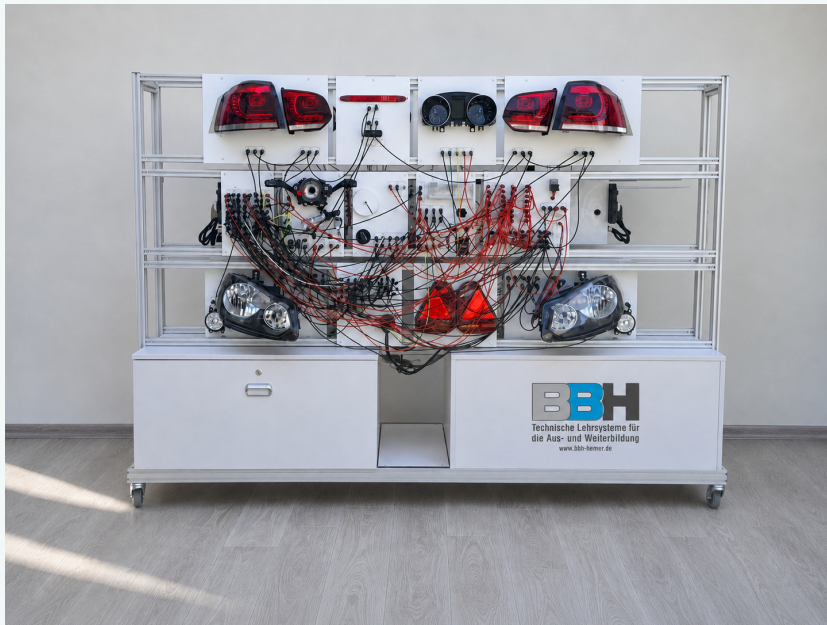


Automotive Electrical & Electronics

Overview brochure

Practice-oriented training systems with original vehicle components for electrical measurements, systematic diagnostics, CAN and LIN bus technology and realistic troubleshooting. From conventional 12- and 24-volt circuits and lighting technology to networked CAN / LIN systems, electrical and electronic relationships can be examined directly on the fully functional setup.



OEM technology

Original vehicle components

CAN & LIN

Networked vehicle systems

Diagnostics

OBD and electrical measurements

Fault simulation

Up to 30 switchable faults depending on the system



ITEM NO. 00014023 / AUDI A6 / CAN / LIN / MOST

Networked CAN, LIN and MOST bus systems

This mobile training system is based on original Audi A6 components and combines CAN, LIN and MOST bus systems in one clear, fully functional setup. The bus topology and the power supply paths for the individual participants are engraved into the front panel for easy tracing.

Electrical bus connections are accessible through disconnect points and bridge connectors. This allows measurements with an oscilloscope, multimeter or CAN bus adapter and enables individual bus participants to be disconnected. The optical MOST ring also supports realistic ring-break diagnostics.

- CAN / LIN / MOST Three networked bus systems in one training rig
- Measurement & diagnostics Disconnect points, bridge connectors and diagnostic access
- Original Audi A6 components
- LIN bus with windscreen wiper and rain sensor
- 10 faults Electronically switchable fault functions
- approx. 50 kg approx. 1200 x 600 x 1000 mm
- CAN bus with measurement and disconnect points
- MOST bus with MMI, radio and gateway



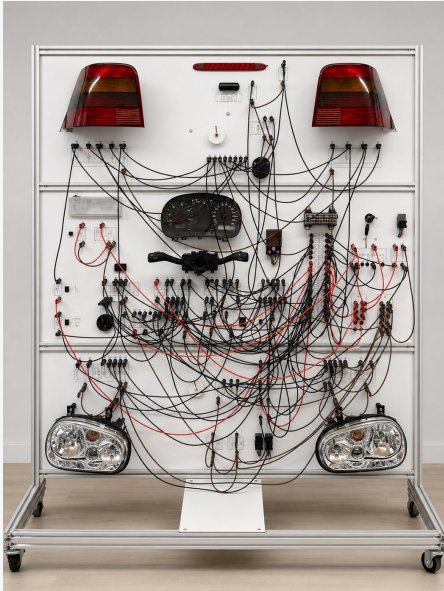
ITEM NO. 00008775 / VW GOLF VI / CAN / LIN

Mobile training rig with networked vehicle electronics

Fully functional training rig based on original VW Golf VI components for electrical measurements, diagnostics, bus-system analysis and systematic troubleshooting.

Electrical connections are accessible via safety laboratory sockets, enabling transparent work based on the vehicle-specific circuit diagram.

- CAN & LIN Networked vehicle communication
- Fault simulation Electronic fault simulation
- Diagnostics 16-pin OBD interface
- Measurement technology Safety laboratory sockets



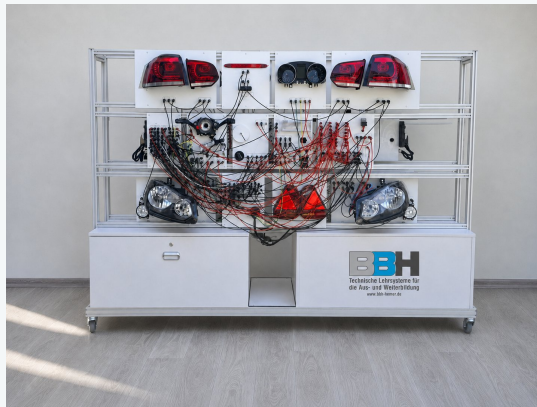
ITEM NO. 00008175 / VW GOLF IV / VEHICLE LIGHTING

Complete vehicle lighting as a wireable training rig

The lighting panel reproduces the complete vehicle lighting system using original VW Golf IV components and enables practical wiring, measurement and diagnostic exercises.

Relevant circuits are accessible via external measurement connections and can be assembled and examined using the original circuit diagrams.

- 4 mm connections Measurement and wiring points
- Original technology VW Golf IV components
- 12 volts Vehicle electrical systems
- EMERGENCY STOP Safe training operation



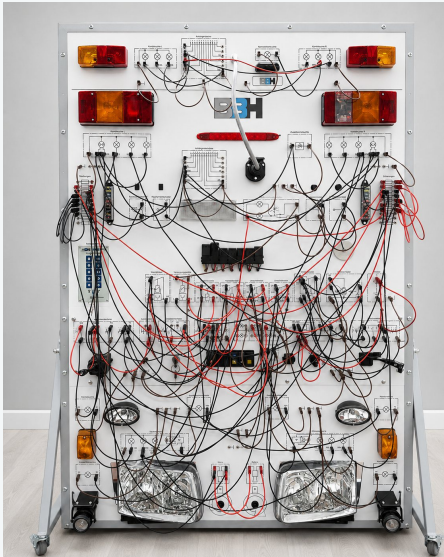
ITEM NO. SD008775 / VW GOLF VI / DOUBLE-SIDED SETUP

Electrical systems, diagnostics and trailer control

The double-sided training rig expands the electrical and electronic working environment with additional operating, switching and trailer functions.

CAN and LIN bus technology, OBD diagnostics and fault simulation enable extensive exercises on networked vehicle electronics.

- Double-sided Comprehensive working environment
- CAN & LIN Networked vehicle electronics
- Fault simulation Targeted diagnostic exercises
- Trailer Trailer control and lighting



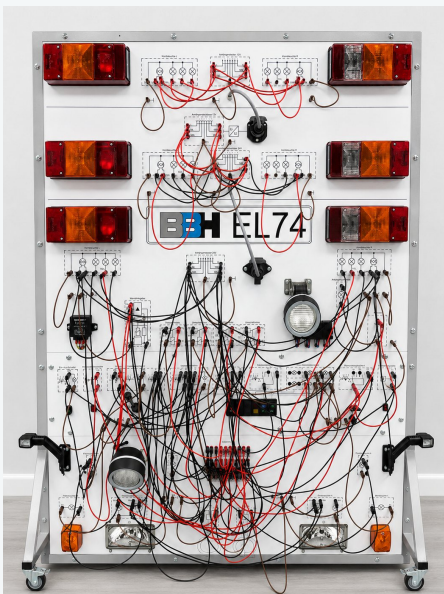
ITEM NO. 00008760

Automotive Electrical EL76 functional training rig

Compact mobile training rig for conventional automotive electrical systems and lighting technology.

An integrated fault-simulation module allows ten different faults to be programmed behind a lockable cover. The training rig is supplied without a cable set.

- 10 faults Programmable fault simulation
- Switching technology Relays, fuses and switches
- Main headlights with halogen lamps
- Simulation lamps for horn / air horn
- Lighting Front, rear and auxiliary lighting
- Trailer Socket and integrated lighting
- Front turn signals
- Fog lights



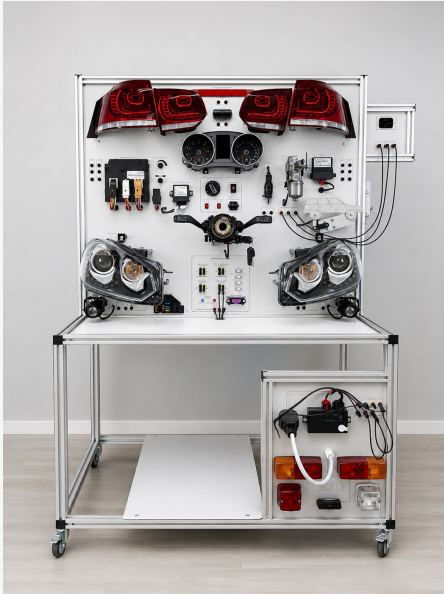
ITEM NO. 00008740

NFZ Elektrik EL74 functional training rig

Compact mobile training rig with original 24-volt commercial-vehicle electrical components.

The setup is particularly suitable for examining conventional commercial-vehicle lighting, switching and trailer circuits.

- 24 volts Commercial-vehicle electrical systems
- Trailer Lighting and socket
- Pair of main headlights
- Horn / air-horn simulation lamps
- Truck Front and rear lighting
- Switching technology Relays, fuses and switches
- Front turn signals
- Combination rear lights, truck



ITEM NO. 00S14035

CAN BUS Golf VI Bi-Xenon functional model

Mobile training rig with fully functional original VW Golf VI components and extensive CAN / LIN bus technology.

The engraved work surface and externally accessible safety laboratory sockets enable safe, transparent wiring based on the original VW circuit diagram.

- CAN & LIN Networked control units
- Residual-bus simulator Vehicle speed and steering angle
- LED rear lights
- License plate light
- Bi-Xenon Cornering and turning light
- Fault simulation Optional fault-simulation box
- LED high-mounted brake light
- Bi-xenon headlights



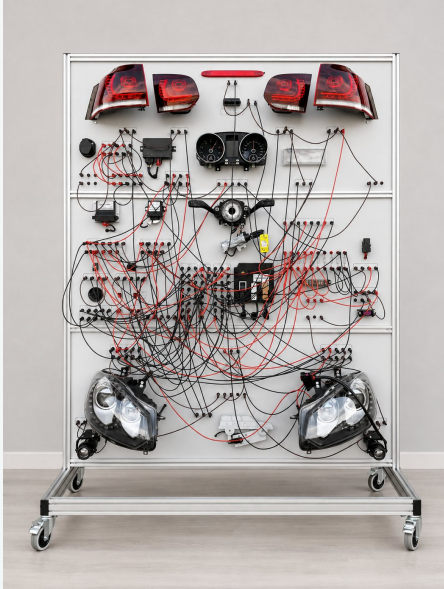
ITEM NO. 00014039

Central Electrical CAN-LIN Bus System VW lighting panel

Mobile training rig with a color-printed front panel and fully operational original VW Golf VI components with xenon headlights and cornering light.

The lighting and signaling system operates via CAN bus with self-diagnostics. Windshield-wiper control is implemented via LIN bus.

- 30 faults Bus and diagnostic exercises
- P-CAN 4 Sub-D connection sockets
- Steering-column control unit
- Central BCM control unit
- CAN & LIN Lighting, signaling and wiper system
- 12 V / 40 A Isolated switching power supply
- Gateway
- Instrument cluster



ITEM NO. 00008770

Automotive Electrical Golf VI Bi-Xenon functional model

Mobile training rig with fully functional original VW Golf VI components.

The labeled melamine-resin panel and color-coded safety laboratory sockets enable clear wiring based on the original VW circuit diagram.

- CAN & LIN Networked vehicle electronics
- Residual-bus simulator Speed and steering angle
- LED rear lights
- License plate light
- 10 faults Electronic fault simulation
- OBD Standard commercial diagnostic testers
- LED high-mounted brake light
- Bi-xenon headlights with dynamic cornering and turning light

Additional components such as original door and trailer modules can be connected directly to the training rig. The scope of supply includes a matched laboratory cable set and CAN Analyse software based on AndiWin.net.



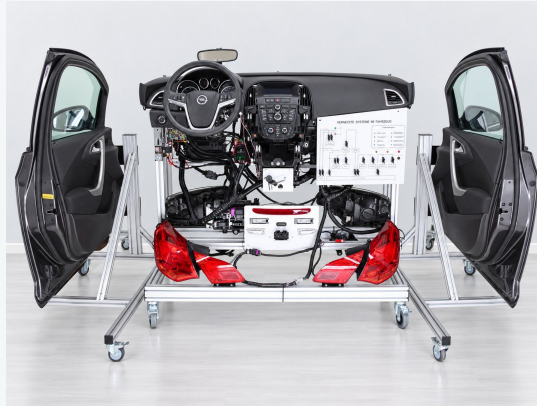
ITEM NO. 00S1 4021 / GOLF V

Dashboard training model CAN / LIN bus

Mobile training model with an original VW Golf V dashboard, driver and passenger airbags, complete lighting system and instrument illumination. The networked control units include the gateway, vehicle electrical system control unit, airbag, climate control, instrument cluster and driver and passenger doors.

Eight predefined faults can be switched into the system. Bridging plugs and externally accessible diagnostic connectors allow measurements and diagnostics with standard workshop test equipment.

- CAN & LIN Networked original vehicle systems
- OBD / diagnostics Standard workshop test equipment
- Instrument cluster and electrical ignition switch
- Complete lighting system incl. instrument illumination
- 8 faults Predefined bus and diagnostic faults
- approx. 80 kg approx. 2000 x 1200 x 1200 mm
- Driver and passenger airbags
- Power windows with comfort function



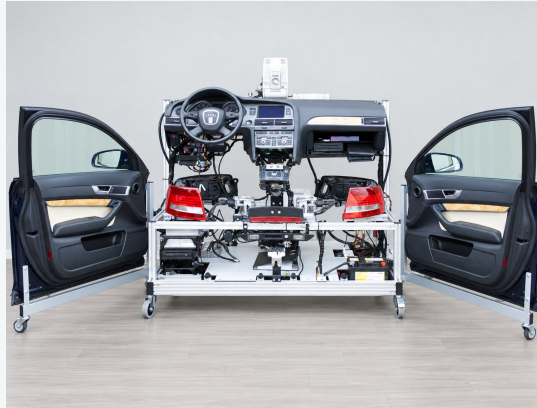
ITEM NO. 00S1 4019 / OPEL ASTRA J

Dashboard training model CAN / LIN bus

System variant with fully operational original components from an Opel Astra J. The mobile training model includes the dashboard, driver and passenger airbags, lighting system and instrument illumination together with the control units required for diagnostics and networking.

CAN-bus interfaces with bridging plugs provide dedicated measurement access. At least eight typical bus faults can be switched in, allowing realistic diagnostic procedures and work with PC-based CAN-bus diagnostic systems.

- Opel Astra J Fully operational original components
- 8+ faults Typical bus faults via toggle switches
- Original Opel Astra J dashboard
- Complete lighting system
- CAN bus Bridging plugs for measurement and diagnostics
- approx. 80 kg approx. 2000 x 1200 x 1200 mm
- Driver and passenger airbags
- Instrument illumination



ITEM NO. 00S1 4023 / AUDI A6

Audi A6 dashboard training model

The CAN / LIN bus training model is built on a mobile aluminium frame and includes the original dashboard, driver and passenger airbags, the complete lighting system and instrument illumination of an Audi A6. The system also includes control units such as the gateway, vehicle electrical system control units, airbag, climate control, instrument cluster, and driver and passenger doors.

At least eight predefined faults according to DIN ISO are integrated via toggle switches. Bridging plugs, externally accessible measurement sockets and the OBD diagnostic connector allow measurement and diagnostics with standard workshop test equipment.

- | | |
|--|---|
| - Audi A6 Fully operational original components | - 8+ faults Predefined faults according to DIN ISO |
| - OBD & measurement sockets Bridging plugs and accessible measuring points | - approx. 95 kg approx. 2100 x 1300 x 1300 mm without doors |
| - Original Audi A6 dashboard | - Driver and passenger airbags |
| - Complete lighting system | - Instrument illumination |



ITEM NO. 00S1 4022 / GOLF 7

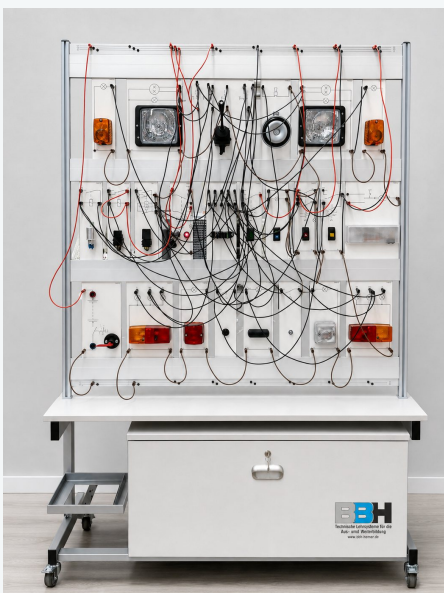
Golf 7 dashboard training model

The CAN / LIN bus training model is built on a mobile aluminium frame and includes the original dashboard, blower housing, windshield-wiper control and complete lighting system of a Golf VII. The system also includes control units such as the gateway, vehicle electrical system control unit, airbag, climate control, instrument cluster, and driver and passenger doors.

Eight predefined faults according to DIN ISO can be introduced via toggle switches. Externally accessible 4 mm measurement sockets and the OBD diagnostic connector allow measurements and diagnostics using standard workshop test equipment.

The CAN-BUS course module included in the scope of supply explains the system. Animations and simulations of a CAN bus system, a question catalogue for checking knowledge, and the presentation of typical fault patterns according to the ISO fault list are also included in the computer program.

- Golf 7 Original networked vehicle systems
- 4 mm measurement sockets Direct measurement access plus OBD diagnostics
- Original Golf VII dashboard
- Windshield-wiper control
- 8 faults Predefined faults according to DIN ISO
- CAN-BUS course module Animation, simulation and knowledge checks
- Blower housing
- Complete lighting system



E1 experimental rig with basic and lighting equipment

The mobile experimental rig enables exercises directly from the wiring diagram and can be equipped with different component-board sets according to the desired scope of training.

The power rail is located at the top and the ground rail below it. The three-row experimental frame provides space for the various electrical components and circuits.

ITEM NO. 0000 8110

Electrical Student Trainer EL1

Fundamentals of automotive electrical systems covering ignition, starter, alternator, wipers, horn, glow-plug system, engine monitoring, charge and oil-pressure circuits. A matching cable set and fault-entry facility support systematic troubleshooting.

- Ignition
- Alternator
- Starter
- Fault finding

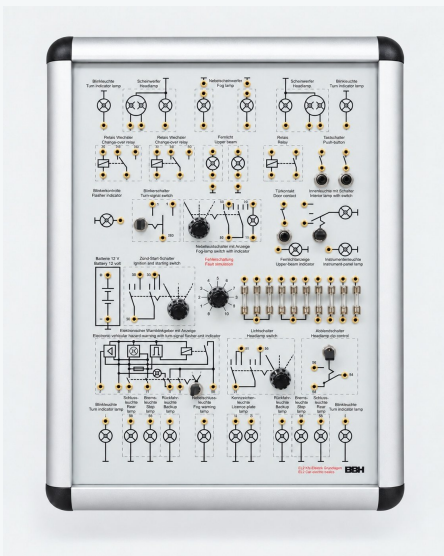


ITEM NO. 0000 8120

Electrical Student Trainer EL2

Complements EL1 with lighting and signalling systems, including relay circuits such as auxiliary headlamp control. EL2 also includes a matching cable set and a fault-entry facility.

- Lighting
- Relays
- Signalling
- Fault finding



ITEM NO. 0000 8130

Electronics Student Trainer EL3

Teaches the fundamentals of automotive electronics through practical experiments. Topics include resistors, capacitors, diodes, coils, transistors and thyristors together with vehicle-specific analogue circuits and sensor technology.

- Electronics
- Components
- Sensors
- Measurements

