

**Additional safety instructions for submersible synchronous motors**




In general the assembly and operating instructions for submersible motors (Document 308 018 427/418) apply. Please refer to the frequency converter manual and the system quick installation guide for further safety instructions.

Storing, transporting, working on the motor, disposal




When machines with permanent magnets are fully assembled, the magnetic field is fed into the motor's magnetic circuit. As a result no magnetic field that is harmful to health can be detected outside the machine.

The permanent magnet rotor can only be dismantled and the coil can only be extracted by authorised workshops and disposal companies.

The following safety instructions apply when working on motors with the rotor removed:

 DANGER	<p>Death or serious bodily injury from magnetic field.</p> <ul style="list-style-type: none"> ⊘ Working in the immediate vicinity of the rotor is only permissible in exceptional justified circumstances. ⇒ Mark the boundaries of the areas where people move freely. People who must use electronic or magnetic medical aids, such as pacemakers, hearing aids, implants or similar are particularly at risk.
 WARNING	<p>Crushing of limbs by magnetic force.</p> <ul style="list-style-type: none"> ⇒ Do not carry any magnetic parts, such as tools, keys, jewellery, etc. on the body and keep them away from the machine.
 CAUTION	<p>Damage to electronic equipment, data carriers and the motors themselves.</p> <ul style="list-style-type: none"> ⇒ Do not carry any electrical equipment and data carriers, such as cheque cards, credit cards, mobile phones, ID cards etc. on your body and keep them away from the machine. ⇒ Keep the working area and clothing free of chippings and ferrous waste. Do not perform any metal cutting operations on the machine.
Disposal	<p>Obey local regulations regarding the disposal of magnetic material.</p>

Commissioning, operation

 DANGER	<p>Death, serious bodily injury or material damage from the rotating rotor.</p> <p>A magnetic flow exists permanently in the motor because of the permanent magnets in the rotor. For each rotary movement of the rotor an electrical voltage occurs on the ends of the motor cables and the converter and filter terminals.</p> <ul style="list-style-type: none"> ⊘ Before performing any work check that the motor cable ends and the converter and filter terminals are not live and check each piece of equipment to ensure that the rotor cannot be turned. The general safety regulations „Working on electrical equipment“ apply. ⇒ Fit a reliable non-return valve. <p>A short circuit current is caused to flow with a cable or converter short circuit because of the voltage induced.</p> <ul style="list-style-type: none"> ⇒ Use short circuit-resistant cables <p>As an option a circuit breaker can be used to protect the cable runs in the event of a short circuit.</p>
 DANGER	<p>Death, serious bodily injury or material damage from the converter.</p> <p>As long as the feeding converter is not switched off and the converter's intermediate circuit (DC link) has not been discharged, dangerous voltage may be present on the ends of the motor cables and the converter and filter terminals even if the rotor is idle.</p> <ul style="list-style-type: none"> ⊘ Before any work check that the motor cable ends and the converter and filter terminals are not live.
 DANGER	<p>Automatically restart (Solar)</p> <p>System can automatically restart (Solar) - the appropriate safety precautions should be taken.</p>
Switching on	<p>The synchronous motor must be operated with a frequency converter and output filters. Ensure that the frequency converter has been configured properly before switching the motor on.</p>
Speed	<p>The maximum speed is the highest permissible operating speed. See name plate.</p>
FI switch	<p>Because of the technology used the FI switch may be triggered incorrectly. The general instructions for protecting equipment with frequency converters apply.</p>
Immunity	<p>The immunity requirements are in principle met by the machine but the plant manufacturer is responsible for selecting suitable sensor signal cables and the final evaluation of the equipment.</p>
Reactive power compensation	<p>Existing compensation equipment must be „choked“. Please consult the plant manufacturer.</p>