

UNIVERSAL GOVERNOR APPARATUS

MODEL DOM.UG



This bench top unit is to demonstrate the principle of operation of various centrifugal force governors. VFD Regulated AC motor is fitted in the housing. The speed is continuously adjusted using a VFD. The centrifugal masses and sleeve forces can be varied using the accessories included. The lift can be measured using the marks on the governor shaft. The unit is simply placed on a table in the laboratory for operation. It only requires a supply of power.

The apparatus is used to study and understand characteristic of the following types of governors:-

1. **Watt Governor**
2. **Porter Governor**
3. **Proell Governor**
4. **Hartnell Governor**

Specifications:

1. Table Size: 600 X 300 mm
2. 1/2 HP 1400 rpm AC Motor with VFD
3. No. of Sleeve Weights: 2 Nos.
4. No. of Spring of Different Stiffness: 2 Nos.
5. Governor mechanisms with necessary springs and weights as follows :
(i) Watt, (ii) Porter, (iii) Hartnell, (iv) Proell.
6. Detailed Technical Manual and On-site Training
7. Optional: Digital RPM Indicator

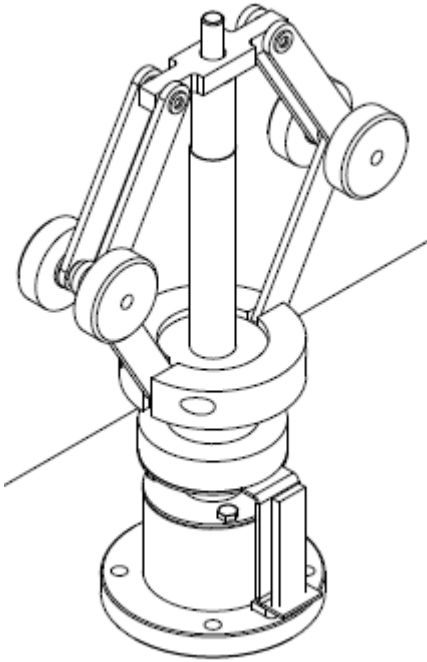
Service Required:

1. 230 V.A.C. single phase supply.
2. Rigid platform or sturdy table with preferably a solid foundation.
3. Hand held Tachometer

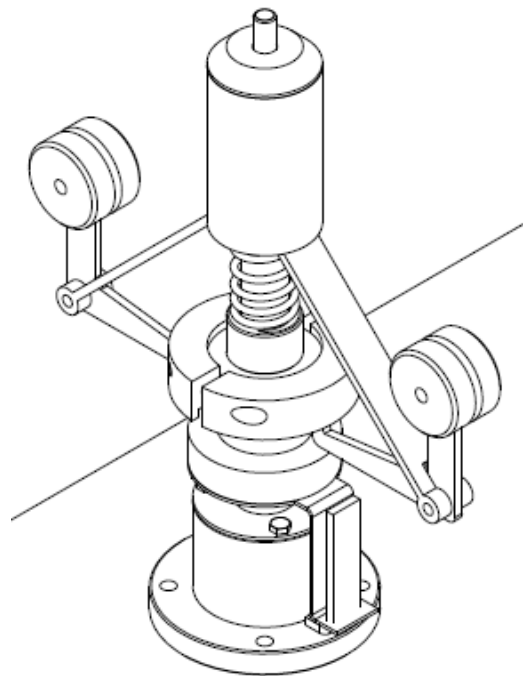
Contacts:

Works:

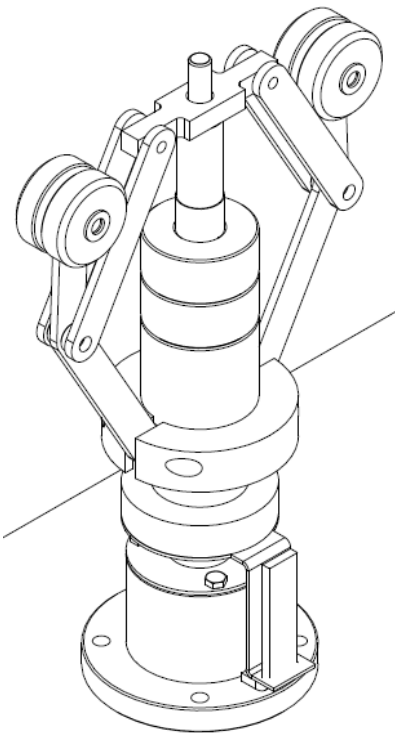
GOVERNOR MOUNTING ARRANGEMENT



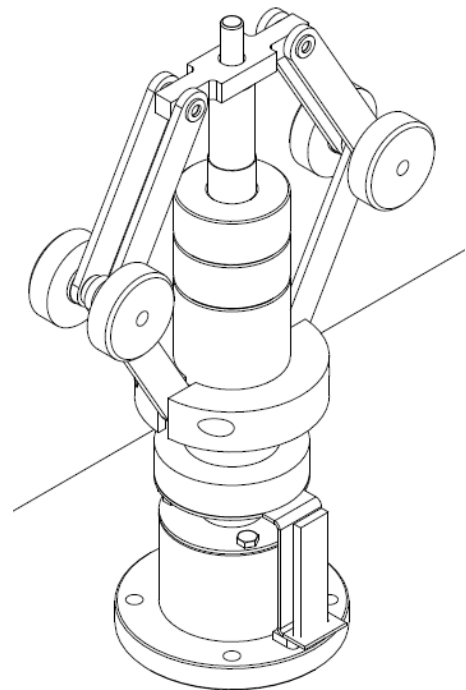
WATT GOVERNOR



HARTNELL GOVERNOR



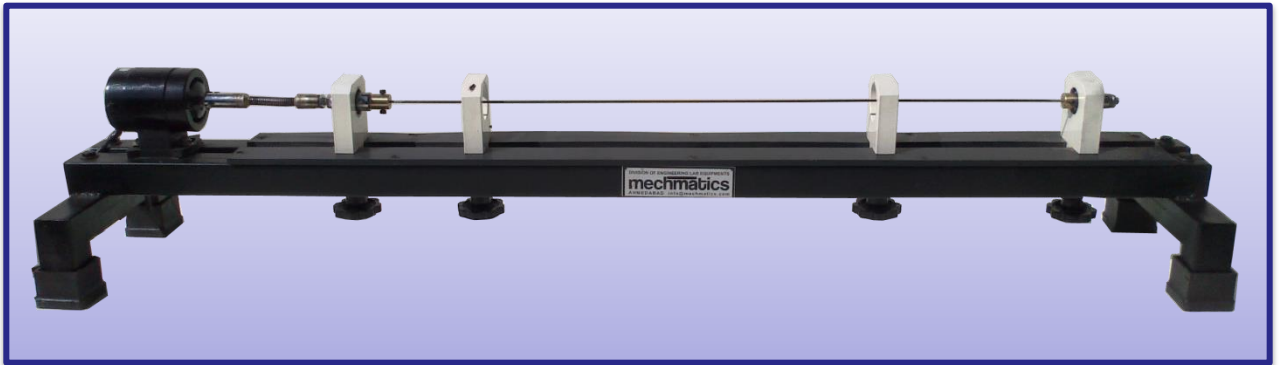
PROELL GOVERNOR



PORTER GOVERNOR

WHIRLING OF SHAFT APPARATUS

MODEL DOM.WS



Whirling of Shafts apparatus shows how shafts vibrate transversely and 'whirl' at a certain rotation frequency. This helps engineers understand possible problems with long shafts and allow for them in their designs.

The main part thick powder coated frame that hold a variable speed motor which turns the horizontal test shaft. Two bearings hold the shaft, one bearing at the 'driven end' and the other bearing at the 'tail end' of the shaft. The tail end bearing slides in its housing to allow the shaft length to change as it 'whirls'. Similar to a beam on two simple knife-edge supports, both bearings allow free angular shaft movement (free ends condition). Also supplied with the equipment are extra bearings that restrict angular movement when fitted, to give 'fixed ends'.

The apparatus is a set of test shafts of different length and diameter to show how these properties affect whirling. Also supplied is a set of weights to show how concentrated loads affect whirling. One weight has an extra hole to make it an eccentric load.

Specifications:

1. Table Size: 1500 x 300 x 300 mm
2. 1/6 HP 6000 rpm Motor with controller
3. No. of Sleeve Weights: 4 Nos.
4. No. of Shaft of Different Diameter: 3 Nos.
5. Shaft End Configurations: Fixed and Free Ends
6. Detailed Technical Manual and On-site Training

Service Required:

1. 230 V.A.C. single phase supply.
2. Rigid platform or sturdy table with preferably a solid foundation.
3. Hand held Tachometer

Contacts:

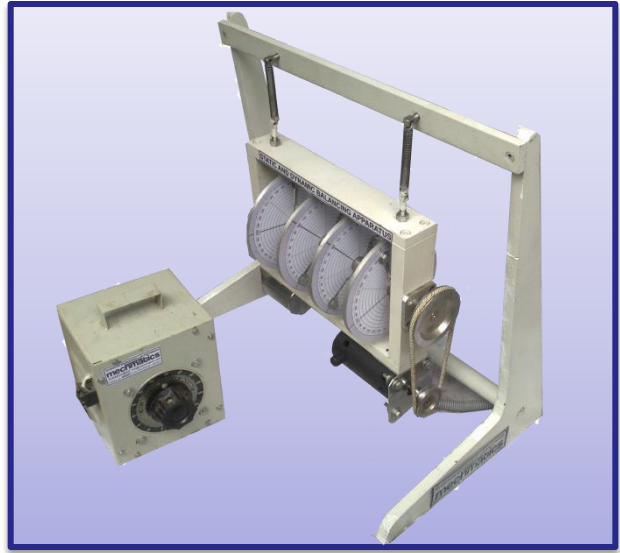
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Works:

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STATIC AND DYNAMIC BALANCING APPARATUS

MODEL DOM.SDB.DISC



The main element of the bench top unit is a smooth shaft to which four disc with variable unbalance weights can be attached at any angle or distance. The rotor is supported horizontally in ball bearings and is driven by a speed-controlled motor. For determination of the unbalance weight by measuring the balance of moments the driving belt can be removed. Using different weights dragging on the pulley defined moments can be exerted to the shaft. They can be compared with those caused by the unbalance weights when rotating. Fastening of the supporting base with spring neutralizes undesirable vibrations.

Specifications:

1. Table Size: 600 x 300 x 600 mm
2. 1/8 HP 6000 rpm DC Motor with controller
3. No. of Discs: 4 Nos.
4. No. of Weights: 8 Nos.
5. Detailed Technical Manual and On-site Training

Service Required:

1. 230 V.A.C. single phase supply.
2. Rigid platform or sturdy table with preferably a solid foundation.
3. Hand held Tachometer

Contacts:

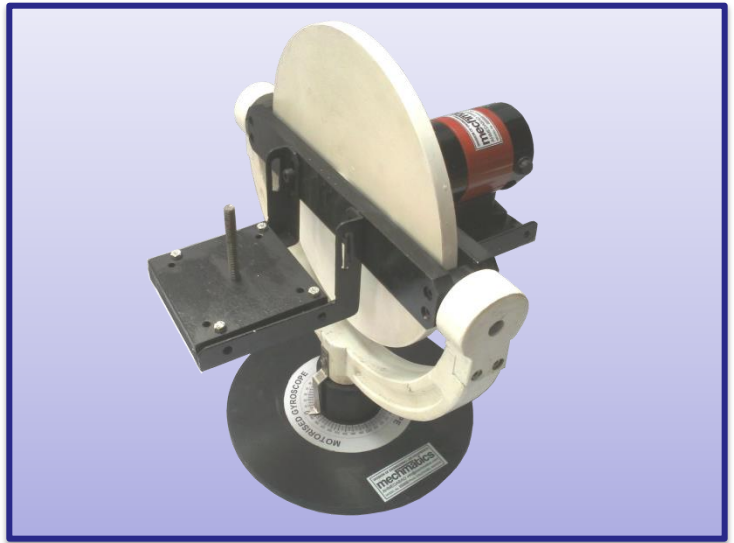
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MOTORISED GYROSCOPE

MODEL DOM.GYRO



The moments generated by the gyroscopic effect can be investigated using this unit. The basic component is a flywheel driven about its own axis. This is mounted together with its drive motor as a yoke and forms the gyroscope. The rotational speeds of motor is regulated with help of a dimmer. The gyroscopic moment is preselected by simply positioning a counterweight of different size. The gyroscope is a portable table unit. All that is required for operation is a mains supply.

Specifications:

1. Table Size: 400 X 400 x 500 mm
2. 1/6 HP 6000 RPM Motor with controller
3. No. of Sleeve Weights: 3 Nos.
4. Flywheel Diameter: 300 mm
5. Detailed Technical Manual and On-site Training

Service Required:

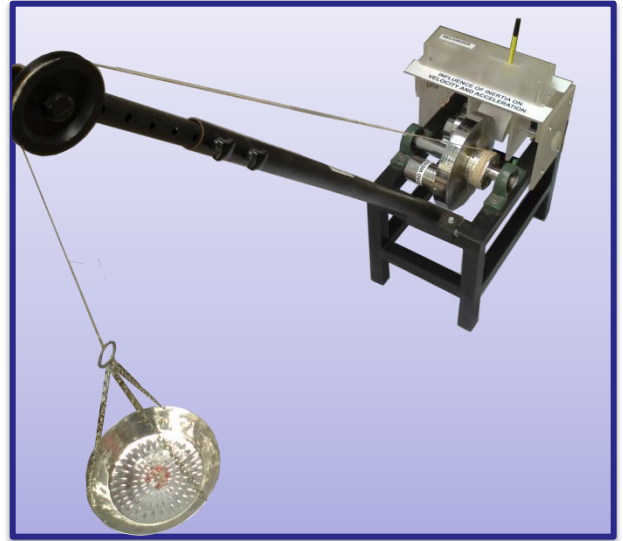
1. 230 V.A.C. single phase supply.
2. Rigid platform or sturdy table with preferably a solid foundation.
3. Hand held Tachometer

Contacts:

Works:

INFLUENCE OF MOMENT OF INERTIA UPON VELOCITY AND ACCELERATION

MODEL DOM.IMI



Velocity and acceleration of a body depends upon its inertia for a particular accelerating force. The apparatus consists of a flywheel mounted in ball bearings. When torque is applied to it, it starts accelerating. If the inertia of flywheel is reduced by weight, then for same torque, velocity and acceleration of lighter flywheel will be greater. Thus effect of inertia upon velocity and acceleration is demonstrated. When weight are attached to flywheel, inertia of flywheel is changed.

Specifications:

1. Flywheel – 200mm x 35mm thick.
2. Pulley and weight set for applying the torque weight set
3. Recorder – Paper roll with reciprocating pen.
4. Flywheel mounting bracket with ball bearings.

Service Required:

1. Bench area of 0.5 X 0.5 m
2. 230 v 50 Hz AC supply.
3. A detailed technical manual accompanies the unit.

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CAM ANALYSIS APPARATUS

MODEL DOM.CAM



The apparatus helps in dynamic investigation of cam and follower mechanisms, as used in motors, engines and machinery. The cam mechanism consists of 3 interchangeable cam plates and 3 different followers. A mass and a spring are used to simulate the valve. In order to demonstrate the "jump speed", the spring rate, mass and speed are adjustable within broad limits. The open design allows the observation of every detail of the movement process.

TYPES OF CAMS

- Eccentric Arc Cam
- Tangent Arc Cam
- Circular Arc Cam

TYPES OF FOLLOWERS

- Knife Edge Follower
- Roller Follower
- Flat Face Follower

Specifications:

1. Table Size: 600 X 300 mm
2. 1/2 HP 1400 rpm Motor with VFD
3. No. of CAMS and Followers: 3 Each as specified above.
4. No. of Spring of Different Stiffness: 2 Nos.
5. No. of Masses : 2 Nos.
6. Dial Indicator 0-10 mm
7. Full Protractor with angle measurement arrangement
6. Detailed Technical Manual and On-site Training

Service Required:

1. 230 V.A.C. single phase supply.
2. Rigid platform or sturdy table with preferably a solid foundation.
3. Hand held Tachometer

Contacts:

Works:

UNIVERSAL VIBRATION APPARATUS

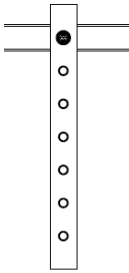
MODEL DOM.UV



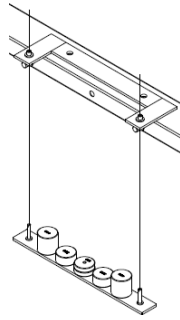
13 Experimental Setups on One Apparatus



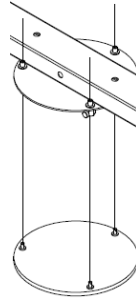
**Simple
Pendulum**



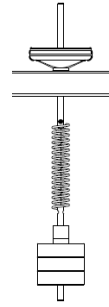
**Compound
Pendulum**



**Bifilar
Suspension**



**Trifler
Suspension**

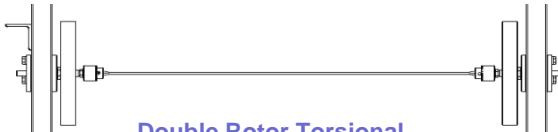


**Spring (& Equivalent)
Stiffness**

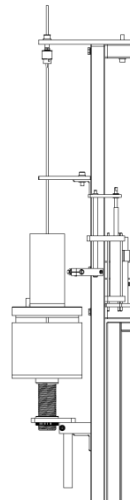
**Pendulum
Module**
(Six Experiments)



**Single Rotor Torsional
Vibrations**

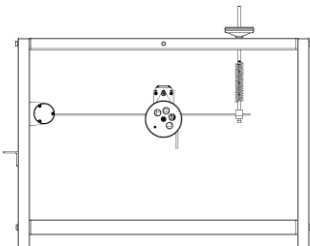


**Double Rotor Torsional
Vibrations**

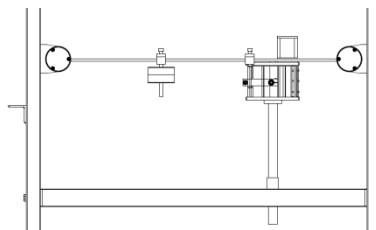


**Single
Rotor
Damped
Torsional
Vibrations**

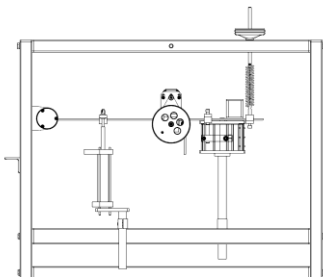
**Torsional
Vibrations
Module**
(Three
Experiments)



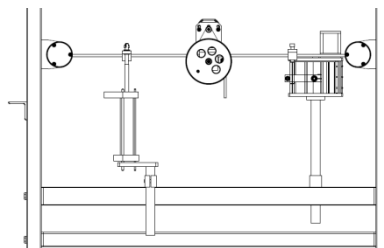
Spring Mass System (Free Vibrations)



Dunkerley's Theorem Verification



**Spring Mass System (Forced Damped
Vibrations)**



Beam Forced Damped Vibrations

**Transverse
Vibrations
Module**
(Four
Experiments)

Experiment Scope:

- Simple pendulum
- Compound pendulum
- Bifilar Suspension
- Trifler Suspension
- Mass-spring systems
- Equivalent Spring Stiffness

Available also as
“Pendulum Module”

- Torsional oscillations of a single rotor
- Torsional oscillations of a single rotor with viscous damping
- Torsional oscillations of a two rotors system

Available also as
“Torsional Vibrations Module”

- Transverse vibration of a beam with one or more bodies attached
- Free vibration of a Spring-mass system
- Forced damped vibration of Spring-mass system
- Dunkerley's Theorem Verification

Available also as
“Transverse Vibrations Module”

Specifications

- Net Dimensions: 1400 x 600 x 1600 mm
- A heavy and sturdy MS frame with a useful cupboard to store all accessories.
- A Control panel with Dimmer and Digital RPM Indicator
- Arrangement for plotting amplitudes of vibrations by a strip chart recorder.
- Arrangement for changing the damping positions.
- No. of long steel Beam = 3 nos.
- No. of Shaft = 3 nos.
- No. of Spring of Varying Stiffness = 2 Nos
- Tools Included: Allen key set, Stopwatch and measuring tape
- A Comprehensive and a detailed technical Manual

Service Required:

1. 230 V.A.C. single phase supply.
2. Rigid platform with preferably a solid foundation.

Contacts:



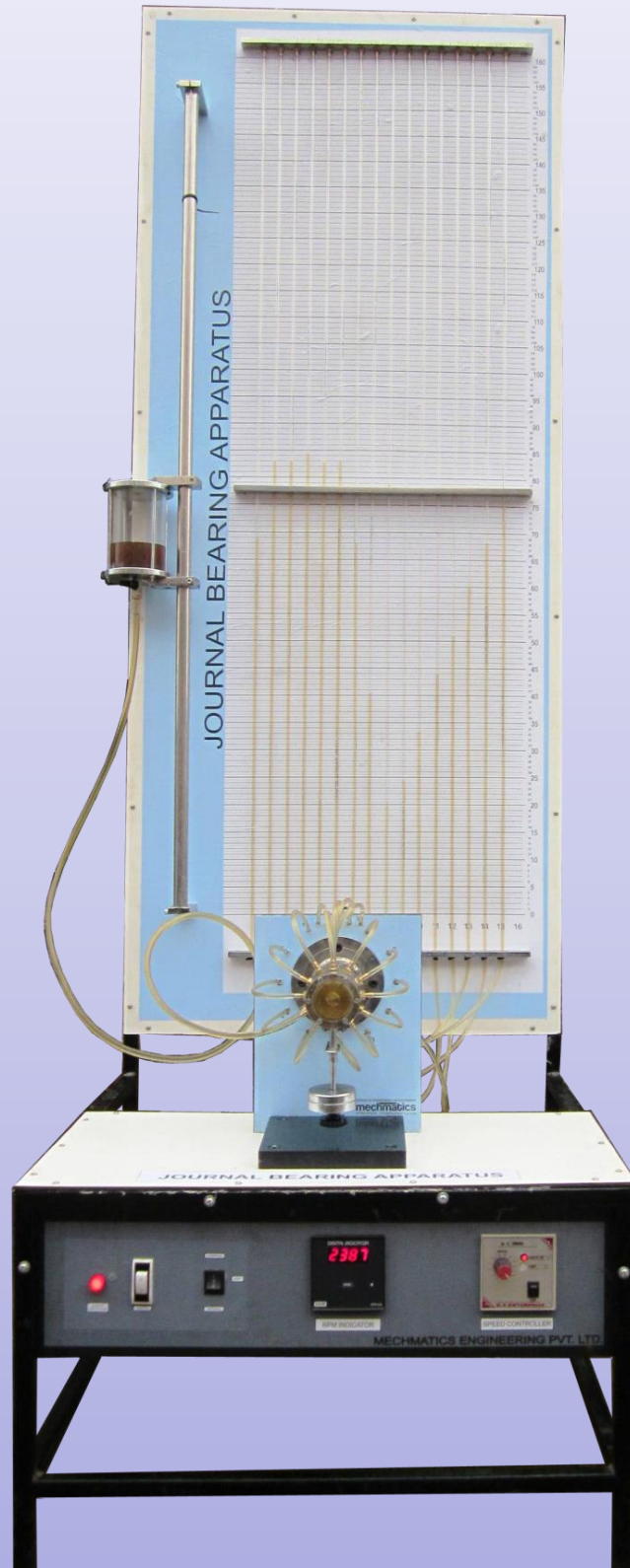
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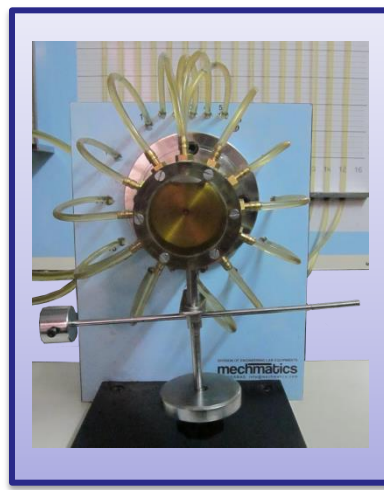
JOURNAL BEARING APPARTUS

MODEL DOM.JB





Transparent housing to observe Hydrodynamic lubrication effect



Arrangement to place both Radial and Axial loads on housing

The MECHMATICS journal bearing apparatus for investigating the distribution of pressure in slide bearings illustrates the principle of hydrodynamic lubrication.

The distribution of pressure and the carrying capacity can be determined on a sliding bearing model at different bearing loads and speeds. The sliding bearing consists of a bearing journal driven by an electrical motor and the freely moving bearing housing. The bearing is loaded with different, interchangeable weights.

In order to view the shifting of the bearing journal in operation as clearly as possible, the model has a large gap and a transparent housing. Both the radial and axial distribution of pressure can be recorded in the bearing gap at 12 measuring points around its perimeter and 5 along the length. The measurements are shown by means of 16 tube manometers mounted on a board.

Specifications:

1. Journal bearing
 - Nominal bearing diameter: 55 mm
 - Bearing gap: 2.5 mm
 - Bearing width: 75
2. Motor
 - Power output: 180 W
 - Max. speed: 2500 rpm
 - Variable Speed Controller
 - Forward – Reverse Switch
3. Length of manometer tubes: 1700 mm
4. Oil viscosity class: SAE 20 W 40
5. Total oil volume: 3.5 L
6. Set of weights: 300 gm (2 nos.)
7. Digital RPM Indicator

Service Required:

1. 230 V.A.C. single phase supply.
2. Rigid platform or sturdy table with preferably a solid foundation.

Contacts:

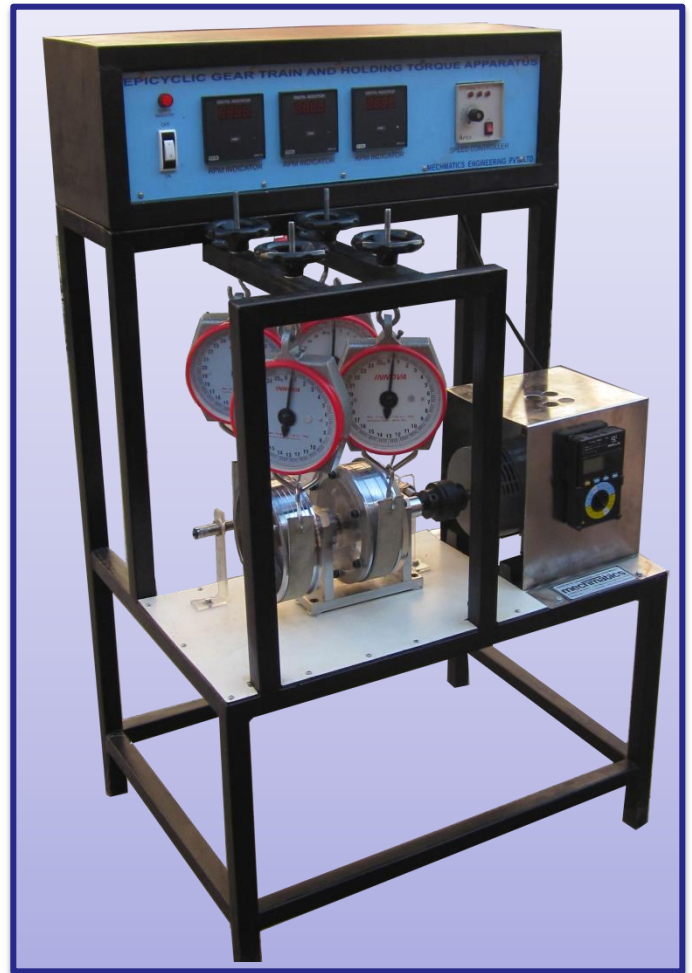
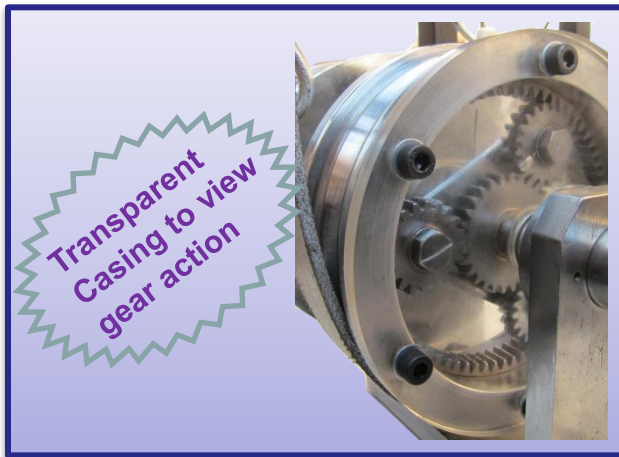
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EPICYCLIC GEAR TRAIN AND HOLDING TORQUE APPARATUS

MODEL DOM.EPI



Epicyclic gearing or planetary gearing is a gear system consisting of one or more outer gears (planet gears), revolving about a central gear (or sun gear). The aim of the apparatus is to calculate and experimentally observe the angular velocity ratios of epicyclic gear train. Also experimentally obtain the torque values of different gears, and compare input torque values

Specifications:

Planetary Gear Train :- Sun Gear – 30 Teeth, Planet Gear – 20 Teeth (3 No's) and – Ring/Internal Gear With – 70 Teeth

Torque and RPM measurement –

- i) Sun Gear and Input torque – Motor current calibrated for motor torque with Digital RPM Indicator
- ii) Planet torque – Pulley of 180 mm dia & spring balance.
- iii) Ring gear – Pulley, 180 mm dia & spring balances.

Drive Motor – 1 HP DC, 1380 RPM motor, driving the sun gear.

The gear box has transparent casing to view the working of sun, planet and ring gears.

Contacts:

Works:

FLYWHEEL APPARATUS

MODEL DOM.FLY



Apparatus can experimentally determine the Moment of Inertia of a Flywheel and axle system. This is designed to provide a simple, clean means of studying rotational dynamics.

The simple geometry makes calculating the moment of inertia easy, so that the calculated values can be verified by experiment. One can apply a torque to a allowing a known mass to drop, vertically, and thus accelerates. The linear acceleration of the mass is the same as the linear acceleration of the string, and thus of a point on the axis of the apparatus. That linear acceleration of the mass is related to the angular acceleration of the apparatus by a factor of the radius of the axis cylinder. We can measure the angular acceleration of the rotating platform with help of mass and stopwatch. The moment of inertia can be varied through given extra mass set.

This permits good, accurate, reproducible measurements using only a scale, a stop watch, and mass balance.

Specifications:

1. Radius of Axle: 18 mm
2. Mass of Flywheel: 12 kgs (approx)
3. Radius of Flywheel: 125 mm
4. Set of Additional Mass to change flywheel inertia
5. Stopwatch, A measuring scale and Set of hanging mass
6. Four Wall Mounting Bolts
7. Rust proof well painted Design
8. Detailed Technical Manual and On-site Training

Contacts:



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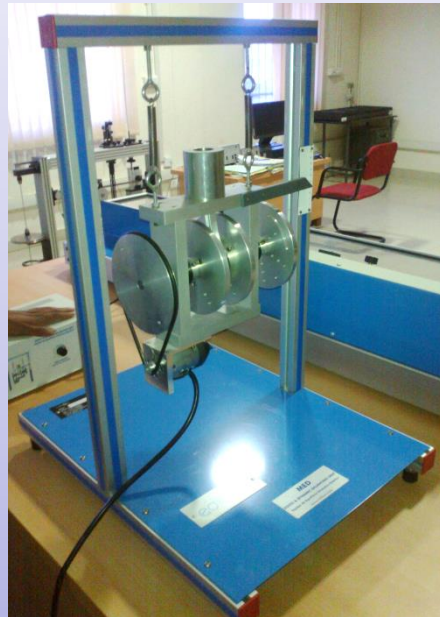
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STATIC AND DYNAMIC BALANCING APPARATUS

COMBINED ROTATING AND RECIPROCATING MASSES

MODEL DOM.SDB.COM



The apparatus is used to study and analyze the oscillations and vibrations and how to eliminate or diminish them. A shaft mounted on bearings is coupled by pulleys to an electrical motor with variable speed. The unit is fixed to the support structure by means of springs which make the unit oscillate in case there are vibrations.

This shaft has 4 discs coupled: one of them is the pulley, 2 are balancing discs and at the end there is a graduated disc. The discs have drills to proceed, through fixing the masses, to the system destabilization and then to its subsequent balancing.

On another hand, it can be coupled to our system a piston whose movement will be an alternative perpendicular to the shaft. The connection of the piston to the shaft is made with a connecting rod. A ruler can be used to see easily the measure system displacement with a needle placed at the side. The unit is supplied with a set of masses and weights of different values for doing the experiments.

Specifications:

1. Table Size: 600 x 300 x 600 mm
2. 1/8 HP 6000 rpm DC Motor with controller
3. No. of Discs: 4 Nos.
4. One Piston Cylinder Arrangement
5. No. of Weights: 8 Nos.
5. Detailed Technical Manual and On-site Training

Service Required:

1. 230 V.A.C. single phase supply.
2. Rigid platform or sturdy table with preferably a solid foundation.
3. Hand held Tachometer

Contacts:

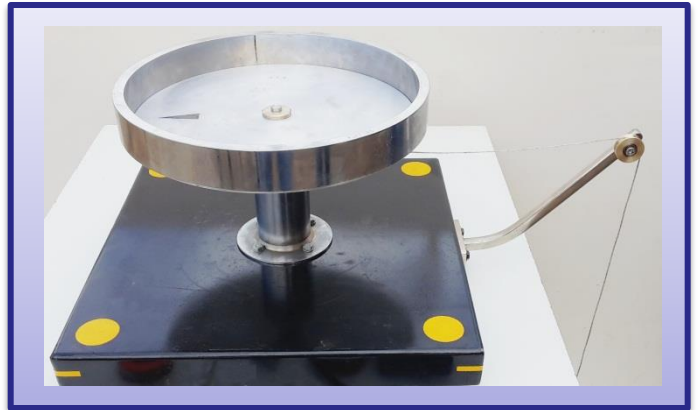
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TURN TABLE APPARATUS

MODEL DOM.TT



Apparatus can experimentally determine the Moment of Inertia of a Disk a Ring and even asymmetrical objects in rotational motion. This is designed to provide a simple, clean means of studying rotational dynamics.

The simple geometry makes calculating the moment of inertia easy, so that the calculated values can be verified by experiment. One can apply a torque to a rotating turntable by applying tension to a string wound around an axis of the turntable. Hanging a mass from the string, over a pulley, creates the tension. The mass is allowed to drop, vertically, and thus accelerates. The linear acceleration of the mass is the same as the linear acceleration of the string, and thus of a point on the axis of the turntable. That linear acceleration of the mass is related to the angular acceleration of the apparatus by a factor of the radius of the axis cylinder. We can measure the angular acceleration of the rotating platform with help of mass and stopwatch. The moment of inertia can be varied through a wide range.

This permits good, accurate, reproducible measurements using only a scale, a stop watch, and mass balance.

Specifications:

1. Table Size: 300 X 300 x 400 mm
2. Turn Table Diameter: 300 mm
3. Additional Ring: 300 mm
4. Stopwatch, A measuring scale and Set of hanging mass
5. Rust proof well painted Design
4. Detailed Technical Manual and On-site Training

Service Required:

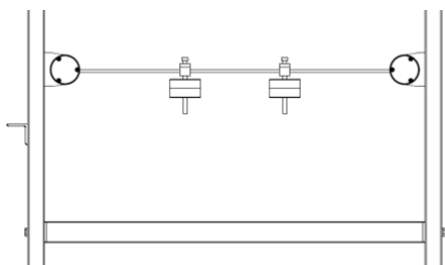
1. Rigid platform or sturdy table with preferably a solid foundation.

Contacts:

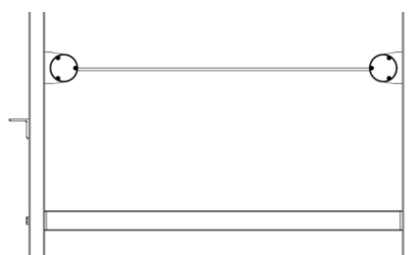
Works:

FREE BEAM VIBRATIONS

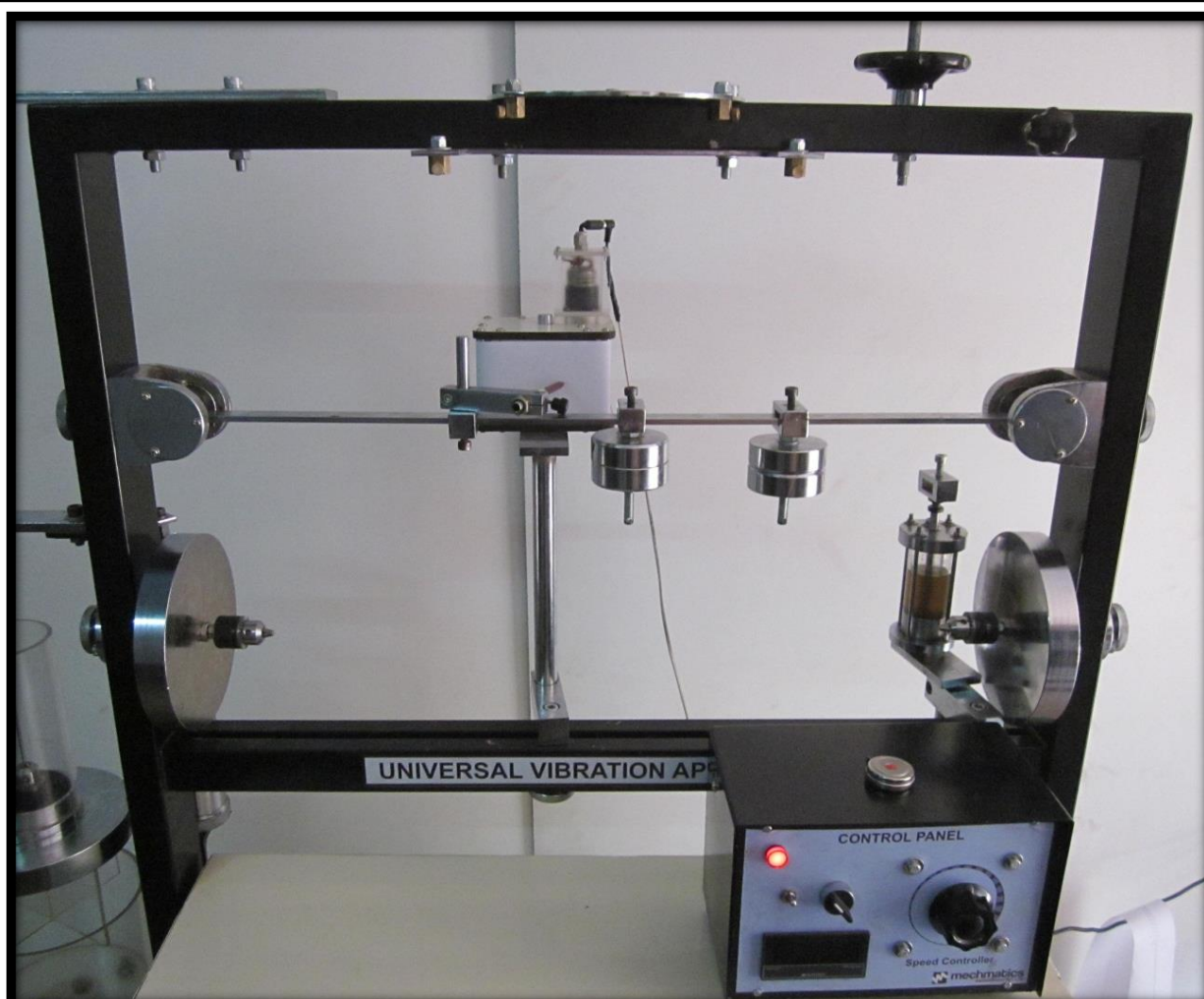
(A PART OF UNIVERSAL VIBRATION APPARATUS MODEL DOM.UV.FB)



Free Beam Vibrations with
Concentrated Masses



Free Beam Vibrations without
Concentrated Masses



Experiment Scope:

- Free Vibrations of Beam with Concentrated Masses
- Free Vibrations of Beam without Concentrated Masses

Specifications

- Net Dimensions: 1000 x 600 x 900 mm
- A heavy and sturdy MS frame
- No. of long steel Beam = 3 nos.
- No. of Concentrated Masses = 2 Nos
- Arrangement to change net weight of concentrated masses
- Tools Included: Allen key set, Stopwatch and measuring tape
- A Comprehensive and a detailed technical Manual

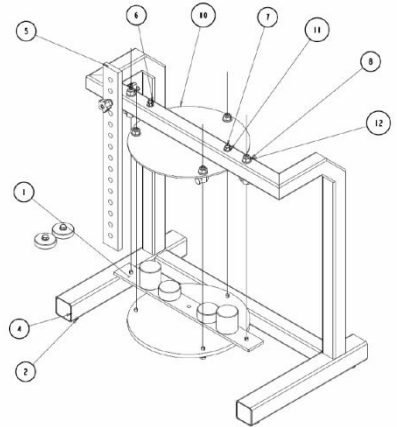
Service Required:

1.230 V.A.C. single phase supply.

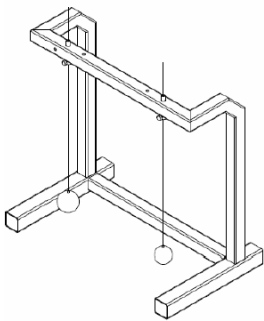
2.Rigid platform with preferably a solid foundation.

PENDULUM APPARATUS

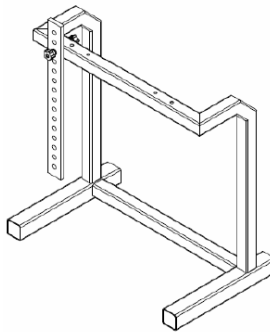
DOM.VIB.PM



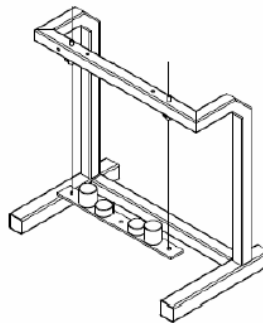
Experiment Scope:



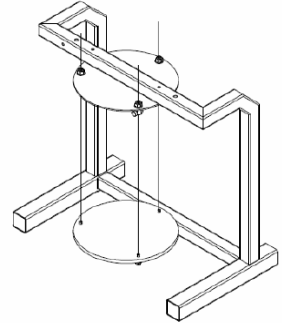
Simple Pendulum



Compound Pendulum



Bifilar Suspension



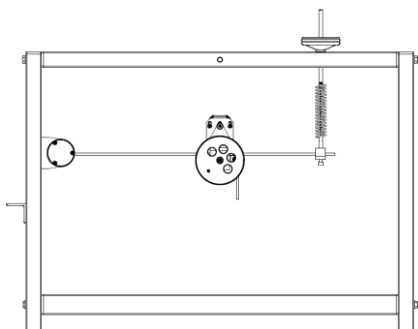
Tifilar Suspension

Specifications

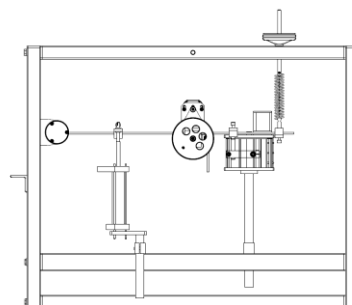
- Net Dimensions: 400 x 500 x 600 mm
- A heavy and sturdy MS frame
- No. of simple pendulum= 2 nos of different size.
- No. of Masses for Bifilar suspension = 6 Nos
- Easy Arrangement to change different experiment on one rig
- Tools Included: Allen key set, Stopwatch and measuring tape
- A Comprehensive and a detailed technical Manual
- Product Demonstrations Video CD

SPRING MASS SYSTEM

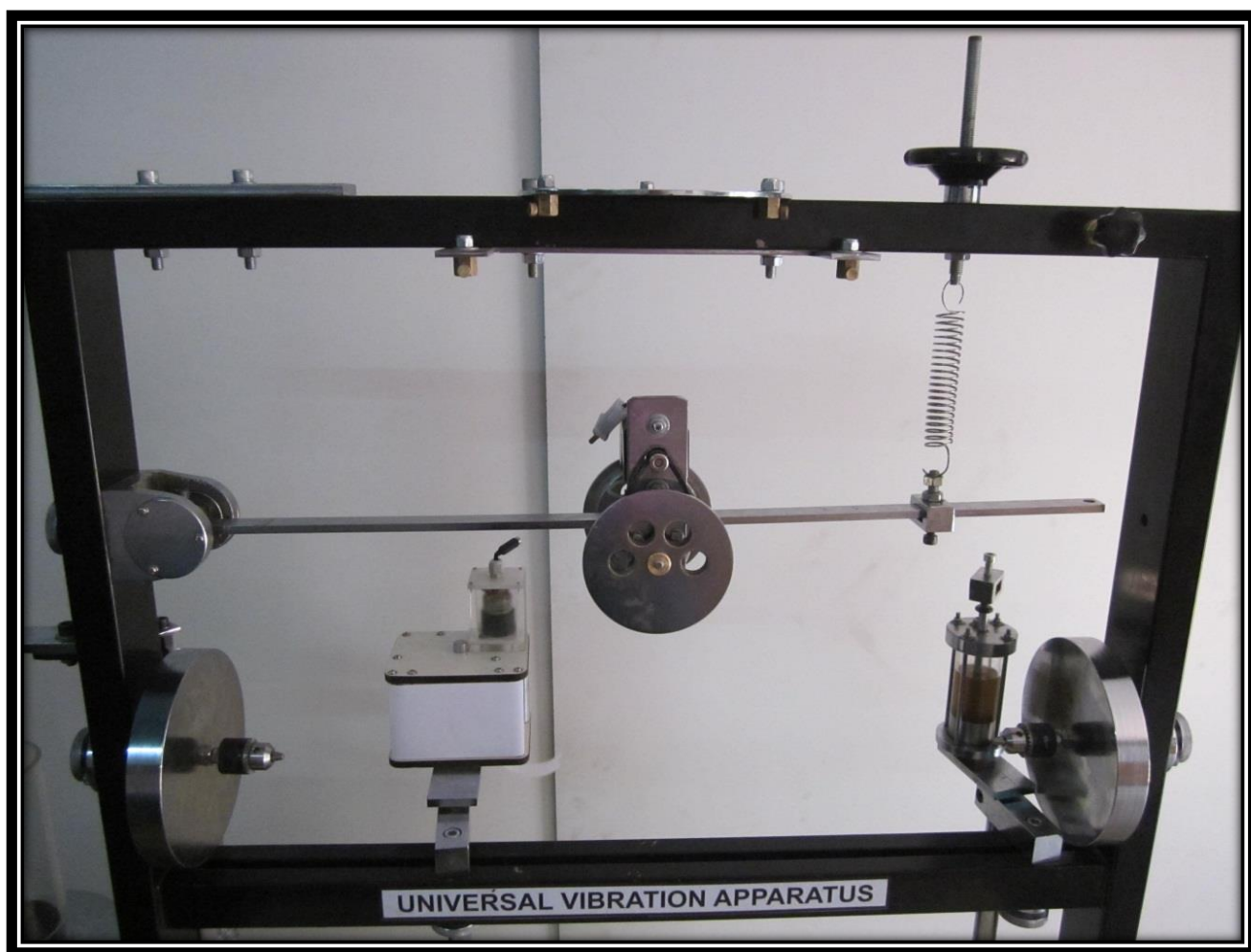
(A PART OF UNIVERSAL VIBRATION APPARATUS MODEL DOM.UV.SM)



Spring Mass System (Free Vibrations)



Spring Mass System (Forced Vibrations)



Experiment Scope:

- Free vibration of a Spring-mass system
- Forced damped vibration of Spring-mass system

Specifications

- Net Dimensions: 1000 x 600 x 900 mm
- A heavy and sturdy MS frame
- A Control panel with Dimmer and Digital RPM Indicator
- Arrangement for plotting amplitudes of vibrations by a strip chart recorder.
- Arrangement for changing the damping positions.
- No. of long steel Beam = 3 nos.
- No. of Spring of Varying Stiffness = 3Nos
- Tools Included: Allen key set, Stopwatch and measuring tape
- A Comprehensive and a detailed technical Manual

Service Required:

1. 230 V.A.C. single phase supply.
2. Rigid platform with preferably a solid foundation.

Contacts:

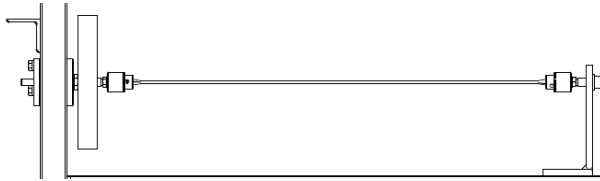
 info@mechmatics.com
 +91-9898123425
 www.mechmatics.com

Works:

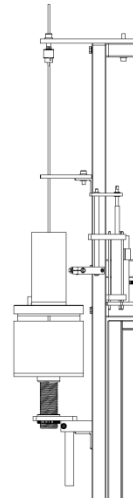
Plot No. 553, Phase-2
Opp. Railway Stn., GIDC Vatwa,
Ahmedabad -382445, India

TORSIONAL VIBRATIONS

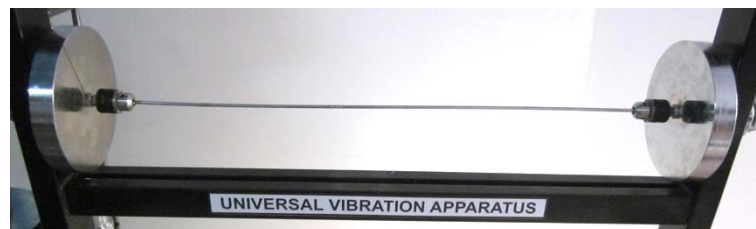
(A PART OF UNIVERSAL VIBRATION APPARATUS) MODEL DOM.UV.TV



Single / Double Rotor Undamped
Torsional Vibration



Single Rotor Damped Torsional
Vibration



Experiment Scope:

- Undamped Torsional Vibration of Single Rotor System
- Undamped Torsional Vibration of Double Rotor System
- Damped Torsional Vibration of Single Rotor System

Specifications

- Net Dimensions: 1000 x 600 x 1000 mm
- A heavy and sturdy MS frame
- Arrangement for plotting amplitudes of vibrations by a strip chart recorder.
- Arrangement for changing the depth of damping
- No. of Shafts = 3 nos.
- Tools Included: Allen key set, Stopwatch and measuring tape
- A Comprehensive and a detailed technical Manual

Service Required:

1. 230 V.A.C. single phase supply.
2. Rigid platform with preferably a solid foundation.

Contacts:

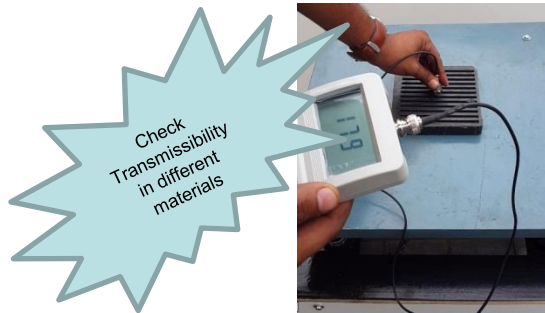
Works:

VIBRATION TABLE

MODEL DOM.VT

INCLUDES

- Vibration Table
- Universal Model Holder
- Vibration Meter



The table is used to artificially generate vibrations of varying frequency. Universal model holder ensure variety of models can be fitted on vibration table. A digital vibration meter reads values in terms of velocity and acceleration

Specifications:

1. Table size 400 x 400 mm
2. 1 HP Motor with Speed Regulator
3. Eccentric Weight changer for obtaining large range of vibrations
4. Well painted Sturdy frame work
5. Detailed Technical Manual

Experimental Scope:

- *Model Testing*
- *Seismic Activity Study*
- *Determine Transmissibility ratio (vibration) for various material*
- *Determination of vibrational reliability of Models*

Service Required:

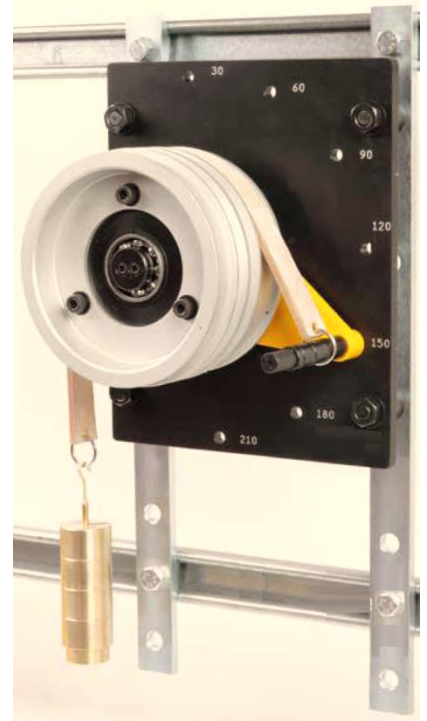
1. 230 V.A.C. single phase supply.
2. Rigid platform or sturdy table with preferably a solid foundation.

Contacts:

Works:

BELT FRICTION APPARATUS

MODEL KOM.BFA



Apparatus allows one to carry out experiment to compare the driving torque for a given degree of overlap of a belt.

Tension is introduced into the belt by hanging a mass from the ring attached to the end. The slipping torque is determined by the addition of a suitable mass attached to a cord wrapped around the drum.

The angle of overlap can be varied from 30 to 210 degrees in increments of 30 degrees. The pulley is balanced and mounted on bearings to reduce frictional losses to a minimum. The unit is wall mounted.

Specifications

1. Pulley Diameter 200 mm
2. Two different types of belts (Flat and V belt)
3. Set of hanging mass
4. Four Wall Mounting Bolts
5. Rust proof well painted Design
6. Detailed Technical Manual and On-site Training

Contacts:

Works:

EARTHQUAKE AND VIBRATION SIMULATOR

MODEL DOM.EQ.MINI



INCLUDES

- Vibration Table
- Seismograph
- Universal Model Holder
- Vibration Meter



The table is used to artificially generate vibrations of varying frequency. Seismograph helps create visual representation of shock waves generated by an earthquake. Universal model holder ensures variety of models can be fitted on vibration table. A digital vibration meter reads values in terms of velocity and acceleration.

Specifications:

1. Table size 400 x 400 mm
2. 1 HP Motor with Speed Regulator
3. Eccentric Weight changer for obtaining large range of vibrations
4. Well painted Sturdy frame work
5. Detailed Technical Manual

Experimental Scope:

- Model Testing
- Seismic Activity Study
- Determine Transmissibility ratio (vibration) for various material
- Determination of vibrational reliability of Models

Service Required:

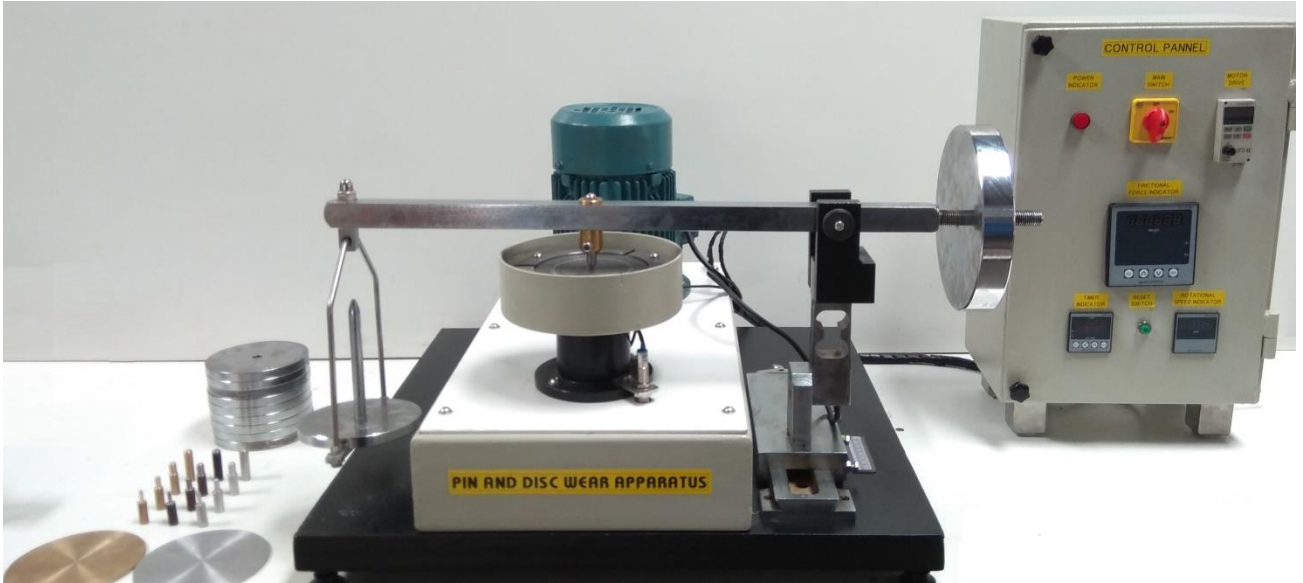
1. 230 V.A.C. single phase supply.
2. Rigid platform or sturdy table with preferably a solid foundation.

Contacts:

Works:

PIN AND DISC WEAR APPARATUS

MODEL DOM.PAD

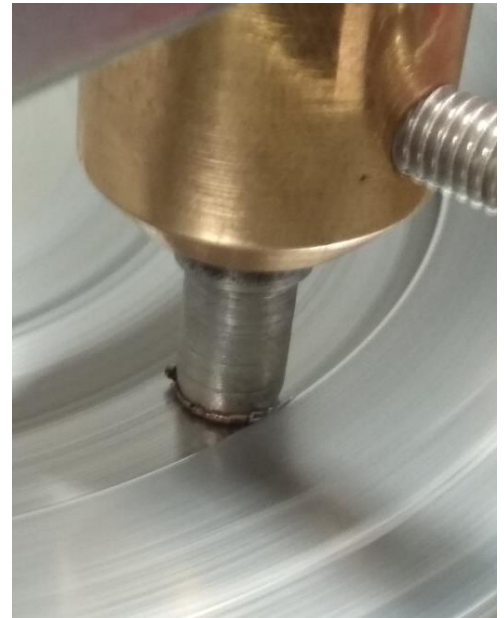


Pin on disc friction/wear study, involves a sharp pin, ball, or cone tip to wear against the disc surface. Usually a constant normal load is applied from the pin towards the contact interface, using weight set. A lateral force sensor is installed to measure the friction force. During the test, a wear track is gradually made on the disc surface due to the materials loss from friction. This is measured with help of a gauge or alternatively wear sensor can be used.

Rig follows ASTM Test Standard and is suitable for Laboratory use in industrial; academic as well as research purposes.

Specifications:

1. Disc Set (Material: MS; Aluminum and Brass Size: 125 mm Dia - 3 mm tk)
2. Pin Set (Material: MS; Aluminum and Brass Size: 4 different head each)
3. Load Set 1 kg = 10 Nos.
4. Motor 1 HP Max Speed 1440 RPM
5. Control Pannel Specification
 - Variable Frequency Drive for Speed Control
 - Digital RPM Indicator
 - Frictional Force Indicator
 - Timer Indicator with Relay Function
 - Main Indicator and Emergency Switch
6. Wear Measurement Surface Plate with Magnetic Dial Gauge.
7. Optionally: Digital Depth Sensor; Optical Microscope for Wear Measurement
8. Detailed Technical Manual and On-site Training



Service Required:

1. 230 V.A.C. single phase supply.
2. Rigid platform or sturdy table with preferably a solid foundation.

Contacts:

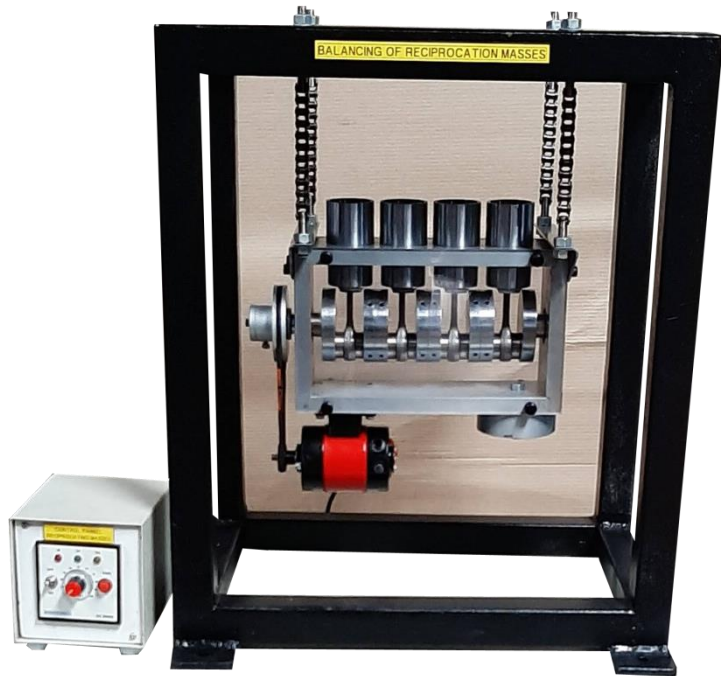
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Works:

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RECIPROCATING BALANCING APPARATUS

MODEL DOM.REC



Unbalanced condition is issue of great significance in motor engineering. The number of cylinders and crank offset has a major influence on the vibration behavior and true-running of a reciprocating engine.

With this apparatus, apart from 4-cylinder in-line engines with different crank offsets, 2-cylinder in-line engines and 1-cylinder engines can also be demonstrated. By placing additional weights on the piston, the ratio between rotating and oscillating masses can be changed. The forces and moments emanating from the engine are observed as vibrations on hanging model. Due to its compact and clearly laid-out design as a bench top unit, the apparatus is suitable both for demonstration purposes and for laboratory exercises.

An electric motor and belt turns the shaft to test for dynamic balancing. The flexible mounts allow the assembly to vibrate, showing imbalance during dynamic balancing tests. The unit can be optionally fitted with accelerometers to measure imbalance on Computerized Data Acquisition system

A transparent safety dome covers the whole rotating assembly. Optionally an interlock shuts off power to the motor when the dome is not fitted.

Key Experiments

- *To study the behavior of vibration due to unbalanced masses in reciprocating parts.*
- *Understand Effect of mass forces*
 - *Mass forces in dependence of the speed*
 - *Mass forces in dependence of the piston mass*
 - *First and second order mass forces*
- *Study Comparison of different crank drives*
 - *4-cylinder, symmetrical, 180° angle between cranks*
 - *4-cylinder non-symmetrical, 90° angle between cranks*
 - *2-cylinder, 180° angle between cranks*
 - *Single cylinder*

Overall Specifications

1. Box Dimensions: 600 x 600 x 900 mm
2. FHP Motor with controller
3. No. of Reciprocating Cylinders: 4 Nos. with varying unbalance piston masses
4. Angle changing tools
5. Detailed Technical Manual and On-site Training

SLIP AND CREEP APPARATUS

MODEL DOM.BSC



The apparatus is used to understand and measure Belt Slip and Creep phenomenon. Variety of belts can be fitted on replaceable pulley shaft. Digital Load and Speed sensors with variable frequency controllers ensures accurate readings. Belt tension gauge is also provided with tension varying arrangement.

Rig is suitable for Industrial as well as Academic purposes

Specifications:

1. Types of Belt: V Belt; Flat Belts (Nylon RNR and T30)
2. Types of Pulley: V Pulley Set; Flat Pulley Set Dia Size: 125 mm
3. Rope brake Dynamometer with Loading Arrangement
4. Driving Motor 1 HP Max Speed 1440 RPM
5. Control Panel includes
 - Variable Frequency Drive for Speed Control
 - Digital RPM Indicator – 2 Nos.
 - Digital Load Indicator – 2 Nos.
 - Main Indicator and Emergency Switch
6. Detailed Technical Manual and On-site Training

Service Required:

1. 230 V.A.C. single phase supply.
2. Rigid platform or sturdy table with preferably a solid foundation.

Contacts:

Works:

STATIC AND DYNAMIC BALANCING APPARATUS

MODEL DOM.SDB.BL



The test assembly includes a balanced steel shaft mounted horizontally on low friction bearings. The equipment includes a set of four rotating masses (balance blocks). The balance blocks fix in any horizontal position and relative angle on the shaft. Each block contains a different (and removable) circular insert, allowing students to create four blocks of different mass and moment. Without the inserts, the blocks become four identical masses for simple balancing tests.

Key Experiments

- *Demonstration of simple static and dynamic balancing of two, three and four rotating masses*
- *Dynamic balancing of rotating mass systems by calculation and vector diagrams (triangle and polygon)*

Overall Specifications

1. FHP Motor with controller
2. No. of Balancing Weight : 4 Nos. different sized drills for varying unbalance
3. Protractor scale for Angle measurement and Linear Scale for Distance
4. Necessary hand tools such as Allen Key; Spanner etc
5. Detailed Technical Manual and On-site Training

Service Required:

1. 230 V.A.C. single phase supply.
2. Rigid platform or sturdy table with preferably a solid foundation.

Contacts:

Works:

STATIC AND DYNAMIC BALANCING APPARATUS

MODEL DOM.SDB.PR



A sturdy base unit holds a test assembly on four flexible mounts. The test assembly includes a balanced steel shaft mounted horizontally on low friction bearings. The equipment includes a set of four rotating masses (balance blocks). The balance blocks fix in any horizontal position and relative angle on the shaft. Each block contains a different (and removable) circular insert, allowing students to create four blocks of different mass and moment. Without the inserts, the blocks become four identical masses for simple balancing tests.

Students fit an extension shaft and pulley (supplied) to the end of the balance shaft. They then add weights (supplied) to a cord wound round the pulley to measure accurately the moment of each balance block.

The test assembly includes a protractor at the end of the shaft and a linear scale with slider under the shaft. These allow accurate measurement of balance block angles and horizontal positions.

An electric motor and belt turns the shaft to test for dynamic balancing. The flexible mounts allow the assembly to vibrate, showing imbalance during dynamic balancing tests. Students remove the belt to check for static balance (the shaft should remain static at any angular position).

A transparent safety dome covers the whole rotating assembly. An interlock shuts off power to the motor when the dome is not fitted.

Key Experiments

- *Demonstration of simple static and dynamic balancing of two, three and four rotating masses*
- *Dynamic balancing of rotating mass systems by calculation and vector diagrams (triangle and polygon)*

Overall Specifications

1. Table Size: 600 x 300 x 600 mm
2. FHP Motor with controller
3. No. of Balancing Weight : 4 Nos. different sized drills for varying unbalance
4. Cord and Container System with precise steel balls
5. Detailed Technical Manual and On-site Training