Press release
Mobility Aftermarket

August 2024
PI 11867 MA

Three new Bosch devices for testing and charging electric vehicles' high-voltage batteries
Module discharger/charger, cell equalizer, and leak tester for repair, diagnostics and performance improvement of HV batteries

- Charger for diagnostics and individual charging and discharging of high-voltage battery modules
- HV cell equalizer for balancing individual cells in the high-voltage traction battery
- HV leak tester for airtightness testing of battery housings and the associated cooling system after repair or overhaul

Plochingen, Germany – The proportion of electric vehicles in Europe is growing continuously. Scandinavia is leading the way: figures for new registrations of electric cars are high across the region's countries. But other European countries are also seeing growing numbers of vehicles with battery-electric powertrains on their roads. Consequently, workshops are experiencing rising demand for professional testing and repair of electric vehicles' high-voltage components and traction batteries. Bosch has developed three new devices for the testing and the coordinated charging and discharging of high-voltage batterie modules. Because these compact, portable devices let workshops diagnose the state of charge (SoC) and state of health (SoH) of the traction batteries in modern electric vehicles precisely and down to the cell level, appropriate repairs can be done to improve battery performance. Bosch will be premiering its new high-voltage testing devices at the Automechanika trade fair in Frankfurt September 10–14, 2024.

Automated operation and real-time display of test data
With Bosch's new portable HV module charger/discharger, workshops will be able to diagnose the state of charge of electric vehicles' high-voltage battery and perform appropriate repairs to improve it. Overall battery performance is impaired if voltage deviates too much between individual battery modules. Charging and

Robert Bosch GmbH
Postfach 10 60 50
70049 Stuttgart, Germany
E-mail Nico.Krespach@bosch.com
Phone +49 721 942-2209
Twitter
Corporate Department
Communications & Governmental Affairs
Executive Vice President: Prof. Christof Ehrhart
www.bosch-press.com

discharging individual modules equalizes the voltages across the modules. The device performs charge and discharge at high voltage and high current to efficiently bring the battery module to its ideal state of charge. In addition to diagnostic and maintenance work on the HV battery, the device can also be used when replacing individual modules, for example, so that the state of charge is the same in the old and new modules. The device is suitable both for regular recharging of stored modules and for reducing the charge level of the modules. For example, when preparing modules for transportation, it can bring them to the prescribed state of charge. Featuring a high level of safety protection, the device monitors the voltage, cell current, and temperature of up to 24 cell groups simultaneously. Operated via a 10-inch touchscreen, the new HV module charger displays all test data in real time and summarizes it in a subsequent test report.

After a certain service life or mileage, voltage deviations may occur between a battery's individual cells, reducing battery performance. Bosch's new HV cell equalizer diagnoses these voltage deviations and can compensate for them by balancing individual cells. It can also be used to equalize the voltage after replacing individual cells if necessary. The device operates at low voltage and low current for independent equalization control of each connected cell, precisely configuring the cells to the same voltage level down to 0.001V. It guides users through the individual operating steps via a 10-inch touchscreen and always displays the test data in real time. Subsequently, it automatically produces a test report. The HV cell equalizer supports charging, discharging, and equalization tests for all common lithium and nickel metal hydride batteries in electric vehicles. Several protective functions ensure safe equalization of the battery cells.

After successful repair or equalization of its module and cell voltages, a high-voltage battery must be professionally and safely reinstalled in the electric vehicle. The Bosch HV leak tester can be used for the final test. This device uses air pressure to check the leakage status of the high-voltage battery and rule out leaks in the battery housing and the associated battery cooling circuit. It can also be used to diagnose whether water has infiltrated the electric powertrain system. A flexible and adaptable hose is used to apply pressure to the individual components. Once the target pressure has been reached, it is maintained while the leak tester independently performs leak detection. The device supports both low-pressure and high-pressure tests with maximum accuracy, down to 0,00001 bar (1Pa).

Device use requires HV qualification

The three new test devices may only be operated by workshop mechanics with HV Level 3 qualifications. At its Service Training Centers, Bosch offers training courses and technical training relating to work on vehicles with high-voltage

systems. For more information and to register, visit www.bosch-training-solutions.com.

Following the presentation at the Automechanika trade fair, Bosch will begin with the market launch of the three devices, initially in the Scandinavian countries of Norway, Denmark, Finland, and Sweden. The new devices will then be launched in Germany, the Netherlands, Austria, and Switzerland.

Readers' contact:
Robert Bosch GmbH
Mobility Aftermarket
Phone: +49 9001 942010
E-mail: Kundenberatung.Kfz-Technik@de.bosch.com

Contact person for press inquiries:
Laura Cichecki
Phone: +49 721 942-2982
E-mail: Laura.Cichecki@de.bosch.com

The Mobility Aftermarket division (MA) provides the aftermarket and repair shops worldwide with modern diagnostic and repair shop equipment and a wide range of spare parts – from new and exchange parts to repair solutions – for passenger cars and commercial vehicles. Its product portfolio includes products made as Bosch original equipment, products developed in-house and specifically manufactured for the aftermarket, as well as services. About 16,000 associates, as well as a global logistics network, ensure that spare parts reach customers quickly and on time. MA supplies testing and repair-shop technology, diagnostic software, service training, and information services. In addition, the division is responsible for the "Bosch Service" repair-shop franchise, one of the world's largest independent chains of repair-shops, with some 13,000 workshops, and more than 1,000 "AutoCrew" partners in over 100 countries. In addition, with Bosch Classic, MA supports owners of classic cars with a wide range of spare parts and services.

Additional information can be accessed at www.boschaftermarket.com

The Bosch Group is a leading global supplier of technology and services. It employs roughly 429,000 associates worldwide (as of December 31, 2023). The company generated sales of 91.6 billion euros in 2023. Its operations are divided into four business sectors: Mobility, Industrial Technology, Consumer Goods, and Energy and Building Technology. With its business activities, the company aims to use technology to help shape universal trends such as automation, electrification, digitalization, connectivity, and an orientation to sustainability. In this context, Bosch's broad diversification across regions and industries strengthens its innovativeness and robustness. Bosch uses its proven expertise in sensor technology, software, and services to offer customers cross-domain solutions from a single source. It also applies its expertise in connectivity and artificial intelligence in order to develop and manufacture user-friendly, sustainable products. With technology that is "Invented for life," Bosch wants to help improve quality of life and conserve natural resources. The Bosch Group comprises Robert Bosch GmbH and its roughly 470 subsidiary and regional companies in over 60 countries. Including sales and service partners, Bosch's global manufacturing, engineering, and sales network covers nearly every country in the world. Bosch's innovative strength is key to the company's further development. At 136 locations across the globe, Bosch employs some 90,000 associates in research and development, of which nearly 48,000 are software engineers.

Additional information is available online at www.bosch-press.com, www.iot.bosch.com, www.bosch-mobility.com, www.bosch.com.