Engineering and Technical Teaching Equipment

Vacuum Technology Trainer

AE-V

www.edibon.com
PRODUCTS
60.- MECHATRONICS & COMPUMECHATRONICS AND
70.- MECHANICS

INTRODUCTION

Pneumatics is the technology that employs air to operate all types of machines and devices. It is one of the technologies most widely used for industrial automation, due to the advantages a work environment working with pneumatics provides.

Vacuum technology is the part of pneumatics that works with negative pressures, and it is widely used in automation to move loads with the aid of suction pads.

The Vacuum Technology Trainer, "AE-V", has been designed to obtain the knowledge required to understand the operation of the most common elements used in vacuum technology.

The "AE-V" is supplied with practical exercises to help the students to understand how the most common elements of a vacuum pneumatic system work.

GENERAL DESCRIPTION

The "AE-V" is a modular unit consisting of a panel where all the components that form the vacuum pneumatic system to be studied are attached to.

The "AE-V" contains all the elements required to carry out the assembly and operation of the circuits proposed in the practical exercises, elements such as push in fittings, flexible tubing, filters, safety valves, etc.

The "AE-V", designed by EDIBON, allows the user to learn the basic concepts about vacuum technology (operation, elements of a vacuum pneumatic circuit, standardized symbols, etc.) without any previous knowledge or experience.

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

The "AE-V" unit consists of the following blocks:

All the components are mounted on a support plate with clamps to fix them to the perforated plate of the working bench. The support plate has the name of the component and its standardized symbol.

All the pneumatic components include quick connections for flexible tube of 6 mm.

Support panel:

- Frame made of aluminum profiles.
- Perforated panel to attach the elements of the unit (pneumatic, electro-pneumatic, electrical components, etc.).

Air treatment block:

- Pressure regulator with filter-regulator and water trap.
- Double scale manometer (MPa and Psi).
- Shut-off valve.

Distributor block:

- 8 quick connection outlets with check valve in each one.
- Direct connection to the air treatment unit.

Set of vacuum elements:

- Pressurized tank used as air vessel.
- Two solid state vacuum switches.
- Digital vacuum switch.
- Digital timer with supply to 24 VDC.
- Two programmable digital vacuum switches.
- Vacuum manometer with electrical contact.
- Multi-stage vacuum ejector.
- Vacuum unit with ejector:
  - Ejector.
  - Supply valve.
  - Vacuum switch.
  - Filter.
- Compact vacuum ejector.
- Vacuum module with ejector and timer:
  - Ejector.
  - Time-controlled valve.
  - Vacuum switch.
  - Filter.
- Vacuum module with ejector:
  - Ejector.
  - Valve.
  - Vacuum switch.
  - Filter.
- Vacuum regulator with manometer.
- Vacuum air suction filter.

Solenoid valves:

- Direct activation 4/2 solenoid valve.
- NC 3/2 solenoid valve.

Kits of 14 different suction pads:

- Box to store the suction pads.
- Flat suction pad made of nitrile rubber (NBR).
- Flat suction pad made of fluorinated rubber.
- Flat suction pad made of polyurethane rubber.
- Flat suction pad made of silicone.
- Flat suction pad made of nitrile rubber (NBR) with ribs.
- Oval flat suction pad made of nitrile rubber (NBR).
- Flat suction pad made of nitrile rubber (NBR) with ball joint.
- Telescopic flat suction pad made of nitrile rubber (NBR) with ribs.
- Concave flat suction pad made of nitrile rubber (NBR).
- Flat suction pad made of nitrile rubber (NBR) with bellows.
- Suction pad made of silicone with bellows.
- Suction pad made of urethane with bellows.
- Suction pad made of fluorinated rubber with bellows.

Power supply:

- Outlet of 24 VDC.
- ON/OFF lit switch (LED).
- Fuse to protect the power supply against short-circuits.
- Supply cable.

Module of electrical inputs:

- Laboratory terminals of 2 mm.
- Two pushbuttons.
- Pushbutton with interlock.
- Two contacts switchable by pushbutton.
- Independent light indicator.

Material for the configuration of vacuum pneumatic circuits:

- Blue flexible tube with length of 25 m and external diameter of 6 mm.
- Tube cutter for tube of 6 mm.
- Set of 20 pressure caps for tube of 6 mm.
- Set of 20 “T” type push in fittings for tube of 6 mm.
- Set of 20 “Y” type push in fittings for tube of 6 mm.
- Set of 60 electrical cables with laboratory terminals of 2 mm of different length and color.

• SAC. **Silent Air Compressor Unit (Optional).**

- Noiseless air compressor.
- Capacity of the boiler: 9 l.
- Power: 340 W.
- Air intake: 50 l./min.
- Maximum pressure: 8 bar.
- Low noise level: 40 dB maximum.
- Designed to be located under the bench.

Cables and accessories for a correct operation.

Manuals:

This unit **is supplied with the following manuals:** Required services, Installation, Starting-up, Safety regulations, Maintenance and Practical exercises.

EXERCISES AND PRACTICAL POSSIBILITIES

1.- Introduction to vacuum pneumatic technology.

2.- Description of the main parts of vacuum pneumatic systems.

3.- Compressed air treatment, distribution and compression system.

4.- Checking the state of the pneumatic circuit by measuring the most common pneumatic variables.

5.- Operation of suction pads made of different materials.

6.- Operation of suction pads with different shapes.

7.- Configuration of a vacuum application.

REQUIRED SERVICES

- Electrical supply: single-phase, 220V/50Hz or 110V/60Hz.
- Compressed air with a 50 l/min of air flow and 8 Bar of pressure.

DIMENSIONS AND WEIGHTS

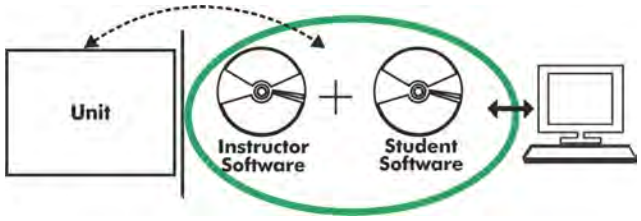
AE-V:

- Dimensions: 1380 x 840 x 1000 mm. approx.
  (54.33 x 33.07 x 39.36 inches approx.)
- Weight: 70 Kg. approx.
  (154 pounds approx.)

RECOMMENDED ACCESSORIES (Not included)

- SAC. Silent Air Compressor Unit (optional).

AE-V/ICAI. Interactive Computer Aided Instruction Software System:



Whit no physical connection between unit and computer, **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 Workgroups, Tasks and Training sessions.

Creation and Integration of Practical Exercises and Multimedia Resources.

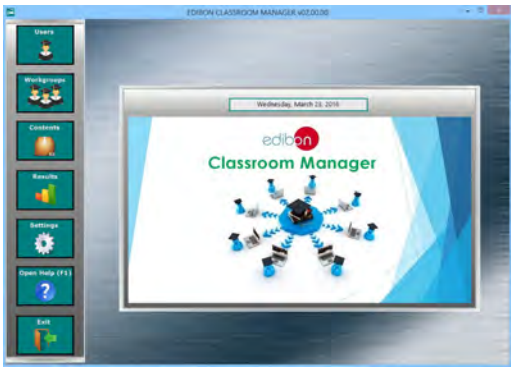
Custom Design of Evaluation Methods.

Creation and assignment of Formulas & Equations.

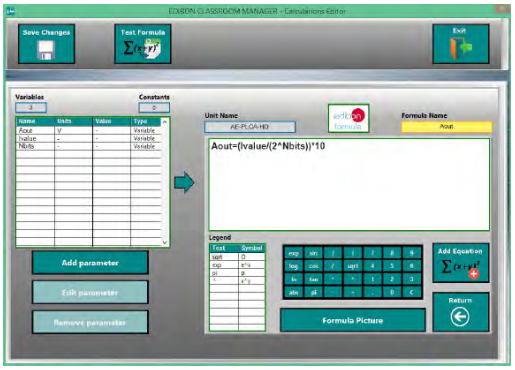
Equation System Solver Engine.

Updatable Contents.

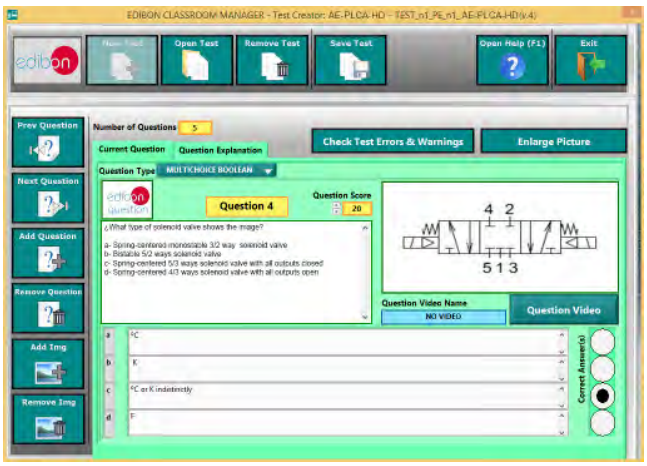
Report generation, User Progression Monitoring and Statistics.



ECM-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.

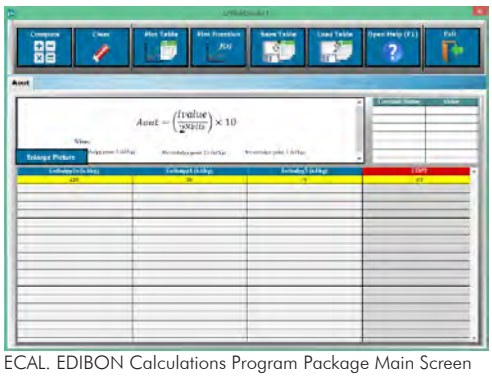
For more information see **ICAI** catalogue. Click on the following link:

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

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: