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Schaeffler E-Axle RepSystem-M

PART NO. 762 0004 10
Repair solution for e-axle
disassembly/assembly

BMW motor EMP242

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Disassembly and assembly
BMW motor EMP242

- The vehicle manufacturer's specifications and safety instructions must be observed when removing and installing the drive unit.
- Work on electric vehicles may only be carried out in compliance with country-specific legal regulations.
- Repairs may only be carried out by specialist staff and using suitable garage equipment.
- The bearing seats and the seats of the rotary shaft seals need to be cleaned.
- Cleanliness must be ensured throughout the entire repair process.
- Due to the high magnetic forces, the rotor must be protected against surrounding metal particles/chips.
- The rotor and stator must not touch each other during the disassembly or assembly processes. Failure to comply with this may result in unwanted noise generation and malfunctions.

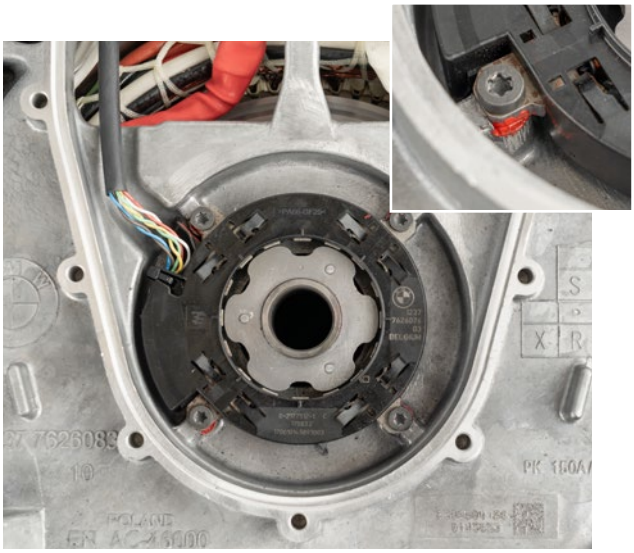
- **Risk of fatal injury from electrical and magnetic fields**
  Electrical and magnetic fields are created on the high-voltage system. There is a risk of death or serious injury due to malfunction of active implants (e.g. pacemakers, insulin pumps, hearing aids). Persons with active implants must not carry out any work on the high-voltage system.

- Remove the motor in accordance with the vehicle manufacturer's specifications.
- Remove attachment parts.

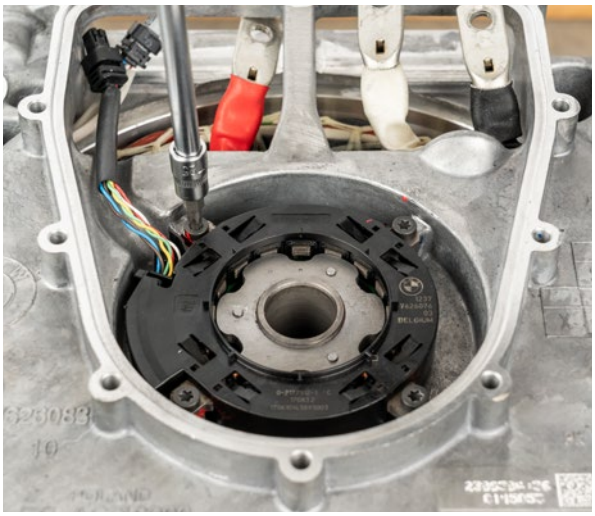
Note:
The vehicle manufacturer stipulates that guide pins are to be used when disassembling the transmission. The corresponding part number can be found in the appendix.

- Position the motor with the rotor position sensor facing upward.
- Mark the position of all four tabs of the rotor position sensor.

Important:
The installation position of the sensor must be precisely marked before disassembly, e.g., mark the four screw-on tabs and the contact surfaces in color before loosening the screws.
Any angle offset, however small, can cause a reduction in power or a motor failure.



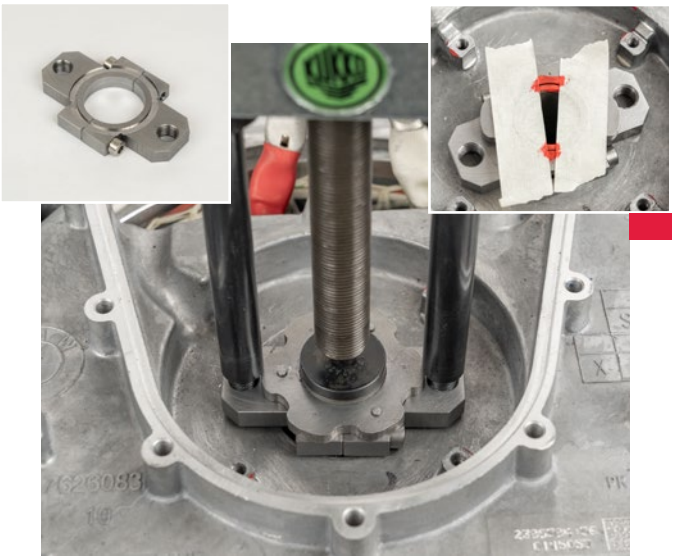
- Disassemble the screws of the rotor position sensor.
- Remove the rotor position sensor.



- Measure and note the installation depth of the encoder for the rotor position sensor, e.g. using a caliper.
- Using a suitable tool, pull the encoder flush to the upper edge of the rotor shaft without twisting it.
- Mark the position of the encoder.

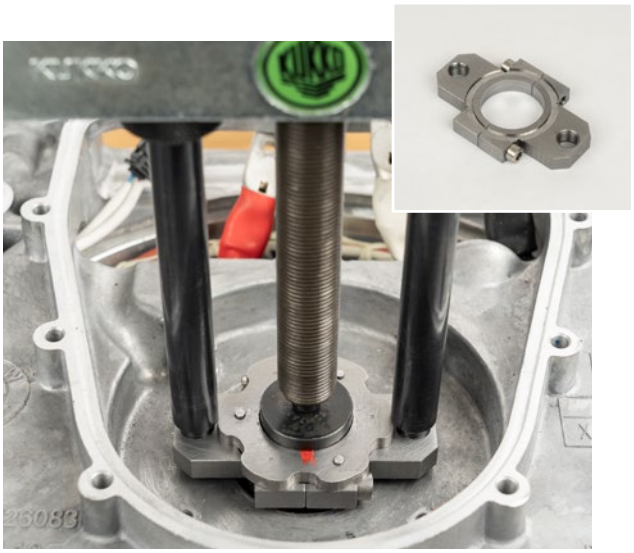
Note:
Risk of damage with two- or three-arm extractors. Ensure that there is full-surface contact on the encoder directly on the rotor shaft, see e.g. sample tool shown.

Important:
The installation position of the encoder must be precisely marked, e.g. using two markings of different widths on the shaft/encoder. Any angle offset, however small, can cause a reduction in power or a motor failure



- Use a suitable tool to pull the encoder for the rotor position sensor off the rotor shaft.

Note:
Risk of damage with two- or three-arm extractors. Ensure that there is full-surface contact on the encoder directly on the rotor shaft, see e.g. sample tool shown.



- Turn the motor upside down.
- Remove the screws from the motor housing.

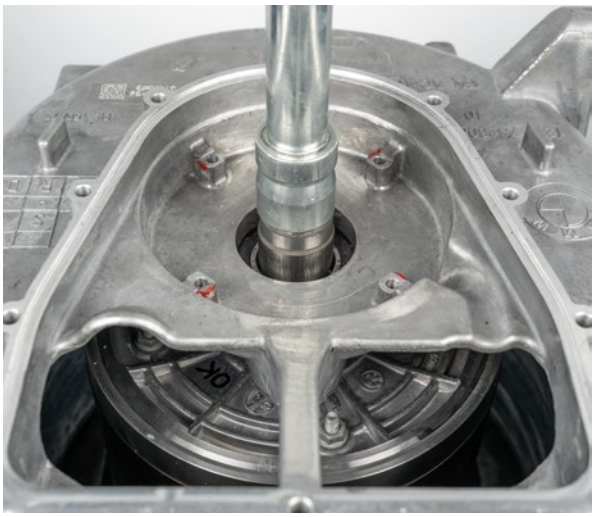
- Remove the rotor from the stator housing.

Note:
An appropriate device must be used to carry out the disassembly to ensure that the two components do not touch each other.
Take note of the cable routing.
A spring washer is located in the bearing seat on the stator side.

Important:
Due to the high magnetic forces, the rotor must be protected against surrounding metal particles/ chips.

- Press the rotor out of the housing.

Note:
The rotor is highly magnetic and must not be damaged on the press table.



- Disassemble the snap ring inside the housing.

- Press the bearing out of the housing.

- Press in a new ball bearing.

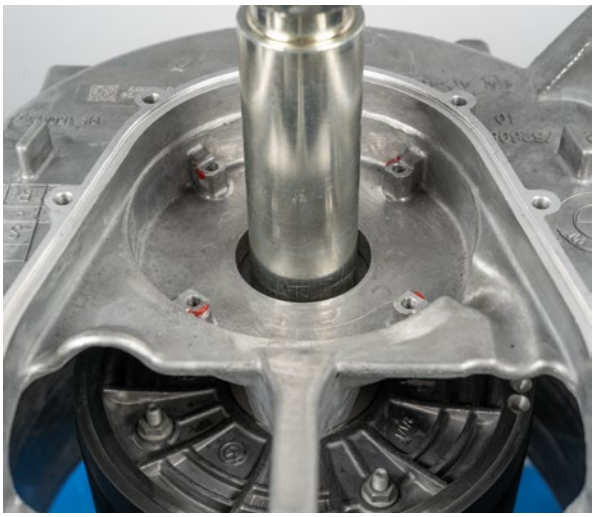
- Insert the snap ring.

- Measure and note the installation depth of the contact ring, e.g. using a caliper.
- Pull the bearing along with the contact ring off the rotor shaft.
- Clean the base of the rotor shaft hub.

- Press on a new ball bearing.

- Press on the contact ring to the previous installation depth using a suitable sleeve.

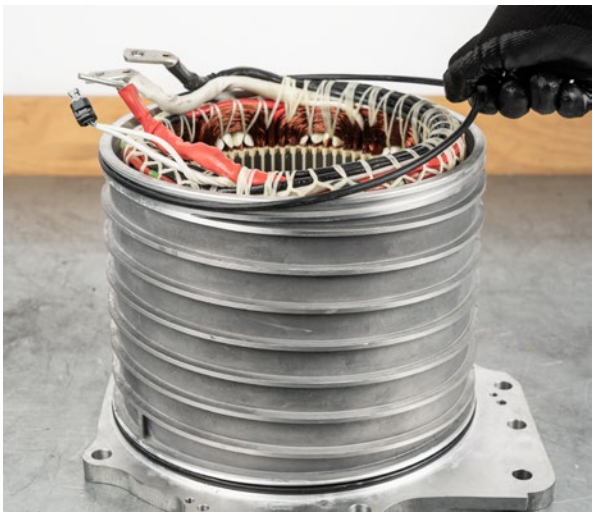
- Press the bearing onto the rotor along with the housing.



Note:
The rotor must not rest on the contact ring during the pressing process, as this will change its installation depth.

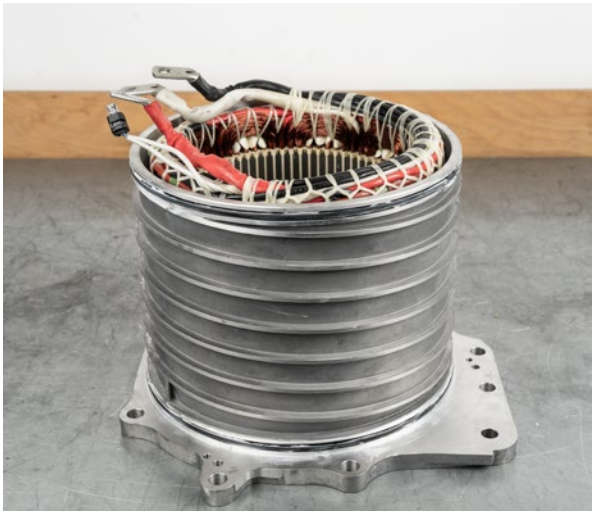
- Check the seat of the spring washer in the bearing seat of the stator housing.

- Disassemble the two O-rings from the stator housing.
- Clean the sealing surfaces near the O-rings on the stator housing and motor housing.



- Assemble the new O-rings and lubricate them using suitable grease, e.g. BMW assembly grease GE.

Note:
The corresponding part number can be found in the appendix.



- Install the rotor in the stator housing.

Note:
An appropriate device must be used to carry out the assembly to ensure that the two components do not touch each other.
Take note of the cable routing.

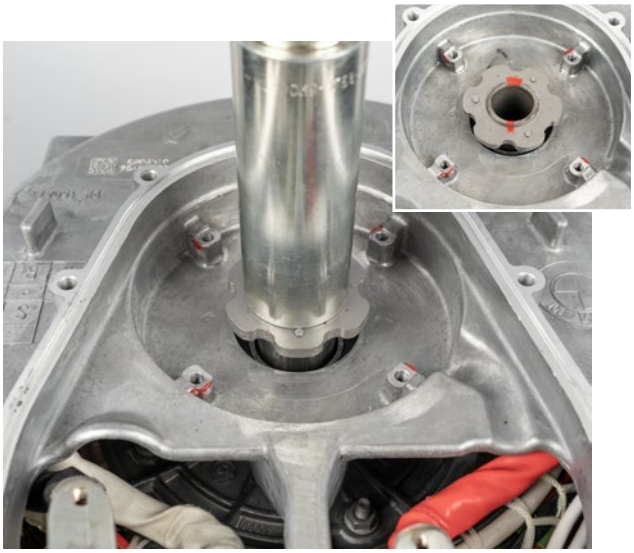
- Tighten the screws of the motor housing evenly to 8 Nm.

- Turn the housing upside down.

- Press the encoder for the rotor position sensor to the previous installation depth and position using a suitable sleeve

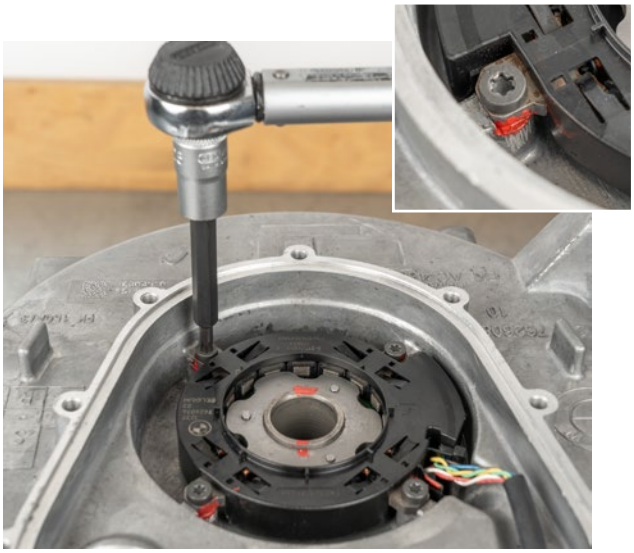
Note:
To avoid axial loads on the bearings, support the rotor shaft on the opposite side using a suitable sleeve.

Important:
The encoder must be precisely mounted on the marking. Any angle offset, however small, can cause a reduction in power or a motor failure.



- Assemble the rotor position sensor in the previous installation position and tighten the screws to 6.8 Nm.

Important:
The sensor must be exactly on the edge of the four surfaces that have been marked in color. Any angle offset, however small, can cause a reduction in power or a motor failure.



- Turn the housing upside down.

- Apply suitable grease to the base of the rotor shaft hub, e.g. BMW assembly grease GE.

Note:
When using GE assembly grease: Squeeze out all of the contents from the tube of grease and apply the grease to the base of the rotor shaft hub. The toothing must not be greased, as the grease is evenly distributed when joining the transmission to the motor. The corresponding part number can be found in the appendix.

- Mount attachment parts.
- Install the motor in accordance with the vehicle manufacturer's specifications.
- Tightening torque for the transmission and motor mounting screws: 25 Nm + 90°.
- Tightening torque of the screws for the HV cables for the power electronics and motor: 14 Nm.

Note:
The vehicle manufacturer stipulates that guide pins are to be used when assembling the transmission. The vehicle manufacturer stipulates that new screws are to be used when connecting the motor to the transmission, screwing on the HV cable and using a new HV cover. The corresponding part numbers can be found in the appendix.

APPENDIX

The following items can be acquired from the
BMW spare parts dealer.

1. Guide pins for disassembly/assembly of the transmission
Guide pins
BMW part number 2 285 545

2.Screw for connecting the transmission to the motor
M12 screw
BMW part number 07 12 9908413

3.Screw for HV cable
M8 screw
BMW part number 12 37 8605128

4.HV cover with seal
Cover
BMW part number 12 37 7626090

5. BMW assembly grease GE
Assembly grease
BMW part number 83 23 2 357 146