Static and Dynamic Balancing Unit

MED

Engineering and Technical Teaching Equipment

www.edibon.com
PRODUCTS
70.- MECHANICS

INTRODUCTION

The study of vibrations problems is one of the greatest challenges of the mechanical engineering. Vibrations are an important problem in mechanical systems.

Vibrations are variations or changes of the configuration of the loads to which a system is subjected, according to the time and to a stable balanced position. Its main feature is the period.

It is important for the student to understand them in order to be able to eliminate or soften them as far as possible.

ISO 9001: Quality Management (for Design, Manufacturing, Commercialization and After-sales service)

European Union Certificate (total safety)

Certificates ISO 14001 and ECO-Management and Audit Scheme (environmental management)

Certificate and Worlddidac Member

GENERAL DESCRIPTION

The Static and Dynamic Balancing Unit, "MED", developed by EDIBON is a unit to study and analyze the oscillations and vibrations and how to eliminate or diminish them.

Basically, the unit is formed by a shaft mounted on bearings. This shaft is coupled by pulleys to an electrical motor with variable speed that will make it turn. The whole is fixed to the support structure by means of springs which make the unit oscillate in case there are vibrations or forces without being balanced.

This shaft has four discs coupled: one of them is the pulley, two 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 the other hand, a piston whose movement will be an alternative perpendicular to the shaft can be coupled to our system. Connection of the piston to the shaft is made with a connecting rod.

A ruler can be used in the Static and Dynamic Balancing Unit, "MED", to see easily the measurement of the system displacement with an indicator placed at the right side of the unit.

An auxiliary module for the electrical supply and the motor speed control, as well as a set of sector masses and weights of different values to do the experiments, are supplied.

SPECIFICATIONS

Bench-top unit.

Anodized aluminum frame and panels made of painted steel.

The "MED" unit mainly consists of:

Electrical motor with variable speed which can reach up to 8300 rpm.

Transmission through pulleys and a belt from the motor to the shaft.

Two balancing discs. They are made of aluminum and have a diameter of 150 mm.

Aluminum external disc, that we will name Graduated disc. It has a diameter of 150 mm.

Set of sector masses and weights to do the practices:

- Two sector masses of 27° angle.
- Two sector masses of 114° angle.
- Two sector masses of 43° angle.
- Two sector masses of 72° angle.
- Eighteen weights of 60 g, 40 g, 30 g, 20 g and 15 g, to do the balance of masses in rotation experiments.

Detail of the included sector masses and weights

Auxiliary Module for the electrical supply and the motor control. At its back, there are connections and at its front part it has a potentiometer to control the speed of the motor.

Cables and Accessories, for normal operation.

Manuals: This unit is supplied with the following manuals: Required services, Assembly and Installation, Starting-up, Safety, Maintenance & Practices Manuals.

EXERCISES AND PRACTICAL POSSIBILITIES

1.- Balance on an individual plane of revolution.

2.- Balance on separated planes of revolution.

3.- Simple demonstration experiments.

4.- Illustrate the dynamic balance of rotation and reciprocating systems.

5.- Illustrate the balance of reciprocating masses.

6.- Observe the effects on oscillations of various conditions of partial balance in the reciprocating systems.

REQUIRED SERVICES

- Electrical supply: single-phase, 220 V/50 Hz or 110 V/60 Hz.

DIMENSIONS AND WEIGHTS

MED:

Unit:

-Dimensions: 450 x 550 x 600 mm approx.
(17.71 x 21.65 x 23.62 inches approx.)

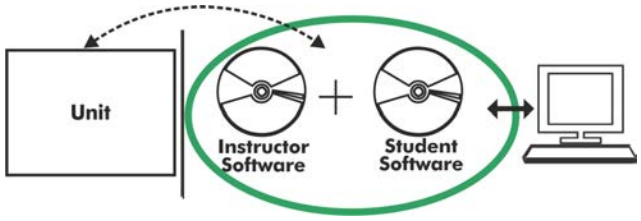
-Weight: 30 Kg approx.
(66.1 pounds approx.)

Auxiliary module:

-Dimensions: 310 x 220 x 145 mm approx.
(12.20 x 8.66 x 5.70 inches approx.)

-Weight: 2 Kg approx.
(4.4 pounds approx.)

MED/ICAI. Interactive Computer Aided Instruction Software System:



With no physical connection between unit and computer (PC), **this complete software package consists of an Instructor Software (EDIBON Classroom Manager -ECM-SOF) totally integrated with the Student Software (EDIBON Student Labsoft -ESL-SOF)**. Both are interconnected so that the teacher knows at any moment what is the theoretical and practical knowledge of the students.

Instructor Software

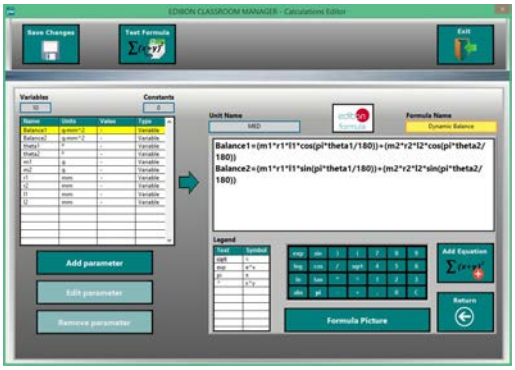
- ECM-SOF. EDIBON Classroom Manager (Instructor Software).

ECM-SOF is the application that allows the Instructor to register students, manage and assign tasks for workgroups, create own content to carry out Practical Exercises, choose one of the evaluation methods to check the Student knowledge and monitor the progression related to the planned tasks for individual students, workgroups, units, etc... so the teacher can know in real time the level of understanding of any student in the classroom.

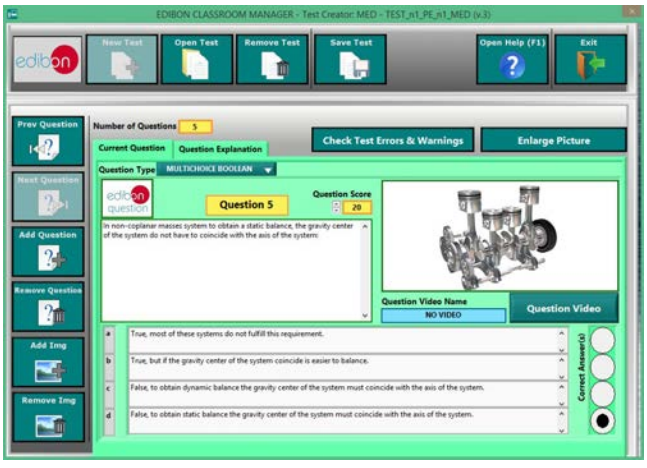
Innovative features:

- **User Data Base Management.**
- **Administration and assignment of Workgroup, Task and Training sessions.**
- **Creation and Integration of Practical Exercises and Multimedia Resources.**
- **Custom Design of Evaluation Methods.**
- **Creation and assignment of Formulas & Equations.**
- **Equation System Solver Engine.**
- **Updatable Contents.**
- **Report generation, User Progression Monitoring and Statistics.**

ECM-SOF. EDIBON Classroom Manager (Instructor Software) Application Main Screen



ECAL. EDIBON Calculations Program Package - Formula Editor Screen



ETTE. EDIBON Training Test & Exam Program Package - Main Screen with Numeric Result Question

ERS. EDIBON Results & Statistics Program Package - Student Scores Histogram

Optional

Student Software

- ESL-SOF. EDIBON Student Labsoft (Student Software).

ESL-SOF is the application addressed to the Students that helps them to understand theoretical concepts by means of practical exercises and to prove their knowledge and progression by performing tests and calculations in addition to Multimedia Resources. Default planned tasks and an Open workgroup are provided by EDIBON to allow the students start working from the first session. Reports and statistics are available to know their progression at any time, as well as explanations for every exercise to reinforce the theoretically acquired technical knowledge.

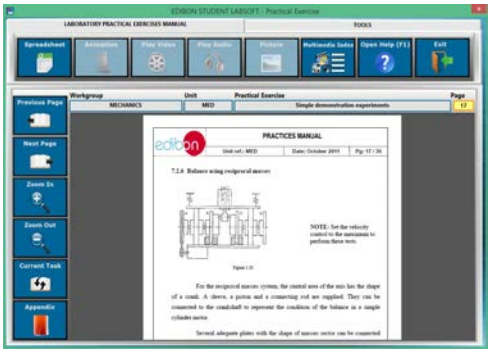
Innovative features:

- **Student Log-In & Self-Registration.**
- **Existing Tasks checking & Monitoring.**
- **Default contents & scheduled tasks available to be used from the first session.**
- **Practical Exercises accomplishment by following the Manual provided by EDIBON.**
- **Evaluation Methods to prove your knowledge and progression.**
- **Test self-correction.**
- **Calculations computing and plotting.**
- **Equation System Solver Engine.**
- **User Monitoring Learning & Printable Reports.**
- **Multimedia-Supported auxiliary resources.**

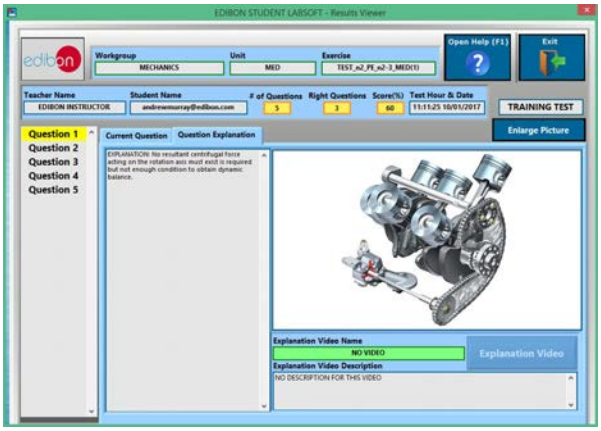
ESL-SOF. EDIBON Student LabSoft (Student Software) Application Main Screen

For more information see **ICAI** catalogue. Click on the following link:

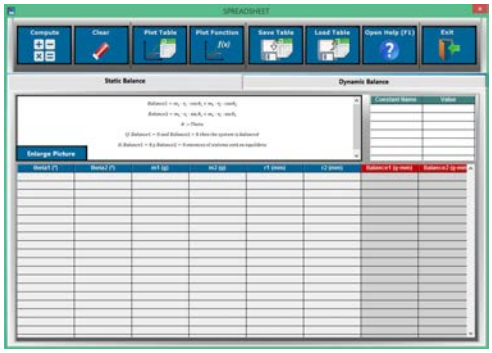
www.edibon.com/en/files/expansion/ICAI/catalog



EPE. EDIBON Practical Exercise Program Package Main Screen



ERS. EDIBON Results & Statistics Program Package - Question Explanation



ECAL. EDIBON Calculations Program Package Main Screen

BDAS. Basic Data Acquisition System and Sensors:

For being used with mechanical modules.

BDAS is designed to monitor the measurements of each mechanical module from a computer.

✱ Specifications subject to change without previous notice, due to the convenience of improvement of the product.

edibon INTERNATIONAL

C/ Del Agua, 14. Polígono Industrial San José de Valderas.
28918 LEGANÉS. (Madrid). ESPAÑA - SPAIN.
Tel.: 34-91-6199363 Fax: 34-91-6198647
E-mail: edibon@edibon.com Web: **www.edibon.com**

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