



## INTRODUCTION

The motion of a four-bar linkage is transformed into oscillatory motion.

The four-bar mechanism or quadrilateral linkage is a mechanism consisting on three movable bars and a fourth fixed bar (for example, the floor). The movable bars are linked to the fixed one through pivots. Grashof's law is a formula used to analyze the type of movement made by the four-bar linkage mechanism: to obtain a continuous movement between the bars, the sum of the shortest bar and the longest bar cannot be greater than the sum of the remaining bars.

The four-bar linkage is one of the most commonly used kinematic mechanisms, for example in window hinges, conveyor belts, folding carts, etc.

The Four-Bar Mechanism, "MCA", has been designed to demonstrate the action of a four-bar mechanism with different geometrical arrangements of joints.

## GENERAL DESCRIPTION

The Four-Bar Mechanism, "MCA", designed by EDIBON, is a bench-top unit to perform laboratory experiments.

It is made of anodized aluminum and consists of two rotary elements (graduated discs) mounted on ball bearings. The discs include a scale to measure the input and output angles accurately with the aid of a methacrylate indicator.

The rotary motion of one of the discs is transferred through the bars and generates the rotary motion of the other disc.

The bars, made of anodized aluminum, can be connected at different lengths using easy to fit knurled bolts.



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.

Anodized aluminum frame and panels made of painted steel.

Main metallic elements made of stainless steel.

Anodized aluminum frame and panels made of painted steel.

The "MCA" unit mainly consists of:

Four-bar mechanism.

The bars, made of anodized aluminum, can be connected at different lengths using easy to fit knurled bolts.

Two graduated discs mounted on ball bearings. The discs include a scale to measure the input and output angles accurately with the aid of a methacrylate indicator.

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



MCA detail

## EXERCISES AND PRACTICAL POSSIBILITIES

- 1.- To demonstrate the action of a four-bar mechanism with different geometrical arrangements of joints.
- 2.- To demonstrate Grashof law.
- 3.- To determine graphically the relationship between the angular displacements of the input crank and the output joint of a simple four-bar system.
- 4.- To determine the velocity and acceleration of the output joint by graphical differentiation and compared with the values obtained in velocity and acceleration diagrams.

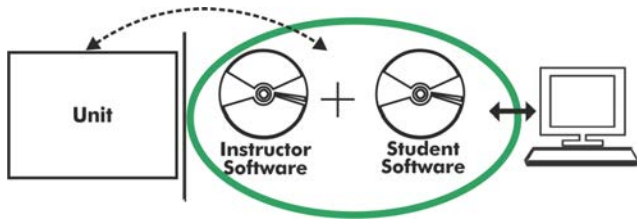
## DIMENSIONS AND WEIGHTS

MCA:

-Dimensions: 450 x 250 x 150 mm approx.  
(17.71 x 9.84 x 5.90 inches approx.)

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

**MCA/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.

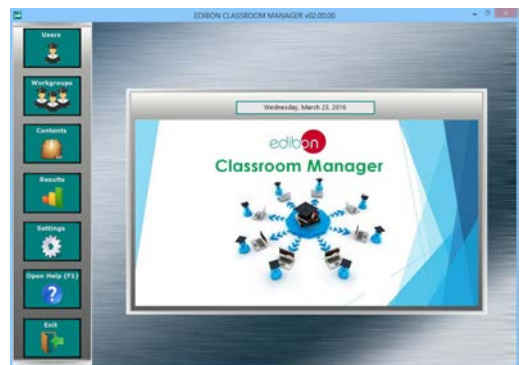
Instructor Software

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

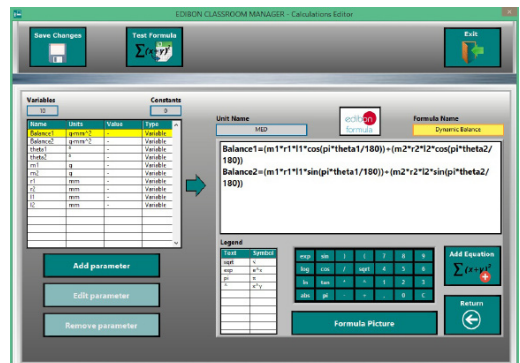
ECM-SOF is the application that allows the Instructor to register students, manage and assign tasks for workgroups, create own content to carry out Practical Exercises, choose one of the evaluation methods to check the Student knowledge and monitor the progression related to the planned tasks for individual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

Innovative features:

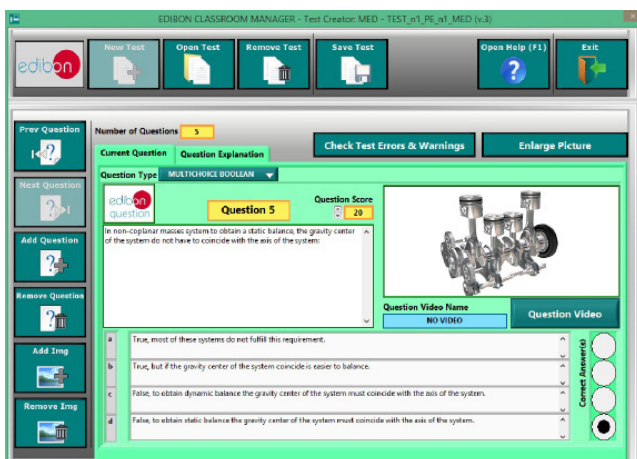
- User Data Base Management.
- Administration and assignment of Workgroup, Task and Training sessions.
- Creation and Integration of Practical Exercises and Multimedia Resources.
- Custom Design of Evaluation Methods.
- Creation and assignment of Formulas & Equations.
- Equation System Solver Engine.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



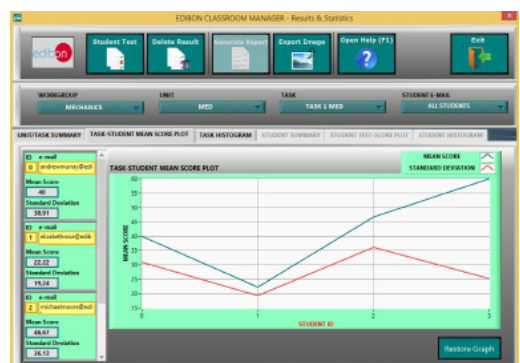
ECM-SOF. EDIBON Classroom Manager (Instructor Software) Application Main Screen



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.

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

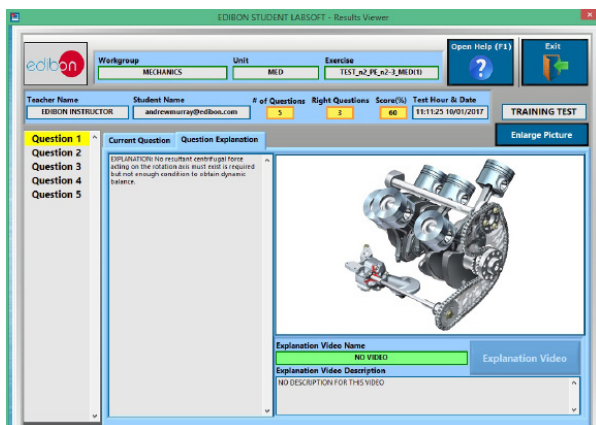
[www.edibon.com/en/files/expansion/ICAI/catalog](http://www.edibon.com/en/files/expansion/ICAI/catalog)



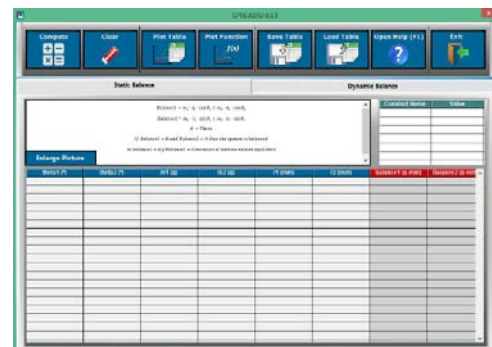
ESL-SOF. EDIBON Student LabSoft (Student Software) Application Main Screen



EPE. EDIBON Practical Exercise Program Package Main Screen



ERS. EDIBON Results & Statistics Program Package - Question Explanation



ECAL. EDIBON Calculations Program Package Main Screen

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



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REPRESENTATIVE:

