENGINE

Code No. :15460

Made of Aluminium alloy & gun metal. Ignition is shown by means of a miniature bulb. Fuel supply is also sectioned. With hand crank, provided for manual operation. Mounted on base, with printed diagram showing working.



TWO STROKE PETROL ENGINE

Code No. :15470

Made of aluminium alloy to demonstrate internal structure and operating principles of an air-cooled two stroke engine. Ignition is shown by means of a miniature bulb. Carburettor and fuel supply also sectioned. Mounted on base, with printed diagram showing working.



FOUR STROKE PETROL ENGINE

Code No. :15480

Four stroke aircooled petrol engine sectional model with the operation of the valves is clearly visible. Also the cams being driven by a gear train from rear of the main crank can be seen.

Simulated spark plug uses a small lamp to indicate the firing point. Screw terminals are provided for connection to 3 volts battery. Cross section of carburettor is shown.

Mounted on base, with printed diagram showing working.





PHYSICS



HEAT



ENGINE MODELS



WANKEL ENGINE

Code No. :15490

Cut out model demonstrating the principle of operation of Wankel engine showing internal construction details. Unlike other engines the rotary piston engine avoids reciprocating parts. The power piston is an arch like triangular rotor which on rotating generates an epitrechoid. Mounted on the base with printed diagram showing the working.



STEAM ENGINE

WITH BOILER

Code No. :15500

Operation of a commercial steam engine is well illustrated with this working model. The extra large size unit is provided with a horizontal boiler with a whistle, safety valve, steam gauge on metal base. Operates on 220V A.C. 50 Hz.



STEAM ENGINE

Code No. :15510

Metallic model with section cut of metal cylinder which is enclosed in a glass box, with working parts like piston, slide valve clearly visible so that link motion and reversing method can be observed. The movement of the wheel is light enough to demonstrate working even by blowing with mouth.



TURBOJET ENGINE

Code No. :15520

Constructed of light and strong metal, section cut model showing air intake, axial flow, two stage compressor, fuel supply, combustion chamber, rotary turbine, thrust jet and exhaust. Printed diagram shows the working.



HERO' S ENGINE

Code No. :15530

A functional model in metal. Comprises of a hollow bulb fixed at the center of a hollow shaft. Two arms bent at right angles at the end are fixed on to the shaft in opposite directions. Water introduced in to the bulb is heated to boiling point to produce steam which comes out of the bent arms, the ends of which are formed into jets. The bulb along with this shaft rests on two stands at the two ends and rotates around its axis. Supplied without burner..

PHYSICS

THERMO METER**MAXIMUM & MINIMUM**

Code No. :15550

Six's pattern, wall mounting. Spirit in glass thermometer with mercury indicating thread and two cursors mounted on dual scale, range -22 to 55 x 1°C and -10 to 140 x 2°F in metal frame, complete with magnet for resetting.

**WALL TYPE WOODEN**

Code No. :15555

Wall mounted double scale mounted on polished wooden base with screw painted marking & figures. Range -20 to +55° x 1°C and 1 - 120° x 2 F, red spirit filled, overall dimensions 500 x 90mm.

Wall type thermometer is also available in plastic base with a range -20 to 50 x 1°C. Code No.: 15556

**CHEMICAL THERMO METER****MERCURY/ALCOHOL**

Total immersion type, mercury filled engraved stem with white enamelled

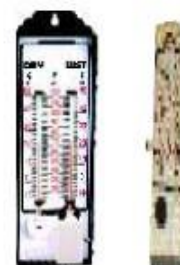
back 5-7 mm diam. with reinforced bulb in round card case, accuracy $\pm 1^\circ$ of the scale. LENGTH 300 mm

RANGE	GRADUATION	MERCURY	ALCOHOL
0 to 50 °C	1	15560	15575
-10 to 110 °C	1	15561	15576
-10 to 110 °C	1/2	15562	15577
0 to 150 °C	1	15563	15578
0 to 200 °C	1	15564	15579
0 to 250 °C	1	15565	15580
0 to 300 °C	1	15566	15581
0 to 360 °C	2	15567	15582
0 to 400 °C	2	15568	15583
0 to 120 °F	1	15569	15584
0 to 220 °F	1	15570	15585
0 to 400 °F	2	15571	15586

**HYGROMETER - WET & DRY MASON'S**

Code No. :15590

Consists of two thermometers with range -10 to +55 deg. C out of which one bulb is covered with muslin which is kept moist by connecting it to a reservoir of water. Mounted in a white enamelled case.





RESISTANCE THERMOMETER , PLATINUM

Code No. :15600

For accurate temperature measurement by Bridge Method. Consists of a fine Platinum wire of approx.2 ohms. resistance, wound non-inductively on a mica frame, which has soldered copper lead. One pair of composite leads are provided along with 4mm socket terminals, suitable for temperature up to 150 Degree Celsius and also for low temperature work.

SOIL THERMOMETER WITH ENGRAVED STEM

Code No. :15610

Red spirit filled tube with slotted aluminium case with pointed end Read ball handle. Range 50 deg to 115 Deg. Celsius.

BALL & RING**WITH CHAIN SINGLE HANDLE**

For demonstrating volumetric thermal expansion of metals. It consists of a brass ball with ring in a wooden handle attached by chain.

Ball Dia.	Code
19 mm	15630
22 mm	15631
25 mm	15632

**WITH CHAIN AND TWO HANDLES**

For demonstrating volumetric expansion of metals. It consists of a brass ring with a wooden handle and separately a brass ball attached by chain, to a rod with handle. It has a separate handle.

Ball Dia.	Code
19 mm	15640
22 mm	15641
25 mm	15642

**TWO HANDLES WITHOUT CHAIN**

Ball and ring for demonstrating volumetric expansion of metal. One handle has a ring and the other has a ball.

Ball Dia.	Code
19 mm	15640
22 mm	15641
25 mm	15642

**BAR AND GAUGE**

Code No. :15660

For demonstrating the expansion by heating and contraction by cooling. A steel rod mounted on a support with wooden handle. Gap gauge made of brass with handle just fits over ends of bar at room temperature. It includes one hole which just accepts the ends of the bar.

**COMPOUND BAR**

BRASS & IRON Code No. :15670

For demonstrating the differential expansion of two metals as shown by the curvature produced when the bar is heated. Comprising a bar of copper and a bar of iron, each riveted together.



▶ PHYSICS

▶ HEAT ▶ THERMAL EXPANSION

PHYSICS



LINEAR EXPANSION APPARATUS

Code No. :15680

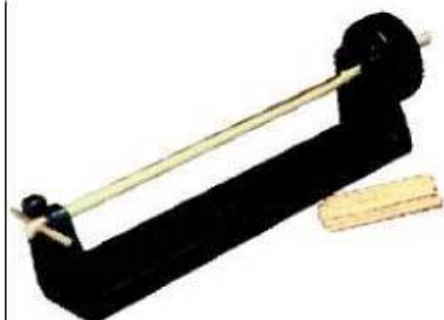
A 500 mm long metal rod is supported in a plated brass tube with three tubules for steam inlet, outlet and thermometer. The tube is mounted on a stand with an adjusting screw at one end and a micrometer screw reading to 0.01 mm on the other, with terminals for connecting a bell or galvanometer to indicate contact. With copper, brass and iron test rods but without thermometer.



EXPANSION APPARATUS GUNTHER

Code No. :15690

Comprising three nickel-plated rods carrying two sliding V-supports for a glass jacket with inlet and outlet tubes & joins two cast end pieces. One end-piece fitted with spherometer reading to 0.005 mm, and the other with contact screw. A brass and a copper rod each 500 x 7 mm length x diameter enclosed in glass jacket, fitted through corks, a half turn of the jacket changing rod in contact with the spherometer. A thermometer can be attached to either of the rods by rubber bands. Brass terminals are fitted to the apparatus so that an electrical circuit can be made through either rod to indicate the moment of contact of centre tube and spherometer. Supplied with 3 metal rods one each of copper, brass and iron.



BAR BREAKING APPARATUS

Code No. :15700

To demonstrate the force which is exerted during thermal expansion & contraction. A heavy cast iron frame with slotted end pillar to carry a stout iron bar. This bar is threaded at one end for a larger tensioning nut and has a hole at the other end to accommodate the cast iron breaking bar, supplied with 6 breaking bars.

▶ PHYSICS ▶ HEAT ▶ GAS LAWS

BOYLE'S LAW APPARATUS

Code No. :15780

Made of wooden stand, polished, mounted on heavy metal base with two levelling screws. A graduated metre scale is fixed in mm readings vertically. Two metal clamps provided to fix the closed glass tube 200mm long, along side either upper or lower portion of the scale. A metal clamp for holding open glass tube, sliding on a metal rod. Jolly air bulb 50mm dia is supplied mounted on a wooden frame which can be fitted on the side of the stand to enable the apparatus to be used, as Jolly's apparatus. Supplied without mercury with pressure rubber tubing.



CHARLE'S LAW APPARATUS

Code No. :15790

Mounted on a wooden stand height 125 cm, with heavy metal base having levelling screws, nicely polished in grey colour. Boxwood scale 100 cm, graduated in mm, reading in both directions. The mercury reservoir held in a clamp slides on metal rod chromium plated. A Jolly's air bulb made from corning glass is supplied mounted on a wooden frame which can be slotted on the side. Complete with pressure rubber tubing and set of two hard glass tubes, without mercury.



CHARLE'S LAW IN GLASS JAR

Code No. :15800

Consists of "U" shaped glass tube of dia 15mm and one limb plain 220mm long, while the other one 120mm long is graduated 25 to 35 x 0.2 ml with a bulb of 37mm diameter at the end. Third limb is 185mm length with 6mm bore joined at right angles to the plain tube. A short length of rubber tube with two pinch clips is mounted on short length for grooves. Tubing mounted at the end of wide bore plain glass hub with rubber bung. Complete with a beaker of 1000 ml capacity and stirrer.



THERMOPILE

Code No. :15810

Bismuth and antimony bars - 12 pairs, joined in series with insulation between them, enclosed in a brass frame having two terminals, connected to Bismuth and Antimony poles, complete with Nickel plated brass cone, is mounted on an adjustable stand.

**THERMOCOUPLE COPPER - IRON**

Code No. :15820

With two copper and two iron wires joined together to form three junctions with brass connectors.

**LESLIE'S CUBE**

Code No. :15830

Made of tin plate box with 130mm. The different vertical faces of the box are blackened, roughened, varnished and polished respectively. 75mm dia top opening is fitted with lid, filled with water at boiling point by a low Bunsen burner flame.

**RADIOMETER CROOK'S**

Code No. :15840

Consists of partial evacuated glass bulb of dia 70mm with a pivot at the center, supporting four light weight metal arms, with vanes. One side of each vane is blackened, while the other side is bright. The whole assembly is mounted on round base.



PHYSICS CHARTS

SCIENCE CHARTS
ELECTRICITY

Electricity is a kind of energy. Most electricity takes the form of a flow of tiny particles, called electrons. Electricity can be made by generators. It can flow along wires in the form of an electric current. Electricity was first described by the Greeks around 500 BC. Nowadays, many scientists have added to the world's knowledge of electricity.

WHAT IS ELECTRICITY?
Electricity is the effect caused by electrically charged particles. It is a form of energy that can be used to do work. It is made up of tiny particles called electrons. These particles are attracted to the positive terminal and repelled by the negative terminal.

HOW IS ELECTRICITY MADE?
Electricity is made by generators. These are machines that convert mechanical energy into electrical energy. They work on the principle of electromagnetic induction. This was discovered by Michael Faraday in 1831.

HOW DOES ELECTRICITY FLOW?
Electricity flows through wires. The flow is called an electric current. It is caused by the movement of tiny particles called electrons. These particles are attracted to the positive terminal and repelled by the negative terminal.

WHAT IS AN ELECTRIC CIRCUIT?
An electric circuit is a closed loop through which electric current can flow. It consists of a power source (like a battery or generator), wires, and various electrical components like bulbs, switches, and resistors.

HOW DOES A BATTERY WORK?
A battery is a source of electrical energy. It consists of several cells connected together. Each cell has two terminals, a positive one and a negative one. When the terminals are connected, electrons flow from the positive terminal to the negative terminal.

HOW DOES A BULB WORK?
A bulb is a device that converts electrical energy into light and heat. It consists of a filament of thin wire inside a glass bulb. When current flows through the filament, it gets heated and glows.

HOW DOES A SWITCH WORK?
A switch is a device that can open or close an electric circuit. It is used to control the flow of current. When the switch is closed, current flows; when it is open, current does not flow.

HOW DOES A MOTOR WORK?
A motor is a device that converts electrical energy into mechanical energy. It consists of a coil of wire placed between the North and South poles of a magnet. When current flows through the coil, it experiences a force and starts rotating.

HOW DOES A GENERATOR WORK?
A generator is a device that converts mechanical energy into electrical energy. It works on the principle of electromagnetic induction. It consists of a coil of wire rotating between the North and South poles of a magnet.

HOW DOES A TRANSFORMER WORK?
A transformer is a device that can change the voltage of an AC supply. It consists of two coils of wire wound around a common iron core. When current flows through one coil, it induces a current in the other coil.

HOW DOES A FUSE WORK?
A fuse is a safety device that melts and breaks the circuit if the current is too high. It is used to protect electrical appliances from damage.

HOW DOES A CIRCUIT BREAKER WORK?
A circuit breaker is a safety device that automatically switches off the circuit if the current is too high. It is used to protect electrical appliances from damage.

HOW DOES A SHORT CIRCUIT OCCUR?
A short circuit occurs when the live wire and the neutral wire are connected directly. This causes a large current to flow, which can be dangerous.

HOW DOES A GROUND WIRE WORK?
A ground wire is a safety device that provides a path for excess current to flow to the ground. It is used to protect electrical appliances from damage.

HOW DOES A LIGHTNING ROD WORK?
A lightning rod is a safety device that attracts lightning strikes and safely conducts them to the ground. It is used to protect buildings from lightning.

HOW DOES A SURGE PROTECTOR WORK?
A surge protector is a safety device that protects electrical appliances from damage caused by power surges. It is used to protect electrical appliances from damage.

HOW DOES A UPS WORK?
A UPS (Uninterruptible Power Supply) is a device that provides backup power to electrical appliances in case of a power outage. It is used to protect electrical appliances from damage.

HOW DOES A SMART METER WORK?
A smart meter is a device that measures electricity usage and provides real-time information to the user. It is used to monitor electricity usage and reduce costs.

HOW DOES A SMART HOME WORK?
A smart home is a home that uses technology to control various appliances and systems. It is used to improve convenience and energy efficiency.

HOW DOES A SMART CITY WORK?
A smart city is a city that uses technology to improve various services and infrastructure. It is used to improve the quality of life and reduce costs.

HOW DOES A SMART GRID WORK?
A smart grid is a power distribution network that uses technology to monitor and control the flow of electricity. It is used to improve the efficiency and reliability of the power grid.

HOW DOES A SMART TRANSPORT WORK?
A smart transport system is a system that uses technology to improve transportation. It is used to reduce traffic congestion and improve safety.

HOW DOES A SMART AGRICULTURE WORK?
A smart agriculture system is a system that uses technology to improve farming. It is used to increase crop yields and reduce costs.

HOW DOES A SMART MANUFACTURING WORK?
A smart manufacturing system is a system that uses technology to improve manufacturing. It is used to increase production efficiency and reduce costs.

HOW DOES A SMART HEALTHCARE WORK?
A smart healthcare system is a system that uses technology to improve healthcare. It is used to reduce costs and improve patient care.

HOW DOES A SMART EDUCATION WORK?
A smart education system is a system that uses technology to improve education. It is used to increase learning efficiency and reduce costs.

HOW DOES A SMART ENVIRONMENT WORK?
A smart environment system is a system that uses technology to improve the environment. It is used to reduce pollution and improve air quality.

HOW DOES A SMART ENERGY WORK?
A smart energy system is a system that uses technology to improve energy usage. It is used to reduce energy consumption and reduce costs.

HOW DOES A SMART WATER WORK?
A smart water system is a system that uses technology to improve water usage. It is used to reduce water consumption and reduce costs.

HOW DOES A SMART TRAFFIC WORK?
A smart traffic system is a system that uses technology to improve traffic flow. It is used to reduce traffic congestion and improve safety.

HOW DOES A SMART SECURITY WORK?
A smart security system is a system that uses technology to improve security. It is used to reduce the risk of theft and improve safety.

HOW DOES A SMART BUSINESS WORK?
A smart business system is a system that uses technology to improve business operations. It is used to increase efficiency and reduce costs.

HOW DOES A SMART GOVERNMENT WORK?
A smart government system is a system that uses technology to improve government services. It is used to increase transparency and improve the quality of government services.

HOW DOES A SMART SOCIETY WORK?
A smart society is a society that uses technology to improve the quality of life. It is used to increase the standard of living and improve the overall well-being of the population.

KEY TERMS
Circuit: A closed loop through which electric current can flow.
Current: The flow of electric charge.
Voltage: The potential difference between two points in a circuit.
Resistance: The opposition to the flow of electric current.
Power: The rate at which electrical energy is converted into other forms of energy.
Energy: The capacity to do work.

ELECTRICITY

CHARTS
paper laminated 56cmx90cm

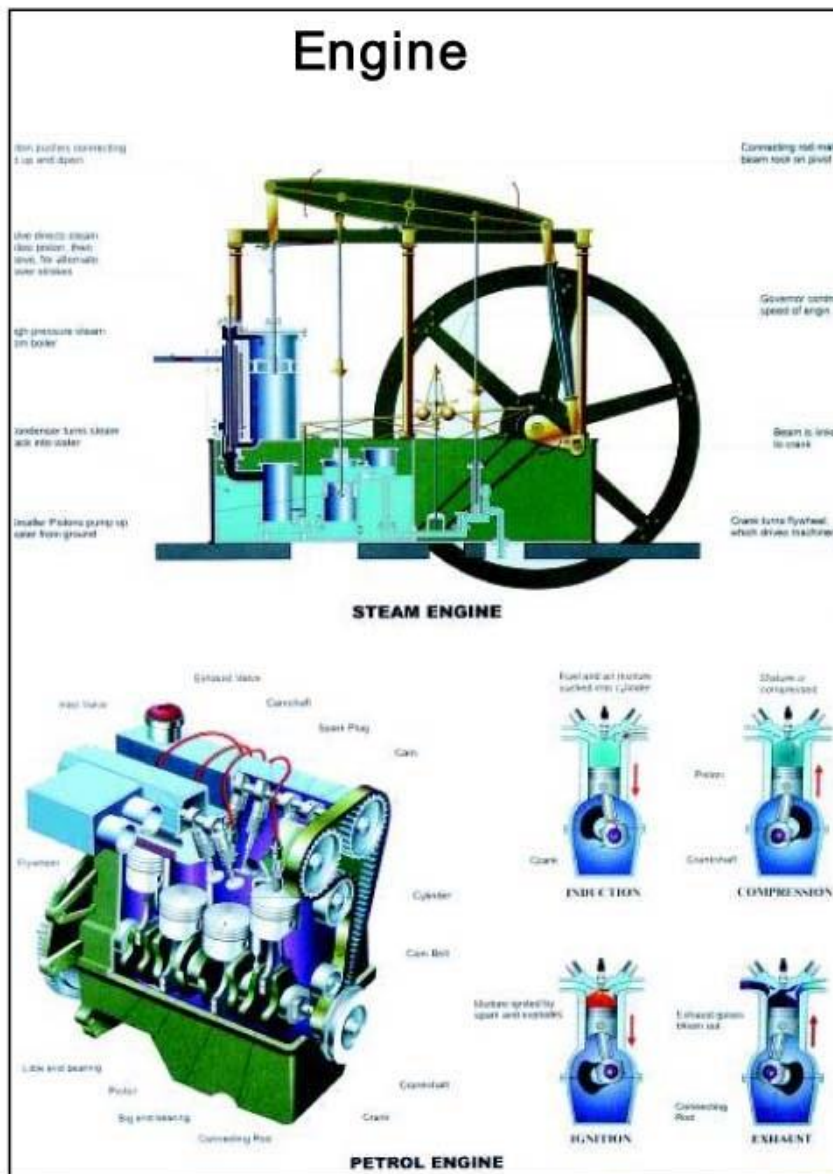
CODE	PHYSICS CHARTS
16400	Inventors & their Inventions-1
16401	Inventors & their Inventions-2
16402	Computer Technology
16403	Electronics
16404	Electricity
16405	Cameras & Photography
16406	Lenses & Mirrors
16407	Light & Colour
16408	Atoms & Molecules
16409	Energy

CODE	PHYSICS CHARTS
16410	Nuclear Energy & Radioactivity
16411	Forces
16412	Dynamics
16413	Friction
16414	Motion
16415	Gravity
16416	Pressure
16417	Work & Simple Machines
16418	Floating
16419	Flight

CODE	PHYSICS CHARTS
16420	Engines
16421	Cars & Motorbikes
16422	Astronomy
16423	Rockets & Spacecraft
16424	Radio
16425	Television & Video
16426	Sound
16427	Waves
16428	Heat & Temperature
16429	Magnetism & Electromagnetism

PHYSICS

▶ PHYSICS ▶ CHARTS



POLYART CHARTS
100cmx75cm fitted with plastic rollers

CODE	PHYSICS CHARTS	CODE	PHYSICS CHARTS	CODE	PHYSICS CHARTS
16440	Engine (Petrol & Steam)	16450	Kirchoff's Laws-Bridges	16460	Magnet & its Properties
16441	Nuclear Fission of Atom	16451	Oscillators	16461	Electro Magnetic Induction
16442	Images formed by Mirrors.	16452	Logic Gates	16462	Types of Crystal Structure
16443	Images formed by Lenses.	16453	Transistor Characteristics	16463	Surface Tension
16444	Light Dispersion	16454	Triode Characteristics	16464	Newton's Laws of Motion
16445	Light Diffraction	16455	Rectifiers	16465	Dimensional Formulae
16446	Light Polarisation	16456	Electronics Symbols-I	16466	Structure of Atom
16447	Light Interference	16457	Electronic Symbols-II	16467	Separation of substances
16448	Semi-Conductor-I	16458	Inter Conversion of Energy forms	16468	Joule's Apparatus
16449	Semi-Conductor-II	16459	Atomic Reactor	16469	Electro Magnetic Spectrum