Original operation instructions
Milling and grinding motor

Type UAL 23-RF / 24-RF

Part No. 64 593

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Contents

1. Safety instructions

1.1 General safety instructions

These operating instructions apply to device UAL 23-RF / 24-RF. Only personnel qualified according to EN 60204-1 may handle the devices.

Observing the enclosed, separate safety instructions is imperative.

1.2 Intended use

This installable milling and grinding motor is intended for the milling of wood and plastics as well as the grinding of wood, plastics, steel and aluminium.

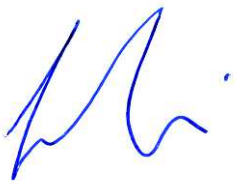
1.3 Improper use

Any use other than that described in Item 1.2 is considered improper and is thus not permissible.

1.4. EC conformity declaration (original)

Otto Suhner GmbH, Trottäcker 50, D- 79713 Bad Säckingen hereby declares in sole responsibility that the product with the serial or batch number (see reverse) complies with the requirements of the directives 2014/30/EU, 2014/35/EU 2006/42/EG. Applicable standards:
EN ISO 12100, IEC 60745, EN 55014-1, EN 55014-2,
EN 61000-3-2, EN 61000-3-3.
Person responsible for documentation: T. Fischer

Bad Säckingen, Mai 2020



T. Fischer
Division Manager

1.5. Explanation of symbols

Attention!
Read carefully!
This piece of information is very important to ensure the functionality of the product. Failure to comply may result in a defect.

Safety instruction / warning
This piece of information serves safe operation. If not observed, the operator's safety is not ensured.

Information
This piece of information serves understanding the product's functions. It helps to utilize the full capacity of the product.

Operating instructions
Read these prior to commissioning the product.

Safety glasses and hearing protection
Wear safety glasses and hearing protection.

Disposal
Environmentally compatible disposal.

Power plug
Pull the power plug prior to performing any works on the device.

2. Commissioning

2.1 Prior to commissioning

Check mains voltage. The voltage of the power supply has to match the specifications on the rating plate.

- Check the tool before using it.
- The tool has to be mounted centrically and positioned at the stop.
- The maximum permissible speed of the tool and the chuck must not be exceeded in any case.
- Observe country-specific provisions.
- Take protective measures if working may generate harmful, combustible or explosive dusts. Wear dust protection mask and, if attachable, use dust chip extraction.

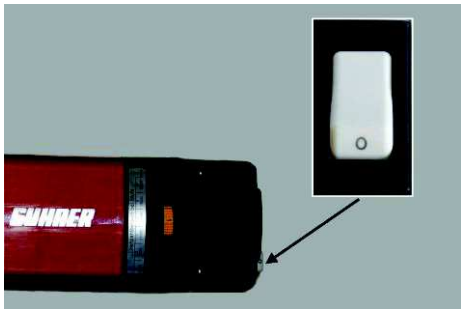
2.2 Commissioning

Set speed at the dial according to the rpm table.

Dial level	min-1/rpm
6	23 500
5	19 000
4	15 000
3	11 000
2	7 000
1	2 500

Never increase the appropriate rotation speed for the insert tool during operation.

Switching on and off



Use toggle switch
Position 1 = On
Position 2 = Off

2.3 Performance data

Mains voltage (see spare part list)	230V 50/60 Hz
Power consumption	1800 W
Rated power	1200 W
Idle speed	2 500 – 23 500 min -1
Max. tool Ø	55 mm
Collet chuck - Ø max.	12 mm
Sound pressure level EN 60745	84 dB, K= 3dB
Sound power level	96 dB, K= 3dB
Vibration EN 60745	5.0 m/s², K=1.5m/s²
Weight without cable	4.8 kg
Ingress protection	⧈ / II

The vibration value stated has been measured according to a standardised test procedure and may vary during actual use. It may be used for product comparison or an initial assessment of the exposure.

2.4 Conditions

Operating temperature range	0 to + 50 °C
Relative humidity	10 - 95 % not condensed

3. Handling / operation

3.1 Protective equipment

3.1.1 Machine protection

- Initial current limitation

The electronically controlled soft start ensures jerk-free machine start. Due to the low initial current, a 16 A fuse is sufficient.

- Temperature-dependent overload protection

To protect against overheating, the safety electronics switch to cool-down mode once a critical temperature is reached. The machine continues operation only at a strongly reduced speed and the electronic speed control is deactivated.
After a cooling period of approx. 10-20 s, the machine is ready to operate again. Switch off and on again to activate the electronic speed control.

With the device warmed up from operation, the temperature-dependent overload reacts sooner, accordingly.

3.2 Insert tools

Only use insert tools whose permissible speed is equal to or higher than the idle speed of the device.

Attach clean tools only!

Pull the plug from the socket before adjusting the settings of the device, changing accessories or putting the device away. This precaution prevents starting the device unintentionally.

Wear protective gloves during **tool change**. The insert tool can heat up extremely during longer operation, and/or the cutting edges of the insert tool are sharp.

3.2.1 Change/assembly of the insert tool

1) Hold the work spindle at the spanner flats using a gauge 22 single open-end spanner.
2) Loosen the clamping nut using a gauge 22 single open-end spanner.

1) Insert tool shaft into the chuck until hitting the stop.

1) Tighten clamping nut.

Abrasives must run smoothly and true. Do not use out-of-centre abrasives any longer.

Trial run!

Check abrasive tools prior to use. The abrasive tool must be mounted perfectly and rotate freely. Perform a trial run for min. 30 seconds without applying any load. Do not use damaged or out-of-centre abrasive tools!

3.3 Working instructions

Working with the milling motor

Wear glasses and hearing protection.

When using a drill upright or a boring or milling bench – possibly in combination with a milling table – the instructions in the operating manuals enclosed with such devices are to be observed.

In addition, please make sure that the T-squares are brought as closely as possible to the cutter, the hand rejector (screen) is set as closely as possible to the work piece surface and that such equipment is used during milling which ensures safe guidance of the work piece, e.g. T-square, auxiliary stop, feed pusher or kick-back block during insert milling.

The feed direction of the work piece must go against the rotation of the cutter (counter rotation):

Caution! Always mill with counter rotation!

Use only sharp and well-perserved milling tools! The best is to use our original milling tools.
When using other milling tools, the manufacturer's rpm ratings permanently marked on the rotating tools must not be exceeded!

Milling process

Keep hands away from the milling area and cutter. Hold the additional handle with your other hand.
If you hold the milling machine with both hands, they cannot be injured by the cutter.

Only approach the work piece with the power tool switched on. *Otherwise, you risk kick-backs if the insert tool gets caught in the work piece.*

4. Maintenance

4.1 Preventive maintenance

4.1.1 Exchanging the carbon brush

Pull the plug prior to any maintenance work.
The device has two carbon brushes.

Exchange the carbon brushes as follows:

Fig. 1

Loosen the four fastening screws (Item 18) of the switch housing (Item 14) with a few rotations and pull the switch housing (Item 14) a back little.

Fig. 2

Push both covers (Item 8) back and remove them from the housing (Item 1).

Fig. 3

Unscrew the screw of the carbon brush holder completely and remove the used carbon brush (Item 11).

Fig. 4

Assemble the new carbon brushes (Item 11) in reverse order.
The carbon brushes must move easily.
After changing the carbon brushes, the brush sparks are a little bigger at first and will soon change back to the normal, small bluish white brush sparks.

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Typ UAL 23-RF / 24-RF
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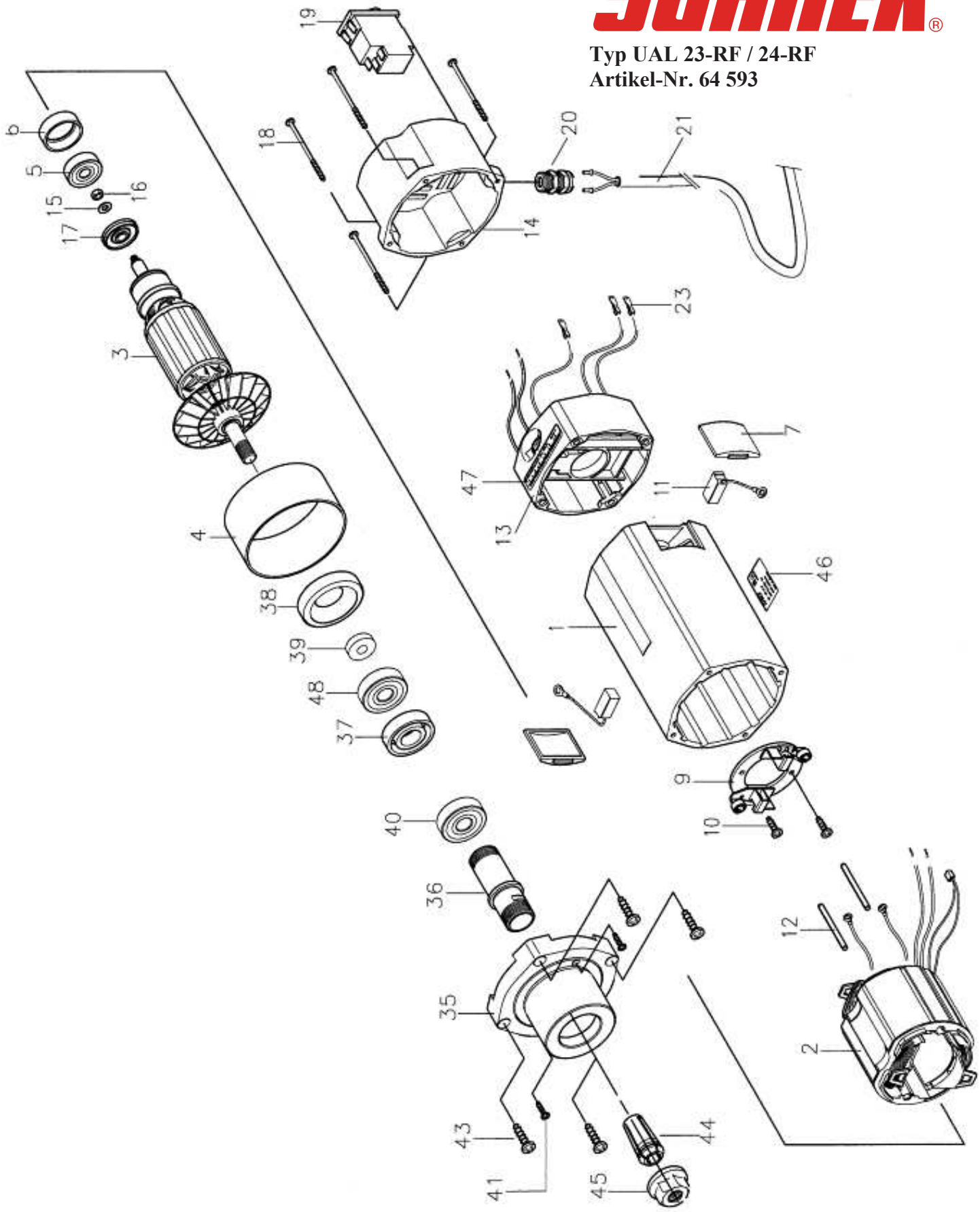

Spare parts for UAL 23-RF / 24-RF - 64593

Spare parts supplied by SUHNER.
When ordering spare parts, please state machine type, serial No. and part No.

Quantity	Description	Item	Part No.
1	Housing with hole	1	52 353 01
1	Stator with PTC	2	78 554 21
1	Rotor with fan	3	78 897 04
1	Spacer	4	49 356 01
1	Ball bearing	5	27 671 21
1	Bearing rubber	6	52 731 01
2	Cover	7	49 347 04
1	Carbon brush holder	9	49 423 01
2	LS sheet metal screw	10	27 997 12
2	Carbon brush	11	15 692 01
2	Clamping pin	12	49 421 01
1	Spacer piece with electronics	13	64 592 03
1	Switch housing	14	78 142 02
1	Washer	15	27 797 34
1	Hexagonal nut	16	27 554 06
1	Ring magnet	17	78 598 01
4	LS sheet metal screw	18	27 995 62
1	Switch	19	49 772 06
1	Cable screw	20	84 399 02
1	Supply cable	21	49 452 01
2	Compression cable lug	23	78 536 01
1	Motor flange	35	64 079 01
1	Spindle	36	64 080 01
1	Spacer pair	37	64 082 01
1	Thrust plate	38	50 637 01
1	Stop ring	39	64 081 01
1	Ball bearing	40	78 518 06
2	LS screw	41	50 638 01
2	Spring washer	42	27 800 03
4	LS sheet metal screw	43	27 995 36
1	Collet chuck	44	64 083 02
1	Sleeve nut	45	64 084 01
1	Rating plate	46	64 085 05
1	Rotation plate	47	64 086 05
2	Gauge 22 single open-end wre	50	37 857 05
1	Ball bearing	48	78 518 12
2	Gauge 22 single open-end wre	50	37 857 05

Please note: Repair work, changes and testing of hand-held tools is to be performed properly. The safety provisions according to DIN, ISO and other provisions applicable in the respective country are to be observed.

4.3 Repair

Should the device break down despite careful manufacturing and testing procedures, any repair work is to be carried out by an authorised SUHNER customer service provider. If the power cord needs to be replaced, this is to be performed by the manufacturer or its representative in order to avoid any safety risks.

4.4 Warranty

There shall not be any claim to warranty for any damages / consequential damages due to improper handling, improper use, failure to adhere to the repair and maintenance provisions as well as handling by non-authorised persons.

Complaints shall only be accepted if the device is returned without having been disassembled.

4.5 Storage

Temperature range	-15 °C to + 50 °C
Max. relative humidity	90 % - +30 °C 65 % - +50 °C

4.6 Disposal / environmental compatibility

The machine consists of recyclable materials.

Dismantle device prior to disposal. Do not throw device into the waste.

According to national provisions, this device has to be recycled in an environmentally friendly manner.