



SL-10001

CNC Production Lathe

CNC PRODUCTION LATHE

CNC System (Color English Version)
 X.Z Axes Feeding Motor: Step Motor and Driver
 Spindle Motor: Two-speed Motor 4 / 6 (3 phase 2.2/2.8kw)
 Manual three jaw chuck 1pc
 Gang Tool Carriage& Gang Tool Holder(3pcs)
 Hand Wheel
 Thread Function
 Coolant Pump
 Working Lamp
 Enclosed Shield for Ball Screw
 RS232 Communication Cable& Communication SoftwareCD
 (To connect CNC Controller with PC)
 Tricolor Lamp for Machining State Indication

Item	Specifications	Unit	Parameter	
Capacity	Max. Swing Dia. over Bed	mm	Φ320	
	Max. Swing Dia. over Slide	mm	Φ150	
	Max. Through Dia. of Bar	mm	Φ28	
	Max. Machining Length	mm	200	
	Thread	Metric	mm	0.25-100
	Range	Inch	TPI	100-4
Spindle	Speed Range	Frequency Conversion	r/min	50-3000
	Spindle Bore		mm	Φ38
	Taper of Spindle		0	Φ45°
	Tube Bore		mm	Φ38
	Size of Chuck		mm	Φ120
	Power of Spindle Motor		kw	Two Speed 4/6 (3 phase 2.2 kw)
X.Z Axes	Feeding Speed of X-axes	m/min	3	
	Feeding Speed of Z-axes	m/min	6	
	Power of X-axes Motor	kw	1	
	Power of Z-axes Motor	kw	1	
	Torque of X-axes Motor	Nm	12Nm (Step)	
	Torque of Z-axes Motor	Nm	12Nm (Step)	
	Min. Setting Unit of X-axes	mm	0.001	
	Min. Setting Unit of Z-axes	mm	0.001	
Tool Post	Type of Tool Post	----	Gang Tool Carriage	
	No. of Tools		1-8 Station (Gang Tool Holder)	
	Size of Tools Shank	mm	15 x 15 or 20 x 20	
Other	Power of Lubrication Oil Pump Motor	W	4	
	Power of Coolant Pump Motor	W	40	
	Overall Dimension	mm	1270(L)*950(W)*1450(H)	
	Net Weight	kg	800	
	CNC System	----	GSK928TC/980TB	



CNC Production Mill

CNC PRODUCTION MILL

CNC PRODUCTION MILL with inbuilt CNC system consist of 3 axis stepper motors, ball screws, variable speed spindle motor, limit/home switch provided with inverter

Standard accessories:

1. Machine with casting base
2. BT 30 arbor 1 no
3. Work piece clamping kit 1 set
4. Sample work piece
5. End mill 4 nos
6. Drill chuck 1 no
7. chuck sleeve 1 no
8. multi colour display in controller
9. Coolant tank with pumps and fittings

SPECIFICATION

Size of worktable (length x width)	800mm x 240 mm
T slot width x qty x space	16mm x 3 x 60mm
max loading weight on worktable	60kg
X-Axis Travel	430mm
Y-Axis Travel	290mm
Z-Axis Travel	400mm
Distance between spindle nose and table	50-450mm
Distance between spindle center and column	297mm
Spindle taper	BT-30
Max. spindle speed	4000r/min
Spindle motor power	1.5Kw
Feeding Motor power: X Axis	1Kw
Y Axis	1Kw
Z Axis	1Kw
Rapid feeding speed: X, Y, Z axis	6m/min
Feeding speed	0-2000mm/min
Min. set unit	0.01mm
Max. size of tool	60x175mm
Loosing and clamping way for tool	Clamp by disc spring
	Loose manually
	Clamp by disc spring
	Loose pneumatically



HEAT TRANSFER THROUGH LAGGED PIPE

Pipes

- a. Diameter :50/100/150mm Inner/Outer (Approx.)
- b. Length :450mm (Approx.)
- c. Material :G.I./MS
- d. Quantity :1 No. Each

Measuring Instruments

- a. Digital Voltmeter Range :0 to 300 V
- b. Digital Ammeter & Range :0 to 5 Amps
- c. Digital Temperature Indicator with Selector switch Range :Ambient to 0-400 Deg.c

Thermocouples

- a. Type :Cr. Al
- b. Length :1 Mt.
- 04. Voltage Varaic :1 No., 1.5 kw
- 05: Insulation : Glass wool



Heat Transfer Through Lagged Pipe



Emmissivity Measurement Apparatus

EMMISSIVITY MEASUREMENT APPARATUS

Plates

- a. Diameter :150
- b. Material :Brass
- c. Heater :250W
- d. Specimen :Black Body and Grey Body

Rectangular Duct

- a. Material :MS with Power Coating Front Acrylic

Measuring Instruments

- a. Digital Voltmeter Range :0 to 300 V
- b. Digital Ammeter & Range :0 to 10 Amps
- c. Digital Temperature Indicator with Selector switch Range :Ambient to 0-400Deg.c

Thermocouples

- a. Type :Cr. Al
- b. Length :1 Mt.
- 05. Voltage Varaic :2 Nos, 1.5 kw



Thermal Conductivity Insulating Powder

THERMAL CONDUCTIVITY INSULATING POWDER

Outer Sphere (top And Bottom)

- a. Diameter :200mm (Approx.)
- b. Material :Copper

Inner Sphere (top And Bottom)

- a. Diameter :100
- b. Material :Copper

Measuring Instruments:

- a. Digital voltmeter, Range :0 to 300V
- b. Digital Ammeter & Range:0 to 5 Amps
- c. Digital Temperature Indicator with selector switch: Range :Ambient to 0-400° c

Thermocouples:

- a. Type :Cr. Al
- b. Length :1 Mtr.
- 05. Electronic Dimmer :1 No., 1.5 kw



HEAT TRANSFER IN NATURAL CONVECTION

S.S. Cylindrical Tube

- a. Diameter :40mm
- b. Length :400/500mm

Measuring Instruments

- a. Digital Voltmeter Range :0 to 300 V
- b. Digital Ammeter Range :0 to 10 Ampsc.
- c. Temperature Indicator with Selector switch Range :Ambient to 400°c

Thermocouples:

- a. Type :Cr. Al
- b. Length :1 Mtr.

Electronic Dimmer :1 No.



Heat Transfer in Natural Convection



Heat Transfer in Forced Convection



Heat Transfer from Pin-Fin

HEAT TRANSFER IN FORCED CONVECTION

Blower

- a. Capacity :350 watts/1.5 cumts/m

Test Section

- a. Diameter :40mm
- b. Length :300mm

Cooling Water Chamber

- a. Diameter :50 mm Optional
- b. Length :300mm (Approx.)
- Material :Copper

Measuring Instruments

- a. Digital Voltmeter Range :0 to 300 V
- b. Digital Ammeter & Range :0 to 10 Amps
- c. Digital Temperature Indicator with Selector switch Range :Ambient to 400°c.

Thermocouples

- a. Type :Cr. Al
- b. Length :1 Mt.

Electronic Dimmer :1 No.

07. Measuring Jar & "u" Tube Manometer 1 No. Each

HEAT TRANSFER FROM PIN-FIN

Blower

- a. Capacity :350 watts/1.5 cumts/m

Test Section

- a. Diameter :12mm
- b. Length :150mm
- c. Material :Brass

Duct

- a. Size :100x150x500mm
- b. Material :MS with Powder Coating

Measuring Instruments

- a. Digital Voltmeter Range :0 to 300 V
- b. Digital Ammeter & Range :0 to 10 Amps
- c. Digital Temperature Indicator with Selector switch Range :Ambient to 400°c.

Thermocouples

- a. Type :Cr. Al
- b. Length :1 Mt.

Electronic Dimmer :1 No.

"U" Tube Manometer:

- a. Material :Glass

STEFAN BOLTZMAN APPARATUS

Stefan Boltzman Section

- a. Hemisphere
Diameter/Material :200mm/Copper
- b. Outer Jacket
Diameter/Material :250mm/Copper
- c. Hylum Base Plate :12 mm thick
- d. Test disc
Size :20mm x 1.5 mm
- Water Tank With Immersion Heater
a. Material :S.S.
- 03. Digital Temperature Indicator With Selector Switch
Range :Ambient to 199.9 Deg. C
- 04. Thermocouples
a. Type :Cr. Al
b. Length :1 Mt.



Stefan Boltzman Apparatus



Critical Heat Flux Apparatus

CRITICAL HEAT FLUX APPARATUS

- Cylindrical Shell**
- a. Diameter :200mm (Approx.)
- b. Height :200mm (Approx)
- c. Material :Glass
- Immersion Heaters:**
- a. Capacity :Suitable
- b. Make :Any Standard
- Measuring Instruments:**
- a. Digital Voltmeter Range :0 to 300 V
- b. Digital Ammeter & Range :0 to 5 Amps
- c. Digital Temperature Indicator with Selector switch Range :Ambient to 199.9 Deg.c
- Thermocouples**
- a. Type :Cr. Al
- b. Length :1 Mt.
- Electronic Dimmer** :1 No
- Test Specimen** : Nichrome wire



Heat Pipe Demonstrator

HEAT PIPE DEMONSTRATOR

- Heat Pipe**
- a. Length/Diameter :300/25mm (Approx/)
- c. Material :Brass
- Test Pipes**
- a. Diameter/Length :25mm/300mm(Approx.)
- Material :Copper
- b. Diameter :25mm (Approx.)
- Length :300mm (Approx.)
- Material :Copper/SS
- Small Capacity Tanks**
- a. Size :150x100x50mm (Approx.)
- b. Materia/Quantity :S.S./ 3 Nos.
- Measuring Instruments**
- a. Digital Voltmeter Range :0 to 300 V
- b. Digital Ammeter & Range:0 to 5 Amps
- c. Digital Temperature Indicator with Selector switch Range :Ambient to 400°c.
- Thermocouples**
- a. Type :Cr. Al
- b. Length :1 Mt.
- Electronic Dimmer** :3 No.



HEAT TRANSFER THROUGH COMPOSITE WALL

Mild Steel, Asbestos & Brass Slabs/wood

a. Thickness :150 od 6 mm Thick

Measuring Instruments

a. Digital Voltmeter Range :0 to 300 V

b. Digital Ammeter & Range :0 to 10 Amps

c. Digital Temperature Indicator with Selector switch Range :Ambient to 400° c.

Thermocouples

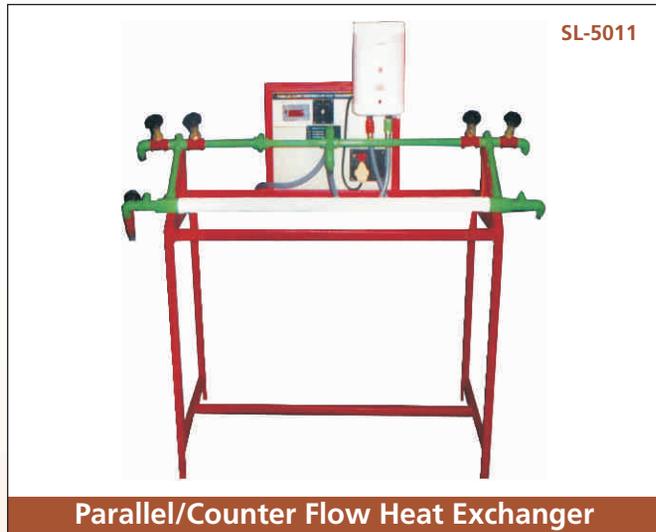
a. Type :Cr. Al

b. Length :1 Mt.

Electronic Dimmer :1 Nos.



Heat Transfer Through Composite wall



Parallel/Counter Flow Heat Exchanger

PARALLEL/COUNTER FLOW HEAT EXCHANGER

Geysar

a. Capacity :3 KW

Heat Exchanger Outer Pipe Insulated By Asbestos Rope

a. Diameter :25mm

b. Material :G.I

Heat Exchanger Inner Pipe

a. Length :1000mm

b. Diameter :12.5 mm OD

c. Material :Copper

Digital Temperature Indicator With Selector Switch

a. Range :Ambient to 199.9 Deg. c

Thermocouples

a. Type :Cr. Al

b. Length :1 Mt.

Measuring Jar :1 Ltr. Capacity



Boiling Heat Transfer Unit

HEAT PIPE DEMONSTRATOR

Glass Tube

a. Diameter/Height :100mm OD/275mm (Approx.)

Copper Tube

a. Diameter :9mm OD (Approx.)

b. Material :150mm (Approx.)

Measuring Instruments

a. Digital Voltmeter Range :0 to 300 V

b. Digital Ammeter & Range:0 to 5 Amps

c. Digital Temperature Indicator with Selector switch Range :Ambient to 199.9 Deg. c

Thermocouples

a. Type :Cr. Al

b. Length :1 Mt.

Dimmer/ Electronic

a. Make :Agro/Equivalent

b. Range :0 to 10 Amps

Rotameter

a. Material :Acrylic

b. Range :40 to 60 cc/sec

Sump Tank:

a. Size :200 x 200x 400mm (Approx.)

b. Material :S.S



Drop & Film Condensation



Shell and Tube Heat Exchanger

DROP & FILM CONDENSATION**Glass Tube**

- a. Diameter :100mm OD (Approx.)
 b. Height :275mm (Approx.)
 c. Quantity :2 Nos.

Measuring Instruments

- c. Digital Temperature Indicator with Selector switch Range :Ambient to 199.9 Deg.c

Thermocouples

- a. Type :Cr. Al
 b. Length :1 Mt.

Rotameter

- a. Material :Acrylic
 b. Range :40 to 60 cc/sec

Sump Tank:

- a. Size :200 x 200x 400mm (Approx.)
 b. Material :S.S

Steam Generator

- a. Diameter :200mm (Approx.)
 b. Height :300mm (Approx.)
 c. Material :M.S.
 D. Heater used :2KW/ 1 No.

SHELL AND TYBE HEAT EXCHANGER**Control Panel**

Stand Alone Metallic powder coated panel

Specimen

Shell: 200mm dia, 5mm thick, 1m long MS pipe
 Tubes: 1/2" dia, 1020mm long Copper or seamless MS tubes

Insulation

Asbestos Cloth / Rope

Geyser

1 liter, 3 kW, Instantaneous (SS hot water tank with pump at extra cost)

Flow measurement

Measuring Jar with digital stop watch (Rota meters at extra cost).

Temperature Indicator

Digital Temperature Indicator, 0-199.9°C with TSS

Thermocouples

Teflon coated Cr -Al (K-type)-4 no.

Measuring Jar

Plastic-1000ml

Stop Watch

Digital, 1/10 of a second, Racer/Pacer Make

Experimental Capability

Over All Heat transfer Co-Efficient, Effectiveness

Manual

Self explanatory Instruction manual with sample calculation

Optional Feature @ Extra

Computerized data acquisition system with software



Unsteady state Heat Transfer Test Rig

UNESTEADY STATE HEAT TRANSFER TEST RIG

Control Panel

Stand Alone Metallic powder coated panel

Specimen

Copper 30mm dia, 30mm long,

Duct / Enclosure

MS powder coated duct of 8"x8" in size 8" dia MS shell with glass wool insulation

Heater

Band Heater-500W

Cooling Fan

8" dia exhaust fan

Voltmeter

Digital voltmeter of range 0-300V AC

Ammeter

Digital ammeter of range 0-20A AC

Temperature Indicator

Digital Temperature Indicator ,0-400°C with TSS

Thermocouples

Teflon coated Cr -Al (K-type)-8 no.

Stopwatch

Digital Stop Watch.

Regulator

Electronic Dimmer 1kW. (2Amps Variac At extra cost)

Experimental Capability

Nusslet No. And Biot No.

Manual

Self explanatory Instruction manual with sample calculation

Optional Feature @ Extra

Computerized data acquisition system with software



Plate Type Heat Exchanger

PLATE TYPE HEAT EXCHANGER

Control Panel

Stand Alone Metallic powder coated panel

Specimen

An industrial Plate Heat exchanger made of SS of size 200 mm x 75 mm, Number of plates are 14

Flow type

Both Parallel and Counter Flow

Geyser

1 liter, 3 kW, Instantaneous
(SS hot water tank with pump at extra cost)

Flow measurement

Measuring Jar with digital stop watch
(Rota meters at extra cost – 2 nos).

Temperature Indicator

Digital Temperature Indicator ,0-199.9°C with TSS

Thermocouples

Teflon coated Cr -Al (K-type)-4 no.

Measuring Jar

Plastic-1000ml

Stop Watch

Digital, 1/10 of a second, Racer/Pacer Make

Experimental Capability

Over All Heat transfer Co-Efficient, Effectiveness

Manual

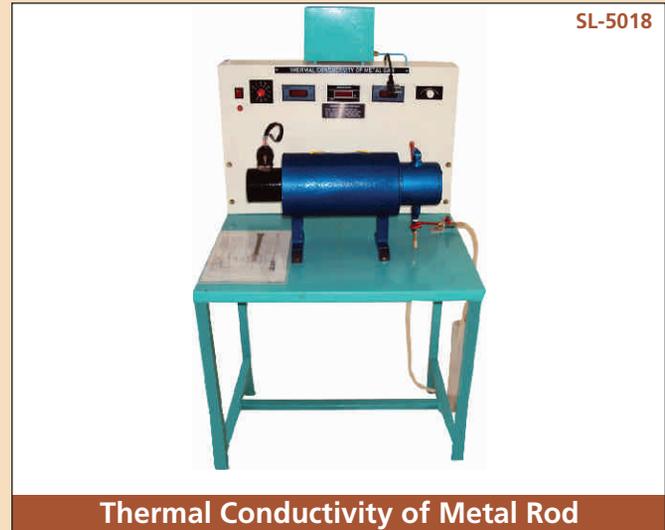
Self explanatory Instruction manual with sample calculation

Optional Feature @ Extra

Computerized data acquisition system with software



Thermal Conductivity by Guarded Hot Plate



Thermal Conductivity of Metal Rod

THERMAL CONDUCTIVITY BY GUARDED HOT PLATE**Guarded Plate Section**

- | | | |
|-------------------------|---|-------------------|
| a. Main Heater Plate | : | |
| b. Diameter | : | 90mm |
| c. Material | : | Brass |
| d. Ring Heater Diameter | : | 100ID/150 OD mm |
| e. Material | : | MICA |
| f. Ring Heater Plate | : | |
| g. Diameter | : | 100 ID/150 mm OD |
| h. Material | : | Brass |
| i. Asbestos plate | : | 150OD/12 mm thick |
| j. Cooling jacket | : | |
| k. Diameter | : | 150OD |
| l. Material | : | Brass |
| m. Size | : | 123mm thick |

Measuring Instruments

- | | | |
|-------------------------------------------------------|---|------------------------|
| a. Digital Voltmeter Range | : | 0 to 300 V |
| b. Digital Ammeter & Range | : | 0 to 10 Amps |
| c. Digital Temperature Indicator with Selector switch | : | Ambient to 199.9 Deg.c |

Thermocouples:

- | | | |
|-----------|---|--------|
| a. Type | : | Cr. Al |
| b. Length | : | 1 Mtr. |

- | | | |
|--------------------------|---|--------|
| Electronic Dimmer | : | 2 Nos. |
|--------------------------|---|--------|

THERMAL CONDUCTIVITY OF METAL ROD**Control Panel**

Stand Alone Metallic powder coated panel

Specimen

Shell: 200mm dia, 5mm thick, 1m long MS pipe

Tubes: 1/2" dia, 1020mm long Copper or seamless MS tubes

Insulation

Asbestos Cloth / Rope

Geyser

1 liter, 3 kW, Instantaneous (SS hot water tank with pump at extra cost)

Flow measurement

Measuring Jar with digital stop watch (Rota meters at extra cost).

Temperature Indicator

Digital Temperature Indicator, 0-199.9°C with TSS

Thermocouples

Teflon coated Cr-Al (K-type)-4 no.

Measuring Jar

Plastic-1000ml

Stop Watch

Digital, 1/10 of a second, Racer/Pacer Make

Experimental Capability

Over All Heat transfer Co-Efficient, Effectiveness

Manual

Self explanatory Instruction manual with sample calculation

Optional Feature @ Extra

Computerized data acquisition system with software



Window Type Air Conditioner Test Rig



Ice Plant Test Rig

WINDOW TYPE AIR CONDITIONER TEST RIG

Aim :

This laboratory scale working model housed on a M.S. Square tube frame further mounted on a wheels (CI) with instrumentation panel is used i) To study the Vapour compression Cycle ii) To calculate co-efficient of performance (COP) iii) To evaluate tonnage capacity.

01. Hermitically Sealed Compressor

- 02. Air Cooled Condenser : 1 NO.
- 03. Condenser Cooling Fan : 1 NO.
- 04. Rota Meter (refrigerant R 22) : 1 No
- 05. Charging Valves : ¼"
- 06. Filter Drier : DM 50, (3/8")
- 07. Energy Meter : 1 NO.

- 08. Pressure / Compound Gauges : 1 NO. each
- a) Range : 0 to 300 psi / 30 " Hg to +150 psi

09. Measuring Instruments

- a) Digital Temperature Indicator : Ambient 50 to 199.9°C

OPTIONAL: AT EXTRA COST LINE VOLTAGE CORRECTOR

- Capacity : 4KVA
- Output : 230V +/- 10%
- Anemometer

10. Thermocouple

- Type : Cr-Al

ICE PLANT TEST RIG

Aim :

This laboratory scale working model housed on a M.S. Angle frame further mounted on a wheels with instrumentation panel is used to determine i) The working of ICE Plant ii) Co-efficient of performance (COP) and iii) Refrigeration circuit.

01. Hermitically Sealed Compressor

- Make : Tecumesh/Kirloskar

- 02. Air Cooled Condenser : 12 x 13 x 2 row

03. Fan Motor :

- a) Capacity : 1/83 HP
- b) Make : AUE

04. Hand Shut off Valves

- a) Size : ¼ "

05. Filter Drier

- a) Make : Danfoss

06. Energy Meters

- Make : Bentex/equivalent

07. Stirrer

- a) Make : Remi/Tullu

08. Pressure/ Compound Gauges

- Range : 0 to 300 psi/-30" Hg to +150psi

09. Brine Tank

- : Stainless steel tank of 304 grade

10. Evaporator cooling coil

- : 3/8" Copper with accumulator

11. Ice Cans

- : GI / 4 Nos

12. Voltage stabilizer

- : 2KVA (Optical)

13. Expansion device

- : Capalury/TeV

14. Brain Solution

- : Calcium Chloride

15. Digital Temp. Ind.

- : 50-199.9°C

16. Thermocouple

- : Cr-Al



Air Conditioning Test Rig



Cold Storage Test Rig

AIR CONDITIONING TEST RIG

Aim :

This laboratory scale working model housed on a M.S. Square tube frame further mounted on a wheels (CI) with instrumentation panel is used i) To study the Vapour Compression Cycle ii) To calculate co-efficient to performance (COP) iii) To evaluate tonnage capacity iv) To study humidification and dehumidification.

01. Hermitically Sealed Compressor

Capacity :1.0 Ton

02. Air Cooled Condenser

Capacity :1.0 Ton

03. Condenser Cooling Fan

Capacity :1/10 HP

04. Rota Meter (Refrigerant R 22)

:1 No

05. Hand Shut Off Valves

Size :3/8 & 1/4"

06. Filter Drier

:DM 50 (3/8)" Type

07. Energy Meters

:2 NO.

08. Thermostat

:1 NO

09. Pressure/ Compound Gauges

1 Nos Each. Range :0 to 300 psi/-30" Hg

to + 150 Psi

10. Measuring Instruments

a) Digital Temperature Indicator :50 to199.9deg. c.

11. Finned Heater :1 NO.

12. Electronic Dimmer :1 NO

13. Hp/Lpcutout :1 NO.

14. Air Conditioning Duct :1 SET

15. Steam Generator :1 SET

OPTIONAL: AT EXTRA COST LINE VOLTAGE CORRECTOR

Capacity :4KVA

Output :230V+/- 10%

Anemometer :1 No.

16. Wet & Dry bulb Thermocouple: 2 No.

COLD STORAGE TEST RIG

Aim:

This laboratory scale working model housed on a M.S. Square tube frame and further mounted on a wheels(CI) with instrumentation panel is used. i) To study the vapor compression refrigeration cycle ii) To calculate Co-efficient of performance (C.O.P.)

01. Hermitically Sealed Compressor

Capacity :1/3 TON

02. Air Cooled Condenser

Capacity :½ HP

03. Condenser Cooling Fan

Capacity :1/83 HP

04. Rotameter (Referigerant R 12)

:1 No

05. Cold Storage Cabinet

:5 Cft With Insulation

06. Filter Drier

:DM 50 (1/4")

07. Energy Meter

:1 NO

08. Thermostatic Expansion Valve

:1 NO.

09. Pressure / Compound Gauges

:1 NO. each

Range :0 to 300 psi/- 30 " Hg

to 150 psi

10. Measuring Instruments

Digital Temperature Indicator :50 to 199.9 deg.c.

OPTIONAL: AT EXTRA COST LINE VOLTAGE CORRECTOR

Capacity :2KVA

Output :230V+/- 10%





Mechanical Heat Pump Test Rig



Air Washer Test Rig

MECHANICAL HEAT PUMP TEST RIG

Aim :

This laboratory scale working model housed on a M.S. Square tube frame and further mounted on a wheels (CI) with instrumentation panel is used i) To study the performance of vapour compression Refrigeration system using water cooled condenser / water cooled evaporator, ii) Co efficient of performance (COP) of the system.

01. Hermitically Sealed Compressor

Capacity :1/3 HP
Make & Model :SHRIRAM/KIRLOSKAR

02. Condenser

Type :Shell and Coil with Refrigerant inside the tube

03. Evaporator Water Cooled

Type :Shell and Coil with refrigerant Inside the tube

04. ROTA METER

Make :Eureka

05. Hand Shut Off Valves

Size : 1/4"
Make :Kim/vanaz/equivalent

06. Filter Drier

Make :Danfoss/equivalent

07. Energy Meters

Make :Bhel/indimeter/equivalent

08. Thermostat

Make :Danfoss/equivalent

09. Compound Gauges

Range :-30 " Hg to +150 psi
Make :Fiebig/equivalent

10. Measuring Instruments

a) Digital Temperature Indicator :50 to 199.9°C

11. Sump Tank

a) Capacity :Suitable
b) Material :S.S

AIR WASHER TEST RIG

Aim:

To treat the air by humidifying Or by dehumidifying it to the required comfort.

AIR WASHER SECTION:

- Directly cooled evaporator of 3/8" dia.
- Water tank of SS 304 to 10 litre capacity.
- Hot and cold water pump.
- Immersion heater of 500 watts.
- Spray jets with heater arrangement.
- Eliminator of coir or filets.
- Ac duct suitable for handle water spray.
- Blower and motor to the capacity.

Refrigeration Systems:

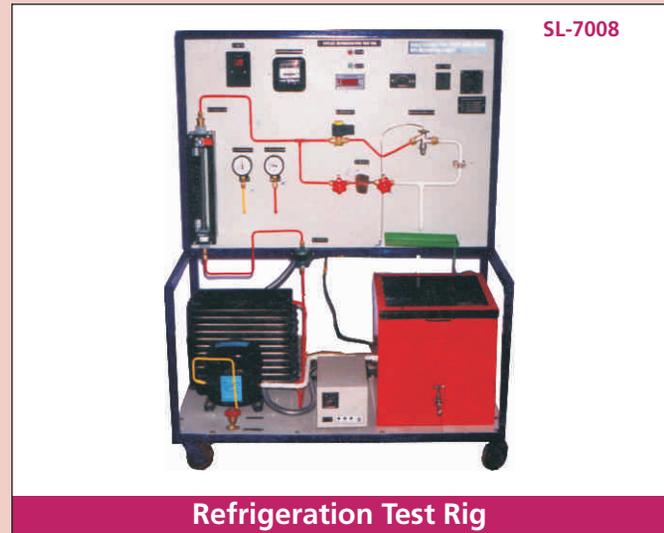
Will be corporate with compressor, condenser filter drier, and condenser fan motor, capillary expansion.

The system will be controlled through temperature indicator cum controller for both heating and cooling and the station temperature can be read from wet and dry bulb temp and also with 'k' type thermocouple, the velocity of air will be arrived through anemometer.

The above unit is self-contained in all respect except power and water facility.



Cooling Tower Test Rig



Refrigeration Test Rig

COOLING TOWER TEST RIG

Aim :

This laboratory scale working model housed on a M.S. Square tube frame along with instrumentation panel is used To determine i) the tower characteristic (KVA/L Value), ii) The made up water flow rate and iii) To plot end states on a psychometric chart which can be used to draw energy balance.

01. Cooling Tower

- | | |
|-------------------|------------------------------------|
| a) Size | : 250 x 250 mm |
| b) Height | : 1000 mm |
| c) Material | : Aluminum body with acrylic frame |
| D) Packing Sheets | : Perforated Aluminum corrugated |

02. Blower

- | | |
|-------------|---------------------|
| a. Capacity | : 1HP |
| b. Make | : Any reputed make. |

03. Geyaser

- | | |
|-------------|----------------|
| a. Capacity | : 3KW |
| b. Make | : RACOLD/BAJAJ |

04. Psychometrics Gun

- | | |
|-------------|-----------|
| a) Material | : Acrylic |
|-------------|-----------|

05. Digital Temperature Indicator:

- | | |
|------------------|-------------------|
| a. No. of Digits | : 4 Digits |
| b. Range | : Ambient to 200° |
| c. Resolution | |

06. Thermocouples

- | | |
|--------------|-----------------------|
| a) Length | : 1 Mtr. |
| b) Type | : Cr. Al |
| c) Sheathing | : Wire mesh sheathing |

07. Air Flow measurement

- | | |
|-------------|--------------------|
| a. Material | : U Tube Manometer |
| b. Size | : Glass |
| c. Media | : Mercury |

08. Water flow measurement

- | | |
|----------|------------------|
| a. Range | : Rotameter |
| | : 0 to 60 cc/sec |

09. Calibrated water tank

- | | |
|-------------|--------------|
| a. Material | : S.S/18 Swg |
| b. Size | : 200 x 250 |

10. Starter

- | | |
|---------|------------------------------|
| a. Make | : Crompton/Any Reputed Make. |
|---------|------------------------------|

REFRIGERATION TEST RIG

Aim:

This laboratory scale working model housed on a M.S. Square tube frame and further mounted on a wheels (CI) with instrumentation panel is used i) To study the vapor compression refrigeration cycle ii) To calculate Co-efficient of performance (COP).

01. Hermitically Sealed Compressor

- | | |
|----------|-----------|
| Capacity | : 1/3 Ton |
|----------|-----------|

02. Air Cooled Condenser

- | | |
|----------|----------|
| Capacity | : 1/2 HP |
|----------|----------|

03. Condenser Cooling Fan

- | | |
|----------|-----------|
| Capacity | : 1/83 HP |
|----------|-----------|

04. Rotameter

- | | |
|--------------------------------|--------|
| R 134a Gas (Echo Friendly Gas) | : 1 No |
|--------------------------------|--------|

05. Hand Shut Off Valves

- | | |
|------|--------|
| Size | : 1/4" |
|------|--------|

06. Filter Drier

- | | |
|--|---------------|
| | : DM 50 1/4 " |
|--|---------------|

07. Energy Meter

- | | |
|--|---------|
| | : 1 NO. |
|--|---------|

08. Thermostat

- | | |
|--|--------|
| | : 1 NO |
|--|--------|

09. Pressure/compound Gauges:

- | | |
|------------------|------------------------|
| 1 NO. Each Range | : 0 to 300 psi/-30" Hg |
|------------------|------------------------|

10. Measuring Instruments

- | | |
|----------------------------------|------------------------|
| a) Digital Temperature Indicator | : -30 to 199.9 deg. C. |
|----------------------------------|------------------------|

OPTIONAL: AT EXTRA COST LINE VOLTAGE CORRECTOR

- | | |
|----------|---------------|
| Capacity | : 2KVA |
| Output | : 230V+/- 10% |





Pelton Wheel Turbine Test Rig



Francis Turbine Test Rig

CLOSED CIRCUIT PELTON WHEEL TURBINE TEST RIG 5 HP

Pelton Wheel

Type : Impulse
 Capacity : 5HP
 Rated Speed : 1000 RPM
 Discharge Capacity: 750 Liters/Minute
 Supply Head : 50 Meters
 Buckets : Gun Metal

Loading

: Rope Brake
 Material : Cast Iron
 Drum Size : 300 mm diameter

Supply Pump Set

Size : 3 ½ X 2 ½
 Discharge : 750 Liters/Minute
 Motor Capacity : 15 HP, 3 Phase, 400 Volts, 50 HZ, AC
 Make : CRI/Sugna/Coimbatore
 Starter for Motor : Star Delta type- 3Phase TC/CROMPTON Make

Flow Measurement

Venturimeter : C.I Body
 Manometer Fluid : Mercury

Pressure Measurement Pressure gauge

RPM Indicator

: Digital

Sump Tank

Material of Construction : MS Powder Coating /M.S. FRP Lining/S.S Unit

Service Required

: Electrical supply-15 HP, 3Phase, 440 Volts,

CLOSED CIRCUIT FRANCIS TURBINE TEST RIG 5HP

Francis Turbine

Type : Inward Flow Reaction Turbine
 Capacity : 5 HP
 Rated Speed : 1250 RPM
 Discharge Capacity : 1800 Liters/Minute
 Supply Head : 25 Meters
 Guide Vanes : Gun Metal Vanes (Aerofoil Blade Shaped)

Loading

: Rope Brake
 Material : Cast Iron
 Drum Size : 300 mm diameter

Supply Pump Set

Size : 4" X 4"
 Discharge : 1800 Liters/Minute
 Total Head : 30 Meters
 Motor Capacity : 15 HP
 Make : CRI/Sugna/Coimbatore
 Starter for Motor : Star Delta-TC/Crompton Make

Flow Measurement

Venturimeter : C.I Body
 Manometer Fluid : Mercury

Pressure Measurement Pressure & Vacuum gauge

RPM Indicator

: Digital

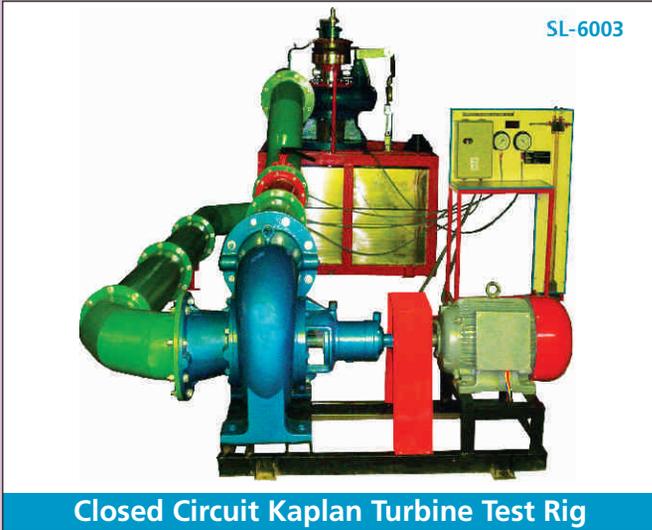
Sump Tank

Material of Construction : MS Powder Coating /M.S. FRP Lining/S.S Unit

Service Required

: Electrical supply-15 HP, 3Phase, 440 Volts, 50HZ AC Supply





Closed Circuit Kaplan Turbine Test Rig



Centrifugal Pump Test Rig

CLOSED CIRCUIT KAPLAN TURBINE TEST RIG 5 HP

Kaplan Turbine

Type : Axial Flow Reaction Turbine
 Capacity : 5 HP
 Rated Speed : 1500RPM
 Discharge Capacity : 4500 Liters/Minute
 Supply Head : 7 Meters
 Guide Vanes : Gun Metal Vanes (Aerofoil Blade Shaped)

Loading

: Rope Brake
 Material : Cast Iron
 Drum Size : 300 mm diameter

Supply Pump Set

Size : 10" X 10"
 Discharge : 5000 Liters/Minute
 Total Head : 8 Meters
 Motor Capacity : 20 HP
 Starter for Motor : Star Delta Crompton Make

Flow Measurement

Venturimeter : C.I Body
 Manometer Fluid : Mercury

Pressure Measurement Pressure & Vacuum gauge

RPM Indicator : Digital

Sump Tank

Material of Construction

: MS Powder Coating /M.S. FRP Lining/S.S Unit

Service Required

: Electrical supply-7.5 HP, 3Phase, 440 Volts, 50HZ AC Supply

CLOSED CIRCUIT MULTISPEED (SINGLE STAGE) CENTRIFUGAL PUMP TEST RIG-3HP

Pump :

A Centrifugal pump of size 40mm to discharge about 250LPM at 15 total head.

Motor :

3Hp, 2880 RPM. Three phase, 400/440V, AC Supply. (ISI Marked)

Speed Variation :

Stepped pulley "V" belt drive to run the pump at 3 different speeds.

Electrical Panel :

Starter and Energy meter for the measurement of input power

Sump Tank :

M.S. Powder Coating/M.S. FRP Lining/S.S Unit of suitable size provided with standard fittings for measuring discharge of water.

Others :

Piping system consisting of Pipes, Pressure relief valve, Gate valve and fitting with Pressure gauge.





SL-6005

Closed Circuit Hydraulic Ram Test Rig



SL-6006

Closed Circuit Gear Oil Pump Test Rig

CLOSED CIRCUIT HYDRAULIC RAM TEST RIG

Hydraulic Ram :

Hydraulic Ram of size 50 x 15m to work against a delivery head up to 20m from a supply head of 2.5metres to discharge about 250LPH at 10m head.

Supply Tank :

M.S Powder Coating/M.S FRP Lining/S.S Unit tank of suitable size with over flow arrangement for supply of water at constant head of 2.5 meters.

Supply & Delivery Pipings :

Supply pipe of size 50mm & 6 meter length connecting supply tank & Hydraulic Ram and delivery pipe of ½ " size to deliver useful water from Hydraulic Ram to measuring tank.

Measuring Tank :

M.S Powder Coating/M.S. FRP Lining/ S.S Unit of suitable size provided with standard fittings for measuring of useful water.

Notch Tank :

M.S. Unit with FRP Lining/S.S Unit with a brass Notch plate and hook gauge for measurement of waste water.

Sump Tank :

M.S. Unit with FRP Lining/S.S Unit of suitable size for independent circulation of water through the unit.

Supply Pump Set :

0.5HP, Single phase to supply water from the sump to the supply tank.

CLOSED CIRCUIT GEAR OIL PUMP TEST RIG

Pump :

A Gear oil pump of size 25mm to discharge about 30LPM against a maximum working pressure of 2Kg/Cm²

Motor :

1Hp, 1400RPM, Single phase, 200/220V, AC supply.

Electrical Panel :

Switch and Energy meter for the measurement of power input

Sump Tank :

M.S. Powder Coating/M.S. FRP Lining/S.S Unit of suitable size store sufficient water for independent circulation through the unit.

Measuring Tank :

M.S. Powder Coating/M.S.FRP Lining/S.S Unit suitable size provided with standard fittings for measuring discharge of water.

Others:

Piping system consisting of Pipes, Pressure relief valve, Gate valve and fitting with Pressure gauge.

Service Required :

Oil/High speed diesel of about 60lts.





CLOSED CIRCUIT RECIPROCATING PUMP TEST RIG

Pump :
Double acting reciprocating pump of size 25 x 20mm with air vessel to discharge about 20LPM at 20 meters total head. (Make: Suguna)

Motor :
1Hp, 1400RPM, Single phase, 200/220V, AC supply.

Speed Variation :
Stepped pulley reduction "V" belt drive to run the pump at 3 different speeds

Electrical Panel :
Switch and Energy meter for the measurement of power input

Sump Tank :
M.S. Powder Coating/M.S. FRP Lining/S.S Unit of suitable size To store sufficient water for independent circulation through the unit.

Measuring Tank :
M.S. Powder Coating/M.S.FRP Lining/S.S Unit suitable size capacity provided with standard fittings for measuring discharge of water.

Others :
Piping system consisting of Pipes, Pressure relief valve, Gate valve And fitting with Pressure gauge.

CLOSED CIRCUIT AXIAL FLOW PUMP TEST RIG

Pump :
Axial Flow Pump to Discharge About 150LPM

Motor :
3HP, Three phase. 400/440V, AC supply

Electrical Panel :
Switch & Energy meter for the measurement of power Input.

Sump Tank :
M.S. Unit with FRP Lining/S.S Unit of suitable size to store sufficient water for independent circulation through the unit.

Measuring Tank :
M.S. Unit with FRP Lining/ S.S. Unit of suitable size provided with standard fittings for measuring discharge of water

Others :
Piping system consisting of Pipes, Pressure relief valve, Gate valve and fitting with pressure gauge.





CC, CD, CV Apparatus

CLOSED CIRCUIT APPARATUS FOR DETERMINATION OF CO-EFFICIENT DISCHARGE (CD) CO-EFFICIENT OF CONTRACTION (CC) CO-EFFICIENT OF VELOCITY (CV) OF ORIFICES AND MOUTHPIECE

Supply Tank:

M.S Powder Coating/M.S.FRP Lining/S.S Unit of suitable size with a fixture arrangement to mount 2 replaceable orifices. A scale & Sliding arrangement for measurement of X & Y ordinate to find the velocity traverse of the water jet from orifice & provided with a micrometer contraction gauge for the measurement of contraction of water jet at the throat of the orifice.

Orifices & Mouthpiece :

Two Orifices made of gunmetal/Brass

Measuring Tank:

M.S, Power coating/M.S.FRP Lining/S.S Unit of suitable size with and overflow arrangement & provided with a PVC control valve & elbow.

Sump Tank:

M.S. Powder Coating /MS.FRP Lining/SS. Unit of suitable size for storage of water to circulate through experimental unit.

Supply Pump Set:

0.5 HP single phase [ISI marked] to pump water from the sump fitted with a control valve (Gun metal gate valve)

Main Switch :

Single phase main switch

Frame Work Mounting:

Mounted on frame work & completely fitted with all the above items as self contained unit suitable for operation without foundation.

Services Required:

Single phase power supply 200/220V & water to fill up sump Tank.



Notch Tank Apparatus

CLOSED CIRCUIT NOTCH TANK APPARATUS

Notch Tank :

Notch Tank of suitable size having arrangement to fix replaceable notches with a set of welded mesh baffles for accommodating ¾ "1" crusher stones for steadying the flow of water

Notches- (Brass):

- a. Trapezoidal Notch
- b. Rectangular Notch-100mm width
- c. V.Notch

Hook Gauge:

30cm range with mounting provision

Measuring Tank:

M.S, Power Coating/M.S.FRP Lining/S.S Unit of auditable size with overflow arrangement & provided with a PVC control valve & an elbow.

Sump Tank:

M.S. Powder Coating /MS.FRP Lining/SS. Unit of suitable size for storage of water to circulate through experimental unit.

Supply Pump Set:

0.5 HP single phase [ISI marked] to pump water from the sump from the sump fitted with a control valve

Main switch :

Single phase main switch

Frame Work Mounting:

Mounted on frame work & completely fitted with all the above items as self contained unit suitable for operation without foundation.

Services Required:

Single phase power supply 200/220V & water to fill up sump Tank.





Closed Circuit jet on Vane Apparatus



Venturi Meter & Orifice Meter

CLOSED CIRCUIT JET ON VANE APPARATUS

Nozzle & Vane Housing :

Made of FRP lined M.S. sheet having provision for mounting interchangeable G.M nozzles with two opposite transparent sides made of acrylic sheets and accommodating mechanism to measure the force due to impact of jet on water on different vanes in KG units & having bracket to mount interchangeable vanes of different types

- Hemisphere
- Flat
- Inclined

Force Measuring:

Weighing scaled 1 ever

Measuring Tank:

M.S, Power Coating/M.S.FRP Lining/S.S Unit of suitable size with overflow arrangement & provided with a PVC control valve & an elbow.

Sump Tank:

M.S. Powder Coating /MS.FRP Lining/SS. Unit of suitable size for storage of water to circulate through experimental unit.

Supply Pump Set:

0.5 HP single phase [ISI marked] to pump water from the sump from the sump fitted with a control valve

Main Switch :

Single phase main switch

Frame Work Mounting:

Mounted on frame work & completely fitted with all the above items as self contained unit suitable for operation without and foundation.

Services Required:

Single phase power supply 200/220V & water to fill up sumpTank.

CLOSED CIRCUIT APPARATUS FOR DETERMINATION OF FLOW THROUGH VENTURI METER & ORIFICE

Piping System:

Consisting of Two G.I. Pipe lines, each line fitted with a venture meter & orifice meter of size 25 mm with a gate valve & provided with a set of distribution chamber having isolating cocks to facilitate experiment on individual venture meter or orifice meter.

Differential Head Measurement:

Differential u tube manometer with mercury.

Measuring Tank:

M.S. Powder Coating/M.S.FRP Lining/S.S. Unit of suitable size with an overflow arrangement & Provided with a PVC control valve & an elbow.

Sump Tank:

M.S. Powder Coating /MS.FRP Lining/SS. Unit of suitable size for storage of water to circulate through experimental unit.

Supply Pump Set:

0.5 HP single phase [ISI marked] to pump water from the sump from the sump fitted with a control valve (Gun Metal gate Valve)

Main switch :

Single phase main switch

Frame Work Mounting:

Mounted on frame work & completely fitted with all the above items as self contained unit suitable for operation without foundation.

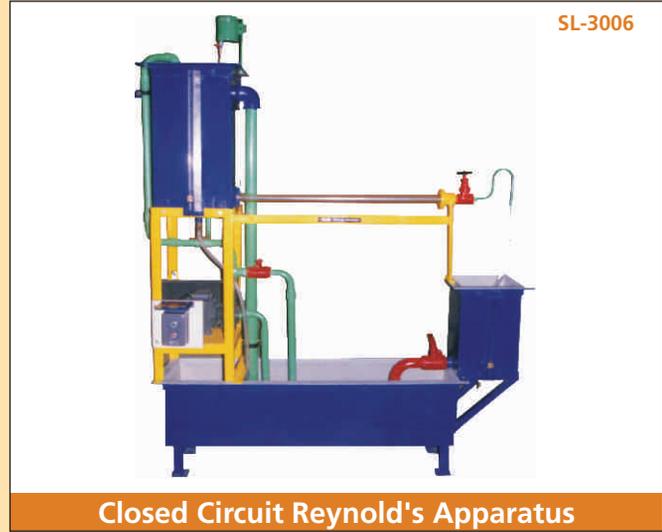
Services Required:

Single phase power supply 200/220V & water to fill up sump tank.





Closed Circuit Bernoulli's Theorem



Closed Circuit Reynold's Apparatus

CLOSED CIRCUIT BERNOULLI'S THEOREM

Sump Tank :

Made of M.S. Powder Coating/M.S. FRP Lining/S.S. Unit of suitable size and provided with a small storage tank for supply of colored liquid with tubing & cock

Transparent Glass Tube:

A transparent tube of 12mm OD & 8mm ID & 600mm length for flow observation provided with a GM control valve.

Measuring Tank:

M.S. Powder Coating /MS.FRP Lining/SS. Unit of suitable size for suitable size with and overflow arrangement & provided with a PVC control valve & an elbow.

Supply Pump Set:

0.25 HP single phase [ISI marked] to pump water from the sump fitted with a control valve (Gun Metal gate valve.)

Main Switch:

Single phase main switch

Frame Work Mounting:

Mounted on frame work & completely fitted with all the above items as self contained unit suitable for operation without and foundation.

Services Required:

Single phase power supply 200/220V & water to fill up Sump tank.

CLOSED CIRCUIT REYNOLD'S APPARATUS

Supply Tank:

M.S. Powder Coating/M.S.FRP Lining/S.S. Unit of suitable size provided with piezo meter for the measurement of total potential head.

Variable Cross Section Transparent Duct:

A transparent duct made of acrylic and of smooth variable cross section with suitably spaced 0.5m height replaceable high quality graduated glass tubes to measure the pressure head along the duct and a GM flow control valve.

Measuring Tank:

M.S. Powder Coating /MS.FRP Lining/SS. Unit of suitable size for suitable size with and overflow arrangement & provided with a PVC control valve & an elbow

Supply Tank:

M.S. Powder Coating M.S. FRP Lining/S.S Unit of Suitable size for storage of water to circulate through experimental unit.

Supply Pump Set:

0.25 HP single phase [ISI marked] to pump water from the sump fitted with a control valve (Gun Metal gate valve.)

Switch & Starter:

Single phase main switch

Frame work Mounting:

Mounted on frame work & completely fitted with all the above items as self contained unit suitable for operation without and foundation.

Services Required:

Single phase power supply 200/220V & water to fill Up sump tank.





CLOSED CIRCUIT CALIBRATION TEST RIG FOR MEASURING DISCHARGE OF ROTA METER TEST RIG

Rota Meter:

Two Rota meters of size 20mm & 25mm for flow measurement fitted with respective pipeline

Measuring Tank:

M.S. Powder Coating/M.S.FRP Lining/S.S. Unit Measuring Tank of suitable size provided with overflow arrangement and a drain valve.

Sump Tank:

M.S. Powder Coating /MS.FRP Lining/SS. Unit of suitable size for suitable to store sufficient water for independent circulation through the unit for experimentation and arranged within the floor space of the Main unit

Supply Pump Set:

Supply Pump set to pump water from the sump to the unit through proper piping system with a gate valve to control the rate of flow and connected with a suitable switch.

Switch & Starter:

Single phase main switch

Frame work Mounting:

Rigid M.S. Frame work, Compactly fitted with all the above items, as a self sufficient package unit, suitable for operation without foundation.

Services Required:

Single phase power supply 200/220V & water to fill up sump Tank.

CLOSED CIRCUIT PIPE FRICTION APPARATUS (MAJOR LOSSES)

Piping System:

Two G.I. Pipe lines of size 20 & 25mm with taping at 2m having a set of individual gate valves & distribution chamber with isolating cocks to facilitate individual experiment on piping system

Frictional Head Loss:

Differential u tube manometer with mercury.

Measuring Tank:

M.S. Powder Coating/M.S.FRP Lining/S.S. Unit of suitable size with an overflow arrangement & Provided with a PVC control valve & an elbow

Sump Tank:

M.S. Powder Coating /MS.FRP Lining/SS. Unit of suitable size for storage of water to circulate through experimental unit.

Supply Pump Set:

0.5 HP single phase [ISI marked] to pump water from the sump from the sump fitted with a control valve (Gun Metal gate Valve)

Main Switch:

Single phase main switch

Frame Work Mounting:

Mounted on frame work & completely fitted with all the above items as self contained unit suitable for operation without foundation.

Services Required:

Single phase power supply 200/220V & water to fill up sump Tank.





Closed Circuit Bernoulli's Theorem



Minor Losses Apparatus

WATER METER TEST RIG

Pump set:

0.5 HP, 1Ph, Monoblock, Make: Kirloskar /CRI/CG/Equivalent

Sump tank:

1000 x 300 x 400 mm, SS304 or MS with FRP coat

Collecting Tank:

300 x 300 x 400 mm, SS304 or MS with FRP coat

Flow meter:

A turbine type flow meter 1" x 1"

Piezometer:

A graduated glass tube (graduation in cm)

Experimental Capability:

Actual & Theoretical Discharge, Co-Efficient of Discharge

Manual:

Self explanatory Instruction manual with sample calculation

Optional Feature @ Extra:

Computerized data acquisition system with software

MINOR LOSSES APPARATUS

Pump set

0.5 HP, 1Ph, Monoblock, Make: Kirloskar /CRI/CG/Equivalent

Sump tank

1000 x 300 x 400 mm, SS304 or MS with FRP coat

Collecting Tank

300 x 300 x 400 mm, SS304 or MS with FRP coat

Pipes & fittings

¾ " pipe line with various fittings like bend, elbow, collar, expansion, contraction and gate valve

Head Measurement

Acrylic body Manometer,200-0-200 mm with Mercury

Piezometer

A graduated glass tube (graduation in cm)

Experimental Capability

Actual Discharge, loss of head for different fittings/ loss factor

Manual

Self explanatory Instruction manual with sample calculation

Optional Feature @ Extra

Computerized data acquisition system with software



PITOT TUBE APPARATUS

Sump Tank:
1.0x0.3x0.4m (LBH)

Collecting Tank:
0.3 x 0.3 x 0.4m

Pump:
0.5 HP Pump set

OBJECTIVE:
To determine the Velocity of flow of water using Pitot Tube

DESCRIPTION:
The experimental set up consists of fiber glass coated MS / SS sump tank and collecting tank, suitable pump set with control valves to regulate flow. The equipment consists of Pitot Tube fixed on the pipe line. A Piezo meter arrangement is provided on the collecting tank for discharge measurement.

INSTRUCTION MANUAL:
Self-explanatory operating manual provided with the system, which contains brief theory and practical exercises and a set of sample calculation report.

Utilities required to be arranged by the customer:

Electric supply:
230 V, 5 Amps AC, 50 Hz, single phase electric supply with proper earthing.

Apparatus for Determination of Metacentric Height

Model :
Semi Circular Sectioned hollow ship model, provision for loading as Cargo and warship, fine arrangement for accurate angle measurement extra weight in Metric Unit for tilting coupled

Sump Tank :
M.S. Powder Coating/MS. FRP Lining/S.S. Unit water tank of suitable size a drain plug for floating the model ship.



Ring & Ball Apparatus SL-BT-001

IS 1205 1985, IP 58/63 & ASTM D 36.

This apparatus is used to determine Softening point of Bitumen. It is that temperature at which a sample of bituminous material loaded by a 9.5mm dia steel ball, drops a specified distance when heated under specified conditions.

Specification : The apparatus consists of steel bracket with a sliding plate support. That support has two holes of 10mm dia on which a ring and ball guide can be kept. A central hole on this plate is for inserting thermometer. Supplied with a glass beaker approximate 600ml, high and a hand stirrer and 2 Nos. 9.5mm dia steel balls.

Ring & Ball Apparatus (Electrical) SL-BT-002

ASTM D36, AASHTO T 53, BS 2000

Electrical heating, with a Heater and Energy Regulator, Suitable for operation on 230 V, 50Hz, Single Phase, A.C. supply. Each unit is supplied with bath of heat resistant glass and the following.

Tapered Rings, Ball Centering Guide, Steel Ball, of 9.5mm dia, Ring Holder, Electric Heater (Hot Plate)

Dean Stark SL-BT-003

ASTM D 95, D244

Used to determine the water in petroleum products or bituminous materials by distilling them with volatile solvent. The equipment comprises electric heater with thermoregulator, glass still, support stand, condenser, receiving trap, clamp.

Standard Penetrometer SL-BT-004

ASTM D5, BS 2000

Used to determine grade of bitumen. The penetration tests determine consistency of bitumen for the purpose of grading. Depth in units 1/10 of millimeter to which a standard needle having a standard weight will penetrate vertically in a duration of five seconds at a temperature of 25°C determines penetration for gradation.

Specification : It consists of a vertical pillar mounted on a base provided with leveling screws. The head, together with dial plunger rod a cone (or needle) slides on a pillar and can be clamped at any desired height. A rack and pinion and pointer assemble provides fine adjustment of needle or cone tip to sample. It incorporates a clutch mechanism. Which makes reading of penetration and subsequent resetting a simple and accurate operation. The dial is graduated in 400 1/10 and the millimeter subdivisions and the needle pointer against figures makes easy reading. Supplied with a bitumen penetration needle, ring weight one each 50 gms. and 100 gms. two sample containers.

Accessories: Penetration cone for empirical estimation of penetration of lubricating grease, petroleum jelly etc. Balance fitted with an under bench weighing facility can be fitted. The balance supplied can also be used as a standard weighing device, thus



SL-BT-002



SL-BT-004

providing a versatile and comprehensive weighing system in the laboratory. (i) Cap. 5 Kg (5000gm) Accuracy 0.5 gm (500mg) (ii) Cap. 15kg (15000gms) Accuracy 1 gm (1000 mg)

Semi-Automatic Penetrometer SL-BT-005

IS 310, 1203, 1448, IP 60, 49, 50 ASTM D5, 217, D637, BS 2000-49

Same as above but the unit is compact with timer to control duration of penetration. The instrument is provided with lead screw gear arrangement, Leveling screws, Spirit level.

Hardness Tester for Mastic Asphalt SL-BT-006

IS 1195

For determining the hardness number of Mastic Asphalt for flooring. It consist of an internally insulated cabinet to the base of which is fitted a water bath having two taps. The bath is heated by an immersion heater and the temperature is controlled with the thermostat at 35° +/- 0.5° C. A 6.5mm dia pin is loaded on the specimen by means of a lever to give a 31.7 Kg weight. A dial gauge 0.01 x 25 mm is provided to record the penetration of pin into the specimen.

Stripping Value Apparatus SL-BT-007

For determining stripping value of bituminous mixes having aggregate size: 1.0mm to 75 micron.

Specification : A circular tray rotates in a vertical plane at a rate of approximately 100 R.P.M. by an electrical geared motor. 4 bottles of approximately 400 cc are mounted on this circular tray at an angle of 90° to each other with their mouth towards center of the tray. A time switch is provided. Suitable for operation on 230 V A.C. Single Phase.

SAY Bolt Viscometer SL-BT-008

ASTM D88, D244, AASHTO T72

Say bolt Viscometer, Electrically Heated, ASTM D88, D244, AASHTO T72 for the empirical measurement of Say bolt Viscosity of petroleum products at specified temperatures between 70o F and 210o F. This is also used for determining the Saybolt Furol Viscosity of bituminous materials at temperatures of 250, 275, 300, 350, 400 and 450 F. It comprises one each of cylindrical Oil cup, Universal Tip, Furol Tip, Bath Fitted with immersion Heater mounted on a stand. Dimmer stat for temperature control, Stirrer with shield. Complete with insulated handle and thermometer support receiving flask, withdrawal tube, filter funnel, thermometer support for cup and circular spirit level. Suitable for operation on 230 V 50 Hz, Single Phase, A.C.

Standard TAR Viscometer SL-BT-009

Electrical Heating with Immersion Heating Elements and Dimmer stat for controlling the temperature. Suitable for operation on 230 V, 50Hz, Single Phase, A.C. supply Complete with 10mm cup and valve. Cup, 10mm Ball Valve, 10mm



SL-BT-005



SL-BT-006



SL-BT-007



SL-BT-008



SL-BT-009



ASPHALT / BITUMEN

Reflux Extractor 4000 GMS SL-BT-010

ASTM D 2172- AASHTO T 164

The simple apparatus working on the same operation principle of consisting of cylindrical glass jar supporting two metal cones of stainless steel cloth and a metal condenser on top of the jar. Supplied complete with 100 filter papers & wire gauge, Hot Plate.

NOTE: Spare Cylindrical glass jar can be supplied at an extra cost.

Centrifuge Extractor (Manually) SL-BT-011

ASTM D2172, AASHTO T-58, T-164

The Instrument is used for determination and checking of Bitumen percentage in Bituminous mix, the mix is added with a solvent and dissolved bitumen is removed by centrifugal action. Consists of a removable Aluminum rotor bowl, Capacity 1500 gms. With a cap and tightening nut. The bowl assembly is mounted on a vertical shaft, which protrudes from a cast housing. This shaft and thus the bowl is rotated fast manually by enclosed gears in the cast body and handle. Solvent is introduced during the test through the holes in the cap of the housing. A drain is provided to collect dissolved Bitumen coming out of the rotating bowl and getting collected in the housing.

Centrifuge Extractor (Motorized) SL-BT-012

ASTM D2172 AASHTO T-58, T-164

Centrifuge Extractor, Electrical Operation, Capacity 1500g, with a Dimmer stat for speed control from 2,400 to 3,600 rpm. Suitable for operation on 230 V, 50 Hz, Single Phase, A.C. supply.

Used for the determination of bitumen percentage in bituminous mixtures. It consists of a removable, precision machined aluminum rotor bowl (accessory 1500 or 3000 g capacity), housed in a cylindrical aluminum box. The separate control panel incorporates an electronic card fitted with AC drive that automatically drives the bowl speed rotation ramp from 0 to 3600 R.P.M. as requested by Standards, with automatic fast stop bowl rotation at the end of the test. Supplied complete with speed regulator and digital display monitoring the frequency. Power supply: 230 V A.C. Single Phase.

Benkelman Beam SL-BT-013

AASHTO T 256

Lightweight Aluminum construction, Ease of Transportation, Unique Telescopic Design Simplifying Field set up, Compact, Thereby reducing the amount of storage space needed. Benkelman Beam utilizes the technique of using balanced beam in conjunction with a suitable vehicle to measure road flexure. The improved Benkelman Beam is a convenient, accurate device for measuring the deflection of flexible pavements under moving wheel loads. Operating on a simple lever arm principle, the unit consists. Supplied with carrying case.

NOTE :Benkelman Beam with Digital Dial Gauge also available at an extra cost



SL-BT-010



SL-BT-011



SL-BT-012



SL-BT-013

Straight Edge (3 Meters) SL-BT-014

A straight edge approximately 3 metres in length may be used to determine lateral surface regularity of a road surface. This lightweight apparatus is made up of mild steel or aluminum as per customers requirement and is equally supported at both ends producing a set height between the road surface & the beam. Any vertical irregularity is measured using incremented wedges.



SL-BT-014

Ductility Testing Apparatus SL-BT-015

IS 1208-1058, ASTM D 113, IP32, 55, AASHTO T 51

Designed to test three specimens simultaneously. The machine consists of a carriage moving over a lead screw. An electric motor driven reduction gear unit ensures smooth constant speed and continuous operation. The entire assembly is mounted with a stainless steel lined water bath completely encased in metal bound hardwood. It is equipped with an electric pump circulator and heater. The temperature is controlled thermostatically. Two rates of travel i.e. 5 cm/min and 1 cm/min are provided. Suitable for operation on 230 V, 50 Hz, Single Phase, A.C. supply.

COMPLETE WITH: Ductility Mould , with Base Plate 3 Nos.

Thermometer IP 38 C, Range: 23o C to 27o C



SL-BT-015

Compaction Mould SL-BT-016

BS 598

Comprising Mould body, base plate and combined filling / extraction collar. Satisfies

Compaction Pedestal SL-BT-017

BS 598

Comprising a 300mm sq x 25mm thick steel plate complete with 4 tie rods and securing nuts. A mould clamp and hammer guide are fitted to the plate. The unit is supplied complete with a laminated hardwood block.

Compaction Pedestal SL-BT-018

Comprising a 12" square x 1 inch thick steel plate secured to an 8" square x 18" high wooden block. 4 angle brackets are supplied for securing the block. A specimen mould holder is fitted to the steel plate.

Compaction Hammer SL-BT-019

Satisfies BS 598. The hammer has a 4535 g sliding weight with a free fall of 457mm.

Steel Block SL-BT-020

100mm diameter x 50mm height. For heating the compaction hammer foot according to BS 598-107.

Accessories: Proctor/core Cutter Extruder Spares, Base Plate for compaction mould, Base plate for compaction mould, Filling / Extraction Collar For Compaction Mould



SL-BT-016



SL-BT-017



Marshal Stability Test Apparatus SL-BT-021

Motorized ASTM: D 1559- T -62.

Generally the test is applicable to hot mix designs using bitumen and aggregates upto a maximum size of 25mm. In this method, the resistance to plastic deformation of cylindrical specimen of bituminous mixture is measured when the same is loaded at periphery at 5 cm per min. This test procedure is used in designing and evaluating bituminous paving mixes. The test procedure is extensively used in routine test programmers for paving jobs. There are two major features of the Marshall method of designing mixes namely, a) density – voids analysis b) Stability – flow tests. The marshall stability of mix is defined as a maximum load carried by a compacted specimen at a standard test temperature of 60°C. The flow value is deformation the marshall test specimen under goes during the loading upto the maximum load, 0.25 mm units. In this test and attempt is made to determine optimum binder content for the type of aggregate mix and traffic intensity.

The apparatus consists of: 1) A loading unit motorized, capacity 5000kgf with two telescopic pillars and an adjustable cross head. Limit switches are fitted inside to control upward or downward movement of the pillars. On-off reversing switch and indicator lamps are on the front side while a hand wheel to manually move the pillars is on the right. The load frame

Standard Accessories: Marshal Mould:3 Nos, Marshal Rammer:2 Nos, Pedestal :1 Nos, Braking Head:1 Nos

Mixer with Heating Jacket SL-BT-022

BS 598:107

A 6-litre Mixer Used in conjunction with an Iso Mantle, is suitable for mixing samples of asphalt. Bench mounting Mixer, 6 liter nominal capacity. Supplied with bowl, beater and whisk. Motorised with two speed operated on 230 V A.C., Single Phase. ISO Mantle Electric Heater: For use of Bench Mounting mixer. For 230 VAC.,50Hz, Single Phase

Automatic Compactor SL-BT-023

BS 598-107

Automatic Compactor for Bituminous Mixes Rugged construction to withstand hard work Fully automatic and easy to operate Uniform compaction Automatic Preset Blow Counter

Specification : The Automatic Compactor eliminates the laborious process of manual compaction and an even degree of compaction is achieved. The driven mechanism lifts the weight of 4.5kg and drops it through a correct height of 457 mm. The rammer foot is removable, which facilitates preheating. A compaction pedestal with specimen holder is fixed to the base. An Automatic Blow counter enables the number of blows to be present before each test and automatically stops the machine on completion. Suitable for operation on 230 V, 50 Hz, Single Phase, A.C. supply.



SL-BT-021



SL-BT-022



SL-BT-023

Core Cutting/ Drilling Machine SL-BT-024 (Diesel Engine Driven)

Suitable to cut/drill cores of concrete, rocks, stones, tiles or the similar materials. The machine is suitable for core samples of size upto 150 mm diameter with the help of thin walled diamond bits which are at extra cost. The machine has sturdy base with pillar support in which rack and pinion is provided for adjustment in height and penetration assembly. The leveling screws are provided at the base. For gripping the sample in position suitable grips are provided. A suitable diesel engine is fitted in the machine with cooling arrangement with water. The base frame is also fitted with wheels for ease of transportation.

Dimension approx, are as under: Height : 1300 mm, Base : 600 x 1200 mm, Head travel on rack : 350mm, Drill speeds : 900 R.P.M. for soft samples and 350 R.P.M. for hard Samples, Water swivel : Built in the machines. Accessories: (1) Thin wall diamond bits. (2) Core barrel.



SL-BT-024

Core Cutting/ Drilling Machine SL-BT-025 (Motorized)

Rated Voltage: ~220 V / 50Hz,

Power Input: 2800W, No-Load Speed: 840rpm,

Max. bit diameter: Ø50mm/100mm/150mm Shaft Male: 1 1/4" UNC

Features : 1. Compact size with light weight as well as safety in operation, 2. The drills are equipped with a friction clutch as well as over load current protection for protecting motor, 3. High-strength gear to keep the drill working long hours constantly, 4. Excellent speed, smooth and stability during drilling, 5. Out setting water swivel seal facilitate making replacement when the seal worn out, 6. Bits capacity: 25mm Dia - 150mm Dia

Complete Combination : The core drill includes drill motor, base, column, carriage, control panel, friction clutch, motor mount plate, rack, gear-box, out setting water swivel seal, hydraulic system. Optional parts include water pump, rod for ceiling jack, water container, adapters. Application : The Core Drill is the industry standard, designed for concrete, reinforced concrete, Asphalt and brick in construction.



SL-BT-025

Rock/ Concrete Cutting Machine SL-BT-026

Electrically operated with cooling system. MASONARY TABLE SAW

For people who work with stone, brick, large tiles or blocks, it goes without saying that precision is crucial to the end result. But the efficiency of the machine should never compromise the need for good ergonomics and a reasonable workload. Put simply, the stone or tile you cut must fit perfectly, just as the machine and the blade you use must fit your work situation perfectly. Universal table saw with a unique super-stable height adjustment device, lockable in any position. max. cutting depth in top position is 230 mm, by turning the material over.



SL-BT-026



ASPHALT / BITUMEN

Asphalt & Concrete Floor Saw SL-BT-027

Driven by electrical motor or by engine as per customers requirement. Diamond bit of 100 mm to 600 mm maximum can be supplied as per requirement. The trolley in which the engine is fitted is supplied with cooling arrangements with the help of a water tank. Arrangements to control the depth is also provided. A safety guard is also provided on the diamond blade. Two wheels are provided for easy movability of the machine.



SL-BT-027

Loss on Heating/ Thin Film Oven SL-BT-028

Precise, Hot Air Drying Better Mineral / Blanket Insulation for high Temperature & to avoid heat loss Silent Hot Air Blower, Unique design of Air Circulation provide through out uniform Air movement Unique design of ventilation keeps the surface of the instruments from being Burnt even when the instruments i.e. Oven Temperature maintained at 200°C Polish / Hair Line 304 grade S. Steel sheet interior, long operation, corrosion resistant Kanthal A-1 Super quality coil shaped & Air heater tubular model wound on side/on the back of the Oven for better accuracy Full feature with Digital Temperature Controller cum Indicator having Alarm facility (On Customer request) Toughened Glass view window to observe /Test the material without disturbing the Temperature condition of the chamber. Working Temperature required as per IS : ASTM is 163°C+1°C Provide with detachable metal shaft (Both for Loss on Heating / Thin Film Oven) Reduction gear is fitted from outside rotated by a vertical shaft having 5-6 RPM.



SL-BT-028

Applications : For Bitumen Testing Loss of weight, softening Point, Penetration Loss of wt in Bitumen & Flux Oils (For Construction / Road Projects Department / Industries)

Specifications : Size: 16" x 16" x 16", Capacity: 60 ltr, Heater Wattage: 1.5 KW

Rolling Thin Film Oven SL-BT-029

ASTM D2872

Certified temperature control, Digital Display Internal Fan

The Rolling Thin Film Oven Test is used to obtain homogeneously aged material by the application of heat and air in order to simulate these affects in conventional mixing. The oven is of double wall construction with side vents and of the heated convection type of air Circulation. An electronic controller maintains the temperature at 163+ 0.5° C. A vertical, carriage is supplied to support 8 glass sample containers, which are rotated at 15+ 0.2rpm. An outlet orifice 1mm in diameter is connected to a 7.6m length of copper tubing and flow meter which controls the airflow at 4000 ml/min. Air is blown into the sample containers at their lowest point of travel by an internal airjet. The oven is supplied with 8 glass sample containers and a thermometer (IP 47C/ASTM 13C). Internal dimensions 483 x 450 x 381mm. A separate source of compressed air is required to operate this oven. Operating Voltage 230 V A.C., Single Phase



SL-BT-029

Core Cutting Grinding Machine SL-BT-030

Table Mounted

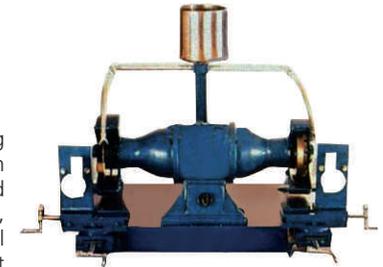
Stable Construction Feed arrangement for cutting

Feed arrangement for cutting

Cooling water arrangement

Heavy Duty, Single Phase Motor 230 V A.C.

Specification : This unit is designed for cutting and grinding cylindrical rock specimens upto NX size. The outfit includes 200mm dia diamond impregnated cutter, a fine diamond impregnated grinding wheel a water supply system and sampler holder. A V-Vice, to hold the sample up to 55mm dia x 140mm long to be cut parallel and square to the longitudinal axis is provided. Cores longer than 140mm can be prepared by reversing the specimen and holding against the vice, A hand feed arrangement is provided to facilitate the specimen with a uniform and smooth feeding motions. This unit is provided with a 1 HP, Single Phase, 230 V A.C. Motor.



SL-BT-030



HEAT TRANSFER THROUGH LAGGED PIPE

Pipes

- a. Diameter :50/100/150mm
Inner/Outer (Approx.)
- b. Length :450mm (Approx.)
- c. Material :G.I./MS
- d. Quantity :1 No. Each

Measuring Instruments

- a. Digital Voltmeter Range :0 to 300 V
- b. Digital Ammeter & Range :0 to 5 Amps
- c. Digital Temperature Indicator with Selector switch Range :Ambient to 0-400 Deg.c

Thermocouples

- a. Type :Cr. Al
- b. Length :1 Mt.
- 04. Voltage Varaic :1 No., 1.5 kw
- 05: Insulation : Glass wool



Heat Transfer Through Lagged Pipe



Emmissivity Measurement Apparatus

EMMISSIVITY MEASUREMENT APPARATUS

Plates

- a. Diameter :150
- b. Material :Brass
- c. Heater :250W
- d. Specimen :Black Body and Grey Body

Rectangular Duct

- a. Material :MS with Power Coating
Front Acrylic

Measuring Instruments

- a. Digital Voltmeter Range :0 to 300 V
- b. Digital Ammeter & Range :0 to 10 Amps
- c. Digital Temperature Indicator with Selector switch Range :Ambient to 0-400Deg.c

Thermocouples

- a. Type :Cr. Al
- b. Length :1 Mt.
- 05. Voltage Varaic :2 Nos, 1.5 kw



Thermal Conductivity Insulating Powder

THERMAL CONDUCTIVITY INSULATING POWDER

Outer Sphere (top And Bottom)

- a. Diameter :200mm (Approx.)
- b. Material :Copper

Inner Sphere (top And Bottom)

- a. Diameter :100
- b. Materail :Copper

Measuring Instruments:

- a. Digital voltmeter, Range :0 to 300V
- b. Digital Ammeter & Range:0 to 5 Amps
- c. Digital Temperature Indicator with selector switch: Range :Ambient to 0-400° c

Thermocouples:

- a. Type :Cr. Al
- b. Length :1 Mtr.
- 05. Electronic Dimmer :1 No., 1.5 kw



HEAT TRANSFER IN NATURAL CONVECTION

S.S. Cylindrical Tube

- a. Diameter :40mm
- b. Length :400/500mm

Measuring Instruments

- a. Digital Voltmeter Range :0 to 300 V
- b. Digital Ammeter Range :0 to 10 Ampsc.
- c. Temperature Indicator with Selector switch Range :Ambient to 400°c

Thermocouples:

- a. Type :Cr. Al
- b. Length :1 Mtr.

Electronic Dimmer :1 No.



SL-5004

Heat Transfer in Natural Convection



SL-5005

Heat Transfer in Forced Convection



SL-5006

Heat Transfer from Pin-Fin

HEAT TRANSFER IN FORCED CONVECTION

Blower

- a. Capacity :350 watts/1.5 cumts/m

Test Section

- a. Diameter :40mm
- b. Length :300mm

Cooling Water Chamber

- a. Diameter :50 mm Optional
- b. Length :300mm (Approx.)
- Material :Copper

Measuring Instruments

- a. Digital Voltmeter Range :0 to 300 V
- b. Digital Ammeter & Range :0 to 10 Amps
- c. Digital Temperature Indicator with Selector switch Range :Ambient to 400°c.

Thermocouples

- a. Type :Cr. Al
- b. Length :1 Mt.

Electronic Dimmer :1 No.

07. Measuring Jar & "u" Tube Manometer 1 No. Each

HEAT TRANSFER FROM PIN-FIN

Blower

- a. Capacity :350 watts/1.5 cumts/m

Test Section

- a. Diameter :12mm
- b. Length :150mm
- c. Material :Brass

Duct

- a. Size :100x150x500mm
- b. Material :MS with Powder Coating

Measuring Instruments

- a. Digital Voltmeter Range :0 to 300 V
- b. Digital Ammeter & Range :0 to 10 Amps
- c. Digital Temperature Indicator with Selector switch Range :Ambient to 400°c.

Thermocouples

- a. Type :Cr. Al
- b. Length :1 Mt.

Electronic Dimmer :1 No.

"U" Tube Manometer:

- a. Material :Glass



STEFAN BOLTZMAN APPARATUS

Stefan Boltzman Section

- a. Hemisphere
Diameter/Material :200mm/Copper
- b. Outer Jacket
Diameter/Material :250mm/Copper
- c. Hylum Base Plate :12 mm thick
- d. Test disc
Size :20mm x 1.5 mm
- Water Tank With Immersion Heater
a. Material :S.S.
- 03. Digital Temperature Indicator With Selector Switch
Range :Ambient to 199.9 Deg. C
- 04. Thermocouples
a. Type :Cr. Al
b. Length :1 Mt.



Stefan Boltzman Apparatus



Critical Heat Flux Apparatus

CRITICAL HEAT FLUX APPARATUS

Cylindrical Shell

- a. Diameter :200mm (Approx.)
- b. Height :200mm (Approx)
- c. Material :Glass

Immersion Heaters:

- a. Capacity :Suitable
- b. Make :Any Standard

Measuring Instruments:

- a. Digital Voltmeter Range :0 to 300 V
- b. Digital Ammeter & Range :0 to 5 Amps
- c. Digital Temperature Indicator with Selector switch Range :Ambient to 199.9 Deg.c

Thermocouples

- a. Type :Cr. Al
- b. Length :1 Mt.

Electronic Dimmer

- :1 No

Test Specimen

- : Nichrome wire



Heat Pipe Demonstrator

HEAT PIPE DEMONSTRATOR

Heat Pipe

- a. Length/Diameter :300/25mm (Approx/)
- c. Material :Brass

Test Pipes

- a. Diameter/Length :25mm/300mm(Approx.)
- Material :Copper
- b. Diameter :25mm (Approx.)
- Length :300mm (Approx.)
- Material :Copper/SS

Small Capacity Tanks

- a. Size :150x100x50mm (Approx.)
- b. Materia/Quantity :S.S./ 3 Nos.

Measuring Instruments

- a. Digital Voltmeter Range :0 to 300 V
- b. Digital Ammeter & Range:0 to 5 Amps
- c. Digital Temperature Indicator with Selector switch Range :Ambient to 400°c.

Thermocouples

- a. Type :Cr. Al
- b. Length :1 Mt.

Electronic Dimmer

- :3 No.



HEAT TRANSFER THROUGH COMPOSITE WALL

Mild Steel, Asbestos & Brass Slabs/wood

a. Thickness :150 od 6 mm Thick

Measuring Instruments

a. Digital Voltmeter Range :0 to 300 V

b. Digital Ammeter & Range :0 to 10 Amps

c. Digital Temperature Indicator with Selector switch Range :Ambient to 400° c.

Thermocouples

a. Type :Cr. Al

b. Length :1 Mt.

Electronic Dimmer :1 Nos.



SL-5010

Heat Transfer Through Composite wall



SL-5011

Parallel/Counter Flow Heat Exchanger

PARALLEL/COUNTER FLOW HEAT EXCHANGER

Geysar

a. Capacity :3 KW

Heat Exchanger Outer Pipe Insulated By Asbestos Rope

a. Diameter :25mm

b. Material :G.I

Heat Exchanger Inner Pipe

a. Length :1000mm

b. Diameter :12.5 mm OD

c. Material :Copper

Digital Temperature Indicator With Selector Switch

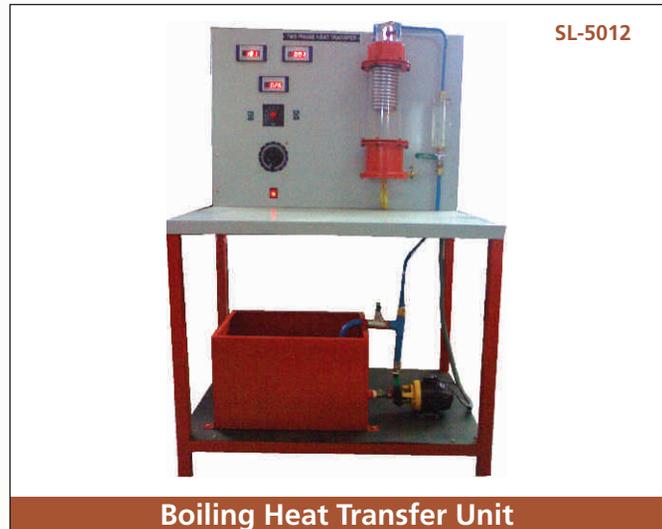
a. Range :Ambient to 199.9 Deg. c

Thermocouples

a. Type :Cr. Al

b. Length :1 Mt.

Measuring Jar :1 Ltr. Capacity



SL-5012

Boiling Heat Transfer Unit

HEAT PIPE DEMONSTRATOR

Glass Tube

a. Diameter/Height :100mm OD/275mm (Approx.)

Copper Tube

a. Diameter :9mm OD (Approx.)

b. Material :150mm (Approx.)

Measuring Instruments

a. Digital Voltmeter Range :0 to 300 V

b. Digital Ammeter & Range:0 to 5 Amps

c. Digital Temperature Indicator with Selector switch Range :Ambient to 199.9 Deg. c

Thermocouples

a. Type :Cr. Al

b. Length :1 Mt.

Dimmer/ Electronic

a. Make :Agro/Equivalent

b. Range :0 to 10 Amps

Rotameter

a. Material :Acrylic

b. Range :40 to 60 cc/sec

Sump Tank:

a. Size :200 x 200x 400mm (Approx.)

b. Material :S.S





Drop & Film Condensation



Shell and Tube Heat Exchanger

DROP & FILM CONDENSATION**Glass Tube**

- a. Diameter :100mm OD (Approx.)
 b. Height :275mm (Approx.)
 c. Quantity :2 Nos.

Measuring Instruments

- c. Digital Temperature Indicator with Selector switch Range :Ambient to 199.9 Deg.c

Thermocouples

- a. Type :Cr. Al
 b. Length :1 Mt.

Rotameter

- a. Material :Acrylic
 b. Range :40 to 60 cc/sec

Sump Tank:

- a. Size :200 x 200x 400mm (Approx.)
 b. Material :S.S

Steam Generator

- a. Diameter :200mm (Approx.)
 b. Height :300mm (Approx.)
 c. Material :M.S.
 D. Heater used :2KW/ 1 No.

SHELL AND TYBE HEAT EXCHANGER**Control Panel**

Stand Alone Metallic powder coated panel

Specimen

Shell: 200mm dia, 5mm thick, 1m long MS pipe
 Tubes: 1/2" dia, 1020mm long Copper or seamless MS tubes

Insulation

Asbestos Cloth / Rope

Geyser

1 liter, 3 kW, Instantaneous (SS hot water tank with pump at extra cost)

Flow measurement

Measuring Jar with digital stop watch (Rota meters at extra cost).

Temperature Indicator

Digital Temperature Indicator, 0-199.9°C with TSS

Thermocouples

Teflon coated Cr -Al (K-type)-4 no.

Measuring Jar

Plastic-1000ml

Stop Watch

Digital, 1/10 of a second, Racer/Pacer Make

Experimental Capability

Over All Heat transfer Co-Efficient, Effectiveness

Manual

Self explanatory Instruction manual with sample calculation

Optional Feature @ Extra

Computerized data acquisition system with software



Unsteady state Heat Transfer Test Rig

UNESTEADY STATE HEAT TRANSFER TEST RIG**Control Panel**

Stand Alone Metallic powder coated panel

Specimen

Copper 30mm dia, 30mm long,

Duct / Enclosure

MS powder coated duct of 8"x8" in size 8" dia MS shell with glass wool insulation

Heater

Band Heater-500W

Cooling Fan

8" dia exhaust fan

Voltmeter

Digital voltmeter of range 0-300V AC

Ammeter

Digital ammeter of range 0-20A AC

Temperature Indicator

Digital Temperature Indicator ,0-400°C with TSS

Thermocouples

Teflon coated Cr -Al (K-type)-8 no.

Stopwatch

Digital Stop Watch.

Regulator

Electronic Dimmer 1kW. (2Amps Variac At extra cost)

Experimental Capability

Nusslet No. And Biot No.

Manual

Self explanatory Instruction manual with sample calculation

Optional Feature @ Extra

Computerized data acquisition system with software



Plate Type Heat Exchanger

PLATE TYPE HEAT EXCHANGER**Control Panel**

Stand Alone Metallic powder coated panel

Specimen

An industrial Plate Heat exchanger made of SS of size 200 mm x 75 mm, Number of plates are 14

Flow type

Both Parallel and Counter Flow

Geyser

1 liter, 3 kW, Instantaneous
(SS hot water tank with pump at extra cost)

Flow measurement

Measuring Jar with digital stop watch
(Rota meters at extra cost – 2 nos).

Temperature Indicator

Digital Temperature Indicator ,0-199.9°C with TSS

Thermocouples

Teflon coated Cr -Al (K-type)-4 no.

Measuring Jar

Plastic-1000ml

Stop Watch

Digital, 1/10 of a second, Racer/Pacer Make

Experimental Capability

Over All Heat transfer Co-Efficient, Effectiveness

Manual

Self explanatory Instruction manual with sample calculation

Optional Feature @ Extra

Computerized data acquisition system with software



Thermal Conductivity by Guarded Hot Plate



Thermal Conductivity of Metal Rod

THERMAL CONDUCTIVITY BY GUARDED HOT PLATE**Guarded Plate Section**

a. Main Heater Plate	:	
b. Diameter	:	90mm
c. Material	:	Brass
d. Ring Heater Diameter	:	100ID/150 OD mm
e. Material	:	MICA
f. Ring Heater Plate	:	
g. Diameter	:	100 ID/150 mm OD
h. Material	:	Brass
i. Asbestos plate	:	150OD/12 mm thick
j. Cooling jacket	:	
k. Diameter	:	150OD
l. Material	:	Brass
m. Size	:	123mm thick

Measuring Instruments

a. Digital Voltmeter Range	:	0 to 300 V
b. Digital Ammeter & Range	:	0 to 10 Amps
c. Digital Temperature Indicator with Selector switch	:	Ambient to 199.9 Deg.c

Thermocouples:

a. Type	:	Cr. Al
b. Length	:	1 Mtr.

Electronic Dimmer : 2 Nos.

THERMAL CONDUCTIVITY OF METAL ROD**Control Panel**

Stand Alone Metallic powder coated panel

Specimen

Shell: 200mm dia, 5mm thick, 1m long MS pipe

Tubes: 1/2" dia, 1020mm long Copper or seamless MS tubes

Insulation

Asbestos Cloth / Rope

Geyser

1 liter, 3 kW, Instantaneous (SS hot water tank with pump at extra cost)

Flow measurement

Measuring Jar with digital stop watch (Rota meters at extra cost).

Temperature Indicator

Digital Temperature Indicator, 0-199.9°C with TSS

Thermocouples

Teflon coated Cr-Al (K-type)-4 no.

Measuring Jar

Plastic-1000ml

Stop Watch

Digital, 1/10 of a second, Racer/Pacer Make

Experimental Capability

Over All Heat transfer Co-Efficient, Effectiveness

Manual

Self explanatory Instruction manual with sample calculation

Optional Feature @ Extra

Computerized data acquisition system with software





SL-8001

Four Stroke Single Cylinder



SL-8002

Two Stroke Single Cylinder

CUT SECTIONAL MODEL OF FOUR STROKE SINGLE CYLINDER ENGINE ASSEMBLY (HERO HONDA)

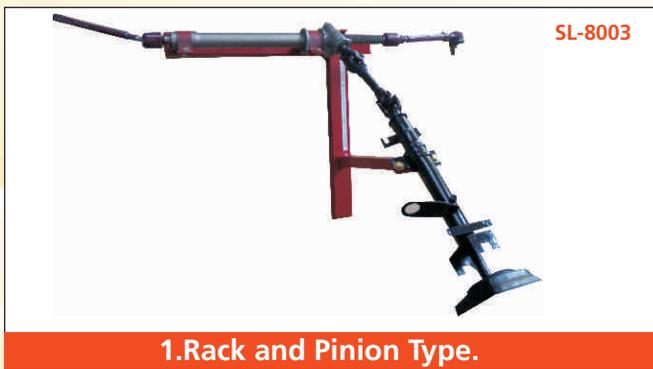
The engine and gearbox assembly, sectioning of maximum parts an accessories like Cylinder, Cylinder Head, Valve ports, Gear box, housing, Oil sump, etc will be carried out to show the internal constructional details such as Piston, Piston rings, Valves, cam, connecting rod ,etc. the model will be mounted on stand. The above model will be painted with Spl Duco painting, Electroplating of hardware will be carried out

CUT SECTION MODEL OF TWO STROKE SINGLE CYLINDER ENGINE (WORKING)

This model is made out of used BAJAJ engine, suitably sectioned to show the internal construction of the engine, gear box, clutch and rear wheel mechanism and the model is fitted on a sturdy iron frame. The complete internal details can be demonstrated by operating the kicker lever to show the working of the piston, sparks from the spark plugs can also be shown

CUT SECTION MODEL OF STEERING GEAR BOX (WORKING)

This model is made out of full size original parts, suitably sectioned and to demonstrate the working of Steering wheel worms, Steering arm, etc., is mounted on a sturdy iron frame.



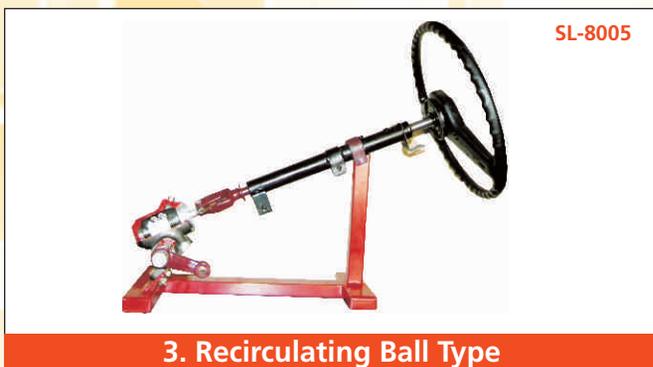
SL-8003

1.Rack and Pinion Type.



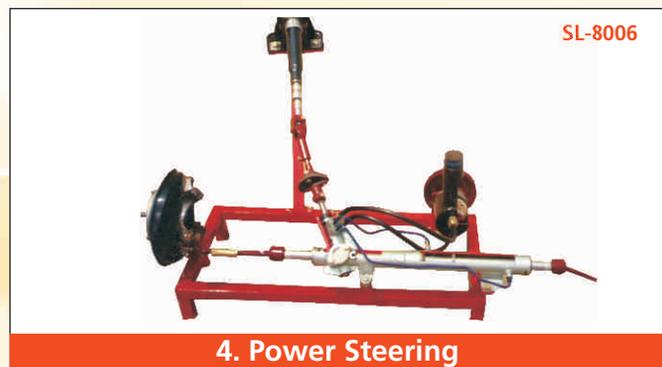
SL-8004

2. Worm and Roller Type



SL-8005

3. Recirculating Ball Type



SL-8006

4. Power Steering





1. Rack and Pinion Type



2. Worm and Roller Type

CUT SECTION MODEL OF STEERING GEAR BOX (WORKING) WITH WHEEL AND AXLE

This model is made out of full size original parts, suitably sectioned and to demonstrate the working of Steering wheel worms, Steering arm, etc., The Arrangement of Wheels And Axle Connecting To steering system will be done so the movement of the wheels when rotating the steering wheels can be displayed . The model will be mounted on to a tubular frame, Suitable color imported painting will be carried out along with Miracle coating for the model will be done for extra gloss and shine. The painting will be carried out in such a way that different colors will be use for different components such as identification of sectioned area etc according to the colors code for easy identification of different systems and mechanisms. All the hardware's and gears will be suitably electroplated



3. Recirculating Ball Type



Model of Steering of Jeep with Stub Axle

CUT SECTION MODEL OF STEERING OF JEEP WITH STUB AXLE

This model is made out of original used parts, will be suitably sectioned And Arranged to demonstrate the internal construction details showing the minute information such as steering gear box, bell assembly, tyre rod , linkages, stub axle etc., and working of the same can be show by steering the steering wheel provided, the model will be suitably painted and The entire model is mounted on a sturdy iron frame.





SL-8011

Fully Floating Differential and Rear Wheel

CUT SECTION MODEL OF FULLY FLOATING DIFFERENTIAL AND REAR WHEEL MECHANISM (WORKING)

This model is made out of original used heavy vehicle parts, suitably sectioned to show clearly the action of Differential gear box, such as pinion crown wheel in Differential and Brake drums in Rear axle, A Crank handle is provided to demonstrate the model. The model is mounted on a sturdy iron frame.



SL-8012

Semi Floating Differential and Wheel

CUT SECTION MODEL OF SEMI FLOATING DIFFERENTIAL AND WHEEL MECHANISM (WORKING)

This model is made out of original used light vehicle, suitably sectioned to show the action of Differential gear box and Brake drums in Rear axle. A Crank handle is provided to demonstrate the model. The whole model is mounted on a sturdy iron frame.



SL-8013

Model of Mechanical Brake System

CUT SECTION MODEL OF MECHANICAL BRAKE SYSTEM (WORKING)

This model is made out of original used parts such as Brake drum, Brake Shoes, Brake peddle, etc., suitably sectioned and mounted on a wooden base. By operating the Brake drum and applying the Brake pedal this model can be demonstrated.

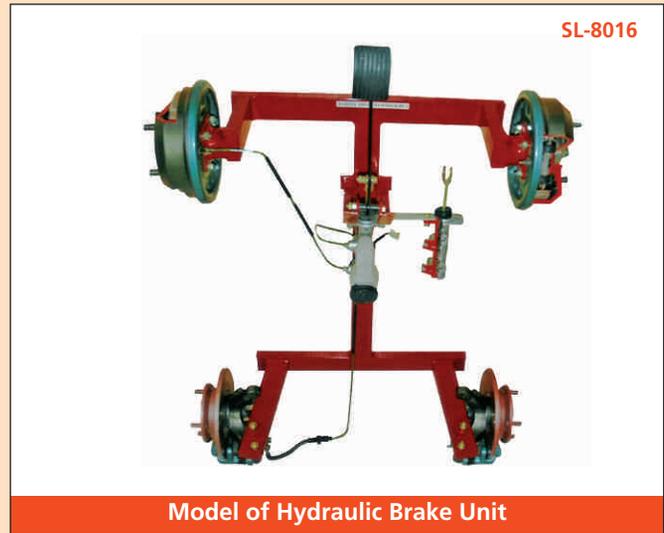


SL-8014

Model of Air brake System

CUT SECTION MODEL OF AIR BRAKE SYSTEM (NON WORKING)

The model is made out of Original parts such as Air compressor, Unloader valve, foot valve, Booster, Wheel assembly, air tank, control valve etc Suitably sectioned and mounted on a sturdy iron frame.

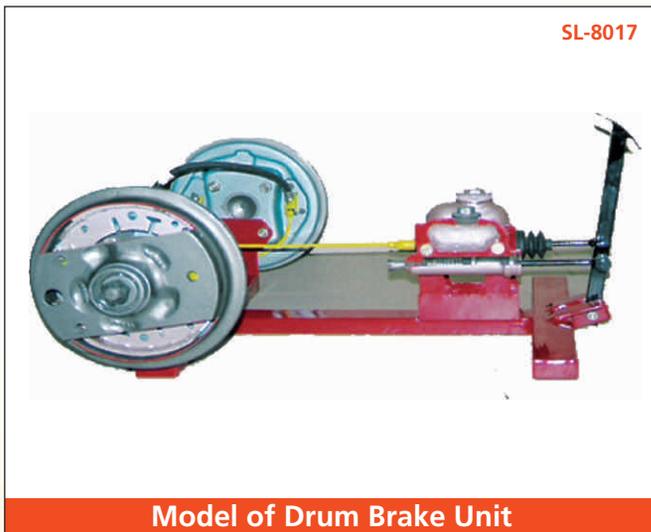


MODEL OF AIR BRAKE SYSTEM (WORKING)

The model is made out of Original parts such as Air compressor, Unloader valve, foot valve, Booster, Wheel assembly, air tank, control valve etc The Brake system will be fitted with two front wheel assembly complete (with out axle) and the drum will be suitably sectioned to show the working of the brake shoe. Other system will be mounted as it is and will be made to function (foot brake, hand brake etc will be functional.)the entire system will be mounted on a sturdy iron frame. A F.H.P Single phase 220/230 V AC motor will be coupled to the compressor for generation of the air, which is used for the operation of the model.

CUT SECTION MODEL OF HYDRAULIC BRAKE UNIT FOUR WHEEL TYPE (CUT SECTIONED AND WORKING WITH TWO DISC AND TWO DRUM BRAKES)

This model contain two disc brakes in the front and two drum brakes at the rear and it is made out of original parts such as two master cylinder Assembly (one sectioned and one working), wheel cylinder, Brake drum, Brake Shoes, calipers etc., suitably sectioned and mounted on a sturdy iron frame. By operating the lever provided, the working procedure of the model can be demonstrated.

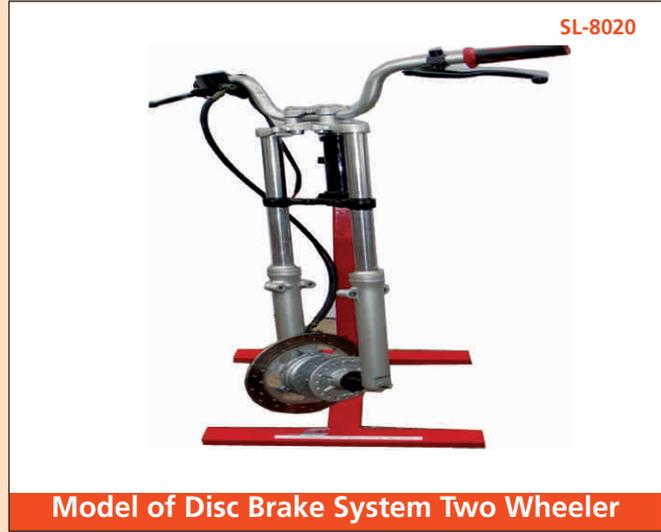
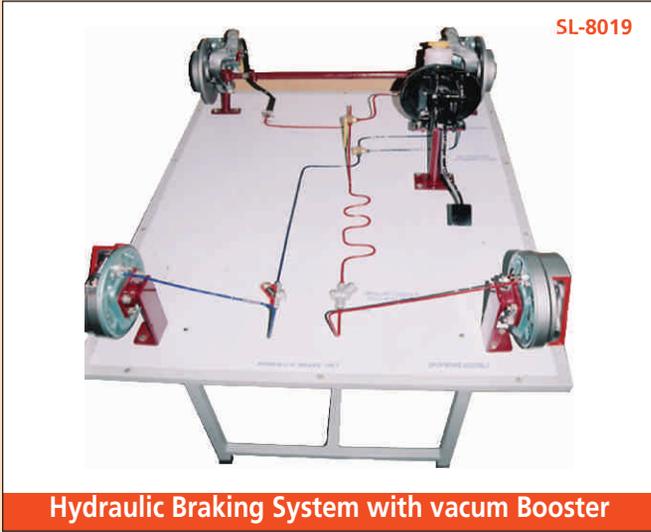


CUT SECTION MODEL OF DRUM BRAKE UNIT (HYDRAULIC WORKING)

This model is made out of original parts such as Two Brake drum assembly, two master cylinder (one sectioned), wheel cylinders (one sectioned), Brake Shoes, etc., the model can be demonstrated by operating the lever provided.

CUT SECTION MODEL OF DISC BRAKE SYSTEM (WOIKING)

The Model is made out of Original parts such as Two Brake disc, two Caliper assembly (one sectioned), two master cylinder (one sectioned) etc, the model is mounted on a sturdy iron frame and can be demonstrated by operating the lever provided.



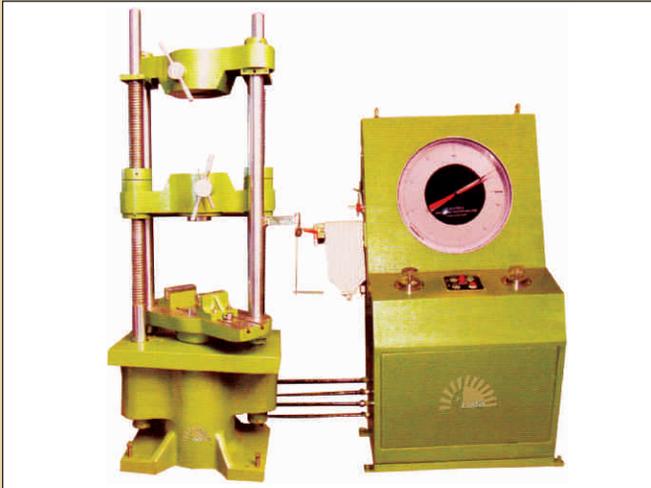
MODEL OF HYDRAULIC BRAKING SYSTEM WITH VACUM BOOSTER (TATA INDICA)

The model will be made out of Used TATA Indica brake aggregates which will be suitably sectioned, Left Front disc and Left rear drum will be made working, using necessary hydraulic connection from the Master cylinder, By operating the brake pedal connected to the Master cylinder through booster, the functioning of disc and drum brake can be demonstrated. The aggregates on the other side will be suitably sectioned to show the internal details and will be kept dummy. All the aggregates will paint finished The entire setup will be mounted on a sturdy iron frame.

CUT SECTION MODEL OF DISC BRAKE SYSTEM TWO WHEELER

This model is made out of original used parts, will be suitably sectioned And Arranged to demonstrate the internal construction details showing the minute information such as the disc brake assembly, master cylinder on the handle, its piping, front wheel assembly with disc , handle bar with cylinder and brake lever etc., and working of the same can be show by operating the brake lever, the model will be suitably painted and The entire model is mounted on a sturdy iron frame.





Universal Testing Machine



Universal Testing Machine

UNIVERSAL TESTING MACHINE (MECHANICAL)

SALIENT FEATURE:

- **Loading accuracy:** As high as + 1 %
- **Speeds:** Straining at variable speeds to suit wide range of materials
- **Facilities for tests:** Motor-driven threaded columns for quick and convenient adjustment of lower crosshead to facilitate rapid fixing of test specimen.
- **Autographic recorder:** Simultaneous roll autographic recorder supplied as standard to enable study of the behaviors of materials.
- **Ideal Dia:** High reading accuracy due to large size ideal design of dial.
- **Large columns:** Large effective clearance between columns enables testing of standard specimen as well as structures.
- **Easy changeability:** Easy change from plain to threaded and screwed specimens
- **Simple & Safe:** Simple to operate.
- **Robust construction**
- **Chrome plated metal components**
- **Wide range of standard and special attachments accessories available.**

UNIVERSAL TESTING MACHINE HYDRAULIC COMPUTERIZED VERSION

APPLICATION SYSTEM:

- Peak Load along with on line load
- Maximum elongation with online elongation
- Ultimate Tensile Strength
- Graphical Display of load vs. time
- Graphical Display of elongation vs. time
- Graphic Display of load vs. elongation
- Graphic Display of stress vs. strain
- Complete Statistical Analysis
- Data report management

SAFETY FEATURES:

- Machine stops after specimen failure
- Safety against over travel of piston
- Surge protector
- Auto machine diagnosis
- Safety against overload



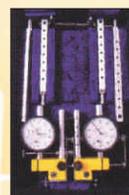
State of The Art Technology Electronic Circuit



SC Model Torque Compensated Power Pack



Lindlay Type Extensometer



Extensometer



TECHNICAL DATA

Model	UNITS	SL-10	SL-10E	SL-20	SL-20E	SL-40	SL-40E	SL-60	SL-60E	SL-100	SL-100E	SL-200	SL-200E
Max. Capacity		100		200		400		600		1000		2000	
1st Measuring Range Resolution	kN	0-100 0.20	0.01kN	0-200 0.40	0.02kN	0-400 0.80	0.05kN	0-600 1.00	0.05kN	0-1000 2.00	0.10 kN	0-2000 4.00	0.20 kN
2nd Measuring Range Resloution	kN	0-50 0.10		0-100 0.20		0-200 0.40		0-300 0.50		0-500 1.00		0-1000 2.00	
3rd Measuring Range Resolution	kN	0-25 0.05		0-50 0.10		0-100 0.20		0-120 0.20		0-250 0.50		0-500 1.00	
4th Measuring Range Resloution	kN	0-10 0.02		0-20 0.04		0-40 0.08		0.60 0.10		0.100 0.20		0-200 0-40	
Max. Clearance for Tensile Test	mm	50-700		50-700		50-700		50-800		50-850		50-900	
Max. Clearance for Compression Test	mm	0-700		0-700		0-700		0-800		0-850		0-900	
Clearance between Columns	mm	500		500		500		600		750		850	
RAM Stroke	mm	150		200		200		250		250		300	
Straining/Piston Speed at no load	mm min	0-300		0-150		0-150		0-100		0-80		0-45	
Electric Supply	kw	1.0		1.0		1.75		1.9		2.6		3.0	

STANDARD ACCESSORIES

FOR TENSION TEST: Clamping Jaws for round Specimen	mm	10-20 20-30	10-20 20-30	10-25 25-40 40-55	10-25 25-40 40-55	10-20 25-40 45-70	20-40 40-60 60-80
Clamping Jaws for Flat Specimen	mm	0-10 10-20	0-10 10-20	0-15 15-30	0-15 15-30	0-22 22-44 44-65	0-20 20-45 45-70
Width	mm	50	50	65	70	70	100
For Compression Test: Pair of compression plate of diameter	mm	120	120	120	120	160	220

FOR TRANSVERSE TEST:

Width for rollers	mm	160	160	160	160	160	160
Diameters of rollers	mm	30	30	30	50	50	70
Max. Clearance between support	mm	500	500	500	600	800	900
Radius of punch Top	mm	6,12	6,12	12,16	16,22	16,22	30,40

Technical Specifications for higher capacity machine will be sent on request.

Special accessories: This include load stabilizer, Brinell test attachment, 180° Bend test attachment, Shear test attachment and a wide range of accessories offering on request, at additional cost.

Installation: It is recommended that machine be erected on a foundation.

Due to Constant R & D, specification and features are subject to change without notice



IMPACT TESTING MACHINE

This Pendulum impact Tester is designed for conducting CHARPY, IZOD AND IMPACT Test. The test Method confirm to IS: 1973, and IS 1499-1977, and BS: 131 Part 2 & 3-1972 IS: 1598-1977, BS: 131 Part I- 1972

The impact energy absorbed by the specimen during rupture is measured as the difference between the height of drop before rupture and the height of rise after rupture of the test specimen and is read on the dial scale.

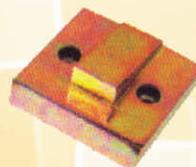


Impact Testing Machine(Izod)

TECHNICAL DATA

	Charpy and Impact Tension Test	Izod Test
Pendulum drop angle	140°	85°21'
Effective weight	20.59 kg.	21.79 kg.
Speed	* 5.3465m/sec	3.857m/sec
Impact energy	30 kgm (300J)	16.4kgm (164J)
Min. graduation	2J	
Distance of axis of hammer rotation and centre of test piece/[pint of test piece hit by hammer	825 mm	825 mm
Max permissible loss by friction	0.5of max. impact energy	

Charpy Test	Izod Test	Impact Tension Test
A) Striking edge	A) Striking edge	A) Striking edge
Angle : 30°± 1°	Angle : 75°	Distance between forks : 36mm
Radius of curvature: 2.25 mm	Radius of curvature: 0.75	Radius of curvature : 1mm
width : 18 mm	Horizontal Relief : 10°	
	Vertical Relief : 5°	
B) Support	B) Support	B) Support
Distance between arm 40 mm	For gripping specimen with	For clamping specimen with
Slopping angle : 0°	dimension of 10 x 10 mm	dimensions of following
Relief angle : 10°		Diameter : 6.4 mm
Radius of curvature: 1.25 mm		Length (Total) : 68 mm
		Length (Measuring) : 25.4 mm
		Thread of supporting M10 x 1.5



Izod Striker



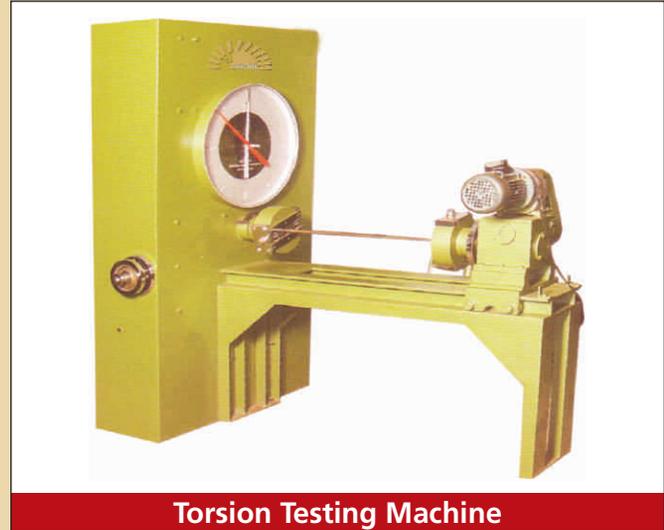
Charpy Striker

Max. CAPACITY available upto 100kgm
also available in Electronic Digital version



TORISON TESTING MACHINE

- Unique "TALCON-CLAW" Grips for Round and Flat specimens
- Torisonal Speed of 0.1/0.2 RPM
- Torque Compensated Motors
- Maintenance Free Gear Box
- Auto Range Selection with Range Selector Wheel (Optional)
- 3 or 4 Torque Ranges for Higher Accuracy (Optional)
- Load-unload Capability
- Variable Speed Drive (Optional)



Torsion Testing Machine

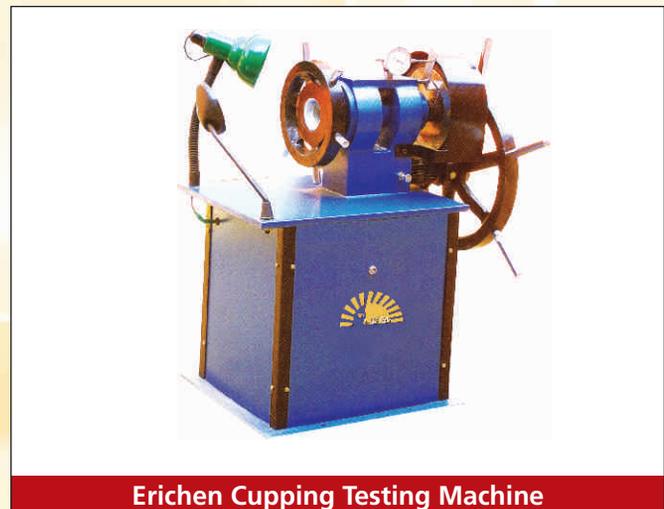
LabTek Torsion Testing Machine is designed for conducting Torison and Twist Tests on various metal wire, tubes sheet materials. Torque measurement by pendulum Dynamometer System. Torque ranges can be adjusted. Torque can be applied to specimen by geared motor through gear box, Autographic recorder can be provided to know the relation between torque and angle of twist on specific request

TECHNICAL SPECIFICATIONS

Model	SL-3a	SL-3b	SL-3c	SL-3d	SL-3e	SL-3f	SL-3g	SL-3h
Capacity kg-m	6	10	20	50	100	200	300	600
Ranges in kg-m	6 & 3	10, 5 & 2	20, 10 & 5	50, 25 & 10	100, 50 & 20	200, 100 & 30	300, 150, 100 & 60	600, 300 & 100
No. of divn. on dial	500	500	500	500	500	500	600	600
Torsion Speed & Direction	Fixed one way	Fixed Reverse	Fixed Reverse					
Clearance Between Grips (mm)	0-400	0-420	0-450	0-500	0-500	0-1000	0-1000	0-1500
Grips for round bars (mm)	4-12	4-12	7-20	10-30	10-34	20-50	30-60	40-70
Grips for flat bars (mm)	1-5	2-8	3-10	5-12	5-15	10-20	15-25	25-40
Width (mm)	25	25	30	40	50	60	60	70
Gear motor 3 ph (ph)	0.5	0.5	0.5	0.5	0.5	2.0	3.0	5.0



Universal Spring Testing Machine



Erichen Cupping Testing Machine



TENSILE TESTING MACHINE

- TENSILE TESTERS are electrically operated machines for testing tensile strength and elongation of materials like plywood, wires, cables, conductors, ferrous and non-ferrous materials
- TENSILE TESTERS are manufactured in various capacities and tests can be conducted on these machines by simply incorporating appropriate traverse speeds and using suitable grips in conformity with the adopted BIS, BS, ASTM, DIN & ISO standards.



Tensile Testing Machine

- ◆ TENSILE TESTERS are quite capable of conducting Compression and Bending tests apart from performing Tensile and Elongation tests.
- ◆ TENSILE TESTERS are manufactured in different capacities upto 10,000Kgf. in our LabTek ensuring + 1% accuracy in the test results.
- ◆ TENSILE TESTERS are extra elegant, best quality, durable and accurate with matchless perfection.
- ◆ TENSILE TESTERS are also offered on specific requirements with load graduation in kilograms. Newton Electronic up Based & computerized Tensile Testers can also be manufactured on specific requirements Besides a wide range of accessories depending upon the individual requirements, for the tests involved, of the suers and a prompt and reliable after-sales service facilities are also available with LabTek

Technical Data

Model	Unit	SL-2a	SL-2ae	SL-2b	SL-2be	SL-2c	SL-2ce	SL-2d	SL-2de	SL-2e	SL-2ee	SL-2f	SL-2fe
Cap.	N	2500		5000		10000		25000		50000		100000	
Ranges		0-500N x 0.01		0-1000N x 0.2N		0-10000N x 0.01		0-25000N x 50N		0-50000N x 50N		100000N x 200N	
		0-1000N x 0.01	5N	0-2500N x 0.2N	5N	0-5000N x 0.01	10N	0-10000N x 2N	20N	0-10000N x 20N	20N	0-50000N x 100N	50N
		0-2500N x 0.01		0-5000N x 10N		0-2500N x 0.01		0-5000N x 1N		0-5000N x 10N		0-2500N x 50N	

Traverse Speed per specification (mm/min) or as	300 and 100	100	100	100	100	25 and 12.5
Grip Separation Minimum Maximum	25mm 1000mm	25mm 1000mm	25mm 750mm	25mm 750mm	25mm 750mm	25mm 600mm
Power Requirement	3 ph 440 V 50 Hz AC					
Over-travel Safety Switches	Included	Included	Included	Included	Included	Included



ROCKWELL HARDNESS TESTER

- SL-5 : Manual weight selection an Manual zero adjustment of Dial gauge
- SL-5A : Manual weight selection with Automatic zero setting dial Gauge
- SL-5B : Automatic weight selection with automatic zero setting dial gauge
- SL-5C: Arrangement similar to SL 5B with one additional weight of 187.5 kg for Brinell tests
- SL- 5D: Arrangement similar to SL 5B with two additional weight of 187.5 kg and 250kg for Brinell tests on this machine small pin having dia 2mm can be tested as plunger is guided with a set of six bearings.
- SL- 5E : Rockwell Superficial Hardness Tester with automatic zero setting dial gauge, manual load selection. The major load are N scale besides all fifteen Rockwell Superficial scales. Can be used with this tester
- SL-5F : This model is double purpose Hardness Tester suitable for Both Rockwell & Rockwell Superficial hardness test. The Major load of 15,30, 45,60, 100 and 150 kg are applied.



Rockwell Hardness Tester

STANDARD ACCESSORIES

Model	SL5	SL5C	SL5D	SL5E	SL5F
	5A, 5B				
Testing Table 50mm Ø	1 Pc.				
Testing Table 40mm Ø with 'V' groove for round jobs 6 to 45 mm Ø	1 Pc.				
Diamond indenter 120°	1 Pc.				
Stell ball indenter 1/16 "	1 Pc.				
Test block Rockwell 'c	1 Pc.	1 Pc.	1 Pc.	Nil	1 Pc
Test block Rockwell 'B'	1 Pc.	1 Pc.	1 Pc.	Nil	1 Pc
Tet block Rockwell Superficial N	Nil	Nil	Nil	1 Pc	1 Pc
Allien Spanners	2Pca	2Pcs	2Pcs	2 Pcs	2 Pcs
Clamping device	1 Pc				
Dash pot oil	1 bottle				
Instructional Manual	1 book				
Brinell Microscope	Nil	1 Pc	1 Pc	Nil	Nil
Stell Ball Indentor 2.5mm	Nil	1 Pc	1 Pc	Nil	Nil
Stell Ball Indentor 5 mm	Nil	1 Pc	1 Pc	Nil	Nil
Test Block HB-2.5/187.5	Nil	1 Pc	1 Pc	Nil	Nil

TECHNICAL SPECIFICATIONS

Model	SL- 5A, 5B	SL- 5C	SL- 5D	SL- 5E	SL- 5F
Max Load (kgf)	150	187.5	250	45	150
Load range (kgf)	60, 100, 150	60, 100,150, 187.5	60, 100, 150, 187.5, 250	15, 30, 45	15, 30, 45 60, 100, 150
Initial Load range (kgf)	10	10	10	-	3, 10
Max. test height (mm)	216	216	290	-	290
Depth of throat (mm)	133	133	148	148	148
Size of base (mm)	171 x 445	171 x 445	210 x 510	210 x 510	210, 510
Machine height (mm)	635	635	845	845	845
Nett. weight (Approx). kg.	77	77	137	137	137
Test Performed	Rockwell	Rockwell & Brinell	Rockwell & Brinell	Superficial	Rockwell & Superficial





Fatigue Testing Machine

FATIGUE TESTING MACHINE

SPECIFICATIONS:

- ◆ Light weight, compact size, simple design
- ◆ Table model
- ◆ Simple lever system for changing load
- ◆ Accurately calibrated as per ISO75
- ◆ 10 Digit electronic counter instead of mechanical counter can be supplied at additional price and the model is termed as SL-F 10
- ◆ Machine with maximum bending movement upto 400kg/cm can be offered on request

TECHNICAL SPECIFICATIONS

1) Maximum bending moment	kg cm	200
2) Bending movement adjustable	kg cm	0-200
3) Ranges	I-kg cm	30-100
	II-kg cm	100-200
4) Gripping dia of specimen	mm	12
5) Testing dia of specimen	mm	8
6) Rotating Speed	rpm	4200
7) Accuracy of applied bending	moment	±1%
8) Digital counter No. of digits		100.5
9) Power required	HP	220V, 50
10) Main supply	A.C.Ph	Hz



Brinell Hardness Tester

BRINELL HARDNESS TESTER

The machine is designed with a Hydraulic Power pack and control circuit for effortless loading unloading operation. A dial gauge in from measures depth of ball penetration. This facilitates production testing within tolerance limits by comparison method.

STANDARD ACCESSORIES

Model	SL 3000
Testing Table 200 mm Ø	1 pc.
Testing Table 200 mm Ø with 'V' groove for round jobs-10 to 80 mm dia	1 pc.
Ball holder 5 mm	1 pc.
Ball holder 10 mm	1 pc.
Test block HB-5/750	1 pc.
Test block HB 10/3000	1 pc.
Brinell Microscope	1 pc.
Allen Spanner	1 pc.
Telescopic cover for elevating screw protection	1 set
Instruction Manual	1 book

Technical Specification

Model	SI-3000
Max load (kgf)	3000
Load range (kgf)	In stage of 250 kgf
Initial Load range (kgf)	250
Max. test height (mm)	410
Depth of throat (mm)	200
Size of base (mm)	670 x 370
Machine height (mm)	1127 mm
Nett. weight (Approx. Kg.)	450 kg
Test Performed	Brinell



METALLURGICAL INVERTED MICROSCOPE

Magnification Range: 20x to 400 x (Standard)
Observation Head: Binocular 45° with interpupillary and diopter adjustment
Stand: Sturdy and Durable pressure Die cast Aluminium stand.
Mechanical Stage: Co-Axial low drive double plate mechanism system travel on ball bearing guide ways.
Focusing System: Co-axial coarse & fine mechanism system with ball bearing guide ways.
Epi-Illumination: Built in base 12V-50W Halogen lamp with light intensity control system.
Quadruple Nose Piece: A precision mechanism ensures the accuracy and optical alignment of the system.
Filters: Green & Blue.
DIN-LWD Objectives: M4 x M10x, M20x & M40x (SL). Anti Fungal & infinity corrected.
Eye Pieces: 5x & 10x Paired. Extra wide field, Anti fungal & Anti reflected



SL-1008

Binocular Inverted Metallurgical Microscope



SL-1009

Muffle Furnace

MUFFLE FURNACE

LabTek Rectangular Muffle Furnace Maximum Temp. 950 deg. C working Temp. 1200 deg. C

- A. 100 x 100 x 225mm. (4" x 4" x 9")
- B. 150 x 150 x 300mm. (5" x 5" x 10")
- C. 150 x 150 x 300mm (6" x 6" x 12")
- D. 200 x 200 x 300mm (8" x 8" x 12")



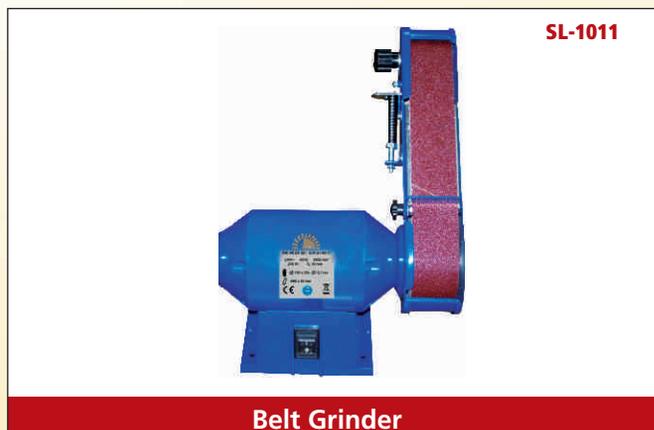
SL-1010

Double Disc Polishing Machine

DOUBLE DISC POLISHING MACHINE

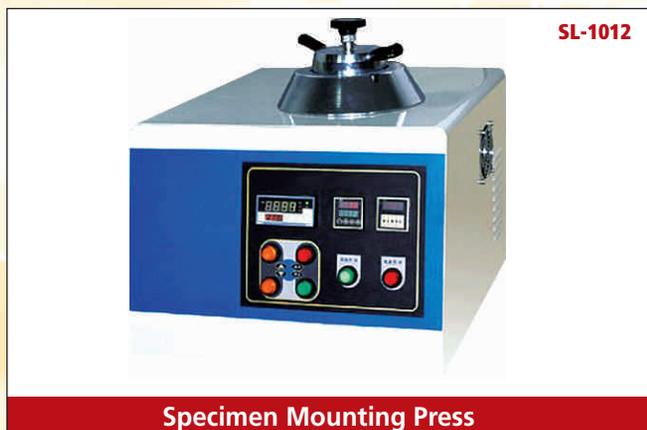
This is double disc polishing machine for met allographic samples. Two independent polishing units is mounted on a common MS frame, other specification as per single disc.

This Machine is portable model for polishing of met allographic sample. Disc dia 200 mm made of Aluminum. Speed continuously variable up to 950 RPM. Rating- 0.25 HP single phase 220 Volt A.C. Provided with sink and swing type laboratory water tap. Water proof Formica table top.



SL-1011

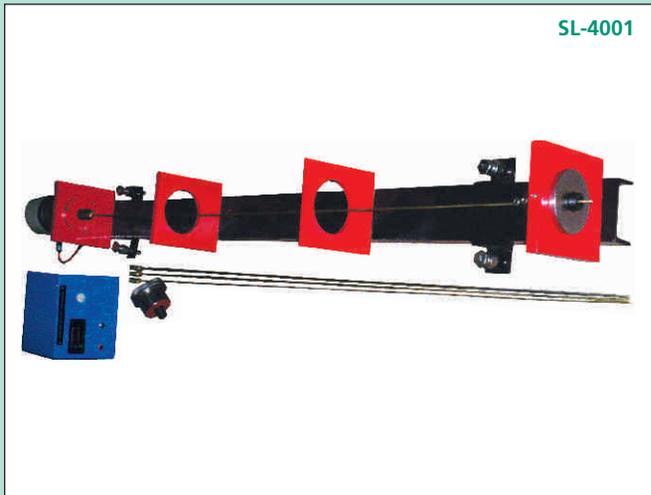
Belt Grinder



SL-1012

Specimen Mounting Press





Whirling of Shaft Apparatus



Vibration Lab Apparatus

WHIRLING OF SHAFT APPARATUS

This compact and simple apparatus incorporated two features. Firstly, kinematics coupling at the driven end of the shaft to slide freely in longitudinal direction while revolving readily. The directional clamping of this end of the shaft is achieved by and interchangeable chuck without self aligning radial ball bearing.

The shaft is driven through a dynamically balanced flexible coupling by a universal motor, the speed of which can be controlled by a control unit. The speed of rotation of the shaft can be measured by a stroboscope. Tachometer can be also used for speed measurement. The following shafts made from steel will be supplied.

Dia. (MM)	Length (MM)
2 or 3	10000
4	10000
6	10000
8	10000

One kinematics coupling and bearing for fixed of free end. One sliding chuck for fixed end with lateral movement.

POWER REQUIREMENT

220 V, 50 Hz single phase

Range of experiments: Investigation of various models of whirl for shafts with:

- a) Both ends directionally free.
- b) Both ends directionally fixed

Note: STROBOMETER AND TACHOMETER NOT INCLUDED IN THE SCOPE OF SUPPLY.

VIBRATION LAB APPARATUS

Vibration Lab- No I:

Vibration lab machine for performing experiments on longitudinal and torsional vibrations with control panels and speed indicators.

Exp. 1-Equivalent spring mass system to study the undamped free vibration.

Exp. 2- Equivalent spring mass system to study forced calibration

Vibration Lab- No II:

Vibration lab machine for performing experiments on longitudinal and torsional vibrations with control panels and speed indicators.

Exp. 1-Simple pendulum

Exp. 2- Compound Pendulum

Exp. 3- Bifilar suspension

Exp. 4- Spring mass system

Exp. 5- Equivalent spring mass system to study the undamped free vibration

Exp. 6- Equivalent spring mass system to study forced calibration.

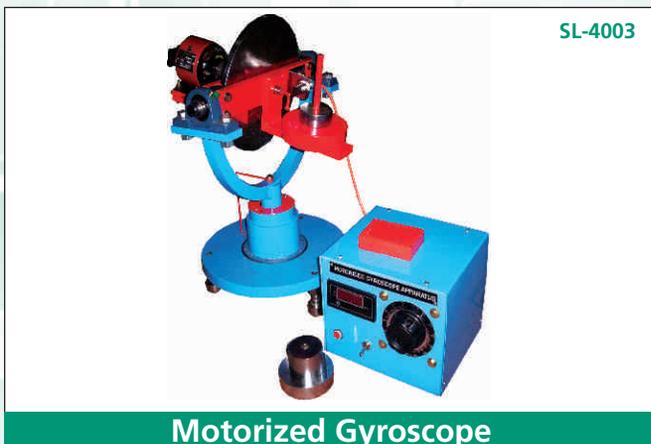
Exp. 7- Verification of Dukerley's rule

Exp. 8- To study of force vibration for various amount of damping.

Exp. 9- Torisional vibration for the single rotor system

Exp. 10- Torisional vibration for the two rotor system

Exp. 11- Single rotor with viscous damping



Motorized Gyroscope

MOTORIZED GYROSCOPE

This is to demonstrate the relationship between applied torque and the rate and direction of rotation. This is motorized and mounted on a frame such that free to rotate about three perpendicular axis. This facilitates to observe the laws of stability and justification of equation.





Universal Governor Apparatus

UNIVERSAL GOVERNOR APPARATUS

The set up consists of a small electric motor connected bevel reduction gear box or belt and pulley system through a flexible coupling. The Governor spindle is driven by a solid coupling connected to the gear box output shaft and is supported on ball bearing. The optional governor mechanism can be mounted on spindle. Speed control unit is provided to regulate speed and extension to the spindle shaft can be used to use hand tachometer. The center sleeve to the porter and proell governors incorporates a weight sleeve to which weights are added. The Hartnell Governor can be operated as a stable or unstable Governor.

The following range of experiments can be Performed:

- The effect of varying mass of the center sleeve.
- The effect of varying the rotating mass.
- Determination of characteristic curves of sleeve position against speed of rotation.

The effect of varying the initial spring compression.



Cam Analysis Apparatus



Static and Dynamic Apparatus

STATIC AND DYNAMIC APPARATUS

This is suitable for conducting experiments on static balancing and dynamic balancing with different weights. This consists of rectangular frame of steel perfectly balance with four different blocks. A protractor scale of the disc is provided to reach exact angular position of each weight to be measured. A linear scale provided below the frame provides the measurement of each weight along the shaft. The unit is hanging from a rigid steel frame through chain for dynamic balancing and can be fixed rigidly for static balancing.

CAM ANALYSIS APPARATUS

The machine facilitates the study of dynamic behavior of cam follower. It consists of a DC Motor coupled to an extension shaft whose end carries a cam. A cam follower, mounted on the end of a vertical bar, is loaded on the cam face by compression spring is retained by a cross bar mounted on two vertical pillars attached to the base plate. Facility is provided to vary the pre compression of spring. The inertia of follower can be altered using weights.

Note: Motor is provided only to demonstrate the actual work of system. However while drawing the graph the motor shall be



Journal Bearing Apparatus

JOURNAL BEARING APPARATUS

The Equipment shall have following test facility:

- 1) Simple Demonstrations Observation of the pressure profile at the various conditions of load and speed
 - 2) Experimental Investigation After noting the pressure profile for any chosen conditions the following analysis may be conducted. Plotting the Cartesian and polar pressure curves
- Parts/Component Details:
- 1) Journal 50 mm diameter (Nominal)
 - 2) Bearing 55 mm diameter
 - 3) Weights 4 adjustable weights.
 - 4) Recommended oil SAE 10
 - 5) DC Motor with speed 150-1500 rev/min in both the direction
 - 6) Suitable speed Control Unit is provided along with apparatus
 - 7) Manometer Panel 16 tubes mounted on a wooden backboard



Epicyclic Gear Apparatus

EPICYCLIC GEAR APPARATUS

The Equipment shall have following facility:

- 1) To measure epicyclic gear ratio between input Shaft and output shaft.
 - 2) To measure epicyclic gear ratio between input shaft and holding drum.
 - 3) To measure input torque, holding Torque and output Torque
- Parts/Component Details:
- A) External Type Epicyclic Gear Train.
 - 1) Bearing blocks for input and output Shafts are mounted on on a base frame.
 - 2) A gear Train with Holding drum and a handle.
 - B) Internal Type Epicyclic Gear Train:
 - 1) A compact Gear Train (Industrial)
 - 2) Variable Speed D.C. Shunt Motor, 1hp 1500rpm, 230 volts.
 - 3) Rope brake arrangement to measure output torque and holding torque.
 - C) Control Panel consisting of Digital Ammeter and Voltmeter RPM Indicator, on off switch. Speed control unit



Corollis Component of Acceleration

COROLLIS COMPONENT OF ACCELERATION

Corioli's components of Acceleration can be determined at various speeds of rotation at water flow rates.

Parts/Component Details:

- 1) Main Tank Fabricated out of fiberglass plastic sheet.
- 2) Rotating Arms 9 mm/ 6mm orifice diameter, 300mm logn.
- 3) Rotameter 300 to 3000 LPH
- 4) Electrical Motor D C. Swinging field, 0.5 H.P. 1500 RPM.
- 5) Mono-block Pump Single phase, pump with Motor 2400 LPM discharge.
- 6) Control Unit consisting of
 - a) pump switch, b) Speed Control, c) Speed Indicator
 - d) Main Switch.
- 7) Rigid Support Structures

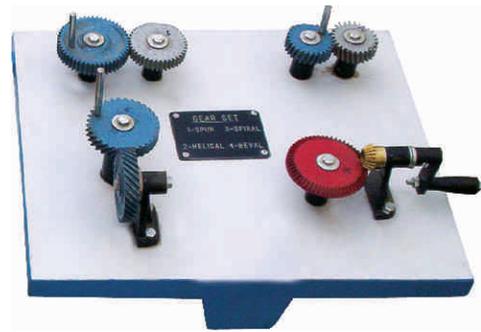
MODELS OF DIFFERENT TYPES OF GEAR TRAINS

SL-4010



Three Stage Spur Gear

SL-4011



Spur, Helical, Bevel Gear

SL-4012



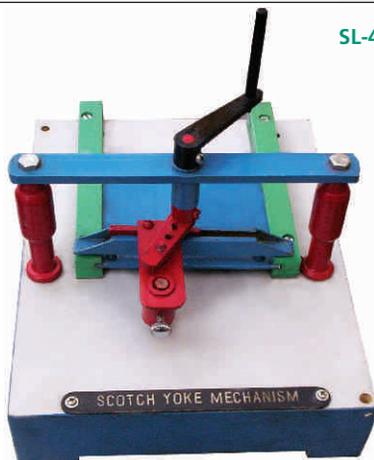
Rack & Pinion

SL-4013



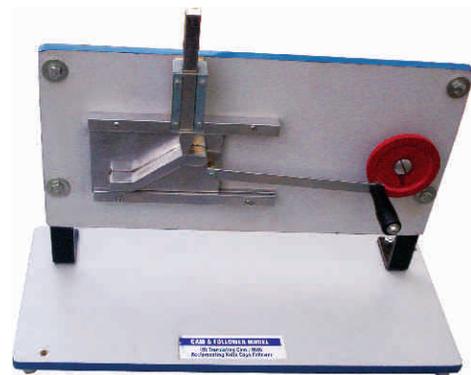
Whit Worth Quick Return Mechanism

SL-4014



Scotch Yoke Mechanism

SL-4015



Cam & Follower with Reciprocating

MODELS OF DIFFERENT TYPES OF GEAR TRAINS

SL-4016



Reversing Gear

SL-4017



Cam & Follower with Translating

SL-4018



Pawl & Ratchet Motion

SL-4019



Herring Bone Gear

SL-4020



Internal Gear Pinion Drive

SL-4021



Oldham Coupling



Single Cylinder 2 Stroke Petrol Engine

SL-2002

SINGLE CYLINDER AIR COOLED TWO STROKE PETROL ENGINE TEST RIG (2.5HP @ 2800 RPM) WITH MECHANICAL BRAKE OR A.C ALTERNATOR OR D.C GENERATOR OR EDDY CURRENT DYNAMOMETER

INTRODUCTION:

The test rig is designed to provide self-contained facility for teaching spark Ignition engine principles. The unit is instrumented so that the following experiments can be carried out.

1. BHP MEASUREMENT
2. BRAKE THERMAL EFFICIENCY
3. FUEL CONSUMPTION MEASUREMENT
4. AIR INTAKE MEASUREMENT

THE ENGINE TEST RIG FACILITATE TO EVALUATE THE FOLLOWING:

- Performance at various throttle position
- BHP measurement from no load to full load

DESCRIPTION:

Three main components from main parts of the test rig.

Welded steel base plate, complete with Mechanical Brake or A.C. Alternator or D.C. Generator or Eddy Current Dynamometer, Drive coupling and with safety guard, anti vibration mounting.

Resistance loading (Resistance bank) with selector switches to load the engine from no load to full load (Only for A.C. Alternator & D.C. Generator)

Panel board positioned over the base plate consisting of fuel system with flow measurement by burette, air flow measurement system, temperature indicator, Speed Indicator

DYNAMOMETER (as applicable)

- a. The dynamometer used is a mechanical Brake capable of absorbing a maximum load of 2.5 HP at a speed to 2800 RPM.
- b. The Loading device used in an AC alternator of matching capacity to load the engine up to 2.5 HP at 2800 RPM along with Resistance loading arrangement for alternator with selector switches.
- c. The Loading device used is DC Generator of matching capacity to load the engine up to 2.5 HP at 2800 RPM along with Resistance loading arrangement provided with selector switches.
- d. The loading device used is Eddy Current Dynamometer of matching capacity to load the engine up to 2.5 HP at 2800 RPM.

INSTRUMENTATION (as applicable):

The following instrumentation is provided.

- 'U' tube manometer for air flow rate
- Burette for fuel flow rate
- Speed indicator-Digital
- Digital Temperature Indicator-Multi point selector switch with thermocouples.
- Digital Voltmeter, Ammeter

CONTROLS:

The test rig is arranged for manual control of the engine with a kick start arrangement for engine starting & manual throttle control.

FUEL MEASURING ARRANGEMENT:

Fuel Measuring Arrangement consists of fuel tank, burette and suitable cock all mounted on a suitable frame work and panel board and supplied with fuel piping from fuel tank to Engine.

AIR INTAKE MEASUREMENT & HEAT CARRIED AWAY BY EXHAUST GAS:

Consisting of an air tank mounted on an iron stand fitted with a suitable orifice plate, manometer, Thermocouple for measuring the exhaust gas temperature with pocket connection with instruments suitably mounted on a panel board.

ENGINE:

Single Cylinder two stroke Air Cooled Petrol Engine to develop 2.5 HP @ 2800 RPM

SERVICES:

Electrical supply of 230V, Single Phase, 50Hz AC.



SL-2003

Single Cylinder 4 Stroke Petrol Engine

SINGLE CYLINDER AIR COOLED FOUR STROKE PETROL ENGINE TEST RIG (3HP @ 3600 RPM) WITH MECHANICAL BRAKE OR A.C ALTERNATOR OR D.C GENERATOR OR EDDY CURRENT .DYNAMOMETER

INTRODUCTION:

The test rig is designed to provide self-contained facility for teaching spark Ignition engine principles. The unit is instrumented so that the following experiments can be carried out.

1. BHP MEASUREMENT
2. BRAKE THERMAL EFFICIENCY
3. FUEL CONSUMPTION MEASUREMENT
4. AIR INTAKE MEASUREMENT
5. MOTORING TEST TO MEASURE I HP & F HP

THE ENGINE TEST RIG FACILITATE TO EVALUATE THE FOLLOWING:

- Performance at various throttle position
- BHP measurement from no load to full load

DESCRIPTION:

Three main components from main parts of the test rig.

Welded steel base plate, complete with Mechanical Brake or A.C. Alternator or D.C. Generator or Eddy Current Dynamometer, Drive coupling and with safety guard, anti vibration mounting.

Resistance loading (Resistance bank) with selector switches to load the engine from no load to full load (Only for A.C. Alternator & D.C. Generator)

Panel board positioned over the base plate consisting of fuel system with flow measurement by burette, air flow measurement system, temperature indicator.

DYNAMOMETER (as applicable)

Mechanical Brake (Belt brake) Dynamometer arrangement with a brake drum fitted on the Engine shaft and provided with cooling water arrangement, spring balance. A set of dead weights in kg units.

AC Alternator of matching capacity to load the engine upto 3HP at 3600 RPM along with Resistance loading arrangement provided with selector switches.

DC Generator of matching capacity to load the engine upto 3HP at 3600 RPM along with Resistance loading arrangement provided with selector switches.

Eddy current dynamometer of matching capacity to load the engine up to 3 HP at 3600 RPM.

INSTRUMENTATION (as applicable):

The following instrumentation is provided.

- 'U' tube manometer for air flow rate
- Burette for fuel flow rate
- Digital Temperature Indicator-Multi point selector switch with thermocouples.
- Digital Voltmeter, Ammeter

CONTROLS:

The test rig is arranged for manual control of the engine with a Rope & Pulley start arrangement for engine starting & manual throttle control.

FUEL MEASURING ARRANGEMENT:

Fuel Measuring Arrangement consists of fuel tank, burette and suitable cock all mounted on a suitable framework and panel board and supplied with fuel piping from fuel tank to Engine.

AIR INTAKE MEASUREMENT & HEAT CARRIED AWAY BY EXHAUST GAS:

Consisting of an air tank mounted on an iron stand fitted with a suitable orifice plate, manometer, Thermocouple for measuring the exhaust gas temperature with pocket connection with instruments suitably mounted on a panel board.

ENGINE:

Brand New engine Single Cylinder Four stroke Air Cooled Petrol Engine to develop 3 HP @ 3600 RPM

SERVICES:

Electrical supply of 230V, Single Phase, 50Hz & Cooling water supply.





Multicylinder 4 Stroke Petrol Engine

SL-2004

MULTICYLINDER FOUR STROKE PETROL ENGINE TEST RIG WITH HYDRAULIC DYNAMOMETER OR A.C ALTERNATOR WITH RESISTANCE LOADING WITH MORSE TEST FACILITY

INTRODUCTION:

The test rig is designed to provide self-contained facility for teaching Internal Combustion (spark Ignition) engine principles. The equipment is instrumented so that the following experiments could be performed.

1. BHP MEASUREME
2. IHP MEASUREMENT (BY MORSE TEST ARRANGEMENT)
3. FUEL CONSUMPTION MEASUREMENT
4. AIR INTAKE MEASUREMENT
5. MEASUREMENT OF HEAT REJECTED TO WATER JACKET
6. HEAT BALANCE TEST

THE ENGINE TEST RIG FACILITATE TO EVALUATE THE FOLLOWING:

- Performance (BHP Measurement) from no load to full load,
- Performance at various throttle position,
- Heat Balance Sheet and Morse test

DESCRIPTION:

Two main components from main parts of the test rig.

Welded steel base plate, complete with Dynamometer, Drive shaft with safety guard, engine starting battery of 12V capacity and cooling water arrangement.

Panel board positioned over the base plate consisting of fuel system with flow measurement by burette, air flow measurement system, temperature and speed indicator.

DYNAMOMETER (as applicable) :

- a. The Dynamometer used is a Hydraulic Dynamometer capable of absorbing a maximum load of 10 BHP at a speed of 1500 RPM.
- b. The Loading device used is an AC Alternator of matching capacity to load the engine upto 10HP at 1500 RPM along with Resistance loading arrangement with selector switches.

INSTRUMENTATION (as applicable):

The following instrumentation is provided.

- Engine oil pressure gauge
- Engine charging circuit ammeter
- 'U' tube manometer for air flow rate
- Burette for fuel flow rate,
- Digital Voltmeter,
- Ammeter
- Speed Indicator-Digital
- Digital Temperature Indicator-Multi point selector switch with thermocouples.

ENGINE STARTING:

The test rig incorporates a 12V DC electrical system designed for use with typical engine self starter system. The battery is included in the scope of supply.

CONTROLS:

The test rig is arranged for manual control with Ignition switch for engine starting, manual throttle control, manual control for hydraulic dynamometer loading and a manul operated cultch actuator arrangement to drive the engine with load or without load (For No Load testing).

FUEL MEASURING ARRANGEMENT:

Fuel Measuring Arrangement consists of fuel tank, burette and suitable cock all mounted on a suitable framework and panel board and supplied with fuel piping from fuel tank to Engine.

AIR INTAKE MEASUREMENT & HEAT CARRIED AWAY BY EXHAUST GAS:

Consisting of an air tank mounted on an iron stand fitted with a suitable orifice plate, manometer, Thermocouple for measuring the exhaust gas temperature with pocket connection with instruments suitably mounted on a panel board.

HEAT CARRIED AWAY BY COOLING WATER:

Consists of suitable inlet and outlet piping with flow control valve. Rota meter to measure the rate of flow of cooling water and Thermocouple with pocket connections for measuring inlet and outlet water temperature.

ENGINE (as applicable) :

- Four Cylinder Four Stroke Water Cooled Vertical Petrol Engine to develop 10 HP @ 1500 RPM. (Make: "Isuzu" used)
- Three Cylinder Four Stroke Water Cooled Vertical Petrol Engine to develop 8 HP @ 1500 RPM. (Make: Maruti-New)
- Four Cylinder Four Stroke Water Cooled Vertical Petrol Engine to develop 10 HP @ 1500 RPM. (Make: Ambassador-New)

SERVICES: Electrical supply of 230V, Single Phase, 50Hz AC & external cooling water supply.





Multicylinder 4 Stroke Petrol Engine

MPFI MULTICYLINDER FOUR STROKE PETROL ENGINE TEST RIG WITH HYDRAULIC DYNAMOMETER OR A.C ALTERNATOR OR D.C. GENERATOR OR EDDY CURRENT DYNAMOMETER LOADING WITH MORSE TEST FACILITY

INTRODUCTION:

The test rig is designed to provide self-contained facility for teaching Internal Combustion (spark Ignition) engine principles. The equipment is instrumented so that the following experiments could be performed.

1. BHP MEASUREMENT
2. IHP MEASUREMENT (BY MORSE TEST ARRANGEMENT)
3. FUEL CONSUMPTION MEASUREMENT
4. AIR INTAKE MEASUREMENT
5. MEASUREMENT OF HEAT REJECTED TO WATER JACKET
6. HEAT BALANCE TEST

THE ENGINE TEST RIG FACILITATE TO EVALUATE THE FOLLOWING:

- Performance (BHP Measurement) from no load to full load,
- Performance at various throttle position,
- Heat Balance Sheet and Morse test

DESCRIPTION:

Two main components from main parts of the test rig.

Welded steel base plate, complete with Dynamometer, Drive shaft with safety guard, engine starting battery of 12V capacity and cooling water arrangement.

Panel board positioned over the base plate consisting of fuel system with flow measurement by burette, air flow measurement system, temperature and speed indicator.

DYNAMOMETER (as applicable) :

- a. The Dynamometer used is a Hydraulic Dynamometer capable of absorbing a maximum load of 8 BHP at a speed of 1500 RPM.
- b. The Loading device used is an AC Alternator of matching capacity to load the engine upto 8HP at 1500 RPM along with Resistance loading arrangement with selector switches.
- c. The Loading device used is an Eddy Current of matching capacity to load the engine upto 8 HP at 1500 RPM

INSTRUMENTATION (as applicable):

The following instrumentation is provided

- Engine oil pressure gauge
- Engine charging circuit ammeter
- 'U' tube manometer for air flow rate
- Burette for fuel flow rate
- Speed Indicator-Digital
- Digital Temperature Indicator-Multi point selector switch with thermocouples.
- Digital Voltmeter, Ammeter

ENGINE STARTING:

The test rig incorporates a 12V DC electrical system designed for use with typical engine self starter system. The battery is included in the scope of supply.

CONTROLS:

The test rig is arranged for manual control with Ignition switch for engine starting, manual throttle control, manual control for hydraulic dynamometer loading and a manual operated clutch actuator arrangement to drive the engine with load or without load (For No Load testing).

FUEL MEASURING ARRANGEMENT:

Fuel Measuring Arrangement consists of fuel tank, burette and suitable cock all mounted on a suitable framework and panel board and supplied with fuel piping from fuel tank to Engine.

AIR INTAKE MEASUREMENT & HEAT CARRIED AWAY BY EXHAUST GAS:

Consisting of an air tank mounted on an iron stand fitted with a suitable orifice plate, manometer, Thermocouple for measuring the exhaust gas temperature with pocket connection with instruments suitably mounted on a panel board.

HEAT CARRIED AWAY BY COOLING WATER:

Consists of suitable inlet and outlet piping with flow control valve. Rota meter to measure the rate of flow of cooling water and Thermocouple with pocket connections for measuring inlet and outlet water temperature.

ENGINE (as applicable) :

Four Cylinder Four Stroke Water Cooled Vertical Petrol Engine to develop 8 HP @ 1500 RPM. (Make: "Isuzu" used)

SERVICES:

Electrical supply of 230V, Single Phase, 50Hz AC & external cooling water supply.





SL-2006

1 CYLINDER/ 4 STROKE/MAIN CYLINDER AIR COOLED/ AUXILIARY CYLINDER WATER COOLED/ 2.5 HP/ 2800 RPM/ VERTICAL VARIABLE COMPRESSION RATIO/ PETROL ENGINE/ DIRECTLY COUPLED TO EDDY CURRENT DYNAMOMETER. THE COMPRESSION RATIO IS VARIABLE FROM 2.5:1 TO 10:1

INTRODUCTION:

The test rig is designed to provide self-contained facility for teaching Internal spark Ignition engine principles. The unit is instrumented so that the following experiments could be performed.

1. BHP MEASUREMENT
2. BRAKE THERMAL EFFICIENCY
3. FUEL CONSUMPTION MEASUREMENT
4. AIR INTAKE MEASUREMENT

THE ENGINE TEST RIG FACILITATE TO EVALUATE THE FOLLOWING:

- Performance at various throttle position
- BHP Measurement from no load to full load

DESCRIPTION:

Three main components from main parts of the test rig.

Welded steel base plate, complete with Dynamometer, coupling and with safety guard, anti vibration mounting.

Panel board positioned over the base plate consisting of fuel system with flow measurement by burette, air flow measurement system, temperature indicator.

DYNAMOMETER (as applicable) :

Eddy current dynamometer of matching capacity to load the engine up to 2.5 HP at 2800 RPM.

INSTRUMENTATION

- The following instrumentation is provided.
- Speed Indicator-Digital
- 'U' tube manometer for air flow rate
- Burette for fuel flow rate
- Digital Temperature Indicator-Multi point selector switch with thermocouples.
- Digital Voltmeter, Ammeter for ac/dc generator

CONTROLS:

The test rig is arranged to manual control of the engine with a Hand start arrangement for engine starting & manual throttle control.

FUEL MEASURING ARRANGEMENT:

Fuel Measuring Arrangement consists of fuel tank, burette and suitable cock all mounted on a suitable framework and panel board and supplied with fuel piping from fuel tank to Engine.

AIR INTAKE MEASUREMENT & HEAT CARRIED AWAY BY EXHAUST GAS:

Consisting of an air tank mounted on an iron stand fitted with a suitable orifice plate, manometer, Thermocouple for measuring the exhaust gas temperature with pocket connection with instruments suitably mounted on a panel board.

ENGINE :

Single Cylinder four Stroke Air Cooled Engine to develop 2.5 HP @ 2800RPM.

SERVICES:

Electrical supply of 230V, Single Phase, 50Hz AC & external cooling water supply.



Single Cylinder Four Stroke water cooled

SINGLE CYLINDER FOUR STROKE WATER COOLED VERTICAL DIESEL ENGINE (KIRLOSKAR) TEST RIG WITH MECHANICAL BRAKE (ROPE BRAKE) OR A.C. ALTERNATOR OR D.C. GENERATOR OR EDDY CURRENT DYNAMOMETER LOADING

INTRODUCTION:

The test rig is designed to provide self-contained facility for teaching Compression Ignition engine principles. The equipment is instrumented so that the following experiments could be performed.

1. BHP MEASUREMENT
2. BRAKE THERMAL EFFICIENCY
3. FUEL CONSUMPTION MEASUREMENT
4. AIR INTAKE MEASUREMENT
5. 1 HP MEASUREMENT (By Retardation arrangement)

THE ENGINE TEST RIG FACILITATE TO EVALUATE THE FOLLOWING:

- Heat Balance Sheet
- BHP Measurement from no load to full load

DESCRIPTION:

Two main components from main parts of the test rig.

Welded steel base plate, complete with Rope Brake Dynamometer/ A.C. DC Generator/Eddy Current Dynamometer provided with cooling water arrangement.

Panel board positioned over the base plate consisting of fuel system with flow measurement by burette, air flow measurement system, temperature and speed indicator.

DYNAMOMETER (as applicable) :

- a. The Dynamometer used is a Mechanical Brake capable of absorbing a maximum load of 5HP at a speed of RPM.
- b. The Loading device used is an AC Alternator of matching capacity to load the engine upto 5HP at 1500 RPM along with Resistance loading arrangement with selector switches.
- c. DC Generator of matching capacity to load the engine upto 5 HP at 1500 RPM along with Resistance loading arrangement provided with selector switches.
- d. The loading device used is an Eddy Current Dynamometer of matching capacity to load the engine upto 5HP at 1500 RPM.

INSTRUMENTATION (as applicable):

The following instrumentation is provided.

- 'U' tube manometer for air flow rate
- Burette for fuel flow rate
- Digital Temperature Indicator-Multi point selector switch with thermocouples.
- Digital Voltmeter, Ammeter
- Digital Speed indicator

CONTROLS:

The test rig is arranged for manual control with Hand cranking start arrangement for engine starting.

FUEL MEASURING ARRANGEMENT:

Fuel Measuring Arrangement consists of fuel tank, burette and suitable cock all mounted on a suitable framework and panel board and supplied with fuel piping from fuel tank to Engine.

AIR INTAKE MEASUREMENT & HEAT CARRIED AWAY BY EXHAUST GAS:

Consisting of an air tank mounted on an iron stand fitted with a suitable orifice plate, manometer, Thermocouple for measuring the exhaust gas temperature with pocket connection with instruments suitably mounted on a panel board.

HEAT CARRIED AWAY BY COOLING WATER:

Consists of suitable inlet and outlet piping with flow control valve. Rota meter to measure the rate of flow of cooling water and Thermocouple with pocket connections for measuring inlet and outlet water temperature.

ENGINE

Single Cylinder Four Stroke Water Cooled Vertical Diesel Engine to develop 5 HP @ 1500 RPM. (Make: Kirloskar)

SERVICES:

Electrical supply of 230V, Single Phase, 50Hz AC & external cooling water supply.





SL-2008

SINGLE CYLINDER FOUR STROKE WATER COOLED SLOW SPEED DIESEL ENGINE TEST RIG (KIRLOSKAR) WITH MECHANICAL BRAKE (ROPE BRAKE) LOADING

INTRODUCTION:

The test rig is designed to provide self-contained facility for teaching Compression Ignition engine principles. The equipment is instrumented so that the following experiments could be performed.

1. BHP MEASUREMENT
2. BRAKE THERMAL EFFICIENCY
3. FUEL CONSUMPTION MEASUREMENT
4. AIR INTAKE MEASUREMENT

THE ENGINE TEST RIG FACILITATE TO EVALUATE THE FOLLOWING:

- Heat Balance Sheet.
- BHP Measurement from no load to full load.

Four Stroke Slow Speed Diesel Engine

DESCRIPTION:

Two main components from main parts of the test rig.

Welded steel base plate, complete with Rope Brake Dynamometer provided with cooling water arrangement.

Panel board positioned over the base plate consisting of fuel system with flow measurement by burette, air flow measurement system, temperature and speed indicator.

DYNAMOMETER (as applicable) :

- a. The Dynamometer used is a Mechanical Brake capable of absorbing a maximum load of 6HP @ 650 RPM/8 HP @ 850RPM

INSTRUMENTATION

The following instrumentation is provided.

- 'U' tube manometer for air flow rate
- Burette for fuel flow rate
- Digital Temperature Indicator-Multi point selector switch with thermocouples.
- Digital speed indicator

CONTROLS:

The test rig is arranged for manual control with Hand cranking start arrangement for engine starting.

FUEL MEASURING ARRANGEMENT:

Fuel Measuring Arrangement consists of fuel tank, burette and suitable cock all mounted on a suitable framework and panel board and supplied with fuel piping from fuel tank to Engine.

AIR INTAKE MEASUREMENT & HEAT CARRIED AWAY BY EXHAUST GAS:

Consisting of an air tank mounted on an iron stand fitted with a suitable orifice plate, manometer, Thermocouple for measuring the exhaust gas temperature with pocket connection with instruments suitably mounted on a panel board.

HEAT CARRIED AWAY BY COOLING WATER:

Consists of suitable inlet and outlet piping with flow control valve. Rota meter to measure the rate of flow of cooling water and Thermocouple with pocket connections for measuring inlet and outlet water temperature.

ENGINE

Single Cylinder Four Stroke Water Cooled Vertical Diesel Engine to develop 6 HP @ 650 RPM./8 HP @ 850 RPM. (Make: Kirloskar/Equivalent)

SERVICES:

Electrical supply of 230V, Single Phase, 50Hz AC & external cooling water supply.



Twin Cylinder Four Stroke Diesel Engine

TWIN CYLINDER FOUR STROKE WATER COOLED DIESEL ENGINE TEST RIG (MAKE : KIRLOSKAR) WITH MECHANICAL BRAKE OR HYDRAULIC DYNAMOMETER OR A/C ELECTRICAL ALTERNATOR OR EDDY CURRENT.

INTRODUCTION:

The test rig is designed to provide self-contained facility for teaching Compression Ignition engine principles. The equipment is instrumented so that the following experiments could be performed.

1. BHP MEASUREMENT
2. BRAKE THERMAL EFFICIENCY
3. FUEL CONSUMPTION MEASUREMENT
4. AIR INTAKE MEASUREMENT
5. MEASUREMENT OF HEAT REJECTED TO WATER JACKET

THE ENGINE TEST RIG FACILITATE TO EVALUATE THE FOLLOWING:

- Heat Balance Sheet.
- BHP Measurement from no load to full load.

DESCRIPTION:

Two/Three main components from main parts of the test rig.

Welded steel base plate, complete with A.C. Alternator/Mechanical Brake/ Hydraulic Dynamometer/ Eddy Current Dynamometer, Drive shaft with safe guard and anti vibration mounting.

Resistance loading (Resistance bank) with selector switches to load the engine from no load to full load (as applicable)

Panel board positioned over the base plate consisting of fuel system with flow measurement by burette, air flow measurement system, temperature and speed indicator.

DYNAMOMETER (as applicable) :

- a. The Dynamometer used is a Mechanical Brake capable of absorbing a maximum load of 10HP at a speed of 1500RPM.
- b. The Dynamometer used is a Hydraulic Dynamometer capable of absorbing a maximum load of 10 HP at a speed of 1500 RPM.
- c. The loading device used is and AC alternator of matching capacity to load the engine up to 10 HP at 1500 RPM along with Resistance loading arrangement with selector switches.
- d. The loading device used is and Eddy Current Dynamometer of matching capacity to load the engine up to 10 Hp at 1500 RPM

INSTRUMENTATION

The following instrumentation is provided.

- 'U' tube manometer for air flow rate
- Burette for fuel flow rate
- Digital Temperature Indicator- Multi point selector switch with thermocouples.
- Digital Voltmeter, Ammeter
- Digital speed indicator

CONTROLS:

The test rig is arranged for manual control with Hand cranking start arrangement for engine starting.

FUEL MEASURING ARRANGEMENT:

Fuel Measuring Arrangement consists of fuel tank, burette and suitable cock all mounted on a suitable framework and panel board and supplied with fuel piping from fuel tank to Engine.

AIR INTAKE MEASUREMENT & HEAT CARRIED AWAY BY EXHAUST GAS:

Consisting of an air tank mounted on an iron stand fitted with a suitable orifice plate, manometer, Thermocouple for measuring the exhaust gas temperature with pocket connection with instruments suitably mounted on a panel board.

HEAT CARRIED AWAY BY COOLING WATER:

Consists of suitable inlet and outlet piping with flow control valve. Rota meter to measure the rate of flow of cooling water and Thermocouple with pocket connections for measuring inlet and outlet water temperature.

ENGINE

Single Cylinder Four Stroke Water Cooled Vertical Diesel Engine to develop 10 HP @ 1500 (Make: Kirloskar/Equivalent)

SERVICES:

Electrical supply of 230V, Single Phase, 50Hz AC & external cooling water supply.





Multicylinder Four Stroke Diesel Engine

SL-2010

MULTICYLINDER FOUR STROKE DIESEL ENGINE TEST RIG WITH HYDRAULIC DYNAMOMETER OR A.C. ALTERNATOR WITH RESISTANCE OR EDDY CURRENT DYNAMOMETER LOADING

INTRODUCTION:

The test rig is designed to provide self-contained facility for teaching Internal Combustion (Compression Ignition) engine principles. The equipment is instrumented so that the following experiments could be performed.

1. BHP MEASUREMENT
2. IHP MEASUREMENT
3. FHP MEASUREMENT
4. FUEL CONSUMPTION MEASUREMENT
4. AIR INTAKE MEASUREMENT
5. MEASUREMENT OF HEAT REJECTED TO WATER JACKET
6. HEAT BALANCE TEST

THE ENGINE TEST RIG FACILITATE TO EVALUATE THE FOLLOWING:

- Performance at various throttle position
- Heat Balance Sheet.
- Performance (BHP Measurement) from no load to full load.

DESCRIPTION:

Two main components from main parts of the test rig.

Welded steel base plate, complete with Dynamometer, drive shaft with safety guard, engine starting battery of 12V capacity and cooling water arrangement

Panel board positioned over the base plate consisting of fuel system with flow measurement by burette, air flow measurement system, temperature and speed indicator.

DYNAMOMETER (as applicable) :

- a. The Dynamometer used is a Hydraulic Dynamometer capable of absorbing a maximum load of 10 HP at a speed of 1500 RPM
- b. The Loading device used is an AC Alternator of matching capacity to load the engine up to 10 HP at 1500 RPM along with Resistance loading arrangement for alternator.
- c. The loading device used is an Eddy Current Dynamometer of matching capacity to load the engine up to 10 HP at 1500 RPM.

INSTRUMENTATION (as applicable):

The following instrumentation is provided.

- Engine oil Pressure gauge
- Engine charging circuit ammeter
- 'U' tube manometer for air flow rate
- Burette for fuel flow rate
- Digital Temperature Indicator- Multi point selector switch with thermocouples.
- Digital Voltmeter, Ammeter
- Digital speed indicator

ENGINE STARTING:

The test rig incorporates a 12 V DC electrical system designed for use with typical engine self starter system. The battery is included in the scope of supply.

CONTROLS:

The test rig is arranged for manual control with Ignition switch for engine starting manual throttle control, manual control for hydraulic dynamometer loading and a manual operated clutch actuator arrangement to drive the engine with load or without load (For No Load testing)

FUEL MEASURING ARRANGEMENT:

Fuel Measuring Arrangement consists of fuel tank, burette and suitable cock all mounted on a suitable framework and panel board and supplied with fuel piping from fuel tank to Engine.

AIR INTAKE MEASUREMENT & HEAT CARRIED AWAY BY EXHAUST GAS:

Consisting of an air tank mounted on an iron stand fitted with a suitable orifice plate, manometer, Thermocouple for measuring the exhaust gas temperature with pocket connection with instruments suitably mounted on a panel board.

HEAT CARRIED AWAY BY COOLING WATER:

Consists of suitable inlet and outlet piping with flow control valve. Rota meter to measure the rate of flow of cooling water and Thermocouple with pocket connections for measuring inlet and outlet water temperature.

ENGINE

Four Cylinder Four Stroke Water Cooled Vertical Diesel Engine to develop 10 HP @ 1500 RPM (Make: Hindustan Stride/Isuzu)

SERVICES:

Electrical supply of 230V, Single Phase, 50Hz AC & external cooling water supply.

SL-2011



Single/Two Stage Reciprocating Air Compressor

SINGLE/TWO STAGE RECIPROCATING AIR COMPRESSOR TEST RIG

COMPRESSOR:

Single Stage, Single Cylinder air compressor with a displacement capacity of about 150 LPM and to work against maximum pressure 8Kg/Cm^2 . The Unit is mounted on a storage tank.

CONTROLS:

The Unit is supplied with pressure switch, suction filter safety valve, pressure gauge, water drain valve air delivery valve etc.

AIR INTAKE MEASUREMENT

An orifice tank with orifice plate, manometer with pressure tapings are provided to measure the volume of air sucked by the compressor.

INSTRUMENTATION:

Digital temperature indicator to measure suction and delivery side temperature of the compressor.

Pressure gauges to measure stage pressure.

Digital speed indicator. u tube manometer

TWO STAGE RECIPROCATING AIR COMPRESSOR TEST RIG

COMPRESSOR:

Two Stage, Twin Cylinder air compressor-3 HP with a displacement capacity of about 300 LPM and to work against maximum pressure 12Kg/Cm^2 . The Unit is mounted on a storage tank.

CONTROLS:

Same as above.

AIR INTAKE MEASUREMENT

Same as above.

ELECTRIC MOTOR:

3 HP/3 Phase electric motor

INSTRUMENTATION:

Same as above.

SL-2012



Variable Speed Air Blower Test Rig

VARIABLE SPEED AIR BLOWER TEST RIG (DYNAMOMETER TYPE):

BLOWER:

An experimental Centrifugal type air Blower suitable for experiments. It consists of interchangeable impellers of backward, radial and forward curved vanes, so that the effect of different types of blading could be well demonstrated. The approximate discharge of air is 30 cubic meter per minute at a pressure of 25cm of water column.

DISCHARGE MEASUREMENT:

One Orifice meter and a differential manometer of 1.0m height to measure the discharge.

PRESSURE MEASUREMENT

Two number of pitot tubes mounted at the inlet duct and outlet duct to determine the total pressure developed at inlet and outlet of the blower.

Motor:

The Blower is coupled to an induction motor of 3HP. The Blower is coupled with a Dynamometer type motor with a stepped pulley arrangement to run at three different speeds, balance arm, dial type spring balance with a large size dial etc., to determine the input power of the blower.

INSTRUMENTATION:

Digital temperature indicator to measure suction and delivery side temperature of the blower.

Pressure gauges to measure stage pressure.



CEMENT & CONCRETE

Compressive Strength Testing Equipment

Compressive Strength Testing Equipment to test cement, brick and concrete is offered by us. The range we offer includes Manually (Hand) Operated, Semi Automatic Compression Testing Equipment, Electrically Cum Manually Operated equipment and more. These strength testing equipment are extremely handy and are easy to use for testing cement, concrete and mortar cubes. We lay utmost importance on equipment design and construct with emphasis on ease of operation. As present day buyers expect more power, speed and highest level of accuracy in material testing system, we continue to offer research based Compressive Strength Testing Equipment of international standard, at affordable prices.

Compression Testing Machine (Manually)

(2 Pillar Model): Compression Testing Equipment Manually (Hand) Operated fitted with single load gauge. The loads are measured on Bourdon tube type load gauges which are calibrated against certified proving rings. The load gauges are fitted with a maximum load pointer.



SL-CC-001

Model	SL-CC-001	SL-CC-002	SL-CC-003	SL-CC-004	SL-CC-005
Capacity (in KN)	250 KN	500 KN	1000 KN	1500 KN	2000 KN
Pressure Gauge (In KN)	250 KN	500 KN	1000 KN	1500 KN	2000 KN
Least Count (In KN)	1 KN	2 KN	5 KN	5 KN	10 KN
Pressure Gauge Diameter (mm)	200	200	200	200	200
Vertical Daylight (mm)	310 Adj	310 Adj	310 Adj	310 Adj	410 Adj
Horizontal Clearance(mm)	210	210	260	280	330
Platen Diameter(mm)	200	200	220	250	300
Ram Diameter (mm)	83	117	165	181	234
Ram Travel (mm)	50	50	50	50	50
Specimen Size (Can be Tested)					
Cube	50mm 70.6mm	50mm 70.6mm 100mm	100mm 150mm	100mm 150mm	100mm 150mm
Capacity (in KN)	-----	-----	100 x 200 150 x 300	100 x 200 150 x 300	100 x 200 150 x 300

Compression Testing Machine (Manually)

Model	SL-CC-006	SL-CC-007
Capacity (In KN)	1000 KN	1000 KN
Pressure Gauge (In KN)	1000 KN	1000 KN
Least Count (In KN)	5 KN	5 KN
Pressure Gauge Diameter (mm)	150	200
Vertical Daylight (mm)	310 (Adj)	310
Horizontal Clearance (mm)	260	240
Platen Size (mm)	240 x 165	220
Ram Diameter (mm)	165	165
Ram Travel (mm)	50	50
Type of Loading Unit	Channel Model	Four Pillar (Portable) Model
Specimen Size (Can be Tested)		
Cube	100mm x 150mm	100mm x 150mm
Cylindrical	100mm x 200mm 150mm x 300mm	100mm x 200mm 150mm x 300mm
Brick	100 x 100 x 225 mm	-----



SL-CC-007

Cube Mould SL-CC-008

For concrete compressive strength testing we offer highly sophisticated testing machines duly made by our engineers and technicians keeping in mind the overall usages. Our concrete compressive strength testing machines includes concrete strength testing moulds like Cube Moulds, Beam Moulds, Cylindrical Moulds along with Flexural Strength Testing Machine that are equipped with the latest designs and operating principle.

Four standard sizes of cube moulds are offered and supplied complete with base plate.



SL-CC-008

Model SL-CC-008	Description
A. Cube Mould	Mortar Cube Mould 50 x 50 x 50mm with loose base plate. Made of Mild Steel.
B. Cube Mould	Mortar Cube Mould 50 x 50 x 50mm with base plate. Made of Cast Iron
C. Cube Mould	Mortar Cube Mould 70.6 x 70.6 x 70.6mm with loose base plate. Made of Mild Steel
D. Cube Mould	Mortar Cube Mould 70.6 x 70.6 x 70.6mm with base plate. Made of Cast Iron
E. Cube Mould	Concrete Cube Mould 100 x 100mm with base plate. Made of Cast Iron
F. Cube Mould	Concrete Cube Mould 150 x 150 x 150mm with base plate. Made of Cast Iron
G. Cube Mould	Concrete Cube Mould 150 x 150 x 150mm with base plate. Made of Cast Iron Accuracy Equivalent to ISI Marked



CEMENT & CONCRETE

Semi Automatic Compression Testing Machine (Electrically Cum Manually Operated (2 Pillar Model))

Compression Testing Equipment Electrically cum Manually (Hand) Operated. The loads are measured on Bourdon tube type load gauges which are calibrated against certified proving rings. The load gauges are fitted with a maximum load pointer. In the Electrically Operated Pumping Units, load gauges are fitted with micro switches to switch-off the motor when the load approaches the maximum capacity of the gauge, avoiding any over loading. Relays are incorporated so that the motor does not restart on its own after a power breakdown. The electrically operated pumping units are provided with a control knob to adjust the pace rate which can be effectively controlled by an experienced operator during the course of testing, by observing the progress of the load gauge reading. The electrically operated pumping units are also fitted with hand operated pump.



SL-CC-013

A) Compression Testing Machine Electrically cum Manually (Hand) Operated fitted with single load gauge:

Model	SL-CC-009	SL-CC-010	SL-CC-011	SL-CC-012	SL-CC-013	SL-CC-014
Capacity (In KN)	250 KN	500 KN	1000KN	1500KN	2000KN	3000KN
Pressure Gauge (In KN)	250 KN	500 KN	1000KN	1500KN	2000KN	3000KN
Least Count (In KN)	1 KN	2 KN	5 KN	5 KN	10 KN	15 KN
Pressure Gauge Diameter(mm)	200	200	200	200	200	200
Vertical Daylight (mm)	310 (Adj)	310 (Adj)	310 (Adj)	310 (Adj)	310 (Adj)	310 (Adj)
Horizontal Clearance(mm)	210	210	260	280	330	380
Platen Diameter (mm)	200	200	220	250	300	300
Ram Diameter (mm)	83	117	165	181	234	234
Ram Travel (mm)	50	50	50	50	50	75
Motor H.P	0.5	0.5	1	1	1	2
Motor Voltage	220V, 1Ph 50Hz	220V, 1Ph 50Hz	440V, 3Ph 50Hz	440V, 3Ph 50Hz	440V, 3Ph 50Hz	440V, 3Ph 50Hz
Specimen Size (Can be Tested):						
Cube	50mm, 70.6mm	50mm, 70.6mm, 100 mm	100mm, 150mm	100mm 150mm	100mm 150mm	100mm 150mm
Cylindrical	-----	-----	100 x 200 150 x 300			

B) Compression Testing Machine Electrically cum Manually (Hand) Operated fitted with Two/Three load gauge:

Model	SL-CC-015	SL-CC-016	SL-CC-017	SL-CC-018
Capacity (In KN)	1000KN	1500KN	2000KN	3000KN
Pressure Gauge (In KN)	1000KN 250KN	1500KN 500KN	2000KN 500KN	2000KN 500KN
Least Count (In KN)	5KN, 1KN	5KN, 2KN	10KN, 2KN	15KN, 5KN
Pressure Gauge Diameter (mm)				



SL-CC-017

Model	SL-CC-019	SL-CC-020	SL-CC-021	SL-CC-022
Capacity (In KN)	1000KN	1500KN	2000KN	3000KN
Pressure Gauge (In KN)	1000KN, 500KN, 250KN	1500KN, 1000KN, 500KN	2000KN, 1000KN, 500KN	3000KN, 2000KN, 1000KN
Least Count (In KN)	5KN, 2KN, 1KN	5KN, 5KN, 2KN	10KN, 5KN, 2KN	15KN, 10KN, 5KN
Pressure Gauge Diameter (mm)	200	200	200	200

Digital Compression Testing Machines Semi Automatic Digital Compression Testing Machine (Electrically Operated)

(2 Pillar Model):The Digital Compression Testing Machine has been designed to meet the need for a simple, economic and reliable means to test concrete for its compressive strength. The Digital Indicator incorporates a 4-Digits display calibrated in Kilo Newton (KN) and preset to maximum load capacity fitted with micro switches to switch-off the motor when the load approaches the maximum capacity of the gauge, avoiding any over loading. Relays are incorporated so that the motor does not restart on its own after a power breakdown. The electrically operated pumping units are provided with a control knob to adjust the pace rate which can be effectively controlled by an experienced operator during the course of testing, by observing the progress of the Digital Indicator readings.



SL-CC-027

Model	SL-CC-023	SL-CC-024	SL-CC-025	SL-CC-026	SL-CC-027	SL-CC-028
Capacity (In KN)	250 KN	500 KN	1000 KN	1500 KN	2000 KN	3000 KN
Digital Indicator (In KN)	250 KN	500 KN	1000 KN	1500 KN	2000 KN	3000 KN
Least Count (In KN)	1 KN					



CEMENT & CONCRETE

Semi Automatic Compression Testing Equipment (Electrically Cum Manually Operated (2 Pillar Model))

Compression Testing Equipment Electrically cum Manually (Hand) Operated. The loads are measured on Bourdon tube type load gauges which are calibrated against certified proving rings. The load gauges are fitted with a maximum load pointer. In the Electrically Operated Pumping Units, load gauges are fitted with micro switches to switch-off the motor when the load approaches the maximum capacity of the gauge, avoiding any over loading. Relays are incorporated so that the motor does not restart on its own after a power breakdown. The electrically operated pumping units are provided with a control knob to adjust the pace rate which can be effectively controlled by an experienced operator during the course of testing, by observing the progress of the load gauge reading. The electrically operated pumping units are also fitted with hand operated pump.



SL-CC-033

Model	SL-CC-029	SL-CC-030	SL-CC-031	SL-CC-032	SL-CC-033	SL-CC-034
Capacity (In KN)	250KN	500KN	1000KN	1500KN	2000KN	3000KN
Pressure Gauge (In KN), Digital Indicator (In KN)	250KN, 250KN	500KN, 500KN	1000KN, 1000KN	1500KN, 1500KN	2000KN, 2000KN	3000KN, 3000KN
Least Count (In KN)	1KN, 1KN	2KN, 1KN	5KN, 1KN	5KN, 1KN	10KN, 1KN	10KN, 1KN
Pressure Gauge Diameter (mm)	200	200	200	200	200	200

Semi Automatic Digital Compression Testing Machine (Electrically Operated - Fabricated Model)

The Digital Compression Testing Machine has been designed to meet the need for a simple, economic and reliable means to test concrete for its compressive strength. The Digital Indicator incorporates a 4-Digits display calibrated in Kilo Newton (KN) and preset to maximum load capacity fitted with micro switches to switch-off the motor when the load approaches the maximum capacity of the gauge, avoiding any over loading. Relays are incorporated so that the motor does not restart on its own after a power breakdown. The electrically operated pumping units are provided with a control knob to adjust the pace rate which can be effectively controlled by an experienced operator during the course of testing, by observing the progress of the Digital Indicator readings.



SL-CC-037

Model	SL-CC-035	SL-CC-036	SL-CC-037	SL-CC-038
Capacity (In KN)	1200KN	1500KN	2000KN	3000KN
Digital Indicator (In KN)	1200KN	1500KN	2000KN	3000KN
Least Count (In KN)	1KN	1KN	1KN	1KN
Vertical Daylight mm	310 (Adj)	310 (Adj)	410 (Adj)	410 (Adj)
Horizontal Clearance(mm)	230	260	310	335
Platen Diameter (mm)	220	250	300	300
Ram Diameter (mm)	165	181	234	234
Ram Travel (mm)	50	50	75	75
Motor H.P	1	1	1	2
Motor Voltage	440V, 3Ph, 50Hz	440V, 3Ph, 50Hz	440V, 3Ph, 50Hz	440V, 3Ph, 50Hz
Specimen Size (Can be Tested):				
Cube	100mm, 150mm	100mm, 150mm	100mm, 150mm	100mm, 150mm
Cylindrical	100mm x 200mm 150mm x 300mm			

Semi Automatic Digital Compression Testing Machine (Electrically cum Manually Operated - Fabricated Model with Load Gauge)

Compression Testing Machine has been designed to meet the need for a simple, economic and reliable means to test concrete for its compressive strength. The Load is displayed simultaneously on the Digital Load Indicator which incorporates a 4-Digits display calibrated in Kilo Newton (KN), preset to maximum load capacity and also on Bourdon tube type Load Gauge with a maximum load pointer. The Indicators are fitted with micro switches to switch-off the motor when the load approaches the maximum capacity of the gauge, avoiding any over loading. Relays are incorporated so that the motor does not restart on its own after a power breakdown. The electrically operated pumping units are provided with a control knob to adjust the pace rate which can be effectively controlled by an experienced operator during the course of testing, by observing the progress of the Digital Indicator readings or the Load Gauge readings. The electrically operated pumping units are also fitted with hand operated pump.



SL-CC-041

Model	SL-CC-039	SL-CC-040	SL-CC-041	SL-CC-042
Capacity (In KN)	1200KN	1500KN	2000KN	3000KN
Pressure Gauge (In KN), Digital Indicator (In KN)	1200KN, 1200KN	1500KN, 1500KN	2000KN, 2000KN	3.00KN, 3000KN
Least Count (In KN)	5KN, 1KN	5KN, 1KN	10KN, 1KN	15KN, 1KN
Pressure Gauge Diameter (mm)	200	200	200	200



CEMENT & CONCRETE



Flexural Strength Testing Machine

The Flexure Strength Testing Machines are designed to provide maximum rigidity throughout their working range. The load is applied by the upward movement of a hydraulic ram. The jack can be raised or lowered for testing different size beams. The load is indicated on a calibrated Bourdon tube type Pressure Gauge of range: 0-100kN x 0.5kN (0-10,000 kgf x 50 Kgf). The load gauge is calibrated against NPL/NCCBM certified proving ring.

Model	SL-CC-043	SL-CC-044	SL-CC-045
Capacity (In KN)	100KN	100KN	100KN
Pressure Gauge (In KN)	100KN	100KN	-----
Least Count (In KN)	½ KN	½ KN	0.1 KN
Pressure Gauge Diameter (mm)	200	200	200
Vertical Daylight (mm)	310 (Adj)	310 (Adj)	310 (Adj)
Horizontal Clearance(mm)	210	210	210
Ram Diameter (mm)	83	83	83
Ram Travel (mm)	50	50	50
Motor H.P	----	0.50	0.50
Motor Voltage	----	220V, 1Ph, 50Hz	
Specimen Size (Can be Tested) Beams (cm)	10 x 10 x5015 x 15 x 70		



SL-CC-043



SL-CC-046

Beam Mould SL-CC-046

Two standard sizes of Beam Moulds are offered for casting concrete specimens for flexural strength testing. These beam moulds are made of cast iron and are supplied complete with a base plate.

Model SL-CC-046	Description
A. Beam Mould	Flexure Beam Strength Testing Beam Mould 100 x 100 x 500 with base plate. Made of Cast Iron
B. Beam Mould	Flexure Beam Strength Testing Beam Mould 100 x 100 x 700 with base plate. Made of Cast Iron

Cylindrical Mould

Moulds for testing concrete cylinders for Compressive Strength Testing are offered in two different sizes. These cylindrical moulds are made of Cast Iron and split into two parts longitudinally. These are supplied complete with a base plate and top plate

Model SL-CC-047	Description
A. Cylindrical Mould	Cylindrical Mould 100mm dia. x 200 mm ht. with base plate. Made of Cast Iron
B. Cylindrical Mould	Cylindrical Mould 150mm dia. x 300 mm ht. with base plate. Made of Cast Iron



SL-CC-047

Proving Rings

Specification: The Proving Rings are made of special steel, carefully forged to provide high and stable accuracy, dependability and repeatability. The dial gauge and anvil are mounted on U-brackets clamped to the ring body by set screws. The indicator has a sensitivity of 0.002mm/ div and the deflection is directly proportional to the applied load. The rings are supplied complete with dial gauge and Works Calibration Chart, individually packed in polished wooden boxes. NPL (India) / NCCBM Calibration Certificates can also be arranged for any proving ring at an additional cost. Separate Pair of Loading Pads are provided to suit each proving ring.



Model	Capacity
Proving Ring Model SL-CC-048	25kgf to 100kgf (1KN)
Proving Ring Model SL-CC-049	200kgf (2KN)
Proving Ring Model SL-CC-050	250kgf (2.5KN)
Proving Ring Model SL-CC-051	1000kgf (10KN)
Proving Ring Model SL-CC-052	2000kgf (20KN)
Proving Ring Model SL-CC-053	2500kgf (25KN)
Proving Ring Model SL-CC-054	3000kgf (30KN)
Proving Ring Model SL-CC-055	5000kgf (50KN)
Proving Ring Model SL-CC-056	100KN (10Tons)
Proving Ring Model SL-CC-057	200KN (20Tons)
Proving Ring Model SL-CC-058	500KN (50Tons)
Proving Ring Model SL-CC-059	1000KN (100Tons)
Proving Ring Model SL-CC-060	2000KN (200Tons)

Cement Sampler SL-CC-061

IS 7535 1986 ASTM C 183 AASHTO T127

This is a brass tube approximately 53 cm long and 2.8 cm I.D. with a wooden handle. Total length approximately 73cm. The tube has the sharp angular edge which conveniently pierces cement bags. An air hole of approximately 3mm dia is drilled on the tube near handle. Total sample collected at one time is 300 cm approximately



SL-CC-061

Blaine's Air Permeability Apparatus SL-CC-062

IS 4031, 5516, 1727 & 4828, ASTM C-204 BS 4359-2

The apparatus is used for determining the fineness of cement in terms of specific surface expressed as total surface area in square centimeters per gram of cement. This is a variable flow type are permeability.

Specification: The apparatus consists one each of permeability cell 12.5mm I.D. manometer 'U' type mounted on stand with a built in stop cock, perforated disc, plunger rubber stopper, rubber tube 30cm long. Packet of 12 filter paper disc and a bottle of 100ml dibutylphthalate liquid.



SL-CC-062



Vicat Needle Apparatus SL-CC-063

IS 4031, 2645, 2542 (PART-1), 1727, 5513 & 712 BS 12, 146, 915, 1370, 4027, 4246, 4248 AASHTO T 129, E 131.

This instrument is used for determining the normal consistency and setting times of cement and 'A' class limes.

Specification: The apparatus consists of a metallic frame bearing a freely movable and with a cap at top, one vicat mould and glass base plate and one set of needles one each initial needle, final needle and consistency plunger.

Vicat Needle App. with Dashpot SL-CC-064

IS 4031, 2645, 2542 (PART-1), 1727, 5513 & 712 BS 12, 146, 915, 1370, 4027, 4246, 4248 AASHTO T 129, E 131.

Specification: Same as Vicat Needle Apparatus but in addition is fitted with a dashpot which facilitates gentle lowering of the needles.

Accessories: Mild steel base plate 5 inches x 5 inches. Fulcrum mould, brass, 70mm i.d. base dia. x 60mm i.d. top dia., 40 mm height.

Note: 1) Normally set of needles and mould which meet its requirements as per I.S. 5513 are supplied. While ordering please specify the specification code of the instrument required. 2) Vicat needle apparatus for determining consistency of hydraulic cement. Gypsum plaster, lime etc. As per ASTM C 187-58 C 472-62 C 110-58, IS 2542 (Part-1) can also be supplied.

Gillmore Needle Apparatus SL-CC-065

ASTM C 266

This instrument is used for determining the time setting of hydraulic cement.

Specification: A base with a Vertical shaft and Two horizontal arms. The lower arms is adjustable for height. 1 no. Initial needle 1/12-inch dia. ¼ lb. Wt. 1 no. Final needle 1/24 inch dia. ¼ lb. Wt. 1 no. Glass base plate. Complete as above.

Kelley Ball Penetration Apparatus SL-CC-066

ASTM C-360

The apparatus is used to determine the work ability of Portland cement & concrete. The Kelly ball test is considered to be simple and much faster than the slump test. Twice the Kelly ball reading approximately equals the slump. It consists of a cylinder with a ball shaped bottom and handle, together weighing 15 kg. A strip frame, guides the handle and serves as a reference for measuring the depth of penetration. The handle is graduated in mm. Penetration can be recorded to the nearest 0.5mm.

Kelley Ball Penetration Apparatus SL-CC-067

Heavy-duty, cast-aluminum design with quick release latches. Provides convenience for the operator and protection to Kelly ball when transporting to and from the job site.



SL-CC-063



SL-CC-065



SL-CC-066

Flow Table SL-CC-068

IS : 6932 (PART VIII) ASTM C 230, BS 4551:1

This is used for determining the work ability of building limes.

Specification: The flow table consists of a 30 cm dia. polish steel plate with 3 engraved annular circles 7, 11 and 19cm dia. The table top is arranged for a free fall of 12.5mm by a cam action. Supplied complete with one brass conical mould, 65mm i.d. at base and 40mm i.d. at top, height of the mould 90mm.

Flow Table SL-CC-069

IS 1199-1959, ASTM C-124, AASHTO-T-120.

It is used for determining the flow of cement concrete.

Specification: Consists of a steel table top 76.2cm (30 inch. Dia) finely machined. The integral cast ribs are designed for support and strength. The stand is fabricated out of cast iron and is of sturdy construction. Holes for mounting in foundations are drilled in the base plate. The ground and hardened steel cam is designed to fit and drop the table by 12.5mm. The hand wheel makes it simple to operate the table. Supplied with one conical mould with two handles, 12cm height, having 17cm. Inside Dia. at the top and 25cm inner dia. at the base. Complete with a tamping rod 16mm dia x 600mm long one end rounded.

Flow Table (Motorized) SL-CC-070

IS 1199, ASTM C-124, AASHTO-T-120

Same as above but electrically operated to raise and drop the table top, approx. 15 times in 15 seconds, Suitable for operation on 230 Volts, 50 cycles, A.C. supply.

Flow Table: IS 5512 & BS 4551-1 SL-CC-071

This used for measuring the consistency of pozzolana and also cement mortar and hydrated lime.

Specification : It consists of a machined brass table top 250+/-2.5mm dia. Mounted on a rigid stand. The table top is reinforced with equally disposed ribs and allowed to conical brass mould 100mm i.d. top dia. and 50mm high.

Accessories : Mild steel plate 25mm thick and 25cm square for fixing to the underside of the base. Same as ZI 1008 but electrically operated to raise and drop the table top, approx. 15 times in 15 seconds, Suitable for operation on 230 Volts, 50 cycles, A.C. supply.

Flow Table (Motorized) SL-CC-072

IS 5512 & BS 4551-1

Same as above but electrically operated. Fitted with a motor, connected to the cam shaft through a reduction gear to give approximately 100 R.P.M. Suitable for operation in Single Phase 230 V.A.C. 50 Cycles, Supply.



SL-CC-068



SL-CC-069



SL-CC-070



SL-CC-071



SL-CC-072

CEMENT & CONCRETE



Ve Bee Consistometer SL-CC-073

IS 1199 & BS EN 12350.

The instrument is used for work ability as well as consistency of fresh concrete. A slump Cone and a graduated rod supplied with the instrument helps the operator to find out slump values and vibration table with container and acrylic disc is used to find out work ability of concrete expressed in Vee Bee degrees, which is defined as the time in seconds to complete required vibrating at which the fresh concrete flows out sufficiently to come in contact of the entire face of acrylic disc.

Specification : The equipment consists of : A vibrating table size 380mm long and 260mm wide, resting upon elastic support at a height of about 305mm above the floor, complete with Start/Stop switch, cord and plug. A holder is fixed to the base in to which a swivel arm is telescoped with funnel and guide swivel arm is also detachable from the vibrating table. The divisions of scale on the rod record the slump of the concrete in millimeters. Supplied complete with a sheet metal container with lifting handles which can easily be fixed to the vibrating table. A slump cone open at both ends with lifting handles and a tamping rod of size 16mm dia and 600mm long rounded at both ends.



SL-CC-073

Slump Test Apparatus SL-CC-074

As Per IS 1199, IS 7320

Specification : The slump cone in these slump test apparatus is filled with freshly mixed concrete and tamped with a tamping rod in three or four layers. The top of the concrete is leveled off with the top of the slump cone, the cone is lifted vertically up and the slump of the sample is immediately measured. The complete slump test apparatus set comprises of a Steel Octagon Base Plate (8 faces) with carrying handle, Graduated Tamping Rod 16mm dia. x 600mm long with one bullet end, slump cone having base 200mm, height 300mm fitted with handle.



SL-CC-074

Compaction Factor Apparatus SL-CC-075

IS 1199, 5515. & BS 1881-103

The apparatus is used for determining the work ability of fresh concrete, provided the maximum size of the aggregate does not exceed 38mm. The test is particularly useful for concrete mixes of very low work ability where true slump values are not reliable.

Specifications: It consists of two rigid conical hoppers and a cylinder mounted on a rigid metal frame. The lower openings of the hoppers are fitted with hinged trapdoors having quick release catches. A circular metal plate is provided to cover the top of the cylinder. Supplied complete with one plasterer's trowel and one tamping rod, 16mm dia x 600 mm long, one end rounded.



SL-CC-075

Lab. Concrete Mixer (Manually) SL-CC-076

Our hand operated concrete mixers are easy to operate. Durable in quality and requiring low maintenance cost, our machines are widely used in construction of buildings, houses, road and other construction purposes. Highly resistant to corrosion and better performing, these machines have been widely demanded by our clients across the globe.

Lab. Concrete Mixer (Motorized) SL-CC-077

Specification: The Laboratory Concrete Mixer is used for preparing Mix Design of Concrete. It consists of a steel vessel of 55/ 110 Litres capacity, mounted on a frame. The vessel is rotated at 20-22 RPM with the help of a motor and a pulley arrangement. The vessel of laboratory concrete mixer can be tilted to any angle by a hand wheel and counter weight. This facilitates mixing and discharge. Blades are provided inside the vessel to mix the material thoroughly. The large pulley wheel facilitates manual rotation of the drum during power failure. The drum, pulley wheel, and motor, etc, are mounted on a steel frame in these laboratory concrete mixer. The concrete mixer is fitted with 1/2 HP motor. Suitable for Operation on 220V, Single Phase, 50Hz, AC Supply



SL-CC-077

Cement Mortar Mixer SL-CC-078

IS : 4031, 1727

It is used for mixing cement pastes, mortars and pozzolanas.

Specification: The apparatus consists of an epicyclic type stainless steel paddle imparting both planetary and revolving motion, by means of gears. It has two speeds of 140 + 5 r.p.m. and 285 + 10 r.p.m. with planetary motions of approximately 62 r.p.m. + 5 r.p.m. and 125 r.p.m. +/- 10 r.p.m. respectively. The stand of the mixer has arrangement to raise or lower the bowl. Complete with stainless steel bowl of about six litres capacity. Suitable for operation on 230 volts, 50 cycles, single phase, A.C. supply.



SL-CC-078

Cone Penetrometer for Mortar SL-CC-079

IS 2250-1965

For determining the consistency of masonry mortar Consists of a movable bearing rod to which a cone 145mm. Long and 75mm dia at a base is fixed. The bearing rod passes freely through a bracket which is provided with release mechanism. A dial graduated in mm with rack and pinion is provided for measuring the penetration. Complete with a conical container 150mm id x 180mm deep and a platform.



SL-CC-079

Gang Mould (Three Gang) SL-CC-080

BS 1881-108

Moulding of 40mm, 50mm, 100mm specimens. Manufactured from Mild Steel / Cast Iron / Bronze and supplied complete with base plate.



SL-CC-080



LE Chatelier Mould SL-CC-081

IS 269, 712, 5514, 1727, 2645, 6932 (PART IX) BS 6463

It is used for the determination of soundness by expansion method of ordinary and rapid hardening Portland cement, low heat Portland cement and class 'A' Limes.

Specification : It consists of a small split cylinder forming a mould. On either side of the split cylinder. Two parallel indicating arms with pointed ends are attached. Supplied complete with two glass plates and a lead weight.

LE Chatelier Flask SL-CC-082

IS 4031 1968, ASTM C 188

Used for finding specific gravity of hydraulic cement. Made from Borosilicate glass. The flask is 243mm in total height, having a bulb of 90mm dia of 250ml approximate capacity. The long neck of the flask has at top a funnel of 50mm dia in that fits a ground glass stopper. The neck has over-all 11mm i.d. upper portion is graduated from 18ml to 24ml with 1 ml graduation. Just at the bottom of the neck 1 ml capacity is marked in between there is 17 ml capacity bulb.

Shrinkage Bar Mould (One Gang) SL-CC-083

IS 4031, 10086, ASTM C 227. & BS 1881.

The mould is used for casting specimens of cement & aggregate combinations for measuring the potential expansive alkali reactivity.

Specification : The mould, which has 25 mm x 25 mm x 250 mm, effective gauge length is made of mild steel and has accurately machined faces. The parts of the moulds are tight fitting and firmly held together when assembled. Supplied complete with base plate and four stainless steel smooth reference pins.

Shrinkage Bar Mould (Two Gang) SL-CC-084

Same as above but with Two compartments assembled on angle base plate.

Shrinkage Bar Mould (Three Gang) SL-CC-085

Same as above but Three compartments.

Shrinkage Bar Mould (Four Gang) SL-CC-086

Same as above but having Four Compartments.

Note: Bar mould as above but in gun metal as well as with knurled and threaded reference pins are also available.

Volume Change Apparatus SL-CC-087

ASTM C 490, IS 4031 & BS 1881

The instrument is used for determining the volume change of cement concrete. Specification : The apparatus comprises of one mould effective gauge length complete with base plate, four reference pins, one length comparator frame, one stainless reference bar with insulated grip, and one dial gauge, 0.002mm x 10mm



SL-CC-081



SL-CC-082



SL-CC-083



SL-CC-084



SL-CC-085



SL-CC-086



SL-CC-087

Length Comparator SL-CC-088

IS 1199-1959, IS 4031 1968 BS 1881, ASTM C 151, C490

It is used to measure the drying shrinkage of concrete autoclave expansion of Portland cement and potential expansive reactivity of cement aggregate combinations in mortar bars during storage, on self drying. **Specification :** The instrument consists of a channeled base over which two vertical pillars are fixed. An adjustable cross plate is at the top. A dial gauge, reading to .002mm x 12mm. Can be located upon a 6.5mm. dia ball or other reference point cemented in the specimen. On the base there is similar recessed seating in which can be placed a second ball or reference point in the specimen. Complete with a stainless steel standardization bar with insulated grip and with 6.5mm dia. Balls mounted in the ends. The unit can be supplied with an Electronic Dial Gauge at extra cost if indicated at the time of placing the order.

Laboratory Cement Autoclave SL-CC-089

IS 4031-1968, IS 1624-1960 & ASTM C 151, C 141

The autoclave is suitable for conducting accelerated soundness tests on cements or the autoclave expansion test requiring constant steam pressure with the correspondent constant pressure. It consists of a stainless steel cylinder with a welded heat insulated metal housing attractively finished. The attached control unit encloses a sensitive pressure regulator and pressure gauge. Power switches and pilot lights for controlling the electric heating units. Inside chamber dimensions 10.5 cm diameter x 40.5cm height suitable for operation on 230 V, 50 Hz Single Phase A. C. supply. Supplied complete with test bar holder, special rack to hold specimens above water level in the autoclave and in a vertical position to expose them in the same manner. A Digital PID Controller is fitted for controlling the desired temperature.

Note : Ordinary laboratory cement autoclave with mild steel chambers are also available.

Heat of Hydration Apparatus SL-CC-090

IS 11262-1985, ASTM C 186

This equipment is required to determine the heat of hydration of cement as expressed in calories per gram. The equipment comprises of the following : 1) A wide mounted double walled vacuum flask with a stop cock 38 mm & a insulating container for the flask 2) A Beckman thermometer (Range 5° C)held tightly by the cock stopper in such a way as to avoid accidental contact with the stirrer blade & the reading lens. To facilitate the easy removal the cock stopper is in two halves. 3) A constant speed stirrer (double bladed propeller type)extended to within 38 mm from the bottom of the flask. 4) A funnel (Gooch type)with a stem of 6 mm inner dia & a body approx 25 mm long and 25 mm dia is fitted to the cock stopper for introducing the sample All the above to combine to form the calorimeter for the determination of heat of hydration of cement. Suitable To Operate on 230 V A.C. 50 Hz



SL-CC-088



SL-CC-089



SL-CC-090

CEMENT & CONCRETE



Vibrating Table SL-CC-091

Specification:

Proper compaction of cement and concrete while casting specimens for compressive or flexural strength testing essential to achieve a better and more consistent mixture. The cement and concrete vibrating table top has stops along its edges to prevent moulds from sliding off the table during operation. The maximum load capacity is 140 kg. The concrete vibrating tables are offered in 3 different table top sizes:



SL-CC-091

Model	Table Top Size (mm)	Motor	Electrical Supply
SL-CC-091.A	1000mm x 1000 mm	1 HP	440V, Three Phase, 50 Hz AC Supply
SL-CC-091.B	600 mm x 600 mm	1 HP	440V, Three Phase, 50 Hz AC Supply
SL-CC-091.C	500 mm x 500 mm	1 HP	440V, Three Phase, 50 Hz AC Supply

Mortar Cube Vibrating Machine SL-CC-092

Quality Standard : As Per IS 4031, IS 10080

Vibrating Machine is used for vibrating the mix in moulds at a frequency of 12,000 ± 400 cycles per minute. The vibrator is mounted over 4 coiled springs and the vibrations are developed by means of a revolving eccentric shaft. The centre of gravity of the vibrator, including the cube mould, is either at the centre of eccentric shaft or within 25mm below it. The simple design of the machine facilitates easy assembly and dismantling of the cube moulds.



SL-CC-092

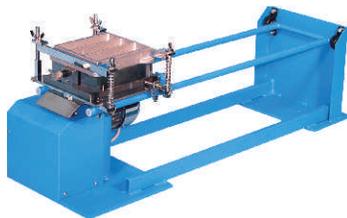
Model	Type	Motor	Electrical Supply
SL-CC-092.A	Analogue	½ HP 2880 RPM	220V, Single Phase, 50Hz AC Supply
SL-CC-092.B	Digital	½ HP 2880 RPM	220V, Single Phase, 50Hz AC Supply

Jolting Apparatus SL-CC-093

IS 1727 1967, IS 4031 1968, ASTM C 394, C 64

For making standard rectangular specimens of 40 x 40 x 160mm. of Portland and pozzolana cement mortar for determining the transverse strength. **Specification :** The jolting apparatus consists of a rectangular table rigidly connected by two support arms to a spindle at a horizontal distance of 800 mm from the centre of the table. There is a projecting lug with a plane face on the upper face of the table beneath which is a stop with a rounded upper surface. The table can be raised and allowed to fall freely on the stop by a cam which is connected to a motor and gearbox through a V-belt on pulleys. The cam rotates at a rate of 60 Rev/Min. A stroke counter fitted with micro-switch is provided which stops the machine after 60 Jolts. Locating pins are provided for mounting the mould compartments on the table. The mould surmounted by the hopper can be clamped rigidly to the table. Supplied complete with mould and hopper. Suitable for operation on 230 Volts, Single Phase, A.C. Supply. A Digital Preset Counter can be supplied at an extra cost.

Accessories: Steel mould with base plate having three compartments each having 40mm x 40mm x 160mm.



SL-CC-093

Tensile Strength Tester (Manually) SL-CC-094

IS: 269 1950, BS 12

Using for making tensile strength test on cement briquettes.

Specification : A loading Machine, double lever type, with steel scale marked from 0-500 Newtons in 10 Newton division. Maximum loading capacity 5 kN. Automatic Loading system using Lead Shot. Lead shot 15 kg supplied with the machine. Set of weights for weighing lead shot comprising one each for weighing upto 0.5 kN, 1 kN, 1.5 kN & 2.0 kN. One standard Briquette Mould with Base Plate also Supplied.



SL-CC-094

Tensile Strength Tester (Elec.) SL-CC-095

IS 269 1958, BS 12

The instrument employs a friction free, accurate, double lever system, the load being applied by means of sliding weight on the top lever. The capacity of the units is 900 kgs. After fixing the briquette in the jaws, the machine is switched on. The sliding weight slides over the calibrated lever thus applying tension to the specimen. A micro switch fitted instantly stop the machine on failure of the briquette and on failure the tensile load is accurately 0.5kg. By means of a marker provided on the sliding weight to its zero position. Suitable for operation on 230 V, 50 cycles, Single Phase, A.C. supply. Complete with one brass briquette mould and one base plate.



SL-CC-095

Briquette Mould (Single/Three) SL-CC-096

IS 269 1958, Bs12.,

For casting of cement briquettes for tensile strength tests. It is a two part split mould made of gun metal. Two thumb screws facilitate easy and quick assembling and dismantling of the mould. The minimum cross section of the briquettes cast is 25.4 mm x 25.4 mm. Supplied complete with a steel base plate.



SL-CC-096

Prism Mould Three gang SL-CC-097

IS 1727 1967, IS 4031 1968, ASTM C 394, C 64

(40.1x40x160mm) It is supplied complete with base. All parts are marked with their identification number for correct assembly. Each mould is individually verified in the dimensional tolerances, hardness, squareness, flatness & roughness.



SL-CC-097

Mortar Needle Penetrometer SL-CC-098

ASTM: C 403

It is used for finding out the rate of hardening of mortar sieved from concrete spring and a stem graduated from 0-70 kg x 1 kg. Six interchangeable penetration needles of areas 645, 323, 65 32 and 16mm sq. Is provided . The penetration resistance is measured by the force exerted to penetrate the mortar by 25mm and is indicated by a sliding ring on the stem, which is graduated. Needle shanks are marked at every 12.5mm. Complete in a wooden carrying case.



SL-CC-098



CEMENT & CONCRETE

Pocket Concrete Penetrometer SL-CC-099

ASTM C-403

For fast evaluation of the initial setting of concrete. It can be used on light weight concrete, special roof deck mixes and concrete additives.

Specification : Consists of a needle having face area 3/10 sq. cm. and graduated at a distance of 25cm. The needles point is an integral part of barrel which houses a calibrated spring. The spring is confined in a sleeve. The resistance offered by the concrete mortar is shown on the direct reading scale with a marker ring which holds its position when released. 2 Scale range is 0-50kg/cm² when the penetration resistance reaches a 2 value of 35kg/cm² the concrete is assumed initially set. Supplied complete in carrying case.



SL-CC-099

Concrete Test Hammer (Small) SL-CC-100

The concrete test hammer is an instrument which is easy to use, for quick and approximate measurement of the resistance to pressure of manufactured concrete products. The principles on which it works are based on the rebound impact of a hammer on a piston which rests against the surface of the concrete products. The Greater the resistance of the concrete, greater is the rebounded impact. By reading this rebound impact on a scale and relating it to curves on graphs supplied with the instrument, the resistance to compression in MPa or PSI can be found, with 20% of actual.

Specifications : Consists of a barrel in which is housed a hammer mass attached to an impact spring which slides on a guide bar. A plunger is attached to the guide bar which is pressed against the surface to be tested. As the piston is pressed against the surface to be tested, on reaching the compressive strength, the hammer mass is released and rebounds to a certain extent (according to the strength of the surface) which is indicated by a rider on a calibrated scale. A lock button fixed on the body of the hammer locks the rider in place and the rider can be reared to zero position by using the same button. The equivalent compressive strength can be computed from the chart supplied. Each hammer is calibrated against at standard test hammer, and is suitable for specimen of compressive strengths 100 - 700 kg/cm. The instrument, complete with a grinding stone for polishing the test surface, is supplied in carrying case.



SL-CC-100

Concrete Test Hammer (Big) SL-CC-101

It is similar to the above but is used for testing concrete with over size aggregates (for which test, cubes promise no reliable results) and for testing concrete roads. Its plunger is wider as such, the amount of concrete reached by the impact is considerably greater. With this model also the results obtained are within 20% of the actual compressive strength. The instrument is supplied with two handles which can be attached to the body of the concrete test hammer for carrying out the test easily. Complete with grinding stones.



SL-CC-101

Flame Photometer SL-CC-102

BS 4550, ASTM C 114-17

- 1) Extremely useful for medical and laboratory use
- 2) Highly Accurate using Micro controller Technology
- 3) 3 Point Calibration using curve fitting software
- 4) Direct results in PPM and MEQ

MICROPROCESSOR BASED FLAME PHOTOMETER is an ideal instrument for the determination of Sodium, Potassium, Calcium and Lithium. It uses the latest Micro-controller technology and advanced engineering techniques so as to give enhanced accuracy and reproducibility. The System has 3 point calibration facility using curve fitting software. It has soft touch membrane keys for ease of operation. The solution is aspirated through an atomiser. Air, sample and the fuel are mixed in the mixing chamber which is then sprayed as a very fine mist into the flame. The color of the flame is changed depending upon the concentration of elements present. Radiations from the flame passes through the sensing system and specific narrow band interference filter which permits only the characteristic radiation to pass to the photo-detector. The output of the photodetector is then processed by the micro-controller and the final results are displayed on the digital display.



SL-CC-102

Range	Serum	Urine	Sensitivity
Na: 0.1 to 100	0.435-435	0.87-870	01.ppm
K: 1 to 100	0.256-256	0.512-512	Accuracy
Ca: 15 to 100	-	-	±1% up to 40ppm
Li : 0.5 to 100	0.724-144.8	-	Readout
Power	Air Supply :By oil free mini compressor unit with pressure regulator		±2% above 40ppm
230V±10% AC, 50Hz			

Melting Pot SL-CC-103

Used to melt Capping compound this pot comprises a metal container in a well lagged steel jacket. A thermostatic control and stand by heat switch are fitted. Supplied complete with lift off cover.

Warmer : An electrically heated and thermostatically controlled bath for melting the capping compound. Supplied with cover and handle. Suitable for operation on 230 Volts A.C. Single Phase.

Capping Compound : Used for capping the ends of concrete cylinders to be tested. Available in packs of 5 kg.

Bowl & Ladle : Metallic bowl is used to carry the capping compound and ladle is used to pour molten capping compound in to the grooves between specimen and capping plate. Supplied as a set.

Specification: Dimensions (Diameter x Depth) Internal 140 x 150mm, External:250 x 165mm, Capacity :2.4 Liters, Rated Power :750 W, Temperatures :40 to 3400C



SL-CC-103

CEMENT & CONCRETE



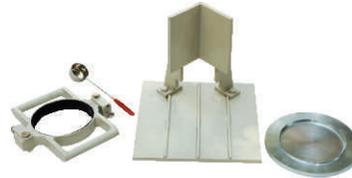
Capping Set (Horizontal) SL-CC-104

IS: 516 1959, BS 1881-120, ASTM C31, C 617,

For 15cm dia x 30cm length cylinders

For 100mm dia x 200mm length cylinder specification . 2027 but for use with specimens 100mm dia x 200mm long.

Specification: The set comprises of a cylinder capper, a cylinder carrier and a ladle. The cylinder capper consists of a base on which two accurately machined plates are mounted vertically. One plate is firmly fixed and the other one is adjustable horizontally. Two plates are provided with holders for holding the cylinder in position. The holder are split and the bottom half of each holder is fixed firmly and the top half of each is removable and bolted down to the lower half. On the upper parts of the vertical plates 'V' s are provided for pouring the capping compound. Two spacers are also provided. Complete with cylinder carrier and ladle for molten compound.



SL-CC-104

Capping Set (Vertical) SL-CC-105

IS: 516 1959, BS 1881-120

For capping compression cylinder specimens. This apparatus can be used both in the laboratory and in the field. The specimens capped in this apparatus have plane parallel faces.

Specification: For cylinders 150mm dia x 300mm long

Consists of a base with an upright. The upright serves as a guide for positioning the capping plate and cylinder. The 19mm thick capping plate is machined accurately. There is a recess in the plate for keeping the molten capping compound and to position cylinder. Complete with cylinder carrier and ladle.

For cylinder 100mm x 200mm long, for cylinders 100mm x 200mm long. Double handles make it easy to hold the cylinder during capping operations. Complete with snap clamp and cushioning lining. Capping mould : For capping the concrete cylinders, it consists of an accurately machined plate with a recess for 100mm dia specimen.

Longitudinal Compressometer SL-CC-106

ASTM C 469

It is designed for finding out the deformation and strains on 15cms. Diameter and 30 cms high cement and concrete cylinders when subjected to compressive loads.

Specification : Consists of a frame with a bottom ring and a top ring with tightening screws to firmly clamp the compressometer over the cylinder. A dial gauge .002mm x 5mm is mounted on the upper ring and the tie of the dial gauge rests on an anvil. The zero on the dial gauge can be set by adjusting the anvil screw. Supplied in a wooden carrying case.



SL-CC-106

Lateral Extensometer SL-CC-107

This is for determining the lateral extension of 15cm dia x 30 cm high cement concrete cylinders while testing them under compression.

Specification : The unit consists of two movable frames pivoted at one end. The extensometer is fixed to the specimen with the help of tightening screws. The lateral extension is indicated on a dial gauge of 0.002mm x 5mm is mounted on the upper ring and the tip of the dial gauge rests on an anvil. The zero on the dial gauge can be set by adjusting the anvil screw. Supplied in a wooden carrying case.

Mechanical Strain Gauge SL-CC-108

BS 1881-206.

It is used for finding out the linear deformation caused on two reference points fixed on a loading member.

Specification : This portable gauge is designed for a gauge length of 20 cm. of the reference pins. The deformation is indicated by a 0.002 x 5mm dial gauge attached to the instrument. Complete with two standard bars for 20 cm gauge length supplied in a wooden case.

Accessories : Reference pins in packet of 100 nos. at an extra cost.

Air Entrainment Meter SL-CC-109

IS 1199 1959 & BS 1881-106

As entrainment of air in limited percentage improves durability of concrete and very low percentages deteriorate it ,measurement of air entrapped in freshly mixed concrete becomes important. The use of chemical additives to increase work ability of concrete in turn requires an air content check to be made. Air entrainment meters are used to determine air entrained in freshly mixed concrete by pressure method.

Specification : The apparatus consists of a pressure tight flanged cylindrical measuring bowl of 0.005 cubic meter capacity for maximum size of aggregate 38mm. The bowl is fitted with a removable flanged conical cover assembly with the help of a seal. The conical cover has an air valve and a petcock for bleeding off the water. A transparent cylindrical stand pipe which is graduated in air content is fixed to the conical cover assembly. Pressure is applied to the specimen with the help of a pressure bulb and the pressure is recorded on the pressure gauge which is mounted on the stand pipe. The whole assembly is mounted on a flat base. The instrument is supplied complete with one each following accessories.

Other Size are also available.

0.007 cubic meter capacity for maximum size of aggregates 38mm,

0.01 cubic meter capacity for maximum size of aggregate 75mm.

0.1 cubic meter capacity for maximum size of aggregate 150mm.



SL-CC-107



SL-CC-108



SL-CC-109

Sand Absorption Cone and Tamper SL-CC-110

ASTM C 128 AASHTO-T-84.

Used for determining the slump of fine aggregate in the determination of bulk and apparent specific gravity and absorption of fine aggregate.

Specification : The equipment comprises of a conical metal mould 1.5inch dia at top to 27/8 top, 3.5 inch dia at base and 2 inch in height. A metal tamping rod weighting 12 ounces and having a flat circular tamping faces 1 inch in dia meter



SL-CC-110

Curing Tank SL-CC-111

a) 24 Hour cycle from time of mixing.

b) Controlled 35oC or 100oC ±2oC Curing Temperature for concrete.

c) Controlled 27oC ± 2oC Curing Temperature for grey cement.

The tank has been designed to accommodate 150mm/70.6mm cube moulds upto 36/72 cube mould and fully insulated, complete with a hinged lid, heater, thermostat and re-circulated pump. Provision of two removable racks allowing free circulation of water around each mould. The pump, drain valves and electrical equipment are housed in a compartment located at one end of the tank. The Tank is heated by a immersion heater under normal conditions and refrigeration system for grey cement the temperature is controlled at 35oC or 100oC ± 2oC / 27oC +2oC , expect for the 15 minutes after immersion of the freshly made specimens.



SL-CC-111

1 Curing Tank for 6/12 moulds of 150mm / 70.6mm size

2 Curing Tank for 12/24 moulds of 150mm / 70.6mm size

3 Curing Tank for 24/48 moulds of 150mm / 70.6mm size

4 Curing Tank for 36/72 moulds of 150mm / 70.6mm size

Needle Vibrator SL-CC-112

An increasing number of contractual obligations call for various forms of vibro-compacted concrete for achieving a better and more consistent mixture. The Needle Vibrator is recommended for vibro-compaction test cylinders and beams at site and in the laboratory. This instrument can also be used at small construction sites.

A motor fitted on a swivel base drives a flexible shaft, which in turn, vibrates the needle at about 10,000 vibrations per minute. (approx.)

Specifications: Needle Vibrator with a 25mm. diameter x 350mm, long needle, a one meter long flexible shaft and a motor drive with a swivel head and on/off switch. Wired for 230V. Sph. 50Hz.

Accessories:

2 meter long flexible shaft without needle.

3 meter long flexible shaft without needle.

5 meter long flexible shaft without needle, but with a 2 H.P. motor.

Needle 20mm, diameter x 350mm. long.

Needle 40mm, diameter x 350mm. long.



SL-CC-112

Tile Flexure Testing Machine SL-CC-113

AS PER IS: 1237 and 654

The Tile Flexure Testing Machine is used to determine the flexural strength of clay roofing tiles and cement concrete flooring tiles. We are one of the leading manufacturers of Tile Flexure Testing Machines. Our machines are manufactured using best raw materials to ensure good functionality and durability. The Tile Flexure Testing Machine is a double lever loading machine where load is placed by a flow of lead metal that automatically stops as the sample breaks. The sample is mounted between rollers which are 40mm or 12mm in dia. Bearing rollers can be placed at center distances of 150, 200 or 270mm. The unit comes equipped with a 20 Kg lead metal.



SL-CC-113

Tile Abrasion Testing Machine SL-CC-114

AS PER IS: 1237 & 1706.

This is used for determination of resistance to wear for cement concrete flooring tiles. Tiles specimen of size 7.06cm x 7.06cm is pressed face-wise under specific load on a grinding path and abrasive powder is evenly spread on the rotating grinding path and after specific number of revolutions of the grinding disc the second parallel side of the tile is subjected to wear for similar number of rotations. The wear of the tile is measured on a thickness gauge specifically made for the purpose. The machine consists of a disc rotating at a speed of 30 rpm in a circular tray. A bracket is provided to hold the specimen. A counter balance lever loads the specimen. Load applied is 30kgf. A funnel is fitted to evenly spread abrasive powder on the grinding path. A pre-set counter automatically stops the machine after 22 revolutions. This counter is re-adjustable. The machine works on 440 volts AC, three phase electrical supply.



SL-CC-114

Vibratory Hammer SL-CC-115

We are providers of Vibratory Hammers, which is a specialized equipment used consistently at construction sites. The Vibratory Hammer is electrically operated. Our Vibratory Hammer has several uses. Some of them are listed below.

Specifications

Used for changing the soil formation with the use of its vibration

Used for driving hammers into heavy or hard piles

Used for the compaction of concrete cubes of 150mm & 100mm



SL-CC-115

Hydraulic Jacks SL-CC-116

Hydraulic Jacks have multipurpose utility, i.e. application of loads while engaged in field investigation, determination of load carrying capacity of piles in the field, tensioning of wires in pre-stressed structures, loading of members of any structure for deformation characteristics etc. The jacks are supplied complete with manually operated pumping units fitted with Bourdon tube type load gauge and high pressure flexible hose pipe. All the jacks have a piston travel of 50 mm and jacks upto 1000 kN capacity are provided with retraction springs.



SL-CC-116

CEMENT & CONCRETE



POZZOLANA Cement Mortar Permeability Apparatus (Three Cell Model) SL-CC-117

IS 1727-2645

For water proofing of concrete admixture and special water proof cements are used. Water proofing of these compounds, is established by measuring permeability of standard mortar. Specimen with or without such water proofing compounds. Permeability apparatus is used to determine permeability to water of cement mortar specimens with or without water proofing compound.

Specification : The mortar permeability apparatus comprises three brass/ gun metal cells mounted on a stand and a pressure chamber with a pressure regulator. The cell can accommodate 100mm dia x 50mm high specimen. Each cell assembly consists of the base plate. The base plate has one outlet for water and is recessed to hold the specimen in place with a ring washer in between. The top plate has an inlet for water and a suitable connector for the application of pressurized water in the cell the mount and collar are clamped between the base plate and the top plate with the help of four tension rods and nuts. The cells are mounted on a stand.

The pressure chamber is fitted with a pressure regulator which helps in regulating the pressure from 0-7kg/sq. cm. The regulator has two pressure gauges, one for indicating the pressure in the chamber (0-10.5kg/sq.cm.) The pressure chamber is connected to the cells with pressure hoses and with couplings. This pressure chamber is fitted with valve. Pressure is applied to the pressure chamber with help of a foot pump and rubber hose which are supplied with the instrument.

Cement Mortar Permeability App. (6 Cell Model) SL-CC-118

Cement Mortar Permeability App. (12 Cell Model) SL-CC-119

Same as above but twelve cells , mounted on a stand.

Accessories : Specimen casting mould C.I. with base plate 100mm dia x 50mm height.

Note : Where Larger Number Of Cells Are Used A Suitable Compressor In Place Of Pressure Chamber Is Recommended. This Compressor Can Be Supplied At Extra Cost.

Concrete Permeability Test App. SL-CC-120

As Per IS 3085 / DIN Standard

(Single Cell Model)

One of the durability test of concrete is to determine permeability of water through specimen. Permeability apparatus is used for determining the permeability of cement mortar and concrete specimens of 15cm cubes cast in the laboratory.

Specification :

The concrete permeability apparatus comprises of a brass / gunmetal cell of Square/Round cross-section mounted on a stand and a pressure chamber is connected to the cell through copper tubing and T-connector mounted on the stand with sleeve packed valve and



SL-CC-118



SL-CC-120

rubber hose pipe with end connections. The cell assembly consists of one base plate, one metal funnel and one top plate. The pressure chamber is fitted with a pressure regulator which helps in regulating the pressure from 0-15kg/cm sq. Gauge is for indicating the pressure in the cell. A foot pump and a pressure tube is supplied to develop pressure in the chamber. The apparatus is supplied with a measuring cylinder 500cc to measure percolated quantity to water. Pressure can also be applied; by a pressure air line or by a compressor which can be supplied at an extra cost.

Permeability App. (3 Cell Model) SL-CC-121

Same as above but supplied with three individual cells with stand. Three pressure gauges for indicating pressure in each cell are supplied apart from the main pressure gauge which indicates pressure chamber.



SL-CC-121

