

## Educational Petrol / Electric HYBRID technology working engine model

Fully operational hybrid electric system with petrol internal combustion engine mounted in a mobile frame. The hybrid system is designed to demonstrate the internal combustion engine, electric motor, gearbox and structure of the rechargeable energy storage system. The educational training engine is based on Toyota original (refurbished) engine.

The training engine model with functional petrol/electric hybrid powertrain is a great educational tool that allows students to learn the components of the hybrid system, power supply system, rechargeable energy storage system and cooling system. It also allows to study components and operation modes of the engine, perform various measurements, tests and other diagnostic procedures.

### Technical specifications and functions

- The educational functional engine with petrol/electric TOYOTA HYBRID CONTROL SYSTEM – II (THS-II), automatic gearbox, climate control system, instrument cluster, cooling system, electric power supply system, CAN gateway network, the exhaust system and etc.
- Electrical wiring diagram with built - in banana plug jumpers for measurements and simulation of the system fault codes
- Ability to simulate more than 50 faults by disconnecting Banana plug jumpers
- Ability to measure the exhaust gas before and after the catalytic converter
- Completed with safety removable panels to protect against hot and rotating parts
- The engine with external components is clearly visible after removing safety panels. Easy access to the engine and its components for service and maintenance
- Fully functioning automatic climate control system with all most important components like electric AC compressor, R134a refrigerant, service couplers and etc.
- Integrated emergency stop button

### Other

- The stand has a closed structure – internal wiring is not visible; Instrument cluster, measurement and fault simulation panel is integrated in a closed aluminum frame construction
- Dimensions approx.: (HxLxW) 1550x1000x1200 mm
- Nett weight approx.: 470 Kg
- Made in Lithuania
- CE certificate

### Optional accessories

- Vacuum gauge
- The pressure gauge in the fuel supply line
- Automotive oscilloscope
- OBD diagnostic scan tool
- The gas analyzer
- The exhaust extraction system

*According to customer's request there is a possibility to manufacture car or truck (petrol or diesel) working engine model!*

### Diagnostic and measurement

#### Oscilloscope/multimeter

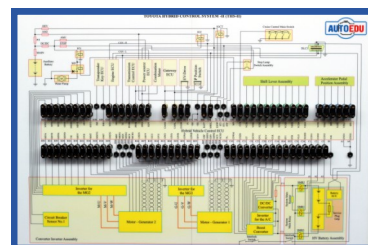
- System's parameters are measured by connecting to the banana connector
- Ability to measure electrical signal parameters of each system component (such as sensor or actuator)

#### Control unit diagnosis

- Diagnosis through OBD 16 – pin diagnostic connector
- Electronic control unit (ECU) identification
- Reading/erasing fault codes
- Displaying the operating system parameters (live data)
- Actuator test (Depends on the control unit)
- Control unit coding/configuration

The working engine model contains these ECU's which could be found and readout with the scan tool:

- Hybrid Control System ECU
- Power Source ECU
- Engine ECU
- Transmission Control ECU
- Hybrid Vehicle Battery ECU
- AC Climate Control ECU
- Gateway ECU
- Transponder Key ECU
- Combination Meter ECU



Order Nr. MVHY 1