

# DYNAMICS

## THEORY OF MACHINES

### AUTOMOBILE SYSTEMS

*For Mechanical, Production, Marine  
Aeronautics & Instrumentation Engineering*

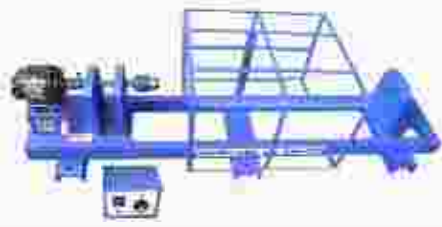


FM96503



**B.S.PYROMATIC INDIA (P) LTD.,**

**AN ISO 9001 - 2000 CERTIFIED COMPANY**



### Whirling of Shaft- BSPIL-DYN-04001 (S) Whirling of Shaft- BSPIL-DYN-04001 (H)

Whirling of Shaft with 3 shafts, 2 set of different bearing ends, Safety guard, speed controller, flexible shaft etc. Duly mounted on the solid frame with FHP Motor drive.

#### Specifications:

STAINLESS STEEL SHAFTS	
3 mm Diameter and 900 mm	
4 mm Diameter and 900 mm	
6 mm Diameter and 900 mm	
MOTOR	
DC variable speed	
Foot mounting type	
Capacity : ½ hp	
Speed : 0-3000 rpm	
DC voltage supply from DC Variable speed controller	

DIGITAL SPEED TRANSDUCER	
Range : 0 to 10,000 rpm	
Type : Proximity	
Supply : 5 12 V DC from speed Indicator	
Size : 15 20 mm Dia.	
Cable 2 m length	
VARIABLE DC MOTOR CONTROLLER	
Speed control (10 3000 rpm)	
Capacity of controller (1/4 hp to 1 hp)	
I/P Supply : 230 V A.C. Single phase	

DIGITAL SPEED INDICATOR	
Range : 0 to 10,000 rpm	
Display : 4 ½ digit LED	
Supply : 230 V single phase	
Safety fuse : 500 mA	
Weight: 25kgs	
Dimensions: 1250mm X 300mm X 300mm	

### Cam Profile Analyser- BSPIL-DYN-04002

This system is a simple Desk top arrangement and the Trainer is provided with Cams of 2 different sizes.

Nomenclature	Specifications
Dimension (L X B X H)	500 X 400 X 500 mm
Motor	1/8 hp AC, 230V
Cam A	Base Dia 25 mm, Nose dia 7mm Angle Of Sweep - 120°, Lift - 10mm
Cam B	Offset Cam,
Followers	Knife-edged follower, Roller follower Mushroom follower, Oscillating follower.
L.C for Lift measurement	1mm
Overall weight	25kg



### Motorised Gyroscope- BSPIL-DYN-04003

An Apparatus based on the Aerodynamic Principle. Gyroscopic rules of a plane-rotating disc can be verified.

Consists of variable speed D.C. Motor with speed controller.

Based on the general principle applied on locomotive Automotive and Aeroplane on making a turn.

Nomenclature	Specifications
Dimension ( L X B X H )	600 X 600 X 600 mm
Disc	f 300 mm (7kg)
Motor	1/6 hp, 230V DC.
Weight	0.5 kg, 1kg each 1 no.
Speed Controller	0-230V, AC.
Resolution of angular measurement	1 degree
Overall weight	34kg

### Universal Governor - BSPIL-DYN-04004

The apparatus is designed to study the principle of a Governor.

The function is to regulate the mean speed of an engine, when there are variations in the load on an engine increases, its speed decreases, there it becomes necessary to increase the supply of fuel.

Nomenclature	Specifications
Dimension ( L X B X H )	500 X 420 X 500
Motor	1/2 hp AC, 230V, 3F
Minimum Equilibrium Position	12mm.
Max Equilibrium Position	115 mm.
Arm length	U-110mm, L- 175mm.
Resolution of linear measurement	0.5mm.
Central load(Hartnell)	1kg.
Overall weight	45kg.



### Flywheel and Connecting Rod- BSPIL-DYN-04005 Determination of M.I. By Oscillation -BSPIL-DYN-04005A

"Pyromatic" make model of flywheel and connecting rod is useful to calculate 'moment of inertia of connecting rod by oscillation. The effect of flywheel can be observed on oscillations of connecting rod.

Nomenclature	Specifications
Dimension (L X B X H)	300 X 300 X 400 mm
Connecting rod	2 Nos.
Weight (Small)	1.5kg
(Large)	2.5 kg
Flywheel	1no.
Model	Manual
Overall weight	19kg.

### Turn Table Apparatus- BSPIL-DYN-04006

This apparatus is designed to find out the mass inertia of the given disc, the system is driven by 128 watts FHP motor and Dimmerstat is provided to regulate the Power Source to have variable drive, a Magnetic Proximity Pick up sensor is fitted to sense the RPM readability through the Digital Indicator.



Nomenclature	Specifications
Dimension (L X B X H)	450x450x400 mm.
Disc	300mm.
Motor	1/6 hp DC.
Speed measurement	Digital, 4-digit display.
Speed Controller	0- 230V DC.
Sliding mass	270 gms (6 Nos).
Central mass	1.25 kg .
Overall weight	27.5kg.



### Worm Gear- BSPIL-DYN-04007

For connecting non-parallel non-intersecting shafts worm gears may be used.

It has quiet operation, because more teeth are in contact. It can able to transmit motion to one direction only. i.e., from the input shaft to the output shaft. Motion cannot be transmitted from the wheel to the worm. The efficiency is lower than that of toothed gear drive.

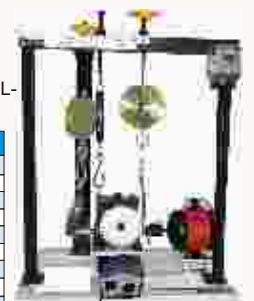
### Transmission Efficiency of Gear- BSPIL-DYN-04008

Gear train is made out compound spur gears and the system is driven through fractional hp motor and all the gears are duly supported by bearings. Mechanical break drum is provided to study and measure the power. The setup comes in single drum with single and dual spring balance. Model - BSPIL-DYN-04008(a) & (b) comes with energy meter to measure the input power.

#### Other Models

- Transmission Efficiency of Gear - Dual Spring Loading BSPIL-DYN-04008A
- Transmission Efficiency of Gear - Energy Meter BSPIL-DYN-04008B

Nomenclature	Specifications
Dimension (L X B H )	550 X 480 X 1000 mm
Gear type	Worm Gear
Motor	¼ hp motor, 230V AC
Speed controller	0-230V Variac
Loading	Mechanical Loading (Brake drum)
Brake drum diameter (worm)	85mm
Brake drum diameter (worm wheel)	110mm
Load measurement device- Spring Balance (0-10kg )	2nos
Overall weight	55kg



**Bevel Gears- BSPIL-DYN-04009**  
**Bevel Gears -Motorized Drive and Rpm BSPIL-DYN-04009A**  
**Bevel Gear Box with housing bearing BSPIL-DYN-04009B(H)**

These are made from actual gears. A realistic shaft is provided to handle and operate and to transmit power to the driven gear through single follower. Assembly is mounted on wooden board and encapsulated with transparent perlex sheet for greater visibility and study. This system also comes with motor driven- Model- BSPIL-DYN-04009(a).

Nomenclature	Specifications
Dimension (L X B X H)	300 X 250 X 150 mm
Type of gear	Straight bevel gear
Angle of transmission	90 Degree
Operation	Manual
Speed ratio	0.5-0.8
Overall weight	7kg(approx)



**Epicyclic Gears- BSPIL-DYN-04010**  
**Epicyclic Gear - Motorized Drive and Rpm BSPIL-DYN-04010A**  
**Epicyclic gear box with housing bearing BSPIL-DYN-04010B(H)**

Epicyclic gear train made of two simple gears duly coupled together. Driver shaft is having handle to operate and to transmit power to the driven gear through single follower. Entire system is mounted on Plywood duly finished with Polymex Beading. This system also comes with motorised drive. Model-BSPIL-DYN-04010 (a).

Nomenclature	Specifications
Overall space	375 x 400 x 380 mm (enclosed in box)
Variable speed	0 - 6000 rpm
Sun	19 teeth
Planet	29 teeth

**Simple Gear Train- BSPIL-DYN-04011**  
**Simple Gear train with housing bearing BSPIL-DYN-04011B(H)**

Gear train is made of actual compound Gears. Driver shaft is having handle to operate and to transmit power to the driven gear through single follower. Assembly is mounted on Wooden Board. Acrylic Sheet is used for transparent study. This system also comes with motorized drive. Model-BSPIL-DYN-04011 (a).

Nomenclature	Specifications
Dimension (L X B X H)	300X250X200 mm
Type of gear	Spur or helical
Operation	Manual.
Speed ratio	0.5-0.7.
Overall weight	5kgs
a) No of teeth	50 to 65
b) Speed ratio	1.3
c) No of shaft	2 nos



**Compound Gear- BSPIL-DYN-04012**  
**Compound Gear - Motorized Drive and Rpm BSPIL-DYN-04012A**  
**Compound gear train with housing bearing BSPIL-DYN-04012B(H)**

Gear train is made of actual compound gears. Driver shaft is provided with handle to smoothly operate and to transmit power to the driven gear through mono follower. Assembly is mounted on Ply wood board The entire setup is covered with transparent acrylic for clear study. This system also comes with motorized drive. Model-BSPIL-DYN-04012 (a).



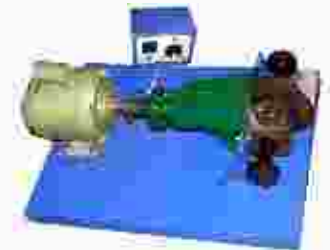
Nomenclature	Specifications
Dimension (L X B X H)	400 X 250 X 300
Driver motor	1/6 hp AC Variable
Speed controller	0-230V, 2 Amps Variac.
No. Of Shaft used	3nos ( driver, intermediate, driven )
Type of gear used	Spur gear.
Speed ratio	0.5-0.7

Resolution for speed measurement	1 RPM (Tachometer, Proximity sensors)
Housing	Acrylic sheet (Transparent)
Overall weight	12kg
a) Speed ratio	0.44
b) Overall space	500 x 400 mm
c) Motor variable speed	0-6000 RPM - (BSPIL-DYN-04012A)

**Differential Gear- BSPIL-DYN-04013**  
**Differential Gear - Motorized Drive and RPM BSPIL-DYN-04013A**

Actual Car differential is used on solid frame, handle and twin discs are provided to feel the characteristics of wheel which can be easily operated to study the rpm change while suppressing the momentum of left or right side disc duly painted in contrast colors to distinguish easily the characteristics of the drive. Universal Joint. This system also comes with motorized drive. Model-BSPIL-DYN-04013 (a).

Nomenclature	Specifications
Dimension ( L X B X H )	500 X 400 X 400 mm
Driver motor	1/6 hp AC Variable
Speed controller	0-230V, 2 Amps Variac.
Sensor	Proximity sensor
Sensor range	0-10000 RPM
Resolution for speed measurement	1RPM
Overall weight	30kg



**Universal Joints- BSPIL-DYN-04014**  
**Universal Joints - Motorized Drive and Rpm BSPIL-DYN-04014A**

The realistic Universal Joints are fitted inside the Acrylic Encapsulation one shaft is fitted with handle, the second shaft is inclined to 30 degrees to the driver shaft. The motion is transmitted from driver shaft to driven shaft by the manual operation and study. This system also comes with motorized drive. Model-BSPIL-DYN-04014 (a).

Nomenclature	Specifications
Dimension ( L X B X H )	400 X 250 X 250mm
Operation	Manual
Angle of transmission	20 degrees
No of shafts	3 nos
No of joints	2 nos
Resolution for Angular measurement	1 Degree
Overall weight	5kgs

**Static & Dynamics Balancing Demo Unit-BSPIL-DYN-04015**  
**Balancing of Rotating Masses Apparatus BSPIL-DYN-04015(H)**

The Static and Dynamics Balancing demo unit With 4 different weights, Shafts, frame etc. Duly driven by FHP motor and the total unit is mounted on a section of frame .

Specifications
1. Precision shaft mounted in ball bearings to a study frame. Frame is hung by chains.
2. Slotted adjustable discs - 4 nos
3. Calibrated weight - 8 nos
4. A small motor to rotate the shaft - 1/6 HP
Dimension (L x B x H) - 600 x 280 x 600 mm
Overall Weight - 18 kg approx.



**Four Bar Mechanism- BSPIL-DYN-04016**  
**Four Bar Mechanism (Crank & Rock Method - Rotary to Reciprocating BSPIL-DYN-04016A)**

This system is designed in such a manner to easily understand the functionality of the Connecting Rod, Cranks., Rocker Arm. The Length of Connecting Rod is 250mm, Length of Cranks 100 mm, Length of Rocker Arm, 200mm Mechanism Frame 300mm. Rust proof Alloy Wheel is provided with handle to operate the arrangement and have scientific study. The whole setup is mounded on the Wooden Board duly covered with Plastic beading. This model also comes in motorised version with digital parameters. Model-BSPIL-DYN-04016 (a).

Nomenclature	Specifications
Dimension ( L X B X H )	500 X400X 200 mm
Operation	Manual.
Crank diameter	20mm
Cylinder bore diameter	22mm
Stroke length	65mm
Resolution for linear measurement	0.5 mm (steel rule)
Resolution for Angular measurement	1 Degree
Overall weight	6kgs.

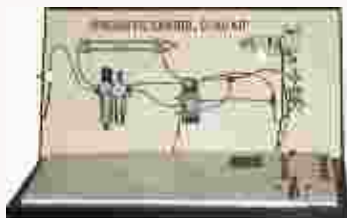


## Hydraulic demo Trainer with LC - BSPIL-HML-DYN-20014

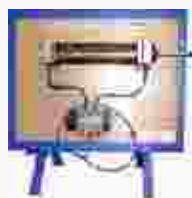
Effective application of hydraulic and automation components and systems requires a thorough understanding of machinery and an ability to easily discuss and follow new and different technical issues. This high quality training aid provides a valuable tool for instruction of the fundamentals of industrial hydraulics.

### Specifications

1. Sump: 40-50 liter capacity.
2. Vane or Gear type.
3. Flow: 10-20 LPM at working pressure 35-50kg/cm<sup>2</sup>.
4. Drive motor: 1-2HP single phase, induction motor- 1400-2000RPM.
5. Pressure relief valve for safety and pressure adjustment.
6. Valve: direction control.
7. Flow control: pressure reducing, sequencing, non-return, solenoid operated directional control valve, and relief valve. 2-4 numbers of pressure gauges for pressure measuring.
8. Hydraulic cylinder: double acting 2 Nos.
9. Return line filter.
10. Sequencing and pressure reducing.
11. Hydraulic cylinder.
12. Single acting (1 No.)
13. Two numbers of pressure gauges will be provided for measuring processes.
14. Solenoid operated directional control valve and non-return valve.
15. Universal main fold.
16. Programmable logic control for timing.
17. Limit switch - 3 Nos.



PNEUMATIC CONTROL DEMO KIT



PNEUMATIC CYLINDER ASSEMBLY

### Pneumatic Control Demo Kit - BSPIL-DYN-04017

### Pneumatic Control Demo Kit - Roll About Cart BSPIL-DYN-04017A

### Pneumatic Control Tranparent Manual System With Foot Pump BSPIL-DYN-04017B

### Electronic Pneumatic Circuit with compressor BSPIL-DYN-04017C

### Electro Pneumatic Training Kit with PLC BSPIL-DYN-04017H

This versatile equipment is designed to have integrated hands-on training aid for students to have basic principles of pneumatics and compressed air devices. This unit allows for the bread boarding of numerous pneumatic circuits to illustrate a wide selection of pneumatic circuits along with the associated lab. This system comes with Manual and instructor guide. This creates a learning experience that provides a complete and practical introduction to pneumatic technology. The Pneumatic Trainer may be supplied on a Roll About Cart BSPIL-DYN-04017(a) or as a tabletop unit. The system is integrated with Industrial grade Cylinder, Pneumatic Control Valve, FRL Unit, Joints, Elbows, Limit Switch, Solenoid Valves, Timer and Logic Circuit. Realistic Modern Quick Snap State of Art Tubing and Accessories are used. The System comes with or without compressor a 1/2 HP compressor is enough to operate the realistic demo model which will be highly interactive for educational purpose. Other Demo kits made by us - Hydraulic Demo Unit/ Flow Demo Unit and other major Mechanical Lab requisites.

Pneumatic Cylinder assembly Pneumatic Trainer or DEMO KIT (Manual) Make: A LOW COST SOLUTION This system will have a Transparent Acrylic Cylinder with Plunger movement visible during the forward and back ward movement duly changed with the help of the realistic Directional Port Valve for forward and backward movement, the entire operation is done with the help of foot pump and the latest quick snap tubing and 1/4" BSP BRASS NIPPLE

### Vibration Table With Recorder- BSPIL-DYN-04018

### Vibration Table With Transmissibility Ratio Computer interfaceable model BSPIL-DYN-04018A

This system is mounted on a rugged steel channel set up duly provided with digital RPM indication through Proximity Pickup, and works with Dual Motor Of 1/8 hp for Vibration Generation and Geared Motor for Recording Device. The study can be conducted either by giving different load or by giving different RPM through the DC Dimmer or by changing the Vibration Table Arm of Different Sizes. This will give the total interactive education of displacement study.

Nomenclature	Specifications
Dimension (L X B X H)	1300 x 1000 x 1100 mm
Motor	1/6 hp Dc
Beam	1100mm and 750 mm length
Speed measurement	Digital, 4-digit display with proximity pick up
Speed Controller	0 -230V
Damper type	Hydraulic (smooth movable)
Recorder	Graphical type
Motor (Recorder)	Fractional hp Geared type
Coupling	Vibrating set up is coupled with driver motor using flexible coupling. (Spring type)
Overall weight	82kg(approx)



### Vibration Measurement- BSPIL-DYN-04019

### Vibration Pickups, Accelerometers and Data Recorders with Computer Interface comes with

### Hardware & Software (Computer to be provided by the Institution) BSPIL-DYN-04019A

### Vibration Table Picso Sensor Accelerometer & Mechanical Recorder BSPIL-DYN-04019B

Comprises of vibration generator of capacity 5 Newton with Vibration Exciter Piezo Electric Accelerometer is used to sense the vibration. Digital display unit will display the displacement, velocity and acceleration is sensed by the sensor. Excitation Frequency is 50 Hz to 1 KHz excitation Voltage 0-10 Volt P to P. Vibration Indicator 3 1/2 digit LCD Display to read acceleration, Velocity and Displacement by selection through selector switch. Range of acceleration- 0.1 to 199.9m /Sq, Velocity 0.01 19.99cm/s(rms) displacement 0.003 to 1.999mm Power 230 Volt 50 Hz. (P to P)

### Tool Dynamometers- BSPIL-DYN-04020,21,22,23

Tool Tool Dynamometers is used to measure cutting forces on various machines like lathe, drill, milling machines. All the three directional forces are measured simultaneously and displayed. Tool dynamometers are useful to study, analyze optimum feed and depth of cut on different materials. The dynamometers are also available in different capacities .

#### Specifications:

- Lathe tool: 3 1/2 digit display 500 & model (a) 300 kg force in XYZ direction.
- Milling tool: 3 1/2 digit display 300 & model (b) 200 kg thrust, 10 kg torque.
- Grinding tool: 3 1/2 digit display 300 & model (c) 200 kg force in XYZ direction.
- Drilling tool: 3 1/2 digit display 300 & model (d) 200 kg force in XYZ direction.



Band Break Dynamometer

### Prony Brake Dynamometer- BSPIL-DYN-04024

### Electrical Break Dynamometer - BSPIL-DYN-04025

### Rope Break Dynamometer BSPIL - DYN-04026

### Band Break Dynamometer BSPIL - DYN-04026A

### Hydraulic Break Dynamometer - BSPIL-DYN-04027

Rope break/electrical break/mechanical break dynamometer are made with mechanical or digital parameters. Dynamometers are driven through 1HP 3 phase and single phase motors.

The setup consist strong metallic table that is capable to handle the vibration.

The 3.0 Hp motor is connected with pulley, it is connected with starter and main block in separate switchboard.

The rectangular wooden shoes are provided to facilitate the Frictional force.

Water channel is provided in the pulley.

Brake Drum Radius 15.8cm

Load added given as steps of 1 kg

Overall size: 1000(L) x 800(W) x 1500(H)

Overall weight: 50kg (approx).

### Multigrade Freedom Suspensions - BSPIL-DYN-04029

Multi Grade Freedom Suspensions [Complete With Solid Frame With Grouting Arrangement For Simple Pendulum, Bifilar Suspension, Trifler Suspension, With Threads, Chucks, Etc.]

Nomenclature	Specifications
Dimension (L X B X H)	500 X 350 X 1500 mm
Bifilar Plate Size (L X B X H)	320 X 50 X 6 mm
Bifilar Plate (rectangular)Weight	1.1kg
Trifilar disc Size	φ300 X 6 Thick
Trifilar Plate (circular)Weight	2.5 kg.
Springs	3Nos
Weights (Mass)	100,200,300,400,500gms.



### Compound Pendulum [With Circular Pendulum, Knife Edge, Solid Frame, Etc.] - BSPIL-DYN-04030

A steel beam of 1m length (approx) is having adjustable fixture holes along the length. A knife edge torque will be provided to the bar. The time period & frequency of compound pendulum can be calculated simply.

Nomenclature	Specifications
Beam Length	1 meter
Points of suspension	7 nos
Overall Dimension	300 x 300 x 1200 mm
Weight	12kg (approx)

### Fly wheel and Axle System - BSPIL-DYN-04031 Moment of Inertia of Fly Wheel (Custom Built) - BSPIL-DYN-04031A

Fly wheel And Axle System [Complete with Heavy Fly Wheel 3 Different Diameter Axles in Steps, Rope, Dead Weights, springs, Solid Frame, Bearing Blocks, Etc.]

### Transverse Vibration – Free Beam -BSPIL-DYN-04032



Transverse Vibration – Free – Free Beam [With Full Beam-Free-Free, Trunion Bearing Sets, Dead Weight For Concentrated Load, Uniform Load, Scale, Recorder Point, Etc. Cantilever Beam With Fixed At One Side With Scale, Pointer

### Balancing of Reciprocating Masses - BSPIL-DYN-04033 Balancing of Reciprocating Masses Apparatus - BSPIL-DYN-04033 (H)

The Entire System Is Mounted On A Heavy Duty Frame Which Is Embedded With Multi Springs To Absorb The Shock Generated While Reciprocation Is In Action With Reciprocating System Duly Fixed On The Frame And Driven Through Dc Motor With Variable Rpm Level And Duly Indicated Through The Digital Rpm Monitor.

Nomenclature	Specifications
Cylinder and Piston	Bore - φ 50.02, f 50.00 Stroke - 40mm
Motor	1/6 hp AC/ DC motor
Speed	3000 RPM
Coupling	Spring type
Recorder	Graphical type
Motor (Recorder)	Fraction HP Geared type

Nomenclature	Specifications
Speed controller	(0-230v)
Digital speed indicator	(0-9999rpm)
Weights	30gms x 4
Overall weight	30kg.
Dimension (L X B X H)	900 X 340 X 520 mm



### Spring Masses System Natural and Forced - BSPIL-DYN-04034

**Purpose:** This system is used to study Natural frequency by Free and Forced Vibration.

This equipment is constructed with rugged steel Frame Slow speed 12 Volt DC Motor is used. With Dimmer arrangements for speed variation

### Spring Mass System - BSPIL-DYN-04034A

**Purpose:** Free and Forced Vibration use this system to study Natural Frequency This system comes with Damping arrangements and equipment is constructed with rugged steel Frame Slow speed 12 Volt DC Motor is used. With Dimmer arrangements for speed variation



Nomenclature	Specifications
Dimension (L X B X H)	600 X 225 X 600 mm
Springs (flexible-1no)	Closed coil type
Motor	0-12V DC motor
Weights	100g, 200g, 300g, 400g, 500g
Damping	Hydraulic damping
Resolution of linear measurement	0.5mm
Overall weight	20kg

### Oil Hydraulic Trainer Simplefied Model - BSPIL-DYN-S-04037 Oil Hydraulic Trainer: ( Automated Mechanized Trainer) Unit: -BSPIL-DYN-04037A

Unit Is Complete With Main Frame Supported On Castor Wheels. A Slanted Ms Plate Working Panel Is Fitted With All Components. Electrical Supply, Switches Starters, Pressure Gauges Are Mounted Next To Working Panel. A Hydraulic Power Pack With All Necessary Fittings Are Provided. Circuit Can Be Built Easily By Using Quick Couplings. Hydraulic Hoses With Quick Couplings Are Also Provided.

#### Specifications:

Hydraulic Power Pack : With Reservoir, Oil, Level Gauge, Return Line Filter, Breather Filter, Drain Plug Tank Top Gear Pump Coupled To Flange Mounted Electrical Motor – ½ Hp Fitted With Bell Housing And Love Joy Coupling. Starter= Bch Mini Manual For 3 Phase, Pressure Gauges- 2 Nos.0-100 Kg/Sq. Cm Switches- 3 Nos. With Illuminations For Solenoid Valves, Main Switch-Illuminated, Indicator For Pump, Working Panel: Ms4 Or 5 Mm Thick Sheet, About 850Mm X 700 mm, Drip Tray: To Take Oil To Tank Hose Tray: To House Hoses, Hoses: 1 Meter Length 3/8" With Quick Couplings- 5 Nos. Components: All Are Sub Plate Mounted Type Cylinder- Double Acting Type 3/8" Port Size With 300Mm Stroke Length Pressure Relief Valve Flow Control Valve 4/3 Solenoid-Solenoid Valve With H Type Valve 4/2 Solenoid Spring Dc Valve Pressure Manifold – 2 Ports Tank Manifold –2 Ports.

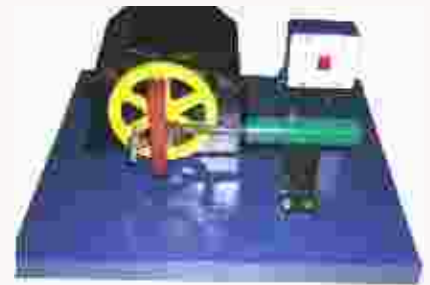


### Scotch Yoke Mechanism Elaborate Model (Motorized) - BSPIL-DYN-04038

### Scotch Yoke Mechanism Simple Model (Manual) - BSPIL-DYN-04038A

Scotch Yoke Mechanism is an inversion of a double slider crank chain. This Mechanism is used for converting rotary motion into a reciprocating motion.

Nomenclature	Specifications
Dimension (L X B X H)	400 X300 X 400 mm
Driver motor	Fractional hp AC Variable type
Speed controller	0-230V, 2 Amps Variac.
Wheel diameter	140mm
Cylinder bore diameter	24mm
Stroke length	70mm
Resolution for linear measurement	0.5mm ( steel rule)
Resolution for Angular measurement	1 Degree
Overall weight	8kgs



### Stroboscope 0- 20000 Rpm Digital Pickup With Flash Gun -BSPIL-DYN-04039

Stroboscope models are handy instruments. They have been designed to keep its functional aspects and size optimum. The smaller size of the instrument makes it easy for the operator to hold and his studies. Stroboscope models have been designed for freeze motion observations in the printing industry for checking the print registrations. It has Xenon flash tube fitted in a 250mm (with 1 no. of flash tube)/500 mm (with 2 Nos. of flash tubes)/750mm (with 3 Nos. of flash tubes) long reflector respectively for flashing. The flashing rate is controlled by internal oscillator in "INT" mode. The flashing rate can be varied in this mode by turning control knob (flashes/min) provided on the panel.



### Friction and Wear Test Apparatus - BSPIL-DYN-04051

This system is designed to see and evaluate the quantum of wear in a given moving mechanism or part, a motorized piston in bore is subjected to constant reciprocation in the bore where as the piston ring used here is not metallurgically sound material i.e. without any alloying element a pure aluminum hence the ring wear is measured physically by using the constant reciprocation in quantum of reciprocation with that of the Physical wear. The system comes with fractional HP motor and Variac for Speed Adjustments.

Nomenclature	Specifications
Dimension L x B x H	550 x 500 x 350mm
Motor	0.25/5/1440 RPM AC 230V, 50HZ
Cylinder Bore	Dia 50.04mm
Piston Outer	Dia 50.00mm



### Pin and Disc Wear Apparatus -BSPIL-DYN-04056

#### Specifications:

1. DISC-Steel disc. 400mm rotating about vertical axis driven by a 1 HP three phase induction motor, with 3 speed pulleys. Max. Surface speed 0-25 m/sec.
- PINS – 12 mm 150 mm long - Aluminum, brass and C, 1 nos. each.
- Weight set to load the pins – 100 gm. And 200 gm. 2 nos each.

#### Measurements:

- Dial gauge, L.C. 0.01 mm for measurement of pin wear.
- Spring balance with torque arm for measurement of co-efficient of friction.
- Digital RPM indicator for disc speed.



### Ball Bearing Test Rig -BSPIL-DYN-04058

#### Specifications:

- Bearing Mounting Fixture – Consist of a set of bearing races for bearings from 6201 to 6204 with parallelogram loading attachment.
- Drive motor – ½ HP, 6000 rpm DC motor.
- Lever and spring balance for applying the load, maximum loading capacity 10000N
- Electronic revolution counter with digital indicator.
- Torque arm with dead weights for measurement of friction torque.
- Fixture for measuring bearing radial clearance.

#### Other Products

Study of Fluid Elements – Pneumatic & Hydraulics Simplified System - BSPIL-DYN-04035  
 Study of Pneumatic and Hydraulic Control Elements - BSPIL-DYN-04036  
 Journal Bearing System -BSPIL-DYN-04040  
 Tacho Generator With Digital Pick Up - BSPIL-DYN-04041  
 Universal Speed Setup Consisting of Photo Voltic Pickup, - BSPIL-DYN-04042  
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Above Specifications are indicative and may have variations as per Current R&D



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