



Read this instructions manual
before using the electric chain saws E21-E23 !



Comer[®]
ATTREZZATURE PER L'EDILIZIA



Electric chain saws for the building industry

E21 - E23

OPERATING AND MAINTENANCE MANUAL

ORIGINAL INSTRUCTIONS

**WARNING****Read this manual
before use**

Before you start using the electric chain saws E21 - E23 read this instructions manual. The guarantee of the good operation and safety of the electric chain saws is closely dependent on the application of all of the instructions contained in this manual.

**DANGER****Use forbidden to children under 18 years**

The electric chain saws are dangerous devices. They can be used only by authorized adults, who have a high level of concentration.

We guarantee the conformity of the electric chain saws E21 – E23 to specifications and technical instructions described in this Manual at the time of its issue, listed on this page; on the other hand, the devices could in future undergo relevant technical changes, without an update of the Manual. Consult Breaker S.r.l. for information about any variations put in place.

Gennaio 2021

Summary

1 PREFACE.....	5
1.1 GENERAL INFORMATION	5
1.1.1 <i>Conservation of the manual</i>	5
1.1.2 <i>Manufacturer and Customer Service</i>	5
1.1.3 <i>Graphics of safety warnings</i>	6
2 SAFETY WARNINGS.....	7
2.1 GENERAL SAFETY RULES	7
2.2 RESPONSIBILITIES.....	7
2.3 WARNINGS FOR USERS.....	8
2.4 PREPARATIONS FOR THE WORK	11
2.5 OTHER PROVISIONS	12
3 ELECTRIC SAWSDESCRIPTION	13
3.1 EC PLATE	13
3.2 PICTOGRAMS AND SAFETY SIGNALS.....	14
3.3 GENERAL DESCRIPTION	16
3.4 TECHNICAL DATA SHEETS	17
3.5 CONDITIONS OF USE AND ENVIRONMENT PROVIDED.....	18
3.5.1 <i>Intended use</i>	18
3.5.2 <i>Usage environment</i>	18
3.5.3 <i>Improper use and contraindications</i>	19
4 LIFTING AND UNPACKING	21
4.1 LIFTING AND TRANSPORT	21
4.2 UNPACKING AND PACKAGE CONTENT.....	21
5 COMMISSIONING.....	24
5.1 BAR AND CHAIN MOUNTING	24
5.2 OIL FILLING AND CHAIN LUBRICATION.....	26
5.3 POWER SUPPLY CONNECTION	27
5.4 CHECKS BEFORE STARTING THE MACHINE	28
6 USING THEELECTRICAL SAW.....	29
7 MAINTENANCE	35
7.1 GENERAL INFORMATION	35
7.2 REGULAR MAINTENANCE	35
8 TECHNICAL ASSISTANCE AND SPARE PARTS	42
9 WAREHOUSE STORAGE	43
10 DISPOSAL OF MATERIALS AND COMPONENTS	44
11 WARRANTY RULES.....	45
12 NOTES.....	46

1 PREFACE

1.1 General Information

This manual is an integral and essential part of the electric chain saws E21 – E23 and must be delivered to the user.

Before commissioning, it is essential that users read, understand and follow carefully the provisions that follow.

The manufacturer is not liable for any damages caused to people or things, or to the electric saws, if they are used incorrectly in relation to the provisions stated.

In view of the continuous technological development, the manufacturer reserves the right to modify the electric saws without notice and without an automatic update of the manual.

1.1.1 Conservation of the manual

The use and maintenance manual is an integral part of the electric chain saws. Therefore you must keep it intact and in a safe place during the whole life of the machine. This manual must always be available to the user.

1.1.2 Manufacturer and Customer Service

If you have any problems or questions, please contact Customer Service without hesitation: it is constituted by qualified and specialized staff, and provides specific equipment and original spare parts.

Breaker S.r.l.

Via Don Lorenzo Milani - 41122 MODENA

Tel.059-511355 Email: info@breaker.it

1.1.3 Graphics of safety warnings

To identify the safety messages in this manual, the following signaling graphic symbols will be used. They are intended to draw the reader's attention for a **correct** and **safe** use of the electric saw.



Pay attention

It highlights behavioral rules to be followed to avoid damage to the electric chain saws and/or the occurrence of hazardous situations.



Residual risks

It highlights the presence of hazards that cause risks to which the user must pay attention in order to avoid personal injury or property damage.

2 SAFETY WARNINGS

2.1 General safety rules

**WARNING**

Use of the electric chain saws E21 – E23

Every user must first read the instruction manual; in particular, the chapter about safety indications.

**WARNING**

Risks related to the use of the electric saws

- For safe use of the electric chain saws E21 – E23 you should take note of all the requirements for the prevention of accidents reported in this manual.
- Always stay concentrated during use and **DO NOT** underestimate the risks associated with the use of the electric saws.

Even if you're already experts in the use of electric saws, you must follow the instructions below, in addition to the general precautions to be observed when using portable electric tools. In particular:

- Acquire complete knowledge of the operation of the electric saws.
- Read this manual carefully to learn about the functioning, the safety devices and all necessary precautions. The above to ensure a safe use.
- Wear appropriate clothing and use appropriate Personal Protective Equipment (PPE).
- Keep the electric saw with care.

2.2 Responsibilities

Non-compliance with the operating instructions and the safety instructions contained in this manual exempts the manufacturer from any liability.

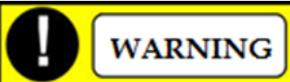
If maintenance of the electric saws is performed not in accordance with the instructions provided, with non-original parts or in such a way as to compromise the integrity or change its characteristics, the manufacturer will be relieved from any liability concerning the safety of persons and the malfunction of the electric saw.



Unauthorized modifications

- Do not modify the electric saw in any way. Any attempt in this respect, further to void warranty, can compromise the operation, cause malfunctions or accidents. Extraordinary maintenance works on the electric saw shall be performed only by qualified and authorized personnel.
- If you hear any unusual noises, or something strange, stop using the electric saw immediately. Carry out a check and, if necessary, contact the Customer Service.

2.3 Warnings for users



Safety warnings to be followed

If used correctly, the electric saw is a fast, easy-to-handle, and efficient work tool. To ensure that your work is safe, always scrupulously follow the safety rules given below and throughout this use and maintenance manual.

1. The electric saw must only be used by adults, and users must be in good physical shape and familiar with the operating instructions.
2. Use is prohibited to children under 18 years and persons incapable of understanding or with mental health problems.
3. Do not take alcohol or drugs before using the electric saw, do not use when you are tired or have taken medicines that cause drowsiness, or in general when you are not able to have a sufficient degree of attention high enough to use the electric saw safely.
4. Never use the electric saw under conditions of physical fatigue. Tiredness, digestion of too abundant food and the physical or psychological discomfort decrease levels of attention: a small distraction can lead to a serious accident.
5. When using the electric saw for the first time, make several cuts in small bricks positioned on a trestle of frame in order to become familiar with the tool in action (see the notes relating to motor starting/stopping).
6. If you loan, lend or sell your electric saw to other people, make sure that they are adults who are completely familiar with its operation and correct use. Give other users the manual with operating instructions, which they should read before using the tool.

7. Always use the electric saw wearing the appropriate Personal Protective Equipment, such as: accident prevention and anti-slip shoes, gloves, visor for the face or goggles, work overalls and ear muffs.
8. If the cut produces a lot of dust, use a dust mask as well.
9. Never wear scarves, bracelets, or any large pieces of clothing that may get caught in the machine or the chain. Wear clothing that is snug-fitting, comfortable, and resistant to cutting.
10. Never use your electric saw in explosive or inflammable atmospheres.
11. Never use the electric saw in case of low visibility. Always work in sufficiently lighted areas.
12. Do not expose the electric saw to rain, bad weather or high humidity conditions.
13. Always carry the electric saw with the chain-cover on and the blade always facing backward.
14. Never work with an electric saw that is damaged, incorrectly assembled or randomly modified. Do not remove, damage, or make ineffective any of the guards and safety devices.
15. Before performing maintenance, cleaning or lubrication activities on the electric saw, always check that the electrical plug is disconnected from the mains.
16. Before each use, check that the electric saw works properly.
17. Do not start cutting until you are sure that the work area is completely free from people or animals.
18. Do not allow anyone to remain in the range of operation of the electric saw while it is running.
19. Always keep the grips clean and dry.
20. When the motor is running, always hold the front grip firmly with your left hand and the rear grip with your right hand,
21. Always cut in a stable and safe position.
22. Never keep the electric saw above the height of your shoulders.
23. Always start cutting when the chain is moving. During work use the teeth as a support point.
24. Never begin cutting with the point of the bar; always use extreme caution when cutting walls, window frames or similar.
25. Always cut in such a way that the bar does not remain stuck in the material you are cutting.
26. Carefully keep this manual and refer to it before each use of the tool.
27. Make sure that the voltage and frequency indicated on the plate correspond to those of the supply line, and that the line complies with the regulations.

28. Only use cables, plugs, and extension cables that comply with the regulations (H07RN-F cable and European plug 16A/250V).
29. Immediately disconnect the plug from the mains if the cable is damaged or cut, and get in touch with an authorized Service center for cable repair or replacement.
30. Check the position of the cable and of the extension cables while working, making sure that they stay outside the range of operation of the chain. Do NOT cut in the vicinity of other electrical cables.
31. Before assembling the cutting unit (bar and chain), make sure that the electrical plug is disconnected from the mains.
32. **ALWAYS disconnect the plug from the mains before carrying out any maintenance / cleaning / lubrication operation.**
33. Always carefully follow the maintenance instructions provided.
34. Make daily checks to ensure that there are no worn and/or damaged parts and that the seals are assembled correctly before use. If necessary, get in touch with an authorized Service center.
35. Do not use gasoline or inflammable solvents as detergents, but always use non-flammable and non-toxic solvents.
36. After each maintenance or adjustment ensure that no tools or foreign objects remain among the blades and the moving parts, in order to avoid damage to the electric saw and/or injury to users.
37. For any maintenance interventions that require the hay-cutter to be disassembled, get in touch with an authorized service center.
38. When not in use, store your electric saw in a dry place, raised off the ground, and with the chain-cover on.



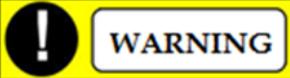
Dangers related to the use of work equipment

Workers responsible for use of the electric chain saws E21 – E23 must have all necessary information and education and must receive appropriate training about safety with reference to:

- a) the conditions of use of the equipment;**
- b) foreseeable abnormal situations pursuant to art. 73 Lgs. Decree 81/08.**

2.4 Preparations for the work

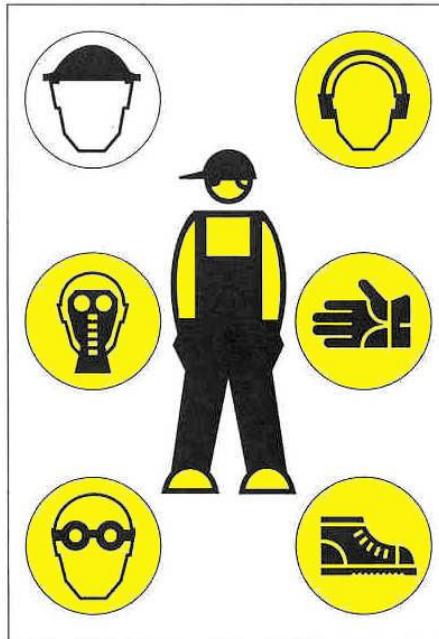
The user must minimize potential risks by always wearing the following protective equipment (PPE).



Personal Protective Equipment (PPE)

Before using the electric chain saws E21 – E23, the user must **ALWAYS** wear appropriate Personal Protective Equipment (PPE), such as:

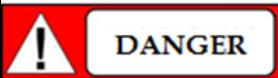
- Work overalls or clothing (snug-fitting and with tight sleeves),
- Accident prevention shoes with non-slip soles and steel toecaps,
- Protective visor for the face – or goggles;
- Anti-abrasion, cut-resistant work gloves,
- Ear muffs,
- Dust mask for mouth and nose (when necessary).



2.5 Other provisions

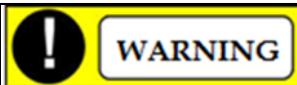
The first thing to do when you begin using the machine is to check for the presence and integrity of all parts of the electric saw, the operation of safety devices, the status and the fixing of the bar and the chain.

If any fault is detected do not use the electric chain saws E21 – E23 !



Dangers related to unauthorized modifications

It is strictly forbidden to modify or remove the guards, the bumpers, the electric saw commands and the description plates.



Only use original spare parts

- Only use COMER spare parts.
- It is excluded any responsibility of the manufacturer for damages or losses of functionality caused as a result of the use of non-original parts and accessories.

3 ELECTRIC SAWS DESCRIPTION

Make sure that the plates and the adhesive pictograms are perfectly readable. Otherwise, apply new ones after requesting them to Breaker S.r.l.

3.1 EC plate

In the identification label applied on the electric chain saws E21 - E23 the following data are provided (see Fig. 1):

- Business name and address of the manufacturer,
- CE marking,
- Power supply parameters (power, voltage, current, frequency),
- Reduction unit output RPM,
- Type/Model identification,
- Serial number,
- Year of construction,
- Maximum cutting length, chain direction and speed,
- Trademark,
- Double insulation motor.

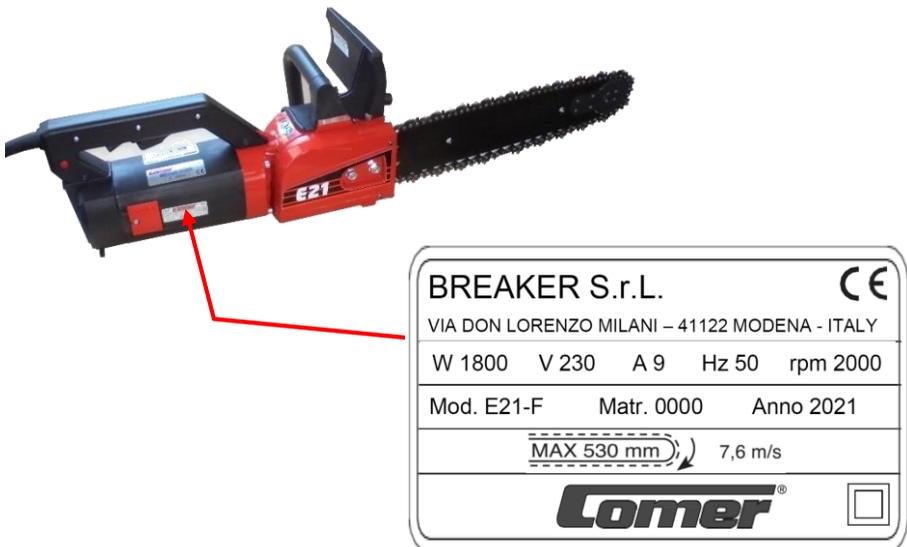


Figure 1 – Identification label of the electric chain saws E21 – E23.

The Declaration of conformity is provided together with the machine.

3.2 Pictograms and safety signals

The pictograms below, placed on the machine, indicate the operations to be carried out before and during the use of the machine, the compulsory use of Personal Protective Equipment (PPE) and the obligation of disposal at end-of-life (see Fig. 2).

- Wear ear muffs and safety goggles.
- Read this instructions manual before using the machine.
- Dispose of waste according at end-of-life, in accordance with the law provisions.
- **WARNING:**
Do not use the chain saw if you have not previously checked the oil tank.
Recommended oil: COMER E20, specific for chains.
- Guaranteed sound power level L_{WA} : 110 dB.
- Chain rotation direction. Maximum cutting length.
Never use the electric saw in the rain and in high humidity conditions.
Immediately disconnect the plug if the cable is damaged or cut.
- **IMPORTANT:**
To avoid vibrations and an excessive stretch of the chain, keep the machine always pressed on the cut surface and resting by the side of the material.
- **SAFETY DEVICE:**
In the event of a kickback, the hand guard triggers the chain brake device and stops the machine. Before a new commissioning, press the red lever.

ATTENZIONE: MOLTO IMPORTANTE! **Comer**
 NON UTILIZZATE MAI LA SEGA A CATENA
 SENZA CONTROLLARE IL LIVELLO DEL SERBATOIO DELL'OLIO
 Olio consigliato: **COMER E20**
 speciale per catene da taglio.



L_{WA}
110 dB



DISPOSITIVO DI SICUREZZA **Comer**
 In caso di contraccolpo il paramano fa scattare il dispositivo di freno catena ed arresta la macchina. Per una nuova messa in funzione, premere la leva rossa.

IMPORTANTE
 Per evitare alte vibrazioni e un eccessivo allungamento della catena, tenere la macchina costantemente premuta sulla superficie di taglio ed appoggiata lateralmente al materiale.

Comer

Figure 2 – Safety pictograms on the electric chain saws E21 – E23.

3.3 General description

The electric chain saws E21 – E23 portable electric tools designed and manufactured for cutting light construction materials.

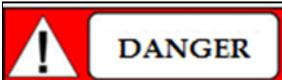
The tool consists of the following main parts:

- a double insulated electric motor,
- a bevel-gear mechanical transmission group,
- a detachable chain-guide bar,
- a chain with hard metal inserts,
- a rear handle (for the right hand), with safety lock and engine Start/Stop button,
- a front circular handle (for the left hand),
- a bumper equipped with an integrated chain brake triggering safety system.

The portable tools were designed to reduce to the minimum any risk to the operator, provided that the latter uses them according to the instructions provided in this instructions manual.

To correctly use the electric saw and prevent accidents, do not start working without having first carefully read this manual.

The electric saws are devices that can cause serious injuries if not used properly. They can be used only by authorized adults who have a high level of concentration.



Dangers related to misuse and/or unintended use

The electric chain saws E21 – E23 were designed and manufactured for the use specified above; a different use and non-observance of the technical parameters laid down by the manufacturer may endanger users or third persons.

The electric chain saws E21 – E23 are fitted with a 230V - 50 Hz single-phase electric motor, with cable feed and plug.

3.4 Technical data sheets

Technical specifications for electric saws.		
Trademark	COMER	
Manufacturer	Breaker S.r.l.	
Model	E21	E23
Supply voltage – V	230	230
Rated power – W	1800	2300
Rated current – A	9	10
Power supply frequency – Hz	50	
Self-weight (bar and chain, 47 cm) – kg	8.37	
Cutting length – cm	40 – 47 – 53	
Chain pitch	3/8" – 1/2" – 404	
Oil tank capacity – liters	0.75	
Chain lubrication	Automatic	
Average sound pressure level (LpAm) – dB(A)	88	
Sound power level (LWA) – dB	110	
Pressure level at operator's ear (LpA) - dB(A)	96	
Level of vibrations (root mean square acceleration value) – m/s ²	4.04	3.77
Dust emitted – mg/Nm ³	28.3	

3.5 Conditions of use and environment provided

3.5.1 Intended use

As previously mentioned, the electric chain saws E21 – E23 were designed and manufactured for cutting light construction materials, such as Poroton, Alveolater, Gasbeton, Ytong, Siporex, Eraclit, tufts, expanded cellular concrete.

Each unauthorized modification may jeopardize the safety and the proper operation of the electric saws and may lead to a serious accident.

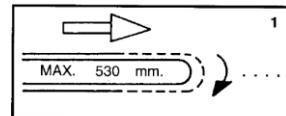
Other types of employment, or the expansion of use beyond that intended, do not match the target attributed by the manufacturer and therefore the same cannot assume any liability for any resulting damage.

3.5.2 Usage environment

The electric chain saws E21 – E23 must be used in indoor settings only, such as buildings under construction, houses, shipyards or in outside areas in the absence of adverse weather conditions (rain, hail, snow, strong wind, high humidity, etc.).

Do not use the electric saw in case of low visibility or in the dark.

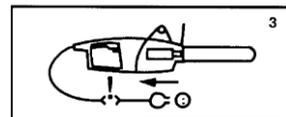
- Maximum permissible temperature: +40° C
- Minimum permissible temperature: +0° C
- Maximum permissible humidity: 80%



Never use the electric saw in the rain and in high humidity conditions.



Immediately disconnect the plug if the cable is damaged or cut.



WARNING

Prohibited environments of use

The electric chain saws E21 – E23 should not be used:

- in areas prone to risk of fire or explosion;
- in environments with corrosive and/or chemically active atmosphere;
- in dimly lit environments;
- in unprotected outside areas in rainfall.

3.5.3 Improper use and contraindications

The actions described below, which of course cannot cover the entire range of potential possibilities of "misuse" of the electric saws, are **absolutely prohibited**.

The manufacturer declines all responsibility for any damage to things and persons caused by prohibited operations.



IT IS ABSOLUTELY FORBIDDEN!

- Use of the electric saw to children under 18 years old and persons incapable of understanding or with mental health problems.
- Taking alcohol or drugs before using the electric saw.
- Using the electric saw when you are tired or have taken medicines that cause drowsiness.
- Using the electric saw without the experience required and/or without following the instructions and the safety measures indicated in this manual.
- Using the electric saw without wearing the appropriate Personal Protective Equipment (PPE), such as: accident prevention and anti-slip shoes, gloves, visor for the face or goggles, dust mask (if necessary), work overalls and ear muffs.
- Wearing scarves, bracelets, or any large pieces of clothing while using the electric saw.
- Using the electric saw in case of low visibility or in the dark.
- Using the electric saw in the rain, during storms, especially if with lightning, in the presence of gusts of wind, strong wind and adverse weather conditions.
- Using the electric saw in explosive or inflammable atmospheres.
- Carrying the electric saw without the chain-cover on or with the blade facing onwards.
- Using the electric saw when there are other people or animals near the work area.
- Using the electric saw even though it is damaged, not properly mounted and/or some pieces are missing.
- Modifying the electric saw, especially the engine and the electric parts.

(cont...)



IT IS ABSOLUTELY FORBIDDEN!
(continues)

- Using the electric saw with one hand only or with one hand plus other body parts.
- Using the electric saw with just one hand and not both (the right hand on the rear handle while the left one on the front handle).
- Keeping the chain of the electric saw towards yourselves or another person.
- Keeping the electric saw above the height of your shoulders.
- Begin cutting without first actioning the chain or using the sawtooth as a support point.
- Begin cutting with the bar tip.
- Using the electric saw to cut hard materials, such as concrete elements, precast elements and similar.
- Using the electric saw to cut wood, logs or similar materials.
- Using the electric saw while standing in a seemingly precarious balance or in an unstable and insecure position.
- Supplying the electric saw with a voltage and a frequency that are different from those indicated on the identification label.
- Using damaged, bare and/or non-compliant extension cables, plugs and sockets.
- Mounting the bar and the chain of the electric saw without first connecting the plug to the power supply.
- Perform any maintenance, cleaning and lubrication procedures on the electric saw without first disconnecting the plug from the power supply.

4 LIFTING AND UNPACKING

4.1 Lifting and transport

The electric chain saw weighs 8.37 kg and therefore it can be lifted and handled by just one person during use and maintenance procedures.

The carton box of the device is (600 x 250 x 330(h) mm), **and therefore 1 person can easily lift it and move it.**

The manufacturer is not liable for any damages, breakage or injuries caused by the lifting and/or moving of the carton boxes after delivery.

4.2 Unpacking and package content

Open the carton box containing the electric saw, then remove the safety cover and the first layer of carton (see Fig. 3).



Figure 3 – Carton box to pack the electric chain saw E21 – E23.

Pull the satchel with the chain out and then remove the second layer of carton (see Fig. 4-1).



Figure 4 – Carton box to pack the electric chain saw E21 – E23.

Pull the engine body of the electric saw and then the envelope containing the manual and the Accessory kit (see Fig. 4-2).

Package content:

- electric saw (engine body),
- chain-guide bar,
- chain,
- chain-cover,
- Accessory kit (see Fig. 5):
 - Flat and Phillips-head screwdrivers
 - Scraper to clean the blade channel
 - Flat screwdriver + hex nut wrench (13 mm)
 - Spare chain tensioning screw
 - Funnel to fill the oil for chain lubrication
- operating and maintenance manual,
- declaration of conformity.



Figure 5 – Accessory kit provided with the electric chain saws E21 – E23.

5 COMMISSIONING

5.1 Bar and chain mounting



WARNING

Wear protective gloves

Always wear protective gloves before mounting the chain-guide bar and the chain.

1. ***Check that the plug of the electric saw is disconnected from the network.***
2. Remove the bar nuts A and the chain cover B (see Fig. 6-3).
3. Move the chain adjustment pin C all the way forward the sprocket D (see Fig. 6-4), using the chain tensioning screw.
4. Place the F bar so that the chain adjustment pin C fits into the corresponding hole in the G bar (see Fig. 6-4).
5. Fit the H chain in the sprocket D and then inside the bar grooves (see Fig. 6-5). Check for proper direction of the chain rotation (see Fig. 6-7).
6. Assemble the chain cover B and thread the nuts A without tightening them.
7. Tension the chain by turning the adjustment screw E clockwise (see Fig. 6-6).
8. Lastly, tighten the bar nuts A of the chain cover B with the supplied wrench (See Fig. 6-7B), while lifting the bar tip.

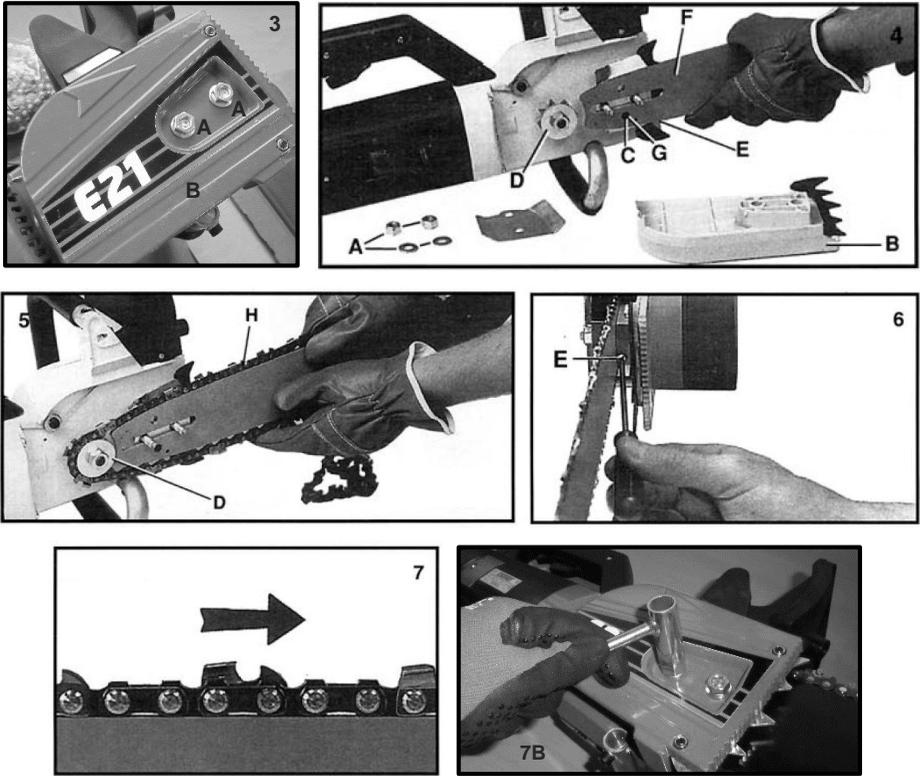
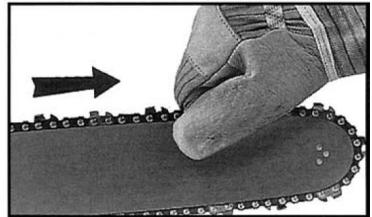


Figure 6 – Mounting of chain-guide bar and chain.

! **WARNING**

Check the chain tension

The chain is at its correct tension when it can be easily pulled by hand while still fitting snugly all around the bar (see the figure at the side). Check the chain tension frequently during the daily use of the electric saw.



5.2 Oil filling and chain lubrication

Check that the plug of the electric saw is disconnected from the network.

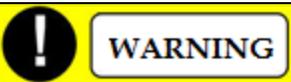
The chain is automatically lubricated during use by a pump which normally requires no maintenance. However, this presupposes that clean oil of the correct type is used.

1. Make sure that no dirt enters the oil reservoir when filling.
2. Unscrew the tank cap, insert the funnel provided and pour the oil (see Fig. 7). Always wipe off around the cap before refueling.



Figure 7 – Oil filling for chain lubrication.

3. After the filling, operate the motor 2 or 3 times without load to let the chain settle in for a few seconds before starting the cut again. This operation will restore the correct oil pump delivery.
4. In case of faults do not try to repair the machine yourself, but apply to your authorized dealer.



Precautions for lubrication

- **Never use waste oil!**
- **Use oil specific for chains only.**
- **For disposal of oil, observe the regulations established by the legislation in force. Ask your dealer for the correct procedures to be followed.**

5.3 Power supply connection

Insert the plug into the socket following the joints (see Fig. 8), then turn the supply switch to ON (I) to power up the machine.



Figure 8 – Insert the power plug.



WARNING

Power supply parameters

Check the voltage and make sure that it matches the following data before inserting the plug into the supply socket:

- 230V - With 15A capacity (E21F) and 15A slowblow safety fuse
- 110V - With 20A capacity (E21F) and 20A slowblow safety fuse



WARNING

Extension cables

Verify that the dimensions of the extension cable are according to the specification, otherwise a voltage deviation may occur causing a consequent loss of motor power and an overheating of the cable itself. The earth plate is not necessary since the electric saw motor is double insulated.

Extension cables recommended length and diameter:

- Length 0 - 20 mt: 1.5 mm cable diameter
- Length 20 - 50 mt: 2.5 mm cable diameter
- Length 50 - 100 mt: 4.0 mm cable diameter

**WARNING****Extension cables**

Only use cables with the H07RN-F code and of the size mentioned, with a 250V/16A "European" plug for external use. Frequently check the plugs and the extension cables and replace them if damaged. For these kinds of interventions get in touch with an authorized service center.

Disconnect the plug from the power supply after use.

5.4 Checks before starting the machine

Never start your work if the working area is not free. Keep people and animals at least 2 m away from the work area.

Inspect the electric saw looking for any signs of wear, loosening, or damaged parts. Do not use the electric saw in case of visible damage, incorrect repairs or lack of parts.

All the elements of the machine must be fitted correctly. The screws and the other fasteners must be properly tightened.

Check for any damage and the wear of the chain, especially the cutting edge of the hard metal inserts.

Check the efficiency and the proper operation of the Start/Stop button and of the safety block.

Check the fixing of the front handle (for the left hand).

Make sure there is no dirt or foreign bodies deposits on the motor ventilation openings.

Make sure that the power cable and any extension cables are efficient, free from cuts, abnormal bending, crushing or excess wear.

**WARNING****Functional checks**

Do not use the machine if any abnormalities are detected during the preliminary functional checks. Any faults found must be remedied by the operator or with the help of an authorized service center.

6 USING THE ELECTRICAL SAW



WARNING

Personal Protective Equipment (PPE)

Before using the electric chain saws E21 – E23, the user must **ALWAYS** wear appropriate Personal Protective Equipment (PPE), such as:

- Work overalls or clothing (snug-fitting and with tight sleeves),
- Accident prevention shoes with non-slip soles and steel toe caps,
- Protective visor for the face – or goggles;
- Anti-abrasion, cut-resistant work gloves,
- Ear muffs,
- Dust mask for mouth and nose (if necessary).



WARNING

Read the instructions manual

Before using the electric chain saws E21 - E23, the operator must read the operating and maintenance manual very carefully.

1. The first thing to do is removing the plastic chain-cover to reveal the chain (see Fig. 9).



Figure 9 – Remove the plastic chain-cover.

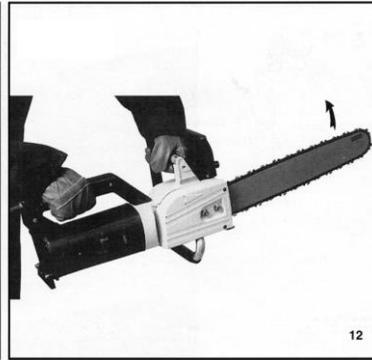
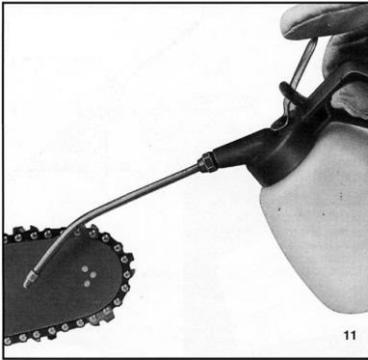
CHAIN BREAK-IN**WARNING****Wear protective gloves****Always wear protective gloves before the chain break-in.**

Figure 10 – Lubrication and chain brake-in.

Tension adjustment should always be made when the chain is cool. Before connecting the electric saw to the network, turn the chain manually and lubricate it with additional oil (see Fig. 10-11). Operate the electric saw for a few minutes checking that the oil pump is working properly (see Fig. 10-12). Stop the motor and adjust the chain tension. Start the motor again and make a few small cuts. Stop the electric saw again and check the chain tension again. Repeat this operation until the chain reaches its maximum stretch.

**DANGER****Hands/fingers cut danger****Never touch the chain when the motor is running. Disconnect the plug from the network before any operations on the cutting devices.**

HAND GUARD AND CHAIN BRAKE

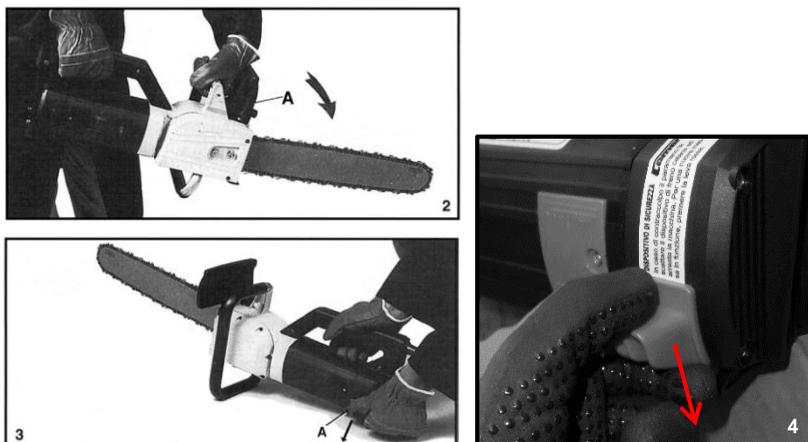
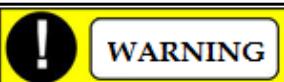


Figure 11 – Hand guard with chain brake control and reactivation lever.

The chain brake ensures a safety use of the electric saw. The chain brake triggers when the operator's hand accidentally presses on the hand guard A (see Fig. 11-2). Once the brake is triggered, the chain immediately stops and disconnects the motor.

To restart the electric saw operation, push the red lever (A) of the brake down (see Fig.11-3 e 4).



WARNING

Check the efficiency of the chain brake

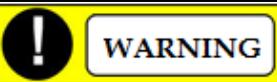
Have the thickness of the brake band and the sprocket checked frequently. The electric saws equipped with chain brake do not work when the brake lever is engaged.

1. Keep the handles of the electric saw firmly, the front one with the left hand while the rear one with the right hand.

Push the safety block switch (A) and then the Start/Stop button (B) to power up the electric saw (see Fig. 12).



Figure 12 – Push the safety block switch (A) and then the Start button (B).



WARNING

Safety rules while cutting

- Use the electric saw with both hands, with a firm grip (the right hand on the rear handle while the left one on the front handle).
- Do not keep the electric saw with bar and chain towards yourselves or other persons.
- Do not keep the electric chain saw above the height of your shoulders.
- Do not power up the electric saw if the chain is in contact with the material.
- Do not use the electric saw if there are other people or animals.
- Do not use the electric saw while standing in a seemingly precarious balance or in an unstable and insecure position.

2. Release the button (B) to stop the engine.

**WARNING****Kickback safety rules**

- Kickback may occur when the nose or tip of the guide bar touches an object or when the material closes in and pinches the chain while cutting. These conditions may cause sudden reverse reactions with a consequent loss of control of the electric saw.
- The understanding and prevention of kickback eliminate the element of surprise reducing the possibility of an accident. To avoid and reduce kickback, keep the electric saw under control by grasping it with both hands.
- Make sure that the area where you are cutting is free from obstacles.

Cutting walls

The most delicate phase of wall level cutting is the saw penetration which has to be done slowly and always at an angle of 35° (see Fig. 13-13). After a diagonal cutting of about 30 - 40 cm, set the electric saw at 90° and execute in this position a through-cutting of the wall (see Fig. 13-13A).

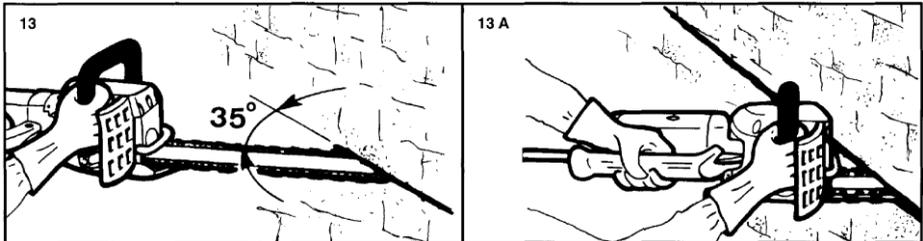


Figure 13 – How to make horizontal cuts.

Never push down on the saw when cutting. The weight of the saw alone enables it to cut properly with minimum effort.

Cutting light materials and walls vertically

For cutting of light building materials, such as clay bricks and tufts, set the bar with the moving chain and the sawtooth on the brick (see Fig. 14-14).

When cutting vertically into walls to create openings, passages, windows etc. always start with the chain in motion and the bar lower side resting vertically against the wall (see Fig. 14-14A).

Never start cutting with the bar tip.

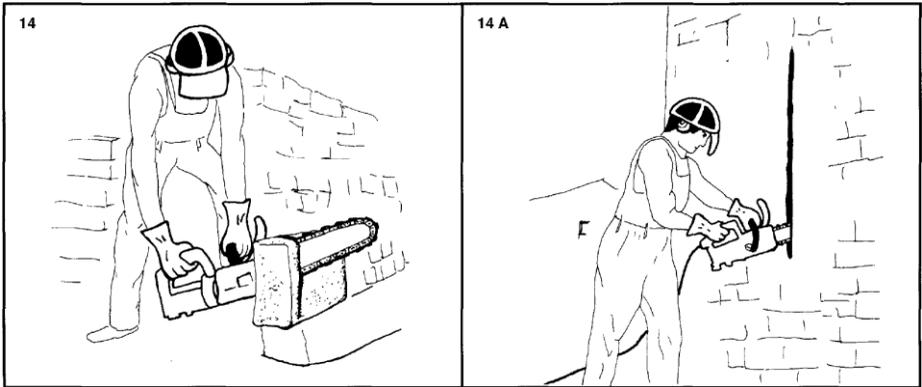


Figure 14 – How to make vertical cuts.

7 MAINTENANCE

7.1 General Information

On the basis of usage conditions it is necessary to define a proper inspection procedure. Time and frequency for regular maintenance activities are indicated below and give a general idea, but they could vary based on the real work requirements.

This manual does not provide detailed information on the dismantling procedure and the extraordinary maintenance activities, because these operations must always be performed by the customer service staff of Breaker S.r.l.

The Customer Service is able to provide all information and to respond to all requests to treat and maintain the electric chain saws E21 - E23 as perfectly efficient as possible..

In case of installation of non-original parts the guarantee loses validity!

7.2 Regular maintenance

	WARNING	Always disconnect the supply power plug
<ul style="list-style-type: none">• ALWAYS check that the electric saw plug is disconnected before going on with the maintenance, the cleaning or the lubrication procedures,• otherwise serious injuries may follow.		

	WARNING	General maintenance, overheating
<ul style="list-style-type: none">• The motor of the electric saw is designed so as not to become overheated during normal use. A possible overheating can be caused by worn or badly sharpened chain, inadequate chain lubrication, excessive pressure on the electric saw while cutting or obstruction of the motor air slits.• If such an overheating should occur, stop using the electric saw immediately and have it checked by an authorized service center.		

DAILY MAINTENANCE

Clean the electric saw daily, paying particular attention to the motor air slits (see Fig. 15-22).

In order not to damage or impair the functioning of the components, especially of electrical parts, the external cleaning must be done with a slightly wet rag. Before starting the electric saw, dry it completely and check that there isn't still residual moisture.

Check the readability and the presence of the CE label and adhesive safety pictograms applied to the electrical saw.

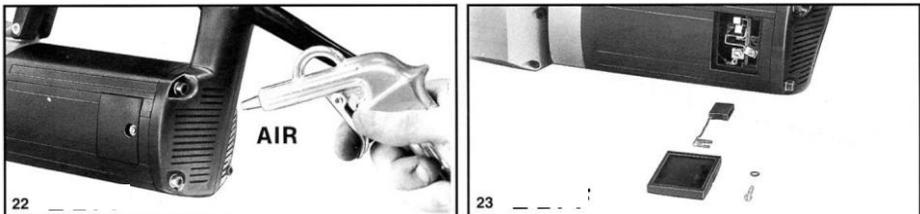
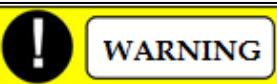


Figure 15 – Regular maintenance activities of the electric chain saws E21 - E23.



WARNING

General maintenance, cleaning

- It is absolutely forbidden to direct jets of water under pressure to electrical parts, such as the engine and the Start/Stop button.
- Do not use gasoline or inflammable solvents or other aggressive liquids to clean the electric saw, but only compressed air.

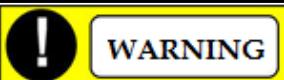
CHECK/REPLACEMENT OF THE BRUSHES

Every 100 work hours the brushes should be checked (see Fig. 15-23).

Replacement is recommended after 200 work hours.

Get in touch with the Customer Service to replace the brushes.

Use R15-type brushes only.

**WARNING****Replacing the motor brushes**

- **In case the brushes create too many sparks, get in touch with the Customer Services to have them checked.**
- **Require the assembly of original brushes.**
- **Brushed must be replaced not individually, but always in pair.**

All the ordinary and extraordinary maintenance operations not indicated in this manual must be performed by an authorized Service Center.

For any maintenance interventions that require the machine to be disassembled, get in touch with an authorized service center.

HOW TO REPLACE CHAIN SPROCKET

Chain sprocket is to be replaced when its teeth show deep cuts in the order of a few mm. Apart from causing turning problems to the chain, an excessive use of the sprocket would damage it forever.

Remove the sprocket cover and take out both bar and chain.

Block the sprocket with a hex nut wrench (13 mm) (A) and then unscrew the hexagon nut with a 17 mm-wrench (B) turning clockwise (see Fig. 16).

PLEASE NOTE: The threading is left-handed.

Remove nut and washer, then place the extractor (C) on the sprocket, tighten shaft screw and extract sprocket.

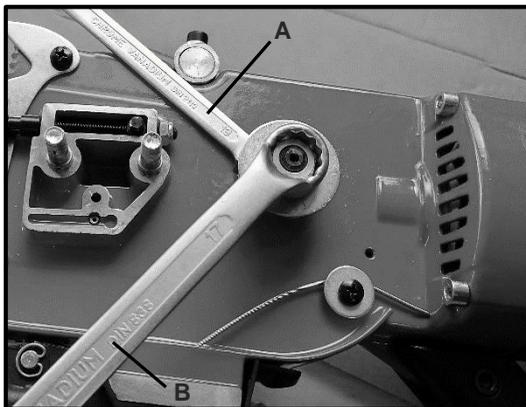


Figure 16 – Dismounting of the chain sprocket.



WARNING

How to replace chain sprocket

- Before fitting a new sprocket clean with compressed air from the end of the shaft and up to the thread.
- Check that the plug of the electric saw is disconnected from the supply power.
- Always wear safety gloves and goggles.

GUIDE BAR MAINTENANCE

Every 20/30 linear meters, remove the blade in order to clean the chain sliding channel. Pass a scraper through the blade channel to make sure that any sand or dirt residues are removed. Remount the blade turned through 180° for uniform wear (see Fig. 17-16).

If during the cleaning operation, burns or deformations are visible on the bar, grind in order to restore the correct working conditions (see Fig. 17-16A).

Replace the bar with stellite tip B when worn out following the same procedure for bar A. Replace the bar with the roller D when the roller diameter is worn out to such an extent that the chain runs against the fixed part of roller itself (see Fig. 17-17 and 18).

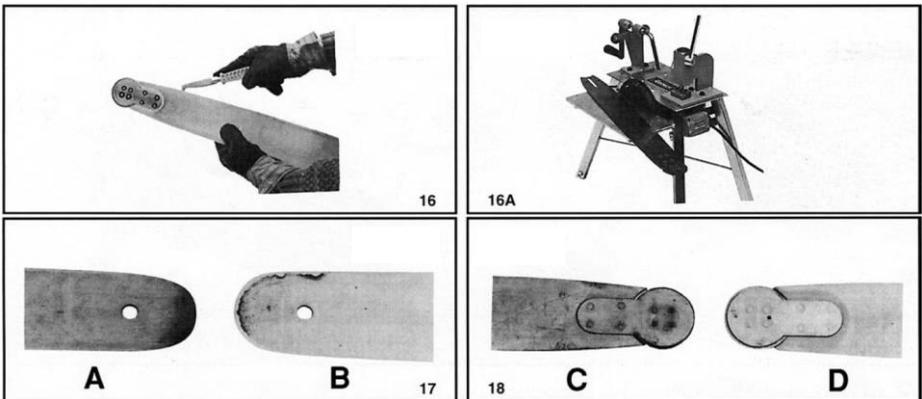


Figure 17 – Regular maintenance activities for the chain-guide bar.

! **WARNING**

Guide bar maintenance

- Check that the plug of the electric saw is disconnected from the supply power.
- Always wear safety gloves and goggles.

CHAIN SHORTENING

To shorten the chain, place it against the anvil with the tooth pointing upwards, match the first rivet under the chain-breaker tip and expel the rivet by pressing the lever; repeat the procedure for the second rivet as well. Repeat the same operation on the consecutive tooth by turning the chain.

PARTS TO BE REMOVED: remove n.2 teeth A, n.2 links with rivet B and n.1 drive link C to shorten the chain by one drive link C (see Fig. 18-20).

Chain union is performed by joining the ends of the chain itself with a connecting link and rivet B and a connecting link without rivet D.

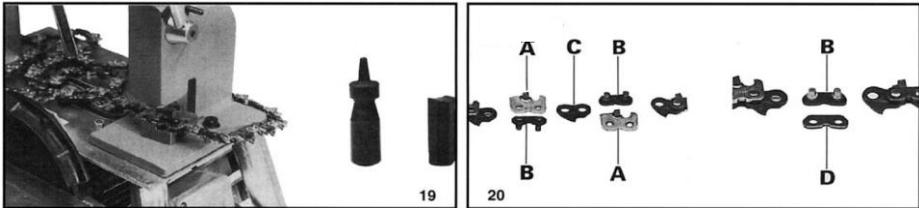


Figure 18 – Chain shortening operations.



WARNING

Chain shortening

- Check that the plug of the electric saw is disconnected from the supply power.
- Always wear safety gloves and goggles.

CHAIN RIVETING

After having jointed the chain with the relative links, use the riveting machine to match the part of the rivet to be fitted on the side of the hexagonal head; use the threaded lever to take up the slack created by the deformation of the rivet during knob rotation (see Fig. 19).

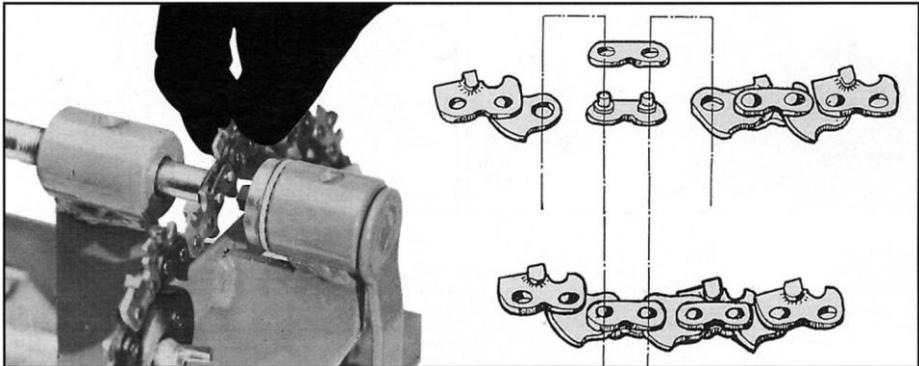


Figure 19 – Chain riveting operations.



WARNING

Chain riveting

- Check that the plug of the electric saw is disconnected from the supply power.
- Always wear safety gloves and goggles.

8 TECHNICAL ASSISTANCE AND SPARE PARTS

If you need technical assistance or urgent delivery of spare parts, please indicate the following information:

- Type of electric saw;
- Registration number;
- Year of construction;
- Quality and quantity desired.



WARNING

Original spare parts

The manufacturer is exempt from all responsibility for damage of any nature caused by the use of non-original spare parts.

9 WAREHOUSE STORAGE

In the event that the electric saw should be stored and not used for a long time, do the following operations:

- Empty the oil from the tank and refit the cap.
- Clean the electric saw thoroughly and grease the metal parts.
- Wrap the motor with plastic sheet. Insert the chain-cover. Store the machine in a dry place, preferably off the ground, and away from heat sources.

10 DISPOSAL OF MATERIALS AND COMPONENTS

**WARNING**

Disposal of materials

The disposal of packaging, waste, of parts replaced, of the electric saw as a whole at the end of its planned life, must be carried out in respect for the environment; avoid polluting soil, water and air, respecting in any case national and local legislation in force on this matter.

Indications for the treatment of waste:

- Ferrous materials, aluminum, copper: they are recyclable materials to be delivered to an authorized collection point.
- Plastics, fiberglass, seals: they are materials to be delivered to landfills or authorized recycling centers.

Divide materials according to their nature, delivering them to specialized companies authorized for disposal, according to what is prescribed by law.



11 WARRANTY RULES

The electric chain saws E21 - E23 are guaranteed for 24 months from the date of purchase.

The guarantee provides for free replacement of any defective or prematurely worn out part provided that all the requirements have been met and there is no misuse of the electric saw. The manufacturer's obligations are limited to the replacement of defective parts.

General wear and tear materials are not covered by the warranty except in case of initial manifest defects: e.g. chain and bar.

Breaker S.r.l. does not assume any responsibility for damages to objects and persons caused by improper use of the **electric saw**.

12 NOTES
