



## INTRODUCTION

The Crank Mechanism "MBI", enables the students to simulate the operation of a classical piston mechanism easily. It represents the piston mechanism of an automobile perfectly; cylinder and crankshaft of a vehicle.

The Crank Mechanism is used in the automobile industry, shipbuilding industry, etc.

## GENERAL DESCRIPTION

The Crank Mechanism "MBI" is a unit designed to observe, study and record the motion of a crank and the forces involved in a simple engine mechanism.

The piston is linearly displaced through a cylinder with the aid of a guide.

Bearings are coupled to the connecting rod so that friction is kept to a minimum.

There is a protractor attached to the crank, which can be rotated on the beam balance arm and locked in any predetermined angular position.

The piston displacement can be measured with a linear scale attached to the piston guide. The piston can be fitted with removable weights to change the piston mass.

The crank effort can be determined by attaching weights to the beam balance arm.



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

## SPECIFICATIONS

Bench-top unit with adjustable legs.

Anodized aluminum structure and panels in painted steel.

The MBI unit mainly consists of:

Piston and guide with graduated scale: piston stroke: 70 mm.

Connecting rod made of stainless steel.

Shaft of the system and counterweight made of stainless steel.

Measuring disc.

Beam balance arm.

Set of weights to add to the piston:

Mass of 1 kg, 1 unit.

Mass of 0.5 kg, 2 units.

In order to carry out some of the practices with MBI unit, a "B" type Set of weights is required. (See "Required Accessories" section).

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

## EXERCISES AND PRACTICAL POSSIBILITIES

- 1.- Determination of the crank effort.
- 2.- Balancing of the crankshaft.
- 3.- Measurement of the piston displacement.
- 4.- Experimental relationship between piston displacement and crank angle.
- 5.- Theoretical relationship between piston displacement and crank angle.
- 6.- Comparison of the piston displacement value theoretically and experimentally.
- 7.- Experimental relationship between turning moment and crankshaft angle.
- 8.- Theoretical relationship between turning moment and crankshaft angle.

## REQUIRED ACCESSORIES (Not included)

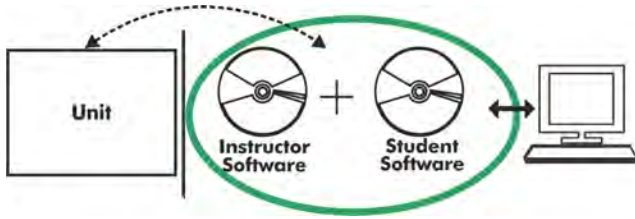
- 1 "B" Type Set of weights. Each Set B includes:
  - 6 weights of 200 gr. (0.44 pounds).
  - 6 weights of 100 gr. (0.22 pounds).
  - 2 weights of 50 gr. (0.11 pounds).
  - 2 weights of 20 gr. (0.044 pounds).
  - 2 weights of 10 gr. (0.022 pounds).
  - 1 support hook of 100 gr. (0.22 pounds).

## DIMENSIONS AND WEIGHT

- Dimensions: 400 x 750 x 500 mm. approx.  
(15.74 x 29.52 x 19.68 inches approx.)
- Weight: 20 Kg. approx.  
(44 pounds approx.).

## Optional

### MBI/ICAI. Interactive Computer Aided Instruction Software System:



Without no physical connection between unit and computer (PC), this complete software package consists of an Instructor Software (EDIBON Classroom Manager -ECM) totally integrated with the Student Software (EDIBON Student Labsoft -ESL). Both are interconnected so that the teacher knows at any moment what is the theoretical and practical knowledge of the students.

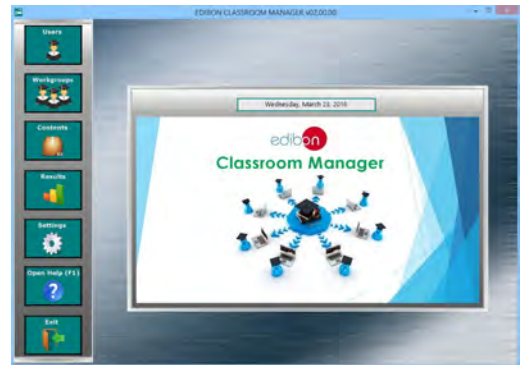
### Instructor Software

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

ECM 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:

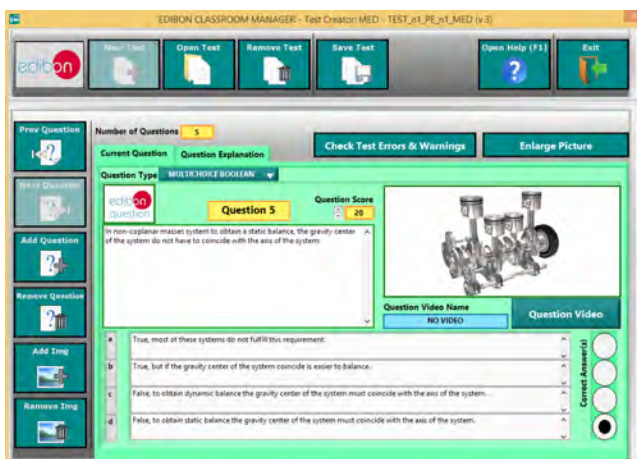
- User Data Base Management.
- Administration and assignment of Workgroups, Tasks and Training sessions.
- Creation and Integration of Practical Exercises and Multimedia Resources.
- Custom Design of Evaluation Methods.
- Creation and assignment of Formulas & Equations.
- Equation System Solver Engine.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



ECM. 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. EDIBON Student Labsoft (Student Software).**

ESL 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.

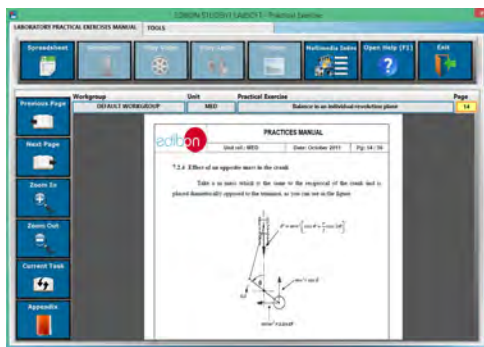
Innovative features:

- 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.**

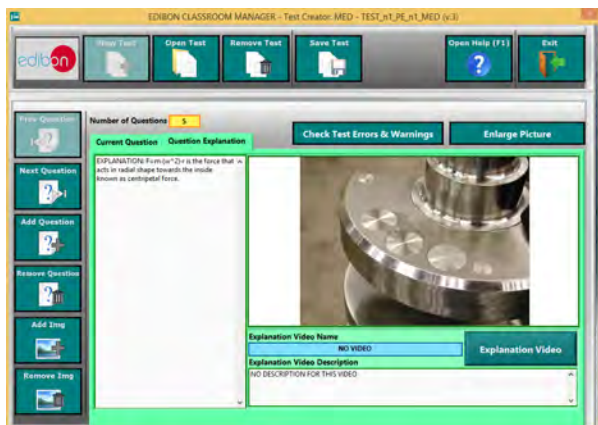
For more information see ICAI catalogue. Click on the following link:  
[www.edibon.com/products/catalogues/en/ICAI.pdf](http://www.edibon.com/products/catalogues/en/ICAI.pdf)



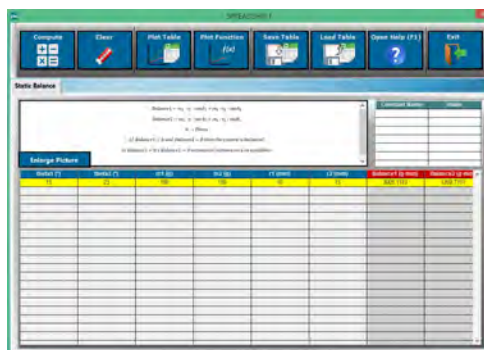
ESL. EDIBON Student LabSoft (Student Software) Application Main Screen



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 (PC).

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



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REPRESENTATIVE

