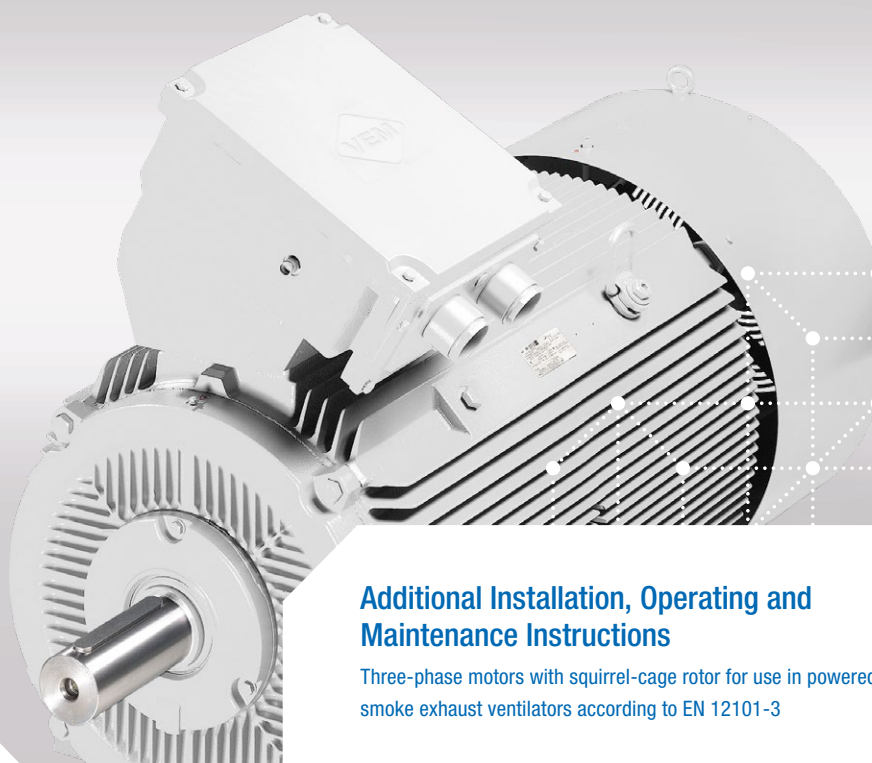




ELECTRIC DRIVES

FOR EVERY DEMAND



Additional Installation, Operating and Maintenance Instructions

Three-phase motors with squirrel-cage rotor for use in powered fire and smoke exhaust ventilators according to EN 12101-3

(translation)

1. General



Attention! Read installation, operation and maintenance instructions, connection diagram, additional connection diagram and safety regulations before transportation, installation, start-up, maintenance and repair. Mind the information!

The existing additional operation and maintenance manual is valid together with the already mentioned documents and the operation and maintenance manual for standard motors, where the basic specifications for connection, installation, operation and maintenance as well as the spare parts lists are included. This manual shall help the user to ease the secure and proper transportation, installation, start-up and maintenance of motors for use in powered fire and smoke exhaust ventilators.

2. Conformity

The mechanic and electric design of motors for use in powered fire and smoke exhaust ventilators fulfil the latest standards for electric motors. They also comply with the following European standard:

- EN 12101-3: Smoke and heat control systems – Part 3: Specification for powered smoke and heat exhaust ventilators

As the operation of these motors during emergencies is of utmost importance VEM recommends to do additional checks and maintenance work to ensure faultless operation.

3. Description

The motors are designed for use in powered fire and smoke exhaust ventilators. They comply with IEC 60034-1, EN 60034-1, EN 60204-1, EN 12101-3, and other applicable IEC/EN standards. The details on the relevant order confirmation constitute the scope of supply.

According to EN 12101-3, the smoke and heat exhaust devices are classified into classes **F200** to **F600**.

Fire gas temperature	Period of emergency conditions		Class according to EN 12101-3
	1 h	2 h	
200 °C		•	F200
300 °C	•		F300
400 °C		•	F400
600 °C	•		F600

The motors are designed for both operations: standard and emergency operation.

Standard operation: operation at standard operating conditions according to nameplate data

Ambient temperature: -20 °C up to +40 °C

Site above sea level: ≤ 1 000 m

Differing data on the nameplate must be observed under all circumstances. The conditions on site must be in conformity with all nameplate data.

Emergency operation: A case of emergency exists, if operating conditions differ from the standard operating conditions. This is particularly valid for an incident or trouble case that is defined according to EN 12101-3 (Temperature-time classification). In case of emergency operation all protection devices for the motor winding must be disabled or bridged immediately!



After an emergency the motors must be replaced by new ones!

If the operating conditions, also without having a trouble case, differ from the normal operating conditions stated on the nameplate, a reduced lifetime and reduced suitability for trouble cases must be taken into account.



The motors are destined for use in commercial/industrial plants. The use in potentially explosive areas is prohibited.

In practical use other periods of emergency conditions deviating from the standard are required as well. These periods are related to the basic classes.

Next to the standard types these other special designations are allowed:

Type designation	Emergency type	Description
VEM motors Thurm GmbH		
BRG200	2 h at 200 °C	Size 71...132T
VEM motors GmbH		Size (112)...132...355
FV (former FV0)	1 h at 200 °C	
FV1	2 h at 200 °C 1 h at 250 °C	
FV2	1 h at 300 °C	Discontinued due to new development
FV2-1	1 h at 300 °C	New development, replacement for FV2
FV2	2 h at 250 °C	Discontinued due to new development
FV2-1	2 h at 250 °C	New development, replacement for FV2
FV3	2 h at 300 °C	Discontinued due to new development
FV3-1	2 h at 300 °C	New development, replacement for FV3
FV4-2	1 h at 400 °C 1.5 h at 400 °C 2 h at 400 °C	Discontinued due to new development
FV4-3	2 h at 400 °C	Customized design
FV4-4	2 h at 400 °C	New development, replacement for FV4-2
FV5	1 h at 600 °C	
FV5X	1 h at 600 °C	Motor thermally protected

The details on the relevant order confirmation constitute the scope of supply.

4. Motor connection



The connection has to be done by qualified personnel according to the valid security regulations. Outside of Germany the required national standards must be applied. Name plate designations have to be observed under all circumstances!

Motors in design for use in powered fire and smoke exhaust ventilators BRG200, FV and FV1 to FV2, FV2-1, FV3 and FV3-1 can be equipped with a terminal box. For design BRG200, FV and FV1 standard terminal boards are used in the terminal box. For motors in design FV2, FV2-1, FV3 and FV3-1 ceramic terminal boards are used. For the connection of the motor special supply cables must be selected according to the emergency case.

Motors for cooling type IC 418 and pad mounted design will be produced usually with lead-out multi-core cables.

For emergency temperatures ≥ 400 °C the motor connection is only done with lead-out cables, wire and single conductor. The laying of the motor connection cables must be carried out according to the laying as in the test. When laying the cables please observe the permitted bending radius of the cables. Avoid possible chafing during cable laying and direct contact with flames in case of emergencies.

5. IM B30/IM 9201 Pad mounting (shaft fan, installation with tube fans)

For installation of motor into aggregate all 6 or 8 threaded holes of the housing must be used. Please take care of the correct position of the supporting bolt/angle bracket. To avoid loosening of the joints at standard or emergency operation please use appropriate measures of protection.

6. Maintenance/Inspection

VEM recommends annual inspection in addition to the maintenance work listed in the installation, operating and maintenance instructions for standard motors. The following topics have to be checked, depending on the type of operation and duty type:

- Environmental conditions
- Cleanliness of motors (ribs, fan cover, cables and cable entries)
- Attachment bolts for „pad mounted“-design
- Drain holes for condensed water
- Lubrication periods
- Hours of operation
- Condition of shaft seals
- Vibration properties
- Warming of bearings and winding

Information about bearing sizes, grease type, amount of grease and lubrication periods can be taken from the name plate except BRG200. In motors for use in powered fire and smoke exhaust ventilators specially tested grease types are used. The used bearing grease is part of the motor type approval and must not be exchanged with another grease type.

During longer periods of idleness (> 1 month) the motors must be started frequently once a month or at least the rotor must be turned manually.

7. Speed controlled motors for use in powered fire and smoke exhaust ventilators

In case of fire/emergency operation the motors must be operated directly on line (DOL). Inverters are only allowed for standard operation and must be bridged during emergency operation. Exceptions are only permitted, if the motors are tested and approved for the individual type of operation.

8. Further instructions



Give repair work for the special windings with heat resistant materials and connection cables only to the manufacturer, never to other repair shops! The use of wrong material can lead to limited operation in case of emergency.

It is not possible to repair motors after emergency operation (fire). Please also exchange motors if their operational capability is limited.



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