Braking and Accelerating Forces Unit

MFF

GENERAL DESCRIPTION

A load transfer between front and rear wheels takes place under conditions of braking or acceleration of a vehicle (a car for example). The problem of load transfer occurs since the accelerating or braking force is not applied to the centre of gravity of the vehicle but to the point of contact of the wheels with the road.

The MFF unit has been designed to demonstrate and study this load transfer.

This unit allows to carry out practices and experiments to study the relationship between the forces involved in car braking and acceleration.

The MFF unit also allows the demonstration of the relationship between these forces on front wheel drive, rear wheel drive, and four wheel drive.

This unit is mounted on an anodized aluminium and steel structure. A car model is supported on a beam load cell and has road wheels. A pin can be inserted in different positions to represent the centre of gravity of the car.

Pulleys, weigths and cords are used to apply different horizontal braking or acceleration and inertia forces to the car .

In order to carry out some of the practices with MMF unit, 2 Sets of weights "A type" and 1 Set of weights "B type" are required. (See "required accessories" section).

Manuals: This unit is supplied with the following manuals: Required services, Assembly and Installation, Starting-up, Security, Maintenance and Practices manual.
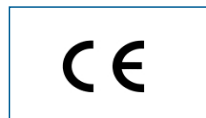
EXERCISES AND PRACTICAL POSSIBILITIES

Some Practical Possibilibies of the Unit:

1.- Investigation of the relationship between the forces involved in vehicle braking and acceleration.

2.- Study of the inertia force.

3.- Demonstration of the relationship between these forces on front wheel drive, rear wheel drive, and four wheel drive.

4.- Study of the load transfer between front and rear wheels.

5.- Study of different conditions varying the position of the centre of gravity.

6.- Appplication of the accelerating or braking force on different points of the centre of gravity.

DIMENSIONS & WEIGHT

-Dimensions: 800 x 600 x 800 mm. approx. (31.50 x 23.62 x 31.50 inches approx.).

-Weight: 20 Kg. approx. (44 pounds approx.).

REQUIRED ACCESSORIES

- Set of weights "B type":
    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 (hanger) of 100 gr. (0.22 pounds).
- Set of weights "A type": (2 sets required)
    9 weights of 50 gr. (0.11 pounds).
    2 weights of 10 gr. (0.022 pounds).
    1 support hook (hanger) of 50 gr. (0.11 pounds).

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MFF/CAI. Computer Aided Instruction Software System:
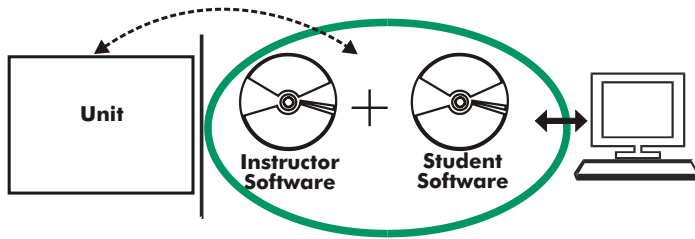
With no physical connection between unit and computer, **this complete package consists on an Instructor Software (INS/SOF) totally integrated with the Student Software (MFF/SOF).** Both are interconnected so that the teacher knows at any moment what is the theoretical and practical knowledge of the students. These, on the other hand, get a virtual instructor who helps them to deal with all the information on the subject of study.

Example of software screens

<u>Instructor Software</u>

INS/SOF. Classroom Management Software (Instructor Software):
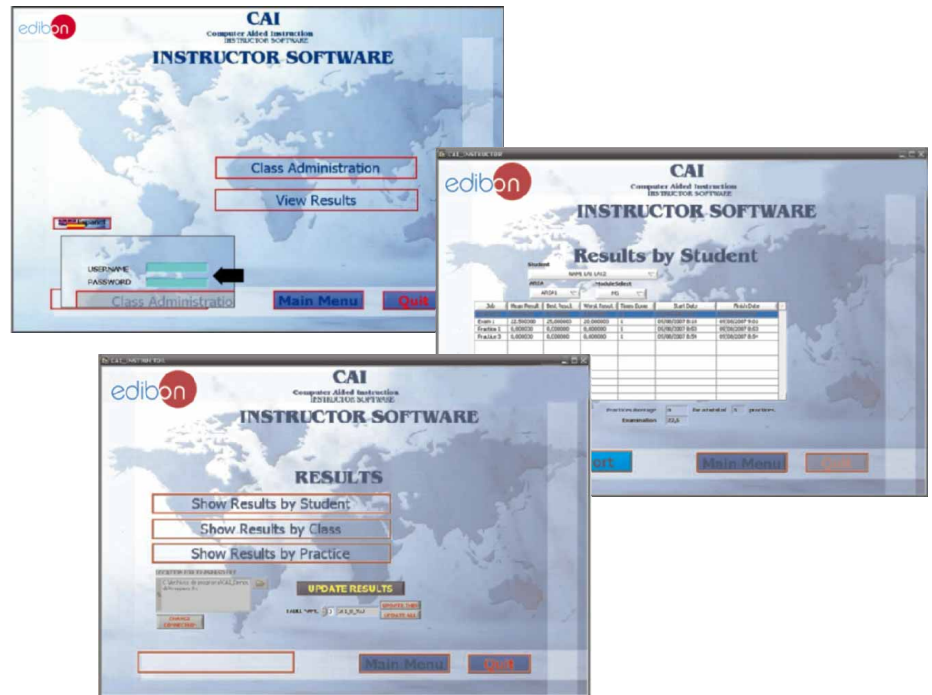
The instructor can:

- Organize Students by Classes and Groups.

- Create easily new entries or delete them.

- Create data bases with student information.

- Analyze results and make statistical comparisons.

- Print reports.

- Develop own examinations.

- Detect student's progress and difficulties.

…and many other facilities.

This software working in network configuration allows controlling all the students in the classroom.

<u>Student Software</u>

MFF/SOF. Computer Aided Instruction Software (Student Software):

It explains how to use the unit, run the experiments and what to do at any moment.

- This software contains:

    Theory: gives the student the theoretical background for a total understanding of the studied subject.

    Exercises: divided by thematic areas and chapters to check out that the theory has been understood.

    Guided Practices: presents several practices to be done with the unit, showing how to complete exercises and practices.

    Exams: set of questions presented to test the obtained knowledge.
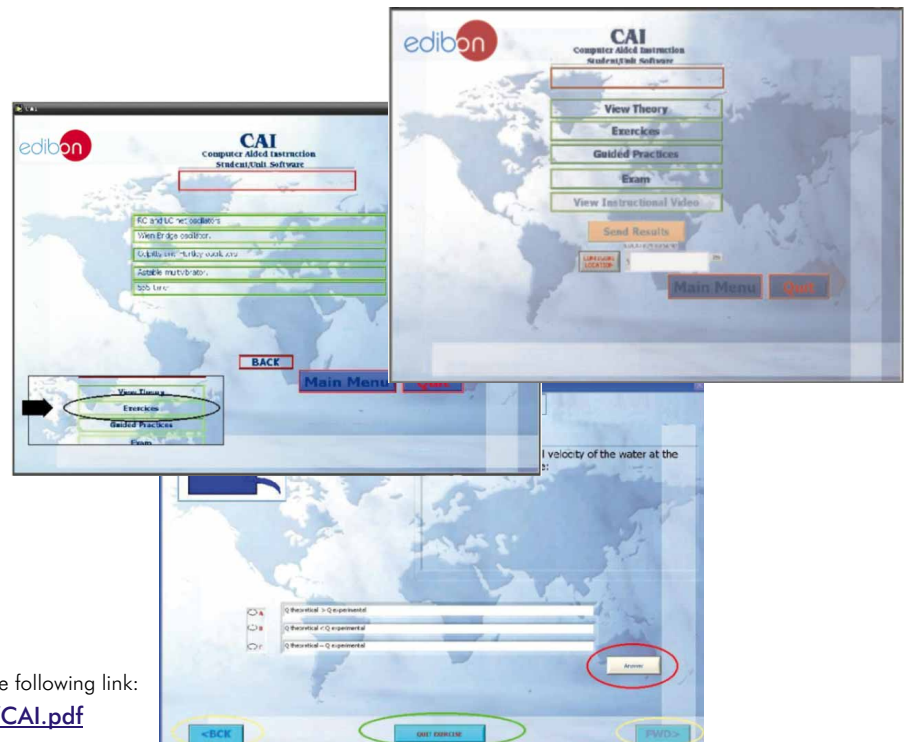
For more information see **CAI** catalogue. Click on the following link:
www.edibon.com/products/catalogues/en/CAI.pdf

MFF/CAL. Computer Aided Learning Software (Results Calculation and Analysis):

This Computer Aided Learning Software (CAL) is a Windows based software, simple and very easy to use, specifically developed by EDIBON.

CAL is a class assistant that helps in making the necessary calculations to extract the right conclusions from data obtained during the experimental practices.

CAL will perform the calculations.

CAL computes the value of all the variables involved.

It allows to plot and print the results. Between the plotting options, any variable can be represented against any other.

Different plotting displays.

It has a wide range of information, such as constant values, unit conversion factors and integral and derivative tables.
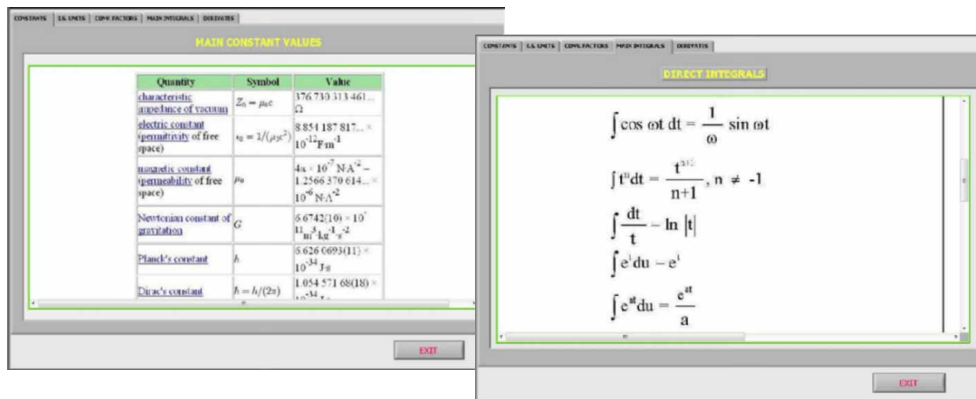
Calculations
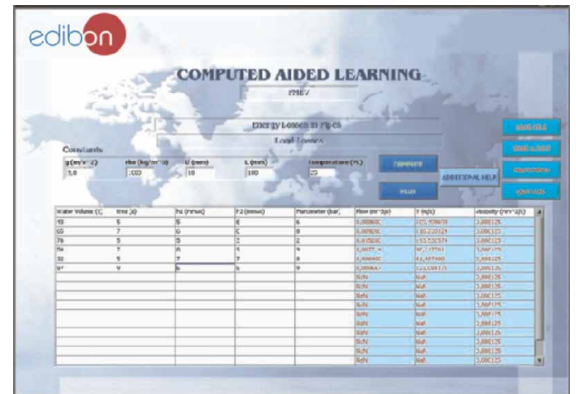
Plotting options

Information of constant values, unit conversion factors and integral and derivative tables

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

www.edibon.com/products/catalogues/en/CAL.pdf

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

REPRESENTATIVE: