

Operating Instructions K4 4914. K4 plus 4912.



Always on the safe side.



KaVo. Dental Excellence.

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K4 4914. K4 plus 4912.


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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.)
- 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.

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A 1.4 Purpose and applications

K4 4914 handpieces are versatile and very particularly suitable for working on crowns, bridges, plastic prostheses and cast prostheses. Suitable for:

Long-term operation at 5000 - 30,000 min⁻¹

Brief operation at 1000 - 5000 min⁻¹

A 1.5 Technical data

Length: 149 mm

Handpiece part: max. Ø 28 mm

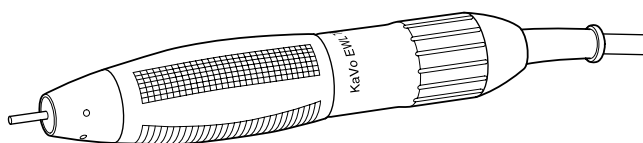
Motor part: max. Ø 26 mm

Weight: approx. 220 g
with connecting cable approx. 400 g

Output power max. 85 watt
max. 4 Ncm

Voltage max. 30V AC

Speed range 1000 - 30,000 min⁻¹



i In the presence of extreme interfering high-frequency fields, speed variations up to max. 20% may occur.

Intermittent operation 2 min / 8 min

Ambient conditions:

Permitted in interior rooms

Permissible ambient temperature range of 5° C - 40°C

Permitted to max. relative humidity 80%

We reserve the right to make technical modifications.

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A 2 Scope of delivery - Accessory

Scope of delivery

K4 handpiece	4914
with chuck	Ø 2.35 mm
Care set	0.411.3180
Instructions for use	1.000.3902

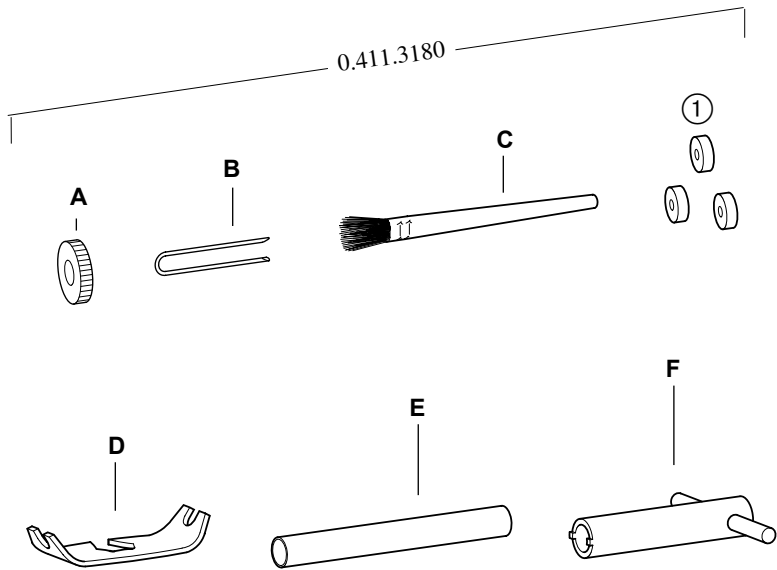
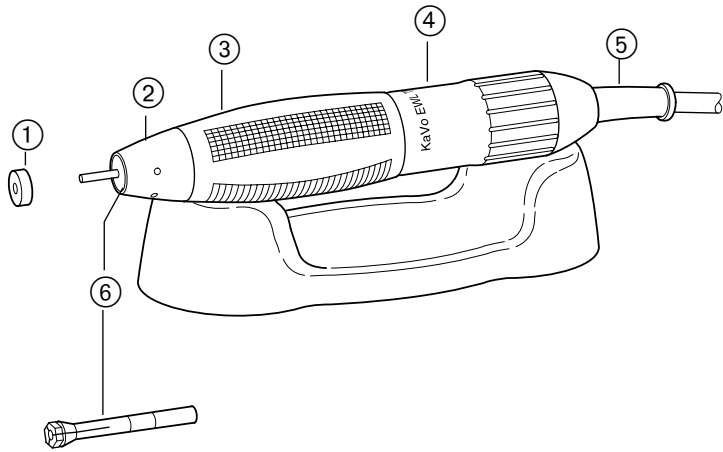
Accessory

Available on request:	
Handpiece support 4850	0.642.0352

Tool for changing the ball bearings	
D Key	0.411.3962

E Assembly pin	0.411.4282
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F Socket wrench	0.411.0211
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A 3 Description

① Cover (3 covers as spare parts included in care set)

② Straight pin

③ Grip tip

④ K4 handpiece part

⑤ K4 motor part

⑥ Chuck

A Chuck key

B Clip

C Cleaning brush

D Key

E Assembly pin

F Socket wrench

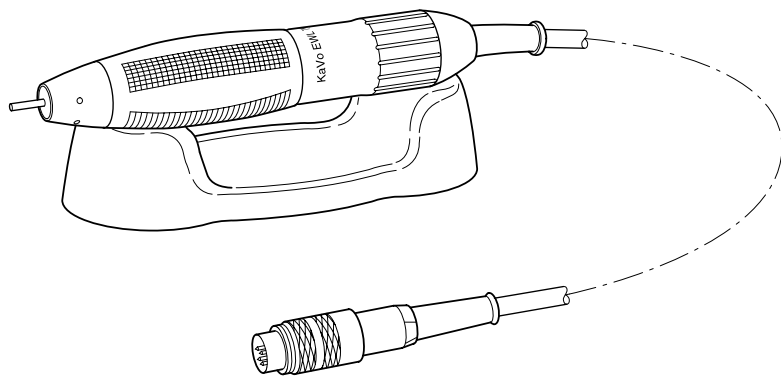
A 4 Commissioning

The K4 handpiece 4914 can be operated with the following controllers:

Table	K4	4954
K4+	knee	4964
K4+	foot	4974

Place K4 handpiece in handpiece support on workstation.


Insert plug into appropriate socket of the suitable controller and screw down.



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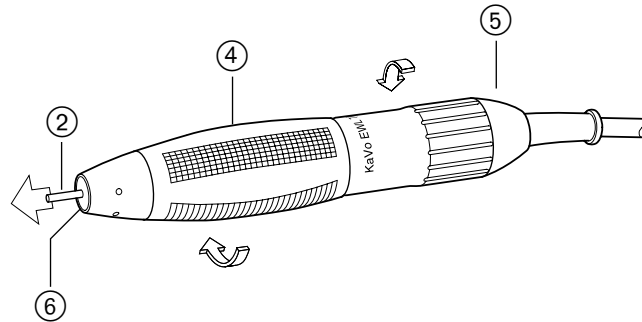
A 5 Operation

A 5.1 Inserting / changing the tool

 *During commissioning and each time when operating the EWL handpieces, it is essential to observe the points mentioned in the section «A 1.3 Precautions»!*

Opening the chuck

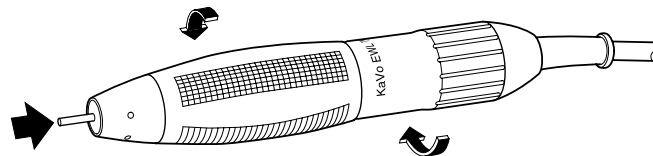
Turn handpiece part ④ and motor part ⑤ in the direction of the arrow until the chuck ⑥ is completely open.




Inserting / changing the tool

Closing the chuck

Turn handpiece part ④ and motor part ⑤ in the direction of the arrow as far as they will go.



A 5.2 Operation

 *If the workplace is unsuitably illuminated, a stroboscopic effect may occur. This causes the tool to appear stationary at certain speeds. The situation can be remedied only by acquiring suitable lighting.*

Each time before switching on, check the desired speed on the controller and if necessary adjust.

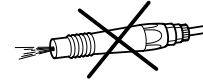
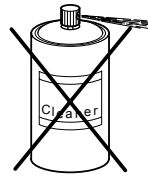
Put the handpiece into operation according to the instructions for use of the up-circuit controller.

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A 6 Maintenance



- Repair and maintenance work on the electrical part of the unit may be performed only by qualified technical personnel or trained persons who have been made aware of the safety regulations. Before maintenance work, disconnect the mains plug or isolate the unit completely from the power supply so that there is no power to the unit.
- On no account may the handpiece be cleaned with compressed air; use the cleaning brush from the care set.
- On no account should cleaning agents (such as spray cleaner, degreaser, etc.) be introduced into the interior of the handpiece.



A 6.1 Weekly cleaning of chuck and handpiece part

Removing the chuck

Remove previously used tool or straight pin from the chuck and take off cover ① (3 covers as spare parts in the care set).

Push straight pin into chuck as far as it will go and close.

Slowly turn the shaft by the straight pin ② until clip **B** can be inserted into grip tip ③ with little resistance.

Open the chuck. Unscrew the chuck using original chuck key **A** and inserted straight pin or tool ②.

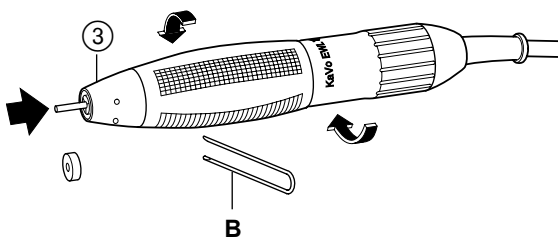
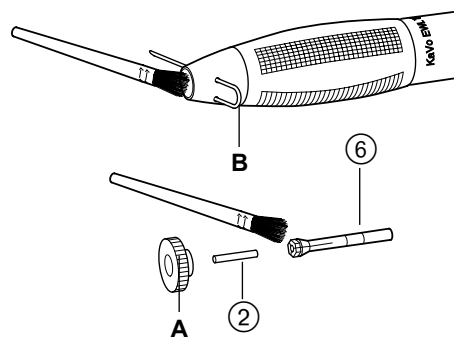
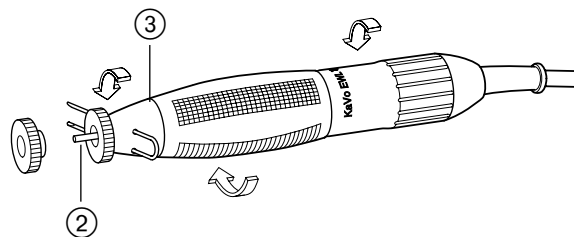
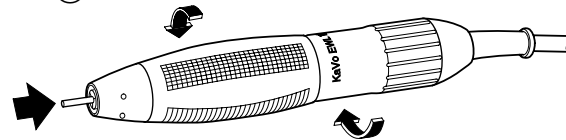
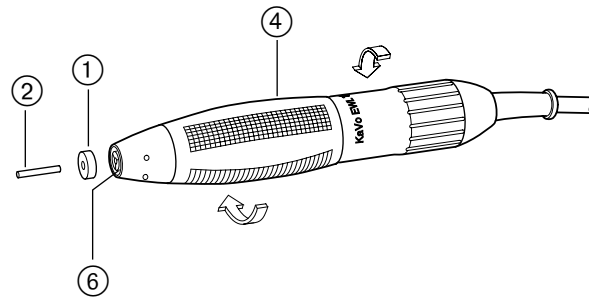
Clean the front opening of the handpiece with a brush or the cleaning brush supplied. Clean the chuck thread, surface of the chuck ⑥ and rotor cone and lightly grease.

Installing the chuck

Insert chuck incl. straight pin ② using original chuck key **A** and tighten.

Mount cover ① again.

Remove clip **B** from grip tip ③ and close chuck with inserted straight pin again.



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A 6.2 Replacing the ball bearings

Dismantling

Slowly turn the shaft by the straight pin ② until clip **B** can be inserted into grip tip ③ with little resistance.

Loosen grip tip in direction of arrow and remove clip.

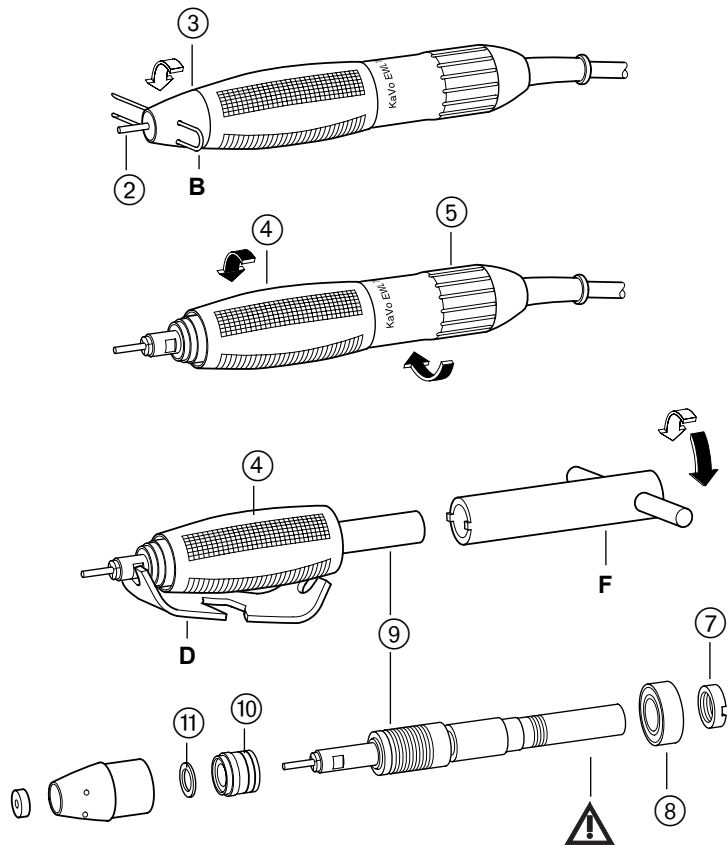
Completely unscrew grip tip.

Unscrew handpiece part ④ from motor part ⑤.

Loosen threaded ring ⑦ with socket wrench **F** - note left-handed thread (hold rotor shaft ⑨ on the key surface with special key **D**). Remove complete rotor shaft forwards from handpiece part ④.

 *The rotor shaft ⑨ is magnetic.*

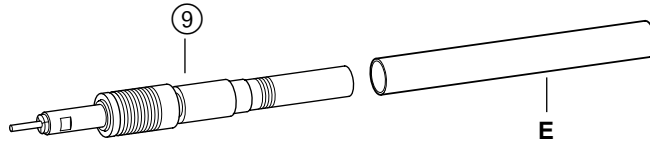
Remove felt washer ⑪ and ball bearing ⑩ from rotor shaft ⑨. Remove ball bearing ⑧ from handpiece part ④.



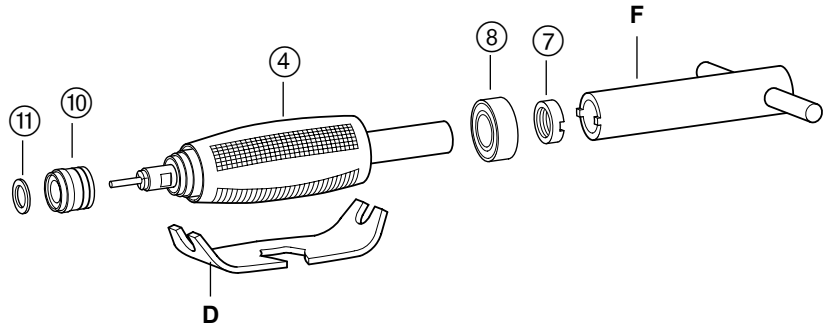
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Assembly

Screw assembly pin **E** (installation aid) onto rotor shaft **9** (left-handed thread) and introduce rotor shaft into handpiece part **4** from the front.

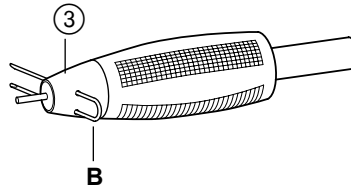


Push new ball bearing **10** (with O-ring side facing inwards) into the housing on the rotor axle.

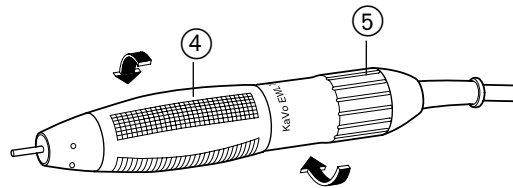


Unscrew assembly pin **E** (left-handed thread) and push new ball bearing **8** over magnetic side of rotor onto rotor shaft **9**. Hold rotor shaft with special key **D** and tighten threaded ring **7** with socket wrench **F** again (note left-handed thread).

Insert felt washer **11** over spring washer and screw on grip tip **3**. Completely tighten grip tip by means of clip **B**.



Screw handpiece part **4** to motor part **5** again.

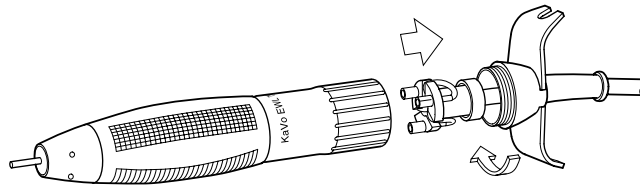


! To increase the life of the ball bearing, KaVo EWL recommends:

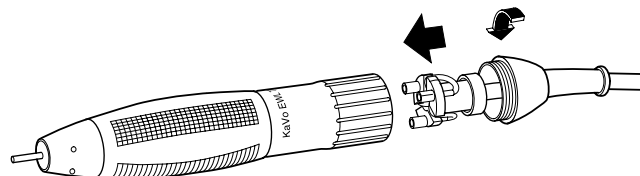
■ After changing the ball bearing, allow the handpiece to run without an inserted instrument for about 60 minutes at 10,000 to 15,000 rpm.

A 6.3 Changing the connecting cable

Unscrew locking cap from the motor part and disconnect the connecting cable in the direction of the arrow.




Insert new connecting cable (3-pin) completely into motor part and screw back locking cap.



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A 7 Malfunctions

 *Repair and maintenance work on the electrical part of the unit may be performed only by specialists or by persons who have been trained in the factory and have been made aware of the safety regulations. Before opening the housing parts, disconnect the mains plug or isolate the unit completely from the power supply so that there is no power to the unit.*

F • K4 handpiece no longer rotates or stops from time to time.

C • K4 handpiece is blocked, possibly due to open chuck system.

R • Close chuck correctly with inserted tool (see **A 5.1**).

C • Break in connecting cable.

R • Check connecting cable incl. plug devices and if necessary replace (see **A 6.3**).

C • Fault in the electrical system of K4 controller.

R • Check controller or have repaired.

F • Tool is no longer adequately retained in the chuck.

C • Diameter of tool shaft does not agree with chuck.

R • Use chuck or tool with appropriate diameter.

C • Chuck has become loose.

R • Insert chuck correctly (see **A 6.1**).

C • Chuck is worn.

R • Replace chuck (see **A 6.1**).

F • Loud running noise or K4 handpiece heats up

C • Ball bearing faulty owing to wear or soiling.

R • Check ball bearing and if necessary replace.(see **A 6.2**)

C • Prolonged operation under very high load.

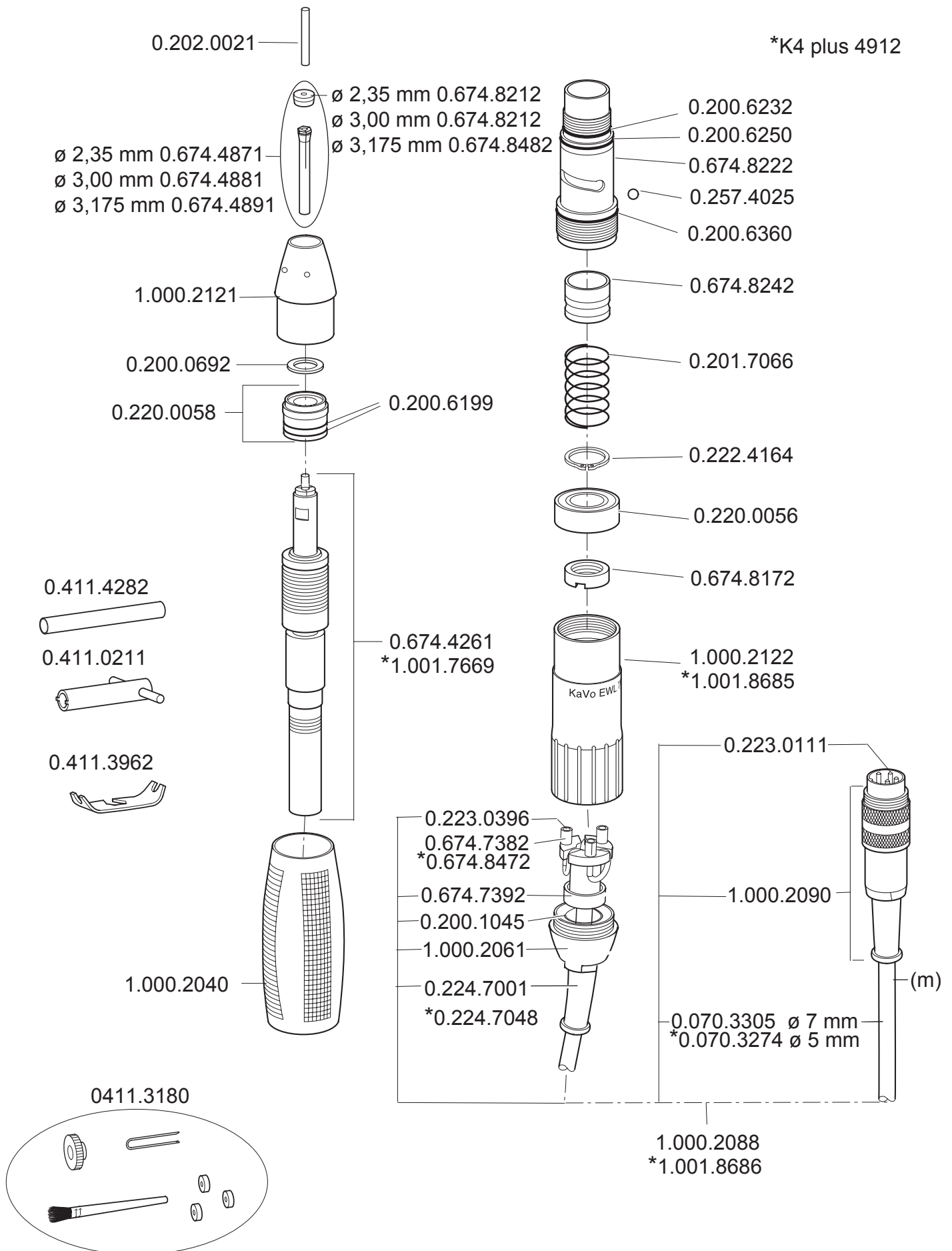
R • Eliminate cause of high load, if necessary increase speed or use tools with smaller diameter.

C • Electronics of controller faulty.

R • Check controller or have repaired.

F = Fault **C** = Cause **R** = Rectification

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Guarantee conditions

Under the valid KaVo delivery and payment conditions, KaVo 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 shall supply spare parts or carry out repairs free of charge. KaVo 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 .

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.

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

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

KE 3

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
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K4 Steuergeräte 4954, 4964, 4974 in Verbindung mit Motorhandstück Typ 4914, 4912
K4 controller 4954, 4964, 4974 in combination with motor handpiece type 4914, 4912
Appareils de commande K9 4954, 4964, 4974 avec pièce à main 4914, 4912
Unidades de control K4 4954, 4964, 4974 con pieza de mano tipo 4914, 4912
K4 Alimentatore 4954, 4964, 4974 in abbinamento con manipolo 4914, 4912
K4 stuurkast type 4954, 4964, 4974 in combinatie met K4 handstuk type 4914, 4912
Unidade de control K4 4954, 4964, 4974 com respectiva peça de mão tipo 4914, 4912
K4 styrenhet typ 4954, 4964, 4974 i förbindelse med K4 handstycke EWL 4914, 4912
K4 enhed type 4954, 4964, 4974 sammen med K4 Håndstykke type 4914, 4912
K4-ohjauslaitteen tyyppi 4954, 4964, 4974 yhdessä K4-käsikappaleesta tyyppi 4914, 4912
K4 styreenhet type 4954, 4964, 4974 i forbindelse med K4 motorgrep type 4914, 4912

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 hänför 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 määräysten tärkeimpien turvallisuusvaatimusten mukainen:
som denne erklæringen gjelder, er i overensstemmelse med de væsentlige vernekravene ifølge bestemmelsene i retningslinjene

89/336/EWG (EMV-Richtlinie)
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 määrittäviä asiakirjoja:

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

EN 61010 Sicherheitsbestimmungen für Laborgeräte
EN 61326-1 EMV-Anforderungen für Laborgeräte

Leutkirch, 16.10.2002


M. Mohr
-Managing Director-

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