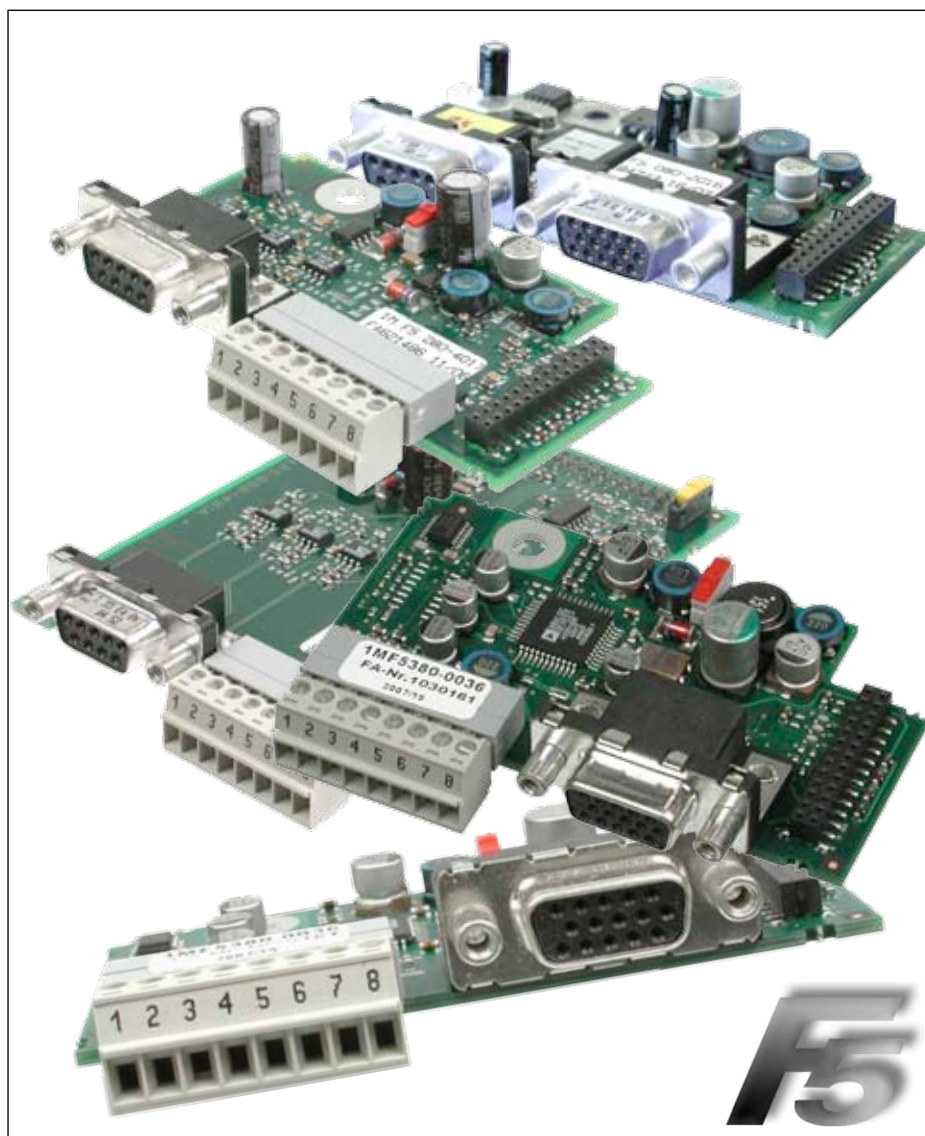


# COMBIVERT



**GB** Installation manual

Encoder interfaces

COMBIVERT with safety function STO F5-K/ -L/ -P

Original manual	
Mat.No.	Rev.
DXF5ZEM-K001	1A



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## 1. Preface

### 1.1 Information on special measures



The used pictograms have following significance:

<b>Danger</b>		Is used, if death or serious bodily injury may be the consequence of non-observance of the measure.
<b>Warning</b>		Is used, if bodily injury and/or substantial property damage may be the consequence of non-observance of the measure.
<b>Caution</b>		Is used, if property damage may be the consequence of non-observance of the measure.
<b>Attention</b>		Is used, if noise sensitive or unrequested operation may be the consequence of non-observance of the measure.
<b>Info</b>		Is used, if a better or simpler result can be the consequence of the measure.

For a special case the instructions can be supplemented by additional pictograms and text.

### 1.2 Documentation

Prior to performing any work on the unit the user must familiarize himself with the unit. This includes especially the knowledge and observance of the safety and operating instructions.

<b>Attention</b>		<b>Observe safety and operating instructions</b>
	Precondition for all further steps is the knowledge and observance of the safety and operating instructions (Instruction manual Part 1). This is provided accompanied by the device or by the download site of <a href="http://www.keb.de">www.keb.de</a> .	

Non-observance of the safety and operating instructions leads to the loss of any liability claims. The warnings and safety instructions in this manual work only supplementary. This list is not exhaustive.

### 1.3 Validity and liability

**The use of our units in the target products is beyond of our control and therefore exclusively the responsibility of the machine manufacturer, system integrator or customer.**

The information contained in the technical documentation, as well as any user-specific advice in spoken and written and through tests, are made to best of our knowledge and information about the application. However, they are considered for information only without responsibility. This also applies to any violation of industrial property rights of a third-party.

Selection of our units in view of their suitability for the intended use must be done generally by the user.

**Tests can only be done within the application by the machine manufacturer. They must be repeated, even if only parts of hardware, software or the unit adjustment are modified.**

Unauthorised opening and tampering may lead to bodily injury and property damage and may entail the loss of warranty rights. Original spare parts and authorized accessories by the manufacturer serve as security. The use of other parts excludes liability for the consequences arising out of.

The suspension of liability is especially valid also for operation interruption loss, loss of profit, data loss or other damages. This is also valid, if we referred first to the possibility of such damages.

If single regulations should be or become void, invalid or impracticable, the effectivity of all other regulations or agreements is not affected.

Due to the multitude of possible applications not every possible case of installation, operation or maintenance can be considered. If you require further information or if special problems arise which are not treated in detail in the documentation, you can request the required information from the local agency of the company Karl E.Brinkmann GmbH.

### 1.4 Copyright

The customer may use the instruction manual as well as further documents or parts from it for internal purposes. Copyrights are with KEB and remain valid in its entirety.

KEB®, COMBIVERT®, COMBICONTROL® and COMBIVIS® are registered trademarks of Karl E. Brinkmann GmbH.

Other wordmarks or/and logos are trademarks (™) or registered trademarks (®) of their respective owners and are listed in the footnote on the first occurrence.

When creating our documents we pay attention with the utmost care to the rights of third parties. Should we have not marked a trademark or breach a copyright, please inform us in order to have the possibility of remedy.

### 1.5 Specified application

The used semiconductors and components of Karl E. Brinkmann GmbH are developed and dimensioned for the use in industrial products. If the KEB COMBIVERT F5 is used in machines, which work under exceptional conditions or if essential functions, life-supporting measures or an extraordinary safety step must be fulfilled, the necessary reliability and security must be ensured by the machine builder.

The operation of our products outside the indicated limit values of the technical data leads to the loss of any liability claims.

## 1.6 Product description

This manual describes the installation or replacement of encoder interface cards in unit version COMBIVERT F5 with safety function STO.

### Attention



### Permissible combinations

Only combinations released by KEB are permissible for replacement or installation of encoder interfaces.

The manual must be made available to any user who is responsible for the installation or replacement of encoder interfaces.

### Warning



### New or modified functionality

The functionality of the drive/servo can change by installation, alteration or replacement of encoder interfaces. The functionality is dependent on the setting/programming by the machine manufacturer.

COMBIVERT F5 with safety function is marked in the material number in the fifth position with the letters K, L or P:

- xxF5Kxx-xxxx
- xxF5Lxx-xxxx
- xxF5Pxx-xxxx

Additionally a „FS“ symbol must be printed on the type plate.

The connection and the settings of the inverter/servos are dependent on the encoder interface type.

### Info






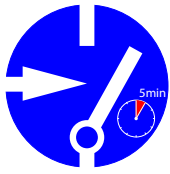




### Encoder interfaces are not safety components



Encoder interfaces are not safety components and they can be changed/installed without anew safety test. No electrical connections between carrier board (control board) and power unit may be opened during installation.

# Safety Instructions

## 2. Safety Instructions

<b>Danger</b>	 <b>Electric Shock</b>
	<p>Frequency inverter / servo drives contain dangerous voltages which can cause death or serious injury. In operation, drive converters, depending on their degree of protection, may have live, uninsulated, and possibly also moving and hot surfaces.</p> <p>In case of inadmissible removal of the required covers, of improper use, wrong installation or maloperation, there is the danger of serious personal injury and damage to property.</p>
<b>Warning</b>	 <b>Only Qualified Electro-Personnel</b>
	<p>All work of installation and start-up may only be done by qualified personnel. According to this manual qualified staff means those who are able to recognise and judge the possible dangers based on their technical training and experience and those with knowledge of the relevant standards and who are familiar with the field of power transmission and safety technology.</p> <p>In the range of safety technology, authorized personnel must be confirmed in written document by KEB.</p>
<b>Warning</b>	 <b>Note capacitor discharge time</b>
	<p>Before any installation and connecting work, the unit must be disconnected from mains and secure it accordingly.</p> <p>After disconnecting the frequency inverter/servo drive, the DC link capacitors are still charged with high voltage for a short time. Therefore, work on the device may be carried out until 5 minutes after switching off.</p>
<b>Attention</b>	 <b>Electrostatic-discharge-sensitive components</b>
	<p>Use antistatic wrist strap for any working on the device or take other appropriate measures for static discharge.</p>

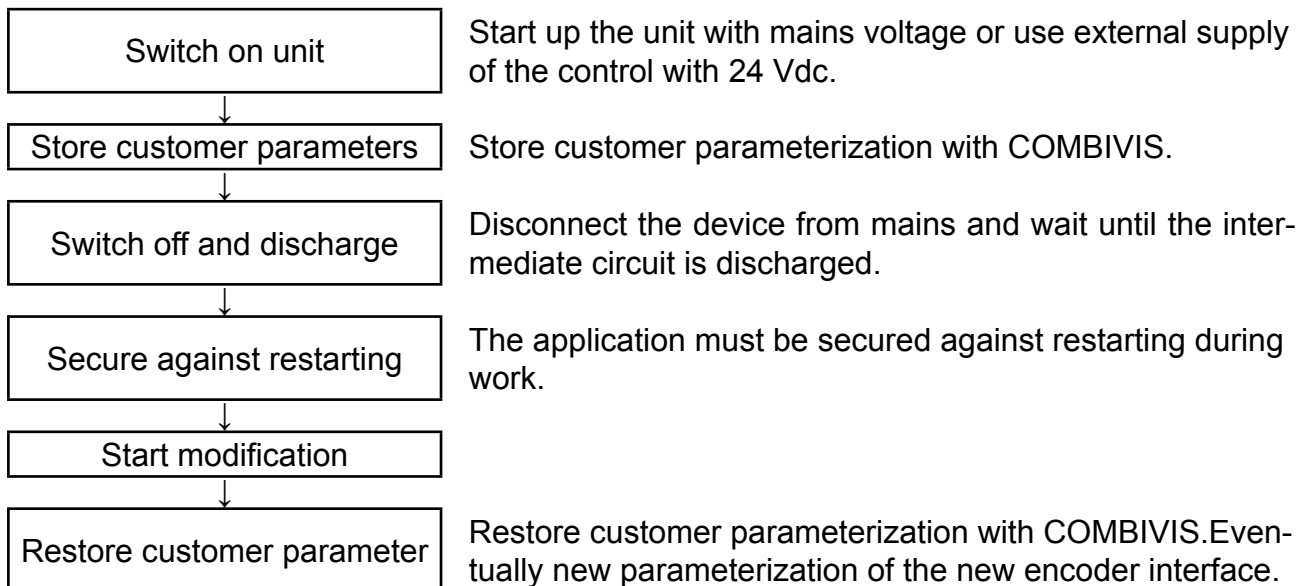


<b>Warning</b>	 <b>Do not open any electrical connections</b>
	No internal electrical connections may be opened during installation or changing of the encoder interface. The certification for "functional safety" expires in case of contravention. The opening of electrical connections with the following required tests is only permissible of authorized personnel by Karl E. Brinkmann GmbH.

**2.1 Preparatory measures**

**2.2 Secure customer parameterization**

The customer parameterization determines the behaviour and the function of the inverter/servo. Possibly the parameterisation can be overwritten by changing the interface card. Therefore, it is generally advisable to make a backup of the customer parameterisation.



# Mechanical installation

## 3. Mechanical installation

### 3.1 Housing D and E

The mechanical installation is dependent on the housing. The housing can be identified through the 7th digit of the material number:

- xxF5xxD-xxxx => housing D
- xxF5xxE-xxxx => housing E

#### 3.1.1 Demounting the device

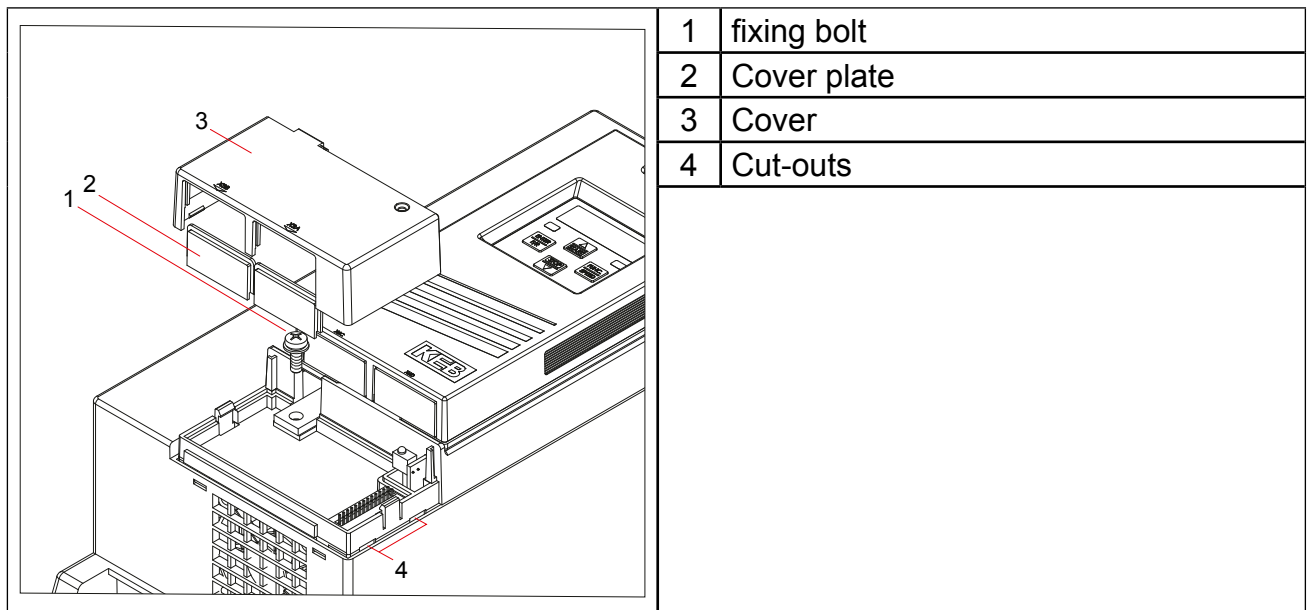


Figure 1: Demounting of the device housing D and E

#### Preparing for Installation

- lightly pick up the cover (3) at the cut-outs (4) and pull up
- Remove cover plates (2)
- Unscrew fixing bolt (1)

### 3.1.2 Installation of the interface board

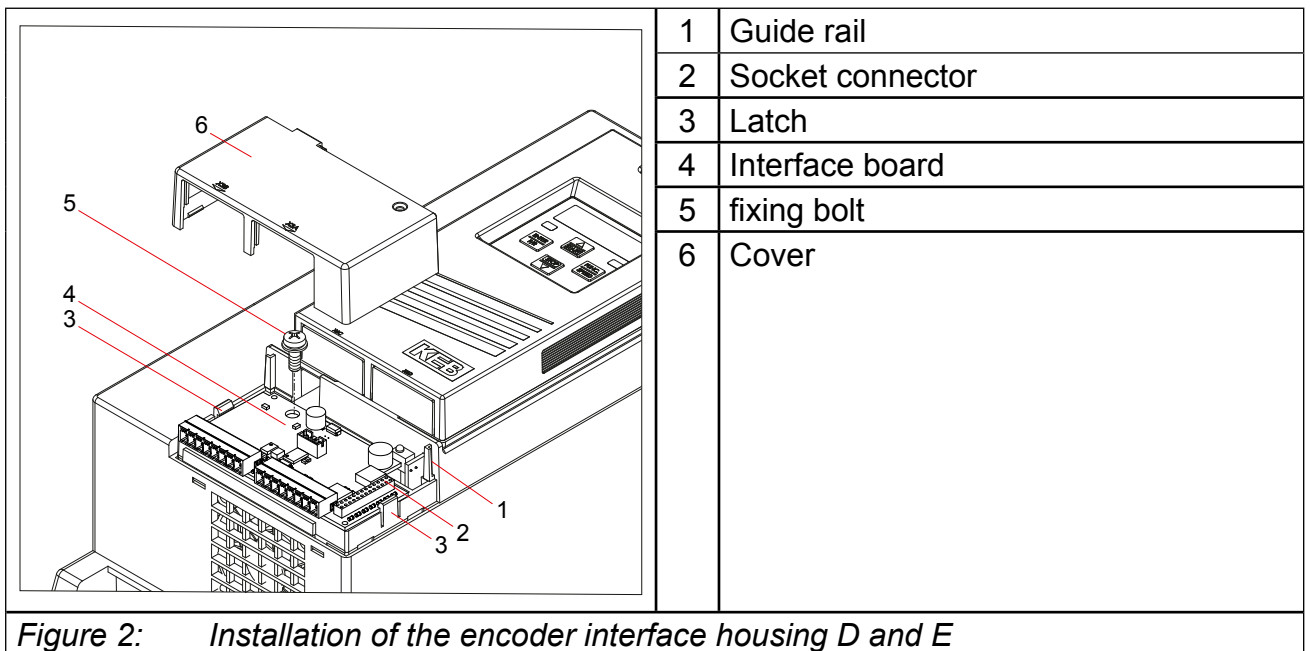


Figure 2: Installation of the encoder interface housing D and E

#### Installation of the interface board

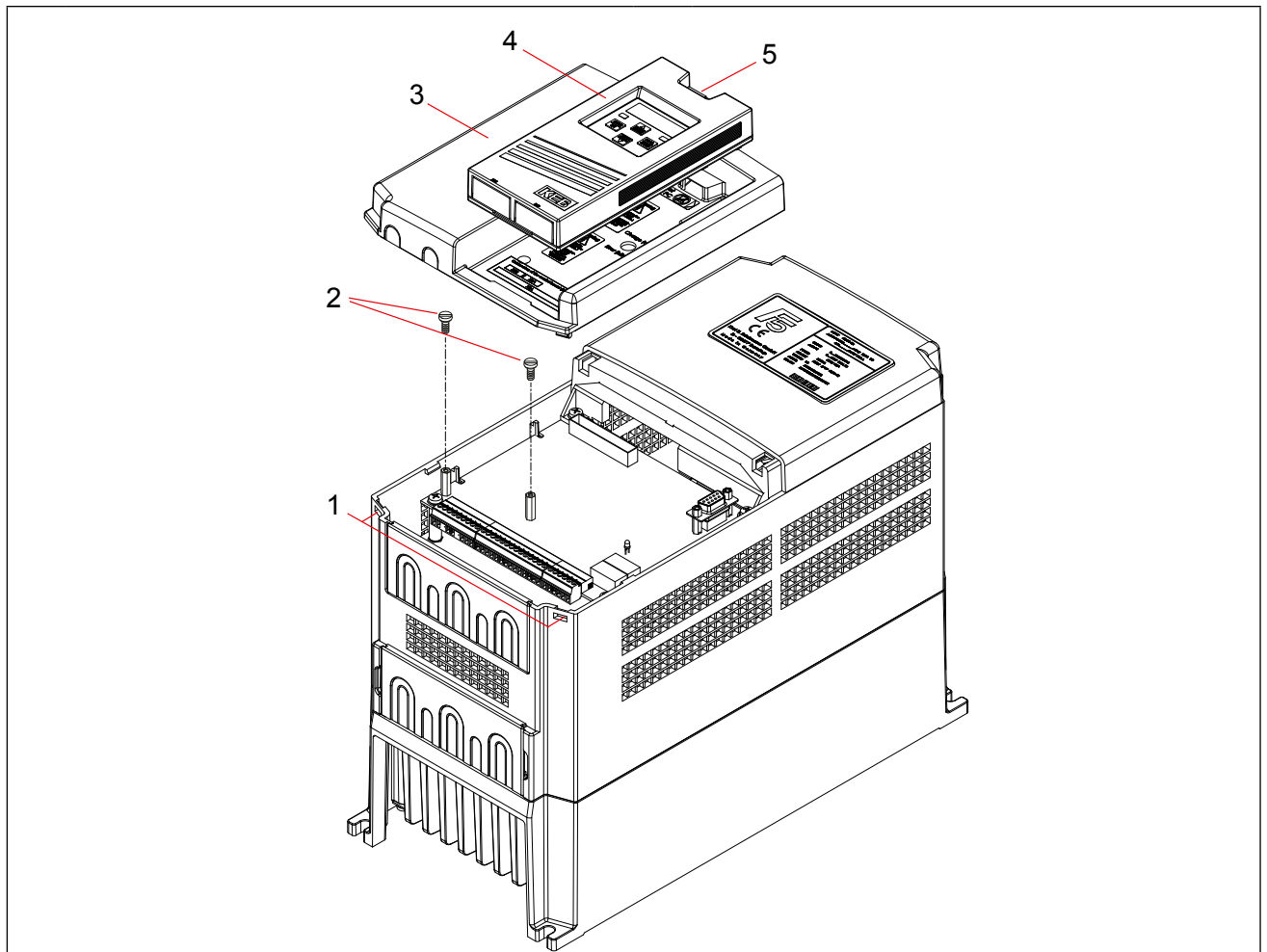
- Insert the interface board (4) with the socket connector (2) and press down until the latches (3) engage
- Screw in fixing bolt (5) and tighten with 2.0...2.2 Nm
- Put the cover (6) until it engages top down on the guide rails (1)
- Fill out the return form from chapter 4 and send it back

## 3.2 Housing G and H

The mechanical installation is dependent on the housing. The housing can be identified through the 7th digit of the material number:

- xxF5xxG-xxxx => housing G
- xxF5xxH-xxxx => housing H

### 3.2.1 Demounting the device



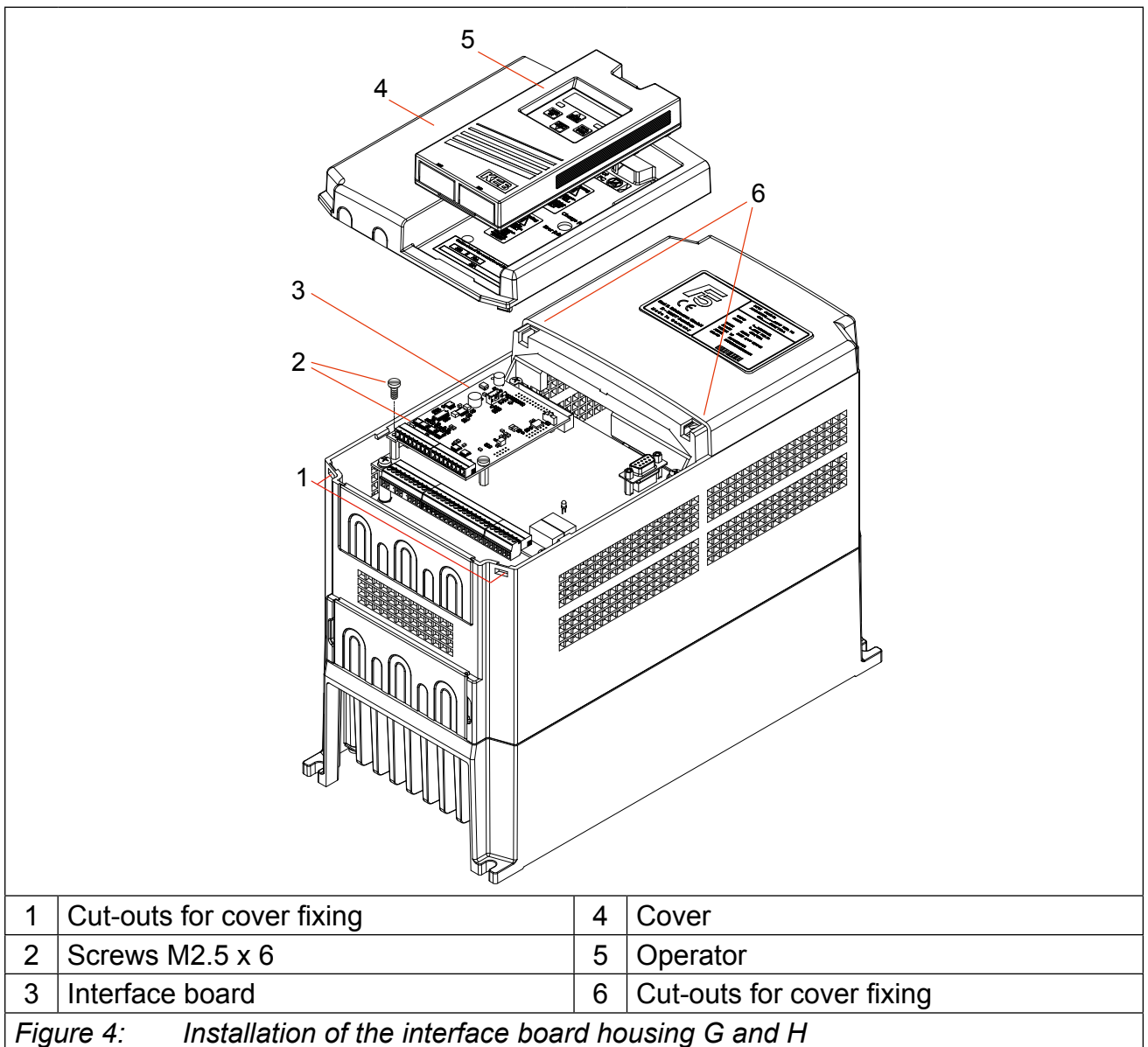
1	Cut-outs for cover fixing	4	Operator
2	Screws M2.5 x 6	5	Latch for operator
3	Cover		

Figure 3: Demounting the device housing G and H

#### Preparing for Installation

- Solve operator (4) by pressing on the latch (5) and pull upwards
- Press the cover (3) out of the cut-outs (1) and tilt upwards
- Remove cover (3) forward
- Unscrew screws (2) from the distance pins (included distance pins are not required for devices with functional safety. These must be mounted first for other devices).

### 3.2.2 Installation of the interface board



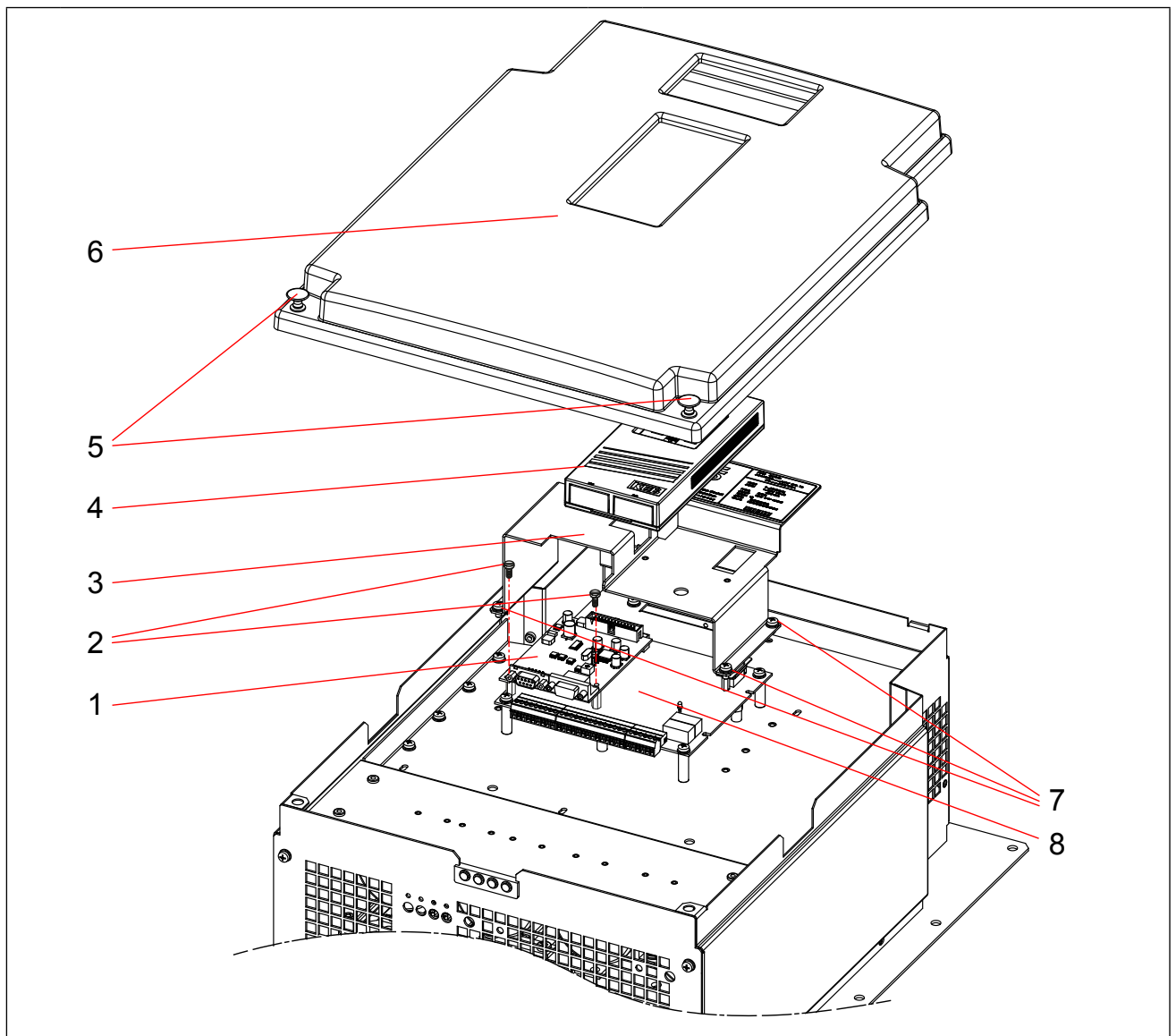
#### Installation of the interface board

- Plug the plug connector of the interface board (3) into the socket connector of the control and press on firmly
- Screw the interface board (3) with the screws (2) to the distance pin and tighten it with 0.7 Nm
- Hook cover (4) into the cut-outs (6) and then press down until the latch engages into the cut-outs (1)
- Slip on operator (5)
- Fill out the return form from chapter 4 and send it back

## 3.3 Housing larger H

The mechanical installation is dependent on the housing. The housing can be identified through the 7th digit of the material number:

- xxF5xxP-xxxx => housing P
- xxF5xxR-xxxx => housing R
- xxF5xxU-xxxx => housing U
- xxF5xxW-xxxx => housing W



1	Interface board	5	Cover fixing
2	2 x screws M2.5 x 6	6	Cover
3	Carrier plate	7	4 x screws M4
4	Operator	8	Control

Figure 5: Installation of the interface board housing R

### Preparing for Installation

- Pull cover fixings (5) upwards and remove cover (6)
- Solve operator (4) by pressing on the latch and pull upwards
- Solve screws (7) and remove carrier plate (3)
- Unscrew screws (2) from the distance pins (included distance pins are not required for devices with functional safety. These must be mounted first for other devices).

### Installation of the interface board

- Plug the plug connector of the interface board (1) into the socket connector of the control (8) and press on firmly
- Screw the interface board (1) with the screws (2) to the distance pin and tighten it with 0.7 Nm
- Attach the carrier plate (3) and tighten screws (7) with 1.3 Nm
- Plug on operator (4)
- Attach the cover (6) and press down the cover fixings (5) to the latch
- Fill out the return form from chapter 4 and send it back





**4. Return form**

The material number of the inverter changes in case of retrofitting or replacement of the encoder interface against another version. In this case the following form must be filled out and send back to Email [rdf@keb.de](mailto:rdf@keb.de).

**Company name:** \_\_\_\_\_

**Customer number (if known):** \_\_\_\_\_

	previous number	new number (if known)
Material number of the inverter		
Serial number of the inverter		X

**Status of the material number:**

Material number as shown above is released

Material number check / awarded by KEB

Material number of the encoder interface	
--	--

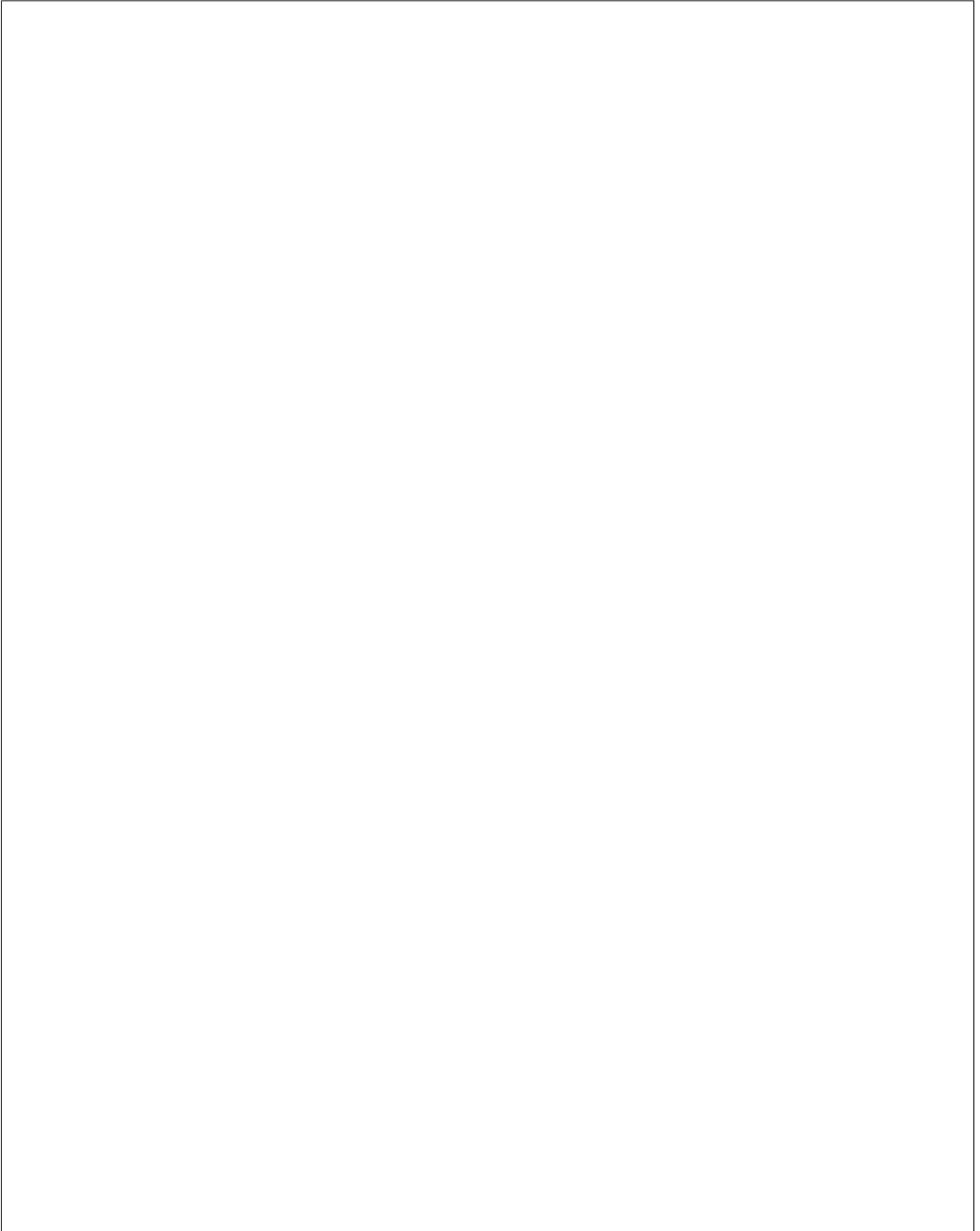
**New type plate required ?**      yes                       no

**Consignment with costs by KEB?**    yes                       no

The service employee confirms with his signature that all work has been carried out carefully and completely in accordance with this instruction.

\_\_\_\_\_  
 Name (in block letters)                      Date                      Signature







**KEB Automation KG**

Südstraße 38 • D-32683 Barntrup  
fon: +49 5263 401-0 • fax: +49 5263 401-116  
net: [www.keb.de](http://www.keb.de) • mail: [info@keb.de](mailto:info@keb.de)

**KEB worldwide...**

**KEB Antriebstechnik Austria GmbH**

Ritzstraße 8 • A-4614 Marchtrenk  
fon: +43 7243 53586-0 • fax: +43 7243 53586-21  
net: [www.keb.at](http://www.keb.at) • mail: [info@keb.at](mailto:info@keb.at)

**KEB Antriebstechnik**

Herenveld 2 • B-9500 Geraardsbergen  
fon: +32 5443 7860 • fax: +32 5443 7898  
mail: [vb.belgien@keb.de](mailto:vb.belgien@keb.de)

**KEB Power Transmission Technology (Shanghai) Co.,Ltd.**

No. 435 Qianpu Road, Chedun Town, Songjiang District,  
CHN-Shanghai 201611, P.R. China  
fon: +86 21 37746688 • fax: +86 21 37746600  
net: [www.keb.de](http://www.keb.de) • mail: [info@keb.cn](mailto:info@keb.cn)

**KEB Antriebstechnik Austria GmbH**

Organizační složka  
K. Weise 1675/5 • CZ-370 04 České Budějovice  
fon: +420 387 699 111 • fax: +420 387 699 119  
mail: [info.keb@seznam.cz](mailto:info.keb@seznam.cz)

**KEB Antriebstechnik GmbH**

Wildbacher Str. 5 • D-08289 Schneeberg  
fon: +49 3772 67-0 • fax: +49 3772 67-281  
mail: [info@keb-drive.de](mailto:info@keb-drive.de)

**KEB España**

C/ Mitjer, Nave 8 - Pol. Ind. LA MASIA  
E-08798 Sant Cugat Sesgarrigues (Barcelona)  
fon: +34 93 897 0268 • fax: +34 93 899 2035  
mail: [vb.espana@keb.de](mailto:vb.espana@keb.de)

**Société Française KEB**

Z.I. de la Croix St. Nicolas • 14, rue Gustave Eiffel  
F-94510 LA QUEUE EN BRIE  
fon: +33 1 49620101 • fax: +33 1 45767495  
net: [www.keb.fr](http://www.keb.fr) • mail: [info@keb.fr](mailto:info@keb.fr)

**KEB (UK) Ltd.**

Morris Close, Park Farm Industrial Estate  
GB-Wellingborough, NN8 6 XF  
fon: +44 1933 402220 • fax: +44 1933 400724  
net: [www.keb-uk.co.uk](http://www.keb-uk.co.uk) • mail: [info@keb-uk.co.uk](mailto:info@keb-uk.co.uk)

**KEB Italia S.r.l.**

Via Newton, 2 • I-20019 Settimo Milanese (Milano)  
fon: +39 02 3353531 • fax: +39 02 33500790  
net: [www.keb.de](http://www.keb.de) • mail: [kebitalia@keb.it](mailto:kebitalia@keb.it)

**KEB Japan Ltd.**

15-16, 2-Chome, Takanawa Minato-ku  
J-Tokyo 108-0074  
fon: +81 33 445-8515 • fax: +81 33 445-8215  
mail: [info@keb.jp](mailto:info@keb.jp)

**KEB Korea Seoul**

Room 1709, 415 Missy 2000  
725 Su Seo Dong, Gang Nam Gu  
ROK-135-757 Seoul/South Korea  
fon: +82 2 6253 6771 • fax: +82 2 6253 6770  
mail: [vb.korea@keb.de](mailto:vb.korea@keb.de)

**KEB RUS Ltd.**

Lesnaya Str. House 30, Dzerzhinsky (MO)  
RUS-140091 Moscow region  
fon: +7 495 632 0217 • fax: +7 495 632 0217  
net: [www.keb.ru](http://www.keb.ru) • mail: [info@keb.ru](mailto:info@keb.ru)

**KEB Sverige**

Box 265 (Bergavägen 19)  
S-43093 Hälsö  
fon: +46 31 961520 • fax: +46 31 961124  
mail: [vb.schweden@keb.de](mailto:vb.schweden@keb.de)

**KEB America, Inc.**

5100 Valley Industrial Blvd. South  
USA-Shakopee, MN 55379  
fon: +1 952 224-1400 • fax: +1 952 224-1499  
net: [www.kebamerica.com](http://www.kebamerica.com) • mail: [info@kebamerica.com](mailto:info@kebamerica.com)

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