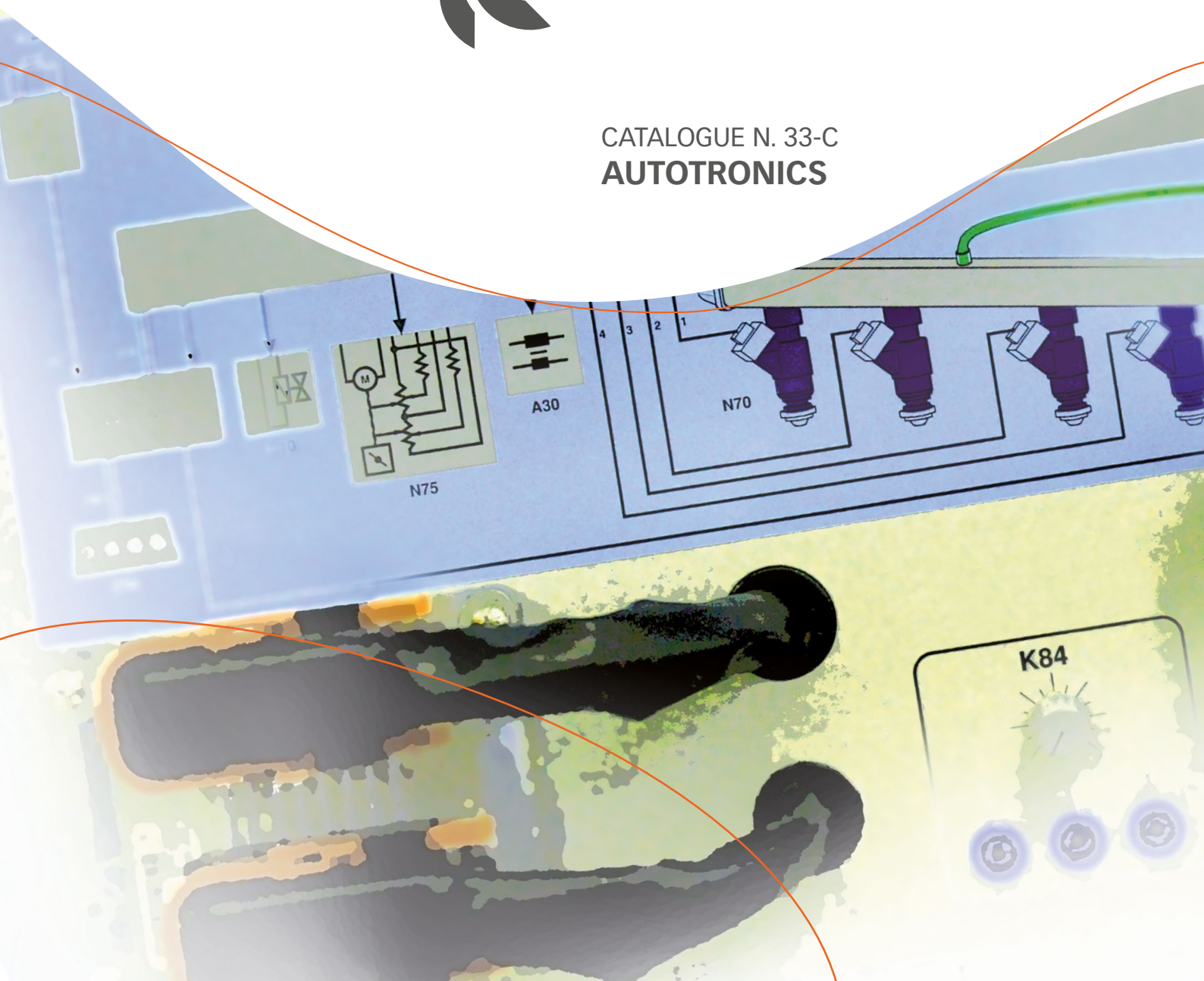
ElettronicaVeneta

CATALOGUE N. 33-C

AUTOTRONICS



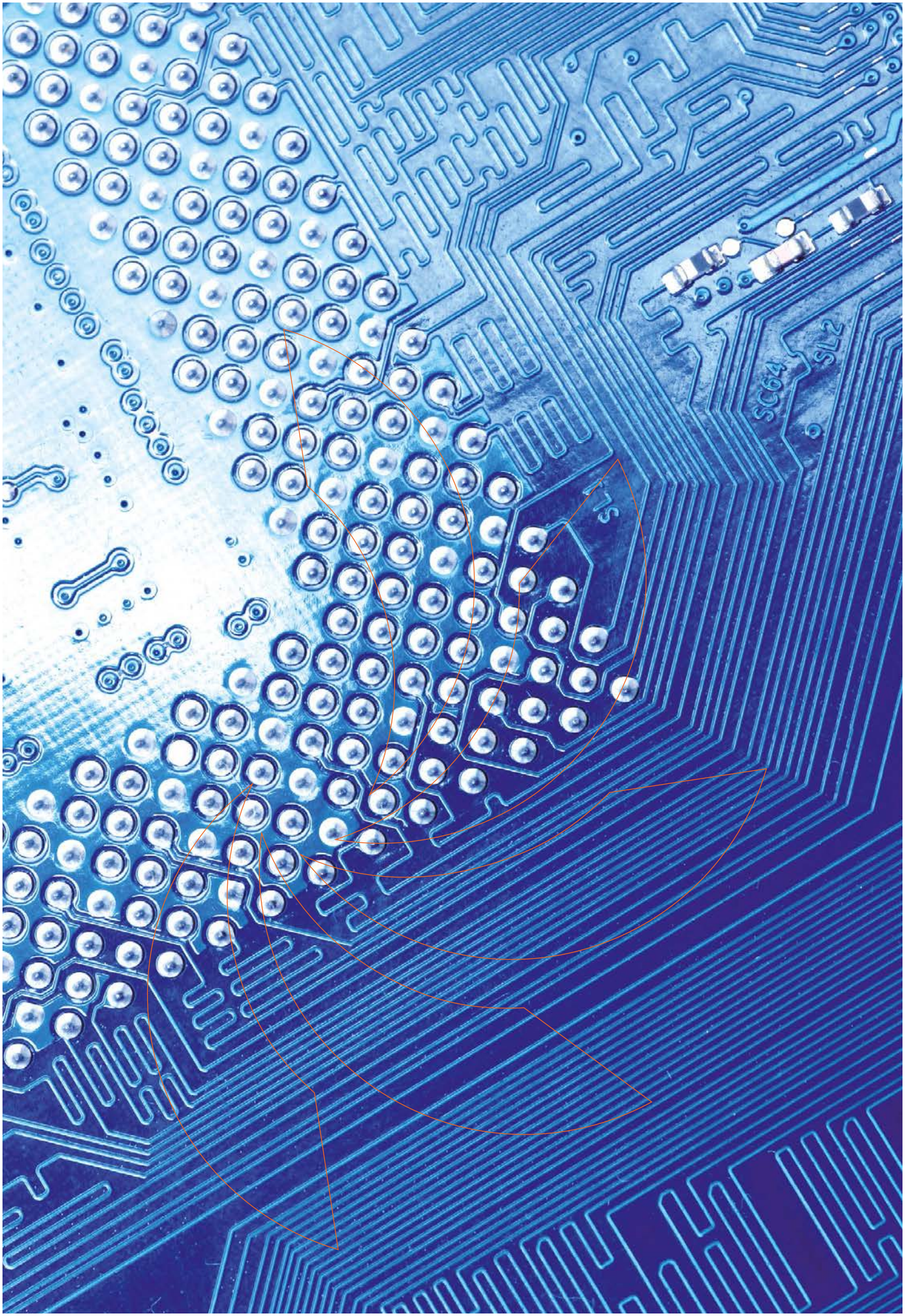
ElettronicaVeneta

CATALOGUE N. 33-C

AUTOTRONICS

Autotronics
export@elettronicaveneta.com
www. elettronicaveneta.com

33C-E
Rel. I22

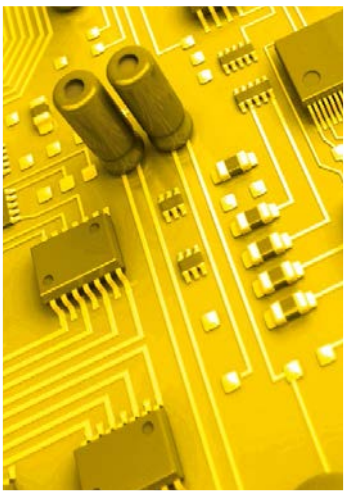

SC64
SL12

INDEX

TRAINING IN REPAIRING TECHNIQUES FOR CAR MECHANICS TR

Note: The catalog is constantly updated. Please send any suggestion you have to export@elettronicaveneta.com. We would also like to remind you that, due to the continuous technological upgrades, the described products may be subjected to design and/or technical modifications. Nevertheless, we guarantee that the educational content of our equipment remains unchanged.

GENERAL INTRODUCTION



ELETTRONICA VENETA S.p.A. has been designing and manufacturing educational equipment since 1963.
This type of equipment covering different fields of technology enables students and teachers to attain two important aims:

- favouring students' learning activity with actual systems being able to clear up important theoretical issues learnt during classes and studied in depth on text-books;
- simplifying teacher's work with the possibility of demonstrating both theoretical and practical sides and applications of the topics explained.

Of course increasing the efficiency of educational activity will lead to improve the work placement of young students besides justifying the investments of material and human resources assigned to schools all over the world.


DET NORSKE VERITAS
QUALITY MANAGEMENT SYSTEM CERTIFICATE
ELETTRONICA VENETA S.p.A.
SINCERT

ELETTRONICA VENETA S.p.A. operates on the international market complying with the educational programs of the various countries and even with the different specific cultures.
At this purpose, flexible systems are proposed to ensure the strictest compliance with current technologies, technological progress and with the demands of specific professionals coming from local industrial market, thus meeting the various requirements satisfactorily.

Thanks to the modularity and flexibility of training methodology and design the educational laboratories and equipment proposed in this catalogue also enable to implement postgraduate/continuous training and vocational retraining, besides regular school education.

The educational equipment produced by Elettronica Veneta S.p.A. covers most technological fields dealt with by the educational programs of vocational schools, technical high schools and of national and international universities.

Integrating this efficient eduactional equipment with the skills and experience of local school structure will enable to keep training programs always updated and consequently to ensure a high-quality and advanced training for the various professional expectations of students and for the industrial technological and research needs of various local frameworks.

La sede di **ELETTRONICA VENETA S.p.A.** premises are located in the green Venetian countryside, near Venice. Besides being an important R&D centre, these modern premises enable to carry out various projects with educational equipment suitable to every type of professional and engineer.

The ISO 9001 (Quality System Certificatation) obtained in 1998 and updated in application of the latest edition of the International Standard, is further testament to the quality-driven organisation of **ELETTRONICA VENETA S.p.A.** aimed at providing top standard equipment, training and service.

PRESENTATION

The important technological development of electronics applied to automotive field in recent years has led to a large scale diffusion of systems including more and more sophisticated electronic components such as:

- electronic control of petrol engine with reduced emissions
- control of Diesel engine with very high pressure injection
- Anti-lock Braking Systems (ABS) for a better safety
- drive and stability control (ESP) for a better drivability
- electric wiring applied to vehicles' multiplex networks for improving performance, reliability and comfort
- in-depth and Standard modeized diagnostics for an efficient servicing.

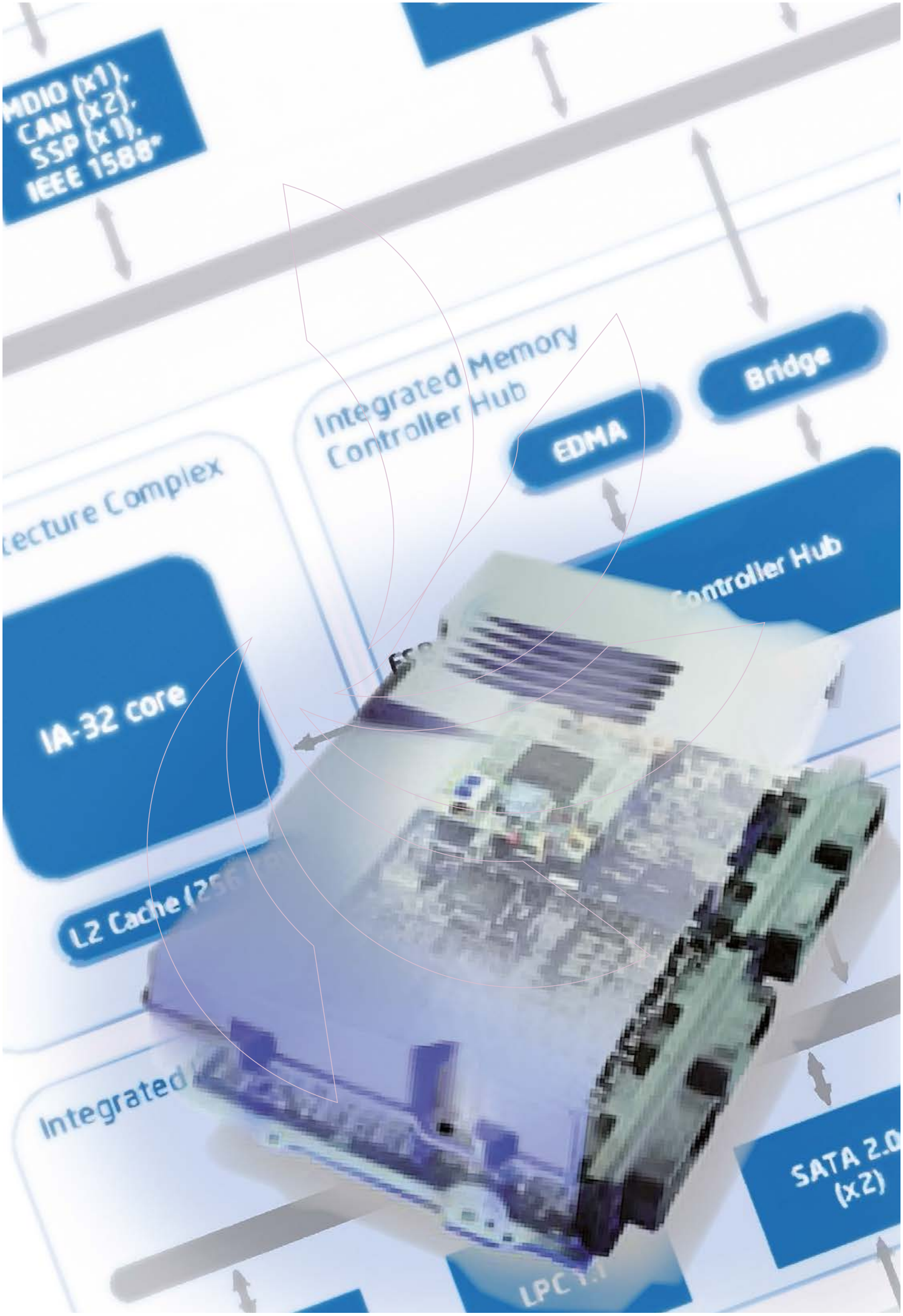
This new reality needs skilled professionals suitably trained in the sector of automotive electronics who know the basics of electronics as well as the most advanced applications.
Morover the evolution of technology and of electronic components in automotive sector requires a continuous theoretical, experimental and practical refreshment of skilled workers of this field.

Then a good training can be ensured by the availability of modular and flexible systems which can be adapted to different needs varying continuously.

ELETTRONICA VENETA S.p.A. has developed ideal environments and solutions for training and research that hit this target; the set of equipment produced by Elettronica Veneta S.p.A. will enable a theoretical and experimental analysis ranging from basic electric systems to the most complex installations.

The various topics indicated here below are explained exhaustively and they implement a training programme which includes both theoretical introduction and practical tests:

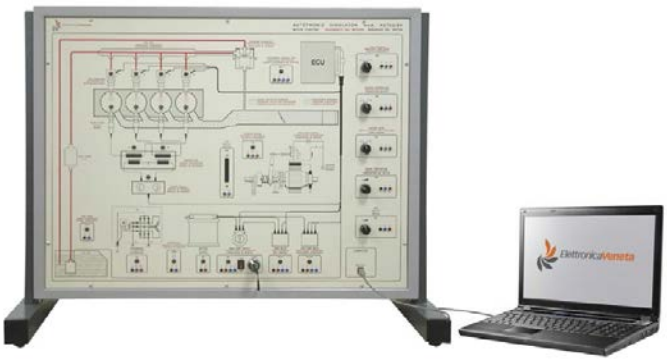
- basics on the operation of the main mechanical members and systems of vehicles are studied with software simulations in Windows
- in-depth analysis of all the electric/electronic control systems of an engine and of vehicle's movement including troubleshooting
- use of the modernest multi-brand diagnostic systems applied to actual garage operations on cars of the most advanced technology.


MDIO (x1),
CAN (x2),
SSP (x1),
IEEE 1588*
Integrated Memory
Controller Hub
EDMA
Bridge
IA-32 core
SATA 2.0
(x2)

VEHICLE CONTROL SYSTEMS

ELETTRONICA VENETA S.P.A. - 31045 Motta di Livenza (TV) Italy - Via Postumia 16 - Tel. +39 0422 765 802 - Fax +39 0422 861 901 - E-mail: export@elettronicaveneta.com

ENGINE STARTING SIMULATOR
Mod. AST02/EV



Engine starting simulator mod. AST02/EV is included in a complete set of educational equipment conceived for the basic training in the field of automotive systems.
This simulator consists of a computer-controlled panel, with silk-screen-printed schematic diagram for an easy location of its components.

Various zones of this schematic diagram are represented with different colours and shades to emphasize peculiar aspects of the system. Warning lights installed in the schematic diagram enable to check control trend.
The graphic display of the information on PC screen enables the permanent monitoring of the system.
The operational conditions are set by students according to the educational path indicated in the courseware.
The testing phase is completed with insertion of faults, carried out by the PC, for the study of repairing techniques.

TRAINING PROGRAM

- electrical characteristics of battery
- electrical measurements of voltages and resistances
- starting motor and solenoid valve
- electrical functions of contact key
- phonic wheel sensor
- spark plugs
- electromagnetic injectors
- electronic control of ignition-injection
- motor-driven fuel pump
- static ignition technique
- fuel circuit with pressure regulator

TECHNICAL CHARACTERISTICS

The system is arranged on a wide silk-screen-printed panel including:

- test jacks with diameter of 2 mm
- pulse ignition key
- selection of operational conditions via potentiometers and buttons for:
  - engine r.p.m.
  - battery voltage
- display of system state with warning lights (LEDs and bargraphs):
  - fuel pump
  - engine r.p.m.
- dynamic display of parameters on PC screen, with software of high graphic performance
- Connections with Personal Computer via USB port

Power supply:	230 Vac 50 Hz single-phase - 50 VA (Other voltage and frequency on request)
Dimensions:	920 x 450 x 720 mm
Weight:	30 kg

REQUIRED

PERSONAL COMPUTER
- NOT INCLUDED -

SUPPLIED WITH

SOFTWARE:
PROGRAM FOR CONTROLLING SIMULATOR AND GRAPHIC DISPLAY ON PC SCREEN
FAULT INSERTION FROM PC

THEORETICAL-EXPERIMENTAL TEXTS:
STUDENT HANDBOOK
TEACHER HANDBOOK

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ELECTRIC CIRCUIT SIMULATOR

Mod. AST03/EV

Electric circuit simulator mod. AST03/EV is included in a complete set of educational equipment conceived for the basic training in the field of automotive systems.

This simulator consists of a computer-controlled panel, with silk-screen-printed schematic diagram for an easy location of its components.

Various zones of this schematic diagram are represented with different colours and shades to emphasize peculiar aspects of the system. Warning lights installed in the schematic diagram enable to check the system state.

The graphic display of the information on PC screen enables the permanent monitoring of the system.
The operational conditions are set by students according to the educational path indicated in the courseware.

The testing phase is completed with insertion of faults, carried out by the PC, for the study of car repairing techniques.

TECHNICAL CHARACTERISTICS

The system is arranged on a wide silk-screen-printed panel including:

- test jacks with diameter of 2 mm
- pulse ignition key
- selection of operational conditions via potentiometers and buttons
- display of system state with warning lights (LEDs and bargraphs)
- dynamic display of parameters on PC screen, with software of high graphic performance
- Connections with Personal Computer via USB port

Power supply:	230 Vac 50 Hz single-phase - 50 VA (Other voltage and frequency on request)
Dimensions:	920 x 450 x 720 mm
Weight:	30 kg

TRAINING PROGRAM

- Alternator and battery charging
- Relay-fuse assembly
- Steering column switch unit and control panel
- Front light unit
- Rear light unit
- Fuel level
- Heated rear window
- Oil pressure
- Brake pedal and relevant warning light
- Engine temperature and cooling fan
- Dashboard with warning lights

REQUIRED

PERSONAL COMPUTER
- NOT INCLUDED -

SUPPLIED WITH

SOFTWARE:
PROGRAM FOR CONTROLLING SIMULATOR AND GRAPHIC DISPLAY ON PC SCREEN
FAULT INSERTION FROM PC

THEORETICAL-EXPERIMENTAL TEXTS:
STUDENT HANDBOOK
TEACHER HANDBOOK

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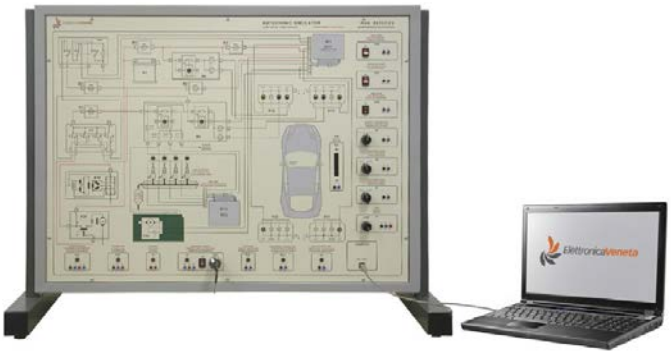
ELECTRIC COMPONENTS SIMULATOR

Mod. AST07/EV



The simulator of electric components mod. AST07/EV is included in a complete set of educational equipment conceived for the basic training in the field of automotive systems.
This simulator consists of a computer-controlled panel, with silk-screen-printed schematic diagram for an easy location of its components.

Various zones of this schematic diagram are represented with different colours and shades to emphasize peculiar aspects of the system. Warning lights installed in the schematic diagram enable to check control trend.

The graphic display of the information on PC screen enables the permanent monitoring of the system.
The operational conditions are set by students according to the educational path indicated in the courseware.

The testing phase is completed with insertion of faults, carried out by the PC, for the study of car repairing techniques.

TRAINING PROGRAM

- Structure of batteries
- charging and discharging of batteries
- servicing of batteries
- starting motor
- speed and torque
- solenoid valve
- principle of three-phase alternator
- electronic regulator of vehicle voltage
- power supply distribution
- current measurement

TECHNICAL CHARACTERISTICS

The system is arranged on a wide silk-screen-printed panel including:

- test jacks with diameter of 2 mm
- pulse ignition key
- selection of operational conditions via switches and buttons for:
  - battery temperature
  - mechanical load
  - electric load
- display of system state via warning lights (LEDs and/or bargraphs)
- dynamic display of parameters on PC screen, with software of high graphic performance
- Connections with Personal Computer via USB port

Power supply:	230 Vac 50 Hz single-phase - 50 VA (Other voltage and frequency on request)
Dimensions:	920 x 450 x 720 mm
Weight:	30 kg

REQUIRED

PERSONAL COMPUTER
- NOT INCLUDED -

SUPPLIED WITH

SOFTWARE:
PROGRAM FOR CONTROLLING SIMULATOR AND GRAPHIC DISPLAY ON PC SCREEN
FAULT INSERTION FROM PC

THEORETICAL-EXPERIMENTAL TEXTS:
STUDENT HANDBOOK
TEACHER HANDBOOK

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AUXILIARY ELECTRIC SYSTEMS SIMULATOR

Mod. AST08/EV

Simulator mod. AST08/EV is included in a complete set of educational equipment conceived for the basic training in the field of automotive systems.

This simulator consists of a computer-controlled panel, with silk-screen-printed schematic diagram for an easy location of its components.

Various zones of this schematic diagram are represented with different colours and shades to emphasize peculiar aspects of the system. Warning lights installed in the schematic diagram enable to check control trend.

The graphic display of the information on PC screen enables the permanent monitoring of the system.
The operational conditions are set by students according to the educational path indicated in the courseware.

The testing phase is completed with insertion of faults, carried out by the PC, for the study of car repairing techniques.

TECHNICAL CHARACTERISTICS

The system is arranged on a wide silk-screen-printed panel including:

- test jacks with diameter of 2 mm
- pulse ignition key
- selection of operational conditions via potentiometers and buttons
- display of system state via warning lights (LEDs and/or bargraphs)
- dynamic display of parameters on PC screen, with software of high graphic performance
- Connections with Personal Computer via USB port

Power supply:	230 Vac 50 Hz single-phase - 50 VA (Other voltage and frequency on request)
Dimensions:	920 x 450 x 720 mm
Weight:	30 kg

TRAINING PROGRAM

- Position control of power windows
- electrical seat position adjustment
- cruise speed regulator
- windshield-wiper control
- air-bag system
- anti-theft alarm installation
- motor-driven sun-roof
- car radio set
- automatic lighting control

REQUIRED

PERSONAL COMPUTER
- NOT INCLUDED -

SUPPLIED WITH

SOFTWARE:
PROGRAM FOR CONTROLLING SIMULATOR AND GRAPHIC DISPLAY ON PC SCREEN
FAULT INSERTION FROM PC

THEORETICAL-EXPERIMENTAL TEXTS:
STUDENT HANDBOOK
TEACHER HANDBOOK

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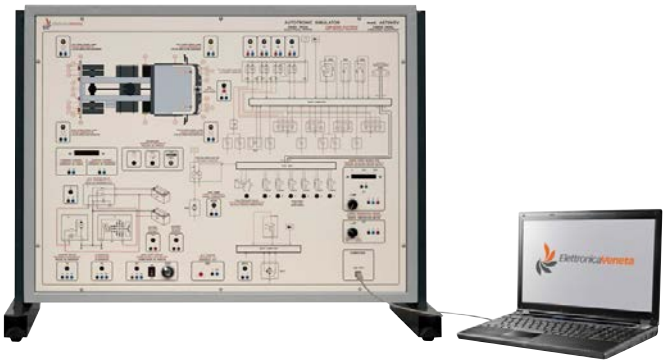
ELECTRIC WIRING FOR HEAVY VEHICLES SIMULATOR

Mod. AST09/EV



Simulator mod. AST09/EV is included in a complete set of educational equipment conceived for the basic training in the field of automotive systems.

This simulator consists of a computer-controlled panel, with silk-screen-printed schematic diagram for an easy location of its components.

Various zones of this schematic diagram are represented with different colours and shades to emphasize peculiar aspects of the system. Warning lights installed in the schematic diagram enable to check control trend.

The graphic display of the information on PC screen enables the permanent monitoring of the system.
The operational conditions are set by students according to the educational path indicated in the courseware.

The testing phase is completed with insertion of faults, carried out by the PC, for the study of car repairing techniques.

TRAINING PROGRAM

- Heavy vehicles, wiring harness and electric components (buses, trucks …)
- Starting motor
- Compression - ignition
- Fuel injection
- Cooling and ventilation
- Fuses and relays
- Battery
- Signalling systems
- Windscreen wiper
- Indicators
- Trailer
- Troubleshooting

TECHNICAL CHARACTERISTICS

The system is arranged on a wide silk-screen-printed panel including:

- test jacks with diameter of 2 mm
- pulse ignition key
- display of system state via warning lights (LEDs and/or bargraphs)
- dynamic display of parameters on PC screen, with software of high graphic performance
- Connections with Personal Computer via USB port

Power supply:	230 Vac 50 Hz single-phase - 50 VA (Other voltage and frequency on request)
Dimensions:	920 x 450 x 720 mm
Weight:	30 kg

REQUIRED

PERSONAL COMPUTER
- NOT INCLUDED -

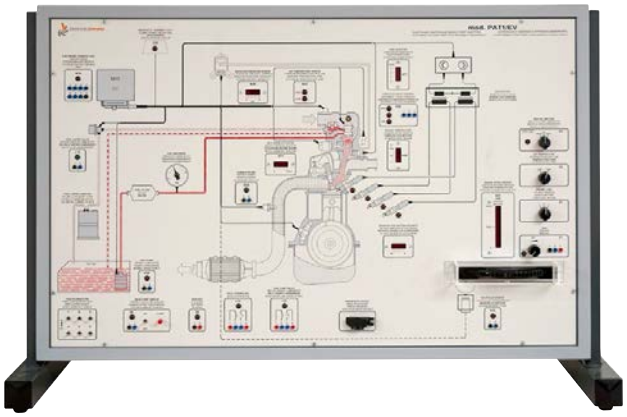
SUPPLIED WITH

SOFTWARE:
PROGRAM FOR CONTROLLING SIMULATOR AND GRAPHIC DISPLAY ON PC SCREEN
FAULT INSERTION FROM PC

THEORETICAL-EXPERIMENTAL TEXTS:
STUDENT HANDBOOK
TEACHER HANDBOOK

SINGLE-POINT ELECTRONIC INJECTION AND IGNITION DEMONSTRATION PANEL

Mod. PAT1/EV



This panel is included in a set of equipment for technical training of automotive electronic systems.
This equipment is assembled with several actual and simulated components to enable an in-depth study of control strategies and components of static electronic ignition and of single-point injection.

Fault insertion enables to study car repairing techniques.

All the components of devices and circuits are assembled on a wide vertical silk-screen-printed aluminium panel which includes:
- schematic diagram of the system for an easy identification of the components and of their connections
- test points (Ø of 2 mm) corresponding to all the connections of electrical components to enable an exhaustive system monitoring
- fault insertion via switches.

TRAINING PROGRAM

- Analyzing the control of injection time according to operational conditions:
  - engine r.p.m.
  - engine temperature
- Fuel vapour recirculation valve
- Electromagnetic sensor and phonic wheel
- Static ignition with coils and spark plugs
- Control of air-fuel mixture according to lambda ratio
- Troubleshooting

TECHNICAL CHARACTERISTICS

The equipment includes the following circuits and devices:
- Electronic control unit with diagnostic LED
- Warning light of fuel pump
- Warning light of injector
- Potentiometer for engine temperature control
- Phonic wheel with engine r.p.m. sensor
- Potentiometer for air temperature control
- Contact key
- Lambda sensor simulator
- Warning light of fuel vapour valve
- Warning lights of spark plugs
- Fault insertion

GENERAL CHARACTERISTICS

Desk-type equipment.

Power supply:	230 Vac 50 Hz single-phase - 1 kVA (Other voltage and frequency on request)
Dimensions:	1080 x 460 x 710 mm
Weight:	35 kg

OPTIONS

- ***Trolley-mounted Trainer mod. TCA/EV***
  Wheeled equipment with a working top.

- ***Fault insertion keyboard mod. FUN/EV***
  Microprocessor fault simulator, designed specifically to enable the Teacher to enter various types of anomalies in the system and to assess the troubleshooting processes carried out by students.
  The system can restart its right operation only after students have typed the code of the faulty component using the same simulator.

SUPPLIED WITH

THEORETICAL-EXPERIMENTAL TEXTS:
STUDENT HANDBOOK
TEACHER HANDBOOK

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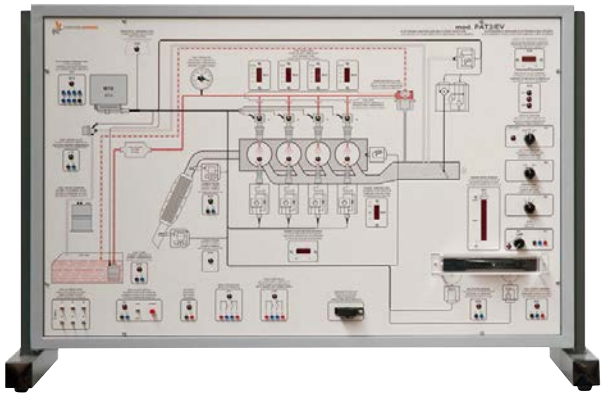
MULTI-POINT ELECTRONIC INJECTION AND IGNITION DEMONSTRATION PANEL

Mod. PAT2/EV



This panel is included in a set of equipment for technical training of automotive electronic systems.
This equipment is assembled with several actual and simulated components to enable an in-depth study of control strategies and components of static electronic ignition and of multi-point injection.

Fault insertion enables to study car repairing techniques.
All the components of devices and circuits are assembled on a wide vertical silk-screen-printed aluminium panel which includes:

- schematic diagram of the system for an easy identification of the components and of their connections
- test points (Ø of 2 mm) corresponding to all the connections of electrical components to enable an exhaustive system monitoring
- fault insertion via switches.

TRAINING PROGRAM

- Analyzing the control of injection time according to operational conditions:
  - engine r.p.m.
  - engine temperature
- Electromagnetic sensor and phonic wheel
- Fuel vapour recirculation valve
- Multi-point ignition
- Lambda adjustment
- Troubleshooting

TECHNICAL CHARACTERISTICS

The equipment includes the following circuits and devices:

- Electronic control unit with diagnostic LED
- Warning light of fuel pump
- Four warning lights of injectors
- Potentiometer for engine temperature control
- Potentiometer for throttle valve
- Phonic wheel with sensor of actual r.p.m.
- Potentiometer for air temperature control
- Ignition key
- Lambda sensor simulator
- Warning light of fuel vapour valve
- Warning lights of spark plugs
- Fault insertion

GENERAL CHARACTERISTICS

Desk-type panel.

Power supply:	230 Vac 50 Hz single-phase - 500 VA (Other voltage and frequency on request)
Dimensions:	1080 x 460 x 710 mm
Weight:	50 kg

OPTIONS

- ***Trolley-mounted Trainer mod. TCA/EV***

Wheeled equipment with a working top.

- ***Fault insertion keyboard mod. FUN/EV***

Microprocessor fault simulator, designed specifically to enable the Teacher to enter various types of anomalies in the system and to assess the troubleshooting processes carried out by students.
The system can restart its right operation only after students have typed the code of the faulty component using the same simulator.

SUPPLIED WITH

THEORETICAL-EXPERIMENTAL TEXTS:
STUDENT HANDBOOK
TEACHER HANDBOOK

ENGINE CONTROL SIMULATOR

Mod. AST04/EV

Simulator mod. AST04/EV concerning the electronic control of injection and ignition is included in a complete set of educational equipment for the basic training in the field of automotive systems.
This simulator consists of a computer-controlled panel, with silk-screen-printed schematic diagram for an easy location of its components.
Various zones of this schematic diagram are represented with different colours and shades to emphasize peculiar aspects of the system. Warning lights installed in the schematic diagram enable to check the system state.

The graphic display of information on PC screen enables the permanent monitoring of the system.
The operational conditions are set by students according to the educational path indicated in the courseware.

The testing phase is completed with insertion of faults, carried out by the PC, for the study of ar repairing techniques.

TRAINING PROGRAM

- analysis of spark lead control according to system parameters
- analysis of injection time control according to system parameters
- cold start
- idle speed control
- limitation of peak r.p.m.
- phases of fuel cut-off
- checks and standards for reducing pollution
- fuel vapour recirculation system
- control of mixture by lambda sensor
- catalytic converter

TECHNICAL CHARACTERISTICS

The system is arranged on a wide silk-screen-printed panel including:
- test jacks with diameter of 2 mm
- pulse ignition key
- selection of operational conditions via potentiometers and buttons, for:
  - engine speed
  - position of throttle valve
  - air temperature
  - engine temperature
  - lambda sensor for measuring oxygen in exhaust gases
  - enabling the air conditioner
  - knocking
  - fuel vapour recirculation valve
- display of system state via warning lights (LEDs and/or bargraphs)
- dynamic display of parameters on PC screen, with software of high graphic performance
- Connections with Personal Computer via USB port

Power supply:	230 Vac 50 Hz single-phase - 50 VA (Other voltage and frequency on request)
Dimensions:	920 x 450 x 720 mm
Weight:	30 kg

REQUIRED

PERSONAL COMPUTER
- NOT INCLUDED -

SUPPLIED WITH

SOFTWARE:
PROGRAM FOR CONTROLLING SIMULATOR AND GRAPHIC DISPLAY ON PC SCREEN
FAULT INSERTION FROM PC

THEORETICAL-EXPERIMENTAL TEXTS:
STUDENT HANDBOOK
TEACHER HANDBOOK

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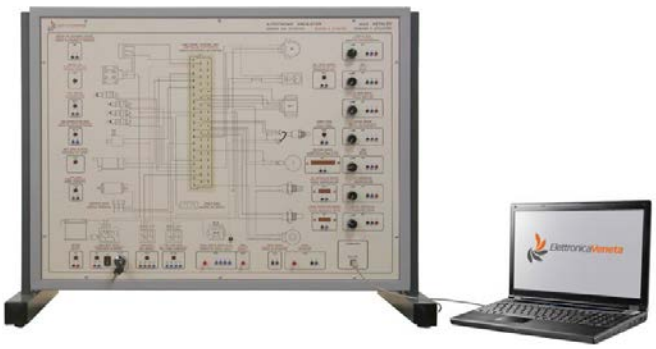
SENSORS AND ACTUATORS SIMULATOR

Mod. AST05/EV



Simulator mod. AST05/EV is included in a complete set of educational equipment for the basic training in the field of automotive systems.
This simulator consists of a computer-controlled panel, with silk-screen-printed schematic diagram for an easy location of its components.
Various zones of this schematic diagram are represented with different colours and shades to emphasize peculiar aspects of the system. Warning lights installed in the schematic diagram enable to check control trend.

The graphic display of information on PC screen enables the permanent monitoring of the system.
The operational conditions are set by students according to the educational path indicated in the courseware.

The testing phase is completed with insertion of faults, carried out by the PC, for the study of car repairing techniques.

TRAINING PROGRAM

- Electromagnetic speed sensor
- Hall-effect sensor
- Engine temperature sensor
- Air temperature sensor
- Pressure sensor
- Air flow sensor
- Air mass sensor
- Knock sensor
- Oxygen sensor
- Electronic accelerator
- Throttle valve position sensor
- Fuel injector
- Fuel pump
- Idle speed actuator
- Electronic control of fuel injection
- Fuel level
- Geared motor

TECHNICAL CHARACTERISTICS

The system is arranged on a wide silk-screen-printed panel including:
- test jacks with diameter of 2 mm
- pulse ignition key
- selection of operational conditions via potentiometers and buttons, for:
  - engine speed
  - position of throttle valve
  - air temperature
  - engine temperature
  - lambda sensor for measuring oxygen in exhaust gases
  - knocking
  - accelerator
- display of system state via warning lights (LEDs and/or bargraphs)
- dynamic display of parameters on PC screen, with software of high graphic performance
- Connections with Personal Computer via USB port

Power supply:	230 Vac 50 Hz single-phase - 50 VA (Other voltage and frequency on request)
Dimensions:	920 x 450 x 720 mm
Weight:	30 kg

REQUIRED

PERSONAL COMPUTER
- NOT INCLUDED -

SUPPLIED WITH

SOFTWARE:
PROGRAM FOR CONTROLLING SIMULATOR AND GRAPHIC DISPLAY ON PC SCREEN
FAULT INSERTION FROM PC

THEORETICAL-EXPERIMENTAL TEXTS:
STUDENT HANDBOOK
TEACHER HANDBOOK

CONTROL OF POLLUTING EMISSIONS SIMULATOR

Mod. AST06/EV

Simulator mod. AST06/EV is included in a complete set of educational equipment for the basic training in the field of automotive systems.
This simulator consists of a computer-controlled panel, with silk-screen-printed schematic diagram for an easy location of its components.
Various zones of this schematic diagram are represented with different colours and shades to emphasize peculiar aspects of the system. Warning lights installed in the schematic diagram enable to check control trend.

The graphic display of information on PC screen enables the permanent monitoring of the system.
The operational conditions are set by students according to the educational path indicated in the courseware.

The testing phase is completed with insertion of faults, carried out by the PC, for the study of car repairing techniques.

TRAINING PROGRAM

- International standards
- Polluting emissions of exhaust gases
- Fuel non-evaporation system
- Exhaust Gas Recirculation (EGR) system
- Characteristics of air/fuel mixture
- Stoichiometric ratio, λ coefficient
- Influence of spark lead on polluting emissions
- Electronic injection/ignition of air-fuel mixture
- Control of idle and peak speeds (fuel cut-off)
- Mixture control by lambda sensor
- Three-way catalytic converter
- OBD (On Board Diagnostic) control with two lambda sensors and Malfunction Indicator (MI)

TECHNICAL CHARACTERISTICS

The system is arranged on a wide silk-screen-printed panel including:

- test jacks with diameter of 2 mm
- pulse ignition key
- selection of operational conditions via potentiometers and buttons, for:
  - engine speed
  - engine temperature
  - lambda sensor No. 1 before the catalytic converter
  - lambda sensor No. 2 after the catalytic converter
  - temperature of three-way catalytic converter (light-off)
- display of system state via warning lights (LEDs and/or bargraphs)
- dynamic display of parameters on PC screen, with software of high graphic performance
- displaying the level of emissions CO, HC, NOx, on PC screen
- Connections with Personal Computer via USB port

Power supply:	230 Vac 50 Hz single-phase - 50 VA (Other voltage and frequency on request)
Dimensions:	920 x 450 x 720 mm
Weight:	30 kg

REQUIRED

PERSONAL COMPUTER
- NOT INCLUDED -

SUPPLIED WITH

SOFTWARE:
PROGRAM FOR CONTROLLING SIMULATOR AND GRAPHIC DISPLAY ON PC SCREEN
FAULT INSERTION FROM PC

THEORETICAL-EXPERIMENTAL TEXTS:
STUDENT HANDBOOK
TEACHER HANDBOOK

ELETTRONICA VENETA S.P.A. - 31045 Motta di Livenza (TV) Italy - Via Postumia 16 - Tel. +39 0422 765 802 - Fax +39 0422 861 901 - E-mail: export@elettronicaveneta.com

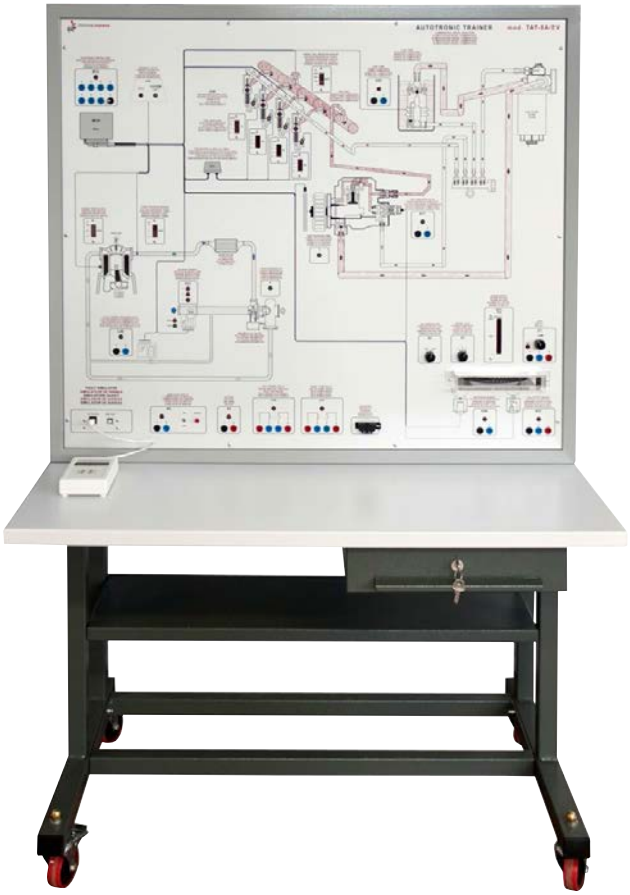
COMMON RAIL DIESEL INJECTION TRAINER

Mod. TAT-8A/EV

This trainer offers a testing package on one of the most advanced Diesel injection systems for vehicles, with high pressure pump and electric injectors. This system is used to control four-cylinder engines and it includes an Electronic Unit enabling an exhaustive system diagnosis.

All the components of circuits and equipment are mounted on a large vertical panel of silk-screen-printed aluminum including:

- Diagram of the system for an easy location of its components and of their connections
- Test points (Ø 4 mm) on all the connections of electric components, for a thorough system monitoring
- Microprocessor fault simulator, designed specifically to enable the Teacher to insert various types of faults in the system and to assess the troubleshooting processes carried out by students. The system can restart its right operation only after students have typed the code of the faulty component using the same simulator.



TRAINING PROGRAM

The trainer mod. TAT8A/EV allows the development of an experimental training program on the following topics:

- Diesel Common Rail injection fundamentals
- Fuel tank circuit
- Low pressure electric pump
- High pressure electric pump
- Injection rail
- Air-mass sensor
- Engine speed and phase sensor
- Temperature sensor
- Turbocharger sensor
- Electronic accelerator
- Troubleshooting

TECHNICAL CHARACTERISTICS

The equipment includes the following circuits and devices:

- Electronic Control Unit with test points
- Low pressure pump light
- High pressure pump with regulation valve light
- 4 injectors lights
- Engine temperature display
- Air temperature selector
- Engine load configuration
- Engine flywheel with rpm sensor
- Phase sensor
- Contact key
- Engine start pushbutton
- EGR valve light
- Preheating glow plug lights
- Turbocharger circuit diagram
- OBD diagnosis plug
- Microprocessor fault simulator with keyboard and LCD display
- USB plug for PC connection

GENERAL CHARACTERISTICS

This Trainer is mounted on wheels and it includes working top and key-locked drawer.

Power supply: 230 Vca 50/60 Hz - 80 VA
(Other voltage and frequency on request)
12 Vdc with internal protected power supply

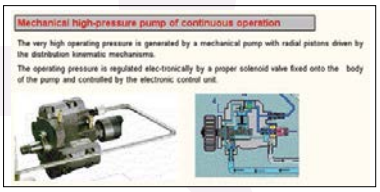
Dimensions: 1200 x 700 x 1800 mm

Weight: 80 kg

OPTIONS

- ***Software mod. SW-TAT8A/EV***

This software enables to develop the course in a computerized environment for both its theoretical and practical sections with fault insertion Personal Computer.

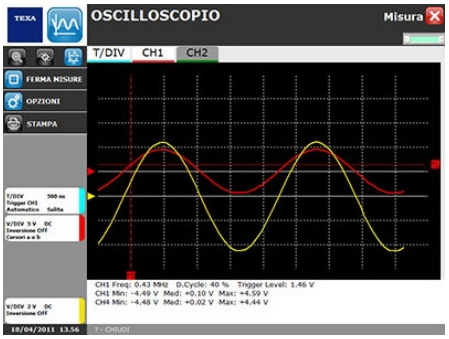


- ***Diagnostic tester: mod. MEM-2/EV (TEXA AXONE + Navigator NANO S)***

This strong and ergonomic, portable instrument enables to carry out monitoring and diagnosis of control unit parameters via wireless connection (Bluetooth) between instrument and the interface on the OBD connector. Its wide display enables:

- to read and display the parameters of control unit
- to read, erase and display mistakes
- to read and display control states
- to control the active diagnosis

- ***Electric measurements: TEXA TwinProbe***



This interface unit with Bluetooth connection will be used together with diagnostic tester to display and control the electric measurements with the functions of multimeter and 2-channel oscilloscope.

SUPPLIED WITH

THEORETICAL-EXPERIMENTAL TEXTS:
STUDENT HANDBOOK
TEACHER HANDBOOK
OPERATIONAL HANDBOOK

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COMMON RAIL DIESEL INJECTION SIMULATOR

Mod. AST12/EV

Simulator mod. AST12/EV is included in a complete set of educational equipment for the basic training in the field of automotive systems.

This simulator consists of a computer-controlled panel, with silk-screen-printed schematic diagram for an easy location of its components.
Various zones of this schematic diagram are represented with different colours and shades to emphasize peculiar aspects of the system. Warning lights installed in the schematic diagram enable to check control trend.

The graphic display of information on PC screen enables the permanent monitoring of the system.
The operational conditions are set by students according to the educational path indicated in the courseware.

The testing phase is completed with insertion of faults, carried out by the PC, for the study of car repairing techniques.

TECHNICAL CHARACTERISTICS

The system is arranged on a wide silk-screen-printed panel including:

- test jacks with diameter of 2 mm
- load adjustment by three-position selector
- pulse ignition key
- selection of operational conditions via potentiometers and buttons
- display of system state via warning lights (LEDs and/or bargraphs)
- dynamic display of parameters on PC screen, with software of high graphic performance
- Connections with Personal Computer via USB port

TRAINING PROGRAM

- Operating principle of Common Rail
- Fuel circuit
- Motor-driven pump
- High-pressure pump
- Electronic injectors
- Air mass sensor
- Engine r.p.m. sensor
- Engine temperature sensor
- Turbo boosting
- Electronic accelerator
- Multistage centrifugal blower of variable geometry
- Troubleshooting

Power supply: 230 Vac 50 Hz single-phase - 50 VA
(Other voltage and frequency on request)
Dimensions: 920 x 450 x 720 mm
Weight: 30 kg

REQUIRED

PERSONAL COMPUTER
- NOT INCLUDED -

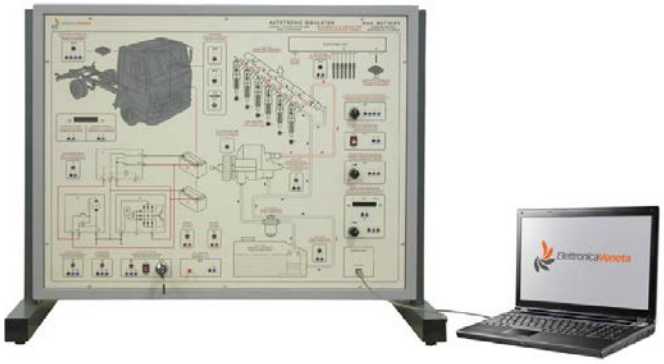
SUPPLIED WITH

SOFTWARE:
PROGRAM FOR CONTROLLING SIMULATOR AND GRAPHIC DISPLAY ON PC SCREEN
FAULT INSERTION FROM PC

THEORETICAL-EXPERIMENTAL TEXTS:
STUDENT HANDBOOK
TEACHER HANDBOOK

DIESEL TRUCK STARTING AND CHARGING SIMULATOR

Mod. AST10/EV



Simulator mod. AST10/EV is included in a complete set of educational equipment for the basic training in the field of automotive systems.

This simulator consists of a computer-controlled panel, with silk-screen-printed schematic diagram for an easy location of its components.
Various zones of this schematic diagram are represented with different colours and shades to emphasize peculiar aspects of the system. Warning lights installed in the schematic diagram enable to check control trend.

The graphic display of information on PC screen enables the permanent monitoring of the system.
The operational conditions are set by students according to the educational path indicated in the courseware.

The testing phase is completed with insertion of faults, carried out by the PC, for the study of repairing techniques.

TRAINING PROGRAM

- Battery
- Starting motor and solenoid valve
- Starting key
- Alternator
- Six-cylinder engine
- Low-pressure motor-driven pump
- Common-Rail high-pressure injection pump
- Battery voltage versus temperature
- Battery switching via relay
- Systems with double starting relay
- Troubleshooting

TECHNICAL CHARACTERISTICS

The system is arranged on a wide silk-screen-printed panel including:

- test jacks with diameter of 2 mm
- six blinking LEDs of Common Rail injectors
- double starting battery of 24 V
- pulse ignition key
- display of system state via warning lights (LEDs and/or bargraphs)
- dynamic display of parameters on PC screen, with software of high graphic performance
- Connections with Personal Computer via USB port

Power supply:	230 Vac 50 Hz single-phase - 50 VA (Other voltage and frequency on request)
Dimensions:	920 x 450 x 720 mm
Weight:	30 kg

REQUIRED

PERSONAL COMPUTER
- NOT INCLUDED -

SUPPLIED WITH

SOFTWARE:
PROGRAM FOR CONTROLLING SIMULATOR AND GRAPHIC DISPLAY ON PC SCREEN
FAULT INSERTION FROM PC

THEORETICAL-EXPERIMENTAL TEXTS:
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TEACHER HANDBOOK

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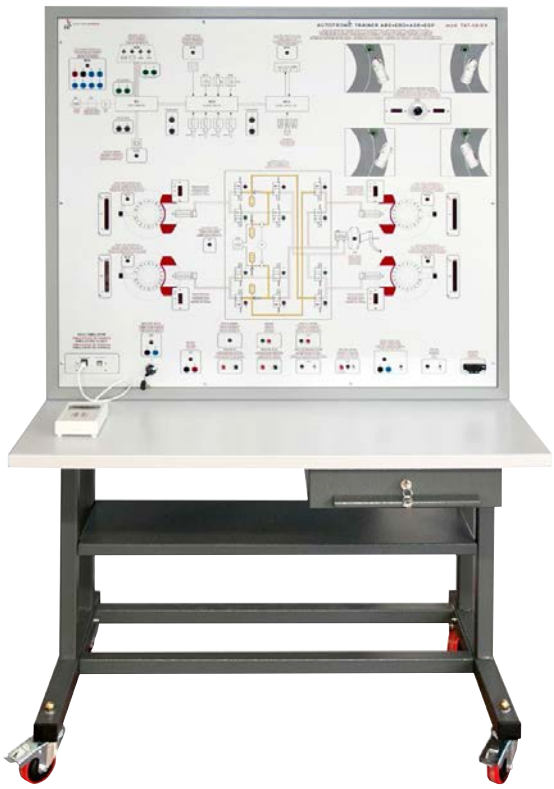
ELECTRONIC STABILITY CONTROL WITH MULTIPLEX NETWORK ABS-EBD-ASR-ESP TRAINER

Mod. TAT-5A/EV



This trainer offers a testing package on one of the most advanced automotive stability control system.
The electronic unit controls the dynamic vehicle state using up-to-date sensors in order to check, wheels speed, power steering angle and horizontal acceleration. The multiplex network allows fast and reliable data transmission.

This system controls the following functions:
- Anti-lock Braking System (ABS)
- Acceleration Slip Regulation (ASR)
- Electronic Brake force Distribution (EBD)
- Electronic Stability Programme (ESP).

All the components of circuits and equipment are mounted on a large vertical panel of silk-screen-printed aluminum including:

- Diagram of the system for an easy location of its components and of their connections
- Test points (Ø 4 mm) on all the connections of electric components, for a thorough system monitoring
- Microprocessor fault simulator, designed specifically to enable the Teacher to insert various types of faults in the system and to assess the troubleshooting processes carried out by students. The system can restart its right operation only after students have typed the code of the faulty component using the same simulator.

TRAINING PROGRAM

- System's components identification
- Sensors for detecting the wheel speed
- Analysis of the operations of the hydraulic unit electro-valves and brake oil recovery pump
- Analysis of the intervention of the ABS (antilock)
- Analysis of the intervention of the EBD (brake distribution)
- Analysis of the intervention of the ASR (traction control)
- Analysis of the intervention of the ESP over steering and under steering (stability program)
- CAN multiplex network (Control Area network)
- Analysis of the electrical levels and states of network failures high speed and low speed
- Self-diagnosis
- OBD diagnosis
- Troubleshooting

TECHNICAL CHARACTERISTICS

The equipment includes the following circuits and devices:

- Braking Electronic Control Unit with test points
- Engine control electronic unit
- Hydraulic Unit with 12 electro-valves lights
- Brake recovery oil pump warning light
- 4 light bars to see wheel speed
- 4 light bars to see braking pressure
- Motorized throttle valve warning light
- Speed control pushbutton
- Braking pressure pushbutton
- Power steering configuration with potentiometer
- 4 diagnosis warning lights
- OBD diagnosis plug
- Microprocessor fault simulator with keyboard and LCD display
- USB plug for PC connection

GENERAL CHARACTERISTICS

This Trainer is mounted on wheels and it includes working top and key-locked drawer

Power supply: 230 Vca 50/60 Hz - 80 VA
(Other voltage and frequency on request)
12 Vdc with internal protected power supply

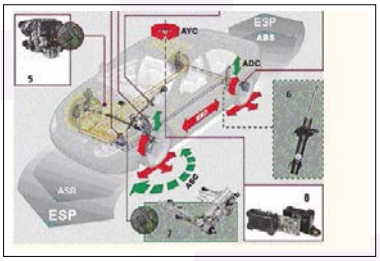
Dimensions: 1200 x 700 x 1800 mm

Weight: 80 kg

OPTIONS

- ***Software mod. SW-TAT5A/EV***

This software enables to develop the course in a computerized environment for both its theoretical and practical sections with fault insertion Personal Computer.

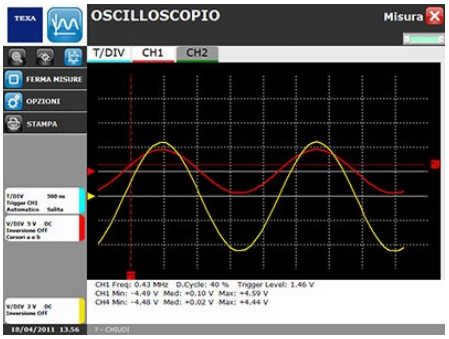


- ***Diagnostic tester: mod. MEM-2/EV (TEXA AXONE + Navigator NANO S)***

This strong and ergonomic, portable instrument enables to carry out monitoring and diagnosis of control unit parameters via wireless connection (Bluetooth) between instrument and the interface on the OBD connector. Its wide display enables:

- to read and display the parameters of control unit
- to read, erase and display mistakes
- to read and display control states
- to control the active diagnosis

- ***Electric measurements: TEXA TwinProbe***



This interface unit with Bluetooth connection will be used together with diagnostic tester to display and control the electric measurements with the functions of multimeter and 2-channel oscilloscope.

SUPPLIED WITH

THEORETICAL-EXPERIMENTAL TEXTS:
STUDENT HANDBOOK
TEACHER HANDBOOK
OPERATIONAL HANDBOOK

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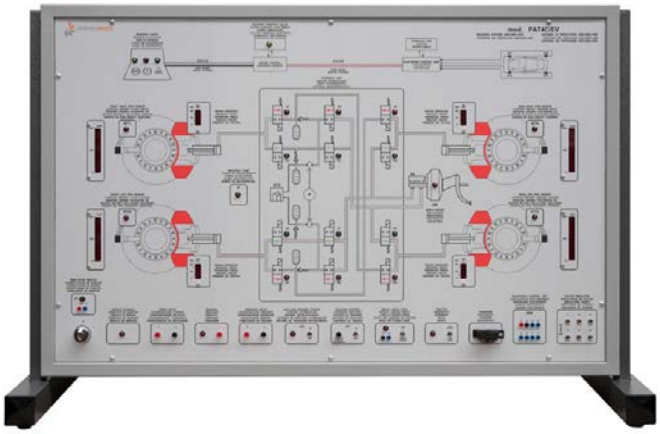
BRAKING SYSTEM ABS-EBD-ASR DEMONSTRATION PANEL

Mod. PAT4C/EV



The trainer mod. PAT4C/EV is included in a complete set of educational equipment for the technical training in the field of automotive systems.
This trainer is made with a fully functional components use an electronic control unit in order to study components and control strategies in vehicle systems.
The fault insertion switches allows the study of maintenance.
The trainer mod. PAT4C/EV is devoted to braking systems ABS + EBD + ASR.

TRAINING PROGRAM

The trainer mod.PAT4C/EV allows the development of an experimental training program on the following topics:

- Classic braking
- ABS Braking (anti-lock brake)
- Hydraulic unit
- EBD (Electronic Brake-force Distribution)
- Antiskid (ASR)
- Troubleshooting

TECHNICAL CHARACTERISTICS

The trainer includes the following components and circuits:

- Vertical silkscreen panel
- Electronic control unit with test points
- Hydraulic schematic shows the 12 solenoid valves and recovery pump
- Dynamic display of the modulation cycle with lights
- 4-wheels vehicle with the speed display
- 4 bar graphs to display the braking pressure
- 3 diagnostic lights (ABS, liquid level, ASR)
- Button to simulate sliding state
- OBD diagnosis socket
- Fault insertion switches

GENERAL CHARACTERISTICS

Desk-type panel.

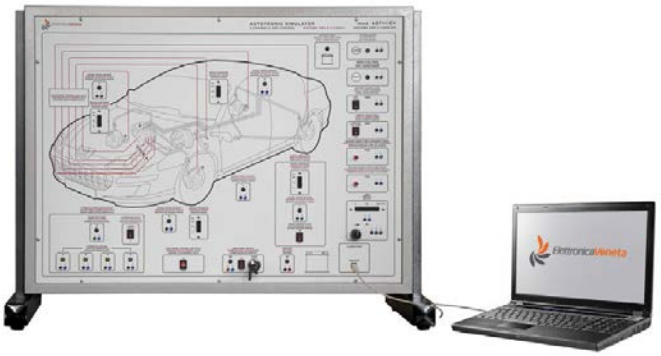
Power supply:	230 Vca 50/60 Hz - 50 VA (Other voltage and frequency on request) 12 Vcc with protected power unit
Dimensions:	1080 x 460 x 710 mm
Weight:	40 kg

SUPPLIED WITH

THEORETICAL-EXPERIMENTAL TEXTS:
STUDENT HANDBOOK
TEACHER HANDBOOK

FOUR-CHANNEL ABS SIMULATOR

Mod. AST11/EV



Simulator mod. AST11/EV is included in a complete set of educational equipment for the basic training in the field of automotive systems.

This simulator consists of a computer-controlled panel, with silk-screen-printed schematic diagram for an easy location of its components.
Various zones of this schematic diagram are represented with different colours and shades to emphasize peculiar aspects of the system. Warning lights installed in the schematic diagram enable to check control trend.

The graphic display of information on PC screen enables the permanent monitoring of the system.
The operational conditions are set by students according to the educational path indicated in the courseware.

The testing phase is completed with insertion of faults, carried out by the PC, for the study of repairing techniques.

TRAINING PROGRAM

- Operating principle of ABS
- Hydraulic block
- Electronic control unit
- Hydraulic solenoid valves
- Brake fluid recirculation pump
- Wheel speed sensors
- Operation with various modes of wheel control:
  - equal speed
  - different speeds
- Self-diagnosis - LED
- Troubleshooting (speed sensor disconnected, faulty valve, etc...)

TECHNICAL CHARACTERISTICS

The system is arranged on a wide silk-screen-printed panel including:

- test jacks with diameter of 2 mm
- pulse ignition key
- selection of operational conditions via potentiometers and buttons, for:
  - braking with equal speed of wheels
  - braking with different speeds of wheels
  - exclusion of a solenoid valve
  - insufficient battery level
  - insufficient level of brake fluid
- display of system state via warning lights (LEDs and/or bargraphs)
- dynamic display of parameters on PC screen, with software of high graphic performance
- Connections with Personal Computer via USB port

Power supply:	230 Vac 50 Hz single-phase - 50 VA (Other voltage and frequency on request)
Dimensions:	920 x 450 x 720 mm
Weight:	30 kg

REQUIRED

PERSONAL COMPUTER
- NOT INCLUDED -

SUPPLIED WITH

SOFTWARE:
PROGRAM FOR CONTROLLING SIMULATOR AND GRAPHIC DISPLAY ON PC SCREEN
FAULT INSERTION FROM PC

THEORETICAL-EXPERIMENTAL TEXTS:
STUDENT HANDBOOK
TEACHER HANDBOOK

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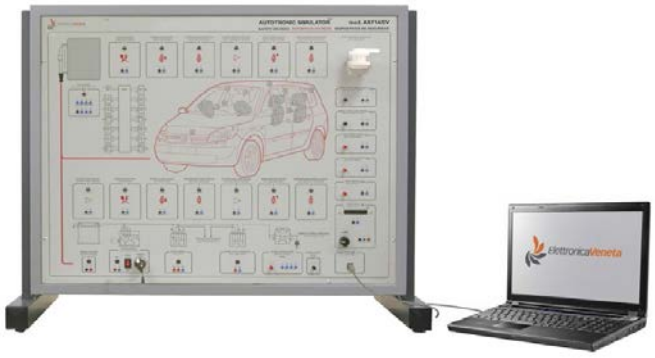
SAFETY SYSTEMS AND DEVICES SIMULATOR

Mod. AST14/EV



Simulator mod. AST14/EV is included in a complete set of educational equipment for the basic training in the field of automotive systems.

This simulator consists of a computer-controlled panel, with silk-screen-printed schematic diagram for an easy location of its components.
Various zones of this schematic diagram are represented with different colours and shades to emphasize peculiar aspects of the system. Warning lights installed in the schematic diagram enable to check control trend.

The graphic display of information on PC screen enables the permanent monitoring of the system.
The operational conditions are set by students according to the educational path indicated in the courseware.

The testing phase is completed with insertion of faults, carried out by the PC, for the study of repairing techniques.

TRAINING PROGRAM

- Air-bags of driver and passenger
- Side air-bags and windows
- Safety-belt pre-tension system
- Electronic control unit
- Inertial switch for stopping fuel pump
- Anti-tilting valve for fuel hydraulic block
- Troubleshooting

TECHNICAL CHARACTERISTICS

The system is arranged on a wide silk-screen-printed panel including:

- test jacks with diameter of 2 mm
- load control with three-position switch
- pulse ignition key
- selection of operational conditions via potentiometers and buttons
- display of system state via warning lights (LEDs and/or bargraphs)
- dynamic display of parameters on PC screen, with software of high graphic performance
- Connections with Personal Computer via USB port

Power supply:	230 Vac 50 Hz single-phase - 50 VA (Other voltage and frequency on request)
Dimensions:	920 x 450 x 720 mm
Weight:	30 kg

REQUIRED

PERSONAL COMPUTER
- NOT INCLUDED -

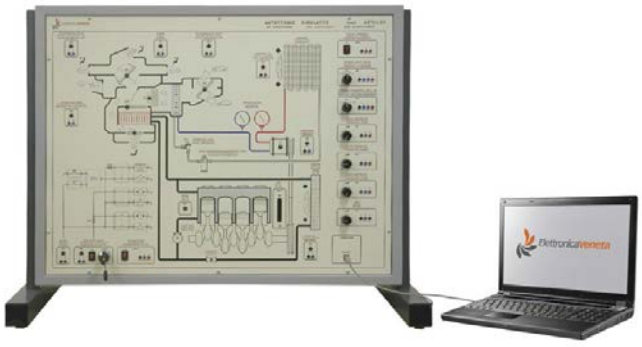
SUPPLIED WITH

SOFTWARE:
PROGRAM FOR CONTROLLING SIMULATOR AND GRAPHIC DISPLAY ON PC SCREEN
FAULT INSERTION FROM PC

THEORETICAL-EXPERIMENTAL TEXTS:
STUDENT HANDBOOK
TEACHER HANDBOOK

AIR CONDITIONING FOR VEHICLES SIMULATOR

Mod. AST01/EV



Air conditioning simulator mod. AST01/EV with electronic control is included in a complete set of educational equipment for the basic training in the field of automotive systems.
This simulator is used for the theoretical study and for tests on automotive air conditioning systems.

This simulator consists of a computer-controlled panel, with silk-screen-printed schematic diagram for an easy location of its components.
Various zones of this schematic diagram are represented with different colours and shades to emphasize peculiar aspects of the system. Warning lights installed in the schematic diagram enable to check control trend.
The graphic display of information on PC screen enables the permanent monitoring of the system.

The operational conditions are set by students according to the educational path indicated in the courseware.
The testing phase is completed with insertion of faults, carried out by the PC, for the study of car repairing techniques.

TRAINING PROGRAM

- pressure-temperature ratio of refrigerant R134a
- high-pressure and low-pressure circuits
- heating-cooling
- functions of compressor and of thermostatic expansion valve
- functions of condenser and of evaporator
- triple pressure switch
- actuator of air mixture flap
- actuator of air distribution door
- internal fan with speed variator
- electric fan of radiator/condenser

TECHNICAL CHARACTERISTICS

The system is arranged on a wide silk-screen-printed panel including:
- test jacks with diameter of 2 mm
- pulse ignition key
- selection of operational conditions via potentiometers and buttons, for:
  - setting temperature set-point
  - setting the external temperature
  - setting the interior temperature
  - push-buttons for interior air distribution
  - setting the three-level pressure switch
  - relay for enabling/disabling the compressor
  - electronic unit control
- display of system state with warning lights (LEDs and/or bargraph)
- dynamic display of parameters on PC screen, with software of high graphic performance
- connections with Personal Computer via USB port

Power supply:	230 Vac 50 Hz single-phase - 50 VA (Other voltage and frequency on request)
Dimensions:	920 x 450 x 720 mm
Weight:	30 kg

REQUIRED

PERSONAL COMPUTER
- NOT INCLUDED -

SUPPLIED WITH

SOFTWARE:
PROGRAM FOR CONTROLLING SIMULATOR AND GRAPHIC DISPLAY ON PC SCREEN
FAULT INSERTION FROM PC

THEORETICAL-EXPERIMENTAL TEXTS:
STUDENT HANDBOOK
TEACHER HANDBOOK

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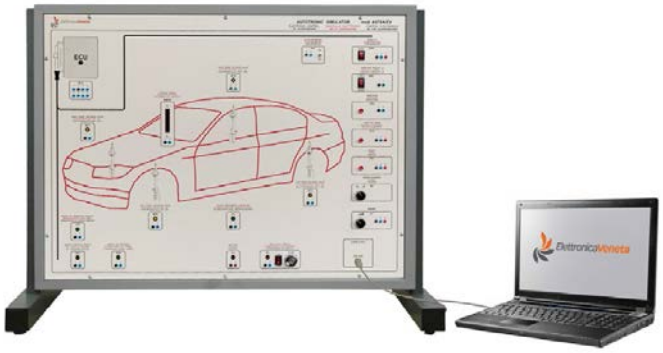
ELECTRONIC CONTROL OF SUSPENSIONS SIMULATOR

Mod. AST6A/EV



Simulator mod. AST6A/EV is included in a complete set of educational equipment for the basic training in the field of automotive systems.

This simulator consists of a computer-controlled panel, with silk-screen-printed schematic diagram for an easy location of its components.

Various zones of this schematic diagram are represented with different colours and shades to emphasize peculiar aspects of the system. Warning lights installed in the schematic diagram enable to check control trend.

The graphic display of information on PC screen enables the permanent monitoring of the system.
The operational conditions are set by students according to the educational path indicated in the courseware.

The testing phase is completed with insertion of faults, carried out by the PC, for the study of car repairing techniques.

TECHNICAL CHARACTERISTICS

The system is arranged on a wide silk-screen-printed panel including:

- test jacks with diameter of 2 mm
- pulse starting key
- display of soft state of suspensions via blinking LEDs
- selection of operational conditions via potentiometers and buttons
- display of system state with warning lights (LEDs and/or bargraph)
- dynamic display of parameters on PC screen, with software of high graphic performance
- connections with Personal Computer via USB port

Power supply:	230 Vac 50 Hz single-phase - 50 VA (Other voltage and frequency on request)
Dimensions:	920 x 450 x 720 mm
Weight:	30 kg

TRAINING PROGRAM

- Control logic of suspensions versus vertical acceleration
- Control logic of suspensions versus steering speed and angle
- Control logic of suspensions versus braking pressure
- Control logic of suspensions versus the geared speed
- Control logic of suspensions versus the opening of throttle valve
- AUTO-SPORT configuration

REQUIRED

PERSONAL COMPUTER
- NOT INCLUDED -

SUPPLIED WITH

SOFTWARE:
PROGRAM FOR CONTROLLING SIMULATOR AND GRAPHIC DISPLAY ON PC SCREEN
FAULT INSERTION FROM PC

THEORETICAL-EXPERIMENTAL TEXTS:
STUDENT HANDBOOK
TEACHER HANDBOOK

ELECTRONIC CONTROL OF AUTOMATIC TRANSMISSION SIMULATOR

Mod. AST9A/EV

The simulator of electronic control of automatic transmission mod. AST9A/EV is included in a complete set of educational equipment for the basic training in the field of automotive systems.

This simulator consists of a computer-controlled panel, with silk-screen-printed schematic diagram for an easy location of its components.
Various zones of this schematic diagram are represented with different colours and shades to emphasize peculiar aspects of the system. Warning lights installed in the schematic diagram enable to check the system state.

The graphic display of information on PC screen enables the permanent monitoring of the system.
The operational conditions are set by students according to the educational path indicated in the courseware.

The testing phase is completed with insertion of faults, carried out by the PC, for the study of car repairing techniques.

TECHNICAL CHARACTERISTICS

The system is arranged on a wide silk-screen-printed panel including:

- test jacks with diameter of 2 mm
- pulse starting key
- selection of operational conditions via potentiometers and buttons
- display of system state with warning lights (LEDs and/or bargraph)
- dynamic display of parameters on PC screen, with software of high graphic performance
- display of the state of control solenoid valves
- adjusting oil temperature with potentiometer
- connections with Personal Computer via USB port

Power supply:	230 Vac 50 Hz single-phase - 50 VA (Other voltage and frequency on request)
Dimensions:	920 x 450 x 720 mm
Weight:	30 kg

TRAINING PROGRAM

- Analyzing gear changing curves
- AUTO-SPORT configuration
- ICE configuration
- Influence of throttle valve opening
- Positions of P-R-N-OD-D-2-1 lever
- States of brakes and of frictions inside the gearbox
- Automatic control of engine torque
- Troubleshooting

REQUIRED

PERSONAL COMPUTER
- NOT INCLUDED -

SUPPLIED WITH

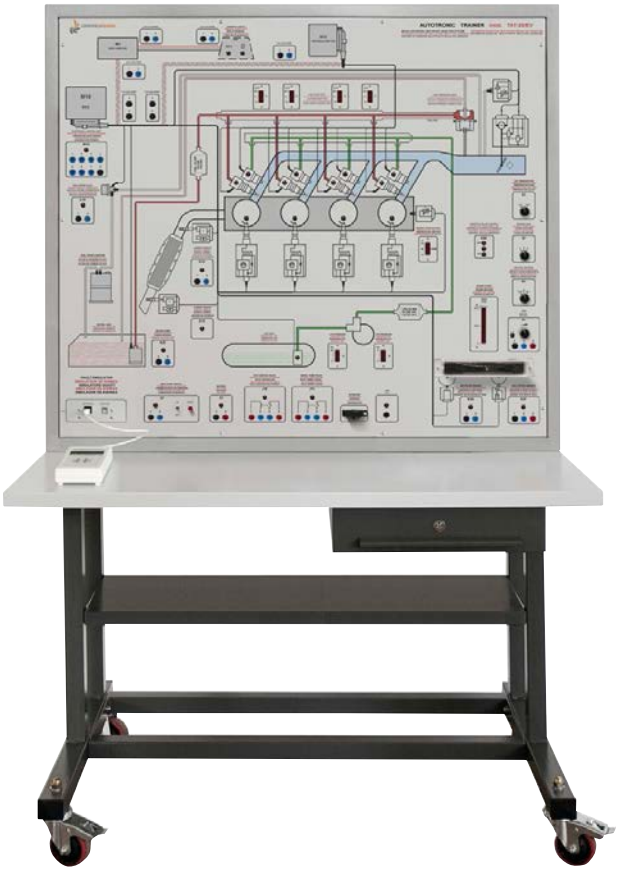
SOFTWARE:
PROGRAM FOR CONTROLLING SIMULATOR AND GRAPHIC DISPLAY ON PC SCREEN
FAULT INSERTION FROM PC

THEORETICAL-EXPERIMENTAL TEXTS:
STUDENT HANDBOOK
TEACHER HANDBOOK

ELETTRONICA VENETA S.P.A. - 31045 Motta di Livenza (TV) Italy - Via Postumia 16 - Tel. +39 0422 765 802 - Fax +39 0422 861 901 - E-mail: export@elettronicaveneta.com

BIFUEL MULTIPOINT INJECTION SYSTEM LPG - PETROL TRAINER

Mod. TAT-20/EV



This trainer offers a testing package on one of the most advanced automotive system for multipoint LPG (Liquefied Petroleum Gas) and petrol injection .
The electronic control units manage the dynamic vehicle state with sensors in order to perform ignition and petrol or LPG multipoint injection. The multiplex network allows fast and reliable data transmission.

This system controls the following functions:

- Static ignition
- Sequential petrol injection
- Sequential LPG injection
- CAN network data transmission

All the components of circuits and equipment are mounted on a large vertical panel of silk-screen-printed aluminum including:

- Diagram of the system for an easy location of its components and of their connections
- Test points (Ø 4 mm) on all the connections of electric components, for a thorough system monitoring
- Microprocessor fault simulator, designed specifically to enable the Teacher to insert various types of faults in the system and to assess the troubleshooting processes carried out by students. The system can restart its right operation only after students have typed the code of the faulty component using the same simulator.

TRAINING PROGRAM

LPG and petrol system components identification

- System sensors
- System actuators
- Petrol circuit
- LPG circuit
- Warning light
- CAN multiplex network (Control Area Network)
- Low speed CAN network
- High speed CAN network
- Self-diagnosis
- OBD diagnosis
- Troubleshooting

TECHNICAL CHARACTERISTICS

The equipment includes the following circuits and devices:

- Ignition Electronic Control Unit
- LPG and petrol Injection Electronic Control Unit
- Petrol tank (pictured in the front panel diagram)
- LPG tank (pictured in the front panel diagram)
- Engine speed bargraph display
- Motorized throttle valve
- Pressure reducer/vaporizator
- Rail with 4 petrol injectors
- Rail with 4 LPG injectors
- Diagnosis warning light
- OBD diagnosis plug (16 pins)
- Low and high speed CAN bus with test points
- Microprocessor fault simulator with keyboard and LCD display
- USB plug for PC connection

GENERAL CHARACTERISTICS

This Trainer is mounted on wheels and it includes working top and key-locked drawer.

Power supply: 230 Vca 50 Hz single-phase - 80 VA
(Other voltage and frequency on request)
12 Vdc with internal protected power supply
Dimensions: 110 x 600 x 1700 mm
Weight: 80 kg

OPTIONS

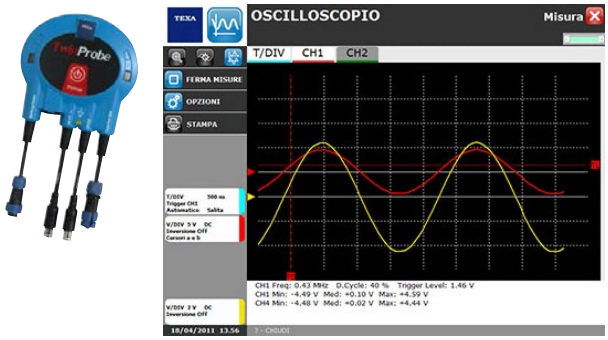
• ***Software mod. SW-TAT20/EV***

This software enables to develop the course in a computerized environment for both its theoretical and practical sections with fault insertion Personal Computer.

- ***Diagnostic tester: mod. MEM-2/EV (TEXA AXONE + Navigator NANO S)***

This strong and ergonomic, portable instrument enables to carry out monitoring and diagnosis of control unit parameters via wireless connection (Bluetooth) between instrument and the interface on the OBD connector. Its wide display enables:
- to read and display the parameters of control unit
- to read, erase and display mistakes
- to read and display control states
- to control the active diagnosis

- ***Electric measurements: TEXA TwinProbe***



This interface unit with Bluetooth connection will be used together with diagnostic tester to display and control the electric measurements with the functions of multimeter and 2-channel oscilloscope.

SUPPLIED WITH

THEORETICAL-EXPERIMENTAL TEXTS:
STUDENT HANDBOOK
TEACHER HANDBOOK
OPERATIONAL HANDBOOK

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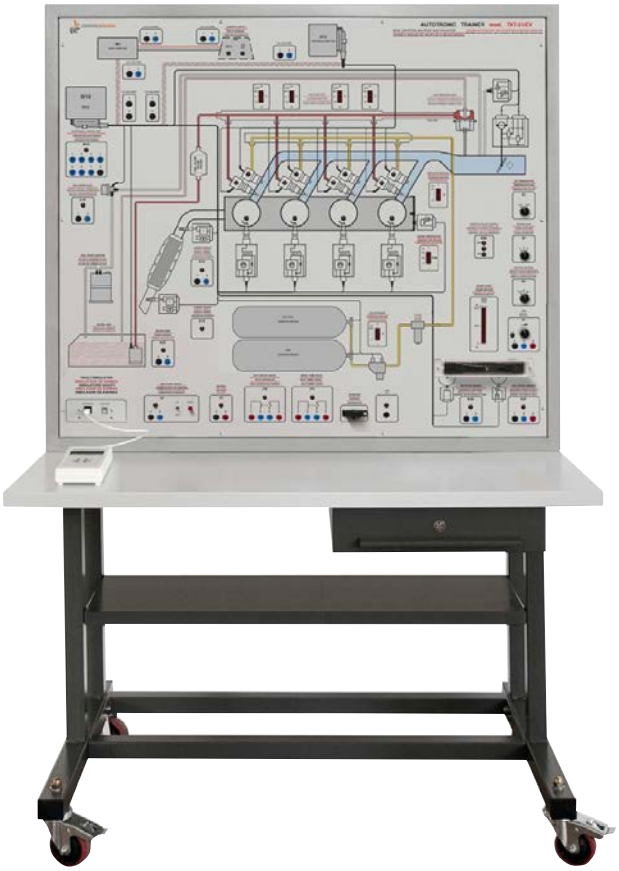
BIFUEL MULTIPOINT INJECTION SYSTEM CNG - PETROL TRAINER

Mod. TAT-21/EV



This trainer offers a testing package on one of the most advanced automotive system for multipoint CNG (Compressed Natural Gas) and petrol injection. The electronic control units manage the dynamic vehicle state with sensors in order to perform ignition and petrol or CNG multipoint injection. The multiplex network allows fast and reliable data transmission.

This system controls the following functions:

- Static ignition
- Sequential petrol injection
- Sequential Compressed Natural Gas injection
- CAN network data transmission

All the components of circuits and equipment are mounted on a large vertical panel of silk-screen-printed aluminum including:

- Diagram of the system for an easy location of its components and of their connections
- Test points (Ø 4 mm) on all the connections of electric components, for a thorough system monitoring
- Microprocessor fault simulator, designed specifically to enable the Teacher to insert various types of faults
- in the system and to assess the troubleshooting processes carried out by students. The system can restart its right operation only after students have typed the code of the faulty component using the same simulator.

TRAINING PROGRAM

- Compressed Natural Gas and petrol system components identification
- System sensors
- System actuators
- Petrol circuit
- CNG circuit
- Warning light
- CAN multiplex network (Control Area Network)
- Low speed CAN network
- High speed CAN network
- Self-diagnosis
- OBD diagnosis
- Troubleshooting

TECHNICAL CHARACTERISTICS

The equipment includes the following circuits and devices:

- Ignition Electronic Control Unit
- CNG and petrol injection Electronic Control Unit
- Petrol tank (pictured in the front panel diagram)
- CNG tank (pictured in the front panel diagram)
- Engine speed bargraph display
- Motorized throttle valve
- Pressure reducer/vaporizator
- Rail with 4 petrol injectors
- Rail with 4 NCG injectors
- Low and high speed CAN bus with test points
- OBD diagnosis plug (16 pins)
- Microprocessor fault simulator with keyboard and LCD display
- USB plug for PC connection

GENERAL CHARACTERISTICS

This Trainer is mounted on wheels and it includes working top and key-locked drawer.

Power supply: 230 Vca 50 Hz single-phase - 80 VA
(Other voltage and frequency on request)
12 Vdc with internal protected power supply
Dimensions: 110 x 600 x 1700 mm
Weight: 80 kg

OPTIONS

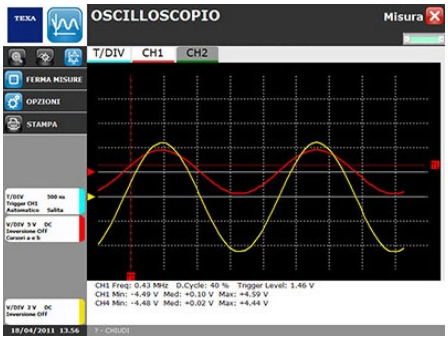
• ***Software mod. SW-TAT21/EV***

This software enables to develop the course in a computerized environment for both its theoretical and practical sections with fault insertion Personal Computer.

- ***Diagnostic tester: mod. MEM-2/EV (TEXA AXONE + Navigator NANO S)***

This strong and ergonomic, portable instrument enables to carry out monitoring and diagnosis of control unit parameters via wireless connection (Bluetooth) between instrument and the interface on the OBD connector. Its wide display enables:
- to read and display the parameters of control unit
- to read, erase and display mistakes
- to read and display control states
- to control the active diagnosis

- ***Electric measurements: TEXA TwinProbe***



This interface unit with Bluetooth connection will be used together with diagnostic tester to display and control the electric measurements with the functions of multimeter and 2-channel oscilloscope.

SUPPLIED WITH

THEORETICAL-EXPERIMENTAL TEXTS:
STUDENT HANDBOOK
TEACHER HANDBOOK
OPERATIONAL HANDBOOK

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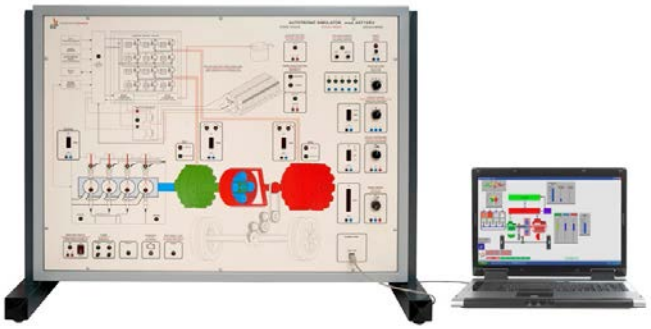
HYBRID ELECTRIC VEHICLE SIMULATOR

Mod. AST15/EV



The simulator mod. AST15/EV, on HEV (Hybrid Electric Vehicle) fuel type is included in a complete set of educational equipment addressed to the basic study of systems for cars.

The simulator consists of a computer-assisted panel, with silk-screen mimic diagram for a clear location of its components. Various zones of the mimic diagram are represented with different colours to emphasize peculiar aspects of the system. Light indicators, installed in the mimic diagram enable to assess the evolutions of the control.

The graphic display of the information available at the control input, such as speed, temperatures..., on the computer screen enables the permanent monitoring of the system.
The operational conditions are set by students according to the educational path indicated in the courseware.

The testing phase is completed with insertion of faults, carried out by the PC, for the study of maintenance.

TRAINING PROGRAM

- Hybrid Electric Vehicle (HEV) architecture
- Electric permanent magnet synchronous motor (PMSM)
- Battery
- Electric motor ECU
- Engine fuel ECU
- Data network
- Operation modes
  - engine starting
  - low and high speed cruising
  - light and full acceleration
  - deceleration and braking
  - reverse
- Regenerative braking
- Battery charging

TECHNICAL CHARACTERISTICS

The system is arranged on a wide silk-screen, panel provided with:

- Color silk screen panel
- Test jacks of 2 mm
- Pushbutton ignition key
- Selection of the operational conditions with potentiometers and buttons
- Display of state of the system with both single and bargraph Leds
- Automatic speed lever PRNDB
- Battery test points
- Impact simulation pushbutton
- Dynamic display of the parameters, on the computer screen, with software of high graphic performance
- USB connexion with the computer

Power supply:	230 Vca 50 Hz single-phase - 50 VA (Other voltage and frequency on request)
Dimensions:	920 x 450 x 720 mm
Weight:	30 kg

REQUIRED

PERSONAL COMPUTER
- NOT INCLUDED -

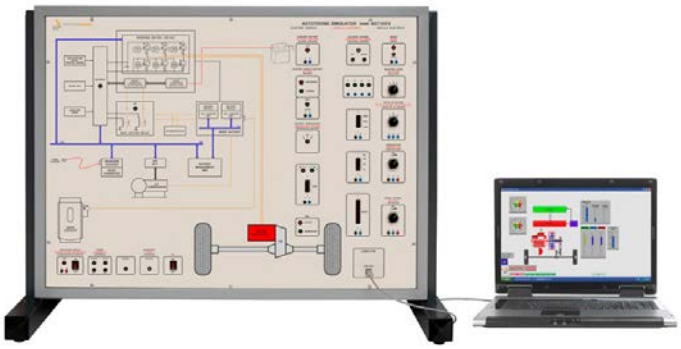
SUPPLIED WITH

SOFTWARE:
SIMULATOR CONTROL MANAGEMENT WITH GRAPHICAL DISPLAY ON THE PC SCREEN
FAULT INSERTION FROM PC
APPLICATION SOFTWARE DEVELOPED IN NI LABVIEW™

THEORETICAL-EXPERIMENTAL TEXTS:
STUDENT HANDBOOK
TEACHER HANDBOOK

ELECTRIC VEHICLE SIMULATOR

Mod. AST16/EV



The simulator mod. AST16/EV, on EV (Electric Vehicle) is included in a complete set of educational equipment addressed to the basic study of systems for cars.

The simulator consists of a computer-assisted panel, with silk-screen mimic diagram for a clear location of its components. Various zones of the mimic diagram are represented with different colours to emphasize peculiar aspects of the system. Light indicators, installed in the mimic diagram enable to assess the evolutions of the control.

The graphic display of the information available at the control input, such as speed, temperatures..., on the computer screen enables the permanent monitoring of the system.
The operational conditions are set by students according to the educational path indicated in the courseware.

The testing phase is completed with insertion of faults, carried out by the PC, for the study of maintenance.

TRAINING PROGRAM

- Electric Vehicle (EV) architecture
- Permanent magnet synchronous motor (PMSM)
- Battery
- Synchronous motor permanent magnet (SMPM)
- Motor ECU
- Data network
- Operation modes
  - engine starting
  - low and high speed cruising
  - acceleration
  - deceleration and braking
  - reverse
- Regenerative braking
- Slow battery charging
- Quick battery charging

TECHNICAL CHARACTERISTICS

The system is arranged on a wide silk-screen, panel provided with:

- Color silk screen panel
- Test jacks of 2 mm
- Pushbutton ignition key
- Selection of the operational conditions with potentiometers and buttons
- Display of state of the system with both single and bargraph Leds
- Battery test points
- Dynamic display of the parameters, on the computer screen, with software of high graphic performance
- USB connexion with the computer

Power supply: 230 Vca 50 Hz single-phase - 50 VA
(Other voltage and frequency on request)
Dimensions: 920 x 450 x 720 mm
Weight: 30 kg

REQUIRED

PERSONAL COMPUTER
- NOT INCLUDED -

SUPPLIED WITH

SOFTWARE:
SIMULATOR CONTROL MANAGEMENT WITH GRAPHICAL DISPLAY ON THE PC SCREEN
FAULT INSERTION FROM PC
APPLICATION SOFTWARE DEVELOPED IN NI LABVIEW™

THEORETICAL-EXPERIMENTAL TEXTS:
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RENA

TRAINING IN REPAIRING TECHNIQUES FOR CAR MECHANICS

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DIAGNOSTIC TESTER
(TEXA AXONE + Navigator NANO S)
Mod. MEM-2/EV

This strong and ergonomic, portable instrument enables to carry out monitoring and diagnosis of control unit parameters via wireless connection (Bluetooth) between instrument and the interface on the OBD connector.

This instrument performs multi-brand diagnostic tests selected from an extensive database.

Its wide display enables:
- to read and display the parameters of control unit
- to read, erase and display mistakes
- to read and display control states
- to control the active diagnosis

TECHNICAL CHARACTERISTICS

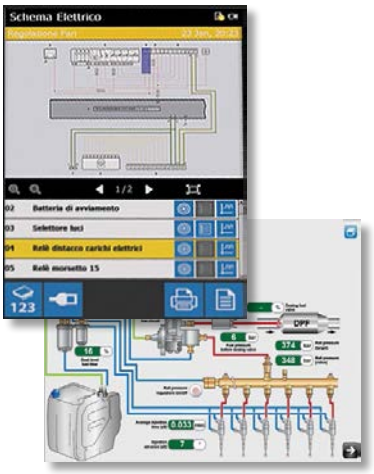
Instrument

- Quad Core ARM Cortex-A9 processor with 2D/3D graphics accelerator
- 2GB RAM memory
- 64GB solid state drive
- Android Marshmallow 6.0.1 operating system
- Button with ON/OFF and RESET functions
- 9.7 inch display, resolution 2048x1536 pixels
- Red LED as charging indication and red/green/blue LED for notifications
- Speaker
- 3-axis gyroscope and accelerometer
- 3-axis magnetometer
- Dual band Wi-Fi module
- Bluetooth module
- Camera with flash and 5-megapixel autofocus
- Battery lasting 8 hours of typical use
- External connector for power supply, battery charging
- USB connector

OBD interface

OBD interface

- Connection:
  - Wired: Virtual RS232 via USB 2.0 device
  - Wireless: Bluetooth Class 1
- Electronic switching 2 way, 13 independent positions
- Diagnostics connector: OBD
- Dimensions: 51 x 23 x 100 mm; weight: 72 g

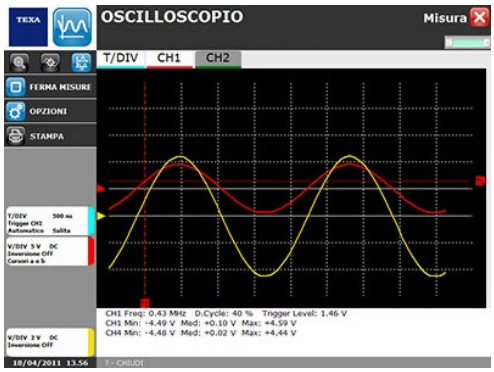


ELECTRIC MEASUREMENTS
Mod. TEXA TwinProbe

TwinProbe is the TEXA tool for acquiring the analogue and digital measurements needed for all conventional diagnostic testing.

Instruments available:

- **Oscilloscope**
  TwinProbe is an oscilloscope with two independent analogue channels for inputs up to ± 200V, complete with SIV (Signal information Viewing) function for interpreting the measured signal.
  The SIV function guides you through the entire test procedure. TwinProbe not only displays the signal but, while taking measurements and acquiring data, simultaneously processes and analyses information in order to provide real time evaluations. TwinProbe can process signals from various sensors and actuators and compare the data acquired against values stored in the internal database, immediately highlighting any signal anomalies.



- **Signal generator:**
  The practical TwinProbe signal generator is ideal for simulating input signals from sensors and the signals transmitted by ECUs to control actuators like solenoid valves, in order to detect and analyse faults in the system.
- **Ammeter:**
  TwinProbe can also be used to measure current intensity. An optional BICOR clamp-on ammeter is needed to allow TwinProbe to run these tests.

Respect to AXONE + Navigator NANO S, TwinProbe communicates with all TEXA viewing units or with a Windows PC with USB connection or through Bluetooth Technology, allowing absolute freedom of movement around the vehicle. The tool can be managed by the IDC5 specific for TwinProbe.

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ANALYSIS OF EXHAUST GASES OF PETROL VEHICLES

Mod. GASBOX/EV

GASBOX is an analyzer of exhaust gases for petrol engines, designed with standards of handiness and flexibility.
This analyzer is equipped with a battery of high capacity being able to supply electricity for more than 8 working hours. This innovation enables to operate in full autonomy without cumbersome leads.
Moreover, Bluetooth Wireless connectivity enables that GASBOX and r.p.m. detecting interfaces RC3 and RC4 communicate with the display unit (commercial PC or diagnostic workstation mod CS-DT/EV) without any cable.

SOFTWARE

Operating software CD NERO is supported by a complete car data base. Selecting brand, model and engine from starting menu will enable the guided procedures that lead to the correct execution of test, step by step.

TECHNICAL CHARACTERISTICS

- Test: CO, CO_2, HC, O_2
- Temperature: +5 °C to +40 °C
- Continuous and automatic drain of condensate
- Electronic – automatic zero setting
- Automatic calibration with sample gas cylinder
- Response time < 10 seconds (length of sensor up to 6 m)
- Max. heating time: 60 seconds

Dimensions: 460 x 200 x 250 mm (without trolley)
Weight: 15 kg (approximately, with trolley)

ELECTRIC CHARACTERISTICS

- Power supply: 2 lead batteries of 12 V – 7 Ah
- Max. absorption: 80 W (2 x 1 A fast-blow fuse)
- Recharging with power supply of 115-230 Vac ± 10%, 50-60 Hz ± 2%

HARDWARE AND SOFTWARE CHARACTERISTICS

- Standard serial output RS232 with proprietary protocol for connection with PC
- Bluetooth Wireless output
- Internal clock powered by buffer battery

ANALYSIS OF EXHAUST GASES OF DIESEL VEHICLES

Mod. OPABOX/EV

TR

OPABOX is an analyzer of exhaust fumes for Diesel engines, designed with standards of handiness and flexibility.

This analyzer is equipped with a battery of high capacity being able to supply electricity for more than 8 working hours. This innovation enables to operate in full autonomy without cumbersome leads.

Moreover, Bluetooth Wireless connectivity enables that OPABOX and r.p.m. detecting interfaces RC3 and RC4 communicate with the display unit (commercial PC or diagnostic workstation mod. CS-DT/EV) without any cable.

TECHNICAL CHARACTERISTICS

- Light absorption coefficient: K(m-1): 0 - 9,99
- Temperature: +5 °C to +40 °C
- Pressure: 850 hPa to 1025 hPa
- Humidity: 0% RH to 95% RH
- Effective length of chamber: 200 mm
- Chamber temperature: 75 °C
- Maximum heating time: 5 minutes
- Light source: green LED
- Electronic and automatic zero setting
- Electronic and automatic calibration
- Storage temperature: -20 °C (min.); +60 °C (max.)

Dimensions: 460 x 200 x 250 mm (without trolley)
Weight: 15 kg (with trolley)

ELECTRIC CHARACTERISTICS

- Power supply: 2 lead batteries of 12 V – 7 Ah
- Max. absorption: 80 W (2 x 1 A fast-blow fuse)
- Recharging with power supply of 115-230 Vac ± 10%, 50-60 Hz ± 2%

HARDWARE AND SOFTWARE CHARACTERISTICS

- Standard serial output RS232 with proprietary protocol for connection with PC
- Bluetooth Wireless output
- Internal clock powered by buffer battery
- Control system SW CD NERO

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DIAGNOSTIC WORKSTATION

Mod. CS-DT/EV

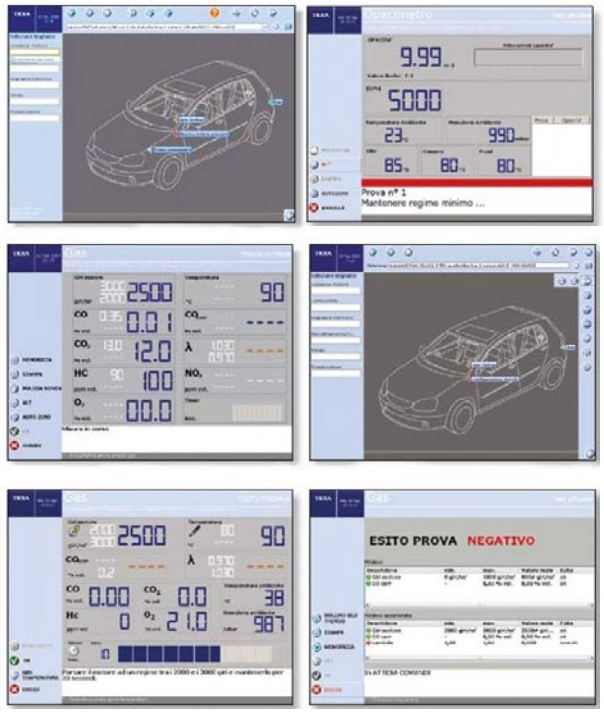
This multi-brand diagnostic workstation is installed on a strong trolley with 4 stable and hard-wearing wheels and it uses a new type of industrial PC with advanced software and colour printer.

This diagnostic workstation is also equipped with a professional keyboard and with an optical mouse, besides being connected with a colour ink-jet printer of high quality standards so that it can be used in garage. The equipment also includes an infrared remote control for controlling the main functions.

This workstation can simultaneously manage all the devices listed below, thus rationalizing work and especially eliminating cables with Bluetooth Wireless technology:

- **Navigator TXC**: diagnostic interface
- **GASBOX/EV**: analyzer of exhaust gases for petrol vehicles
- **OPABOX/EV**: analyzer of exhaust gases for Diesel vehicles

This diagnostic workstation is provided with a shock-proof screen of 17" for working environments such as car repair garages.



TECHNICAL CHARACTERISTICS

- Workstation on four-wheel trolley
- Strong framework of epoxy-painted steel
- Wireless connection with all diagnostic interfaces
- It enables the analysis of emissions on petrol and Diesel engines
- Two serial outputs RS232
- 1 socket for wall adapter
- 1 connector for SVGA video on male DB15
- 6 external USB 2.0 lines, 2 telephone jacks RJ11 (IN-OUT)
- 1 Ethernet Lan RJ45 connector, 100 Mbits
- 1 IR input for remote control
- Bluetooth connectivity: via USB pendrive
- WI-FI connectivity: on internal optional board, external antenna
- DVD/CD player: on internal USB 2.0 line
- Ink jet printer

Dimensions: 760 x 660 x 1570 (1185) mm (with closed monitor)

Weight: 55 Kg

DIAGNOSTIC WORKSTATION OF WHEEL ALIGNMENT

Mod. WALIGN/EV

TR

This is a professional wheel alignment system with 8 infrared CCD sensor heads for motor vehicles, provided with integrated alignment program in Windows. Its high resolution ensures a very accurate precision and high reliability, besides a wide measuring range of toe and cambering.

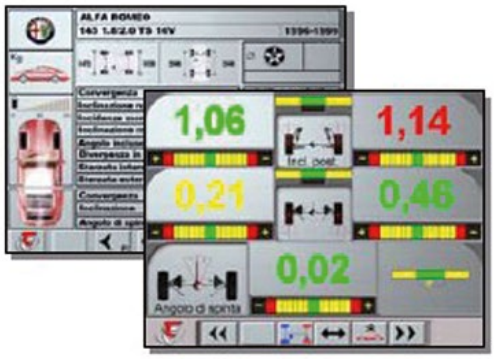
FUNCTIONS

- Data transmitting-receiving radio 2,4 GHz data transfer and/or Bluetooth without homologation authorization
- High efficiency rechargeable battery and sensor heads with on board battery charger
- Automatic compensation of caster measure versus the difference in height between axes
- Summing-up and comparison of measures in a unique screen
- Simultaneous display of all data in an axle
- 20° steering without electronic plates
- Toe, caster and camber simultaneous display
- Wheel eccentricity adjust on lift or ground
- Spoiler software with inclined sensor heads
- Toe curve according with VAG specification
- User interactive help
- Automatic system for sensor heads power down
- Continuous sensors calibration checking

Provided with: Trolley, up-to-date Personal Computer, 21" Monitor and Printer.

ELECTRIC CHARACTERISTICS

- Absorbed power: 400 W
- Power supply: single-phase 230 Vac, 50/60 Hz
- Sensor heads: battery-powered 6-hour operation
- Supplied with:
  - 4 10-21" wheel clamp
  - 4 sensor head charging cables
  - 2 turn table
  - Software
  - Data base



AUTOTRONICS

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33C-E-TR-WALIGN-2

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GARAGE EQUIPMENT AND ACCESSORIES

Here are some examples of equipment and accessories available for training automotive technicians.

TOOL SET FOR VEHICLE MAINTENANCE

PUMP TEST BED

MOBILE ROLLER CAB

HEADLIGHT BEAM ALIGNER

CAR LIFT

MULTI-FUNCTION AND DIAGNOSTIC TESTERS

TR

33-C

AUTOTRONICS

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33C-E-TR

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PRODUCTS INDEX
SORTED ALPHABETICALLY BY MODEL

CS LABORATORY FOR STUDYING CONTROL SYSTEMS

TR TRAINING IN REPAIRING TECHNIQUES FOR CAR MECHANICS


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