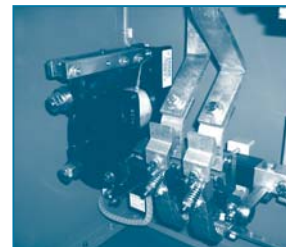
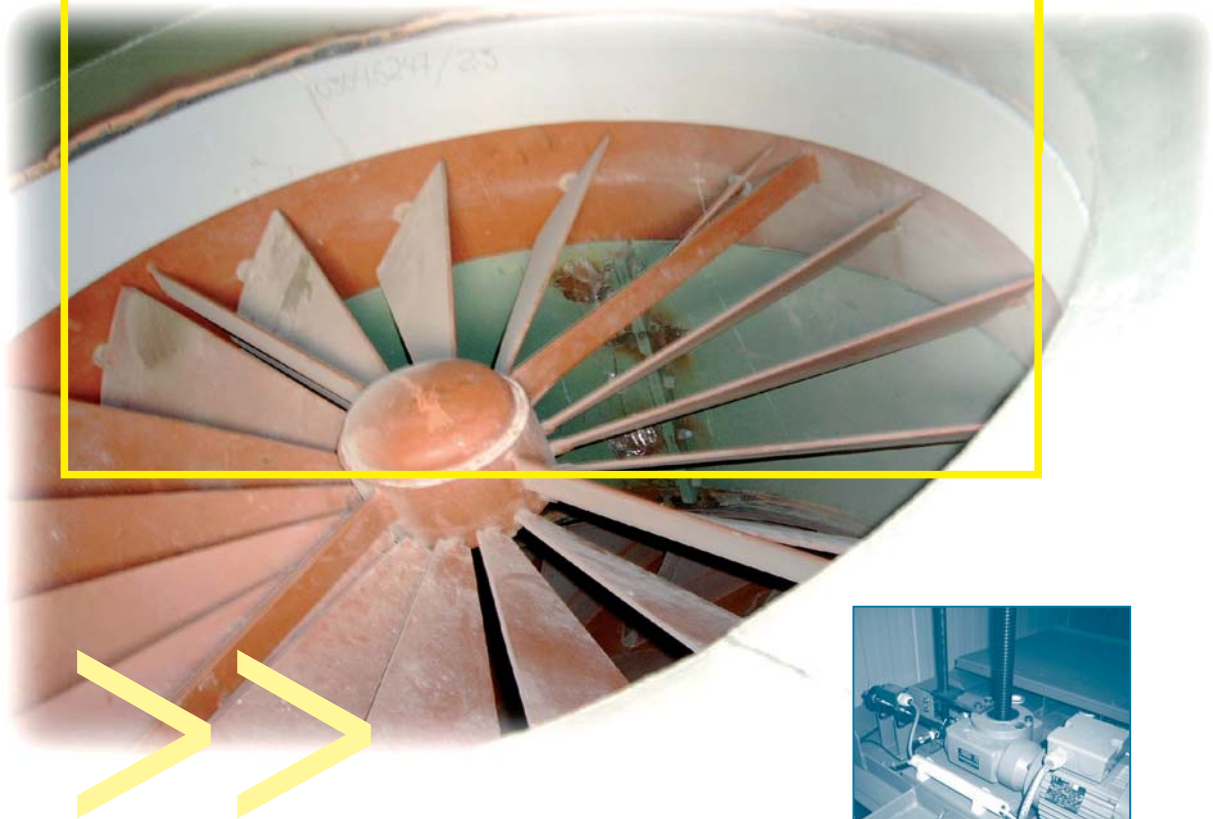


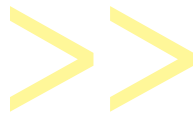
# Liquid motor starters

## MOTORSTARTERS

High torque – smooth start



# General description



## Liquid starter FE

for three-phase motors with slip-ring rotor up to 12 MW

## General, application

FE starters are filled with an electrolyte, which influences the resistance depending on the concentration.

Additional liquid starters save the heat that forms during the starting process and slowly transfers this by their surface. Therefore, they are particularly suited for high-performance drives that are not frequently started.

This type of starter is always used, when smooth starts are required, by example to safe the gear.

Robust equipment guarantees high operational reliability and long service lives

## Designs

- Single starter for low and medium-voltage machines up to 8000 kW
- Twin starter for low and medium voltage machines up to 12000 kW
- Starter with plain steel plate tank
- Starter with cooling fins for higher starting frequency
- Starter with additional water heat exchanger for high starting frequency

## Basic accessories

- Auxiliary switches required for the customer's control, wired to terminals
- Temperature monitoring tripping at 85°C
- Control voltage 230 V – 50/60 Hz
- Cable inlets, connection directly to short circuit contactor
- Visual and electrical level control
- Painting RAL 5014

## Extras

- Control transformer for different control voltage
- Tank with cooling fins
- Electrolyte heating
- Anti-condensation heating

## Standards and regulations

FE starters comply with

- DIN VDE 0660 Regulations for low-voltage switchgear
- DIN 46062 Starters for direct current and alternating current slip-ring motors
- IEC 60947-4-1 Low voltage switchgear, contactors and motor starters

They conform with the Low Voltage Directive 73/234 EWG of the EC.

According to DIN 50010, T1 the starters are suited for installation in

- closed locations
- roofed locations
- outdoor locations

## Protection

IP54 as per DIN 40050 / IEC 144

## Ambient temperature

-25 ... +45°C, higher temperatures on request

## Altitude

Up to 1000 m above sea level, higher altitudes on request

To be provided by the customer

- Plane foundation
- Stator contactor or circuit breaker
- Line-side short circuit protection
- Thermal motor protection

## Initial filling

For the first filling soda (NA2CO3) is delivered with the starter



subject to technical changes 2009

Lista\_Engl\_01/09

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