

### ***eromobil<sup>®</sup> - er 230 s***



## **ANOTRONIC LTD.<sup>TM</sup>**

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## Application

eromobil-er 230 s and eromobil-er 400 t are eroding drilling devices operating according to the electric arc method which permit stock removal on electrically conductive materials, independently of their hardness. Both eromobil appliances are used in the main for the removal of broken or shorn-off tools such as thread taps, twist drill bits, reamers and similar.

## Functional Characteristics

The electric arc is generated by a voltage supplied by the converter and applied between the electrode and the workpiece, whereby the electrode always acts as the minus pole, and the workpiece as the plus pole.

A rapid series of consecutive electric arcs between the electrode and the workpiece brings about stock removal from the workpiece and from the electrode in accordance with the polarity.

Depending on the material of which the electrode and the workpiece are made, the different arcing ration fluctuates independently of the hardness of the workpiece. The possibility for machining depends on the fusion point and the composition of the material to be eroded.

The sequence of electric arcs is forced by the erosion drilling head (vibrating head). The hollow electrode clamped by a collet in the erosion drilling head executes a longitudinal vibration movement, thus igniting and breaking the arc. Bright, even flickering of the pilot lamp on the vibrating head indicates the execution of stock removal. The intensity of the electric arc is determined by the step switch setting.

Coolant (drilling emulsion) is fed through the hollow electrode from the coolant pump to the eroded material. This cools the workpiece and at the same time flushes out the produced swarf and chips.

The eromobil permits horizontal as well as vertical cooperation. As the electrode does not rotate during the working sequence, it is possible to form through-holes of any optional shape.

## Commissioning

eromobil-er 230 s and -er 400 t designed for application on existing upright drilling machines or special machines. The vibrating head is clamped optionally using a dia. 12 mm chucking journal or a morse taper MK 2.

### **CAUTION!**

**The vibrating head must not be permitted to rotate.**

#### ■ Connected loads:

eromobil-er 230 s - 220/230 V AC, 50 Hz, 16 Amp., 3,6 kVA

eromobil-er 400 t - 380/400 V threephase current, 50 Hz, 16 Amp., 6 kVA

- Coolant requirement:  
The same drilling emulsion you generally use.

### CAUTION!

Driven sleeves must not be rotated and the machine feed system must not be switched on.

- Drilling hose:

The free end of the drilling hose is fixed to the back of the appliance using an Ermeto union and coupling plug.

- Earth cable:

The earth cable is plugged onto the back of the appliance and the pole terminal connected to the workpiece.

- Coolant pump:

The electrical and fluid terminals are joined at the back of the appliance.

### IMPORTANT PREPARATORY WORK!

The workpiece you wish to machine must be firmly connected to the table and must not vibrate with the drill during machining.

Ensure that the electrode is correctly and firmly fitted in the collet.

When eroding broken-off tools, the electrode should be centred as precisely as possible in order to avoid damaging the workpiece (e.g. thread). To protect it against the effects of splash water, the electrode is covered by a bag-type splash guard. To protect your eyes against the light - arc, we advise the wearing of tinted glasses or shielding the electrode from view.

## Selection of Electrodes

Guideline values for removing sheared-off thread taps (metric):

Electrode size	Thread (metric)
dia. 1,0 mm x 250 mm	M 2 - M 2,6
dia. 1,5 mm x 250 mm	M 3
dia. 2,0 mm x 250 mm	M 4
dia. 2,5 mm x 250 mm	M 5
dia. 3,0 mm x 250 mm	M 5 - M 6
dia. 3,5 mm x 250 mm	M 6
dia. 4,0 mm x 250 mm	M 6 - M 8
dia. 4,5 mm x 250 mm	M 8
dia. 5,0 mm x 250 mm	M 8 - M 10
dia. 6,0 mm x 250 mm	M 10
dia. 7,0 mm x 250 mm	M 12
dia. 8,0 mm x 250 mm	M 12 - M 14
dia. 10,0 mm x 250 mm	M 16 - M 20
dia. 12,0-25,0 mm x 250 mm	M 20 - M 40

#### Guideline values for the removal of shorn-off twist drill bits and thread taps:

Bits up to 5 mm	-	Electrode dia.: 1 mm smaller
Bits up to 10 mm	-	Electrode dia.: 2 mm smaller
Bits from 10 mm	-	Electrode dia.: 1/5 of bit diameter

## Selection of Setting Values

A decisive factor in ensuring fast machining is choosing the right setting of the work step switch. This is used to select the erosion voltage. Both eromobil types offer the possibility to work with one of six different voltage steps. Voltage step 1 sets the lowest, voltage step 6 the highest rate of stock removal.

#### Erosion voltage eromobil - er 230 s

Step	1	2	3	4	5	6
Electrode dia.	1-1,5	1,5-2	2-3	3-4	4-6	6-10
Thread dia.	M 2-2,5	M 3-4	M 4-6	M 6-8	M 8-12	M 12-20

#### Erosion voltage eromobil - er 400 t

Step	1	2	3	4	5	6
Electrode dia.	1-1,5	1,5-2	2-3	3,5-5	6-10	10-25
Thread dia.	M 2-2,5	M 3-4	M 4-6	M 6-10	M 10-20	M 20-40

## Summary of Important Functions

Before switching on the main switch, always check the following points:

- Is the workpiece firmly clamped on the work table?
- Is the electrode well fastened and centred?
- Is the earth cable mounted with the pole terminal at the workpiece?
- Main switch 'ON': The vibrating head must start to vibrate.
- Main switch 'ON': Set the required work step. The pilot lamp comes on.
- Switch for pump 'ON': Completely fill the pump beforehand!

To protect against splash water, the drilling point is covered with a bag-type splash guard.

#### CAUTION!

With the eromobil-er 400 t, threephase current, check that the sense of rotation of the pump is correct.

If necessary, change two phases.

With the eromobil-er 230 s, set the pump switch to 'ON'.

- The electrode is positioned against the workpiece using the feed mechanism until a spark-over takes place. The remaining feed process is carried out watching the pilot lamp on the vibrating head. If this flickers brightly, the right feed rate has been reached. If the pilot lamp goes out, this means that the electrode has burnt onto the workpiece: Feed is too high.

## **Troubleshooting** - Before opening the housing, always pull out the mains plug

### **Fault: Multiple short circuits or burning together of electrodes.**

- Insufficient or no coolant available.
- Stop cock on the back of the appliance not open or not completely open.
- Clean suction basket on the suction hose.
- Detached wastes and broken-off threads can lead to short circuiting. Pull the electrode out of the borehole. If this does not help, remove chips and swarf from the borehole.
- Bent electrodes or electrodes mounted crooked are contacting the wall of the borehole. Check electrodes.

### **Fault: Electrode falls to vibrate.**

Open the front panel and check the miniature fuse on the righthand side.

### **Fault: Pilot lamp fails to react to setting on step switch.**

Check bulb.

### **Fault: No sparkover when positioning the electrode.**

Check connection of the earth cable.

### **Fault: Appliance switches off.**

If overloaded, the transformer heats up and is cuts out automatically. The pilot lamp on the front panel (temperature monitor) lights up. As soon as the light goes off, the eromobil is ready for operation again.

## ELECTRODES

COLLETS - er

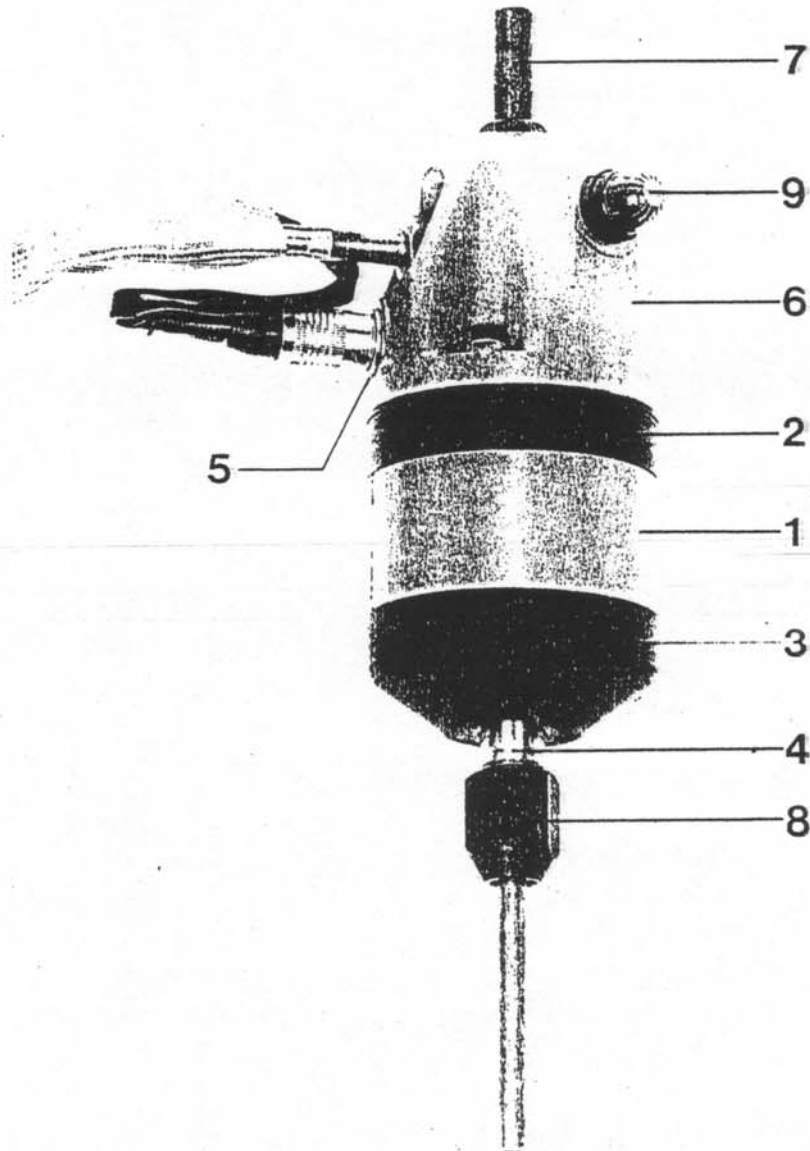
Edition '93

ORDER NUMBER			ELECTRODE SIZE	
800	00	10	Electrode	1,0 dia. x 250 mm
800	00	15	Electrode	1,5 dia. x 250 mm
800	00	20	Electrode	2,0 dia x 250 mm
800	00	25	Electrode	2,5 dia. x 250 mm
800	00	30	Electrode	3,0 dia. x 250 mm
800	00	35	Electrode	3,5 dia. x 250 mm
800	00	40	Electrode	4,0 dia. x 250 mm
800	00	45	Electrode	4,5 dia. x 250 mm
800	00	50	Electrode	5,0 dia. x 250 mm
800	00	60	Electrode	6,0 dia. x 250 mm
800	00	70	Electrode	7,0 dia. x 250 mm
800	00	80	Electrode	8,0 dia. x 250 mm
800	01	00	Electrode	10,0 dia. x 250 mm

ORDER NUMBER			COLLET SIZE	
800	10	10	Collet	1,0 mm dia.
800	10	15	Collet	1,5 mm dia.
800	10	20	Collet	2,0 mm dia.
800	10	25	Collet	2,5 mm dia.
800	10	30	Collet	3,0 mm dia.
800	10	35	Collet	3,5 mm dia.
800	10	40	Collet	4,0 mm dia.
800	10	45	Collet	4,5 mm dia.
800	10	50	Collet	5,0 mm dia.
800	10	60	Collet	6,0 mm dia.
800	10	70	Collet	7,0 mm dia.
800	10	80	Collet	8,0 mm dia.
800	11	00	Collet	10,0 mm dia.

# VIBRATORY HEAD

er 230 s/er 400 t Edition'93



# VIBRATORY HEAD

er 230 s/er 400 t Editon'93

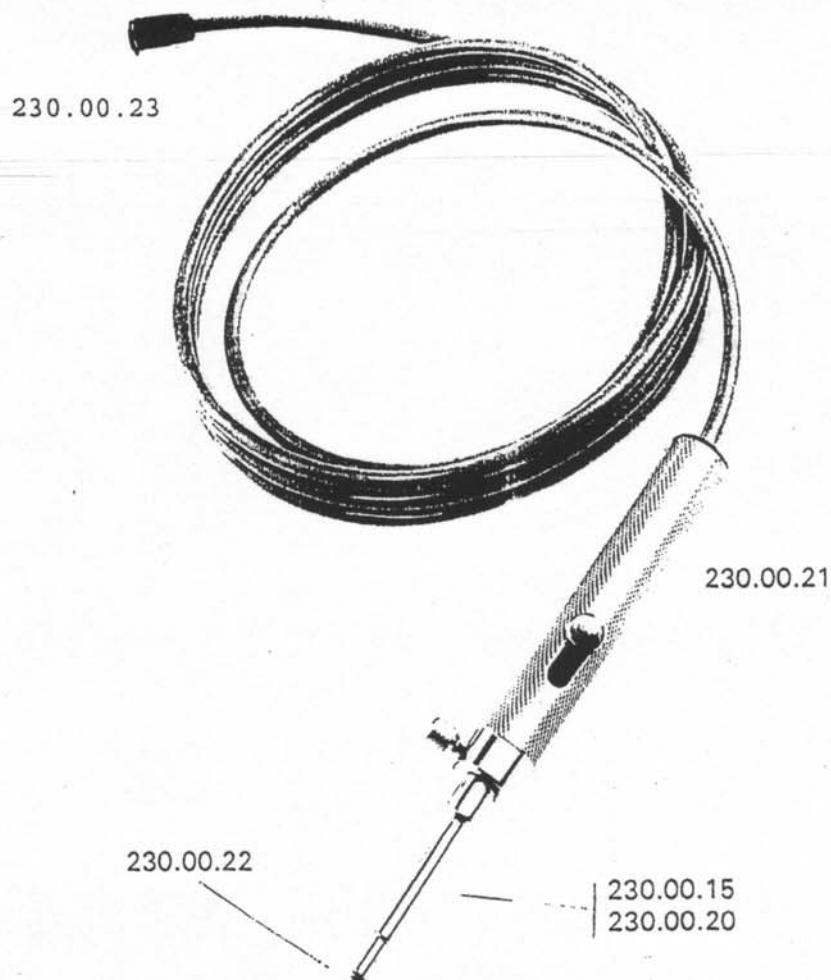
ORDER NO.	DESCRIPTION OF PART	No. ea.	REMARK
230 10 00	Vibratory head, new, complete	1	
230 10 01	Vibratory head in replacement, complete	1	
230 10 02	Pot magnet core	1	Pos 1
230 10 03	Upper guide bearing	1	Pos 2
230 10 04	Lower guide bearing	1	Pos 3
230 10 05	Armature, complete	1	Pos 4
230 10 06	Flange box 3 poles	1	Pos 5
230 10 07	Cap cast, alum	1	Pos 6
230 10 08	Clamping pin	1	Pos 7
230 10 09	Clamping nut	1	Pos 8
230 10 10	Insulating disk	1	
230 10 11	Insulating bushing	3	
230 10 12	Screw-in angle	1	
230 10 13	Cup spring	8	
230 10 14	Grooved nut	2	
230 10 15	Indicator lamp, complete	1	Pos 9
230 10 16	Guide pin	1	
230 10 17	Ring coil	1	
230 10 18	Bulb for indicator lamp	1	Pos 9
230 10 19	Sinter bearing	2	
230 10 20	Washer $\phi$ 5	3	
230 10 21	Socket head top screw M 4x20	3	
230 10 22	Socket head top screw M 5x40	1	
230 10 23	Washer 18 $\phi$ x25)	1	



# DEEP-HOLE TEST LAMP

er 230 s/er 400 t Edition'93

ORDER No.	DESCRIPTION OF PART	No. ea.
230 00 10	Deep-hole test lamp, complete	1
230 00 15	Pen light, 35 mm lg.	1
230 00 20	Pen light, 100 mm lg.	1
230 00 21	Cable grip	1
230 00 22	Bulb for deep-hole test lamp, 3,8 V	1
230 00 23	Connection plug, 2 pole	1



EROSION HOSE  
EARTHING CABLE  
er 230 s/er 400 t Edition'93

ORDER No.	DESCRIPTION OF PART	No. ea.
230 70 01	Erosion hose, complete, 2 m	1
230 70 02	Coupling plug	1
230 70 03	Coupling socket	1

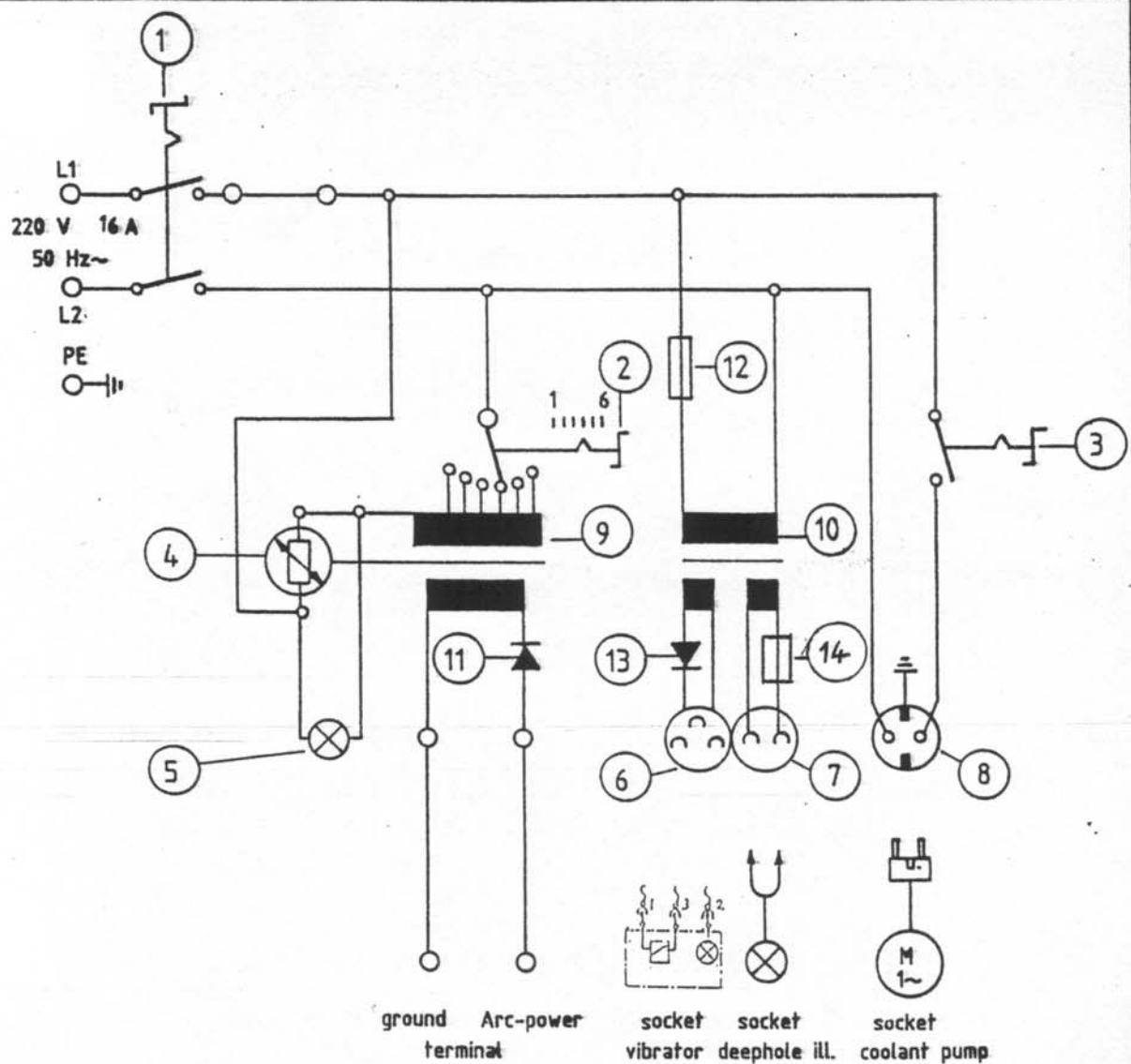


ORDER No.	DESCRIPTION OF PART	No. ea.
230 70 05	Earthing cable, complete	1
230 70 06	Workpiece crocodile clip	1
230 70 07	Plug	1



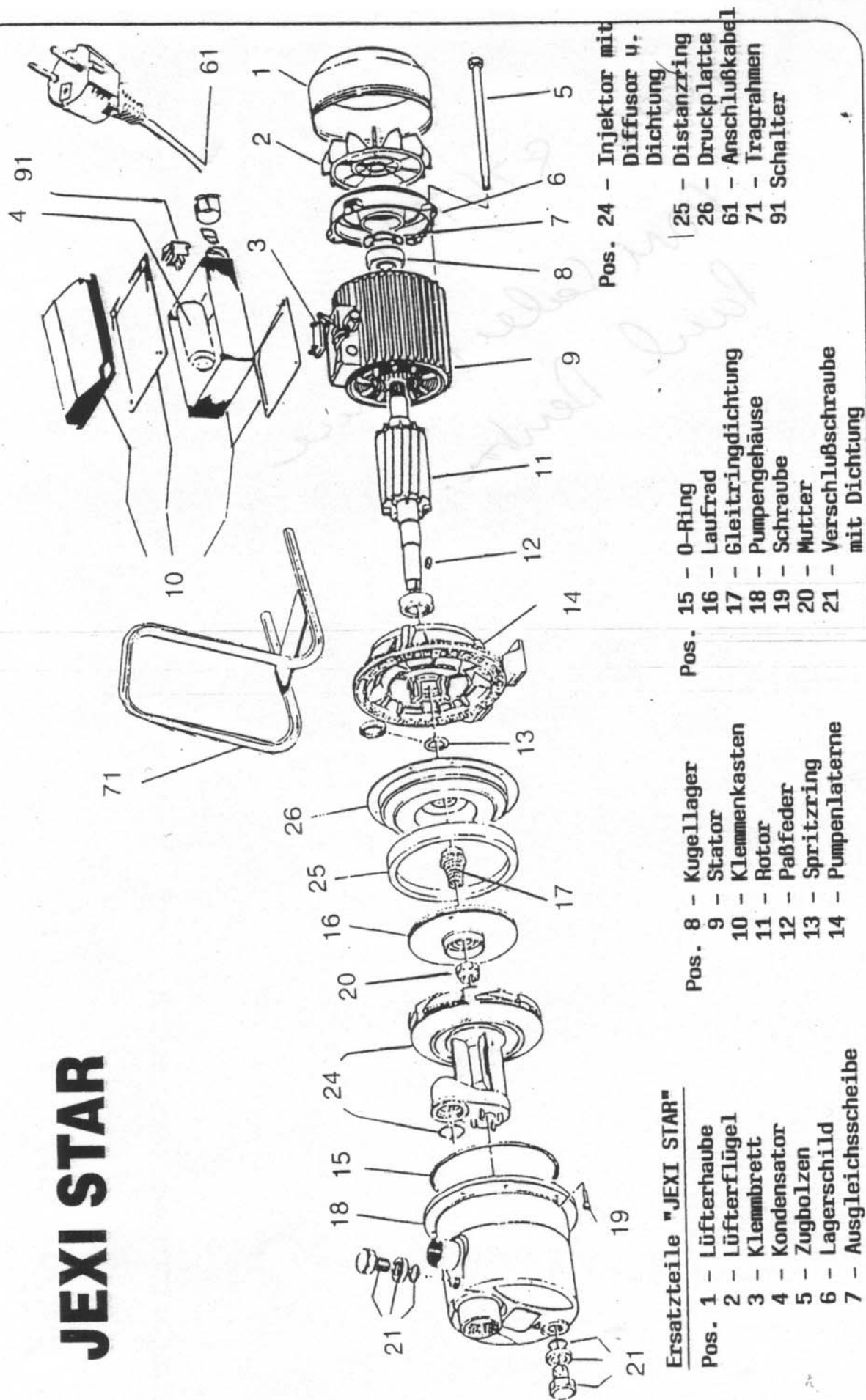
Converter  
eromobil er 230 s Edition '93

ORDER No.	DESCRIPTION OF PART		No. ea.	
230 80 00	Converter, complete, 230 VAC, 3,6 kVA		1	
230 80 01	Main-breaker		1	Pos. 1
230 80 02	Selector-switch		1	Pos. 2
230 80 03	Pump-switch		1	Pos. 3
230 80 04	Temp. protector		1	Pos. 4
230 80 05	Pilot light		1	Pos. 5
230 80 06	Socket vibrator,		1	Pos. 6
230 80 07	Socket deep-hole illumin, 3,5 V		1	Pos. 7
230 80 08	Socket coolant pump		1	Pos. 8
230 80 09	Arc transformer		1	Pos. 9
230 80 10	Vibrator transformer		1	Pos.10
230 80 11	rectifier		1	Pos.11
230 80 12	Fuse/amp. slow		1	Pos.12
230 80 13	Diode		1	Pos.13
230 80 14	Fuse		1	Pos.14



- 1 main-breaker
- 2 selector-switch
- 3 pump-switch
- 4 temp. protector
- 5 pilot light
- 6 socket vibrator
- 7 socket deephole illumin. 3,5 V
- 8 socket coolant pump
- 9 arc transformer
- 10 vibrator transformer
- 11 rectifier
- 12 fuse / amp. slow
- 13 diode
- 14 fuse

# JEXI STAR





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5axis cnc Milling

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- ECM Sub-Contract Service.
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- EDM small hole drilling Machines and Sub-Contract Service.
- EDM/ECM Consultancy Service.

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