Global Training – The finest automotive learning.

Cars · Market launch · E-Class PLUG-IN HYBRID model series 213 - BASIC - • AKUBIS® direct special • Final test · Go

Participant Document

T1481E
As at 09.06.2016

Mercedes-Benz
This document is intended for training purposes only. The exercises performed in the course cannot simply be implemented in practice without regard to various considerations. Country-specific laws, regulations and specifications must always be observed.

The training documents are not subject to the ongoing update service. When working at the vehicle, always use the most up-to-date workshop aids (e.g. EPC net, WIS net, DAS, special tools) provided by the manufacturer for the vehicle in question.

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Note: The term “employee” always refers to both male and female employees.
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1 Orientation

1.1 Welcome

PLUG-IN HYBRID - Future inside

The E 350 e impresses with its exceptional dynamics and efficiency. It makes it possible to drive for more than 30 km using electricity only and therefore without local emissions at speeds of up to 130 km/h. The combination of its four-cylinder gasoline engine and a powerful electric engine provides system performance of 210 kW (286 HP) and system torque of 550 Nm.

The E 350 e is equipped with the AGILITY CONTROL suspension and pre-entry climate control that can be controlled by a smartphone app as standard.

The high voltage lithium-ion rechargeable battery with capacity of 6.2 kWh can be charged using an external power source. Thanks to an onboard charger, this takes about one and a half hours at a wallbox charging station. The charging time at a normal household socket is about three hours.

Training portfolio for the E 350 e

The following training will be available from Aftersales Training for the market launch of the E 350 e:
1 Orientation

1.1 Welcome

<table>
<thead>
<tr>
<th>Training code</th>
<th>Target group</th>
<th>Mandatory requirements for participation in the final test</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1481E - Market launch of E-Class PLUG-IN HYBRID model series 213 - Basic - AKUBIS® direct special</td>
<td>Service advisor and system technician</td>
<td>High-voltage awareness</td>
</tr>
<tr>
<td>T1482E - Market launch of E-Class PLUG-IN HYBRID model series 213 - Advanced - AKUBIS® direct special</td>
<td>System Technician</td>
<td>T1481E - Market launch of E-Class PLUG-IN HYBRID model series 213 - Basic - AKUBIS® direct special</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High-voltage qualification and product training on a PLUG-IN HYBRID vehicle</td>
</tr>
</tbody>
</table>

No face-to-face training is planned for the E 350 e for the first time. When the system technician has successfully passed both final tests and the mandatory requirements have been fulfilled, he may enable the E 350 e based on diagnosis.

This document serves as an accompanying document for the training **T1481E - Market launch of E-class PLUG-IN HYBRID model series 213 - Basic - AKUBIS® direct special** and for the required final test.

We wish you lots of success in this final test!

**EVF (Explanation of Vehicle Functions)**

![EVF Symbol]

We use this symbol to refer you to specific system information that may be of assistance during customer contact.
2 Market launch of E 350 e

2.1 Vehicle overview

The hybrid transmission of the E 350 e is a so-called 3rd generation P2 hybrid system. This hybrid drive system is based on the transmission major assembly model designation 725.013, and unlike the hybrid variant based on 724.2, it has a converter with a lockup clutch and an additional clutch instead of the wet clutch. In addition to the conventional drive mode, the following functions or operating modes are possible:

- Engine start/stop
- Regenerative braking
- Boosting (electrical support of the internal combustion engine)
- Purely electric driving

Driving on electric power only is possible up to a speed of 130 km/h. The electrical power is stored in a lithium-ion battery with energy content of 6.2 kWh, which can be charged externally at public charging stations, a wallbox charging station at home or a normal household power socket.

The driver can choose between four specific operating modes using a button in the lower control panel:

- HYBRID: for consumption-optimized driving with all hybrid functions available
- E-MODE: for exclusively electric driving
- E-SAVE: the charge level of the high-voltage battery is maintained
- CHARGE: the high-voltage battery is charged by the internal combustion engine when driving
Technical data of the E 350 e

**Internal combustion engine**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of cylinders/cylinder arrangement</td>
<td>4/in-line</td>
</tr>
<tr>
<td>Displacement cm³</td>
<td>1991</td>
</tr>
<tr>
<td>Rated output (kW at rpm)</td>
<td>155 at 5500</td>
</tr>
<tr>
<td>Rated torque (Nm)</td>
<td>350</td>
</tr>
</tbody>
</table>

**Electrical machine**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine power (kW)</td>
<td>Max. 65</td>
</tr>
<tr>
<td>Torque (Nm)</td>
<td>440</td>
</tr>
<tr>
<td>System performance (kW)</td>
<td>210</td>
</tr>
<tr>
<td>System torque (Nm)</td>
<td>550</td>
</tr>
<tr>
<td>Acceleration 0 - 100 km/h (s)</td>
<td>6.2</td>
</tr>
<tr>
<td>Maximum speed (km/h)</td>
<td>246</td>
</tr>
<tr>
<td>Maximum speed, electric (km/h)</td>
<td>130</td>
</tr>
<tr>
<td>Combined consumption from (l/100 km)</td>
<td>2.1</td>
</tr>
<tr>
<td>CO₂ Combined emissions from (g/km)</td>
<td>49</td>
</tr>
<tr>
<td>Electric range (km)</td>
<td>more than 30</td>
</tr>
<tr>
<td>High-voltage battery total capacity (kWh)</td>
<td>6.2</td>
</tr>
</tbody>
</table>

---

*E 350 e*
### Hybrid drive train concepts

<table>
<thead>
<tr>
<th>Vehicle portfolio</th>
<th>Gen1/722.950</th>
<th>Gen2/724.2</th>
<th>Gen3/725.013</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model series 221</strong></td>
<td><img src="image1.png" alt="image" /></td>
<td><img src="image2.png" alt="image" /></td>
<td><img src="image3.png" alt="image" /></td>
</tr>
<tr>
<td>Market launch 2009: model series 221 with M272</td>
<td></td>
<td></td>
<td>Market launch 2012: model series 212 with OM651</td>
</tr>
<tr>
<td>Market launch 2013: model series 222 with M276 (Plug-In)</td>
<td></td>
<td></td>
<td>Market launch 2016: model series 213 with M274</td>
</tr>
</tbody>
</table>

| Drive train concept | | | |
|---------------------|---|---|
| **P1 concept without 12-V alternator** | ![image](image4.png) | ![image](image5.png) | ![image](image6.png) |
| **P2 wet clutch concept, with 12-V alternator in some cases** | | | |
| **P2 converter concept** | | | |

<table>
<thead>
<tr>
<th>EM output</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>15 kW</td>
<td>25 kW – 85 kW</td>
<td>65 kW – 90 kW</td>
</tr>
<tr>
<td><img src="image7.png" alt="image" /></td>
<td><img src="image8.png" alt="image" /></td>
<td><img src="image9.png" alt="image" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EM torque</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>200 km</td>
<td>200 km - 250 km</td>
<td>400 km</td>
</tr>
<tr>
<td><img src="image10.png" alt="image" /></td>
<td><img src="image11.png" alt="image" /></td>
<td><img src="image12.png" alt="image" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>E driving range*</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0 km</td>
<td>1 km – 36 km</td>
<td>2 km – 102 km</td>
</tr>
<tr>
<td><img src="image13.png" alt="image" /></td>
<td><img src="image14.png" alt="image" /></td>
<td><img src="image15.png" alt="image" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Core motivation</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CO₂ lighthouse, achievement of AT-PZEV credits (Advanced Technology-Partial Zero Emissions Vehicle)</td>
<td>P2-20: electric-only driving, diesel hybrid</td>
<td>Converter hybrid without 12-V alternator and with optimized performance (towing capacity)</td>
</tr>
<tr>
<td><img src="image16.png" alt="image" /></td>
<td><img src="image17.png" alt="image" /></td>
<td></td>
</tr>
</tbody>
</table>

*NEDC range (EU standard, status on 02.12.2015)
2.2 Qualification concept

Qualification concept for working on a high voltage series production vehicle for maintenance and repair technicians and certified diagnostic technicians.

<table>
<thead>
<tr>
<th>Qualification</th>
<th>Work-related safety instruction</th>
<th>HV awareness</th>
<th>HV qualification without product training</th>
<th>HV qualification with product training</th>
<th>HV training, manual disabling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activities</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>&quot;Simple&quot; activities outside the HV system, e.g. operation, checking workshop equipment, starting assistance</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>- General repairs on the HV vehicle</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>- Working on the disabled HV system</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>No activity: Intermediate stage - prerequisite for product training</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Diagnosis-based disabling of vehicle</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>X</td>
</tr>
<tr>
<td>- Manual disabling</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>X</td>
</tr>
<tr>
<td>- Insulation resistance testing</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>- Voltage proof test</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

* Diagnosis-based disabling allowed, if product training for specific vehicle is available, attempt to perform diagnosis-based disabling must always take place before manual disabling.

** Manual disabling for high voltage series production vehicles (no metropolitan concepts) allowed (in accordance with WIS specification).

Employees with high voltage awareness training may remove/install high-voltage components on a high-voltage vehicle where voltage was removed.
Simple tasks
The employees must be instructed in the dealership within the scope of a work-related safety instruction for carrying out "simple" tasks. This training includes the special considerations, dangers, safety precautions and rules of conduct in connection with the high-voltage-on board electrical system.

Simple tasks are:
- Operation (driving, fueling/loading, cleaning)
- Tires (checking condition, changing)
- Checking/refilling coolant, washer fluid, oil
- Changing wiper blades/adjusting spray nozzle
- Charging 12 V battery, checking/changing 12 V fuses
- Jump starting
- Reading out diagnosis (actual value/quick test)
- Retrofitting accessories (without WIS description)
- Vehicle reception, including checking of pending service measures
- Explanation of vehicle-specific functions (in the event of sales/vehicle delivery)

The basis is WIS document AH54.00-P-0010-01A.

For Sales in Germany, an agreement was reached that the recommended qualification for carrying out the safety instruction must be at least the high voltage awareness training or higher. The duration of the instruction must be determined depending on the scope of vehicle-specific special features and the activities to be carried out.
2.3 Hybrid-specific components
<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Wiring harness between charger feed-in socket and charger</td>
<td>A100s1</td>
</tr>
<tr>
<td>2</td>
<td>Wiring harness between high-voltage battery and high-voltage distributor plate on the power electronics control unit</td>
<td>A100s1</td>
</tr>
<tr>
<td>3</td>
<td>Heat exchanger</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Line between high voltage distributor and high voltage PTC heater</td>
<td>N33/5</td>
</tr>
<tr>
<td>5</td>
<td>Wiring harness between high-voltage distributor plate at power electronics control unit and electric machine</td>
<td>N82/2</td>
</tr>
<tr>
<td>6</td>
<td>Low temperature coolant circuit 2 temperature sensor</td>
<td>M43/7</td>
</tr>
<tr>
<td>7</td>
<td>Line between high voltage distributor and electric A/C compressor</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Line between high-voltage distributor plate at power electronics control unit and high-voltage power distributor</td>
<td>N129/1</td>
</tr>
<tr>
<td>9</td>
<td>Expansion reservoir for low-temperature circuit 2</td>
<td>N129/1f752</td>
</tr>
</tbody>
</table>

**Function of onboard charger:**

- Converts AC input voltage into DC output voltage to charge the high-voltage battery
- Controls communication with socket on vehicle (status LEDs and locking motor)
- Charge plug detection (prevents driving off with the charging cable)
- Controls communication with the public charging station (payment and intelligent charging)
- Monitors charging process through Control Pilot

**Properties:**

- 3.3 kW output with 220 - 240 V

**High-voltage battery functions:**

- Acts as an energy storage device and supplies the HV components with the energy required

**Properties:**

- Capacity 6.2 kWh
### Function of power electronics:
- Controls electrical machine when requested by ME-SFI [ME] control unit
- Monitors the temperature and position of the electric machine
- Converts the direct current of the high-voltage battery into a 3-phase alternating current for the electric machine
- A DC/DC converter is integrated in the power electronics control unit for supplying the 12-V on-board electrical system.
- Replaces the traditional 12 V alternator
- DAS-related control unit

### Power electronics properties:
- Supplies 230 A continuously and 340 A for short periods (<2s)

The following control units are mainly involved in DAS 4:
- Electronic ignition lock control unit
- ME-SFI [ME] control unit
- Powertrain control unit
- Electric steering lock control unit
- Fully integrated transmission control unit
- **Power electronics control unit**
- Electric machine

### Function of electric machine
- The electric machine converts electrical energy into kinetic energy
- The following functions can be implemented
  - Regenerative braking (energy recovery) realized by way of braking torque applied by the electric machine
  - Electrical start-off, electric mode
  - Boosting (additional torque to assist the combustion engine)
  - Alternator mode

### Properties of electrical machine:
- 3-phase electric machine as a continuously energized synchronous machine
- Up to 65 kW maximum output
- Max. torque of 440 Nm
- Integrated rotor position sensor
- Integrated temperature sensor
- Integrated in transmission traction head (725.013)

### Function of electric A/C compressor:
- The high-voltage A/C compressor with integrated control unit is responsible for drawing in and compressing the refrigerant. The electric A/C compressor is continuously speed-controlled from 700 to 9000 rpm, depending on the evaporator temperature.
- The high-voltage battery cooling function or the pre-entry climate control function can also request activation of the electric A/C compressor.

### Electric A/C compressor properties:
- Scroll compressor with electric motor and corresponding power electronics
- Power consumption up to 60 A (at maximum output)
- Refrigerant R1234yf
- Object number for compressor oil A000 989 06 06
### High-voltage PTC function:
- Heats up the coolant to reach the specified temperature in the vehicle interior more quickly

### High-voltage PTC properties:
- Rated output of 7 kW with inlet temperature of -20 °C
- Power consumption of up to 30 A (for brief periods)
2.4 Control and display concept, operation strategy

**HYBRID-specific displays**

<table>
<thead>
<tr>
<th></th>
<th>HYBRID - the currently selected operating mode</th>
<th>30 km - electric range (depending on driving style, charge level of high-voltage battery)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>READY - signals the operative readiness of the hybrid drive system</td>
<td></td>
</tr>
</tbody>
</table>

**Power display of electric machine in %**

**E-DRIVE**
The electric operating energy input, e.g. during electric mode or with the boost effect, is displayed here. When the indicator reaches the end stop, the combustion engine starts in electric mode.

**Charge**
The recovered power that is stored in the high-voltage battery in the form of electrical energy is displayed here. When the indicator reaches the end stop, the maximum regenerative brake power is reached. The service brake assists if additional brake power is required.
Energy flow display

BROKEN WHITE LINE

- The combustion engine drives the vehicle.
- The high-voltage battery is not charged.

BROKEN WHITE LINE

- The combustion engine is running.
- The electric machine is operated as an alternator and charges the high-voltage battery.

BROKEN RED LINE

- **Boost mode** (acceleration mode) - The power requirement is extremely high.
- The electric machine assists the combustion engine depending on the charge level of the high-voltage battery.

BROKEN GREEN LINE

- **Regenerative braking** - the kinetic energy of the vehicle is converted into electrical energy by the electric machine
- in order to charge the high-voltage battery.

BROKEN GREEN LINE

- **Electric mode** - The electric machine drives the vehicle.
- Power is supplied via the high-voltage battery.

The vehicle can be operated at speeds of up to approximately 130 km/h using the electric motor only.

1: Fuel consumption in the last 15 minutes
2: Electrical energy generated in the last 15 minutes
Transmission modes

The handling characteristics can largely be determined by selecting the respective transmission mode. However, depending on the transmission modes selected, not only do the drive (engine and transmission management), suspension and steering change, but also the energy management. The respective transmission mode can be selected using the DYNAMIC SELECT switch.

<table>
<thead>
<tr>
<th>Transmission mode</th>
<th>Explanation</th>
</tr>
</thead>
</table>
| Individual        | Individual setting of the following vehicle characteristics:  
|                   | • Drive  
|                   | • Suspension  
|                   | • Steering  
|                   | • ECO Assistant (haptic accelerator pedal)  
| Sport             | • Sporty driving style with boost effect  
|                   | • Pure electric mode is not possible  
| Sport +           | • Extremely sporty driving with boost effect  
|                   | • Pure electric mode is not possible  
| C (Comfort)       | • Comfortable and consumption-optimized driving style  
|                   | • Pure electrical mode is possible  
| E (Economy)       | • Extremely consumption-optimized driving  
|                   | • Electric mode as often as possible  
|                   | • Double pulse in the haptic accelerator pedal (ECO Assistant)  
|                   | • The coastdown behavior of the vehicle is adapted depending on the traffic  
|                   | • Purely electric deceleration mode is possible up to 180 km/h  

Behavior after ignition OFF

If the ignition is switched off for under four hours, the transmission mode selected last remains active.

If the ignition is switched off for more than four hours, the transmission mode switches to Comfort when the vehicle is started again.
Operating modes

By selecting the operating modes, the driver can actively influence the energy balance and therefore also the charge level of the high-voltage battery.

<table>
<thead>
<tr>
<th>Operating mode</th>
<th>Explanation</th>
</tr>
</thead>
</table>
| HYBRID         | • All drive types are available: electric drive, internal combustion engine, boost effect, regenerative braking  
                   • Automatic selection of drive type using electric mode as often as possible |
| E-MODE         | • Electric mode for electric driving  
                   • The drive type is chosen using the haptic accelerator pedal  
                   • Electric drive is possible up to the actuation point of the haptic accelerator pedal  
                   • The internal combustion engine is not started up until the actuation point is bridged by the haptic accelerator pedal. |
| E-SAVE         | • Electric mode or driving with the combustion engine is possible  
                   • However, the electric drive and the boost effect are only restrictedly available  
                   • To use the electrical energy at a later stage, the current charge level of the high-voltage battery is maintained. |
| Charge         | • Charging of the high-voltage battery while driving via the internal combustion engine  
                   • Electric mode is not possible. |

**Operating mode availability**

All operating modes are available in transmission modes C and E.

HYBRID operating mode is active in transmission modes S and S+ and during manual shifting.
Travel-based operation strategy

The travel-based operation strategy takes into account several factors to influence the energy balance of the high-voltage battery. The following factors are incorporated for assessing the energy required for the route:

- COMAND Online (map data with elevation profile of route)
- Current vehicle weight
- Behavior of the driver (vehicle speed, braking)
- Ancillary consumer load (air conditioning, heating, lighting)
- Turning probability

The operating mode is not selected on a result-oriented basis only, but also in relation to the following:

- The use of electric energy minimizes consumption differently with respect to the route.
- The use of electric energy for electric mode in the city offers high added value for the driver.

In section A, the charge level of the high-voltage battery is slightly increased (highway stretch). In the process, the system takes into account the urban driving in section B. The hatched area in section A indicates how the charge level would develop without this consideration. The charge level would already start to degrade in the highway stretch, and the fuel consumption in the city would increase.

When the vehicle is in urban traffic (section B), the previously built-up charge level is gradually used up and is maintained constant from a certain level.

If the driver now continues to drive in a highway section C, the system maintains the charge level as far as possible. The destination is located in section D. Here, no additional energy is required and the high-voltage battery can be charged when the vehicle is stationary.

The travel-based operation strategy is available under the following conditions:

- the active route guidance is activated, and suitable map data is available
- E ( Economy) transmission mode has been selected using the DYNAMIC SELECT switch
- The HYBRID operating mode is selected
**Display of route-based operation strategy**

The area in front of the vehicle is displayed in green on the multifunction display while driving.

**Haptic accelerator pedal**

The haptic accelerator pedal helps to reduce fuel consumption by means of two functions.

<table>
<thead>
<tr>
<th>How?</th>
<th>Signaling the maximum available electrical power</th>
<th>Signaling the optimum point in time for releasing the accelerator pedal</th>
</tr>
</thead>
<tbody>
<tr>
<td>By means of an additional actuation point</td>
<td>By means of a tangible double pulse</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WHEN?</th>
<th>Signaling the optimum point in time for releasing the accelerator pedal</th>
</tr>
</thead>
<tbody>
<tr>
<td>At the end of the power display of the electric motor (E-DRIVE)</td>
<td>At the optimum point in time</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AVAILABILITY?</th>
<th>Only in E-MODE operating mode</th>
<th>Only in the E-Economy and I-Individual transmission modes</th>
</tr>
</thead>
</table>

**ECO start/stop function**

**Automatic engine stop**

The automatic engine stop in hybrid vehicles can be equated with electric mode.

The "automatic engine stop" subfunction is examined and described from the point of view of the hybrid drive system.

Function requirements for automatic engine stop **general**:

- Hybrid drive system "READY"
- Combustion engine running.
- System diagnosis completed and error-free
- Engine hood closed
- No crash event in the driving cycle
- Vehicle speed < 160 km/h
- Transmission oil temperature > 0°C

The internal combustion engine is switched off by the ME-SFI control unit if certain combustion engine-internal requirements are met and all of the following requirements and enables have been issued:

- Vehicle speed < 160 km/h
- Transmission oil temperature > 0 °C
- Gear range plausible
- Sufficient vacuum in brake booster
- ESP® has issued release
- Engine hood closed
• No crash event
• 12-V on-board electrical system status OK and release issued
• High-voltage battery charge level sufficient
• Oil supply to automatic transmission ensured
• Driver door closed
• Driver seat belt fastened
• Interior temperature can be regulated if coolant temperature of internal combustion engine is available
• Climate control control unit has issued release

The combustion engine is not switched off automatically if:
• The self-diagnosis function of the engine management system is active
• The hybrid drive system is malfunctioning
• The climate control system in the vehicle requires this
• The high-voltage battery is charged.

**Automatic engine start**

The "automatic engine start" subfunction is examined and described from the point of view of the hybrid drive system. The internal signals and function sequences of the internal combustion engine, the automatic transmission, the regenerative braking system and the 12-V on-board electrical system are not described in further detail here.

Function requirements for automatic engine start **general**:
• Hybrid drive system "READY"
• Engine is stationary after automatic engine stop (Electric mode)
• System diagnosis completed and error-free
• No crash event in this driving cycle
• Engine hood closed
2.5 Charging

When the E 350 e is being charged there are three stationary charging options:

- Power socket (mode 2)
- Wallbox charging station (mode 3)
- Charging station (mode 3)

The high-voltage battery can be charged within a nominal voltage range of 100 V to 240 V. Depending on the selected charging type, the provided charging cable must be used. A distinction is made between modes 2 and 3.

**Mode 2 charging cable**

The mode 2 charging cable includes an in-cable control box with a ground fault circuit breaker (RCD) and Control Pilot in accordance with IEC 61851. It has a power supply plug at one end and a 5-pin socket at the other end.

The charge cable plug is locked at the vehicle end when charging, whereby there are country-specific deviations.

---

**Mode 2 charging cable with in-cable control box**

Please inform the customer that this charging cable must be handled as described in the operator's manual:

- “Do not leave the control of the charging cable freely suspended at a power socket”
- “The control may not be lifted up using the following components:”
  - “at the charging cable plug”
  - “at the power supply plug”

Extension cables, cable drums and multiple sockets must not be used in combination with the charging cable.
Mode 3 charging cable
The mode 3 charging cable does not include an in-cable control box. The protection functionality (fuses, RCD) is provided by the charging station or wallbox charging station. The charging cable has a 7-pin socket at both ends. When charging, the charging cable connector is locked at the vehicle side and the charging station side.

Instructions for wallbox charging station and wallbox charging station service, 2016
The objective of the improved wallbox charging station service is to offer the customer an attractive solution for safe, quick and convenient charging at home via the dealer. In addition to the purchase of the wallbox charging station, the dealer can also offer the customer a chargeable voucher for the installation of the wallbox charging station by a service provider as a user-friendly solution. The installation service offers various types of services such as an installation check and/or the installation of the wallbox charging station. This offer is an all-round carefree package for the customer because the customer can order the complete service (hardware and installation voucher, etc.) from a single source. When doing this, the dealer is provided with professional support via the wallbox charging station service tool of Mercedes-Benz Accessories GmbH. The actual installation of the wallbox charging station on site at the customer's is carried out by "The Mobility House" without the involvement of the dealer.
As standard, the E 350 e is delivered with the mode 2 type E/F charging cable in Germany. The charging cable has a maximum length of 4 m and it is spiral shaped.

Charging features
The driver can determine the departure time via the multimedia system and the maximum charging current via the instrument cluster himself/herself.

Two charging options are available for this:
• Immediate charging
  The high-voltage battery is immediately charged with the energy available from the mains supply.

• Charging with departure time
  If the customer selects "Charging with departure time" in the multimedia system, the high-voltage battery is also charged with the energy available from the mains supply. Configuration of the departure time is also relevant for the use of the stationary air conditioning and represents the end of the charging process during an optimized charging process.

Overview of charging times

<table>
<thead>
<tr>
<th>Charging options</th>
<th>Mode 2 charging cable 1.8 kW</th>
<th>Mode 2 charging cable 3 kW</th>
<th>Mode 2 charging cable 3.6 kW (in combination with CEE connector)</th>
<th>Mode 3 charging cable 3.6 kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private charging facility 1 Phase</td>
<td>285 minutes</td>
<td>165 minutes</td>
<td>135 minutes</td>
<td>-</td>
</tr>
<tr>
<td>Private charging facility 3 Phases</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>135 minutes</td>
</tr>
<tr>
<td>Public charging facility 3 Phases</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>135 minutes</td>
</tr>
</tbody>
</table>

"Charge&Pay for Mercedes-Benz" app - find your power source via smartphone

Anyone wishing to charge his/her PLUG-IN HYBRID vehicle in the public sector can find about 3,000 charging locations, 230 operators, countless charging cards and payment systems.

In order to make this easier in future, Mercedes-Benz offers "Charge&Pay for Mercedes-Benz". Mercedes-Benz and smart customers can find free charging columns and control the charging and billing process using this app.

Payment is simple and transparent using PayPal.

Special feature

"Charge&Pay for Mercedes-Benz" operates without a contract and a basic fee.

The app has been available free of charge for the iOS and Android operating systems since December 2014.

Charging process

Stationary charging is subdivided into two subfunctions:

• Locking the charger feed-in socket
• Charging
The overall charging process is monitored in conjunction by the control units for the charger, battery management system, ME-SFI [ME], instrument cluster, and drivetrain. The maximum permissible charging current can be selected via:

- In-Cable Control Box in the mode 2 charging cable (depending on the national version) or
- the instrument cluster

The smaller value of the two charging current settings determines the maximum charging current.

**ECE charger feed-in socket pin assignments**

The 7-pin socket has 3 high-voltage contacts for feeding in the AC voltage and 2 signal contacts for CP and proximity. The CP contact is used for data exchange with the charging station; the vehicle detects when the charging cable is inserted via the PP contact.

**ECE charger feed-in socket**

<table>
<thead>
<tr>
<th>1</th>
<th>Left indicator LED (lock LED)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Right indicator LED (charge indicator LED)</td>
</tr>
<tr>
<td>CP</td>
<td>Control Pilot</td>
</tr>
<tr>
<td>N</td>
<td>Neutral conductor</td>
</tr>
</tbody>
</table>

| L1/L2/L3 | Phases L1, L2, L3 |
| PE | Protective Earth conductor |
| PP | Proximity |
| X58/23 | Charger feed-in socket |

The meaning of the indicator LEDs is listed in the table:

<table>
<thead>
<tr>
<th>LED locking/unlocking (white) Open lock icon</th>
<th>Locking or unlocking status of charging plug</th>
<th>LED charge status indicator</th>
<th>Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>No display</td>
<td>LOCKED</td>
<td>Orange flashing light</td>
<td>Connection build-up</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Green (flashing)</td>
<td>High-voltage battery is being charged</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Orange, illuminated</td>
<td>Temporary charging stop</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Green (continuously lit)</td>
<td>High-voltage battery fully charged</td>
</tr>
<tr>
<td>LED locking/unlocking (white) Open lock icon</td>
<td>Locking or unlocking status of charging plug</td>
<td>LED charge status indicator</td>
<td>Cause</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>---------------------------------------------</td>
<td>----------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Continuously lit</td>
<td>UNLOCKED</td>
<td>Red flashing light (high frequency)</td>
<td>Fault</td>
</tr>
<tr>
<td>Continuously lit and charge status indicator LED on</td>
<td>UNLOCKED</td>
<td>Orange/green/red</td>
<td>see above</td>
</tr>
<tr>
<td>Flashing (90 s at high flashing frequency)</td>
<td>FAULT</td>
<td>Flashing (90 s at high flashing frequency)</td>
<td>Fault</td>
</tr>
</tbody>
</table>

Emergency release

In the event that a problem arises, the charging plug can be disconnected as shown using the emergency release mechanism on the vehicle.
Service

**Input analysis**
An input analysis is planned if complaints are received about charging.

The input analysis covers the following charging complaints:

- Charging not working
- Charging termination
- Fault messages (flash codes) on In-Cable Control Box
- Fault messages (flash code) on charging socket on vehicle
- Questions/problems during the charging process

Recording of the used **charging infrastructure** is also part of the analysis:

- Wallbox charging station
- Domestic power outlet (with FI)
  - Mains fuse with 12/16/32 A
- Domestic power outlet (without FI)
  - Mains fuse with 12/16/32 A
- Public charging (with Plug&Charge)
- Public charging (without Plug&Charge)
- Payment type for public charging (telephone, SMS, credit card, other)
2.6 Mercedes me

Mercedes me, which was presented and introduced in 2014 on the occasion of the International Geneva Motor Show, is the new service brand by Mercedes-Benz.

Mercedes me provides access to the Mercedes-Benz world. The portal bundles innovative services, products and lifestyle products by Mercedes-Benz, Daimler and our cooperation partners, which also go beyond the "vehicle" product. You have to register to be able to use Mercedes me and the services. You then have access to personalized topics, as well as possibly access to the own vehicle (depending on the vehicle equipment). Mercedes me is never "done". New or further developed, tailor-made services and contents are constantly being provided that enrich the lives of the customers and make them easier.

"Anytime and anywhere"

Mercedes me is not just an online platform, but is visualized across all communication channels. The brand offer can be called up using a personalized Mercedes ID on the website www.mercedes.me. This gives the customer access to all of the individual services of Mercedes-Benz from a single source. The webpage is available in different languages and works on mobile equipment.

With the introduction of the E-Class (model series 213), the next major change will come to the vehicle with Mercedes me connect. Not only the name was slightly changed, but it also phases in the next generation in terms of technology.

National availability

The Mercedes me connect services are planned for the following countries.
Countries that already had Mercedes me connect services at the end of 2015.
Belgium, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Austria, Poland, Switzerland, Slovakia, Spain, Czech Republic, Hungary and Great Britain

Countries that will receive Mercedes me connect services in 2016.
European countries: Denmark, Norway, Portugal, Sweden
Non-European countries: China

Mercedes me connect services (release 1.x)

<table>
<thead>
<tr>
<th>Basic services (code 06U)</th>
<th>Remote Online services (code 05U)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be used free of charge</td>
<td>(Free of charge for first three years with COMAND)</td>
</tr>
<tr>
<td>• Mercedes-Benz emergency call system</td>
<td>• Vehicle position</td>
</tr>
<tr>
<td>• Telediagnosis</td>
<td>• Vehicle locating</td>
</tr>
<tr>
<td>• Maintenance management</td>
<td>• Remote query of vehicle status</td>
</tr>
<tr>
<td>• Accident management</td>
<td>• Configuration of Mercedes-Benz Apps</td>
</tr>
<tr>
<td>• Breakdown assistance management</td>
<td>• Stationary heater programming (**)</td>
</tr>
<tr>
<td>• Remote vehicle diagnosis (**)</td>
<td>• Remote door locking and unlocking</td>
</tr>
<tr>
<td>(*) Only available for certain model series as of approx. 12/2015</td>
<td>• Geographical vehicle monitoring</td>
</tr>
<tr>
<td></td>
<td>• Route planning (**)</td>
</tr>
<tr>
<td></td>
<td>• Programming of charge settings and pre-entry climate control (**)</td>
</tr>
<tr>
<td></td>
<td>(**) Only available for certain model series</td>
</tr>
<tr>
<td></td>
<td>(***) Only available for plug-in vehicles</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Live Traffic Information (code B54)

In select European countries, more precise traffic information is available for the optimized dynamic destination-oriented navigation system.
A vehicle must be connected to the Mercedes me account of the respective user in order to use the basic or remote online services. The services that are available depend on the equipment of the vehicle. It is also possible to individually activate or deactivate the services that are available (with the exception of the Mercedes-Benz emergency call system). To use the services, the respective terms of use must be accepted.

The linking of a vehicle is carried out at a Mercedes-Benz partner using the Mercedes me connect Retail (MmcR) system. The following documents are required for identification and as credentials:

- **Official document** (e.g. ID card) for inspection
- **Motor vehicle registration certificate** for inspection and to check the registered owner
- Email address of the Mercedes me account (if already available)

### Software updating

The customer can recognize the availability, the download and the automatic installation of a software update for the head unit based on the symbol (arrow).

Software updates are downloaded and installed automatically by default. It is possible to deactivate the automatic online update in the menu of the head unit. In the event of deactivation, the customer also receives a notification in the head unit. The update process can be started via the menu item "Software update".
The customer is notified of the download and installation progress in the display. COMAND Online can be used during this time without any limitations. If COMAND Online is switched off during the installation, the process resumes after it has been switched on again. After a successful installation, the customer is prompted to restart COMAND Online. The update takes effect after a system restart.

The HERMES communications module is always updated automatically. Separate confirmation in the head unit is not possible. All updates can be seen via the Mercedes me connect portal page under "Software update". The customer has full transparency here to see the status of software updates.

The following prerequisites are required to carry out a software update:

- The Mercedes me connect service "Software update" must be available in the market
- The Mercedes me connect general user agreement must be signed
- Internet connection via the mobile telephone network

If one of these criteria is not met, the customer cannot carry out the update in the vehicle.

Over the air software updates are communicated as part of field measures via the "intakt" system to the MPC that is affected in each case as "Remote software updates".

**Mercedes me connect services (release 2.0)**

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Services or features</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>UMTS communications module (code 360)</strong></td>
<td>Basic services</td>
</tr>
<tr>
<td>Contains an integral SIM card with the UMTS mobile phone standard.</td>
<td>• Maintenance management (incl. quick test)</td>
</tr>
<tr>
<td></td>
<td>• Telediagnosis (additional wear parts)</td>
</tr>
<tr>
<td></td>
<td>• Accident management</td>
</tr>
<tr>
<td></td>
<td>• Breakdown assistance management (incl. quick test)</td>
</tr>
<tr>
<td></td>
<td>• Remote vehicle diagnosis</td>
</tr>
<tr>
<td><strong>LTE communications module (code 362)</strong></td>
<td></td>
</tr>
<tr>
<td>Contains an integral SIM card with the LTE mobile phone standard.</td>
<td></td>
</tr>
<tr>
<td><strong>Remote Online services (code 11U)</strong></td>
<td></td>
</tr>
<tr>
<td>Only for Audio 20 USB</td>
<td>• Geographical vehicle monitoring</td>
</tr>
<tr>
<td></td>
<td>• Vehicle locating</td>
</tr>
<tr>
<td></td>
<td>• Vehicle position</td>
</tr>
<tr>
<td></td>
<td>• Remote door locking and unlocking</td>
</tr>
<tr>
<td></td>
<td>• Remote query of vehicle status</td>
</tr>
<tr>
<td></td>
<td>• Stationary heater programming</td>
</tr>
<tr>
<td></td>
<td>(Only for stationary heater code 228)</td>
</tr>
<tr>
<td></td>
<td>The remote online equipment is limited to three years as of the initial registration. The term can then be extended for a fee.</td>
</tr>
<tr>
<td><strong>Vehicle setup (code 08U)</strong></td>
<td></td>
</tr>
<tr>
<td>Only for COMAND Online</td>
<td>• Remote query of vehicle status</td>
</tr>
<tr>
<td></td>
<td>• Remote door locking and unlocking</td>
</tr>
<tr>
<td></td>
<td>• Programming the stationary heater</td>
</tr>
<tr>
<td></td>
<td>(Only for stationary heater code 228)</td>
</tr>
<tr>
<td></td>
<td>• Personalization</td>
</tr>
<tr>
<td></td>
<td>• Send2Car</td>
</tr>
<tr>
<td>Equipment</td>
<td>Services or features</td>
</tr>
<tr>
<td>----------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| **Vehicle monitoring (code 09U)**                  | - Geographical vehicle monitoring  
- Vehicle locating  
- Vehicle position                                                                                                                                 |
| Only for COMAND Online                             |                                                                                                                                                      |
| **Live Traffic Information (code 367)**            | - More precise traffic information for the optimized dynamic destination-oriented navigation system  
(In select European countries) |
| Only for COMAND Online (531), Garmin® MAP PILOT (357), preinstallation for Garmin® MAP PILOT (355) | The services can be used free of charge for the first three years after the initial registration and can then be extended via the Mercedes me Portal. |
| **Mercedes-Benz emergency call system (code 351)** | The Mercedes-Benz emergency call system is already activated when the vehicle is handed over. It is not necessary to sign separate terms of use for this. |
| **Concierge service (code 12U)**                   | The Mercedes me connect Concierge Service is an exclusive assistance and information service for Mercedes-Benz customers.  
After activation of the Mercedes me connect services, the Concierge Service is available free of charge for 1 year and its period of validity can then be extended subject to a fee. |
| Only for COMAND Online                             |                                                                                                                                                      |
| **Digital vehicle key in the smartphone (code 896)** | The digital vehicle key in the smartphone can be used free of charge for a smartphone the first three years. It must be enabled via Mercedes me. It can be extended after three years for a fee. |
| Only in combination with wireless charging system for mobile devices (code 897) or multifunction telephony (code 899) |                                                                                                                                                      |
| **Remote Parking Pilot (code 503)**                | The Remote Parking Pilot is enabled for use through the Mercedes me Portal. The use of the services can be enabled for a fee in the Mercedes me Portal for three years; they can then be extended via the Mercedes me Portal. |
| **Navigation services**                            | - Weather, local search, parking place finder and gas station prices (traffic through HERMES communications module)  
- Online map update "Over the Air" (traffic through HERMES communications module)  
- Online map update (USB)  
- Navigation card (SNAP) |
| Only for COMAND Online                             | The services can be used free of charge for the first three years after the initial registration and can then be extended via the Mercedes me Portal. |
| **Software update**                                | Software updates for defined vehicle components (Internet browser, communications module control unit software) are possible "Over the Air". The benefit for the customer is that he/she receives updated software without a workshop visit. Changes are redocumented via the Daimler back end systems.  
The software is not updated immediately following the download, but only 15 min after circuit 15 OFF.  
The function can be used after the customer has accepted the Mercedes me connect terms of use. |
| Only for COMAND Online                             |                                                                                                                                                      |

To use the many different Mercedes me connect services in the E-Class (model series 213), the vehicle must be connected (linked) to the Mercedes me account of the respective user.

The user can then activate or deactivate the respective services for his/her vehicle after accepting the terms of use.

As with Mercedes me connect (release 1.x), the vehicle is linked via the MmcR system. The process for linking an E-Class (model series 213) vehicle is the same as the previous Mercedes me connect (release 1.x) process.
## Select new Mercedes me connect services (release 2.0)

### Remote Parking Pilot

The Remote Parking Pilot can be used to park the vehicle in narrow parking spaces or to make it exit them per smartphone. Operation takes place here via an App on a smartphone. To be able to use the function via the smartphone app, the KEYLESS-GO system checks whether the vehicle key is present. Communication between the smartphone (Remote Parking Pilot app) and the vehicle is by means of a Bluetooth® connection.

The Remote Parking Pilot app, available for Android and iOS, is available to the customer in the respective App Store free of charge. To enable the Remote Parking Pilot in the vehicle, the function has to be subscribed for in the Mercedes me Portal.

Information on compatible mobile phones can be found at “www.mercedes-benz.com/nect/”.

### Digital vehicle key in the smartphone

The mobile phone as a digital vehicle key: By using Near Field Communication (NFC) technology, it is possible to replace vehicle key functions such as opening and locking of the vehicle with the mobile phone.

To be able use of the service digital vehicle key in the smartphone, a suitable mobile phone (with NFC) and a suitable SIM card are required. The service is verified (mobile phone, SIM card) and activated via the Mercedes me user account of the customer. A compatibility check in the Mercedes me Portal can be used to check whether the smartphone is suitable.

### Concierge Service

The Mercedes me connect Concierge Service is an exclusive assistance and information service for Mercedes-Benz customers. It provides personal assistance over the telephone with searching interesting places (POI), restaurants or hotels. Recommended destinations are transferred to COMAND Online upon request. The Concierge Service can be used in the vehicle and with the smartphone via an app.

Typical applications of the Concierge Services are:
- Local search in an unfamiliar area (e.g. next restaurant)
- Information (e.g. stock prices, hotel reservation)
- Find points of interest (POI) and transfer them as navigation destinations to the vehicle

### Car-to-X communication

The Car-to-X technology considerably extends the previous range of the vehicle sensor system such as the radar or camera systems. It makes it possible to transmit dangerous situations that have been automatically detected or manually reported by the driver in the vehicle to other vehicles. The data is gathered in the Daimler Vehicle back end, checked for plausibility and forwarded to other equipped vehicles in the relevant surroundings. This means that information about potential dangers in road traffic can be passed on to the drivers at an early stage. So that they can be prepared and critical situations cannot develop in the first place.

### Further training courses on the subject of Mercedes me connect

Target group: Car service advisors

- **P0107E** (training code)
  - Cars • Service Operating Sequences • Mercedes me connect • e-Training • Go
- **P0108F**
  - Cars • Service Operating Sequences • Mercedes me connect in Service Process • Go
Target group: Van service advisors

- **T1560E**
  Vans • Mercedes me • e-Training • Go

- **T1563F**
  Vans • Mercedes me • Go

Target group: Car salespersons

- **S0276E**
  Cars • Product Competence • Mercedes me connect • AKUBIS® direct sales • Go

- **S0313F**
  Cars • Product Competence • Mercedes me connect • Run

Target group: Van salespersons

- **S0471E**
  Vans • Product Competence • Mercedes me Vans • e-Training • Go

- **S0426F**
  Vans • Product Competence • Mercedes me Vans • Run
2.7 Pre-entry climate control

With the E 350 e there are four ways of carrying out pre-entry climate control of the vehicle interior:

- Pre-entry climate control via key
- Pre-entry climate control for departure time with charging of the high-voltage battery
- Pre-entry climate control for the departure time without charging of the high-voltage battery
- Immediate pre-entry climate control

Pre-entry climate control via key

The area of the driver’s seat or the entire vehicle interior can be briefly pre-heated or pre-cooled before entering the vehicle in order to improve entry comfort. When pre-cooling, the following functions are switched on in accordance with requirements:

- Automatic air conditioning
- Blower
- Seat ventilation

When pre-heating, the following functions are switched on in accordance with requirements:

- Automatic air conditioning
- Blower
- Seat heater
- Steering wheel heater
- Wall heating
- Mirror heater
- Rear window heater
- Perfume atomizer
- Ionization

The pre-entry climate control via the vehicle key must be activated/deactivated in the multimedia system. This is also where the zone is selected, i.e. only driver’s seat or entire vehicle. The high-voltage battery must also be sufficiently charged. The pre-entry climate control via the vehicle key can be activated twice in succession for up to 5 minutes. The combustion engine must then run for longer than 10 seconds.
Pre-entry climate control at departure time, with/without charging

Pre-entry climate control is started a maximum of 55 minutes beforehand. In the event of delayed departure, the vehicle interior is air-conditioned for an additional 5 min.

The actuated functions correspond to those of pre-entry climate control via the vehicle key.

The pre-entry climate control at the departure time must be activated/deactivated in the multimedia system. This is where the zone and the departure time are also set.

The following functions also remain switched on after starting the vehicle:

- Seat heater
- Seat ventilation
- Wall heating
- Perfume atomizer
- Ionization

When the high-voltage battery is being charged, the charging has priority over pre-entry climate control up to a defined charge level. Because of the pre-entry climate control, the charge level of the high-voltage battery may also be reduced with the charging cable plugged in. The range for electric mode is reduced.

Immediate pre-entry climate control

The immediate pre-entry climate control is activated using a button in the THERMATIC or THERMOTRONIC operating unit. The LEDs in the button indicate the function, i.e. cooling (blue), heating (red) or a set departure time (yellow). The vehicle interior continues to be air-conditioned for up to 50 minutes even if the vehicle is stopped and the interior temperature is kept constant.
### Pre-entry climate control

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>N58/1</td>
<td>Climate control operating unit</td>
</tr>
<tr>
<td>N58/1s6</td>
<td>Climate control menu button</td>
</tr>
<tr>
<td>N58/1s7</td>
<td>Rear window heater button</td>
</tr>
<tr>
<td>N58/1s8</td>
<td>Immediate pre-entry climate control button</td>
</tr>
</tbody>
</table>
2.8 Service

The ASSYST PLUS service interval indicator notifies the customer when the next service is due. The current Mercedes-Benz maintenance strategy also applies to the E 350 e:

- ECE: Fixed maintenance intervals with an interval every 25,000 km/12 months
- USA: Fixed maintenance intervals with an interval every 10,000 miles/12 months
- China: Fixed maintenance intervals with an interval every 10,000 km/12 months
- Always alternating between Service A and B
- "PLUS package" optional for customers
- RoW: gear oil and filter change every 125,000 km with 725.013
- USA: gear oil and filter change every 60,000 miles with 725.013

Additional maintenance work is required for the E 350 e

- Check charging cable and vehicle socket for mechanical damage

**R1234yf refrigerant** is used in the E 350 e. The object number for the compressor oil is A000 989 06 06.

### Towing

The information in the operator's manual must always be followed.

The E 350 e may be towed for no more than 50 km (30 miles). A towing speed of 50 km/h (30 mph) may not be exceeded. For longer towing distances and faster speeds, the entire vehicle must be picked up and transported. The vehicle must not be towed but only transported if:

- The multifunction display has failed
- Display message "Towing prohibited; see operator's manual" appears on the multifunction display.
Guidelines for towing services can be found in the XENTRY portal. These guidelines contain information on towing passenger cars with electric drives.

Replacement parts
Before replacing a high-voltage component, a TIPS case module (PTSS case) must be created. The Market Performance Center (MPC) supports the contract partner. With regard to replacing the high-voltage battery, the following regulation applies in Germany:

- If the vehicle is less than 6 months old as of the handover or the date of the initial registration, a new part must be installed.
- If the vehicle is more than 6 months old as of the handover or the date of the initial registration, a remanufactured part must be used, if available.
Sales

The warranty period for the vehicle is 2 years. To enhance the customer’s confidence in the new, innovative plug-in drive technology, Mercedes-Benz issues a warranty certificate for the high-voltage battery in the E 350 e. This warranty certificate is a performance promise to the buyer. To this end, the certificate contains a binding statement from Daimler AG whereby any technical malfunction of the high-voltage battery (provided that this malfunction can be attributed to a production fault, a material fault, or wear) will be rectified during a period of six years or a mileage of 100,000 km (62,000 miles) from the date of delivery or the day the vehicle was initially registered (whichever comes first). The detailed conditions regarding exclusions and assurances are available in the "Mercedes-Benz Plug-in Battery Certificate".

High-voltage battery

If a repair order has been issued for the vehicle that has crashed, the high-voltage battery must be replaced after an accident involving deployment of the pyrofuse (irreversible shutoff of the high-voltage on-board electrical system) in accordance with SI54.10-P-0035A.

Battery care of the high-voltage battery in stock vehicles and in case of repair

Continuous maintenance of the high-voltage battery is fundamentally important until the vehicle handover to the customer in order to be able to deliver vehicles fault-free and on schedule and in order to avoid consequential costs. Failure to adhere to the specifications can have various consequences:

- Hardware damage to the high-voltage battery due to deep discharging (consequential costs)
- Only manual high voltage disabling possible

In vehicles with anticipated idle times of more than six weeks, the high-voltage battery module must be checked at least every six weeks and recharged if necessary!

Checking of the charge level (State of Charge = SOC) of the high-voltage battery in the vehicle fleet/service:

- If the charge level < 50 % the high-voltage battery must be recharged to a level of >50 %.

For plug-in hybrids and electric vehicles the following applies:

- Pay attention to notes for charging in the operator's manual; SOC = 100 % is recommended

Important:

In the event of long idle times with high voltage vehicles, the 12 V battery must generally not be disconnected, since the 12-V power supply is needed to maintain the cell balancing inside the high-voltage battery. Otherwise, the high-voltage battery can become damaged. The 12-V battery is recharged or supported via the high-voltage battery at certain intervals in all of the current model series.