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VIN	XXXXXXXX	Vehicle	3'/F80/SEDAN/M3/S55/MANUAL/ECE/RL/2017/07		
Int.lev.works	-	Int.lev.(cur.)	-	Int.lev.(tar.)	-
Mileage	-				

61 20 ... Notes regarding the lithium ion battery

Introduction

The lithium ion battery is used for the first time beginning on 03/2014 in the M3 F8x.

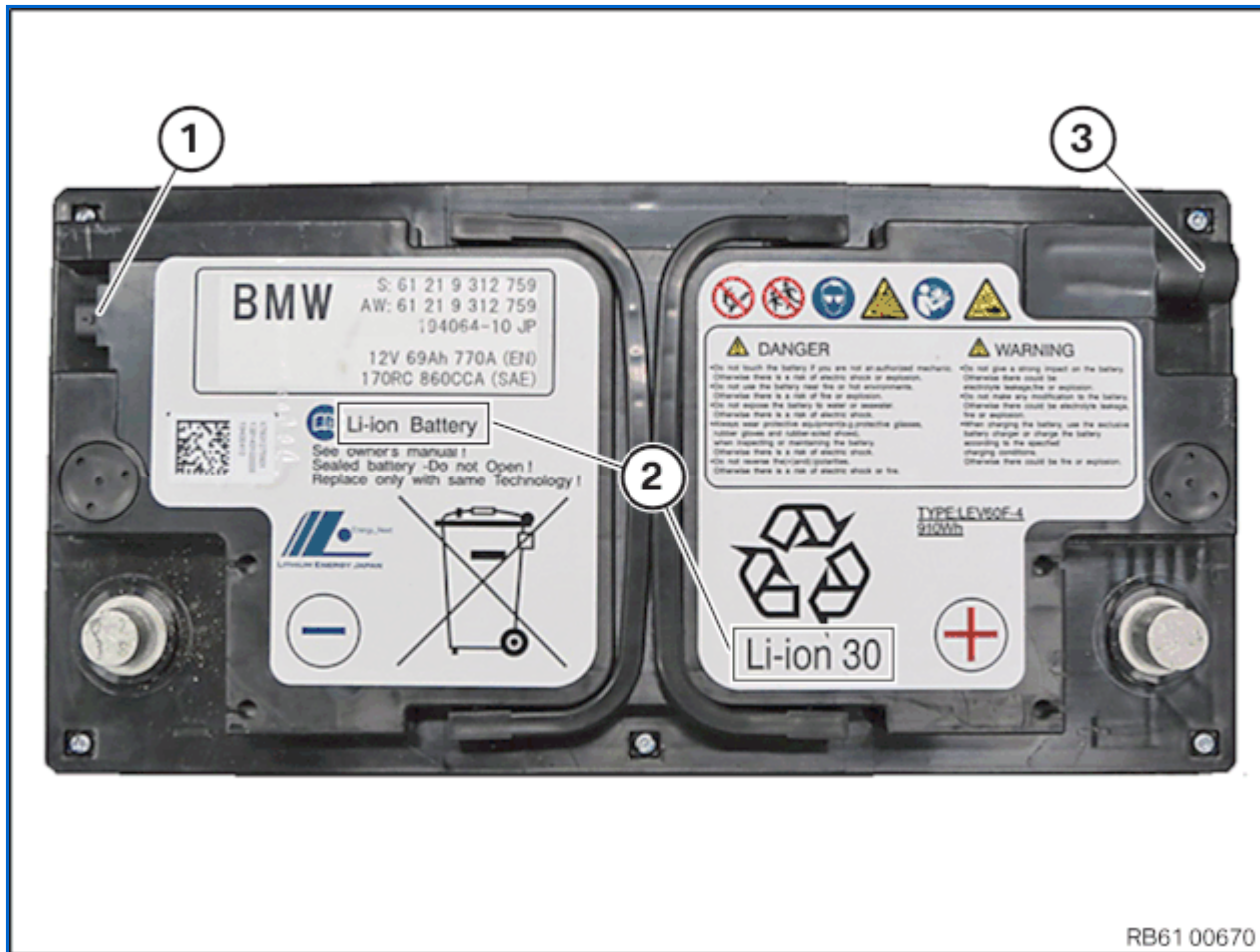
The constantly increasing energy demand of modern vehicle electrical systems calls for ever more powerful battery solutions. A modern luxury-class vehicle has some 100 actuator motors that have to be fed with electrical current. Added to these are safety, environmental and comfort elements which are increasingly becoming standard features, such as e.g. Antilock Brake System (ABS), Dynamic Stability Control (DSC), electric steering assistance, MSA, air conditioning and navigation system. Current consumption is considerable even when the vehicle is not in use.

In addition, the subject of light construction has an especially high priority, especially in M vehicles. A low vehicle weight contributes significantly to the sporty drivability of a vehicle. Compensation of additional weight with technical measures is limited.

The lithium ion battery has the following advantages compared to a lead-acid or AGM battery:

- Low weight (approximately 50% of the AGM battery).
- Increased cycle stability resulting in extended service life.
- Higher power consumption resulting in higher state of charge and better availability of customer functions (e.g. automatic engine start-stop function).
- Increased power at temperatures of > 0 °C resulting in higher vehicle system stability.

Brief component description



Lithium ion batteries can be detected based on the following characteristics:

1. [LIN bus connection inside of the lid](#)
2. [Notes on the label](#)
3. [Large degassification connection in the lid](#)

- [In the lithium ion battery, integrated electronics](#) are used in place of the intelligent battery sensor on the negative terminal of the AGM battery. The integrated electronics have similar tasks.
- In addition, the lithium ion battery has an integrated electronic disconnect switch for protection.
- The lithium ion battery has a black housing just like the AGM battery.
- "Magic Eye" does not exist, either.

Notes for Service department

Attention!

It is necessary when handling the lithium ion battery to observe some particular points pertaining to battery replacement and charging!

Charging

Warning!

Do not charge the lithium ion battery with > 14.0 V!

Do not use rapid-charging programs!

Attention!

The charging voltage that is generated by existing chargers that are designed for the lead-acid or AGM battery is too high for the lithium ion battery.

This excessive charging voltage may in some cases result in that the separating switch of the lithium ion battery **will be opened**. This does not damage the lithium ion battery. The separator switch will close again when a charging voltage of < 14 V is applied at the battery terminals.

[The charging voltage of existing chargers must be adjusted prior to the initial charging of a lithium ion battery.](#)

Do not exceed the **maximum charging voltage of 14.0 V** when charging a lithium ion battery. This applies not only to lithium ion batteries out of the vehicle but also charging by use of the jump start terminal point.

The lithium ion battery should only be charged at a battery temperature of > 5 °C. If charging below 5 °C is absolutely necessary, the maximum current of the charger must be adjusted according to the following table. The maximum permissible charging voltage is 14.0 V.

Battery temperature	Maximum permissible duration of the charge current
5 °C to 60 °C	180 A
0 °C to 5 °C	30 A
-10 °C to 0 °C	20 A
-15 °C to -10 °C	10 A
-25 °C to -15 °C	6 A

Disconnect switch

The lithium ion battery has an internal disconnection switch that can disconnect the lithium ion battery to protect it. The voltage at the battery terminals cannot be measured when switched off.

This means that the lithium ion battery is not necessarily defective when the voltage can no longer be

measured at the battery terminals.

If the electronic disconnect switch is activated, a diagnosis of the lithium ion battery is necessary using the diagnosis tester.

The following table outlines the response of the disconnect switch in fault situations:

Fault situation	Condition for reactivation
Overvoltage	Overvoltage is no longer applied. Voltage at the battery terminals < 14 V
Undervoltage (protection from total discharge)	Apply a voltage of > 10 V to the battery terminals for at least 20 s (e.g. using a charger)
Operation at high temperature	Battery temperature < 80 °C
Short circuit	Apply a voltage of > 10 V to the battery terminals for at least 20 s (e.g. using a charger)

A power pack, charger or second battery (e.g. jump-start) can be used if it is necessary to apply voltage at the battery terminals to reactivate the disconnect switch according to the table above.

When a charger is used, it must have a mode for completely discharged batteries or manual start of the charging procedure because the battery will otherwise not be detected and the charging procedure will not start.

Housing

Attention!

Risk of damage!

Do not open lithium ion batteries!

The screws on the lid and on the bottom of the lithium ion battery are not intended for service work and may not be unscrewed!

Do not open the lithium ion battery because it will not be possible to close it tightly again. Additionally, touching current carrying components may cause high short-circuit currents that will lead to the destruction of the lithium ion battery.

Disposal/transport

Before transporting the lithium ion battery, [assess its transportability](#).