



Motor spindle 4015



With Compliments

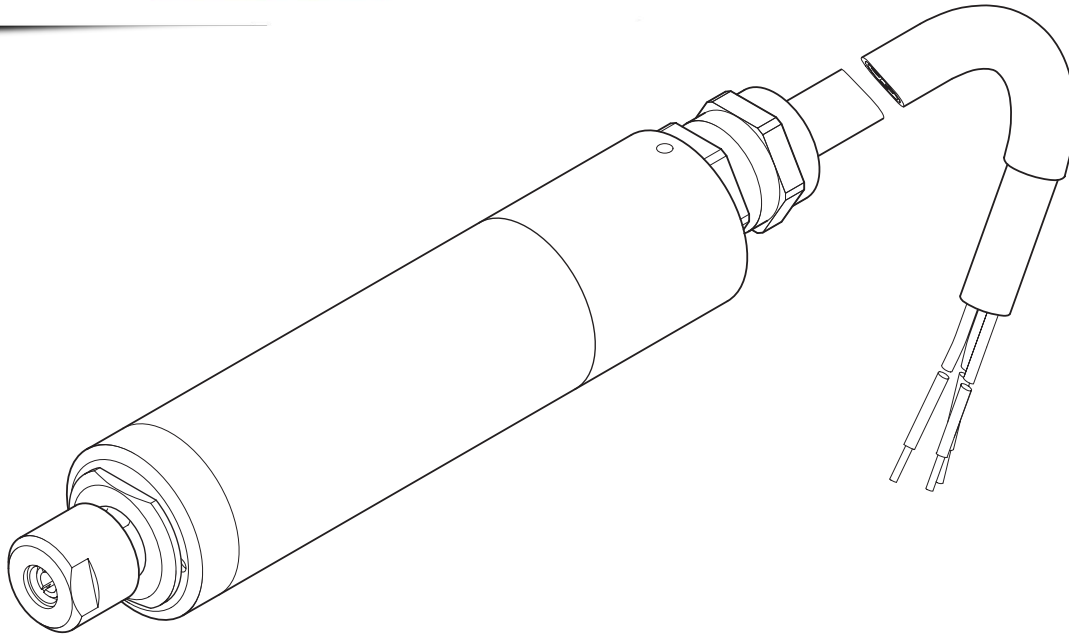
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Ref. 1.001.2437


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A 1 User information


A 1.1 Meaning of the pictograms


 Situations where failure to follow the instructions may lead to danger, damage to material or operating faults.


 Important information for operator and engineer.


 Automatic mode
Automatic sequence


 Close, screw in, fasten, etc.


 Open, release, loosen

 more, higher


 less, lower

 Continuous operation

 Time, time sequence

 Disconnect mains plug

A 1.2 Important information

 *The instructions for use should be read by the user before starting up the unit for the first time, in order to avoid incorrect operation and other damage. If other language versions are required, please request these from your responsible KaVo agent. Duplication and distribution of the instructions for use (IU) require KaVo's prior consent.*

All technical data, information and properties of the product described in the IU correspond to the state on going to press.

Modifications and improvements to the product as a result of new technical developments are possible.

This does not imply any right to retrofitting of existing units.

KaVo assumes no responsibility for damage arising through:

- external influences (poor quality of the media or inadequate installation)
- use of incorrect information
- improper use
- improperly performed repairs.

Repair and maintenance work - apart from the activities described in these instructions for use - may be performed only by qualified technical personnel.

In the event of modifications by third parties, the approvals become null and void. KaVo recommends using only original spare parts for operation and for repair.

A 1.3 Precautions

Safe operation and protection of the unit are ensured only through proper use in accordance with the instructions for use and using the tools approved for the purpose. The following should also be observed:

- the tool manufacturer's instructions,
- the work safety regulations,
- the accident prevention regulations.



■ *Each time before switching on, check the set speed.*

■ *Observe the permissible maximum speed and maximum pressure of the tools (according to tool manufacturer's instructions).*

■ *Use safety screens when working with rotating tools.*

■ *To avoid danger through accidental switching on, place the handpiece on a suitable shelf or tool support.*

In the event of an unsatisfactory condition of the unit or improper use, e.g.:

- unsuitable tools
- tool shafts not manufactured according to DIN-ISO
- improper use or use not in accordance with the purpose
- unapproved speeds for tools used
- incorrect clamping of the tools in the chuck
- insufficient retaining force of the chuck (wear, soiling, failure to follow the product care instructions for the chuck system, etc.)
- different sizes of tool shaft and chuck
- lack of regular cleaning of the chuck
- failure to follow the maintenance instructions
- failure to comply with the accident prevention regulations (e.g. failure to use safety screens, safety devices, handpiece supports, etc.)
- Non-conformity with the EMW Guidelines regarding radiation from low frequency, radio frequency and microwaves (use shielded cable)
- failure to take into account signs of wear and damage
- tool shafts which have slipped out (potential danger = bending of the tool shafts)

there is a danger of injury and damage to material and unit, e.g. due to:

- Bending of the tool shafts
- Accidental withdrawal of the tools from the chuck
- Breaking or splintering of the tool.

- Eccentric rotation or shattering of tools, or
- Snagging and rolling up
- Catapulting of small material-parts



A 1.4 Possible uses and applications

The motorised spindle is designed to be used in machines for filing processes, such as drilling, milling, cutting etc.

A 2 Scope of delivery - Accessories

Motorised spindle 4015
with 2 m connection cable

Spanner/wrench SW 8 1.001.4067

Spanner/wrench SW 12 0.411.1012

Brush set 0.411.0190
consisting of:

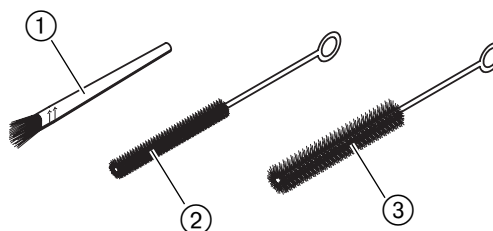
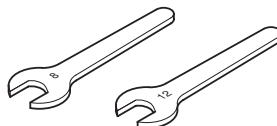
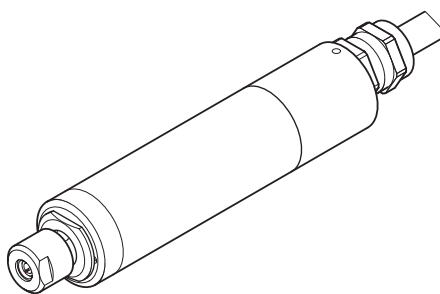
① cleaning brush 0.229.3205

② fine-bristle brushes 0.229.3001

③ cylinder brushes 0.229.3002

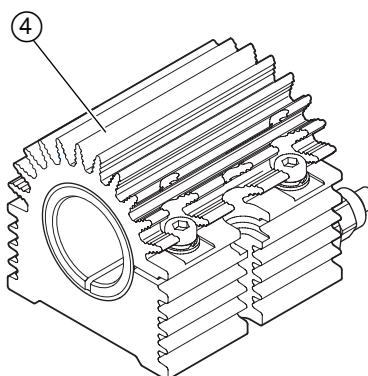
Case (0.684.4116) and
contents padding (0.684.4128)
Please retain for eventual inspection/repair
returns.

Operating instructions 1.001.2501



A 2.1 Accessory available on request:

Clamping device 4825 ④ (1.001.4841) for
possible connection to external air- and
water cooling.



A 3 Electrical connection

Check that the available voltage and frequency agree with the data on the frequency converter.



- *Dangers from disturbances in the energy supply, breaking of machine parts or other malfunctions, e.g.*
 - *unforeseen ejection*
 - *unexpected starting*
 - *unexpected slipping/over-revving*
 - *incorrect rotation (chuck mechanism can loosen)*

must be prevented by appropriate safety features incorporated in the control unit (e.g. max. revolutions). KaVo EWL recommends operation by use of Frequency Converter "e@sy Drive 4425".



Repair and maintenance work - apart from the activities described in these instructions for use - may be performed only by qualified technical personnel.



Disconnect the converter plug.

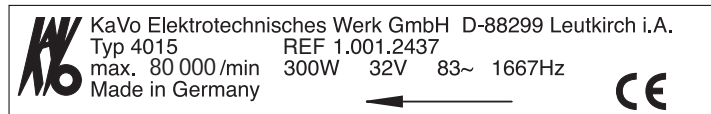
Fasten the connecting wires to the converter connection terminal.



Ensure that the ground wire is correctly fixed to the provided grounding terminal.



Pay attention to the rotation of the spindle (if necessary, exchange two connections) !



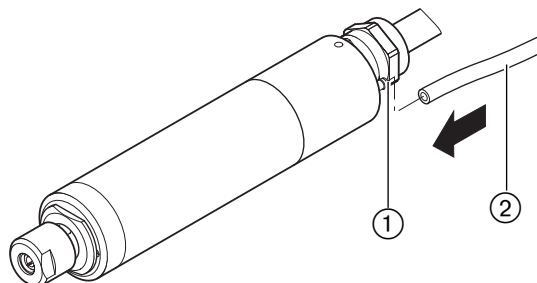


A 4 Installation and operation of motor spindle 4015



- Compressed air supply of 0,5 to 0,8 bar for air-lock, must be clean and dry.
- Use only compressed air free from dirt, water, and oil.
- Never operate the spindle without airlock.

Attach the 2.5 mm air hose ② to the air connector ① in the direction of the arrow, then secure.



Installation in spindle holder or clamping device

It is recommended to use Clamping Device 4815 (1.001.4841).

Initial torque when clamping the spindle 1,5 NM \pm 20 % is to be maintained.

Operation in any position between horizontal and vertical (tool pointing down) is possible, using cooling through the spindle holder or an external cooling jacket.

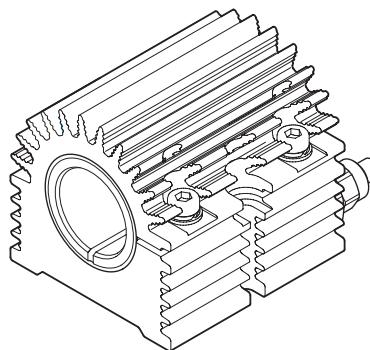


When inserting the spindle ensure it is located cylindrically.

The spindle is designed for cooling via the spindle holder .

Motor spindle 4015 is moisture-proof, but must not be immersed in water.

Tension can be applied over the whole housing. However it is recommended to clamp over a wide surface, and when possible in the middle of the spindle.



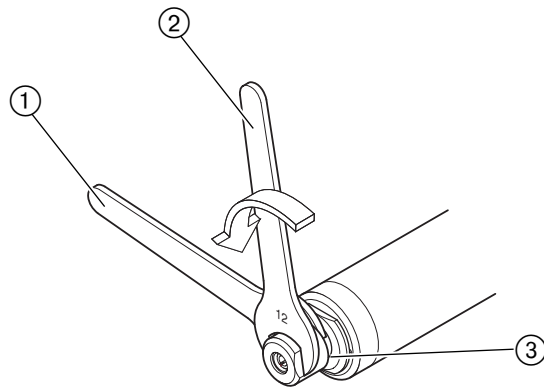
- Only operate SF motor spindle 4015 with a tool or test-pin clamped in the chuck. Avoid, at all times, impact or blows against the spindle or a clamped-in tool.
- Only work with concentric tools.
- Operate the spindle only in a suitable position.
- A too-high tension is to be avoided (effects the rotation and lifetime of the spindle)
- Ensure correct rotation in accordance with the direction of the arrow on the nameplate.

A 5 Changing the chuck

⚠ *Changing of the chuck or a tool is to be carried out only when the spindle is at a complete standstill. The converter must be secured against accidental switch-on, e.g. by pressing the mains switch to the "OFF" position.*

A 5.1 Removing the chuck

Hold shaft ③ with spanner/wrench ① and turn nut ④ with spanner/wrench ② in direction of the arrow >, until the nut can be removed. Remove the installed chuck ⑤.

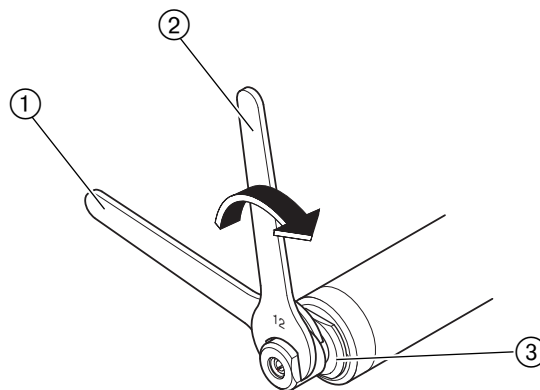
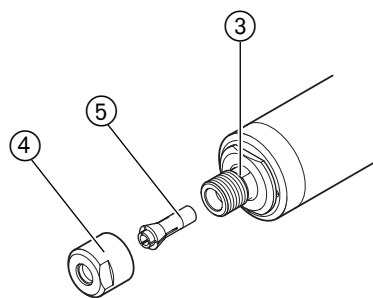


A 5.2 Insertion of the chuck

Hold shaft ③ with spanner/wrench ① and turn nut ④ with spanner/wrench ② in direction of the arrow <, until the nut can be removed.

Push chuck ⑤ with inserted tool or test-pin into the chuck location-position.

Hold shaft ③ with spanner/wrench ① and turn nut ④ with spanner/wrench ② in the direction of the arrow >, tightening snugly, thereby securing the tool or test-pin.

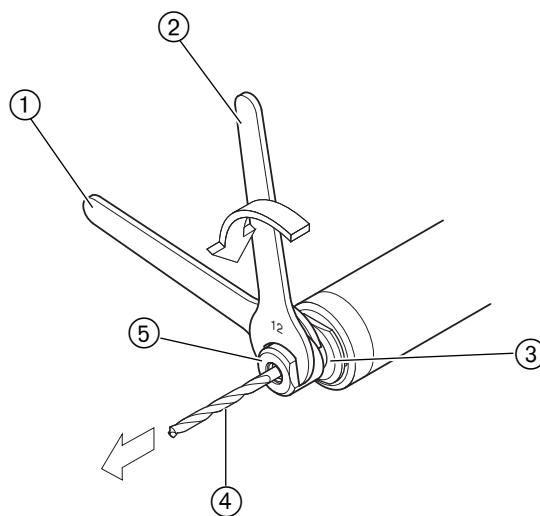


i *Do not lubricate outer surfaces of the frontal area, cone and centering insert.*

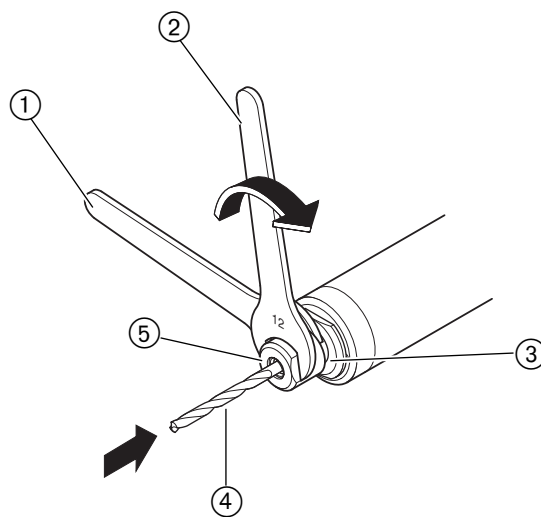


A 6 Changing tools

Hold shaft ③ with spanner/wrench ① and loosen nut ⑤ with spanner/wrench ② in the direction of the arrow <, until the tool ④ can be pulled out.



Insert replacement tool in the chuck. Turn nut ⑤ with spanner/wrench in direction of the arrow > tightening snugly, thereby securing the tool.

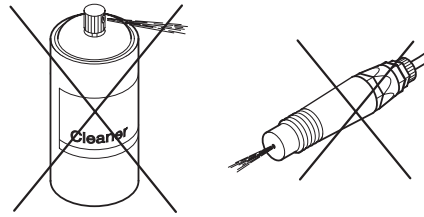


Insert replacement tool, dependent on shaft length and manufacturer's instructions, so far into the chuck that the head or cutting edges of the tool do not touch the chuck.

A 7 Maintenance



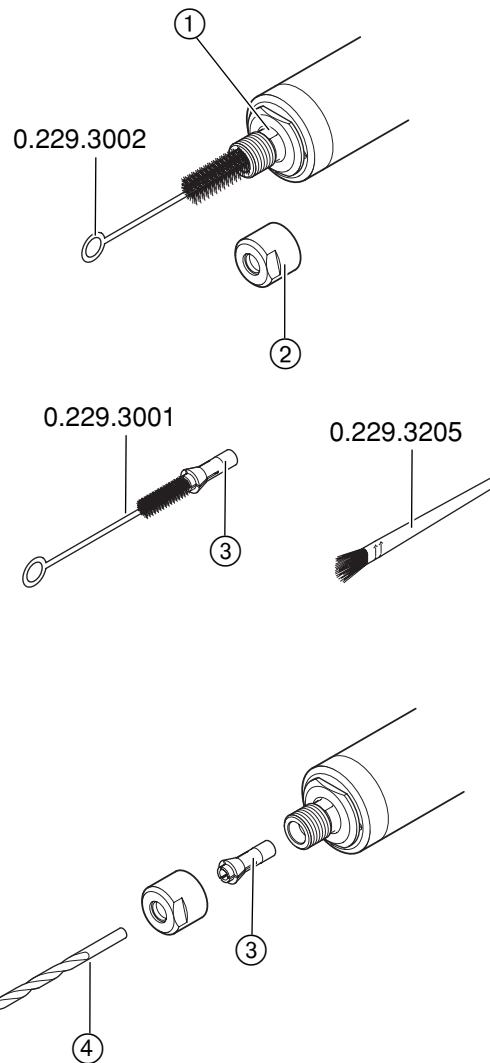
- Under no circumstances, clean motor spindle 4015 with ultrasonics, steam, compressed air, etc.
- Cleaning materials such as spray cleaners, solvents, etc must under no circumstances be brought into contact with the interior of motor spindle 4015.



Chuck ③ must be cleaned frequently.

Clean chuck receptacle and chuck ③ with a brush. Clean the threads of tightening nut ② and shaft ①, then lubricate lightly.

Re-insert cleaned chuck ③ with tool ④ or test-pin ④ into motor spindle 4015 (see A 5.2).





A 8 Technical Data

Refers to motor spindle 4015 driven by converter 4425:

Stainless steel housing \varnothing 25,4 mm

Frequency 83 – 1,667 Hz

Revolutions 5,000 – 80,000 min⁻¹ (not under load)

Torque max. 4 Ncm

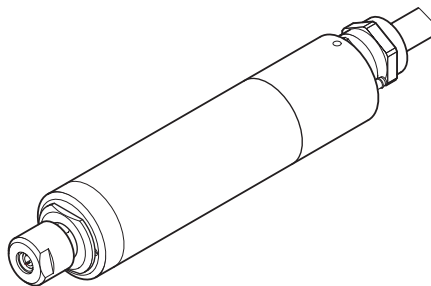
Maximum consumption max. 250 Watt

Voltage max. 32 V

Current max. 8 A

Weight
(incl. 2 m connection cable) 0,4 kg

i Further installation dimensions, with tolerances, are available from KaVo EWL on request.



Water cooling via Clamping Device Type 4825

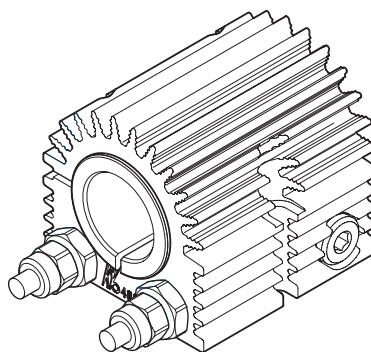
Load limits:

Motor spindle 4015:

Method of operation: S1(continuous operation)

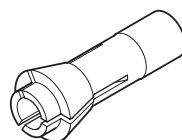
Clamping device: 1.001.4841

Converter: Type 4425



A 9 Available Chucks

Order No.	∅	Order No.	∅
0.674.2122	0,3	0.674.2292	2,0
0.674.2132	0,4	0.674.2302	2,1
0.674.2142	0,5	0.674.2312	2,2
0.674.2152	0,6	0.674.2322	2,3
0.674.2162	0,7	0.674.2332	2,35
0.674.2172	0,8	0.674.2342	2,4
0.674.2182	0,9	0.674.2352	2,5
0.674.2192	1,0	0.674.2362	2,6
0.674.2202	1,1	0.674.2372	2,7
0.674.2212	1,2	0.674.2382	2,8
0.674.2222	1,3	0.674.2392	2,9
0.674.2232	1,4	0.674.2402	3,0
0.674.2242	1,5	0.674.2412	3,1
0.674.2252	1,6	0.674.2422	3,175
0.674.2262	1,7	0.674.2432	3,2
0.674.2272	1,8	0.674.2442	3,3
0.674.2282	1,9	0.674.2452	3,4
		0.674.2462	3,5
		0.674.3132	4,0



Standard Chucks

Guarantee conditions

Under the valid KaVo EWL delivery and payment conditions, KaVo EWL gives a guarantee of satisfactory function and freedom from faults in material and manufacture for the duration of 6 months from the date of sale certified by the vendor. After expiry of the warranty, KaVo gives a guarantee of another 6 months for damage attributable to deficiencies in the material or in manufacture.

In the case of justifiable complaints, KaVo EWL shall supply spare parts or carry out repairs free of charge. KaVo EWL accepts no liability for defects and their consequences which have arisen or could have arisen as a result of natural wear, improper handling, cleaning or maintenance, noncompliance with the maintenance, operating and connecting instructions, corrosion, impurities in the air supply or chemical or electrical influences which are unusual or not admissible in accordance with KaVo's instructions. The guarantee shall become null and void if defects or their consequences can be attributed to interventions in or modifications to the product. Guarantee claims can only be validated if they are notified immediately in writing to KaVo EWL.

When the product is sent in, it must be accompanied by a copy of an invoice or delivery note which clearly shows the fabrication number.



**Konformitätserklärung;
Déclaration de conformité;
CE-Dichiarazione di conformità;
Declaração de conformidade;
EU-Konformitätserklärung;
EU-Konformitätserklärung;**

**Declaration of conformity;
Declaración de conformidad;
EU-conformiteitsverklaring
EU-konformitetsförklaring
EY Vaatimustenmukaisuusvakuutus**

Wir, We, Nous, Nosotros, Noi, Wij, Nós, Vi, Vi, Me, Vi, KaVo ELEKTROTECHNISCHES WERK GmbH
Wangener Str. 78
D-88299 Leutkirch im Allgäu

erklären, dass das Produkt
declare that the product
déclarons que le produit
declaramos que el producto
dichiariamo che il nostro prodotto
verklaren dat het product
declaramos que o produto
förklarar att produkten
erklærer, at produktet
ilmoitamme, että tuote
erklærer, at produktet

**Spindel Typ 4015
Spindle type 4015
Electrobroche type 4015
Husillo del motor tipo 4015
Motore industriale tipo 4015**

auf das sich diese Erklärung bezieht, mit den wesentlichen Schutzanforderungen gemäß den Bestimmungen der Richtlinie(n) übereinstimmt.
to which this declaration relates conforms to the essential safety requirements according to the provisions of Directive(s)
auquel se réfère cette déclaration, est conforme aux exigences essentielles de protection conformément aux dispositions de la/ des Directive(s)
al lo cual se refiere esta declaración, coincide con las esenciales exigencias de protección según las determinaciones de la(s) norma(s)
a cui si fa riferimento in questa dichiarazione, è conforme alle misure di sicurezza secondo le direttive delle norme
waarop deze verklaring betrekking heeft, overeenstemt met de meest essentiële veiligheidsvoorschriften volgens de bepalingen van de richtlijn(en) voldoet.
ao qual se refere esta Declaração, coincide com as exigências fundamentais de segurança segundo as determinações da(s) norma(s)
som denna förklaring hänförelse sig till överensstämmer med de väsentliga skyddskraven enligt bestämmelserna i direktiven:
som denne erklæring omhandler, opfylder de væsentlige beskyttelseskrav i bestemmelserne i de følgende direktiver:
johon tässä ilmoituksessa viitataan, on direktiivien määräämien turvallisuuksivaatimusten mukainen:
som denne erklæringen gjelder, er i overensstemmelse med de væsentlige vernekravene ifølge bestemmelsene i retningslinjene

89/336/EWG (EMV-Richtlinie)
98/37/EWG (Maschinenrichtlinien)
73/23/EWG (Niederspannungsrichtlinien)

Zur Beurteilung des Erzeugnisses wurden folgende Normen oder normative Dokumente angewandt:

The following standards or normative documents were used for assessing the product:

Les normes ou autres documents normatifs suivants sont utilisés pour le jugement de ce produit :

Para la evaluación del producto se aplicaron las siguientes normas o documentos norma:

Per la valutazione del prodotto sono state applicate le seguenti normative o altri documenti normati:

Ter beoordeling van dit product is gebruik gemaakt van de volgende normen of normatieve documenten:

Para a avaliação do produto foram aplicadas as seguintes normas ou documentos normativos:

För bedömning av produkten har följande normer eller normativa dokument tillämpats:

De følgende Normer eller normative dokumenter blev anvendt ved bedømmelsen af produktet:

Tuotteen arvioimisessa käytettiin seuraavia standardeja ja standardeista määrääviä asiakirjoja:

Følgende standarder eller andre normative dokumenter er benyttet i vurderingen av dette produktet:

EN 61800-3 EMV Produktnorm Drehzahlveränderbare elektrische Antriebe
EN 50178 Ausrüstung von Starkstromanlagen mit elektronischen Betriebsmitteln

Leutkirch, 14.06.2002

M. Mohr
-Managing Director-

Spare parts

4015 1.001.2437

