OPERATION AND MAINTENANCE MANUAL

Portable chamfering machine
Art. 0022

FERVI
PRO SMART EQUIPMENT

TRANSLATION OF THE ORIGINAL INSTRUCTIONS

PREFACE

Please ensure you have read this manual before any operation

TRANSLATION OF THE ORIGINAL INSTRUCTIONS

Before undertaking any operation on the machine, it is compulsory to have read this instruction manual. The guarantee that the machine will function and perform properly is strictly dependent upon the application of all the instructions contained in this manual.

Operator Qualifications

The workers in charge of using this machine must possess all the necessary information and instruction and should be given adequate training in relation to safety regarding:

a) Conditions of use for the equipment;

b) Foreseeable abnormal situations, pursuant to Article 73 of Italian Law Decree 81/08 (which adopts the EN rules).

We guarantee the Machine complies with the specifications and technical instructions described in the Manual on the date of its issuance (shown in this page). On the other hand, the machine may also be subject to important technical changes in the future, without the manual being updated.

Therefore, contact FERVI for information about modifications that may have been implemented.

REV. 1 **July 2013**

CONTENTS

1 INTRODUCTION

This manual is delivered with the machine, and it must be regarded as an inseparable part of it.

The manufacturer holds all ownership to material and intellectual property of this manual; any disclosure or copying, even partial, of this publication without prior written consent is forbidden.

The purpose of this manual is to convey the necessary knowledge for the use and maintenance of **Portable chamfering machine Art. 0022** and to create a sense of responsibility and knowledge of the capabilities and limits of this machine entrusted to the operator.

Operators must be properly trained and prepared; therefore, please make sure this manual is read and consulted by the staff responsible for commissioning, operating and maintaining the **Portable chamfering machine**. This is to make all operations the safest and most effective possible for those who carry out these tasks.

Therefore, it is imperative to strictly comply with the requirements in this manual, a necessary condition for safe and satisfactory operation of the machine.

Prior to installation and use of the **Portable chamfering machine**, the authorized personnel shall:

- carefully read this technical document;
- know which protections and safety devices are available on the machines, their location and how they work.

It is the responsibility of the buyer to ensure that users are properly trained, that they are aware of all the information and instructions in this document and that they are aware of the potential risks that exist while working with the **Portable chamfering machine**.

The manufacturer waives any and all responsibility for damage to people and/or things caused by non-observance of the instructions in this manual.

The **Portable chamfering machine** has been designed and built with mechanical guards and safety devices designed to protect the operator/user from possible injury. It is strictly forbidden to modify or remove guards, safety devices and caution labels. If you have to do so temporarily (for example, for cleaning or repair requirements), please make sure that no one can use the machine.

Modifications to the machine carried out by the user must be considered their sole responsibility, therefore the manufacturer waives any and all responsibility for any damage caused to persons and/or property resulting from maintenance performed by unqualified personnel and in a manner unlike the operating procedures shown below.

GRAPHIC REPRESENTATION OF SAFETY, OPERATIONAL AND RISK WARNINGS

The following boxes are designed to attract the attention of the reader / user for the **proper** and **safe** use of the machine:

Pay attention

This highlights behavioural rules to prevent damage to the machine and/or the occurrence of dangerous situations.

Residual Risks

This highlights the presence of dangers that cause residual risks to which the operator must pay attention in order to avoid injury or damage to property.

For a safe and effective use of **Portable chamfering machine Art. 0022**, you must read this manual carefully to acquire full knowledge of the machine and the general precautions to be observed during operation. In other words, machine durability and performance are strictly dependent on how it is used.

Even if already familiar with this sort of machines, it is necessary to follow the instructions herein, in addition to the general precautions to be observed while working.

- Acquire full knowledge of the machine.

  Read this manual carefully to understand: operation, safety devices and all necessary precautions. All this is to allow safe use of the machine.
- Wear appropriate clothing for the job.

  The operator must wear appropriate clothing, so as to prevent the occurrence of unpleasant accidents.
- Maintain the machine with care.

Using the Machine

The machine must only be used by qualified personnel trained to use the machine by authorized personnel.

2 GENERAL SAFETY WARNINGS

2.1 General safety rules for machine tools

Risks related to Using the Machine

Do NOT underestimate the risks related to the use of the machine and stay focused on the work you are carrying out.

Risks related to Using the Machine

Despite the implementation of all safety devices for safe use of the machine, it is necessary to take note of all the accident prevention requirements highlighted in various parts of this manual.

Risks related to Using the Machine

Every person who is responsible for the use and maintenance of the machine should first have read the instruction manual, particularly the chapter dealing with safety.

It is recommended that the plant safety manager get written confirmation of the above.

Risks associated with using the machine

- During all work phases with the machine, you should proceed with great caution in order to avoid damage to persons, to the property or to the machine itself.
- Please use the machine only for its expected uses (drilling or tapping).
- Don't tamper with the safety devices equipping the machine.

Risks associated with using the machine

Before starting any work on the machine, the operator must wear the appropriate personal protective equipment (PPE) such as gloves and eye protection (see section 6.6 of this manual).

1. Always check the efficiency and integrity of the machine.
2. Before connecting the machine to the mains, make sure that the rotating parts are not damaged or badly worn. Make sure that the switch is in the neutral position.
3. Do not start the machine in an enclosed or poorly ventilated area, or in the presence of a flammable and/or explosive atmosphere. Do not use the machine in locations which are damp, wet, or even exposed to the rain.
4. Avoid starting accidentally.
5. Before starting the machine, get used to ensuring that no remaining adjustment or maintenance wrenches have remained inserted.

6. Keep the workplace tidy and free from hindrances; disorder causes accidents.
7. Make sure that the work environment is forbidden to children, non-employees and animals.
8. Do not perform tasks on the machine other than those for which it was designed. Only use the machine in the manner in which it was intended, as described in this instruction manual.
9. Work without disturbances.
10. Work areas must be well lit.
11. Always wear eye protection and protective gloves while working. If dust is produced, use the appropriate masks.
12. Wear appropriate clothing. Loose clothing, dangling jewelry, long hair, etc.., can get caught in the spindle and in moving parts, causing irreparable injury.
13. Replace worn and/or damaged parts. Before operating, make sure guards and protections work correctly. If necessary, have them checked by Service staff. Use only original spare parts.
14. **Cut the mains voltage supply to the machine when:**
    - the machine is not being operated;
    - is left unattended;
    - you are performing maintenance or adjustment because the machine does not work properly;
    - you are replacing its tool;
    - in case the machine is being moved to another location;
    - you are cleaning the machine.
15. Do not use the machine in areas with a risk of fire and / or explosion.
16. It is recommended that users of this publication, for maintenance and repair, have a basic knowledge of mechanical principles and of repair technique procedures.
17. **Management in charge of safety is to make sure that the staff responsible for using the machine has read and understood this manual in its entirety.**
18. **Management is responsible for safety and verification of the company's risk status, pursuant to the law.**

2.2 Safety regulations regarding the electric system of machine-tools

Risks associated with using the machine

1. Do not modify the electrical system in any way. Any attempt in this regard may jeopardize the operation of electrical devices, causing malfunction or accident.
2. Work carried out in the electrical system of the machine must, therefore, be carried out only by qualified and authorized personnel.
3. If you hear unusual noises, or you feel something strange, immediately stop the machine. Then carry out an inspection and, if necessary, perform any repairs as required.

1. The supply voltage must correspond to that stated on the identification plate and in the technical specifications. Namely: 230 Vac / 50 Hz.

   Never use any other type of power supply!
2. The use of a circuit breaker on the electric power supply is recommended. For more detailed information, contact a trusted electrician.
3. The power socket must be equipped with a grounding lead. The size of any extension cables must be equal to or greater than the one of the machine's own power supply cable (diameter ≥ 1.5 mm^2).
4. The power supply cable (and its possible extension cable) should never come in contact with hot objects, sharp edges, wet or oiled surfaces.
5. The power supply cable (and its possible extension cable) should be checked periodically, and before each use, for making sure they have no signs of damage or wear. If these are not in good condition, do not use the machine and replace the damaged cable.
6. Do not use the power cord to detach its plug from the socket.

2.3 Safety regulations for using chamfering machines

1. Accident

Sharpening operations always present a risk of injury associated with the possibility of detachment of splinters and/or sparks from the workpiece or tool breakage.

There is no "intrinsic" means of safety, just as there is no worker who, while careful, can "always" avoid an accident. Therefore, DO NOT underestimate the risks associated with using the machine and concentrate on the work in progress.

2. Do not touch the tools while they are in motion. Do not lift the machine by holding the power cord.
3. To stop the machine tools, always and only use the stop command device (stop button)
4. Do not move away from the machine until the tools and other moving parts, have completely stopped.

2.4 Technical Assistance

For any problems or concerns, please contact, without hesitation the Customer Service Department of your dealer, who has competent and specialized staff, specific equipment and spare parts.

2.5 Other provisions

IT IS FORBIDDEN TO TAMPER WITH SAFETY DEVICES

The first thing to do when starting work is to check for the presence and integrity of the protections and the operation of the safety devices.

If any defect is detected, do not use the machine.

Even more so, it is strictly forbidden to modify or remove guards, safety devices, labels and indication signs.

3 TECHNICAL SPECIFICATIONS

Model	Art. 0022
Power (W)	750
Voltage (V)	230
Frequency (Hz)	50
Spindle speed (rev/min)	2950
Insert holder spindle diameter (mm)	80
Weight (kg)	12.5
Chamfering depth (mm)	0 ÷ 5
Chamfering angle	15° ÷ 45°
Guide plate width (mm)	50
Guide plate length (mm)	200
Insert dimensions (mm)	13 x 13 x 3.5
Insert material	Tungsten carbide
Loaded acoustic pressure level L_{pA} (dB(A))	80
Transmitted vibration (m^2/s)	2.3

4 DESCRIPTION OF THE MACHINE

The portable chamfering machine is very easy to use and has been designed to carry out angular chamfering of metal items.

The characteristics that distinguish the portable chamfering machine are its speed and ease of use.

The chamfering machine is composed of a machine body, which encloses the electric motor and the insert holding spindle, in most there are two handles for increased ease of use.

The inserts are protected all around, only a small portion of the spindle is left uncovered, which is required for machining.

Moving parts

After stopping the machine, the spindle continues to rotate for a few seconds, wait until it has completely stopped before placing hands near the tool.

It is compulsory to ALWAYS use appropriate PPE, such as goggles and gloves.

4.1 Description of the main parts

Figure 1 - Main parts of the machine

1	Motor
2	Adjustable guide
3	Upper handle
4	Rear handle
5	Enabling switch
6	Chamfering depth adjustment screw
7	Chamfer angle adjustment
8	Insert holder spindle guard

4.2 Plate

The following identification plate is attached to the front of the portable chamfering machine.

Figure 2 – Identification plate

4.3 Pittogrammi

On the side of the machine the following attention and warning pictograms are attached.

Figure 3 – Attention and Warning Pictograms

5 COMMISSIONING OF THE MACHINE

The portable chamfering machine Art. 0022 is supplied completely assembled.

5.1 Connection to the power supply and start-up test

1. Insert the power supply plug into a grounded double pole socket (10/16 A, 250 V).
2. Press the green power button on the back of the machine (see Figure 4).
3. Start the machine by pressing the confirmation button and the enabling switch, which are present on the rear handle (see Figure 5) and make sure that the direction of rotation of the tool is consistent with that envisaged by the manufacturer.

Impact of thrown parts
During the test run, no operator and no other person should be within range of the machine.

6 CONTROL BUTTONS

Located on the right side of the machine are the Start (green) and Stop (red) buttons of the machine.

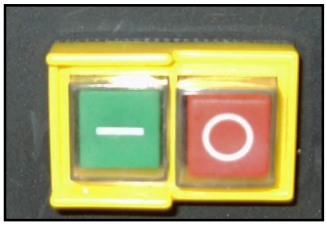


Figure 4 - Start/Stop Buttons

To start the rotation of the tool you need to press the confirmation button (Figure 5/A) on the back of the handle and at the same time hold down the enabling switch located on the underside of the handle (Figure 5/B).

Figure 5 – Confirmation button (A) Enabling switch (B).

Enabling

If the confirmation button is not pressed it is not possible to press the enabling switch, which remains locked.

7 OPERATION

7.1 Instructions for Use

The portable chamfering machine is very simple to use, but always requires due attention by the operator.

Operating the machine

The portable chamfering machine must only be used with inserts that are suitable for the type of material to be processed.

Risk of abrasion and accident

- Before using the machine, make sure that the item to be chamfered is stable and properly secured, to prevent unwanted shifting or loss of stability.
- Wear appropriate personal protective equipment (PPE) such as gloves, goggles, overalls or apron and safety shoes.

It is not recommended to extend the continued use of the machine for more than 10 minutes to avoid overheating of the machine (which could damage the motor) and the tool.

NOTE: The Portable chamfering machine can not operate in environments with potentially explosive atmospheres. It is therefore the responsibility of the operator to avoid using the Sharpener in an environment with flammable vapours and/or explosives.

Danger of explosion

The Portable chamfering machine has NOT been designed to operate in environments with a potentially explosive atmosphere.

7.2 Using the machine

The tungsten carbide inserts are used to perform the cutting (chamfering) of angled parts and sharp edges of metallic materials, whether they are small-sized items or the edges of work surfaces.

NOTE: If the edge to be machined is damaged and has cavities and/or protrusions, chamfering can still be carried out, but pay particular attention and hold the machine firmly to prevent kickback and loss of stability.

All adjustments must be carried out with the machine off and the power cord unplugged from the power outlet.

Machine adjustment

The graduated scales are merely indicative, should a strict adjustment be required it is necessary to use appropriate measuring instruments.

Machine adjustment

Before starting chamfering operations it is necessary to carry out appropriate adjustments to the machine. To do this, proceed as follows:

- Adjust the chamfering angle, loosen the 4 allen screws that secure the guides in place.

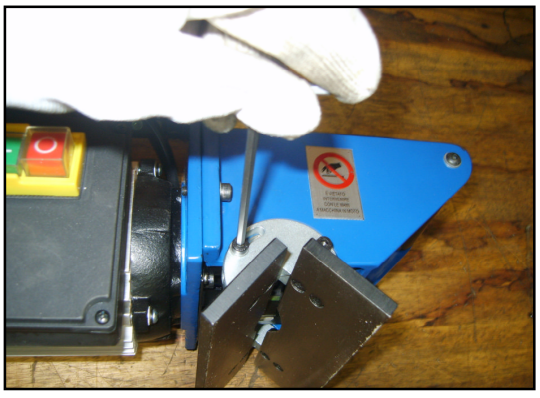


Figure 6 - Guide adjustments.

- Turn the guides aligning the reference mark on the support with the graduated scale on the machine frame (Figure 7), and then tighten the screws again.

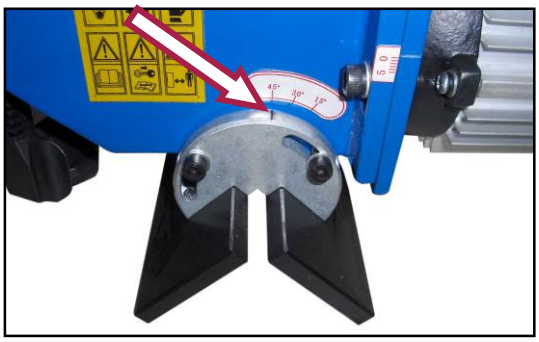


Figure 7 Setting chamfer angle.

- To adjust the chamfer depth, loosen the two screws (one on each side) that attach the motor/spindle unit to the machine frame.

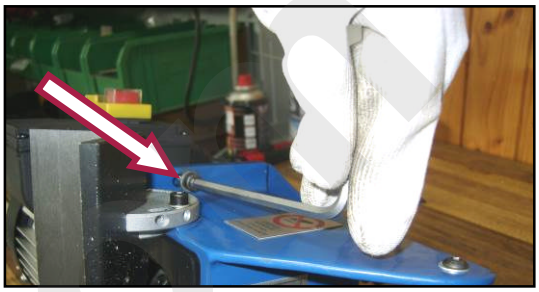


Figure 8 Loosening the screws.

- Unlock the safety nut under the knob with an Allen key.

- Turn the knob located at the upper part of the machine so as to align the reference mark on the frame with the graduated scale applied in the vicinity of the screw (see Figure 9). Then tighten the screws and the lock nut again.

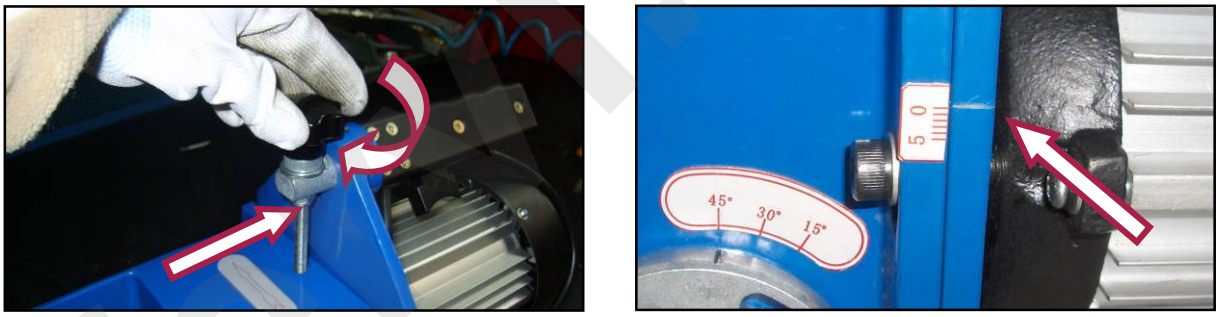


Figure 9 Adjustment depth.

Note: the graduated scales on the machine are merely indicative, whenever a strict adjustment of the chamfer angle and/or depth is required it is necessary to use appropriate measuring instruments.

Chamfering

After adjusting the machine it is possible to proceed with the chamfering of the edges.

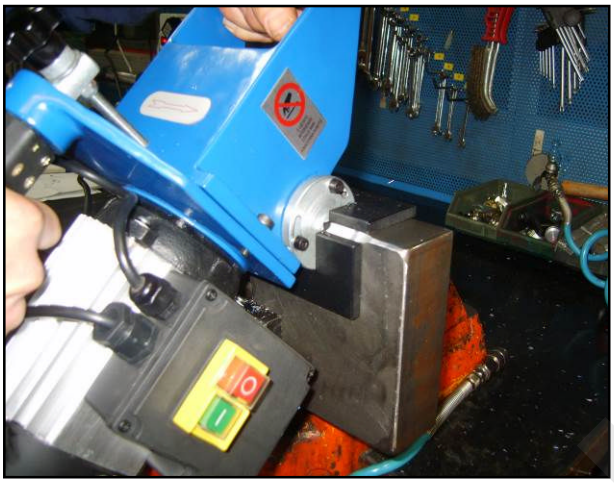


Figure 10 – Chamfering.

For sharpening, proceed as follows:

- Start the machine by pressing the green start button.

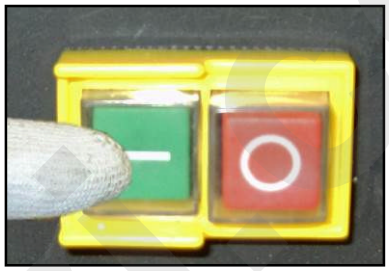


Figure 11 – Starting

- Make sure the Portable chamfering machine is secured and apply a slight pressure to the left end of the item to be processed, moving it to the right.
- Press the confirmation button with the right hand thumb and the start button with the index and/or middle finger as shown in Figure 5.

Note: If chamfering to a depth of 5 mm is required, begin by setting the machine at a lower depth and perform two or more passes increasing the depth with each pass.

- After chamfering the entire length of the edge, release the start button on the handle then turn off the machine by pressing the red stop button.

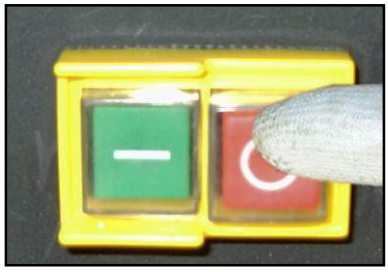


Figure 12 – Stopping

The maximum chamfering depth (5 mm) is achieved only with an inclination of 45°, lower inclinations correspond to lower depths.

8 MACHINE SAFETY DEVICES

8.1 Electrical safety devices

The control device inserted in the electrical circuit of the Portable chamfering machine is a **magnetic switch** with two buttons (see chapter 6 of this manual). This prevents the danger of unwanted and/or accidental starts of the machine, since the switch can only be activated through a voluntary action suitable for the given purpose and when the machine is powered. If power is restored following an unintentional power cut, the machine does not start by itself but must be turned on with the normal start button.

Furthermore, the start button is equipped with a protective collar.

In the event of malfunction or breakdown, the Portable chamfering machine is equipped with power cable and plug with **grounding conductor**, which provides a path of least resistance for electric current and reduces the risk of electric shock.

The plug must be plugged into an appropriate socket, grounded in accordance with current regulation. Extension cables must be of a section equal to or greater than the power cable of the machine.

Electric Shock
Improper connection of the machine’s grounding conductor can result in the risk of electric shock.

It is necessary to connect the machine to an electrical system that has a device for the automatic interruption of the power supply in case of failure, which is consistent with the protections installed on the machine. For more detailed information, contact a trusted electrician.

Check with a qualified electrician if you don't understand the grounding instructions or if you have any doubts about grounding the machine.

8.2 "Mechanical" Safety Devices

PROTECTIVE CASING OF THE INSERT HOLDER SPINDLE

This prevents splinters, sparks, etc. that eventually get separated from being thrown into the operator's face.

Checking Safety devices

- Each time the Portable chamfering machine is used, check the perfect functioning and positioning of the safety devices.
- Do not use the machine in the case of damage and/or breakage.

Use of PPE

In any case, ALWAYS use appropriate personal protective equipment such as:

- Gloves,
- Goggles or face shields;
- Overalls or aprons;
- Safety shoes.

Figure 13 - Personal Protective Equipment.

9 MAINTENANCE

9.1 Routine maintenance

Electric Shock

Before maintenance or checks, turn off the machine and ALWAYS unplug the plug from the power outlet. This is so that there is no risk of electric shock.

Regularly clean and take care of the machine to guarantee proper efficiency and a long working life.

With a compressor, routinely blow away the dust and residue that accumulate on the machine and protection devices when the machine is engaged in chamfering operations.

Working with compressed air

ALWAYS wear the protective goggles when using compressed air.

Only use a warm, damp cloth to clean the body of the machine and other external parts.

Cleaning the machine

DO NOT use detergents or any solvents; the plastic parts are easily damaged by chemical agents.

Periodically check for wear on the inserts, taking care to replace them if there are cracks, defects and/or detached materials or irregular wear.

Periodic Checks

In addition, run a thorough check of operation and wear EVERY 6 MONTHS of the life of the machine.

9.2 Periodic Maintenance

DESCRIPTION	FREQUENCY	ACTION / MEANS
Check for wear on the inserts	Daily	Replace
General cleaning of the machine	Daily (recommended)	Clean with an air compressor

Replacing the inserts

Electric shock

Before replacing the insert, turn off the machine and ALWAYS unplug the plug from the power outlet. This is to prevent the risk of electric shock.

Characteristics of the Wheel

- Only use wheels with the size and characteristics indicated in the table of technical specifications (see Section 3 of this manual)
- The speed marked on the wheel must be equal to or greater than that specified in the specifications table.
- It is forbidden to use any type of adapter to install sharpening wheels with an inner diameter which differs to that indicated.

To replace the inserts, proceed as follows:

- Unscrew all 4 screws that hold the bracket of the support guides in place;

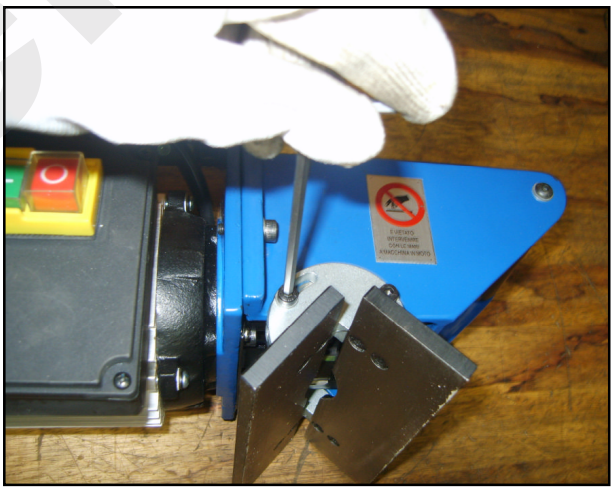


Figure 14 - Removal of the locking screws.

- Remove the entire unit;

Figure 15 - Removal of the support unit.

- Rotate the spindle with one hand until the position of the insert locking screw is directly in front of you.

Figure 16 - Removal of the blade locking screw.

- Remove the screw, slide out the wedge holding the insert in place.

- Repeat this procedure for all 6 inserts.

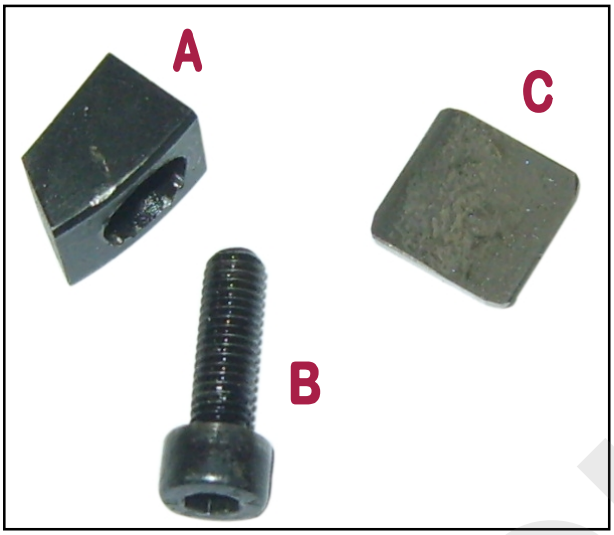


Figure 17 Wedge (A), Screw (B), Insert (C).

Note: the inserts have all four sides sharpened and can be reused by changing the orientation. When all 4 sides have been used they must be replaced.

Ejection of parts
Do not attempt to sharpen worn inserts. After using all 4 sides they must be replaced.

- Introduce in order the insert, the wedge and the locking screw.

Cutting direction
The insert has the cutting edge inclined in the direction of rotation of the spindle. Pay attention to the cutting edge when rotated or replaced.

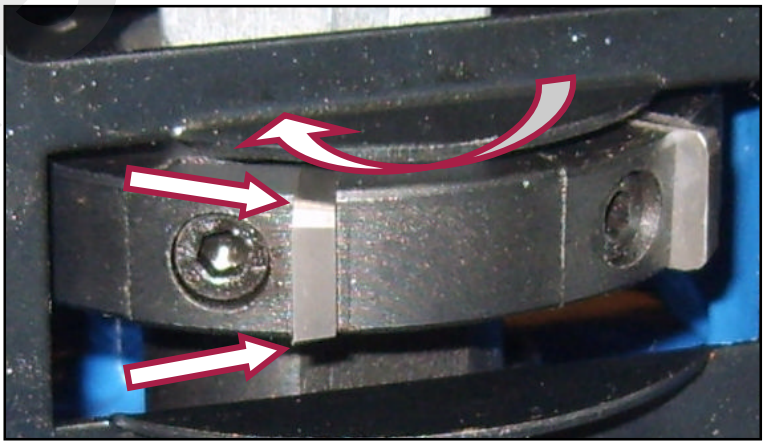


Figure 18 Position of the insert.

10 TROUBLESHOOTING

PROBLEM	CAUSES AND SOLUTIONS
The machine will not start.	• Check the connection to the mains supply. • Press the green button to start. • Make sure the automatic system for interruption of the power supply has not been engaged, in this case, unplug the machine and contact Technical Support. • Press the confirmation button and hold down the enabling switch on the handle.
Electrical problems with the motor or other parts (overheating, bad contacts, etc.)	• Allow the machine to cool in the event of prolonged use. • Consult the Service Department.
The chamfering is not even.	• Make all the adjustments to the machine, paying special attention to the inclination of the spindle. • Make sure that the support guides are fitted correctly. • Check that the chamfer depth is not excessive, if the thrust force is excessive it will result in irregular feeding. • Make sure that the inserts are all mounted correctly and are not worn and/or damaged. • Make sure the material to be chamfered is smooth and that there are no parts made of different materials.
The inserts are damaged and/or worn	• Carry out the rotation and if necessary replacement (use only original spare parts).

11 DISPOSAL OF PARTS AND MATERIALS

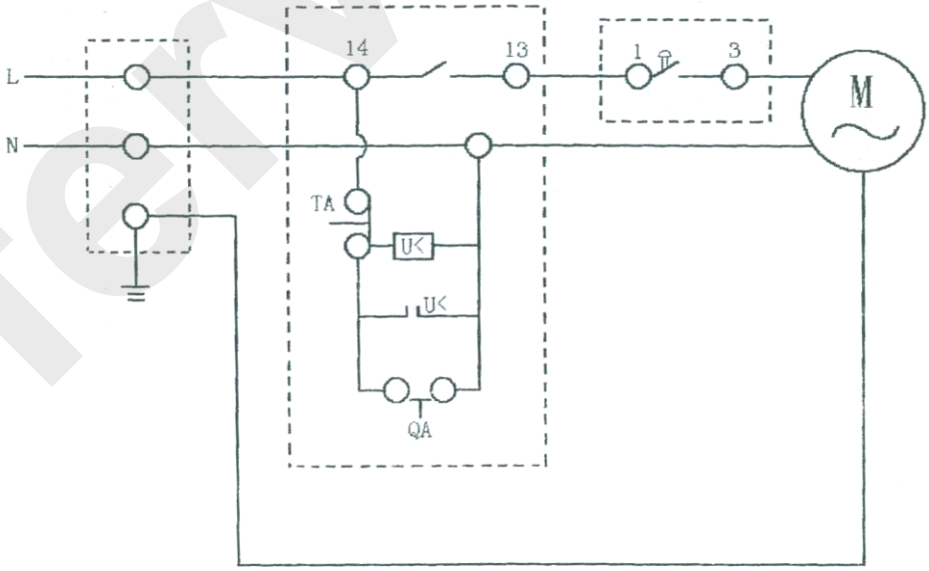
If the machine is to be scrapped, its parts must be disposed of separately.

Respect the Environment!

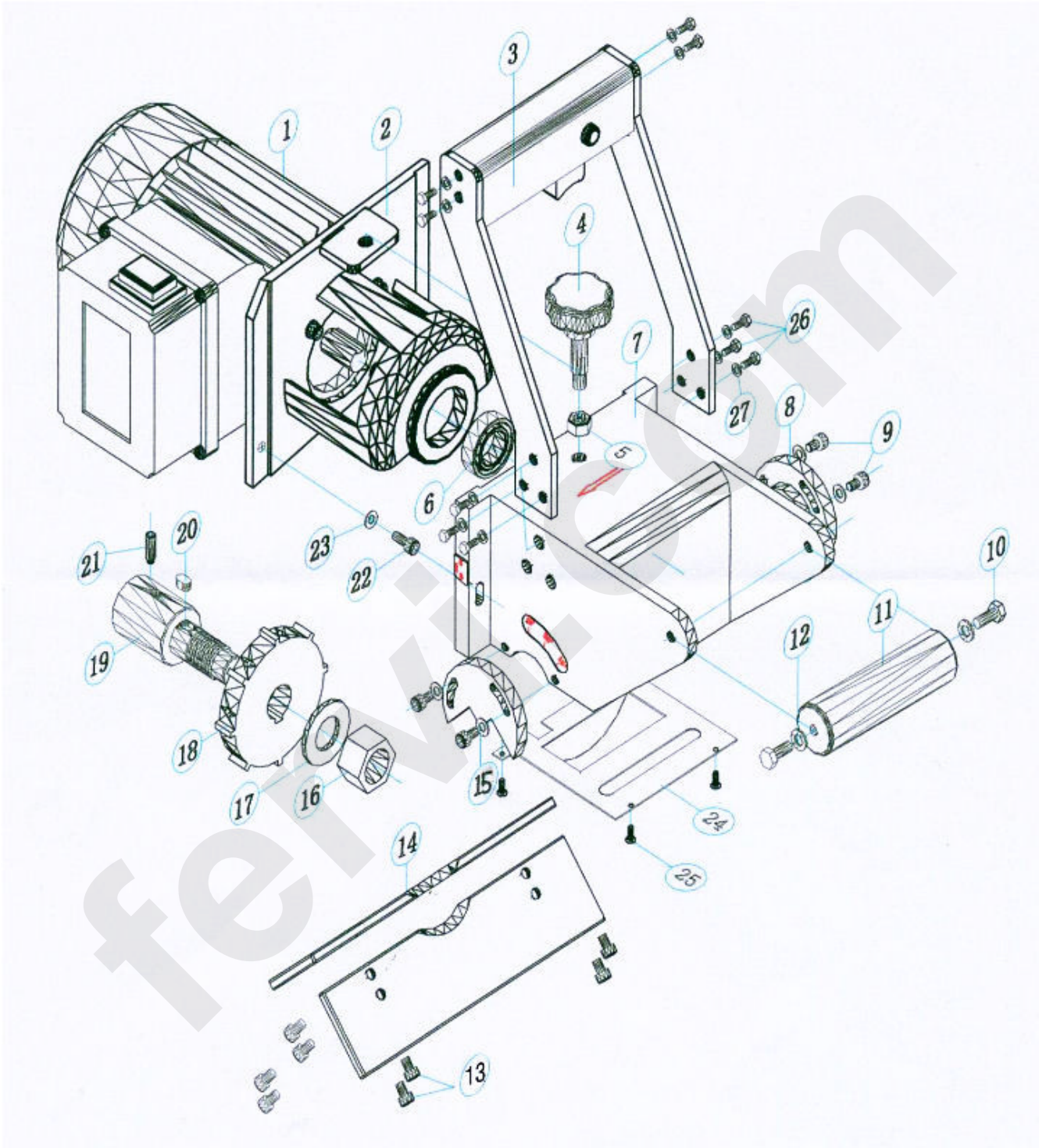
Contact a specialist centre for the collection of metallic materials.

The structure of the Portable chamfering machine, and the spindle are made of steel, the inserts of tungsten carbide, the handle of plastic, the motor windings of Copper, the cooling fins of Aluminium. Differentiate the materials according to their nature, with the assistance of specialist companies authorised for waste disposal, in compliance with the requirements of the law.

12 ELECTRICAL CIRCUIT DIAGRAM



13 PARTS LIST



Ref.	Description	Ref.	Description
0022/01	Motor	0022/15	Washer 5
0022/02	Fixed guard	0022/16	Nut M20
0022/03	Upper handle	0022/17	Washer 20
0022/04	Chamfer reg. dep. knob M8	0022/18	Insert (x6)
0022/05	Lock nut M8	0022/19	Spindle shaft
0022/06	Bearing 104	0022/20	Wedge 6x6x10
0022/07	Moveable guard	0022/21	Adjustment screw M6 x 10
0022/08	Swivel guide support	0022/22	Allen screw M6 x 20
0022/09	Allen screw M5 x 20	0022/23	Washer 6
0022/10	Bolt M6 x 12	0022/24	Spindle guard
0022/11	Rear handle	0022/25	Round head screw M3 x 5
0022/12	Washer 6	0022/26	Bolt M6 x 12
0022/13	Allen screw M5 x 8	0022/27	Washer 6
0022/14	Guides		