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10.2006	

Electric-breaker

EH 23/... 

Operator's Manual

1. Foreword

For your own safety and protection from bodily injuries, carefully read, understand and follow the safety instructions in this manual.

Please operate and maintain your Wacker machine in accordance with the instructions in this manual. Your Wacker machine will reward your attention by giving trouble-free operation and a high degree of availability.

Replace faulty or defective components Immediately.

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2. Safety instructions**for the use of drilling and breaking hammers with electric drive****2.1 General Instructions**

- 2.1.1 Drilling and breaking hammers may only be operated by persons who
- * are at least 18 years of age,
 - * are physically and mentally fit for this job,
 - * have been instructed in operating drilling and breaking hammers and proven their ability for the job to the employer
 - * may be expected to carry out the job they are charged with carefully.

The persons must be assigned the job of operating drilling and breaking hammers by the employer.

- 2.1.2 Drilling and breaking hammers are to be applied for their proper use. Both the manufacturer's operating instructions and these safety instructions have to be observed.

- 2.1.3 The persons charged with the operation of these hammers have to be made familiar with the necessary safety measures relating to the machine. In case of extraordinary uses, the employer shall give the necessary additional instructions.

- 2.1.4 It is possible that these drilling and breaking hammers exceed the admissible sound level of 89 dB(A). Operators must wear personal hearing protection if the admissible assessment sound level equals or exceeds 89 dB (A).

2.2 Operation

- 2.2.1 The function of operation levers or elements is not to be influenced or rendered ineffective.

- 2.2.2 Make sure that the machine is connected only to voltage and frequency as indicated on its name plate. Choose correct cross section for extension cord.

- 2.2.3 The operator has to switch off drilling and breaking hammers, to disconnect them from the electric mains and to store them in such a manner that they do not turn over before leaving the machines or going on breaks.
- 2.2.4 Wear safety goggles in order to avoid injuries to the eyes.
- 2.2.5 We recommend wearing suitable working gloves.
- 2.2.6 Wear safety shoes while working with drilling and breaking hammers.
- 2.2.7 Drilling and breaking hammers are always to be operated with both hands on the handles provided for this purpose.
- 2.2.8 When working with drilling and breaking hammers, especially when carrying out drilling jobs, the operator has to have a firm stand, particularly when working on scaffolding and ladders.
- 2.2.9 Drilling and breaking hammers are to be guided such that hand injuries caused by solid objects are avoided. When carrying out demolition jobs at elevated places, special care is required to prevent the machine or the operator from falling.
- 2.2.10 Avoid body contact with earthed components. When breaking connecting passages, make sure that there are no electric wires or gas pipes. No one may stay in the room to which the passage is broken through, as there is danger of injuries because of falling stones or tools.
- 2.2.11 During operation the tool holder must be closed. Tools and tool holder must be checked for wear in order to guarantee proper functioning of holder.
- 2.2.12 The operation of this machine may cause broken - off pieces to be flung away. Therefore, during operation, no one except the operator is to come near this machine.
- 2.2.13 Drilling and breaking hammers have to be disconnected from the electric mains before changing tools.

- 2.2.14 The tools always have to be in perfect conditions.
- 2.2.15 Do not operate this machine in areas where explosions may occur.
- 2.2.16 Do not misuse the electric cable to pull or lift up the unit or to pull the plug out of the socket. Protect cable from heat, oil and sharp edges.
- 2.2.17 Electric equipment and material may only be used if they comply with the operational and local safety requirements. They must be in proper conditions and they must be maintained in this condition.
- 2.2.18 Do not expose electric tools to rain. Do not use electric tools in damp or wet surroundings.

2.3 Safety checks

- 2.3.1 Drilling and breaking hammers may only be operated with all safety devices installed.
- 2.3.2 Before starting operation, the operator has to check that all control and safety devices function properly.
- 2.3.3 Before starting operation, the overload clutch of drilling hammers has to be checked for proper functioning.
- 2.3.4 Regularly check cable for damage.
- 2.3.5 In case of defects of the safety devices or other defects reducing the operational safety of the drilling and breaking hammers, the supervisor has to be informed immediately.
- 2.3.6 The machine must to be switched off immediately in case of defects jeopardizing the operational safety of the equipment.

2.4 Maintenance

- 2.4.1 Only use original spare parts. Modifications to this machine are subject to the express approval of the Wacker Company. All liabilities shall be refused in case of nonobservance.
- 2.4.2 Disconnect the drilling and breaking hammer from the electric mains before carrying out maintenance and repair jobs.
- 2.4.3 Work on the electric parts of the machines may only be carried out by skilled technicians.
- 2.4.4 All safety devices must be reinstalled properly immediately after maintenance and repair jobs have been completed.

2.5 Transport

- 2.5.1 When being transported on vehicles, precautions have to be taken that these hammers do not slip or turn over.

2.6 Maintenance checks

- 2.6.1 According to the conditions and frequency of use, drilling and breaking hammers have to be checked for safe operation at least once every 6 months by skilled technicians, such as those found at Wacker-service depots and have to be repaired if necessary.

Please also observe the corresponding rules and regulations valid in your country.

3. Technical data

	EH 23/230				EH 23/ 115
Item no.	0008914 0008943	0008944	0008941	0008942	0008916
Length x width x height (without tool) mm:	750 x 530 x 210				
Operating weight (mass) without tool kg:	22,4				
Voltage V:	230 ~1				115 ~1
Power input kW:	2,2				
Current consumption A:	10,8				22
Frequency Hz:	50 / 60				
Percussion rate min ⁻¹ :	1280				1300
Special lubricating grease	grease Retinax LX2				
Shaft for breaking tools	27 x 80	EE 28x152	6-kt. 25x108	6-kt. 28x160	
Drive motor	Totally insulated universal motor				
Single stroke impact J(mpk):	50				
Sound pressure level at operators station L _{PA} :	97 dB(A)				
The weighted effective acceleration value, determined according to EN ISO 5349 m/s ² :	is 4,8				

4. Description

4.1 Field of application

- 4.1.1 For breaking concrete and asphalt as well as rubble-laden ground, for demolishing concrete, masonry and similar building materials (undisturbed and frozen ground) etc., for ripping up roads and concrete, asphalt, tar as well as wood-block and stone paving, for cutting off clay, loam, turf and salts, for breaking compacted or tamped ground, for ramming in posts and earth rods.



Always use the proper pin driving tool with the machine when ramming posts or ground rods. Damage will occur to the percussion system if posts and/or rods are directly inserted into the toolholder. This will eliminate any responsibility for warranty claims and prevent unnecessary customer complaints.

4.2 Transport to work site

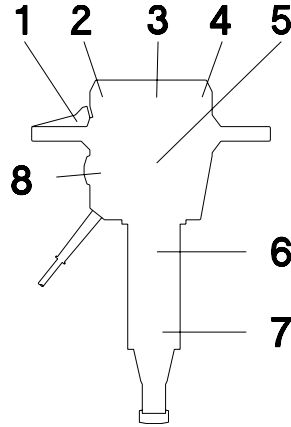
Conditions:

- * Only use appropriate lifting gear with a minimum load-bearing capacity of 30 kg when transporting the Wacker equipment.
- * Always switch off motor during transport!
- * Tie down the Wacker equipment when transporting it on the load-carrying surface of a transport vehicle.

Note: Also refer to the specifications in safety instruction.

Description

4.3 Functional description

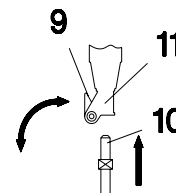


- 4.3.1 On activation of the switch lever (1), and electric motor (2) drives the crank mechanism (3) through a transmission (4).
- 4.3.2 The rotary motion of the crankshaft journal is converted by means of a con-rod (5) and a guide piston (6) into a linear motion and transmitted through an air cushion (“pneumatic spring”) to the percussion piston (7).
- 4.3.3 The percussion piston (7) then strikes the tool directly (without any intermediate piston).
- 4.3.4 A built-in electronic control (8) ensures a low starting current and constant speed off the drive motor when idling and under load.

5. Operation

5.1 Attaching the tool

1. Swivel catch (9) on tool holder (11) outwards..
2. Clean shaft (10) and grease slightly.
3. Insert tool right in.
4. Press catch on tool holder right back.



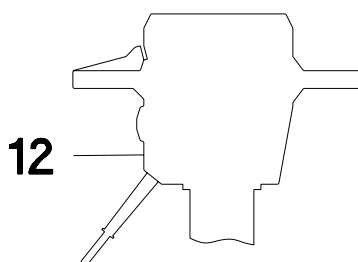
Only use sharp tools!


Only use tools with perfect shaft to avoid recoil!

5.2 Connection

Check before connecting:

- 5.2.1 The mains voltage must be the same as that indicated on the nameplate (12).



- 5.2.2 The electric breaker is operated with AC (light current) (see technical data).
- 5.2.3 Check whether the necessary fuse is available in the mains supply (see technical data).
- 5.2.4 The electric breaker is fully insulated and there is therefore no green/yellow PE conductor in the power supply cable .

Operation

5.3 Notes on correct handling

- 5.3.1 Place the electric breaker with tool on the material in question and switch on by pressing the switch lever.
- 5.3.2 After a few seconds the electric breaker reaches its full percussion rate.
- 5.3.3 Exploit the weight of the electric breaker when working.
- 5.3.4 The performance of the tool is not improved by applying great pressure against the material to be worked on.
- 5.3.5 Press down with approx. 100 N on both handles to avoid no-load blows and to guarantee the operator's comfort.
- 5.3.6 Place the chisel not too far from the edge to split off the material to be cut. This stops the chisel from jamming and also increases the demolition performance.

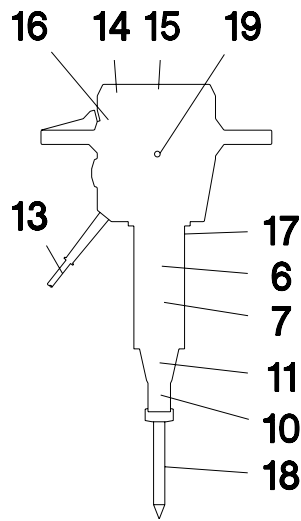
6. Maintenance

6.1 Maintenance schedule

Component	Maintenance work	Maintenance interval
Feed cable	Check for perfect condition, change if defective.	daily
Protective hood	Ventilations slits free of dirt, clean if necessary.	
Tools	Check the shaft and cutting edges and, if necessary sharpen, reforge or replace.	
Crank gear Percussion system	Regrease via grease nipple (see technical data)	20 h
Carbon brushes	Check for wear - if remaining length less than 12 mm in spite of cut - out facility - replace.	80 h
Tool holder	Check for wear - change if necessary.	monthly
Electric breaker	Maintenance - WACKER service station.	300 h

Maintenance

6.2 Carbon brushes



Check carbon brushes:

1. Replace carbon brushes (16) if the surface has been worn down unevenly.
2. Replace carbon brushes (16) if they are less than 12 mm long.

If shut-down device has triggered replace carbon brushes (16).

6.3 Lubrication of the motor and transmission

The sealed motor armature bearing and the transmission mean that additional lubrication within the maintenance interval of 300 hours is unnecessary.

6.4 Lubrication of the percussion system

The percussion system (17) is to be moderately greased with special grease (see technical data) via the grease nipple (19) located on the crankcase (accessible via the lubrication bore on the hood) roughly every 20 hours of operation or at the latest if the tool shaft (10) runs dry.

6.5 Lubrication of the tool holder, tolerances

- 6.5.1 Only insert tools (18) with a cleaned and slightly greased shaft (10) into the tool holder (11).

- 6.5.2 Check the tool holder often for signs of wear. A tool in new condition (18) may exhibit tolerance of no more than 10 mm at a distance of 400 mm from the insertion end's (1) rest collar. Replace a tool holder (11) that exhibits greater wear in order to avoid disturbances and damages.

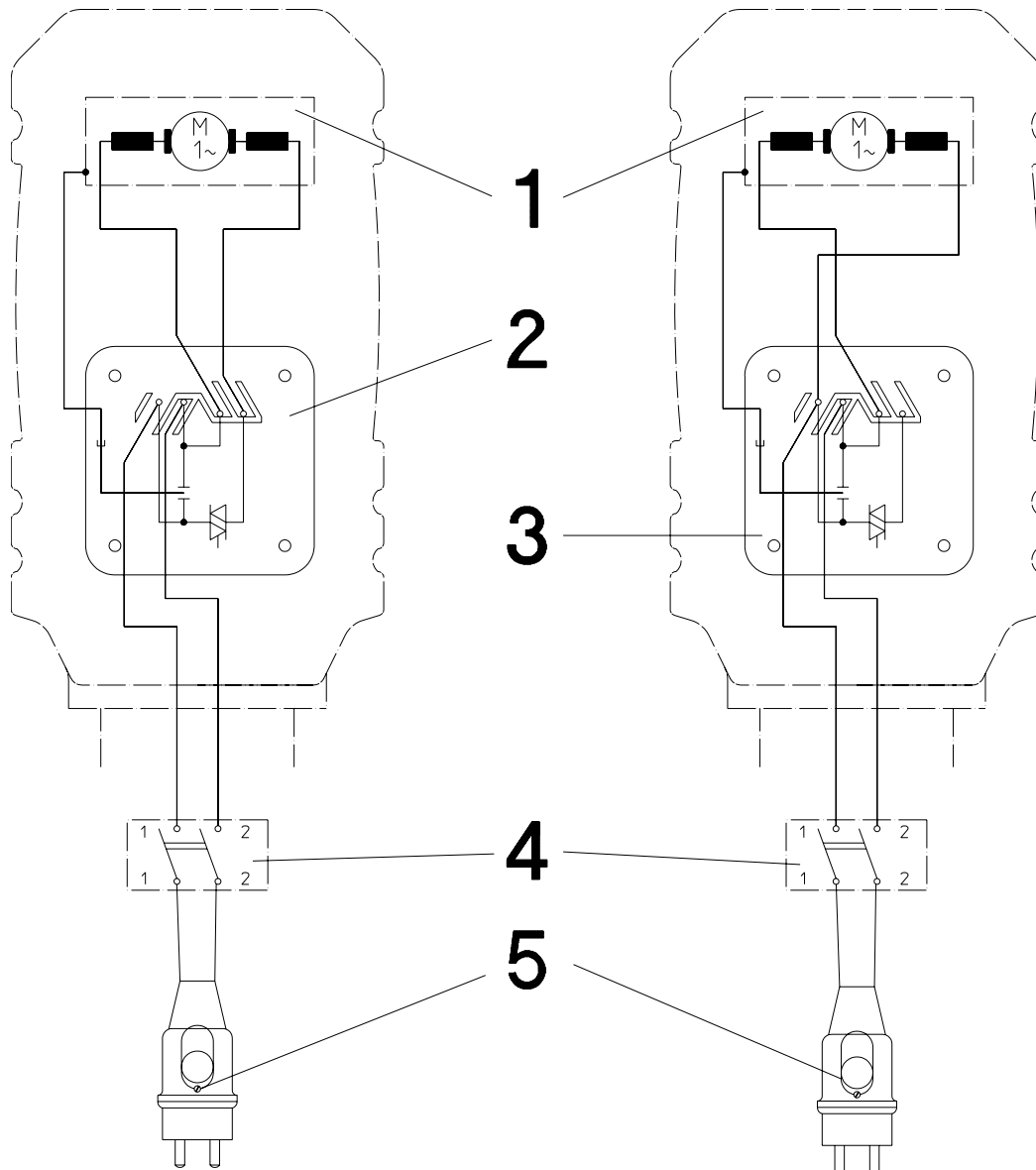
Malfunction

7. Malfunction

7.1 Equipment failure

Cause	Remedy
Carbon brushes worn.	Replace carbon brushes.
Damaged power cable.	Replace completely.
Failure of the electronics.	The wiring diagram shows how it is possible to continue to use the machine in the event of an electronic fault by changing the motor connection.

8. Electric wiring diagram



1. Motor

2. Electronics with suppression capacitor

3. Connection without electronics (electronics bypassed)

4. Switch

5. Plug

Diagram

9. Diagram

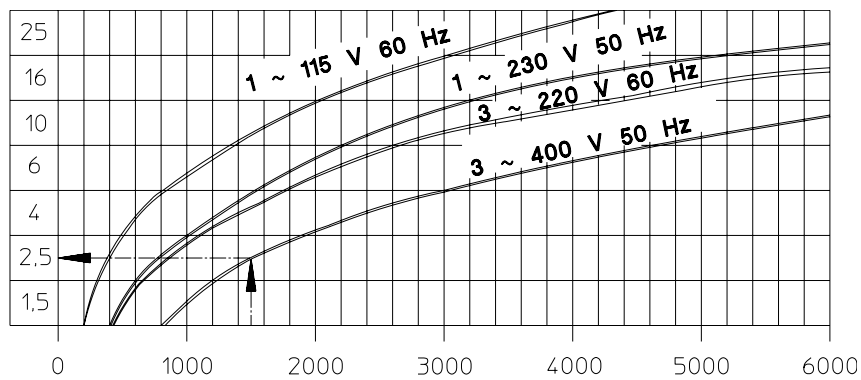
Selection of required cross section for extension of cables and power lines

This procedure takes into consideration:

- * The ohmic and inductive resistance of the line with an admissible loss of voltage of 5% and $\cos \phi = 0,8$ as per voltage-frequency-curve.
- * The admissible warming-up of the lines as per VDE standard (table of required minimum cross section).

Voltage - Frequency - Curves

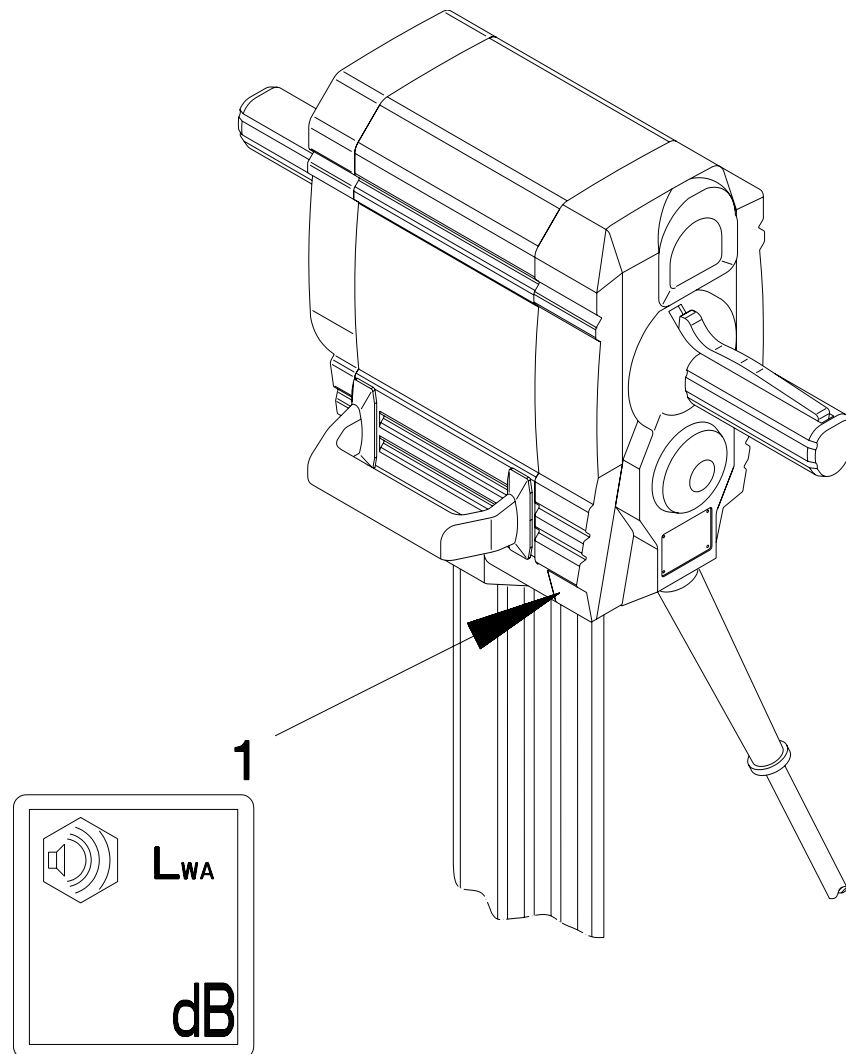
Cross-section area of cable in mm^2



Rated current x length of cable A x m

Minimum cross-section area according to VDE		
Cable	Max. load	Max. fuse
mm^2	A	A
1	15	10
1,5	18	10/3~16/1~
2,5	26	20
4	34	25
6	44	35
10	61	50
16	82	63
25	108	80

10. Decal



1. Decal - Sound power level

Disposal

11. Disposal

11.1 Environmentally friendly reuse

Provide for environmentally friendly reuse of the machine. Comply with all regional regulations and directives such as the European directive regarding old electric and electronic devices.



Do not add the device to normal waste disposal. Instead, it should be collected separately.

EC - Conformity Certificate

Wacker Construction Equipment AG, Preußenstraße 41, 80809 München

hereby certify that the construction equipment specified hereunder:

1. Category:

Breakinghammer

2. Type:

EH 23/...

3. Equipment item number:

0008914, 0008916, 0008941, 0008942, 0008943, 0008944

4. Operating weight:

22,4 kg

has been evaluated in conformity with Directive 2000/14/EC:

Conformity assessment procedure	At the following notified body	Measured sound power level	Guaranteed sound power level
Annex VIII	VDE Prüf- und Zertifizierungsinstitut Zertifizierungsstelle Merianstraße 28 63069 Offenbach/Main	105 dB(A)	107 dB(A)

and has been manufactured in accordance with the following directives:

- * **2000/14/EG**
- * **89/336/EG**
- * **98/37/EG**
- * **73/23/EG**

ppa *O Ho* *cl*

Dr. Stenzel
Research and Development Management

VDE Prüf- und Zertifizierungsinstitut

VDE VERBAND DER ELEKTROTECHNIK
ELEKTRONIK INFORMATIONSTECHNIK e.V.

CERTIFICATE

Registration Number 6236/QM/06.97

This is to certify that the company

WACKER



**Wacker Construction Equipment AG
Wacker-Werke GmbH & Co. KG**

at the following locations

**Head Office Munich
Preußenstraße 41
80809 Munich**

**Production plant Reichertshofen
Karlsfeld logistics centre
Sales regions with all branches all over Germany**

has implemented and maintains a
Quality Management System for the following scope:

**Machine manufacture
Construction machines**

This Q System complies with the requirements of

DIN EN ISO 9001:2000

and the requirements of the German and international Road Traffic Act.

This Certificate is valid until 2009-06-05.

VDE Testing and Certification Institute
Certification

Date: 2006-05-30

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The VDE Testing and Certification Institute is accredited by DAR Accreditation
Bodies according to DIN EN ISO 17020 and DIN EN ISO 45012 and notified in the EU
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