

THEORY PRACTICE

in automotive mechanics,
electrics and electronics



Newsletter

Current automotive teaching equipment for best training in car-related professions



THEPRA-LAB: PCB lab system - Novelty 2011

The new subject-comprehensive lab system consists of four individual PCBs and covers all subjects from the basic principles to actor technology. The system comprises all required components; it is compact, can be used at once, and permits free wiring. The focus of the pedagogically valuable course documents is on car diagnosis.



Illustration shows order no. 12 020 010

PCB 1

Car electrical systems - basic principles and circuit diagnosis

Order No. 12 020 010

PCB 2

Car electronics - diagnosis basics

Order No. 12 020 011

PCB 3

Car sensor technology - diagnosis basics

Order No. 12 020 012

PCB 4

Car actor technology - diagnosis basics

Order No. 12 020 013

Largest possible car relation

- Plus supply for each circuit set-up secured (5 A). Plus supply can be switched on and off according to ignition switch in the car.
- Plus- and minus-side "corrosion resistance" can be switched on to simulate noticeable voltage drops (corroded contacts).
- Indirect power measurement (voltage drop as current measurement method) is practised. Avoids danger of destruction of measuring device.
- Tasks with reference to real order processing (OBD-reference and diagnosis levels).
- Voltage distribution in the circuits as diagnosis criterion, as practised in on-board and off-board diagnosis.
- Multimeter and oscilloscope as measuring devices
- Suitable for car, industrial, agricultural and construction machinery training

Lesson design individual / variable

- Clear setting of tasks with prepared measuring protocols
- Task processing and assessment frontal, in groups or separately (component diversity)
- Repetition and improvement of specialist competence
- Detailed and comprehensive calculations and assessments
- Transfer of general connections into concrete diagnosis situations
- Pre-determined error logs for assessment and diagnosis
- Detailed sample solutions and special notes in the teacher leaflet

Thermal protection

- High-performance components and direct current switches.
- Transistors and thyristors additionally secured against excessive voltages and overcurrent at wrong connection.

Circuit Construction Diversity

- Circuit construction by highly flexible lab lines and/or alligator connection lines.
- Fixed wiring possible because every component access is equipped with a crew terminal in addition to two lab sockets. Suitable connection lines are solid wire and/or flexible lines with wire-end sleeves.



Illustration shows order no. 12 020 011

Dimensions: Width 300 mm, depth 265 mm, height approx. 80 mm, weight: approx. 1 kg

Component Set - Inverter in Electric Mobility - Novelty 2011

Current technology in component format

This new component set enables trainings on the function of so-called inverters in hybrid, electronics or fuel cell vehicles.

Almost all e-vehicles with high-voltage technologies require climate compressors that work independently of a combustion engine, because high-voltage components also have to be cooled when a vehicle is standing. Therefore, and due to the relatively large drive performance, they are supplied with direct voltage directly via the HV battery; the voltage is then converted into rotary current.

This current completion of the THEPRA component system offers tasks for DC-DC -AC conversion in current e-vehicles; it contains the control component 16 x56



Illustration shows order no. 16 000 045

400 and four IGBT transistor components 16 x56 410.

An oscilloscope (e.g. 16 162 016), DC/AC-current supply device (e.g. 12 050 010) and a lamp component are required to perform the experiments and exercises.

Teacher version

Component set - Inverter in electric mobility

Order No. 16 100 045

Student version

Component set - Inverter in electric mobility

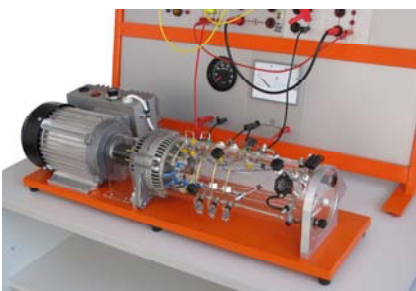
Order No. 16 000 045

New storage plates

New storage plates are available in the matching perforation grid for your THEPRA student and teacher components:

Teacher version	DIN A1	16 100 012
Student version	DIN A3	16 000 012

Generator battery charging trainer with multifunctional controller - Innovative !



Unique and in two versions

State-of-the-art generators for car electricity supply are equipped with highly variable multifunctional controllers. They enable a great number of useful functions when operating a generator.

The unique, transparent THEPRA training model has the same function as a common car-technology generator and is now available with multifunctional control as well as with transistor control.

The successful generator battery loading trainer has been reworked in both versions and is additionally discounted by **10 %** until the end of the year.

We also offer: lab cart, wood design, light grey, 100 cm wide with separating wall - order no . 10 012 200

Generator Battery Charging-Trainer TR

With training model rotary current generator transistor controller - Table model --

Order No. 15 030 000

Generator-Batterielade-Trainer MFR

With training model rotary current generator multifunctional controller - Table model -

Order No. 15 030 100

New model !

Transformer core component - Classic

Universally applicable

The plugged-in feet are placed consistently in the THEPRA grid; therefore, this component is equally suitable for teacher and student PCBs alike. Thumb screws enable simple coil replacement.

Customised versions are available for the coil windings.

Universal design for teachers / students

Transformer core component

Order No. 16 153 051

Accessories

Coil 100 windings	16 153 005
Coil 200 windings	16 153 006
Coil 500 windings	16 153 010
Coil 1000 windings	16 153 011



Breakout Box - Diverse and compact



Connection to control devices via specific adapters enables workshop-compliant testing and error simulation for all state-of-the-art complex electronics systems in the motor vehicle.

Features

- Combination of error circuit and pin box in a compact device
- Universal use with our large offer of vehicle-specific adapters
- Available with 76 or 155 channels
- Error circuit via toggle switch. The switch position can be covered by the inner frame
- Introduction of: transfer and load resistor with three potentiometers 1 0K-50K-1 00K
- Every channel is secured separately

76 channels

Breakout Box, small box system

Order No. 38 300 300

155 channels

Breakout Box, large box system

Order No. 38 300 310

Accessories

Specific adapter, design individually according to control device: as of order no. 38 210 201

System Car Electrics PANDA - Variable



Fig. shows workshop design without device boards

The diverse system for car electrics training is now available in several versions.

Versions

- Workshop design with steel cart
- Lab design with wooden cart
- Table model for self-mounting on present furniture
- Volume-discount-capable
- Device boards available for many subject areas, including agricultural machine technology

Basic device supporting frame

Movable, workshop version steel

Order No. 11 010 000



Fig. shows the device boards 1, 2, 3 and 12

Diesel Injection System Common Rail with Piezo (CDI) - the Model for Success

This teaching and functional bench with piezo injection technology shows all features, conditions, errors and measured values as in the original engine.

Now!
Price benefit



Teaching content

- Naming the entire common-rail engine management components
- Explaining component interaction
- Determining connection pins at components and control device according to problem
- Determining target values depending on operating situation
- Using OBD diagnosis tools common for the workshop
- Measuring and assessing sensor signals and actor control voltages
- Recording CAN-bus signals with the oscilloscope and assessing voltage level
- Making screen-shots of all signals, all control voltages and the CAN data-bus with a digital oscilloscope

Order No. Basic unit 17 036 000

ME-MOTRONIC 7.5.10 - State-of-the-Art Technology

Test bench injection technology petrol engines, can be moved on lab cart 125, with transfer module for student circuit diagram measuring stations / error control unit and PC interface.

Now!
Price benefit



Features

- ME-MOTRONIC, original components VW, original injection pressures
- Set-up and symbolic presentation in the EVA principle with screen-print fields on aluminium front plate
- 4 mm measuring sockets on front plate to measure according to original circuit diagram
- Compact device build, can be moved for lab and workshop practice
- THEPRA PC measured data recording - sensibly combines the measured values in a pedagogically sensible manner
- Up to 20 uncoupled student-circuit-diagram-measuring stations with error circuit
- 21 experiments with teacher/student work documents
- Can be diagnosed via OBD interface
- Detailed accompanying documents

Order No. Basic unit 38 068 000

SAC - Clutch - Ideal Supplement

Over the last years, use of SAC (Self-adjusting clutch) systems has become increasingly established with higher speeds or applications with increased wear reserve requirements.

Experiment options

- Assembly and disassembly of the SAC with special tools
- Determining the transferable torque at:
 - a) good clutch disc
 - b) work clutch disc
- Determining the press-on force/spring force at:
 - a) good clutch disc
 - b) work clutch disc

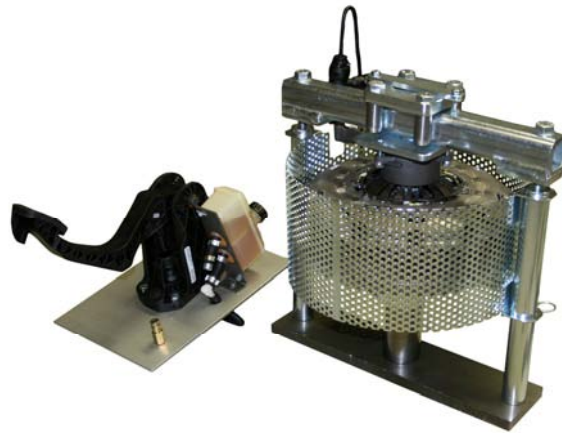
Installation of an SAC requires special knowledge.

This can be practised with the retrofitting set for the THEPRA Universal test bench car brakes/car clutches.

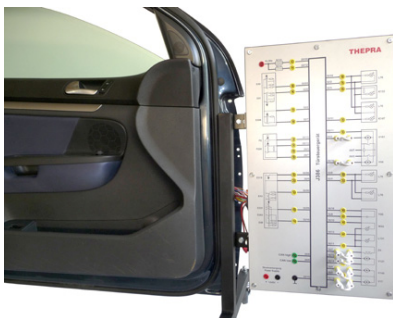
SAC

SAC complete as additional unit for 35 010 000

Order No. 35 080 100



Driver door - New with diagnosis interface



Teaching device for car and car body technology with diagnosis interface for tester and integrated CAN BUS system. Genuine car driver's door with measuring table.

Features

- Query of switch positions with short voltage impulses
- Practical procedure for commissioning
- Oscilloscope as indispensable test device in car body repair
- Small and logical steps at analysis (lesson instructions)
- Diagnosis capable
- Integrated transmission module for connection to error control device and student measuring stations

- Well-structured measuring table with 4 mm measuring sockets on anodized aluminium front plate

Driver door

Complete as table model

Order No. 16 400 000

Teacher Work Station Component System

The THEPRA component system is unique not only in the "large" version. Size and quality are just right.

Special features

- Mounting panel now available in orange and light grey
- Price benefit by combination with lab cart - order no. 10 12 200
- Rear storage panel for plug-in components - order no. 16 100 012

- More than 200 individual car electrics and electronics plug-in components available



Teacher's workplace

Mounting panel DIN A1 with frame and deposit

Order No. 16 100 011

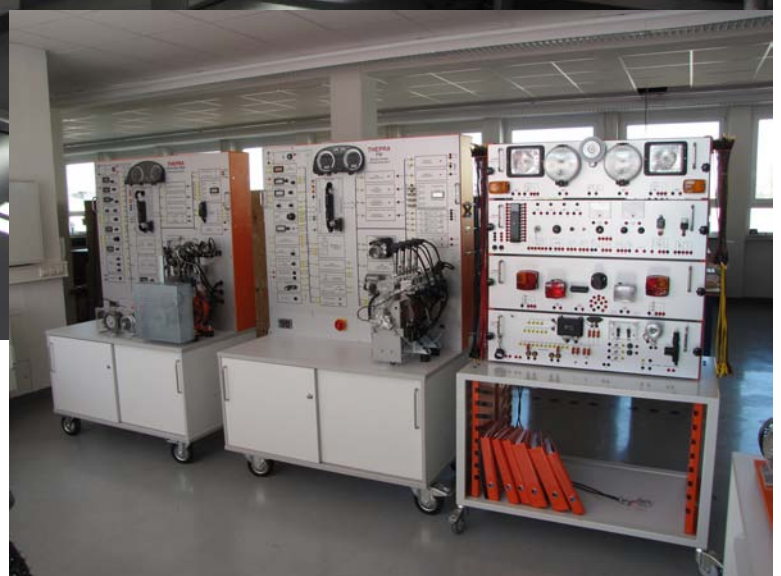


THEPRA - Forecast



More news

We are working on many new innovations. You will be surprised - in the upcoming newsletter we report on it.



Contact

Infowerk Medien & Technik GmbH
c/o Dep. Educational Equipment
Martinsbuehel 6
A-6170 Zirl

Fon: +43 (0) 5238 / 20 099 0
Fax: +49 (0) 5238 / 20 099 40

E-Mail: info@infowerk.at
Internet: www.infowerk.at