SIEMENS

CE

Fremdbelüftete Drehstrommotoren für Hauptspindelantriebe
(Beschreibung s. Seite 2)

Betriebsanleitung
Instructions

Separately-Ventilated Three-Phase Motors for Main Spindle Drives
(Description on page 5)

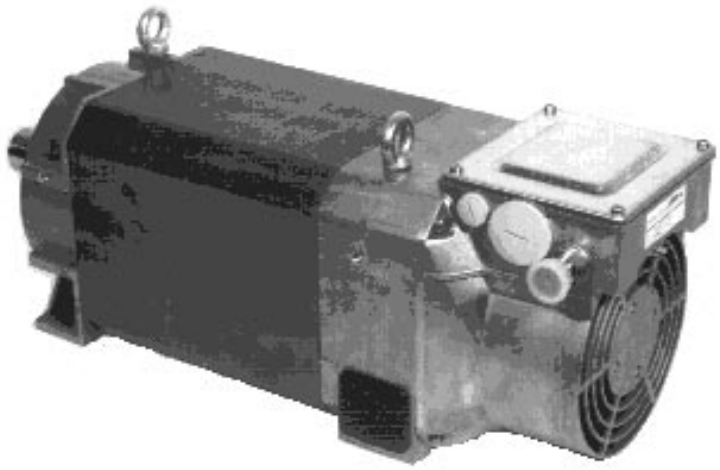
Moteurs triphasés à ventilation séparée pour entraînement de broches
(Description voir page 8)

Motores trifásicos con ventilación independiente para accionamientos de cabezal (Descripción en la pág. 11)

Motori trifasi a ventilazione esterna per azionamento mandrino
(Descrizione a pagina 14)

Trefasmotorer med separat fläkt för drivanordningar med huvudspindel
(Beskrivning se sida 17)

1PA6 / 1PH7



Bauformen:	Die lieferbaren Bauformen nach EN 60034-7 (bzw. IEC 34-7) sind im Katalog aufgeführt. Die zutreffende Bauform ist auf dem Leistungsschild angegeben.
Types of construction:	The available types of construction in conformity with EN 60034-7 (or IEC 34-7) are listed in the catalog. The type of construction is given on the rating plate.
Formes de construction:	Les formes de construction disponibles selon EN 60034-7 (CEI 34-7) sont indiquées au catalogue.La forme de construction pour le moteur considéré est indiquée sur la plaque signalétique.
Modelos:	Los modelos suministrables conforme a EN 60034-7 (o IEC 34-7) se indican en el catálogo. El modelo correspondiente se indica en la placa de características
Forma costruttiva:	Le forme costruttive disponibili secondo EN 60034-7 sono riportate nel catalogo. La relativa forma costruttiva è riportata sulla targhetta.
Konstruktionstyp:	De konstruktionstyper enligt EN 60034-7 (resp. IEC 34-7) som kan levereras finns uppförda i katalogen. Den tillämpliga konstruktionstypen finns angiven på märkplåten.

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Safety and operating instructions for converter-fed low-voltage three-phase motors
in conformity with the low-voltage directive 73/23/EEC

Typ: 1FT, 1FV2, 1FK, 1PH, 1PA, 1PV

1 Danger

In operation, electric motors have hazardous, live and rotating parts, and possibly also hot surfaces. All operations serving transport, connection, commissioning and regular maintenance are to be carried out by **qualified, responsible technical personnel**. (Observe VDE 0105; IEC 364.) Improper conduct can cause severe **personal injury and damage to property**. The applicable **national, local** and **plant-specific specifications and codes of conduct** must be complied with. The warning and instruction plates on the motor must be complied with.

2 Intended use

These motors are intended for service in industrial and commercial installations. They comply with the harmonized standards of the series **EN60034 (VDE 0530)**. Their use **in areas exposed to explosion hazard** is **prohibited**, unless they are **expressly** supplied for this purpose (pay attention to additional notes). In special cases - where these motors are used in a **non**-industrial environment - extra safety precautions (such as touch protection for children) must be provided by the owner or user of the equipment during installation.

The motors are rated for ambient temperatures from **-15 °C to +40 °C** and for installation at altitudes of **≤ 1000 m** above sea level. If different information is given on the rating plate, **always** be sure to follow it. The conditions at the place of use must conform with **all** the rating plate data.

Low-voltage motors are **components** for installation in machines as defined by the machine directive 89/392/EEC. **Commissioning** is prohibited until such time as the end product has been proved to conform to the provisions of this directive 89/392/EEC, among other things. (Account is to be taken of EN 60204-1.)

Plants and machines equipped with converter-fed low-voltage three-phase motors must satisfy the requirements of the EMC directive 89/336/EEC.
Proper installation is the responsibility of the plant installer. The signal and power cables must be **shielded**.
Account is to be taken of the **converter manufacturer's EMC instructions**!

3 Transport, storage

Notify the transport company immediately of any **damage** discovered after delivery; if necessary the equipment is **not to be commissioned**. For transport, use only the openings, lifting eyes, etc., provided. Make sure that the lifting eyes are screwed tight. Do **not** attach **any additional** loads. Keep the lifting capacity of the hoisting gear in mind.

Before commissioning, **remove** shipping braces **and keep them in a safe place**. If motors are put into storage, make sure that they are kept in a **dry, dust-free** and **low-vibration** (v_{eff} ≤ 0.2 mm/s) environment (bearing standstill damage).
Measure the insulation resistance before putting the motors into operation for the first time. Dry out the winding if the insulation resistance is ≤ 1kΩ per volt of rated voltage value.

4 Installation

Make sure that the motor is properly supported, that the feet or flange are firmly fixed and that directly-coupled motors are in alignment (avoid distortion). Rotate rotor **by hand** to ensure that it does not rub against anything.
Always make use of suitable devices for fitting and removing drive elements (belt wheel, coupling ...) and heat or cool them as necessary. At all other times drive elements must be kept covered for the sake of touch protection. Avoid undue stressing (such as excessive belt tension). If in doubt, refer to the catalog or specification.
The **balance data** is given on the shaft end face or rating plate (**H** = half featherkey balancing, **F** = full featherkey balancing). Keep the balance in mind when fitting the drive element (ISO1940)! With half featherkey balancing, cut off the **protruding end** of the featherkey if necessary.
Do **not** impede free circulation of air around self-ventilated motors or through forced-ventilated motors.

5 Electrical connection

All work must be done only by **qualified technical personnel** on **disconnected** motors that are at **standstill** and have been **secured to prevent reconnection**. The same applies to auxiliary circuits (such as space heating, brake, transmitter).
Check that the equipment is dead!
CAUTION: The motors must be operated with the appropriate converters. Operation on the three-phase supply is **not** permitted and can destroy the motor!
Pay attention to the information given on the rating plate and in the circuit diagram in the terminal box or operating instructions.
Pay attention to compatibility between transmitter/sensor signals and the analyzer.

Transmitters and **sensors** may contain **electrostatically sensitive components (ESC)**; pay attention to ESC measures if applicable!

Disassembly, assembly and adjustment of transmitters must be carried out in accordance with the relevant instructions.
The connection must be made so that there is a permanent and safe electrical connection (no protruding wire ends). Make use of the cable lugs or end sleeve provided. Make a good and secure **protective conductor connection**.
Table: Tightening torques for terminal plate connections

	Thread Ø	M4	M5	M6	M8	M10
	Tightening torque [Nm]	0,8...1,2	1,8...2,5	2,7...4	5,5...8	9...13

For terminal box connection, make sure that the **clearances in air** between non-insulated live parts are **at least 5.5 mm**!
No foreign matter, dirt or moisture must be present in terminal boxes or plugs. Close unused openings for cable entry and the terminal boxes themselves in a **dust-tight** and **waterproof** manner.
When connecting and installing **accessories** (e.g. tachometer generators, impulse transmitters, brakes, temperature sensors, airflow monitors ...), it is essential to **comply with the relevant information**, if necessary contact the motor manufacturer. If there are no instructions available for the repair of a damaged accessory, then the repair must be made in a SIEMENS specialist workshop.
Where motors are fitted with brakes, the brake must be checked for proper functioning before the motor in put into operation for the first time.

6 Operation

Secure featherkeys before the motor is tested by running it without drive elements. Check the direction of rotation with the motor uncoupled (refer to Section 5 above).
Vibration levels of v_{eff} ≤ 3.5 mm/s most are acceptable in coupled operation (exactly information, see operating instruction).
In the event of changes in normal operating behaviour, such as **increased temperature, noise, vibration**, switch the motor off **if in doubt**. Find out the cause of the trouble; consult the manufacturer if necessary. Even when the motor is only on test, do not put safety equipment out of operation.
Where motors are operating in a dusty or dirty atmosphere, clean the air passages regularly.
Fit new bearings or replenish bearing grease at the intervals specified by the manufacturer, or not less frequently than every 3 years.

7 Further information

Further information is given in our maintenance instructions (ENGLISH / GERMAN). If your write to us quoting the motor type and number, we shall be pleased to send you the appropriate maintenance instruction.

Keep these safety and operating instructions in a safe place!

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Safety and operating instructions for converter-fed low-voltage three-phase motors
(in conformity with the low-voltage directive 73/23/EEC)

Danger

In operation, electric motors have hazardous, live and rotating parts, and possibly also hot surfaces. All operations serving transport, connection, commissioning and regular maintenance are to be carried out by **qualified, responsible technical personnel**. (Observe VDE 0105; IEC 364.) Improper conduct can cause severe **personal injury and damage to property**. The applicable **national, local** and **plant-specific specifications and codes of conduct** must be complied with.

Special and **modified** versions may differ with regard to technical details! If anything is unclear, you are urged to contact the manufacturer, quoting the type designation and serial number (No. E ..., see rating plate) or to have the repair work carried out by a Siemens service centre.

1 Intended use

These motors are intended for service in industrial and commercial installations. They comply with the harmonized standards of the series **EN60034 (VDE 0530)**. Their use **in areas exposed to explosion hazard** is **prohibited**, unless they are **expressly** supplied for this purpose (pay attention to additional notes). In special cases - where these motors are used in a **non**-industrial environment - extra safety precautions (such as touch protection for children) must be provided by the owner or user of the equipment during installation.

The motors are rated for ambient temperatures from **-15 °C to +40 °C** and for installation at altitudes of **≤ 1000 m** above sea level. If different information is given on the rating plate, **always** be sure to follow it. The conditions at the place of use must conform with **all** the rating plate data.

They can be installed in roofed-over areas with dusty or damp environment and **normal climatic conditions**. If the motor is used in **corrosive environments**, it must be given a coat of corrosion-proof paint.

Low-voltage motors are **components** for installation in machines as defined by the machine directive 89/392/EEC. **Commissioning** is prohibited until such time as the end product has been proved to conform to the provisions of this directive 89/392/EEC, among other things. (Account is to be taken of EN 60204-1.)

Plants and machines equipped with converter-fed low-voltage three-phase motors must satisfy the requirements of the EMC directive 89/336/EEC. Proper installation is the responsibility of the plant installer. **Signal and power cables** to the motor must be **screened**.
Account is to be taken of the **converter manufacturer's EMC instructions**!

Measuring surface sound pressure level (DIN EN 21 680 Part 1)

1PA6 10./1PH7 10.	approx. 73 dB(A)
1PA6 13./1PH7 13.	approx. 73 dB(A)
1PA6 16./1PH7 16.	approx. 74 dB(A)

2 Operation

2.1 Transport, storage

All the lifting eye-bolts provided should be used during transport.
Do not attach any additional loads. Pay attention to the lifting capacity of the hoist.
If the motor is not started up immediately on delivery, it must be stored in a dry room where it is safe from dust and vibrations.
Thoroughly tighten all screwed-in lifting eye-bolts.

2.2 Installation

Always heed the rating plate markings concerning the type of construction and the protection class, and verify their conformance with the conditions on the actual installation site!

If the **lifting eye-bolts** have been **screwed in**, they must either be tightened or removed after the motor has been installed! The lifting eye arrangement is shown in Fig. 9.

The motors must be installed in such a way that the cooling air can flow in and out unhindered. It is essential to observe the minimum distance**s** between the inlet and outlet air openings and the neighbouring components (Fig. 4)! Hot outlet air must not be drawn in again.

The motor must be assembled without subjecting the end of the shaft to knocks or pressure!

The cover plates (6.30) which are removed in order to screw the motor tight must be re-fitted before the motor is started up! The arrow must point upwards (Fig. 1).

If the motor is mounted horizontally with the terminal box at the top or vertically with the shaft end downwards, the plug (Fig. 1) must be removed.

Permissible vibrations

The **site vibration response of the system**, which is determined by the output elements, the mounting conditions, the alignment, the installation and the effects of external vibrations, may cause the vibration values at the motor to increase. In the interests of reliable motor operation and a long bearing service life, the vibration values specified in Fig. 7 should not be exceeded. Under certain circumstances, the rotor may need to be fully balanced with the output element.

2.3 Balancing, output elements

Suitable devices should always be used to push on or pull off the output elements (e.g. the coupler disk, gear wheel or belt pulley).
The thread in the end of the shaft should be used for this purpose.

The rotors are balanced dynamically with a half featherkey as standard (EN 60034/VDE 0530).
NOTE: The balancing method is marked on the shaft end face!
(**F** = Balancing with full featherkey)
(**H** = Balancing with half featherkey)
When the output element is assembled, be careful to use the correct balancing method!
The output elements for their part must be balanced in conformity with ISO 1940!

The output elements must incorporate the usual shock protection measures.
If a motor without output elements is started up, the featherkey must be prevented from being spun out.

The permissible transverse and axial forces are shown on the graphs in the Project Planning Instructions (please ask your Regional Office or the manufacturer for further details if necessary).

If there is a change in the normal operating conditions, such as **increased temperature, noise** and/or **vibration**, be sure to switch the motor off **in case of doubt**. Find out what has caused the change and consult the manufacturer if necessary. Do not disable any protective devices even in test operation.

If there are heavy deposits of dirt, clean the air channels regularly.

2.4 Electrical connections

All work must be carried out by qualified technicians with the motor at standstill, disconnected and secured against reconnection. This also applies to the auxiliary circuits (such as separately driven fan unit).

General connection instructions:
- The connecting leads must be suitable for the type of application and for the anticipated currents and voltages,
- The connecting leads, the strain relief device and the devices which protect against rotation and transverse forces must be adequately dimensioned, and the connecting leads must be prevented from kinking,
- The PE conductor must be connected to ⏚ .

Instructions for connecting the terminal box:
- The ends of the leads must not be stripped farther than necessary, i.e. the insulation must extend almost up to the cable lug or the terminal,
- The size of the cable lugs must be matched to the dimensions of the terminal board connections and the cross-section of the mains cable,
- The PE conductor must be connected,
- The inside of the terminal box must be kept clean and free from cable residues,
- All the screws and bolts of the electrical connections on the terminal boards (but not the terminal blocks) must be tightened to the specified torques (see Fig. 5),
- The minimum clearances in air specified in Fig. 5 must be observed, both when connecting and when re-arranging internal connecting leads,
- The minimum clearances in air must be observed for live, non-insulated parts. Attention must be paid to protruding wire ends,
- Any entries which are not in use must be sealed and the sealing elements screwed in firmly and tightly,
- All the sealing surfaces of the terminal box must be in good condition, to ensure that the requirements of the protection class are satisfied!
- The insulating foil is present,
- Allowance is made for contraction of the cable screens.

The insulating foil in the terminal box (Fig. 5) serves to prevent arcing to the cover and must therefore not be removed!

2.4.1 Power connection

The power must be connected via the terminal box. Pay attention to the information given on the rating plate!

The three-phase system must never be connected directly, since this will cause the motor to be damaged beyond repair.

The correct phase sequence is vital!
The motor must always be operated with a converter with a suitable power output.

2.4.2 Pulse encoder and temperature sensor

The pulse encoder and the temperature sensor are connected by means of the flange-mounting connector with pins, which is integrated in the terminal box.

2.4.3 Separate fan set

Note the information given on the rating plate and in the operating instructions accompanying the separate fan set (Fig. 10)!

An interlock circuit must be provided to prevent the main machine from being switched on unless the fan set is in operation!

2.5 Start-up

Caution - high temperatures!

High temperatures in excess of 80 °C may occur on the motor surfaces.

No temperature-sensitive parts, such as ordinary leads or electronic components, must be touching or fixed to these surfaces.
Protection must be provided against electric shock if necessary!

The following checks must be carried out prior to start-up:
- The rotor must be able to turn freely,
- The motor must be properly assembled and aligned,
- The output elements must be set correctly (e.g. belt tension of belt drive) and be suitable for the intended field service conditions,
- All the electrical connections, the fixing screws and the connecting elements must be designed and tightened in accordance with the specified values,
- The PE conductor must be properly connected,
- Protection must be provided against electric shock for moving and live parts,
- The limit speed n_{max} (see rating plate) must not be exceeded.

3 Repair

Safety precautions

The motor must be isolated in accordance with the pertinent standards before any work is carried out on the system, and especially before the covers of the core-and-winding assemblies are opened. Any auxiliary circuits must be isolated in addition to the main circuits.
The usual „5 rules of safety“ apply, e. g. as set out in DIN VDE 0106:
- Isolate,
- Prevent from restarting,
- Verify isolation from supply,
- Earth and short-circuit,
- Cover or safeguard any neighbouring live parts.

These measures must not be reversed until all the repair work has been completed and the motor fully assembled.

3.1 Disassembly/assembly of the encoders

Caution! Encoder systems containing integrated electronics (optical encoders, rotor position encoders, gear wheel encoders, etc.) are electrostatically sensitive devices (ESDs).

The following rules must be observed when working on ESDs:
- The place of work must be earthed,
- The connector pins must not be touched directly,
- No electrostatic charge must be transferred on contact (a conductive object should be touched immediately before such contact is made, for example),
- Suitable packaging must be used for transport (corrugated cardboard boxes, conductive plastic bags - not ordinary plastic bags, polystyrene, etc.).

Instructions for disassembling/assembling the encoders
- Unscrew the cover of the terminal box and disconnect the motor leads and temperature sensor leads from the terminal block (Fig. 5),
- Unscrew the separate fan set and the encoder cover.

3.1.1 Disassembly/assembly of ERN1387 and ROD431

(see Fig. 1 and Fig. 2)

Disassembly
- Remove the snap-on cover,
- Remove the connector with the signal connector lead,
- Undo the screws (8.10a) for the torque arm and the encoder screw (8.10b); the motor rotor must be prevented from turning at the same time,
- Screw a grub screw, e.g. DIN 913-M5x30 (see Fig. 2), into the end of the shaft to protect the centring bore and force off the encoder by screwing in an M6 screw.

Assembly
- Screw the torque arm to the encoder (leaving a sufficient distance between the torque arm and the encoder) and lock the screws, e.g. with Loctite 243,
- Position the encoder and the assembled torque arm on the taper of the motor rotor and screw in the screw; note the maximum tightening torque. The motor rotor must be prevented from turning at the same time.
- Fasten the torque arm to the end shield and note the radial runout on the encoder,
- Press in the metal sleeve of the signal connector lead
- Plug in the connector,
- Snap on the cover.

3.1.2 Disassembly/assembly of the resolver, size 21

(see Fig. 3)

Disassembly
- Remove the adapter plug,
- Undo the screws and remove the resolver stator,
- Remove the screws (M5x48) and remove the resolver rotor; the motor rotor must be prevented from turning at the same time.

Assembly
- Fit the resolver rotor and then screw in the screw (M5x48). Note the maximum tightening torque!
- Assemble the resolver stator and fasten with the screws,
- Insert the adapter plug.

3.2 Changing bearings, lubrication

3.2.1 Bearing replacement intervals

NOTE: The limit speed n_{s1} must not be exceeded during continuous operation (see Fig. 8).

Under normal operating conditions, the replacement intervals t_{LW} specified in Fig. 8 are recommended for the bearings of the 1PA6/1PH7 motors.
The specified operating hours apply to a horizontal position, a coolant temperature of +30 °C, a storage temperature of +100 °C and vibrations in accordance with vibration severity grade R (DIN VDE 530 Part 14). The mean operating speed n_m must be estimated if the motor speed varies.

Under abnormal conditions, e.g. a vertical position, operating speed mostly above 75 % of the limit speed n_{max}, severe vibration and impact loads, frequent reversing, etc., the bearing replacement intervals t_{LW} must be reduced by up to 50 %.
If the storage temperature exceeds +100 °C for a prolonged period of time, the bearing replacement intervals must be halved for each additional 15 °C.

Renewal of the D-end and ND-end bearings is recommended after the specified number of operating hours, and at the latest after 3 years.

3.2.2 Disassembly/assembly of the motor

Disassembly
When disassembling the motor, mark the original positions of the parts in relation to one another (e.g. with a marker pen or a drawing pin), in order to simplify re-assembly. Please refer to section 3.1 for the encoder disassembly procedure.
Undo the screws in the ND-end shield, then carefully remove this shield.
Remove the grease slinger from the D-end shaft shoulder by sliding it back.
Pull the rotor out of the motor. Pull off the rolling contact bearings using a suitable device.

Assembly
Do not re-use the rolling contact bearings after they have been pulled off.
Heat the new bearings evenly to between 80 and 100 °C and push them on, making sure that the inner ring is flush with the shaft shoulder!
Hard blows (such as with a hammer) must be avoided!
Insert the motor rotor in the stator.
Fit the ND-end bearing (with shaft spring) into the ND-end flange without canting it. Tighten the screws.
Press on grease slinger (gamma ring housing **9RB...** without sealing lip) with suitable sleeve to dimension **X** (see Fig 4).
Grease slingers damaged in disassembly must not be re-used!

Running in the bearings
After new bearings have been fitted, they should be run in to distribute the grease evenly. This entails accelerating the motor steadily from 0 to about 75% of its limit speed n_{max} over a of 15-minute period.

ANHANG / APPENDIX / APPENDICE / ANEXO / APPENDICE / BILAGA

DEUTSCH
Ersatzteile (Fig. 1), vom Werk lieferbar (siehe Bestellbeispiel)

1.00 Lagerung AS , komplett
- Lagerkappe AS
- Schleuderscheibe
- Wälzlager
- O-Ring
- Schraube

3.00 Läufer, komplett

4.00 Ständer, komplett

6.00 Lagerung BS, komplett
.10 Lagerschild
- Lagerschild
- Schrauben
- O-Ring

.20 Lagerung
- Wälzlager
- Wellfeder

.30 Dichtung
- Dichtung
- Stopfen

7.00 Belüftung und Klemmenkasten, komplett

8.00 Einbauten
.10 Geber, komplett
- Geber
- Schrauben
- Drehmomentstütze

.20 Leitung, komplett
- Leitungen mit Isolierkörper
- Einbaudose

.30 Geberdeckel
- Deckel
- Schrauben
- O-Ring

Normteile sind nach Abmessung, Werkstoff und Oberfläche im freien Handel zu beziehen.

ENGLISH
Spare parts (Fig. 1) available from the factory (see ordering example)

1.00 D-end bearing, complete
- Bearing cap, D-end
- Grease slinger
- Rolling-contact bearing
- O-ring
- Screw

3.00 Rotor, complete

4.00 Stator, complete

6.00 ND-end bearing, complete
.10 End shield
- End shield
- Screws
- O-ring

.20 Bearing
- Rolling-contact bearing
- Leaf spring

.30 Seal
- Seal
- Plug

7.00 Fan unit and terminal box, complete

8.00 Built-in devices
.10 Encoder, complete
- Encoder
- Screws
- Torque arm

.20 Lead, complete
- Leads with insulation
- Mounting socket

.30 Encoder cover
- Cover
- Screws
- O-ring

Standard parts are obtainable from the trade according to dimensions, material and surface finish.

FRANCAIS
Pièces de rechange (Fig. 1) , livrables par l'usine (voir exemple de commande)

1.00 Palier côté D, complet
- couvercle de palier côté D
- déflecteur
- roulement
- joint torique
- vis

3.00 Rotor, complet

4.00 Stator, complet

6.00 Palier côté N, complet
.10 Flasque-palier
- flasque-palier
- vis
- joint torique

.20 Palier
- roulement
- rondelle élastique ondulée

.30 Joint
- joint
- bouchon

7.00 Ventilation et boîte à bornes, complètes

8.00 Eléments incorporés
.10 Capteur, complet
- capteur
- vis
- arrêt en rotation

.20 Câble, complet
- câbles avec corps isolant
- embase de connecteur

.30 Couvercle de capteur
- couvercle
- vis
- joint torique

Les pièces normalisées peuvent être obtenues dans le commerce d'après leur dimension, la matière et l'état de surface.

ESPAÑOL
Piezas de repuesto (Fig. 1), suministro desde fábrica (v. ejemplo de pedido)

1.00 Rodamientos lado D, completo
- tapa del rodamiento D
- disco centrifugador
- rodamiento
- junta toroidal
- tornillo

3.00 Rotor, completo

4.00 Estator, completo

6.00 Rodamientos lado N, completo
.10 Escudo portacojinetes
- escudo portacojinetes
- tornillos
- junta toroidal

.20 Rodamientos
- rodamientos
- resorte

.30 Sello
- sello
- tapón

7.00 Sistema de ventilación y caja de bornes, completo

8.00 Dispositivos
.10 Captador, completo
- captador
- tornillos
- brazo de reacción

.20 Cables, completo
- cables con cuerpo aislante
- caja de conector

.30 Tapa del captador
- tapa
- tornillos
- junta toroidal

Las **piezas estándar** se comprarán en comercios del ramo según las dimensiones, material y superficie especificados.

ITALIANO
Pezzi di ricambio (fig. 1) da ordinare al costruttore (v. esempio d'ordine)

1.00 Cuscinetti lato A completi
- Copricuscinetto lato A
- Dischi a movimento centrifugo
- Cuscinetto a rotolamento
- O-Ring (anche: anello torico)
- Vite

3.00 Rotore completo

4.00 Statore completo

6.00 Cuscinetti lato B, completi
.10 Scudo B
- Scudo
- Viti
- O-Ring (anche: anello torico)

.20 Cuscinetto
- Cuscinetto a rotolamento
- Molla ondulata

.30 Guarnizione
- Guarnizione
- Tappo

7.00 Sistema di ventilazione e cassetta morsetti completi

8.00 Elementi ad incasso
.10 Trasduttore completo
- Trasduttore
- Viti
- Staffa per attacco molla

.20 Cavo completo
- Cavo con corpo isolante
- Presa ad incasso

.30 Coperchio del trasduttore
- Coperchio
- Viti
- O-Ring (anche: anello torico)

Componenti conformi ai criteri **standard** di dimensione, materiale e superficie si trovano in commercio.

SVENSKA
Reservdelar (Fig. 1), som kan erhållas från tillverkaren (se beställningsexempel)

1.00 Lagring AS, komplett
- lagersköld AS
- centrifugalbricka
- rullningslager
- O-ring
- skruv

3.00 Rotor, komplett

4.00 Stator, komplett

6.00 Lagring BS, komplett
.10 lagersköld
- lagersköld
- skruvar
- O-ring

.20 lagring
- rullningslager
- axelkil

.30 packning
- packning
- propp

7.00 Ventilation och uttagslåda, komplett

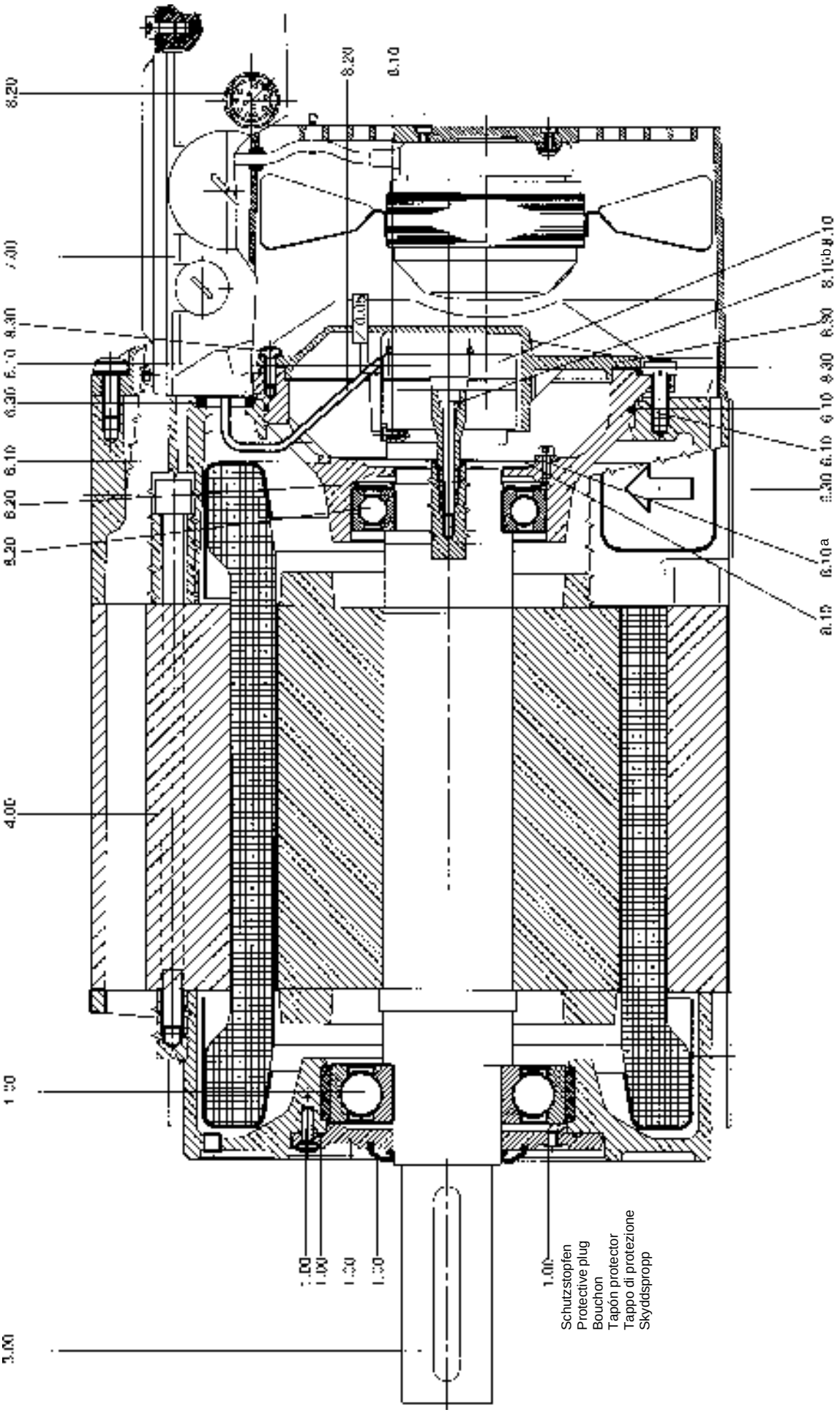
8.00 Inbyggningsdelar
.10 givare, komplett
- givare
- skruvar
- momentstag

.20 ledning, komplett
- ledningar med isolering
- inbyggnadsuttag

.30 givarlock
- lock
- skruvar
- O-ring

Standarddetaljer med önskade dimensioner, material och yta kan erhållas i öppna handeln.

Bestellbeispiel / Ordering example:	**1PH7 131-4CF 40 - 0AA01**
Exemple de commande / Ejemplo de pedido:	**Nr. E 6K 6 76553 01 005**
Esempio d'ordine / Beställexempel:	1.00 Lagerung AS, komplett



AH	Anziehdrehmoment / Tightening torque Couple de serrage / Par de apriete Coppie di serragio / Åtdragningsmoment
100 132 160	Fig. 6 7,5 Nm ±10 % 18 Nm ±10 %

Fig. 1 1PA6/1PH7 IM B3

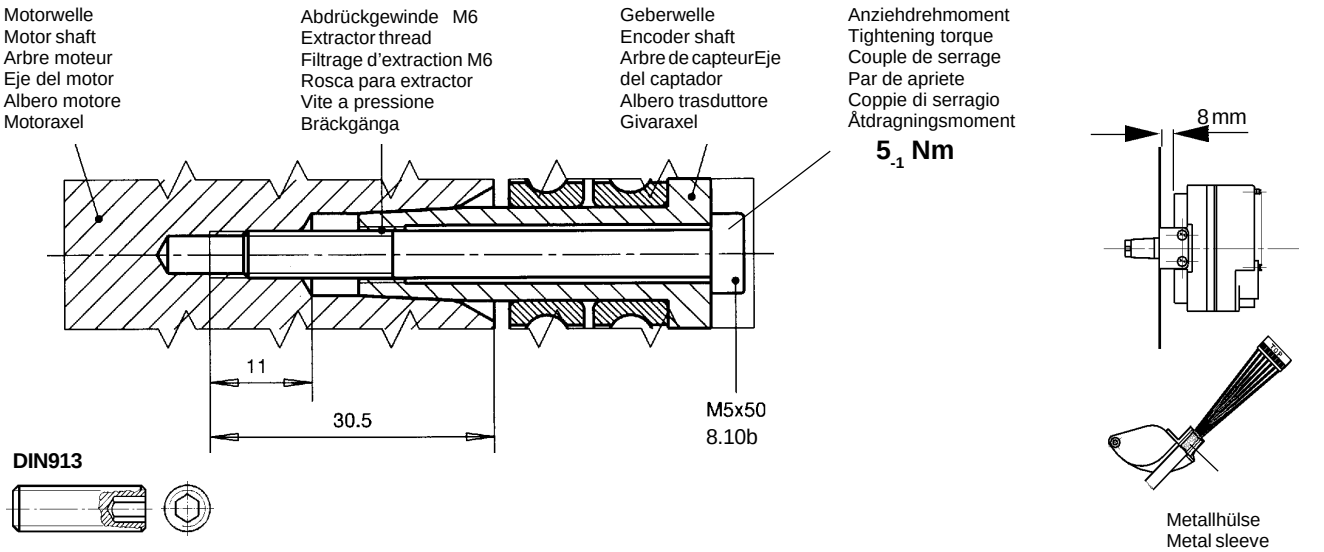


Fig. 2 Verbindung Motorwelle - Geberwelle / Joint between motor shaft and encoder shaft
Assemblage arbre moteur - arbre de capteur / Unión eje del motor/eje del captador
Collegamento albero motore - albero trasduttore / Förbindelse motoraxel - givaraxel

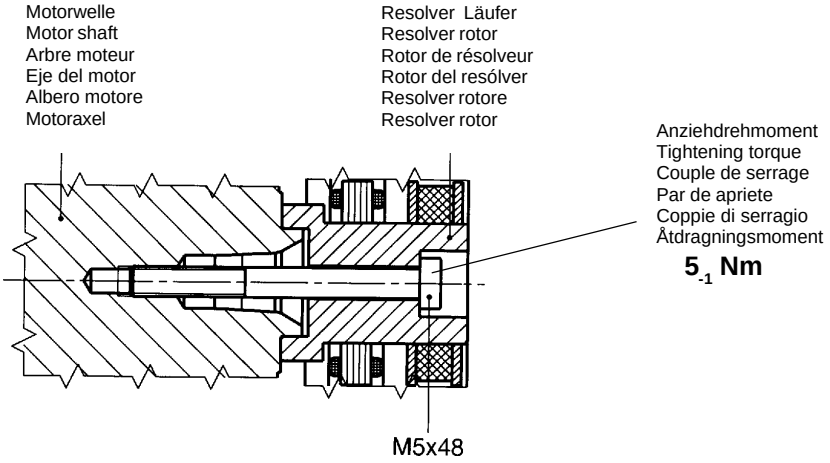
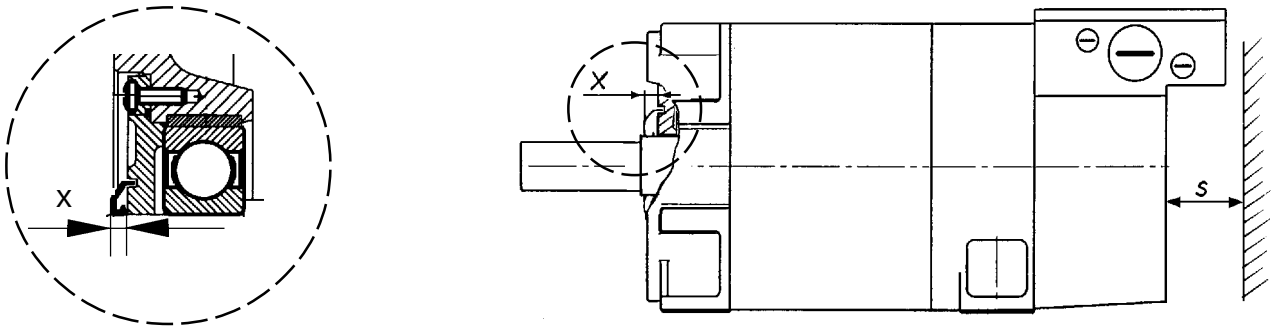


Fig. 3 Verbindung Motorwelle - Resolver Läufer / Joint between motor shaft and resolver rotor
Assemblage arbre moteur - rotor de résolveur / Unión eje del motor/rotor del resólver
Collegamento albero motore - resolver rotore / Förbindelse motoraxel - resolver rotor



Typ / Type / Tipo	x	s [1]
1PA6 10. / 1PH7 10.	4,5 mm	30 mm
1PA6 13. / 1PH7 13.	5,5 mm	60 mm
1PA6 16. / 1PH7 16.	5,5 mm	80 mm

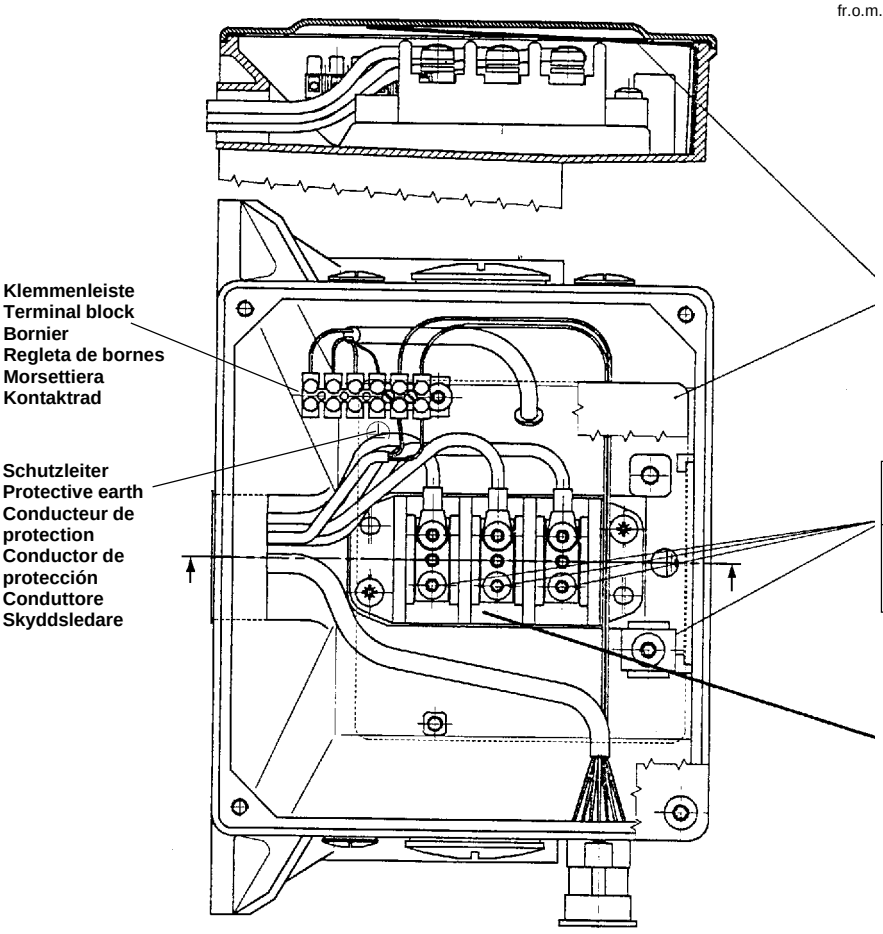
[1] Mindestabstand **s** der Zu- und Abluftöffnungen zu benachbarten Bauteilen
[1] Minimum clearance **s** of air intake and outlet openings from neighbouring parts omponents
[1] Distance minimale **s** entre ouverture d'arrivée/sortie d'air et pièces voisines
[1] Distancia mín. **s** de los orificios de entrada/salida del aire respecto a piezas contiguas
[1] Distanza minima **s** delle fessure di afflusso / deflusso dell'aria da altre parti costruttive
[1] Minsta avstånd **s** mellan till- och frånluftsöppningarna och närliggande byggnadsdetaljer

Fig. 4 Mindestabstand/Einbau Gammaring / Minimum clearance/gamma ring fitting
Distance minimale/Montage du déflecteur / Distancia mínima/montaje del retén
Distanza minima/montaggio anello-gamma / Minsta avstånd/montering av gammaring

Typ / Type/ Tipo		1PA6 10. / 1PH7 10.	1PA6 13. / 1PH7 13.	1PA6 16. / 1PH7 16.
Hauptklemmen Main terminals Bornes principales Bornes principales Morsetti principali Huvudklämmor	Anzahl x Größe / Quantity x Size Nombre x Taille / Cantidad x Tamaño Quantità x Grandezza / Antal x Storlek	6 x M5	6 x M6	6 x M6
	Anziehdrehmoment /Tightening torque Couple de serrage / Par de apriete Coppia di serraggio / Åtdragningsmoment	1,8 . . . 2,5 Nm	2,7 . . . 4 Nm	2,7 . . . 4 Nm
	für Leiterquerschnitt max. For conductor cross-sections up to pour une section des conducteurs maximale Para una sección máxima de los conductores de Per sezione conduttore max. Für ledararea max.	25 mm^2	35 mm^2	50 mm^2 (*)
	Max. Belastbarkeit (1) / Maximum currrent carrying (1) Intensité maximale (1) / Carga máxima (1) Carico massimo (1) / Max. belastning (1)	67 A	83 A	123 A (*)
Schutzleiter-Anschluß PE connection Raccord pour conducteur de protection Terminal para el conductor de protección Collegamento conduttore di protezione Skyddsledaranslutning	Größe / Size Taille / Tamaño Grandezza / Storlek	M5	M6	M6
	Kabelschuhbreite max. Maximum cable lug width Largeur maximale de la cosse Anchura máxima del terminal del cable Larghezza capocorda max. Kabelskons bredd max.	12 mm	15 mm	15 mm

(1) nach EN 60 204-1 Installationsart B2 / According to EN 60 204 - 1 type of installation B2
selon EN 60 204 - 1 type d'installation B2 / Según EN 60 204-1 modo de instalación B2
secondo EN 60 204 - 1 installazione di tipo B2 / enligt EN 60204 - 1 installationssätt B2

(*) ab 35 mm^2 nur Installationsart C nach EN 60 204-1
from 35 mm^2 only type of installation C according to EN 60 204-1
pour ≥ 35 mm2, seulement type d'installation C selon EN 60 204-1
a partir de 35 mm^2 sólo el modo de instalación C según EN 60 204-1
a partire da 35 mm2 solo installazioni di tipo C secondo EN 60 204-1
fr.o.m. 35 mm^2 endast installationssätt C enligt EN 60 204-1



AH	Anziehdrehmoment / Tightening torque Couple de serrage / Par de apriete Coppie di serragio / Åtdragningsmoment
100	max. 3 Nm
132	max. 3,5 Nm
160	max. 3,5 Nm

max. Klemmenspannung / Max. terminal voltage / Tension maxi. aux bornes Tensión máxima en bornes / Tensione max. morsetti / Max. försörjningsspänning	**< 600 V**	**< 1000 V**
Mindestluftstrecke / Min. clearance in air / Distance min. dans l'air Distancia mínima en el aire / Traferro minimo / Minsta luftgap	5,5 mm	8 mm

Fig. 5 Elektrischer Anschluß / Electrical connections / Raccordement électrique
Conexión eléctrica / Collegamento elettrico / Elektrisk anslutning

Anziehdrehmomente für Schraubenverbindungen (nicht für elektrische Anschlüsse)
Tightening torques for screwed connections (not for electrical connections)
Couples de serrage des assemblages vissés (ne concerne pas les connexions électriques)
Pares de apriete para uniones atornilladas (no para conexiones eléctricas)
Coppie di serraggio per viti di attacco (non per allacciamenti elettrici)
Åtdragningsmoment för skruvförband (ej för elektriska anslutningar)

Bei Festigkeitsklassen **8.8** und **8** oder höher nach DIN ISO 898
For strength classes **8.8** and **8** or higher to DIN ISO 898
Classe de résistance **8.8** et **8** ou supérieure selon DIN ISO 898
Para clases de resistencia **8.8** y **8** o más altas según DIN ISO 898.
Per classi di resistenza **8.8** e **8** o maggiori sec. DIN ISO898
Hållfasthetsklasserna **8.8** och **8** eller högre enl. DIN ISO 898

Gewinde-Ø / Thread-Ø Ø du filetage / Ø de la rosca Filetto-Ø / Gängdimeter	M4	M5	M6	M8	M10	M12	M16
Anziehdrehmoment Tightening torque Couple de serrage Par de apriete Coppia di serraggio Åtdragningsmoment [N m]	3	5	9	24	42	70	165
Toleranz / Tolerance Tolérance / Tolerancia Tolleranza / Tolerans ± 10%							

Fig. 6 **Anziehdrehmoment** (Die obigen Anziehdrehmomente gelten soweit keine anderen Werte angegeben sind!)
Tightening torque (The above values of tightening torque are applicable unless alternative values are given elsewhere.)
Couple de serrage (Les couples de serrage indiqués ci-dessus sont valables pour autant qu'aucune valeur spécifique ne soit donnée.)
Par de apriete (Estos pares de apriete rigen mientras no se indiquen otros.)
Coppie di serragio (Le coppie di serraggio indicate qui di sopra sono valide se non sono indicati altri valori.)
Åtdragningsmoment (Ovanstående åtdragningsmoment gäller om ej andra värden angivits!)

Schwingfrequenz **Oscillation frequency** **Fréquence de vibration** **Frecuencia** **Frequenza di oscillazione** **Vibrationsfrekvens**	**Schwingwerte** **Vibration values** **Vibrations** **Valores de vibración** **Valori delle oscillazioni** **Vibrationsvärde**n	
< 6,3 Hz	Schwingweg / Vibration displacement Déplacement / Elongación Ampiezza di oscillazione / Vibrationssträcka	s ≤ 0,16 mm
6,3 - 63 Hz	Schwinggeschwindigkeit / Vibration velocity Vitesse de vibration / Velocidad Velocità di oscillazione / Vibrationshastighet	v_{eff} ≤ 4,5 mm/s
> 63 Hz	Schwingbeschleunigung / Vibration acceleration Accélération / Aceleración Accelerazione di oscillazione / Vibrationsökning	a ≤ 2,55 m/s²

Fig. 7 Immittierte Schwingwerte
Vibration values
Vibrations
Valores de vibración
Valori delle oscillazioni
Vibrationsvärden

Typ /Type /Tipo	Querkraft-Ausführung / Transverse-force version / Exécution à effort transversal / Fuerza transversal / Esecuzione-forza trasversale / Utförande med radiell kraft			
1 PA6 10. / 1PH7 10.	$n_m \leq 2500$	$2500 < n_m < 6000$	$n_{s1} \leq 5500$	
1 PA6 13. / 1PH7 13.	$n_m \leq 2000$	$2000 < n_m < 5500$	$n_{s1} \leq 4500$	
1 PA6 16. / 1PH7 16. n_m, n_{s1} [1/min]	$n_m \leq 1500$	$1500 < n_m < 4500$	$n_{s1} \leq 3700$	
t_{Lw} [h]	**16 000**	**8 000**	**8 000**	

n_m: mittlere Betriebsdrehzahl in 1/min ; es wird Drehzahlspiel vorausgesetzt !
n_m: mean operating speed in rpm; some speed fluctuation is assumed!
n_m: vitesse moyenne de service en tr/min ; il est supposé que la vitesse varie de façon cyclique !
n_m: velocidad de servicio media en 1/min; ¡se suponen intervalos a diferentes velocidades!
n_m: numero medio di giri d'esercizio compiuti in 1/min dando per acquisito il gioco di velocità
n_m: medelvarvtal vid drift i 1/min ; det förutsätts att varvtalet varierar!

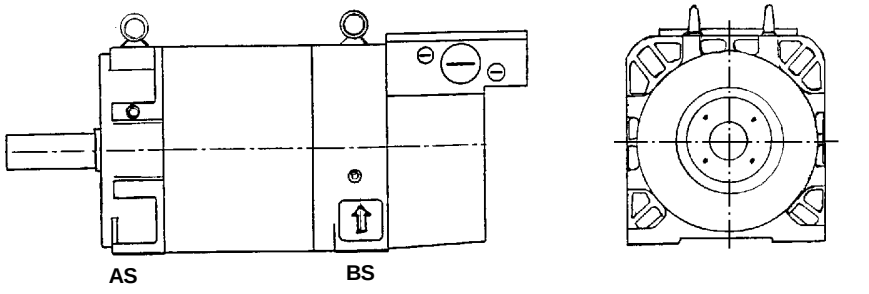
n_{s1}: max. Dauerdrehzahl in 1/min
n_{s1}: max. continuous speed in rpm
n_{s1}: vitesse maxi. en service continu en tr/min.
n_{s1}: velocidad permanente máx. en 1/min
n_{s1}: numero massimo di giri compiuti in esercizio continuo in 1/min
n_{s1}: max kontinuerligt varvtal i 1/min

t_{Lw}: Lagerwechselfrist in Betriebsstunden
t_{Lw}: Intervalle de remplacement des roulements en heures de service
t_{Lw}: Intervallo in ore die esercizio per la sostituzione del cuscinetto

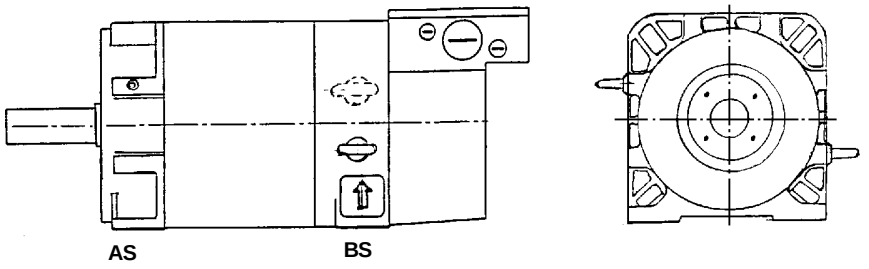
t_{Lw}: Bearing remplacement interval in operating hours
t_{Lw}: Intervalo para el cambio de rodamientos en horas de servicio
t_{Lw}: Lagerbytesintervall i driftstimmar

Fig. 8 Empfohlene Lagerwechselfrist t_{Lw} / Recommended replacement interval t_{Lw}
Intervalles de remplacement des roulements t_{Lw} / Intervalos recomendados para cambiar los rodamientos t_{Lw}
Intervallo t_{Lw} consigliato per la sostituzione di cuscinetti / Rekommenderat intervall för lagerbyte t_{Lw}

Waagerecht(Standard)
Horizontal(standard)
Axe horizontal(standard)
Horizontal (estándar)
Orizzontale (standard)
Vågrätt (standard)



Wellenende nach unten
Shaft end downwards
Bout d'arbre vers le bas
Extremo del eje hacia abajo
Estremità dell'albero verso il basso
Axeltappen nedåt



Wellenende nach oben
Shaft end upwards
Bout d'arbre vers le haut
Extremo del eje hacia arriba
Estremità dell'albero verso l'alto
Axeltappen uppåt

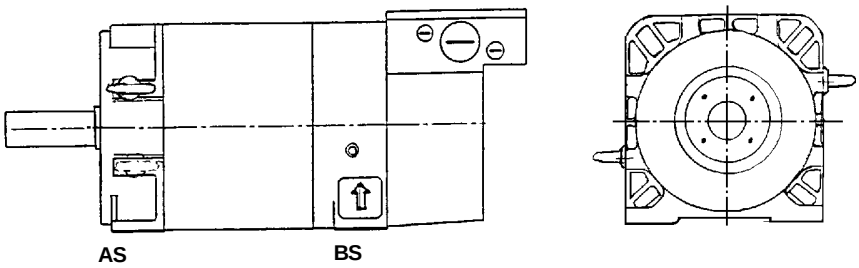


Fig. 9 Anordnung der Hebeösen / Lifting eye arrangement
Disposition des oeillets de levage / Disposición de los cáncamos
Disposizione dei golfari di sollevamento / Placering av lyftöglorna

ebm Betriebsanleitung

Fremdbelüftung W2D... für Motoren 1PA6/1PH7

1 Sicherheitshinweise / Bestimmungsgemäße Verwendung

ebm-Erzeugnisse sind keine gebrauchsfertigen Produkte, sondern Einbaugeräte, die erst im eingebauten Zustand in Betrieb genommen werden dürfen. Sie dürfen nicht in explosionsfähiger oder mit chemischen Zusätzen verunreinigter Umgebung und nur in dem von ebm spezifizierten Temperaturbereich betrieben werden. Außerdem sind sie zum Betrieb unter normalen Einsatzbedingungen, bei denen es keine Ablagerung leitfähigen Materials gibt, vorgesehen.

Die Lüftermotoren sind mit Netzpannung zu versorgen.

ebm-Fremdbelüftungseinheiten sind dazu bestimmt, im Dauerbetrieb (S1) Umgebungsluft zu fördern. Dabei darf die Steuerung keine extremen Schaltbetriebe zulassen.

Einbau, Inbetriebnahme und elektrische Installation darf nur von dafür geschultem Fachpersonal vorgenommen werden.

Zur Montage der Belüftungsbaugruppe müssen geeignete Befestigungsmittel verwendet werden. Der elektrische Anschluß ist nach dem vorgegebenen elektrischen Schaltbild vorzunehmen.

Die Verwendung einer Motorschutzeinrichtung mit allpoliger Abschaltung zum Schutz gegen unsachgemäßen Gebrauch (BIockierfall) ist sicherzustellen und die ordnungsgemäße Funktion im eingebautem Zustand zu beurteilen.

Anschlußleitungen dürfen keiner unzulässigen Zugbeanspruchung ausgesetzt werden.

2 Lagerung

Um einen einwandfreien Betrieb und eine möglichst lange Lebensdauer zu gewährleisten sollten extreme Belastungen, sowie eine empfohlene Aufbewahrungsdauer von größer einem Jahr vermieden werden.

Extreme Belastungen sind beispielsweise: Einwirkung von Staub, Feuchtigkeit und agressiven chemischen Substanzen, sowie Einwirkung von großer Hitze oder Kälte oder hoher Luftfeuchtigkeit.

3 Instandhaltung

Der Ventilator innerhalb der Fremdbelüftungseinheit ist durch die Verwendung von speziellen Lagerfetten wartungsfrei. Bei Wartungsarbeiten an der Fremdbelüftungseinheit wie dem Reinigen der Ventilatorflügel, muß der Ventilator still stehen und der Stromkreis der Fremdbelüftungseinheit unterbrochen und gegen Wiedereinschalten gesichert sein.

Die Reinigung des Ventilators sollte mit einem dafür geeigneten Tuch oder einer Bürste erfolgen, ohne das dabei Feuchtigkeit in den Innenraum des Motors gelangen kann.
Achtung: Bei zu starker Krafteinwirkung können die Ventilatorflügel beschädigt werden. Dies muß vermieden werden!

4 Inbetriebnahme

Vor der Inbetriebnahme müssen alle sicherheitstechnisch und funktional relevanten Details überprüft werden. Hierzu wird im folgenden in Form einer Aufzählung eine kurze Hilfestellung gegeben, die jedoch keinen Anspruch auf Vollständigkeit erhebt:

- Vergleich der Daten der Frerndbelüftungseinheit mit den Anschlußdaten. Die Fremdbelüftungseinheit darf nicht angeschlossen werden, wenn die Anschlußdaten von den Daten der Fremdbelüftungseinheit in der Art abweichen, daß daraus eine Überlastung resultiert.
- Überprüfung der Montage (z. B. richtiger Einbau bezüglich Drehrichtung) und der elektrischen Installation (z. B. der Anbringung des Schutzleiters) der Fremdbelüftungseinheit inklusive Zubehör.
- Überprüfung der Montage und der elektrischen Installation von sicherheitsrelevanten Bauteilen wie beispielsweise Motorschutzschaltern, Schutzgittern und dergleichen.
- Entfernung von Teilen, die sich im Förderbereich des Ventilators bzw. im Bereich des Ventilatorflügels befinden.

5 Ersatzteile für Klemmkästen

Sollte es zum Verlust von Sonderschrauben oder zum Bruch des Klemmsteins kommen, so kann von der

Fa. ebm Werke GmbH & Co.
Bachmühle 2
D - 74 673 Mulfingen
Tel.: 0 79 38 / 81-0
Fax: 0 79 38 / 81-110

je Motorenbaugröße ein Satz mit Ersatzteilen bezogen werden. Enthalten sind darin alle Torxschrauben, die keine Normteile sind, sowie das Klemmbrett bezogen auf die jeweilige Motorenbaugröße.

Motorenbaugröße 1PA6/1PH7	ebm-Type Fremdbelüftungshaube	ebm-Bestell-Nr. Ersatzteile
Achshöhe AH100	W2D160	61017-1-7612
Achshöhe AH132	W2D210	61018-1-7612
Achshöhe AH160	W2D250	"

Die aktuellen Preise werden auf Anfrage von unseren Varkaufssachbearbeitern genannt.

Versand und Lieferung ausschließlich per Nachnahme.

Fig. 10

ebm Operating instruction

Separate Fan Unit W2D... for Motors 1PA6/1PH7

1 Safety notes/intended use

ebm products are not supplied ready for use, but are intended for fitting in other equipment. They must not be put into operation until after fitting. They must not be used in areas exposed to explosion hazard or areas where the environment is polluted by chemical additives and must only be operated in the ebm-specified temperature range. They are intended for operation under normal conditions in which there are no deposits of conductive material.
The fan motors must be supplied with line voltage.
ebm separate fan units are intended to deliver environmental air in continuous operation (S1). The control device must not allow excessively frequent switching.
Fitting, electrical installation and start-up must be performed by trained technicians only.
Suitable fixing materials must be used for fitting the fan unit. The electrical connections must be as shown in the existing circuit diagram.
The use of a motor protection device with all-pole disconnection as safeguard against improper use (rotor locking) must be ensured, and proper functioning must be tested in the built-in state.
Connecting leads must not be subjected to excessive tensile strain.

2 Bearings

To ensure perfect operation and the longest possible service life, extreme loads should be avoided and the recommended maximum storage period of 1 year should not be exceeded.
Examples of extreme loads are: the effects of dust, moisture and aggressive chemical substances, as well as the effects of extreme heat/cold or high humidity.

3 Repair

Thanks to the special bearing greases used, the fan inside the separately fan unit is maintenance-free. When maintenance work is carried out on the unit, such as cleaning the fan blades, the fan must be at standstill and the power must be disconnected and secured against reconnection.
The fan should be cleaned with a suitable cloth or brush in such a way as to prevent moisture getting inside the motor.
Warning: If too much force is used, the fan blades can be damaged. This must be avoided!

4 Start-up

All details concerning safety and proper functioning must be checked prior to start-up. The following list of checks is intended as a reminder, but makes no claim to completeness:

- Compare the specification data of the separate fan unit with the connection data. The separate fan unit must not be connected if the connection data and the separate fan unit data deviate in such a way as to cause overloading.
- Check the mounting(e.g. correct mounting with respect to direction of rotation) and the electrical installation (e.g. protective earth conductor connected) of the separate fan unit, including accessories.
- Check the mounting and the electrical installation of parts with a safety function, such as protective circuit-breakers, safety grilles, and the like.
- Remove parts located in the fan delivery zone or in the vicinity of the fan blades.

5 Spare parts for terminal box

If special screws are lost or the terminal block is broken, a set of spare parts for the size of motor concerned can be ordered from

ebm Werke GmbH & Co.
Bachmühle 2
D - 74 673 Mulfingen
Tel.: (++49) 7938-81-0
Fax: (++49) 7938-81-110

The set contains all torx screws that are not standard parts, as well as the terminal block for the given motor size.

Motor size	ebm-type separate fan unit	ebm order No. spare parts
1PA6/1PH7		
Shaft height AH100	W2D160	61017-1-7612
Shaft height AH132	W2D210	61018-1-7612
Shaft height AH160	W2D250	"

Please contact our sales assistants for information on current prices.
Dispatch is on a cash-on-delivery basis only.

Fig. 10

ebm Instructions de service

Motoventilateur W2D... pour moteurs 1PA6/1PH7

1 Consignes de sécurité/Utilisation conforme à la destination

Les produits ebm ne sont pas des produits finis prêts à l'usage, mais sont des appareils à incorporer qui ne doivent être mis en service qu'à l'état incorporé. Ils ne doivent pas être utilisés dans les atmosphères explosibles ou polluées de substances chimiques, et ne doivent fonctionner que dans la plage de température spécifiée par ebm. Par ailleurs, ils sont prévus pour le fonctionnement dans les conditions normales, dans lesquelles il ne se produit pas de dépôt de matières conductrices.
Les motoventilateurs doivent être alimentés en tension du réseau.
Les motoventilateurs**ebm** sont destinés à faire circuler de l'air en service continu (S1). La commande ne doit pas tolérer un service intermittent à fréquence de commutation élevée.
Le montage, la mise en service et l'installation électrique ne doivent être effectués que par du personnel formé à cet effet.
La fixation du motoventilateur doit être réalisée avec des moyens appropriés.
Le raccordement électrique sera effectué en conformité avec le schéma électrique fourni.
On prévoira un dispositif de protection du moteur à coupure omnipolaire assurant par exemple la protection en cas de blocage, et on en vérifiera le fonctionnement correct à l'état monté.
Les câbles de raccordement ne doivent pas être exposés à des efforts de traction exagérés.

2 Paliers

Afin d'assurer un fonctionnement correct et une durée de vie la plus longue possible, il convient d'éviter les contraintes extrêmes ainsi qu'un entreposage d'une durée supérieure à un an.
Les contraintes extrêmes sont par exemple les effets de la poussière, de l'humidité, de substances chimiques agressives ainsi que d'une grande chaleur ou d'un grand froid.

3 Maintenance

Le ventilateur est exempt d'entretien en raison de l'utilisation de graisse à roulement spécial. Pour les interventions d'entretien sur le motoventilateur, tel que le nettoyage des pales, le ventilateur doit être arrêté et le circuit d'alimentation du motoventilateur doit être ouvert et condamné pour empêcher la mise sous tension.
Pour nettoyer le ventilateur, on utilisera un chiffon ou une brosse, en veillant à ce qu'il ne pénètre pas d'humidité à l'intérieur du moteur.
Attention ! Sous l'effet d'un trop grand effort, les pales du ventilateur peuvent être endommagées. Ceci doit être évité à tout prix !

4 Mise en service

Avant la mise en service, il faut vérifier tous les détails affectant la sécurité et le fonctionnement. Vous trouverez ci-après, à titre d'aide, une énumération qui ne prétend pas être exhaustive.

- Comparer les caractéristiques du motoventilateur avec les caractéristiques du réseau. Il ne faut pas raccorder le motoventilateur si ses caractéristiques s'écartent de celles du réseau à tel point qu'il en résulterait une surcharge.
- Vérifier le montage (notamment en ce qui concerne le sens de rotation) et l'installation électrique (par ex. branchement du conducteur de protection) du motoventilateur et des accessoires.
- Vérifier le montage et l'installation électrique des constituants de sécurité tels que le disjoncteur moteur, les grillages de protection et autres.
- Enlever les corps étrangers qui se trouvent dans le canal d'aspiration et de refoulement du ventilateur ainsi que dans la zone de la roue du ventilateur.

5 Pièces de rechange pour boîte à bornes

En cas de perte de vis spéciales ou de rupture d'une borne, il est possible de se procurer auprès de la société

Fa. ebm Werke GmbH & Co.
Bachmühle 2
D-74 673 Mulfingen
Tél. : (++49) 7938/81-0
Fax : (++49) 7938/81-110

un jeu de pièces de rechange pour la taille du moteur considérée. Ce jeu comprend toutes les vis à empreinte Torx qui ne sont pas des pièces normalisées, ainsi que la planche à bornes pour la taille de moteur considéré.

Moteurs 1PA6/1PH7	**Type ebm du capot du motoventilateur**	**Réf. ebm des pièces de**
Hauteur d'axe AH100	W2D160	61017-1-7612
Hauteur d'axe AH132	W2D210	61018-1-7612
Hauteur d'axe AH160	W2D250	"

Les prix des pièces de rechange seront communiqués sur demande par notre service commercial.

Expédition et livraison uniquement par paiement à la réception.

Fig. 10

ebm **Instrucciones**

Ventilación independiente W2D... para motores 1PA6/1PH7

1 Indicaciones de seguridad/utilización conforme

Los productos de la marca ebm no son productos listos para su empleo, sino que son aparatos que se han de incorporar antes de ponerlos en servicio. No deben operarse en entornos expuestos al peligro de explosiones o contaminados con aditivos químicos y sólo pueden ponerse en funcionamiento bajo las temperaturas especificadas por ebm. Además están previstos para su utilización bajo condiciones normales de servicio, donde no hayan depósitos de material conductor.
Los motores de los ventiladores han de conectarse a la red.
Los grupos motoventiladores separados **ebm** sirven para impulsar aire ambiente en servicio permanente (S1). Durante el servicio el control debe evitar toda maniobra extrema.
El montaje, la puesta en marcha y la instalación eléctrica la efectuará sólo personal cualificado especializado en esta materia.
Para montar el grupo motoventilador se utilizarán los medios de fijación adecuados. La conexión eléctrica se efectuará siguiendo el esquema prescrito.
Se cuidará de incorporar un guardamotor con desconexión de todos los polos como protección contra la utilización indebida (bloqueo) y se comprobará su funcionamiento correcto después de haberlo montado.
Los cables de conexión no deben ser sometidos a fuerzas de tracción inadmisibles.

2 Almacenamiento

Para asegurar el funcionamiento perfecto y garantizar una vida útil larga deberán evitarse las solicitaciones extremas así como tiempos de almacenamiento superiores a un año.
Son solicitaciones extremas p. ej.: polvo, humedad y sustancias químicas agresivas, así como la exposición a altas y bajas temperaturas o a una alta humedad atmosférica.

3 Mantenimiento

El ventilador en el grupo motoventilador separado es libre de mantenimiento debido a que se ha usado grasa de rodamientos especial. Cuando se efectúan los trabajos de mantenimiento en el grupo motoventilador, así como al limpiar los álabes, deberá estar parado el ventilador y se habrá desconectado el circuito de corriente del grupo habiéndolo asegurado contra la reconexión.
El ventilador se limpiará con un trapo o un cepillo adecuado cuidando que no penetre humedad en el motor.
Importante: ¡No ejercer demasiada presión ya que hay peligro de que se estropeen los álabes del ventilador!

4 Puesta en marcha

Antes de la puesta en marcha se comprobarán todos los detalles relativos a la seguridad y funcionales. A continuación ofrecemos una pequeña ayuda en forma de una lista que no pretendemos sea completa:

- Comparar los datos del grupo motoventilador separado con los datos de conexión. Es inadmisible conectar el grupo motoventilador si los datos de conexión difieren de los datos del grupo motoventilador de tal manera, que pudiera resultar una sobrecarga.
- Comprobar el montaje (p. ej. el correcto montaje en lo que respecta a la dirección de giro) y la instalación eléctrica (p. ej. la colocación del conductor de protección) del grupo motoventilador, incl. accesorios.
- Comprobar el montaje y la instalación eléctrica de piezas que garantizan la seguridad tales como los guardamotores, las rejillas de protección y similares.
- Retirar todas las piezas que puedan ser aspiradas e impulsadas por el ventilador así como todas las que estén cerca de los álabes.

5 Piezas de repuesto para las cajas de bornes

En caso de pérdida de tornillos especiales o si se quiebra la regleta de bornes puede pedirse a

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un juego de piezas de repuesto, disponible para cada tamaño de motor. Este paquete contiene todos los tornillos Torx que no sean piezas estándar, así como el tablero de bornes correspondiente a cada tamaño de motor.

Tamaño del motor	Caperuza de ventilador tipo ebm	Referencia ebm Piezas de repuesto
1PA6/1PH7		
Altura del eje AH100	W2D160	61017-1-7612
Altura del eje AH132	W2D210	61018-1-7612
Altura del eje AH160	W2D250	"

Pueden consultarse los precios corrientes en nuestra oficina de ventas.
El suministro y envío es exclusivamente contra reembolso.

Fig. 10

ebm Istruzione

Ventilazione esterna W2D ... per motori 1PA6/1PH7

1 Avvertenze di sicurezza / Uso appropriato

I prodotti della Ebm non sono dispositivi pronti per l'uso, ma apparecchiature a incasso che possono essere messe in funzione soltanto dopo essere state opportunamente montate. Non devono essere collocate in ambienti con pericolo di esplosioni o contaminati da sostanze chimiche e possono essere esposte soltanto alle temperature ambiente indicate dalla Ebm. Inoltre possono essere impiegate in condizioni standard che non richiedano lo stoccaggio di materiali conduttori.
Alimentare i motori del ventilatore con tensione di rete.
Le unità di ventilazione esterna servono a ventilare l'ambiente durante l'esercizio continuo (S1). In tal caso il comando non ammette manovre estreme.
Le operazioni di montaggio, messa in servizio e allacciamento alla rete elettrica devono essere eseguite da personale qualificato.
Il montaggio del dispositivo di ventilazione richiede l'impiego di elementi di fissaggio adeguati. L'allacciamento alla rete elettrica deve essere realizzato secondo le indicazioni contenute nello schema elettrico.
E' necessario garantire l'impiego di un dispositivo di protezione del motore con disinserzione universale contro usi impropri (in caso di arresto) e una valutazione del suo funzionamento dopo averlo opportunamente montato.
I cavi di connessione non devono essere esposti a carichi non ammessi.

2 Immagazzinaggio

Per garantire il perfetto funzionamento e la lunga durata del dispositivo è necessario evitare carichi estremi e tempi di immagazzinaggio che superano i dodici mesi.
Con carichi estremi si intende ad esempio l'esposizione alla polvere, all'umidità e a sostanze chimiche corrosive, oltre che al caldo o freddo eccessivi e a elevati tassi di umidità.

3 Manutenzione

Grazie all'impiego di speciali grassi per cuscinetti il ventilatore dell'unità di ventilazione esterna non richiede alcuna manutenzione. Prima di eseguire lavori di manutenzione sull'unità di ventilazione (ripulitura delle alette del ventilatore) è opportuno accertarsi che il ventilatore sia fermo, che l'unità di ventilazione esterna non sia collegata alla rete e che non sia possibile una reinserzione accidentale.
Per ripulire il ventilatore utilizzare stracci o spazzole adatti. Evitare l'infiltrazione di umidità nel motore.
Attenzione! Una pressione eccessiva potrebbe danneggiare le alette del ventilatore. Procedere quindi con estrema cautela.

4 Messa in servizio

Prima di procedere alla messa in servizio è necessario verificare tutti i dettagli tecnici relativi alla sicurezza e al funzionamento del dispositivo. Il breve elenco che segue è da intendersi solo come supporto non come enumerazione esaustiva delle operazioni da eseguire:

- confrontare i dati dell'unità di ventilazione esterna con quelli dell'allacciamento. L'unità di ventilazione esterna non deve essere allacciata alla rete se i dati di quest'ultima differiscono dai dati dell'unità di ventilazione in misura tale da generare sovraccarichi
- verificare che il montaggio (ad es. in relazione alla direzione di rotazione) e l'installazione elettrica (ad es. l'impiego di conduttori di protezione) dell'unità di ventilazione e dei relativi accessori siano stati eseguiti correttamente
- verificare che il montaggio e l'installazione dei componenti rilevanti per la sicurezza (ad es. interruttori di protezione del motore, griglie protettive e simili) siano stati eseguiti correttamente
- rimuovere le parti che si trovano nell'area di canalizzione o sulle alette del ventilatore.

5 Pezzi di ricambio per morsettiere

In caso di perdita di viti speciali o rottura di parti di bloccaggio è possibile ordinare alla

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un set di pezzi di ricambio diversi a seconda della grandezza costruttiva del motore. Il set contiene tutte le viti Torx (pezzi non standard) e un portamorsetto diverso a seconda della grandezza costruttiva del motore.

Grandezza costruttiva	tipo emb di sfogo d'aria dell'unità ventilazione esterna	Nr. di ordinazione ebm per pezzi di ricambio
1PA6/1PH7		
Altezza asse AH100	W2D160	61017-1-7612
Altezza asse AH132	W2D210	61018-1-7612
Altezza asse AH160	W2D250	"

I prezzi applicati attualmente possono essere richiesti ai responsabili delle vendite.

Spedizione e fornitura soltanto su indicazione del cognome.

Fig. 10

ebm Bruksanvisning

Separat fläkt W2D... för motorer 1PA6/1PH7

1 Säkerhetsanvisningar/ändamålsenlig användning

ebm-produkter är inga produkter färdiga att användas, utan instrument som byggs in och först i monterat tillstånd får tas idrift. De får inte drivas i områden med explosionsrisk eller förorenade av kemiska substanser och endast i det av ebm definierade temperaturområdet. Dessutom är de avsedda för drift under normala villkor under vilka inga ledande material kan avsätta sig.
Fläktmotorerna skall försörjas med nätspänning.
ebm separata fläktenheter är avsedda att transportera omgivningsluft i kontinuerlig drift (S1). Därvid får styrningen inte tillåta några extrema kopplingar.
Montering, idrifttagande och elektrisk installation får endast göras av härför skolad fackpersonal.
För montering av alla fläktar måste lämpliga befästningsanordningar användas. Den elektriska anslutningen måste göras i enlighet med det fastställda elektriska kopplingsschemat.
Det skall säkerställas att det finns en motorskyddsanordning med frånkoppling av alla poler till skydd mot osakkunnig användning (blockering) och kontrolleras att den fungerar ordentligt när den är monterad.
Anslutningsledningarna får inte utsättas för otillåten dragspänning.

2 Förvaring

För att garantera en oklanderlig drift och så lång livslängd som möjligt skall extrema belastningar och en längre lagringstid än den rekommenderade på ett år undvikas.
Extrema belastningar är till exempel: Påverkan av damm, fukt och agressiva kemiska substanser liksom inverkan av kraftig hetta eller kyla eller hög luftfuktighet.

3 Underhåll

Ventilatorn inom fläktenheten är underhållsfri genom användandet av speciella lagerfetter. Vid underhållsarbeten på den separata fläktenheten som rengöring av fläktbladen, måste ventilatorn stå still och fläktenhetens strömkrets bruten och säkrad mot återinkoppling.
Rengöringen av ventilatorn skall ske med en lämplig trasa eller borste utan att fuktighet kan komma in i motorns inre.
Viktigt: Ventilatorbladen kan skadas om man använder för stor kraft. Detta måste undvikas!

4 Idrifttagning

Före idrifttagandet måste alla säkerhetstekniska och funktionsrelevanta detaljer kontrolleras.
Nedan finns ett hjälpmedel i form av en lista, som dock inte gör anspråk på att vara fullständig:

- Jämför den separata fläktenhetens data med anslutningsdata. Den separata fläktenheten får inte anslutas om dess data avviker från anslutningsdata på ett sådant sätt att en överbelastning kunde bli reslutatet.
- Kontrollera monteringen av den separata fläktenheten med tillbehör (t.ex. vad beträffar rotationsriktningen) och den elektriska installationen (t.ex. skyddsledarens anslutning).
- Kontrollera monteringen och den elektriska installationen av säkerhetsrelevanta byggnadsdelar som till exempel motorbrytare, skyddsgaller och liknande.
- Avlägsna delar som finns inom ventilatorns matningsområde resp. inom fläktbladens område.

5 Reservdelar till uttagslådor

I fall av förlust av specialskruvar eller vid brott på uttagsplattan så kan allt efter motorstorlek en sats med reservdelar erhållas från

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I satsen ingår alla torxskruvar, som inte är normdelar, liksom uttagsplattan passande till den aktuella motorstorleken.

Motorstorlek	**ebm-typ separat fläkt-kåpa**	**ebm-best.nr reservdelar**
1PA6/1PH7		
Axelhöjd AH100	W2D160	61017-1-7612
Axelhöjd AH132	W2D210	61018-1-7612
Axelhöjd AH160	W2D250	"

De aktuella priserna erhålls vid efterfrågan hos försäljningavdelningen.
Försändelse och leverans endast mot postförskott.

Fig. 10

Geschäftsgebiet Drehzahlveränderbare Antriebe / Variable - Speed Drives

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Antriebstechnik mit System

Siemens Aktiengesellschaft

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