English / Englisch

Operation, Maintenance, Safety

Translation of original operating instructions
for the edge-, corner- and stair-sanding machine

FLIP®

Lägler®

00.320.20.002 01.12.2012

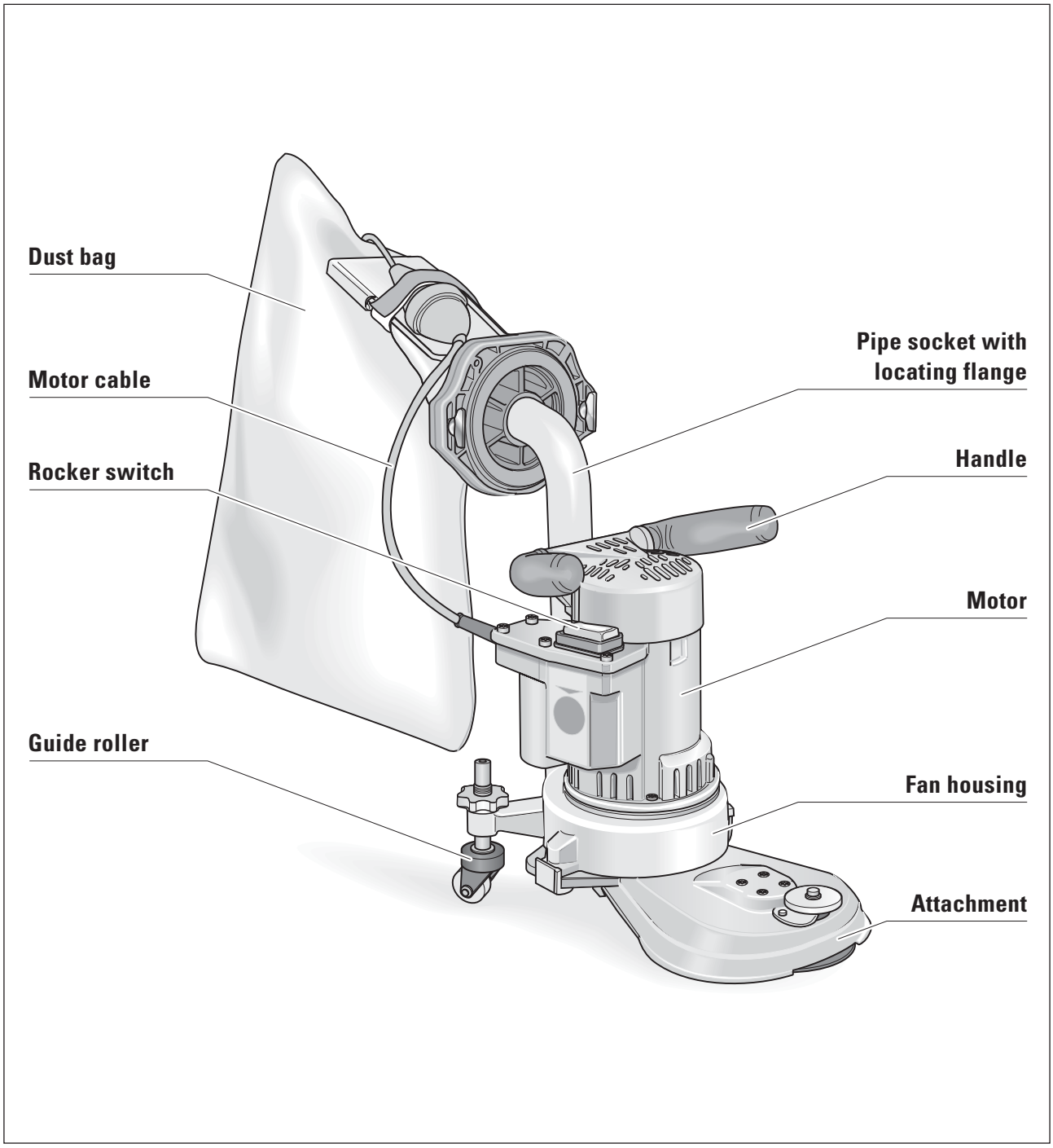


Fig. 1 Components of the edge-, corner- and stair-sanding machine FLIP®

CONTENTS

 **WARNING!**	**Death, severe physical injury** or **significant property damage** can occur if the corresponding cautionary measures are not taken.
 **CAUTION!**	**Moderate to light physical injury** or **property damage** can occur if the corresponding cautionary measures are not taken.
ATTENTION!	An **undesired event** can occur if the corresponding instructions are not followed.

Introduction

You have purchased a high-quality product from LÄGLER®. We wish you a great deal of success with your FLIP®. All LÄGLER® products are subjected to a thorough inspection before leaving the factory.

Please read these operating instructions completely before you begin working with your FLIP®. These operating instructions include important information on occupational safety and will provide you with answers to many questions so that you can work with the machine safely and without any problems. If you cannot find a specific subject in these operating instructions, please read the LÄGLER® application technique guidelines "Sanding Wooden Floors" (http://www.laegler.com) or contact our service department, your retailer or your importer.

1.1 FEATURES OF THE MACHINE

In figure 1 (page 2), we have indicated the most important components of the FLIP®. Take your time to become familiar with the machine.

1.2 DESCRIPTION OF THE MACHINE

The FLIP® edge-sanding machine works with a sanding plate on which Velcro sanding discs can be fastened. Traditional sanding discs fastened with a tension screw can, of course, also be used. The work zone is protected by the attachment. The fan housing, on which the electric motor is mounted in vertical position, is located on the attachment. A motor power cable is used to connect the machine to the power supply system. The motor switch with ON/OFF positions is located on the switch box cover of the motor housing. The machine is moved by means of two guide rollers at the rear side of the machine. The handles are located on top of the motor. A rotatable pipe socket is mounted on the rear of the fan housing which feeds the sanding dust into the dust bag. The dust bag is connected to the pipe socket via a flange with two quick-release fasteners. The power cable is attached to the bag's fixing bracket with Velcro tape so that it is kept out of the working area of the machine.

There are three different attachments for the FLIP® (part numbers are in *Section 11, Spare parts*):

- short attachment for sanding edges and stairs
- long attachment for sanding edges and below radiators or similar objects
- attachment for sanding corners (corner attachment)

WARNING!

RISK OF DEATH from electrical shock:

The machine may never be used for wet processing operations of any kind!

1.3 PROPER USE AS INTENDED

The FLIP® edge-sanding machine is suitable for the dry sanding of wooden floors, cork floor and wooden stairs in the professional and rental business sectors.

Any other form of use is not permitted without the approval of the manufacturer!

1.4 PROTECTIVE DEVICES

The following parts of the machine are safety devices and thus must always be kept in perfect condition:

Attachment cover, short/ long	=	Dust protection, protection against V-belts
Attachment, short/long	=	Protection against sanding disc and V-belts
Handle, motor housing, switch box cover	=	Protection against current-carrying parts

2

Hazard warnings and safety instructions

2.1 HAZARD WARNINGS

WARNING!

RISK OF DEATH from suffocation and RISK OF INJURY:

- Never wrap the power cable around your neck or other parts of the body!

RISK OF DEATH from electrical shock:

- The machine may never be used for wet processing operations of any kind!
- Do not expose the machine to rain! Do not use the machine in moist or wet environments!
- The machine must be switched off and the power plug must be removed from the socket during all maintenance work and work on the electrical equipment!
- Avoid body contact with grounded parts, e.g. pipes, radiators, ovens, refrigerators!
- The quality of the motor cable and the power cable must match the quality of the original LÄGLER® cable!
- The power cable must be protected from mechanical and/or electrical damages in the workplace!

WARNING!

RISK OF DEATH, RISK OF INJURY, RISK OF FIRE:

- **Be certain to read the hazard warnings and safety instructions before using the machine!**
- **Instruct your coworkers and colleagues accordingly! Otherwise, these persons could be exposed to danger or injured!**

ATTENTION!

- **Keep these hazard warnings and safety instructions in a safe place!**
- **Note the valid regulations and legal conditions in your country!**

WARNING!

RISK OF DEATH from electrical shock:

- Do not carry or pull by the machine by the cable! Do not pull on the cable to remove the plug from the socket! Protect the cable against heat, oil and sharp edges!

RISK OF EXPLOSION due to sparks while sanding or a high dust concentration in the air:

- Do not use the machine near
  - sources of fires,
  - flammable liquids or gases,
  - potentially explosive areas!
- Do not smoke in a dusty environment, e.g. while sanding or emptying the dust bag!

RISK OF FIRE from spontaneous combustion or from sparks while sanding:

- There is a high risk of fire when sanding woods with a large amount of resin, waxed floors or metal! Therefore, the machine must always be cleaned carefully directly after sanding. Be certain to note the warning notices of the paint, oil and wax manufacturers!
- Cloths, pads, et cetera which have been immersed in oil or wax can spontaneously combust! Be certain to note the warning notices of the paint, oil and wax manufacturers!
- The dust bag must always be removed from the machine after sanding and emptied into a waste bag with the emptying fixture! Dispose of these waste bags in a non-combustible container! Cover this container with a non-combustible cover and be certain to store it and the dust bag outdoors (➡ *Section 5.3, Emptying the dust bag*)!

RISK OF FIRE from the overheating of the cable.

- Only cables with wire cross-section of at least 1.5 mm² may be used as motor cables and power cables!

WARNING!

HEALTH RISK CAUSED BY DUST:

- Make sure that the dust bag is properly fastened to the machine!
- If the machine is operated correctly, the mandatory dust emission values will not be exceeded! When emptying the dust bag, it is advisable to wear a respiratory protective mask P3 (part number in *Section 11, Spare parts*)!
- Wear a respiratory protective mask of at least filter class P2 when conducting work that creates dust!

CAUTION!

RISK OF INJURY and RISK OF PROPERTY DAMAGE from rotating tools and parts of the machine:

- Before turning on the machine, make sure that all tools and adjustment tools have been removed from the machine!
- The machine may not be started if the sanding plate is on the floor! Therefore, tip the machine backwards slightly to start the machine (➡ *Section 4.3, Starting the machine*)!
- Do not reach into rotating tools or parts of the machine!
- Do not let children or other persons touch the machine or cable and keep them out of the work area!
- Do not wear any long articles of clothing or jewellery! These could be caught by moving parts!

RISK OF INJURY and RISK OF PROPERTY DAMAGE from unintentional starting of the machine:

- The power plug must be removed from the socket when the machine is switched off!
- Make sure that on/off switch is not set to on when connecting the machine to the current supply!

RISK OF INJURY and RISK OF PROPERTY DAMAGE from the rolling away, tipping or falling of the machine:

- The machine must be secured against rolling away, tipping or falling when not in use!
  Always ensure that the machine is standing firmly!

CAUTION!

RISK OF INJURY and RISK OF PROPERTY DAMAGE from unsuitable parts:

- Only use tools, accessories and spare parts from LÄGLER® for the FLIP® (➡ *Section 11, Spare parts*)! **There is no guarantee for external parts or liability for damage caused by them!**

HEALTH RISK caused by noise:

- Use hearing protection when conducting work that produces noise!

RISK OF PROPERTY DAMAGE:

- Do not store the unused machine with sanding media on the sanding plate! The sanding media can cause scratches on the ground!
- Improper transport will result in damage to the machine!

2.2 GENERAL SAFETY INSTRUCTIONS

- **Provide good illumination in the workplace!**
  Well lit construction sites reduce the risk of injury and allow you to better evaluate the quality of your work.

- **Keep your work area clean!**
  Untidy work area create a risk of accidents.

- **Use the proper machines!**
  Do not use low-performance machines or additional devices for heavy jobs. Do not use the machine for purposes and work that it is not intended for.

- **Do not overload the machine!**
  It works better and more safely in the power range noted.

- **Do not bend too far over the machine!**
  Avoid unnatural postures. Make sure that you stay in a stable position and keep your balance at all times.

- **Be attentive!**
  Pay attention to your work. Work carefully and do not use the machine if you are not concentrating.

- **Maintain your machines with care!**
  Keep your machines clean so that you can work better and more safely. Follow the maintenance guidelines and the instructions for replacing tools. Regularly inspect the cable and have it replaced by a qualified electrician if it is damaged. Inspect the extension cable regularly and replace it if it is damaged. Keep the handles dry and free of oil and grease.

- **Check your machines for damage!**
  Before using the machines, you must inspect the safety devices or damaged parts carefully to ensure that they are working perfectly and as intended. Check whether the moving parts are working properly, that they are not sticking, that no parts are broken, whether all parts are in perfect condition and installed properly and whether all other conditions which could influence the operation of the machine are in order.
  Damaged safety devices and parts must be properly repaired or replaced by an authorized service shop insofar as nothing to the contrary is indicated in the operating instructions. Damaged switches must be replaced by a qualified electrician. Do not use the machine if it cannot be started or switched off by using its switch.

- **Store your machines safely!**
  Store your unused machines in a dry, closed location out of the reach of children!

Technical data

NOTE on noise emission:

The values indicated are emission values and must not represent safe workplace values as well.
Although a correlation exists between emission levels and immission levels, it is not always possible to determine whether additional precautionary measures are required. Factors that can have an effect on the immission level existing at the workplace include the duration of the effects, the characteristics of the work area and other sources of noise, e.g. the number of machines and processing operations in the vicinity. The permissible workplace values may also vary from country to country.
This information, however, is intended to enable the user to better estimate the dangers and risks.

NOTE:

The motor data indicated here refers to machines used in the Federal Republic of Germany. Exported machines may have other data that can be seen on the motor type plate.

Manufacturer ..... Eugen Lägler GmbH
Machine type ..... edge-sanding machine
Serial number ..... see type plate
Year of manufacture ..... see type plate
Motor type ..... universal motor
Voltage ..... 230 V
Frequency ..... 50/60 Hz (CPS)
Output ..... 1.35 kW
Fuse protection ..... 10 A
Insulation class ..... F
Protection class ..... IP 22
Protection system 2
Safety devices ..... no-voltage release, thermal overload protection
Sanding disc diameter ..... 150 mm (~ 5.9")
Sanding disc diameter, corner attachment ..... 61 mm (~ 2.4")
Sanding disc speed under load ..... approx. 3100 1/min (rpm)
Sanding disc speed under load, corner attachment ..... approx. 7750 1/min (rpm)
Attachment height without wall-protecting roller ..... 44 mm (~ 1.7")
Attachment height with wall-protecting roller ..... 58 mm (~ 2.3")
Corner attachment height ..... 51.5 mm (~ 2")
Attachment length, short version ..... 155 mm (~ 6.1")
Attachment length, long version ..... 315 mm (~ 12.4")
Corner attachment length ..... 225 mm (~ 8.9")
Overall height without dust bag ..... 460 mm (~ 18.1")
Overall length without dust bag
- with short attachment ..... 460 mm (~ 18.1")
- with long attachment ..... 620 mm (~ 24.4")
- with corner attachment ..... 530 mm (~ 20.9")

Overall width ..... 260 mm (~ 10.2")
Total weight ..... 9.8 kg (21.6 lbs)
Dust emissions at workplace ..... < 0.2 mg/m³ (0.0024 gr./cu.yd.)
(measured as per the testing requirements GS-HO-15 of German lumber industry professional association)
Workplace-related noise emission values ..... 86 dB (A)
Measurement uncertainty constant of the noise emission values ..... 4 dB (A)
Vibration total value a_{hv} ..... < 2.5 m/s²
(measured at the handle)

Application purposes
Dry edge-sanding, corner-sanding and stair-sanding of wood and cork floors.

Basic equipment
Machine ready for use, dust bag, extension cable 3 x 1.5 mm² (length: 10 m), universal spanner, respiratory protective mask (P3), emptying fixture, waste bag, cable tie and operating instructions.

Special accessories
Long attachment, corner attachment, foldable earmuff

Wearing parts
Please check the condition of the wearing parts mentioned below at regular intervals in order to be able to work safely and optimally at all times.

Replace the following in case of wear and/or damage:
- Extension cable
- Motor cable
- Rocker switch
- Velcro coating on the sanding plate
- V-belt
- Motor pulley
- Sanding plate, complete
- Dust bag
- Guide roller
- Paper tensioning disc
- Screw for paper tension
- Carbon brushes

WARNING!

RISK OF DEATH from electrical shock:

The machine may never be used for wet processing operations of any kind!

NOTE:

You will find the corresponding part number for the special accessories and wearing parts in *Section 11, Spare parts*.

Commissioning

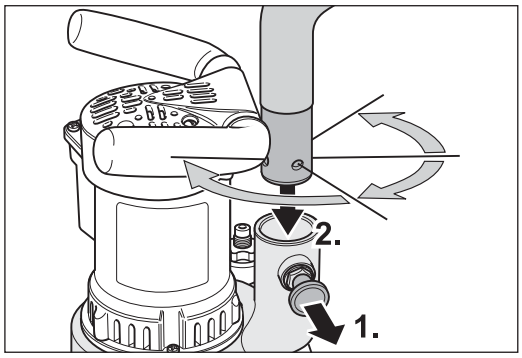


Fig. 2 Pull the stop bolt (1.) and insert the pipe socket into the fan housing (2.).

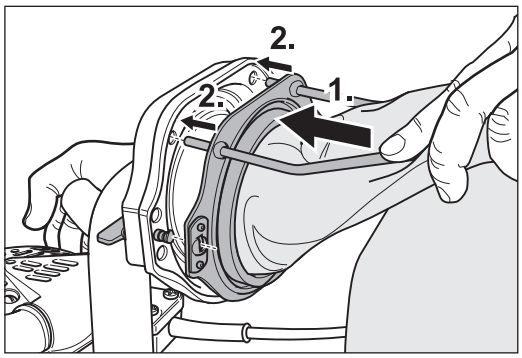


Fig. 3 Push the dust bag over the locating flange (1.) and fix it in place with the two metal studs (2.).

The section describes how to start using the FLIP® on-site. In order to prevent damage and malfunctions, you must proceed in the order of steps indicated below.

4.1 PREPARING THE MACHINE

ATTENTION!

Please note that the packaging serves as a transport container for the machine, accessories and the sanding medium. Furthermore, the machine can be sent back safely in the original packaging without risk should there be any problems.

1 Unpack the machine carefully. Dispose of the packing materials according to the environmental regulations.

2 Pull out the stop bolt on the suction socket of the fan housing (Fig. 2, 1.) and at the same time insert the pipe socket into the fan housing (Fig. 2, 2.).

3 Turn the pipe socket so that the opening of the elbow piece is facing the back and the stop bolt can snap into place when it is let go.

4 The pipe socket can be turned 360°. Four fixed positions exist where the stop bolt can snap into place in the pipe socket.

CAUTION!

RISK OF INJURY and RISK OF PROPERTY DAMAGE:

The stop bolt must always snap into place in the pipe socket!

5 Push the dust bag opening over the locating flange to the end of the elbow piece (Fig. 3, 1.). Fix the dust bag into place using the two metal studs (Fig. 3, 2.).

6 Attach the dust bag to the locating flange using the two quick-release fasteners (Fig. 4).

4.2 CONNECTING THE POWER CABLE

1 Insert the plug of the motor cable in the coupler of the extension cable (Fig. 5).

2 Attach the extension cable coupler to the dust bag using the Velcro loop (Fig. 6).

3 Insert the extension cable into a sufficiently protected power socket.

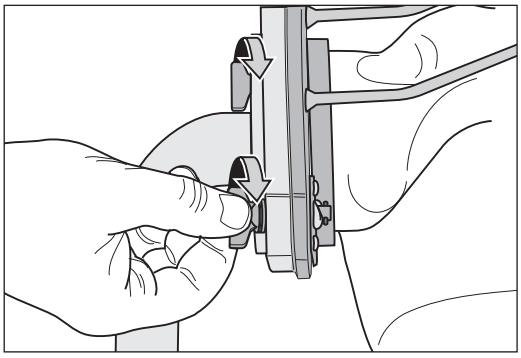


Fig. 4 Secure the dust bag using the quick-release fasteners.

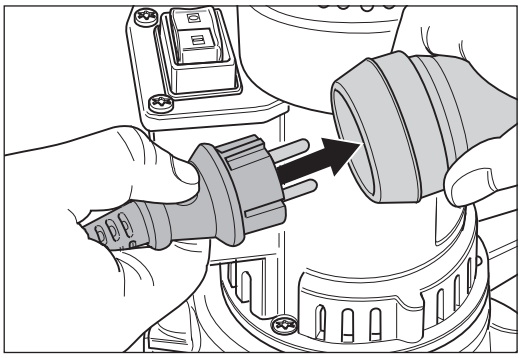


Fig. 5 Connect the motor cable to the extension cable.

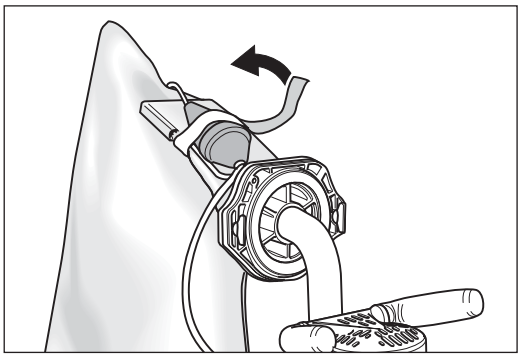


Fig. 6 Attach the extension cable coupler to the dust bag.

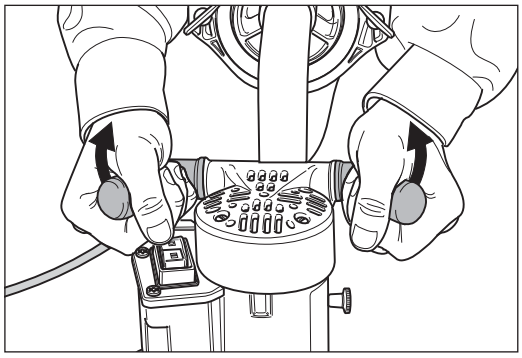


Fig. 7 Tilt the machine backwards slightly before starting and switching off the machine.

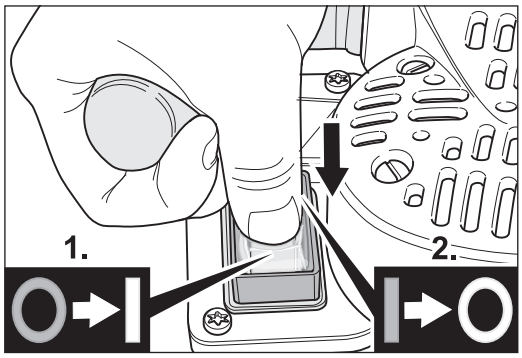


Fig. 8 Start (1.) and switch off (2.) the machine using the rocker switch.

4.3 STARTING THE MACHINE

CAUTION!

RISK OF INJURY and RISK OF PROPERTY DAMAGE from rotating parts of the machine:

- **Always tip the machine backwards slightly (Fig. 7) before starting the machine so that the sanding disc is raised off the floor!**
- **Never allow the machine to run unattended!**

1 Tip the machine backwards slightly (Fig. 7).

2 Flip the rocker switch to "I" (Fig. 8, 1.). The switch button will snap into the place and the motor will be started.

3 Tip the machine forward and begin sanding.

CAUTION!

RISK OF PROPERTY DAMAGE:

If the switch button does not snap into switch position "I", do not continue sanding! Otherwise the motor can be permanently damaged!

Remedy the following causes for the malfunction:

- **The electrical network has undervoltage! Use a transformer if necessary.**
- **The extension cable is too long (longer than 20 m or the cable cross-sections of the extension cable are smaller than 1.5 mm²!**
- **The carbon brushes of the motor have reached their wear limit and must be replaced (➡ *Section 7.6, Replacing the carbon brushes*).**
- **The switch is defective! It must be replaced by a qualified electrician (circuit diagram ➡ *Section 10*)!**

4.4 SWITCHING OFF THE MACHINE

CAUTION!

RISK OF INJURY and RISK OF PROPERTY DAMAGE from rotating parts of the machine:

Always tip the machine backwards slightly (Fig. 7) before switching off the machine so that the sanding disc is raised off the floor!

1 Tip the machine backwards slightly (Fig. 7).

2 Flip the rocker switch to “0” (Fig. 8, 2.). The switch button will snap into the place and the motor will be switched off.

3 **Wait until the sanding plate comes to a complete stop before stand the machine back on the sanding plate!**

CAUTION!

RISK OF INJURY and RISK OF PROPERTY DAMAGE:

Always remove the power plug from the socket after you have switched off the machine!

ATTENTION!

Do not store the unused machine with sanding media on the sanding plate! The sanding media can cause scratches on the ground!

Working with the FLIP®

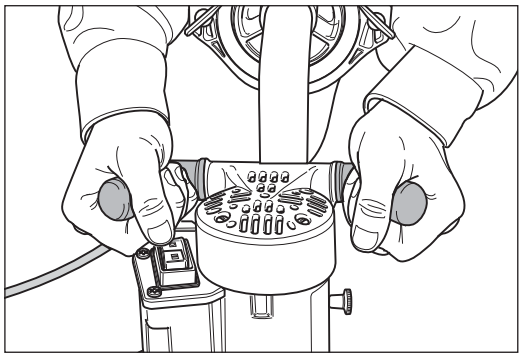


Fig. 9 Guide the FLIP® with both hands.

NOTE:

For more information free of charge, please contact: within Germany
- Telephone: 0800 / 52 34 537
- Fax: 0800 / 48 66 353

within the USA
- Telephone: 800-848-6635

or
- Telephone: 0049 - 7135 - 98 90 - 0
- Fax: 0049 - 7135 - 98 90 - 98
- e-mail: info@laegler.com
- Internet: http://www.laegler.com

You will also find important and interesting application tips in the LÄGLER® application technique guidelines "Sanding Wooden Floors" (http://www.laegler.com)!

5.1 GENERAL APPLICATION TIPS

WARNING!

RISK OF DEATH from electrical shock:

The machine may never be used for wet processing operations of any kind!

ATTENTION!

- **Bear in mind that the FLIP® operates at very high cutting speeds! For this reason, there is a risk of burn marks for finer grit grades!**
- **Do not apply excessive pressure to the attachment while sanding! This will significantly worsen the sanding finish by causing deep scratches or burn marks and could cause the motor to switch off from overheating!**

The FLIP® is a very versatile machine. The attachment can be changed in a matter of seconds. The FLIP® is used for the sanding of transitions, borders, edges, corners and stairs.

- Deep sanding marks due to the selection of a too coarse grit grade can be prevented by starting the first sanding operation with the finest grit grade possible.
- Prevent sanding marks made by previously used grit grade by adhering to the order of the sandpaper grit grade and never skip more than one grit grade.
- After replacing the sanding disc, start working in poorly lit areas of the room in order to remove the initial aggressiveness of the sanding medium.
- Always vacuum the floor or stairs thoroughly before the first sanding operation and after each additional one.
- Clean the wheels of the machine regularly.

5.2 REPLACING THE SANDING MEDIUM

ATTENTION!

- **Only use sanding discs with paper as the base! Do not use any sanding discs with thick bases such as fibre discs, cutting discs or similar materials! Otherwise the sanding plate will be damaged!**
- **Do not use any double sanding discs (with sanding grit on both sides)! Otherwise the Velcro coating on the sanding plate will be damaged!**
- **Always use only one sanding disc! Otherwise the sanding results will not be satisfactory and the dust suction system will not be fully operational!**
- **You will receive the best sanding finish and price/performance ratio with the Velcro sanding discs from LÄGLER®!**

Depending on the material being sanded, you will use various sandpaper grit grades. Proceed as follows to change the sanding medium:

5.2.1 VELCRO SANDING DISCS

1 Switch off the machine.

2 **Pull the power plug out of the socket!**

3 Lay the machine on its side, avoiding damage to the floor and the machine!

4 Pull the worn-out Velcro sanding disc off of the sanding plate (Fig. 10).

5 Place a new Velcro sanding disc on the sanding plate. The Velcro sanding disc must be positioned in the centre of the sanding plate. The hole in the centre of the sanding disc and the universal spanner make this step easier (Fig. 11).

6 Press the Velcro sanding disc onto the sanding plate.

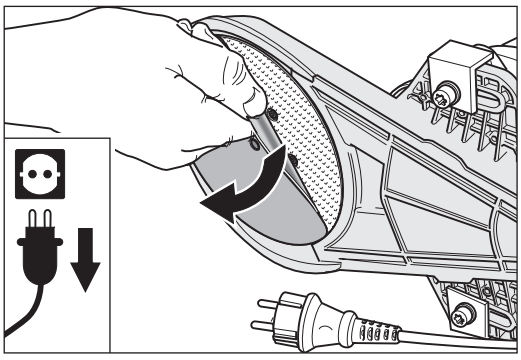


Fig. 10 Remove the Velcro sanding disc from the sanding plate.

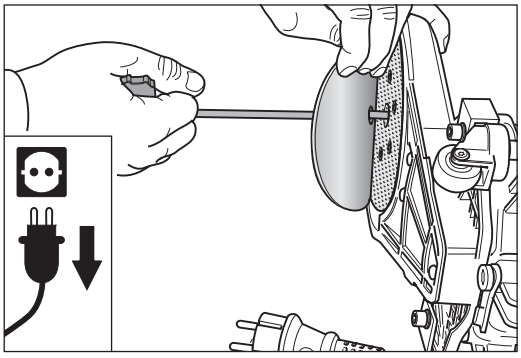


Fig. 11 Mount the new Velcro sanding disc in a centred position and press down.

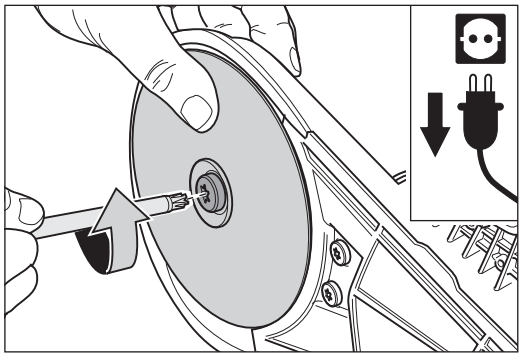


Fig. 12 Remove the screw with the universal spanner.

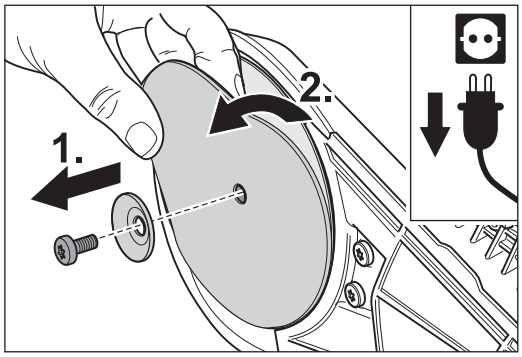


Fig. 13 Remove the screw and the paper tensioning disc (1.) and remove the sanding disc (2.).

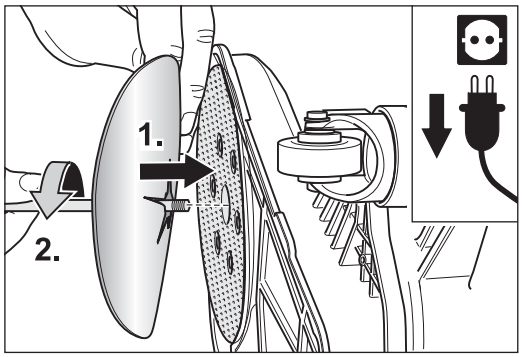


Fig. 14 Mount the new sanding disc (1.) and tighten the screw (2.).

5.2.2 CONVENTIONAL SANDING DISCS

1 Switch off the machine.

2 **Pull the power plug out of the socket!**

3 Lay the machine on its side, avoiding damage to the floor and the machine!

4 Use the universal spanner to remove the screw from the sanding plate (Fig. 12).

5 Remove the screw and paper tensioning disc (Fig. 13, 1.). Remove the sanding disc from the sanding plate (Fig. 13, 2.) and put all three parts aside.

6 Put on a new sanding disc and insert the screw with the paper tensioning disc into the hole of the sanding plate (Fig. 14, 1.).

7 Turn the screw in the sanding plate with the universal spanner (Fig. 14, 2.). Make sure that the sanding disc is as centred as possible on the sanding plate.

8 Tighten the screw with the universal spanner until it is hand-tight.

ATTENTION!

Do not tighten the screw for attaching the sanding disc too tightly! The thread of the sanding plate could otherwise be damaged!

5.3 EMPTYING THE DUST BAG

WARNING!

RISK OF FIRE from the formation of sparks while sanding:

- **The dust bag must always be removed from the machine after sanding and emptied into a waste bag with the emptying fixture! Dispose of these waste bags in a non-combustible container!**
  Cover this container with a non-combustible cover and be certain to store it and the dust bag outdoors (Fig. 27)!
- **Note the warning on the motor housing (Fig. 15)!**

HEALTH RISK caused by dust:

In order to ensure that the dust values in the air do not exceed the prescribed threshold levels, please note:

- **The dust must be emptied when it is one-third full at the very latest in order to prevent a deterioration of the suction performance due to the lack of filtering surface area! The horizontal line on the outside of the dust bag marks the maximum fill level!**
- **Do not work with an overfilled dust bag!**
- **Do not wash, patch or repair the dust bag in any other manner!**
- **Damaged dust bags must be replaced with new ones!**
- **When emptying the dust bag, wearing a respiratory protective mask (at least filter class P2) is recommended!**

In order to empty the dust bag in a manner as free from dust as possible, an emptying fixture, a waste bag and cable tie are included with the FLIP®.

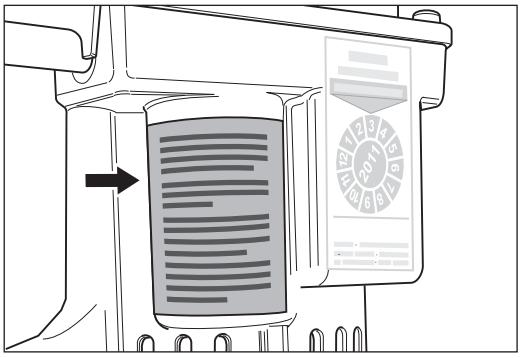


Fig. 15 Note the warning on the motor housing!

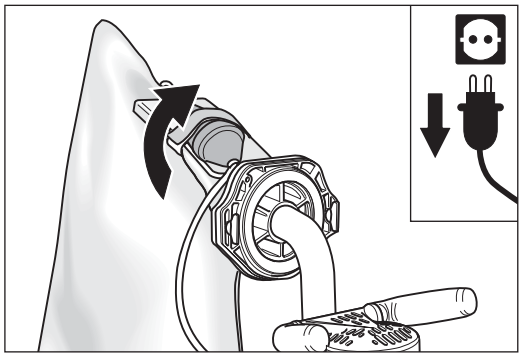


Fig. 16 Remove the coupler from the Velcro loop on the dust bag.

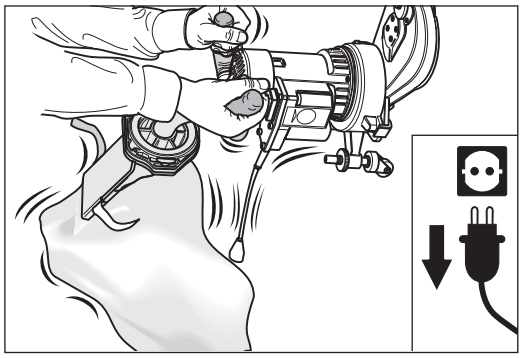


Fig. 17 Shake the dust residue from the machine into the dust bag.

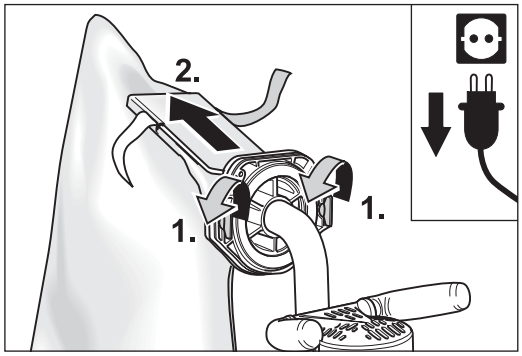


Fig. 18 Open both quick-release fasteners (1.) and remove the dust bag (2.).

Proceed as follows to empty the dust bag:

1 Switch off the machine.

2 **Pull the power plug out of the socket!**

3 Remove the extension cable coupler from the Velcro loop on the dust bag (Fig. 16).

4 Remove the plug of the motor cable from the extension cable coupler.

5 Shake the dust residue from the machine into the dust bag (Fig. 17).

6 Open the quick-release fasteners on the locating flange (Fig. 18, 1.).

7 Slowly pull the dust bag off of the locating flange (Fig. 18, 2.).

8 Hold the handle of the emptying fixture and insert a waste bag from the ribbed side through the opening in the centre of the fixture (Fig. 19).

9 Pull the waste bag over the emptying fixture from behind (Fig. 20).

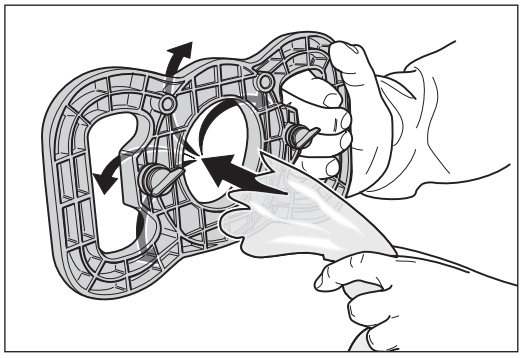


Fig. 19 Insert the waste bag into the emptying fixture.

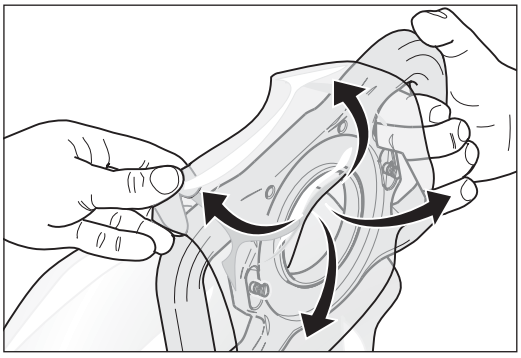


Fig. 20 Pull the waste bag over the fixture.

10 Take hold of the emptying fixture with the waste bag in one hand and take hold of the dust bag in the other. Hold the dust bag at a slight angle to prevent dust from escaping.

11 Insert the dust bag with fixing plate into the emptying fixture. Make sure that the dust bag rods are in the correct position: The pins must fit into the openings provided (Fig. 21).

12 Apply light pressure to insert the fixing plate of the dust sack completely into the emptying fixture. The pins on the dust bag rods will pierce the waste bag and prevent it from slipping (Fig. 21).

13 Attach the emptying fixture to the dust bag by turning the two quick-release fasteners 90° clockwise (Fig. 22).

14 Emptying the dust bag into the waste bag by shaking it vigorously (Fig. 23).

15 Seal the filled waste bag with a cable tie (Fig. 24).

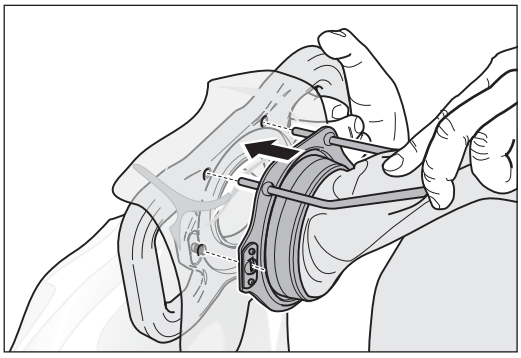


Fig. 21 Insert the dust bag with fixing plate into the emptying fixture.

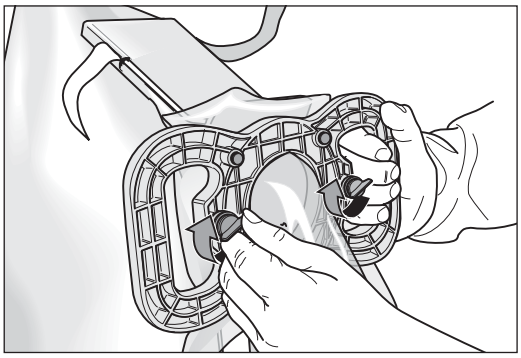


Fig. 22 Attach the emptying fixture to the dust bag.

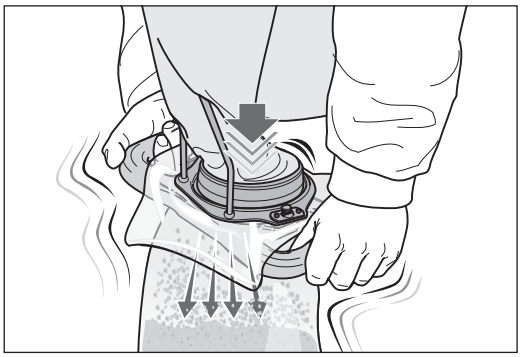


Fig. 23 Empty the dust bag by shaking it vigorously.

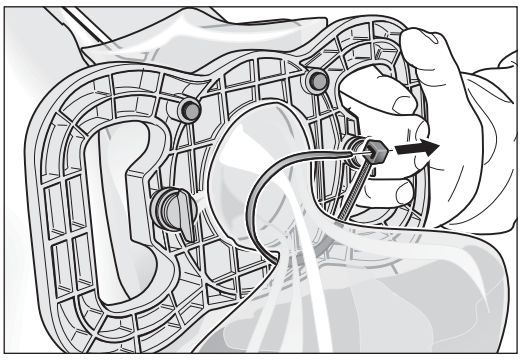


Fig. 24 Seal the waste bag with a cable tie.

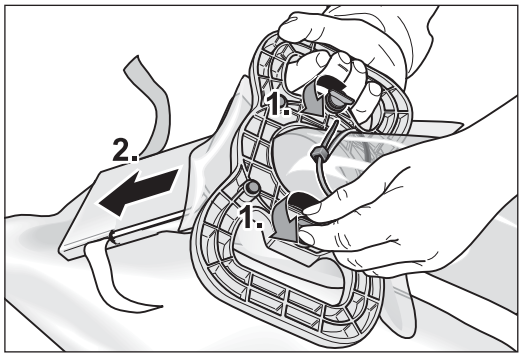


Fig. 25 Open the quick-release fasteners (1.) and remove the dust bag (2.).

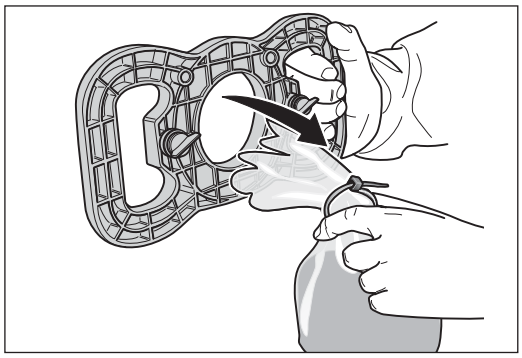


Fig. 26 Remove the waste bag from the emptying fixture.

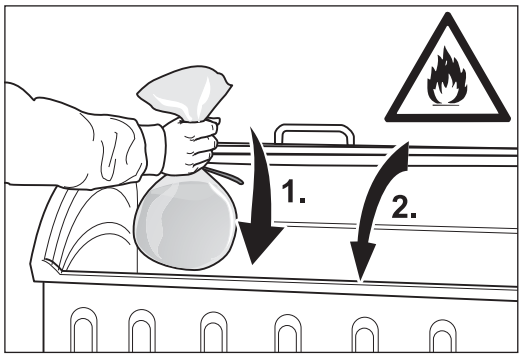


Fig. 27 Throw the filled waste bag into a non-combustible container (1.) and keep this closed (2.) ➡ **risk of fire!**

16 Open the two quick-release fasteners on the emptying fixture (Fig. 25, 1.).

17 Keep the dust bag tilted at a slight angle for the residual dust to fall back into the dust bag and remove the emptying fixture from the dust bag (Fig. 25, 2.).

18 Reattach the dust bag to the machine in the reverse order (➡ *Section 4.1, Preparing the machine*).

19 Remove the filled waste bag from the emptying fixture (Fig. 26) and place it in a non-combustible container (Fig. 27). Due to the risk of fire, seal the container with a non-combustible cover!

Transport and storage

WARNING!

RISK OF INJURY and RISK OF PROPERTY DAMAGE:

In the event of transport in an automobile or similar machine, all parts must be secured against sliding!

RISK OF FIRE from the formation of sparks while sanding:

Always transport and store the machine without the dust bag! Store the used dust bag in a non-combustible container!

NOTE!

You can use parts of the transport packing to transport or store the machine!

If the machine must be stored for a longer period of time, take the measures necessary to ensure dry and frost-free storage with minimum temperature fluctuations.

In order for the FLIP® to need less space for transport or storage, proceed as follows:

1 Pull out the stop bolt in the fan house (Fig. 28, 1.).

2 At the same time, turn the pipe socket until the dust bag is positioned over the attachment (Fig. 28, 2.) and the stop bolt noticeably snaps into place in the pipe socket when released (Fig. 28, 3.).

CAUTION!

RISK OF INJURY and RISK OF PROPERTY DAMAGE:

The stop bolt must always snap into place in the pipe socket!

You can easily carry the machine using the pipe socket (Fig. 29).

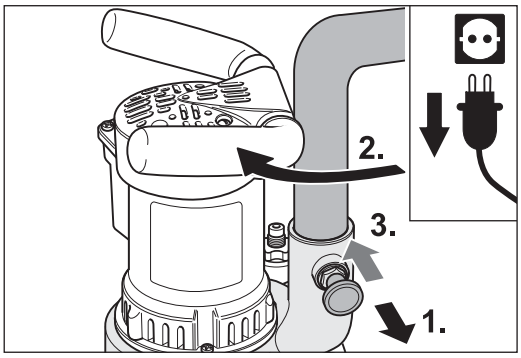


Fig. 28 Pull out the stop bolt (1.) and simultaneously turn the pipe socket (2.). Then release the stop bolt (3.). It must snap into place in the pipe socket!

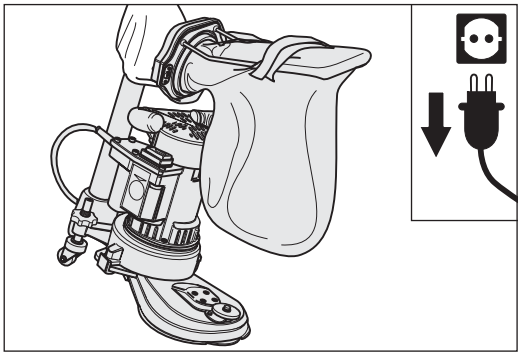


Fig. 29 Carry the FLIP® by the pipe socket.

Maintenance work and replacement of wearing parts

WARNING!

RISK OF DEATH from electrical shock and RISK OF INJURY from rotating machine parts:

- **All maintenance work, especially on the electrical equipment, must be conducted by a qualified expert for safety reasons!**
- **All maintenance work must be conducted with the machine switched off and with the power plug removed from the socket!**

ATTENTION!

- **Only use original spare parts from LÄGLER®! This is the only way to ensure that your machine continues to perform! Warranty claims for third-party parts will not be honoured!**
- **Never conduct the maintenance work and replacement of wearing parts on the newly sanded wooden floor! You could cause scratches or other damage to the floor!**
- **Do not use any cleaning products which contain solvents!**

From time to time, at the latest when damages are discovered, you must conduct various maintenance tasks and replace wearing parts. Work in a clean, well lit location and work according to these operating instructions. You will find the tool needed to be able to conduct the following work in the tool bag.

An inspection of the machine can be conducted quickly and prevents the necessity of later complaints which can be caused by small damages to the machine or by worn-out parts. These measures contribute significantly to the preservation of the value of the machine and, ultimately, to your own safety.

7.1 CLEANING AND CARE

WARNING!

RISK OF FIRE from spontaneous combustion and the formation of sparks while sanding:

- **There is a high risk of fire when sanding woods with a large amount of resin, waxed floors or metal!**
- **Therefore, the machine must always be cleaned carefully directly after sanding!**
- **Be certain to note the warning notices of the paint, oil and wax manufacturers!**

The following maintenance measures should be conducted before beginning work to ensure the proper functionality of the machine and the usual first-class sanding results.

- Clean the wheels of the machine.
- Check the tension of the V-belt and/or correct this (➡ *Section 7.2, Tightening the V-belt*).
- Clean the paper tensioning screw and the thread of the sanding plate regularly. Otherwise the thread will be damaged.
- Check the dust suction system and the dust bag for leaks and damages.
- Conduct a visual inspection of the electrical equipment (rocker switch, extension cable, plug, couplers).

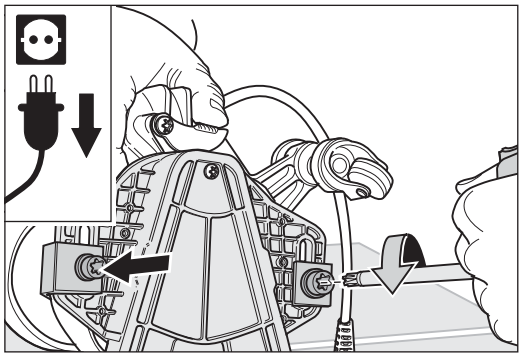


Fig. 30 Undo the two screws that connect the attachment.

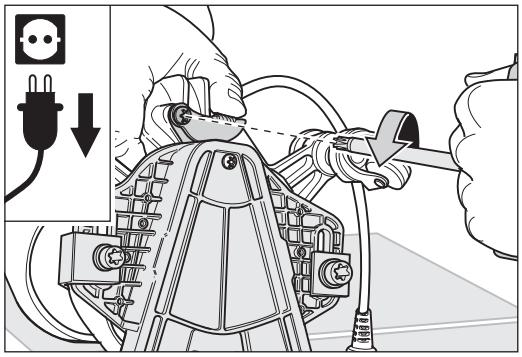


Fig. 31 Undo the screw which attaches the belt tightening plate.

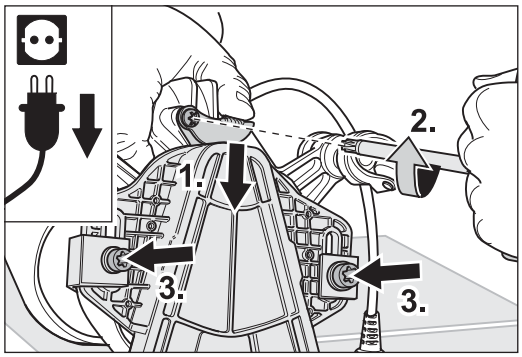


Fig. 32 Hold the FLIP® by the fan housing, press on the belt tightening plate (1.) and retighten the three screws (2. and 3.).

Following restoration tasks, residual material consisting of adhesive, wax or sealing lacquer may have accumulated in the pulleys or in the attachment.
This can impair the running characteristics of the machine and reduce the suction performance. This kind of soiling is indicated in most cases by unsteady running, difficult starting, reduced working speed and increased development of noise. The suction performance also decreases. In this case, the V-belt must be removed (➞ *Section 7.3.1, Removing the V-belt*) and the attachment and flanks of the pulley must be cleaned. Check whether there are any deposits in the fan housing or on the fan blades and remove these if necessary. Wear a respiratory protective mask.

7.2 TIGHTENING THE V-BELT

ATTENTION!

Do not overtighten the V-belt! This will allow you to avoid excessive wearing of the V-belt and pulleys!

The V-belt must be retightened from time to time. To do so, proceed as follows:

1 Switch off the machine.

2 **Pull the power plug out of the socket!**

3 Lay the machine on its side or with the motor housing on a table. Avoid damages to the floor and/or table and the machine.

4 Use the universal spanner to undo the two screws which connect the attachment to the fan housing (Fig. 30).

5 Use the universal spanner to undo the screw which attaches the belt tightening plate (Fig. 31).

6 Hold the FLIP® by the fan housing and press the belt tightening plate forward towards the attachment at the same time with your thumb (Fig. 32, 1.).
Use your other hand and the universal spanner to retighten the three screws (Fig. 32, 2. and 3.).

7.3 REPLACING THE V-BELT

Use only original LÄGLER® V-belts (part number in *Section 11, Spare parts*)!

The V-belt must be replaced, at the latest, when it cannot be retightened because the screws for connecting the attachment are at the end of the holes.

7.3.1 REMOVING THE V-BELT

1 Switch off the machine.

2 **Pull the power plug out of the socket!**

3 Lay the machine on its side or with the motor housing on a table. Avoid damages to the floor and/or table and the machine.

4 Undo the screw of the belt tightening plate with the universal spanner (Fig. 33, 1.).

5 Turn the belt tightening plate away from the attachment (Fig. 33, 2.). and retighten the screw of the belt tightening plate (Fig. 33, 3.).

6 Use the universal spanner to remove the two screws which connect the attachment, along with the washers and the guide angles (Fig. 34). Place these parts to the side.

7 Remove the attachment from the machine (Fig. 35) and put down the attachment with the sanding disc facing upward.

8 Use the universal spanner to undo the fixing screws of the attachment cover and remove this from the attachment (Fig. 36).

9 Turn the attachment over.

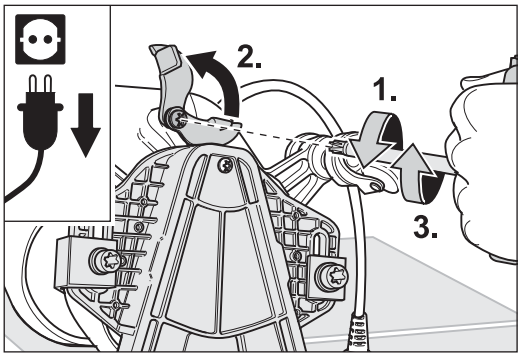


Fig. 33 Loosen the screw (1.), turn the belt tightening plate away from the attachment (2.) and retighten the screw (3.).

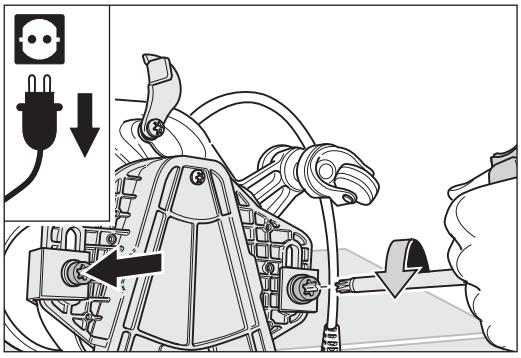


Fig. 34 Remove the two screws which connect the attachment, along with the washers and the guide angles.

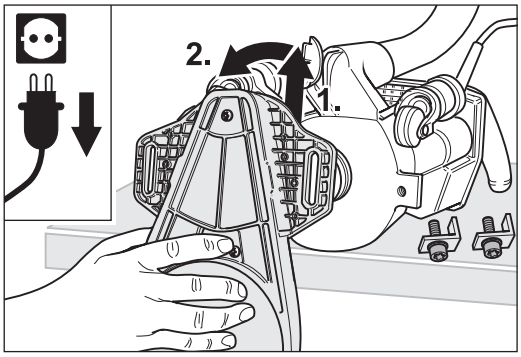


Fig. 35 Remove the attachment from the machine.

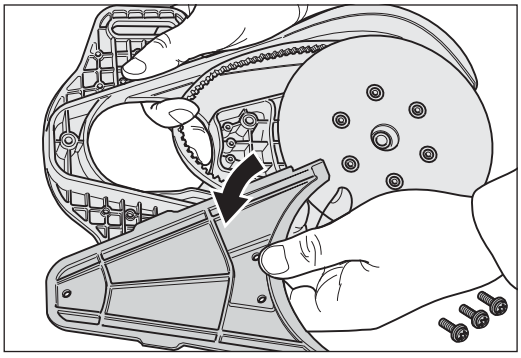


Fig. 36 Remove the attachment cover from the attachment.

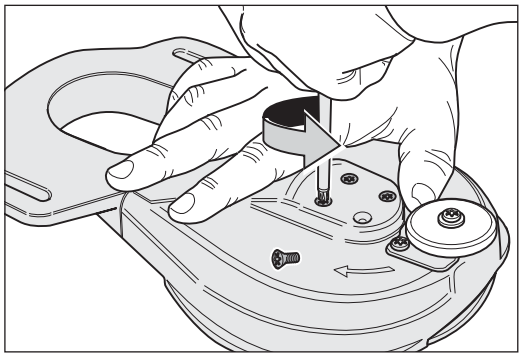


Fig. 37 Remove the four fixing screws of the complete sanding plate.

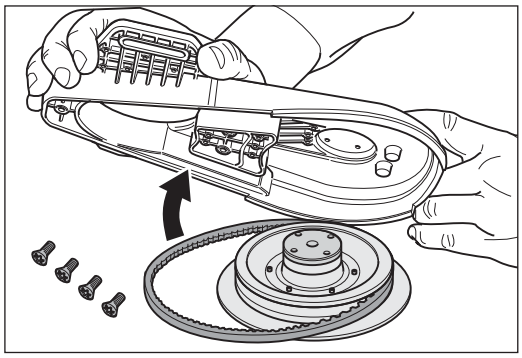


Fig. 38 Remove the attachment from the complete sanding plate.

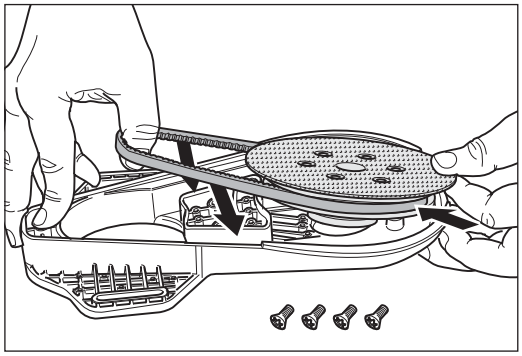


Fig. 39 Insert the complete sanding plate with the V-belt into the attachment. Make sure that holes of the complete sanding plate are aligned with the holes in the attachment!

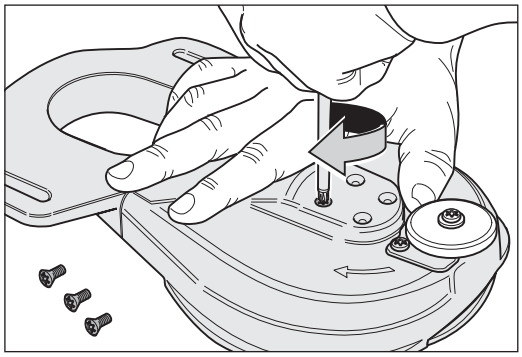


Fig. 40 Tighten the four screws for attaching the complete sanding plate.

10 Use the universal spanner to undo the four fixing screws of the complete sanding disc (Fig. 37).

11 Remove the attachment from the complete sanding disc (Fig. 38).

12 Dispose of the worn-out V-belt.

13 Check whether the sanding plate pulley or the motor pulley are worn-out. Replace these parts if necessary (➡ *Section 7.4, Replacing the complete sanding plate* and *Section 7.5, Replacing the motor pulley*).

14 Clean the two pulleys and the attachment. Wear a respiratory protective mask if necessary.

7.3.2 INSTALLING THE V-BELT

1 Place the new V-belt on the complete sanding plate pulley.

2 Insert the complete sanding plate with V-belt in the attachment. Ensure that the holes of the complete sanding plate are aligned with the holes in the attachment (Fig. 39)!

3 Make sure that the sanding plate can be turned by hand and that the V-belt is correctly placed in the attachment.

4 Turn the attachment over and tighten the four screws for attaching the complete sanding plate using the universal spanner (Fig. 40).

5 Push the attachment over the motor pulley and insert the V-belt into the motor pulley (Fig. 41).

6 Put on the attachment cover.

7 Tighten the two screws for connecting the attachment, placing a washer and guide angle in the respective threads of the fan housing (Fig. 42, 1.). Do not tighten the screws yet.

WARNING!

HEALTH RISK caused by dust:

Make sure that the belt tightening plate is not located between the attachment and the fan housing (Fig. 42, 2.)! Otherwise, a significant amount of dust will escape from this area during sanding!

8 Tighten the V-belt (➡ *Section 7.2, Tightening the V-belt*).

Checking the belt tension again after break-in time of a few days and tighten the V-belt again if necessary!

7.4 REPLACING THE COMPLETE SANDING PLATE

Use only original LÄGLER® sanding plates (part number in *Section 11, Spare parts*)!

If it is determined while replacing the V-belt that the sanding plate pulley is worn-out, the complete sanding plate must be replaced as follows:

1 Switch off the machine.

2 **Pull the power plug out of the socket!**

3 Remove the attachment from the machine and dismantle the complete sanding plate (➡ *Section 7.3.1, Removing the V-belt*).

4 Put the attachment with a new complete sanding plate back on the machine (➡ *Section 7.3.2, Installing the V-belt*).

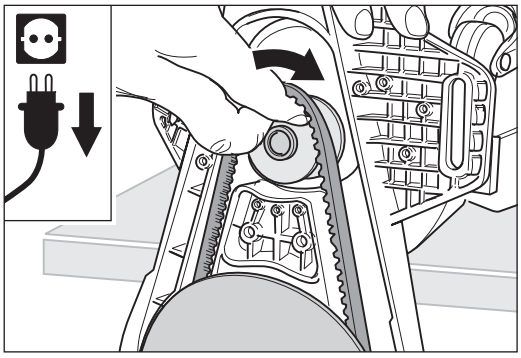


Fig. 41 Insert the V-belt into the motor pulley.

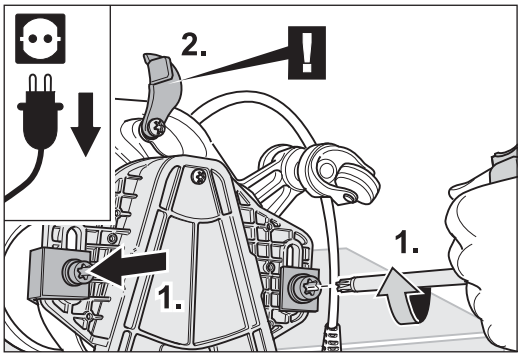


Fig. 42 Turn both screws for connecting the attachment and place a washer and a guide angle in the respective thread of the fan housing (1.). Make sure that the belt tightening plate is not located between the attachment and the fan housing (2.)!

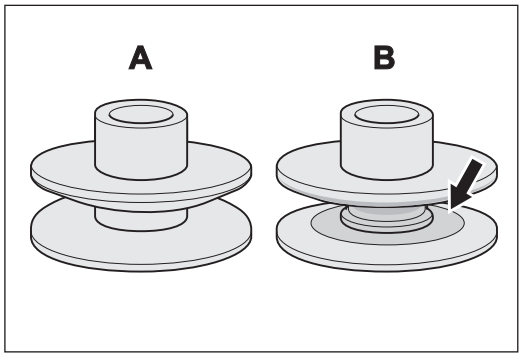


Fig. 43 A: New motor pulley,
B: worn-out motor pulley that must be replaced.

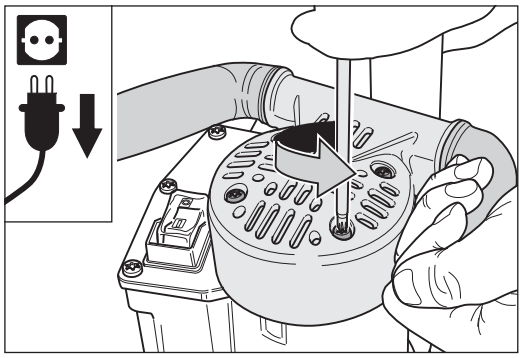


Fig. 44 Remove the four fixing screws of the handle.

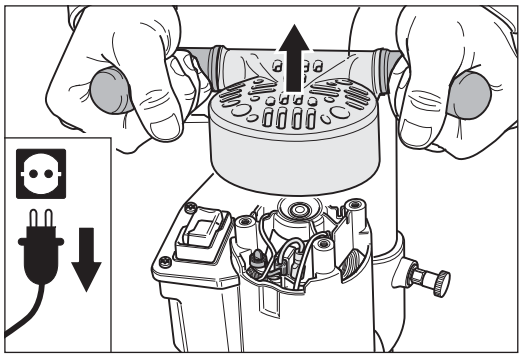


Fig. 45 Remove the handle. **Make sure that no parts fall into the motor!**

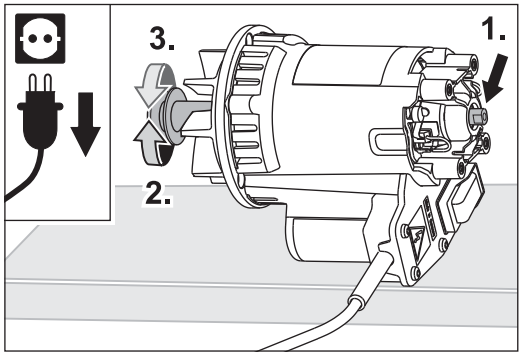


Fig. 46 Hold the end of the motor shaft with a spanner (1.) and unscrew the motor pulley from the shaft (2.). Screw on the new motor pulley (3.).

7.5 REPLACING THE MOTOR PULLEY

Use only original LÄGLER® motor pulleys (part number in *Section 11, Spare parts*)!

The motor pulley is subjected to increased wear due to the high motor speed of the FLIP®. In order to prevent excessive wearing of the V-belt, the pulley should be replaced in a timely fashion (Fig. 43).

1 Switch off the machine.

2 **Pull the power plug out of the socket!**

WARNING!

RISK OF DEATH from electrical shock:

When disassembling the motor, the power plug must always be removed from the socket!

3 Undo the four fixing screws of the handle (Fig. 44) and remove it from the motor housing (Fig. 45). **Make sure that no parts fall into the motor when doing so!**

4 Remove the attachment from the machine (➡ *Section 7.3.1, Removing the V-belt*).

5 Lay the motor on its side.

6 Hold one end of the motor shaft tightly with an SW 10 spanner (Fig 46, 1.) and use a pair of pliers to unscrew the motor pulley from the motor shaft (Fig 46, 2.).

7 Clean the threads of the motor shaft and the contact surface of the motor pulley carefully.

8 **IMPORTANT:**
Oil the inside of the motor pulley drill hole.

9 Turn the new motor pulley onto the motor shaft (Fig. 46, 3.).

10 Tighten the motor pulley using the spanner and pliers.

11 Install the handle on the motor housing.

CAUTION!

RISK OF ELECTRICAL DAMAGE:

Do not pinch any cables while installing the handle!

12 Install the attachment on the machine (➡ *Section 7.3.2, Installing the V-belt*) and tighten the V-belt (➡ *Section 7.2, Tightening the V-belt*).

7.6 REPLACING THE CARBON BRUSHES

Use only original LÄGLER® carbon brushes (part number in *Section 11, Spare parts*)!

In order to prevent damage to the collector from excessively worn-out carbon brushes, LÄGLER® carbon brushes with safety contacts are used. These safety contacts automatically switch off the motor when the wear limit is reached. The carbon brushes should, however, be replaced at least once per year to avoid damage to the motor!

ATTENTION!

- **The carbon brushes must be replaced at the latest upon the reaching of the wear limit and the automatic switching off of the motor! While the automatic switching off can be prevented by pressing and holding the switch, this will cause permanent damage to the switch and the collector! These parts will then have to be replaced!**
  There are no warranty claims for damages of this nature!
- **Use only original LÄGLER® carbon brushes with safety contacts (part number in *Section 11, Spare parts*)!**
- **In order to extend the service life of the motor, a qualified electrician should remove the carbon remnants on the collector every other time the carbon brushes are replaced!**

1 Switch off the machine.

2 **Pull the power plug out of the socket!**

WARNING!

RISK OF DEATH from electrical shock:

When disassembling the motor, the power plug must always be removed from the socket!

3 Undo the four fixing screws of the handle (Fig. 47) and remove it from the motor housing (Fig. 48). **Make sure that no parts fall into the motor when doing so!**

4 Pull off the connector of one of the carbon brushes from the carbon holder (Fig. 49, 1.).

5 Turn the brass pressure clamp of the carbon holder to the side using the universal spanner (Fig. 49, 2.) and remove the worn-out carbon brush (Fig. 49, 3.).

6 Insert the new carbon brush (Fig. 50, 1.) and turn back the brass pressure clamp of the carbon holder (Fig. 50, 2.).

7 Attach the carbon brush connector to the contact in the carbon holder provided (Fig. 50, 3.). Install the carbon brush cable like the other old carbon brushes that are still installed. This will prevent a later pinching of the cable.

8 Replace the second carbon brush in the same manner.

9 Install the handle on the motor housing.

CAUTION!

RISK OF ELECTRICAL DAMAGE:

Do not pinch any cables while installing the handle!

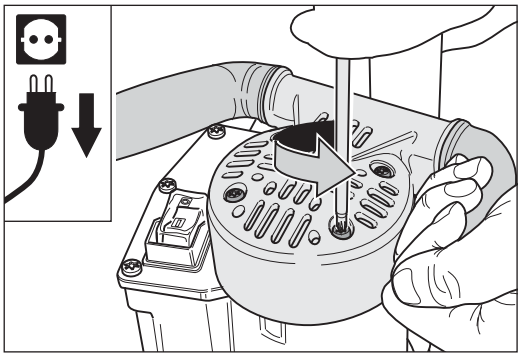


Fig. 47 Remove the four fixing screws of the handle.

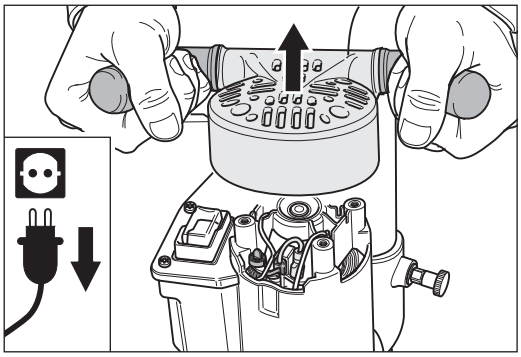


Fig. 48 Remove the handle. **Make sure that no parts fall into the motor!**

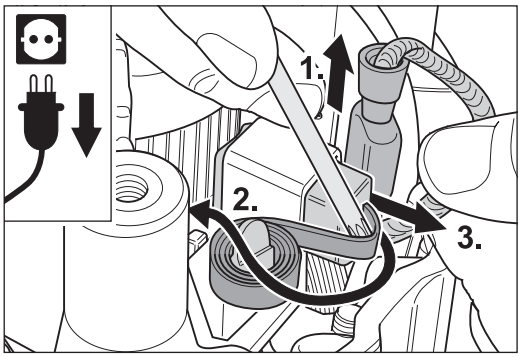


Fig. 49 Pull off the connector (1.), turn the brass pressure clamp to the side (2.) and remove the carbon brush (3.).

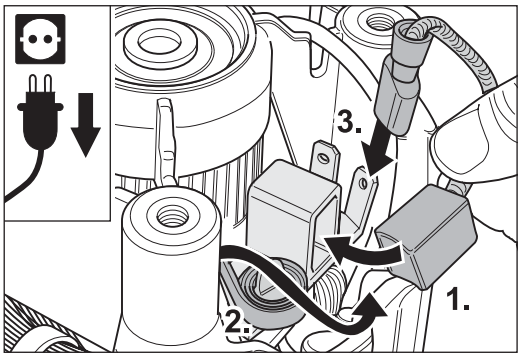


Fig. 50 Insert the new carbon brush (1.), turn the brass pressure clamp back (2.) and attach the connector (3.).

7.7 CHECKING THE DUST SUCTION SYSTEM

In order to ensure optimal dust suction for your own safety and the safety of others, the following points must be taken into consideration.

- Use only original LÄGLER® dust bags for the FLIP® (part number in *Section 11, Spare parts*)!
- Do not use any dust bags which have been damaged, washed, patched or repair in any other way!
- Ensure that the guide rollers are correctly positioned!
- Check the dust suction system for any clogged-up material or deposits!
- Make sure that the dust bag and locating flange are connected properly!

7.8 ADJUSTING THE GUIDE ROLLERS

The position of the guide rollers effects the sanding results and the aggressiveness of the machine.

7.8.1 STANDARD SETTING

The two alignment marks on the universal spanner can be used to set a position for the guide rollers, which is suitable for both rough and fine sanding work for the respective attachment.
This is achieved by holding the corresponding alignment mark of the universal spanner, depending on the attachment used, between the guide roller and the fan housing and this spacing is then set (see below for the procedure).

This setting allows a horizontal and even sanding which does not overload the machine and leads to an even and attractive sanded finish.

The standing setting of the guide rollers is conducted as follows:

1 Switch off the machine.

2 **Pull the power plug out of the socket!**

3 Loosen the locknut of the guide roller to be adjusted (Fig. 51, A).
If the locknut is screwed on too tightly, you can turn the guide roller counterclockwise with the universal spanner to loosen the locknut (Fig. 51, B).

4 Hold the appropriate universal spanner alignment mark for the attachment used between the guide roller and the fan housing. The lettering on the spanner must be legible from above (Fig. 52 and Fig. 53).

Alignment marks for the - short attachment: **short**
- long attachment: **long**
- Corner attachment: **short**

5 Now turn the guide roller in the direction required until the alignment mark on the fan housing and the guide roller match up (Fig. 52 and Fig. 53).

6 Retighten the locknut.

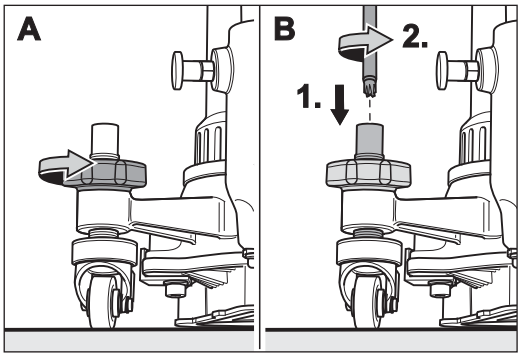


Fig. 51 Undo the locknut on the guide roller.

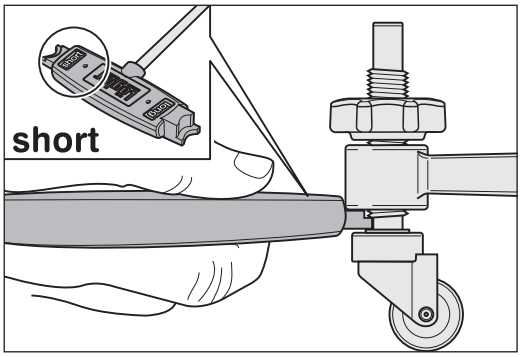


Fig. 52 Standard setting for the short attachment and the corner attachment.

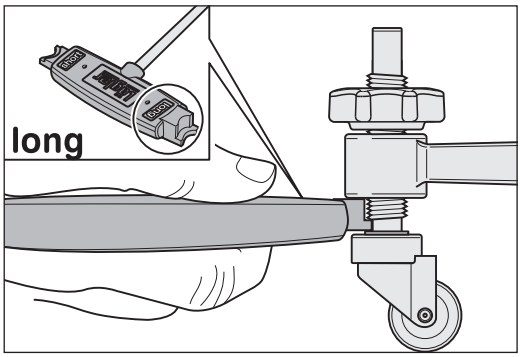


Fig. 53 Standard setting for the long attachment.

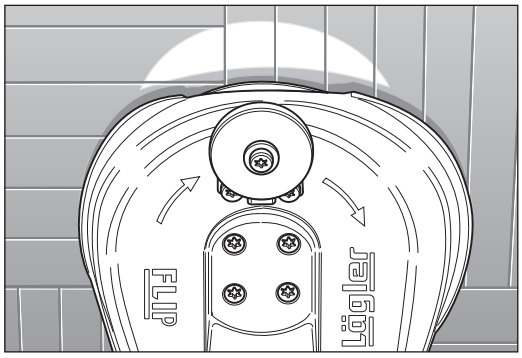


Fig. 54 Proper adjustment of the guide rollers:
The machine sands centrically.

7 Adjust the second guide roller.

8 Conduct a trial sanding operation and check the sanding results.

9 If the machine sands centrically (Fig. 54), the guide rollers are properly adjusted.

10 If the machine sands too much to the right (Fig. 55) or to the left (Fig. 57), the guide rollers are not adjusted to the same height (Fig. 56 and Fig. 58)!

11 Adjust both guide rollers to the same height (➡ *steps 1 through 7*) and repeat the trial sanding operation.

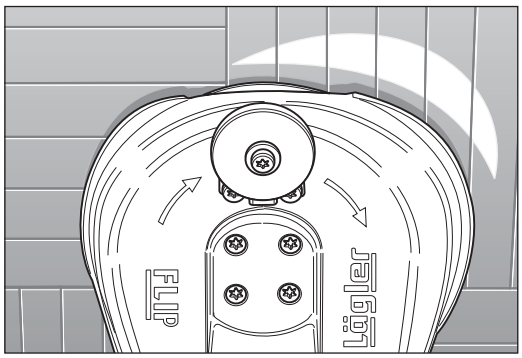


Fig. 55 Improper adjustment of the guide rollers:
The sanding zone of the machine is too much to the right.

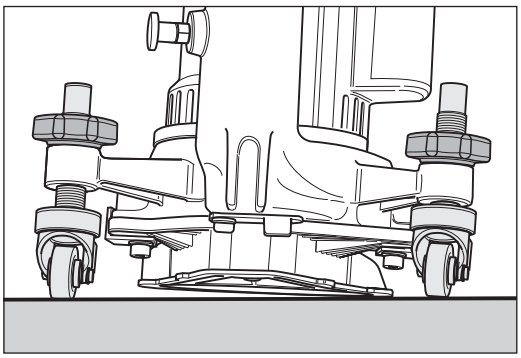


Fig. 56 The sanding zone of the machine is too much to the right:
The left guide roller is lifting the machine too much.

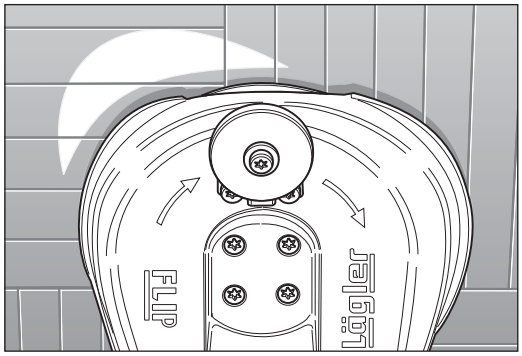


Fig. 57 Improper adjustment of the guide rollers:
The sanding zone of the machine is too much to the left.

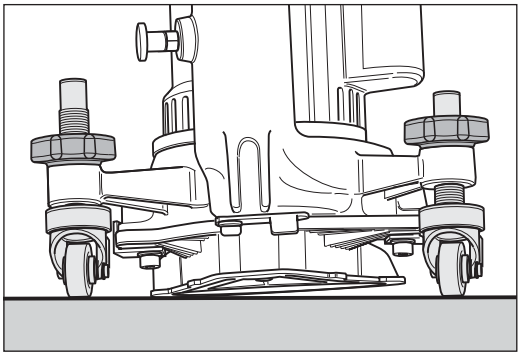


Fig. 58 The sanding zone of the machine is too much to the left:
The right guide roller is lifting the machine too much.

7.8.2 SETTING FOR SPECIAL CASES

To sand deeper for rougher sanding work, no additional pressure may placed on the attachment; instead the adjustment angle must be made steeper (Fig. 59)!
For finer sanding work, the adjustment angle can be made flatter (Fig. 60).
The standing setting can easily be restored using the universal spanner.

If you would like a steeper or flatter setting than the standard setting, proceed as follows:

1 Switch off the machine.

2 **Pull the power plug out of the socket!**

3 Loosen the locknut of the guide roller to be adjusted (Fig. 51, A).
If the locknut is screwed on too tightly, you can turn the guide roller counterclockwise with the universal spanner to loosen the locknut (Fig. 51, B).

4 Now turn the guide roller one or two rotations in the desired direction.

5 Retighten the locknut.

6 Adjust the second guide roller.

7 Conduct a trial sanding operation and check the sanding results (➡ *Section 7.8.1, Standing setting* steps 9 to 11).

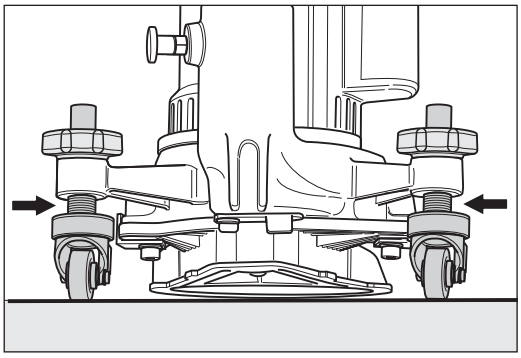


Fig. 59 Steeper adjustment angle for rough sanding work.

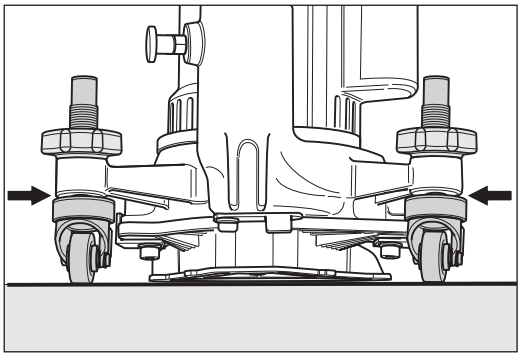


Fig. 60 Flat adjustment angle for fine sanding work.

7.9 REPLACING THE WHEELS AND THE GUIDE ROLLERS

ATTENTION!

- **Blocked wheels or guide rollers restrict the mobility of the machine and leave marks on the floor! These parts must be replaced!**
- **Always replace both wheels or guide rollers!**

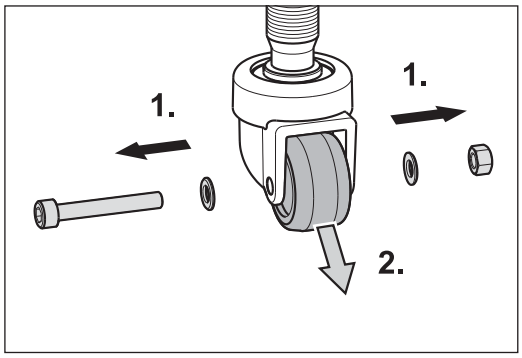


Fig. 61 Remove the screw, washer and nut (1.) and remove the wheel from the wheel fork (2.).

7.9.1 REPLACING THE WHEELS

Use only original LÄGLER® wheels (part number in *Section 11, Spare parts*)!

The wheels must be replaced when the contact surfaces are worn-out or damaged or the wheels can only be turned by applying additional force.

1 Switch off the machine.

2 **Pull the power plug out of the socket!**

3 Remove the screw with the washer and nut from the wheel fork (Fig. 61, 1.).

4 Remove the wheel from the wheel fork (Fig. 61, 2.).

5 Install the new wheel in the reverse order.

7.9.2 REPLACING THE GUIDE ROLLERS

Use only original LÄGLER® guide rollers (part number in *Section 11, Spare parts*)!

The guide rollers must be replaced when the wheel forks only rotate around the horizontal guide roller axes with increased force!

1 Switch off the machine.

2 **Pull the power plug out of the socket!**

3 Loosen the locknut of the guide roller to be adjusted (Fig. 51).

4 Rotate the guide roller completely out of the fan housing.

NOTE:

A light film of oil on the thread of the new guide roller makes the adjustment work easier.

5 Rotate the new guide roller into the fan housing.

6 Set the position of the guide roller using the universal spanner (➡ *Section 7.8, Adjusting the guide rollers*). Mount the locknut and tighten it.

7 Check the setting of the guide rollers (➡ *Section 7.8. Adjusting the guide rollers*).

7.10 ADJUSTING THE WALL-PROTECTING ROLLER

Adjusting the wall-protecting roller can avoid damaging or sanding various wall shapes or skirting boards.

1 Switch off the machine.

2 **Pull the power plug out of the socket!**

3 Use the universal spanner to undo the screw in the middle of the wall-protecting roller (Fig. 62).

4 Push the wall-protecting roller into the position you require (Fig. 63, 1.) and retighten the screw (Fig. 63, 2.).

5 Check the position by placing the switched off FLIP® against the wall so that the wall-protecting roller rests against the wall or skirting board.

6 The sanding plate must not be touching the wall. Otherwise, push the wall-protecting roller in the desired direction.

If you deliberately want to sand right up to the wall, you can push the wall-protecting roller completely out of the working area.

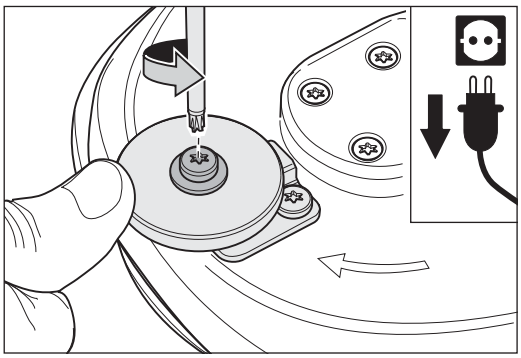


Fig. 62 Undo the screw in the middle of the wall-protecting roller.

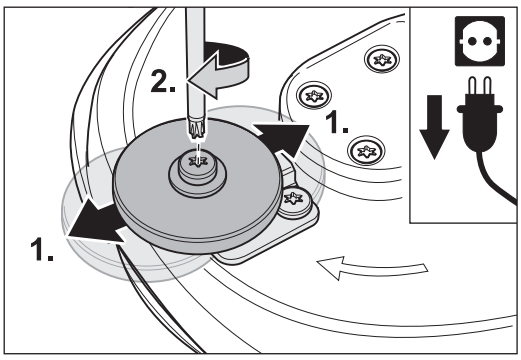


Fig. 63 Push the wall-protecting roller (1.) and tighten the screw (2.).

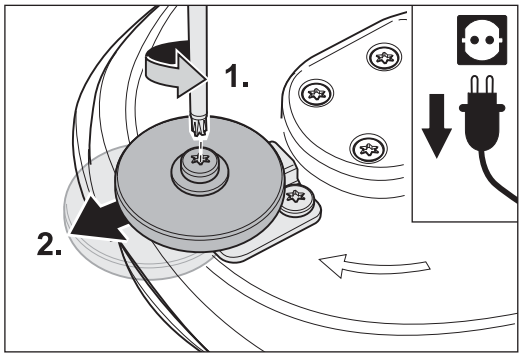


Fig. 64 Undo the screw (1.) and push the wall-protecting roller (2.).

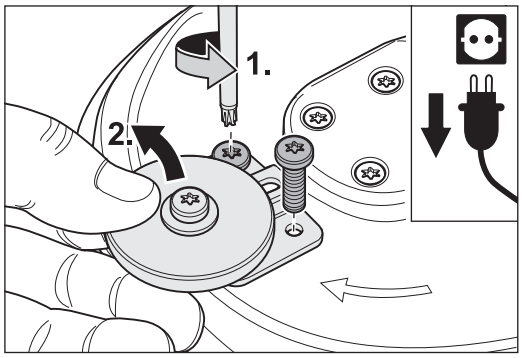


Fig. 65 Undo the fixing screws (1.) and remove the complete wall-protecting roller (2.).

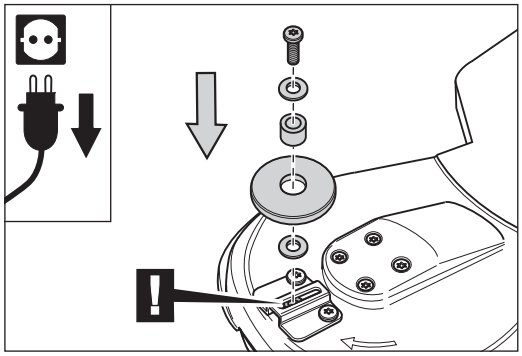


Fig. 66 Assembly of the wall-protecting roller. Pay attention to the nut in the holder!

If you want to sand under low radiators or cupboards, you can completely remove the wall-protecting roller:

1 Switch off the machine.

2 **Pull the power plug out of the socket!**

3 Undo the screw in the middle of the wall-protecting roller with the universal spanner (Fig. 64, 1.) and push the wall-protecting roller into the front position (Fig. 64, 2.).

4 Undo the two screws attaching the holder of the wall-protecting roller to the attachment (Fig. 65, 1.) and remove the complete wall-protecting roller (Fig. 65, 2.).

7.11 REPLACING THE WALL-PROTECTING ROLLER

Use only original LÄGLER® wall-protecting rollers (part number in *Section 11, Spare parts*)!

1 Switch off the machine.

2 **Pull the power plug out of the socket!**

3 Use the universal spanner to undo the screw in the middle of the wall-protecting roller (Fig. 64, 1.).

4 Remove the old wall-protecting roller.

5 Insert the bush in the new wall-protecting roller and place it on the holder of the wall-protecting roller with a washer on each side. Ensure that the middle of the roller is located over the nut in the holder (Fig. 66)!

6 Turn the screw through the drill holes in the washer and the bush into the nut.

7 Adjust the position of the wall-protecting roller according to your needs (➡ *Section 7.10, Adjusting the wall-protecting roller*).

Regular inspection and maintenance work in accordance with accident prevention regulations

The electrical operating equipment and machine parts must be inspected at least once a year by a qualified electrician with respect to electrical and mechanical safety, then be repaired as required. Afterwards, the operational safety must be confirmed by the attachment of an inspection label on the machine (Fig. 67).

The elements required for the dust suction system must be checked at least once per year by a qualified expert and repaired as required. The functional efficiency must also be confirmed.

Ensure that only original LÄGLER® spare parts are used for maintenance work! You should only allow the customer service work to be conducted by LÄGLER® or an authorized LÄGLER® service centre!

The service passport in these operating instructions (*Section 12*) documents when and where your machine was serviced.

Enter the serial number and the year of manufacture of your machine on the back cover of these operating instructions (please see the type plate)! If you do not do this, your service passport is invalid!

Make sure that the maintenance tasks in the service passport are confirmed by filling in a corresponding field with the date, stamp and signature.

WARNING!

Tests and testing intervals must comply with and be performed in accordance with the applicable regulations and legal requirements in your country!

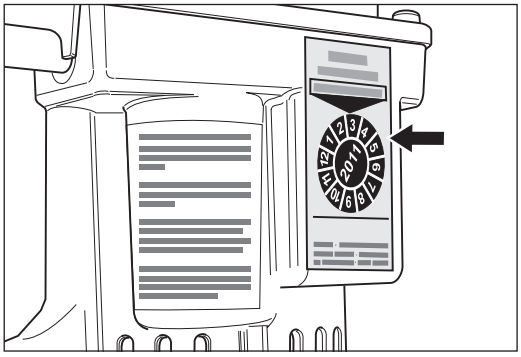


Fig. 67 The inspection label on the motor housing confirms the electrical and mechanical safety of the machine.

REGULATIONS VALID IN GERMANY

The German Ordinance on Industrial Safety and Health (BetrSichV) requires every employer to define the testing intervals on the work equipment they provide according to a risk analysis and to document all of this.

WARNING!

In order to ensure the safety of the machines and equipment (= working equipment), the German Ordinance on Industrial Safety and Health (BetrSichV) must be complied with in Germany!

NOTE:

- All LÄGLER® machines and electrical equipment are subjected to an electrical inspection as well as a thorough visual and functional test before they leave the factory.
- A recurring inspection of the machines and electrical equipment must be conducted in Germany at certain intervals.
- LÄGLER® recommends using the guidelines of BGV A3 for inspections and inspection intervals.
- You can, of course, arrange for repairs and recurring inspections of LÄGLER® machines to be conducted by the LÄGLER® service department.

EXCERPT FROM THE BGV A3

§ 5 Inspections

(1) The employer must ensure that the proper condition of the electrical systems and equipment is inspected
   1. before using the equipment for the first time and other an alteration or repair before being used again by an electrician or under the supervision of an electrician and
   2. at regular intervals.

The intervals are to be calculated in such a manner that defects which must be handled are detected in a timely manner.

(2) The electrical engineering regulations relevant to the inspection are to be followed.

(3) Upon request by the professional association, an inspection log with specific entries is to be maintained.

(4) The inspection before the first commissioning as per paragraph 1 is not required if the employer receives confirmation from the manufacturer or installer that the electrical systems and equipment have been correspondingly procured in accordance with these accident prevention guidelines.

Table 1B: Recurring inspections of portable electrical equipment:

Systems/equipment (which are to be inspected)
- portable electrical equipment (insofar as is used)
- extension and device connection cables with plugs
- connection cables with plugs
- movable cables with plugs and fixed connections

Inspection interval
Every 6 months as a reference value, **3 months on construction sites*)**.
If an error rate of less than 2% is reached during the inspection, the inspection interval can be extended to a maximum of 1 year (valid for machines on construction sites, in production facilities and workshops).

*) See the BG information "Selection and Operation of Electrical Systems and Equipment on Construction Sites" (BGI 608) for more details.

Type of inspection
The proper condition of the machines and equipment must be inspected.

Inspector
Electricians or persons trained in electrical engineering when using suitable measurement and inspection devices.

Causes of faults

This section shows you how to remedy possible malfunctions. If none of the measures listed here are successful, please contact our service department, your retailer or your importer.

THE MACHINE DOES NOT RUN

The machine does not start

- The machine is not connected to the electrical network. Check the following items:
  - Is the motor cable connected to the extension cable?
  - Is the extension cable inserted into the power socket?
- The power socket is not properly connected. This error must be corrected by a professional.
- The electrical safety device of the electrical network interrupted the electrical circuit, e.g. because
  - too many electricity consumers are connected to the same electrical circuit,
  - improper electrical installation.

  The causes for the error must be repaired by an expert.
- The electrical network is not providing sufficient voltage (undervoltage). Use a transformer if necessary (e.g. LÄGLER® part number 708.00.00.100 for 230 volts).
- The temperature switch in the motor has switched off the machine because
  - one or more power cables have a total length of more than 20 m,
  - the power cable has wire cross-sections which are too small (wire cross-sections smaller than 1.5 mm²),
  - or too much pressure was applied to the attachment while sanding.

  The motor must cool off and the causes for the problems named above must be remedied.
- An electrical component of the machine (e.g. cable, switch) is defective and must be inspected by an electrician and replaced if necessary.

WARNING!

RISK OF DEATH from electrical shock:

Work on the electrical equipment is to be conducted exclusively by a qualified electrician (circuit diagram in *Section 10*)! The machine must be switched off and the power plug removed from the socket during this work!

RISK OF INJURY due to unsuitable parts:

Make sure that only original LÄGLER® spare parts and original LÄGLER® accessories are used!

The machine attempts to start up but is not able to do so

- At low temperatures: The machine is too cold and must be heated up to room temperature in a warm room.
- A cable which is too thin or too long is used for the electrical connection. Power cables with wire cross-sections smaller than 1.5 mm² or with a total length of more than 20 m lead to a loss of power and are not allowed for safety reasons!
- The electrical network is not providing sufficient voltage (undervoltage). Use a transformer if necessary (e.g. LÄGLER® part number 708.00.00.100 for 230 volts).
- The V-belt is too tight and must be loosened (➡ *Section 7.2, Tightening the V-belt*).

The machine has switched off automatically

- The motor has become too hot and must cool off (due to undervoltage in the power supply or too much pressure on the attachment while sanding).
- The wear limit of the carbon brushes has been reached. The carbon brushes must be replaced (➡ *Section 7.6, Replacing the carbon brushes*)! Use only original LÄGLER® FLIP® carbon brushes with safety contacts (part number in *Section 11, Spare parts*)!

THE MACHINE RUNS BADLY

The machine runs, but has no or very little sanding power capacity

- The sanding medium is incorrect or dull and must be replaced (➡ *Section 5.2, Replacing the sanding medium*).
- At low temperatures: The machine is too cold and must be heated up to room temperature in a warm room.
- A cable which is too thin or too long is used for the electrical connection. Power cables with wire cross-sections smaller than 1.5 mm² or with a total length of more than 20 m lead to a loss of power and are not allowed for safety reasons!
- The electrical network is not providing sufficient voltage (undervoltage). Use a transformer if necessary (e.g. LÄGLER® part number 708.00.00.100 for 230 volts).
- The V-belt is not tight enough and must be tightened a bit (➡ *Section 7.2, Tightening the V-belt*).
- The machine setting angle is too flat. The guide rollers must be properly adjusted (➡ *Section 7.8, Adjusting the guide rollers*).

The machine vibrates intensely and runs noisily

- The sanding medium does not have the proper tension. The tension must be corrected (➡ *Section 5.2, Replacing the sanding medium*).
- The sanding medium is damaged or incorrect and must be replaced (➡ S*ection 5.2, Replacing the sanding medium*).
- The V-belt is dirty, damaged or worn-out and must be replaced (➡ *Section 7.3, Replacing the V-belt*).
- A pulley is dirty or worn-out and must be cleaned or replaced (➡ *Section 7.4, Replacing the complete sanding plate* and *Section 7.5, Replacing the motor pulley*).
- There are clogged materials and deposits in the machine that must be removed.

THE MACHINE RUNS BUT CREATES A GREAT DEAL OF DUST

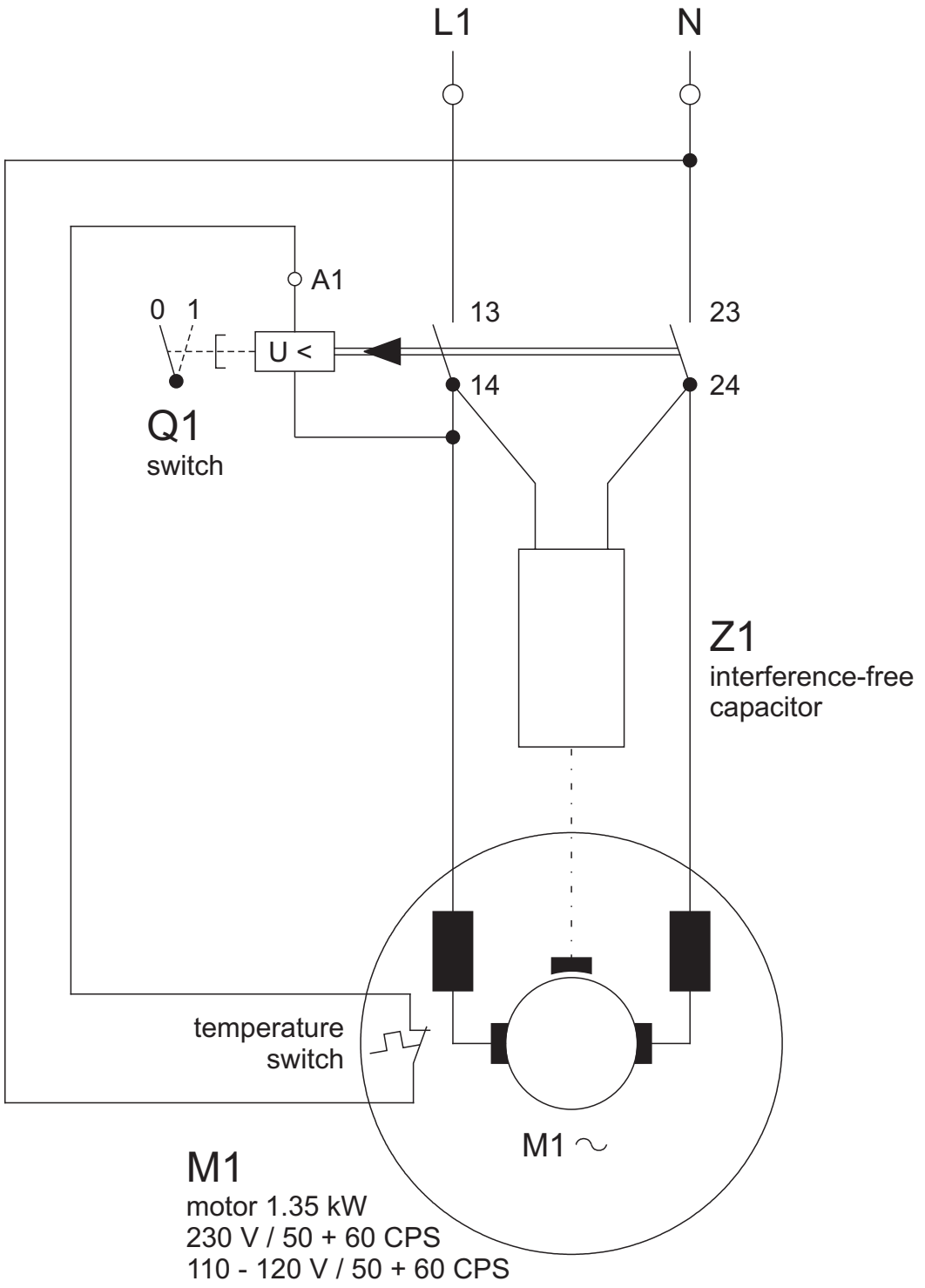
- The dust bag is more than one third full and must be emptied (➡ *Section 5.3, Emptying the dust bag*).
- The dust bag is not correctly attached or is damaged and must be replaced (➡ *Section 4.1, Preparing the machine*).
- When mounting the attachment, the belt tightening plate was pinched between the attachment and the fan housing. The attachment must be properly installed (➡ *Section 7.3.2, Installing the V-belt*).
- The dust suction system is clogged up and must be cleaned.
- More than one sanding disc is mounted. Only install one sanding disc (➡ *Section 5.2, Replacing the sanding medium*).
- The machine setting angle is too steep. The guide rollers must be properly adjusted (➡ *Section 7.8, Adjusting the guide rollers*).
- The machine is not being moved in clockwise, circular motions while sanding.

SANDING PROBLEMS

Waves, strips, grooves

- The floor or stairs were not vacuumed before sanding. The floor or stairs must always be cleaned thoroughly before the first and after each additional sanding operation.
- The sanding disc was not lifted from the floor while the machine was being started or switched off. Always tilt the machine backwards slightly before starting it or switching it off so that the sanding disc is lifted off the floor (➡ *Section 4.3, Starting the machine* and *Section 4.4, Switching off the machine*).
- The sanding medium does not have the proper tension. The tension must be corrected (➡ *Section 5.2, Replacing the sanding medium*).
- The sanding medium is damaged or incorrect and must be replaced (➡ *Section 5.2, Replacing the sanding medium*).
- The machine setting angle is not correct. The guide rollers must be properly adjusted (➡ *Section 7.8, Adjusting the guide rollers*).
- The wheels are dirty or damaged and must be cleaned or replaced (➡ *Section 7.9, Replacing the wheels and the guide rollers*).
- The V-belt is dirty, damaged or worn-out and must be replaced (➡ *Section 7.3, Replacing the V-belt*).
- A pulley is dirty or worn-out and must be cleaned or replaced (➡ *Section 7.4, Replacing the complete sanding plate* and *Section 7.5, Replacing the motor pulley*).
- The machine is being moved too slowly and must be sped up.
- The machine is not being moved in circular motions while sanding.
- Too much pressure is placed on the sanding disc while sanding. Do not press too hard on the attachment while sanding.

CIRCUIT DIAGRAM

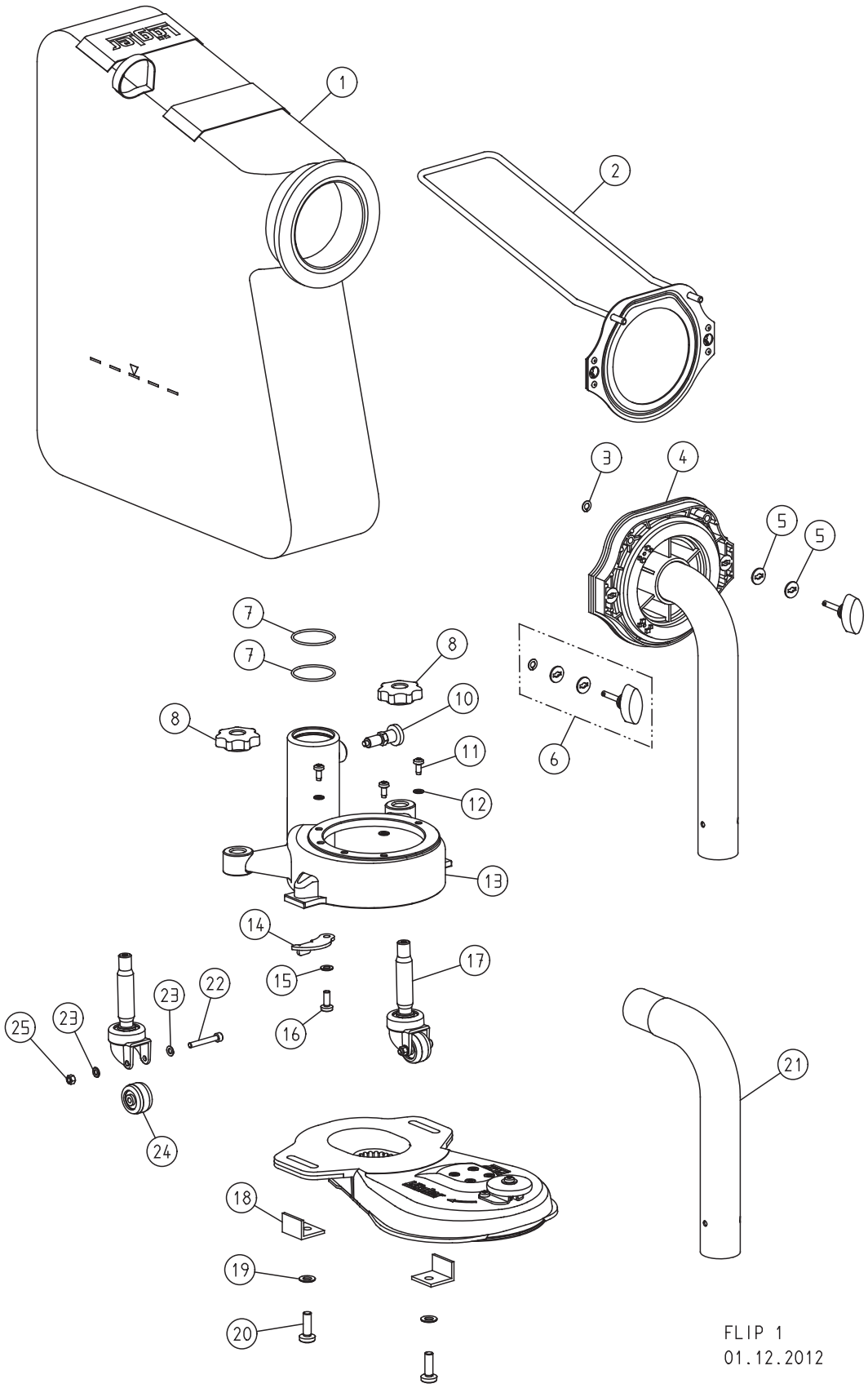


01.01.2010

FLIP®: universal motor	1.35 kW / 230 V / 50 + 60 CPS 1.35 kW / 110 - 120 V / 50 + 60 CPS

EUGEN LÄGLER GMBH Kappelrain 2 D-74363 Güglingen-Frauenzimmern	Phone: 0049 - 7135 - 98 90 - 0 Fax: 0049 - 7135 - 98 90 - 98	e-mail: info@laegler.com Internet: http://www.laegler.com

SPARE PARTS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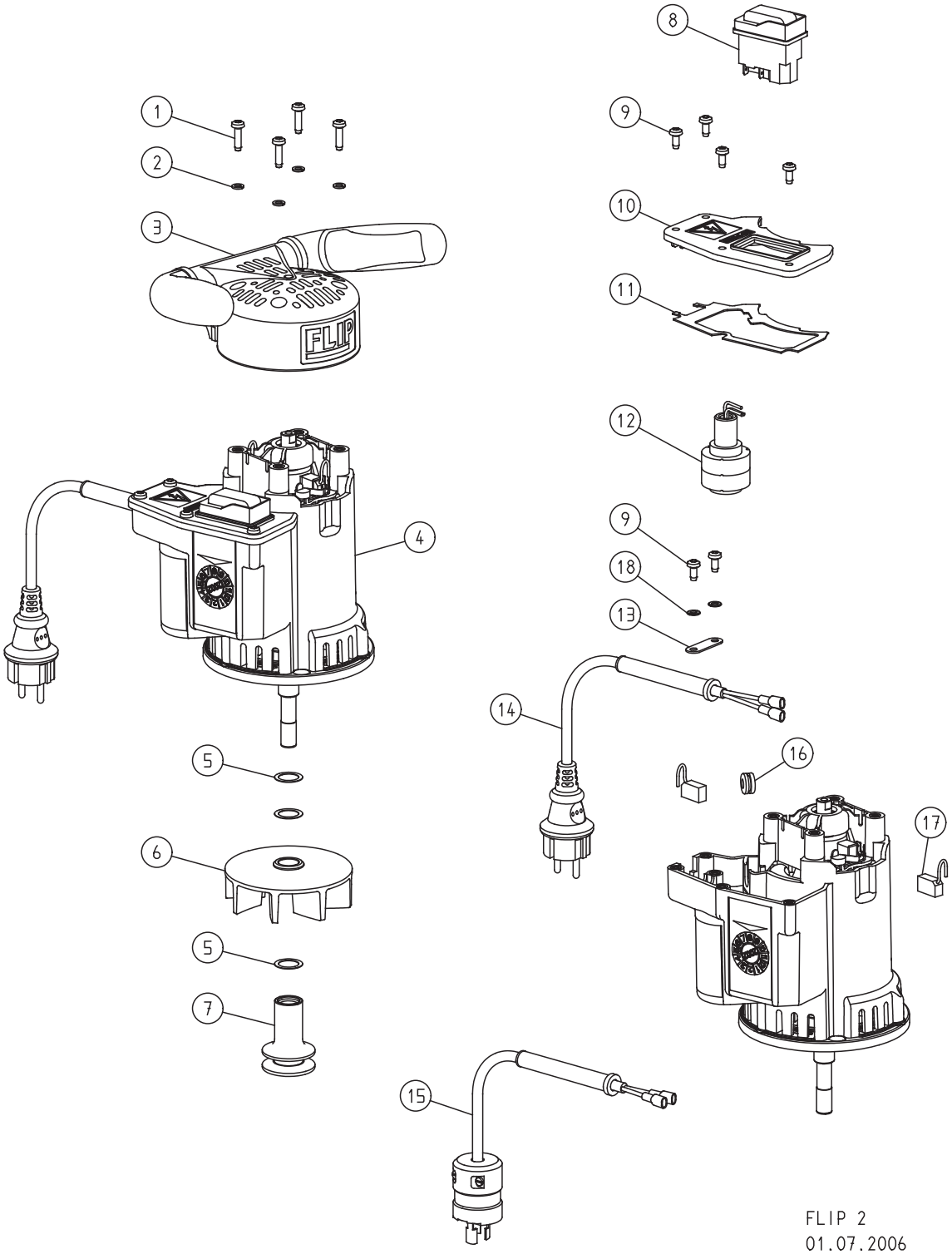
FLIP 1
01.12.2012

Item	Part number	Description
	320.00.80.100	Dust bag FLIP®, complete
1	320.00.86.105	Dust bag FLIP®
2	320.00.82.100	Fixing plate with bracket
3	000.25.11.752	Retaining disc
4	320.14.00.100	Pipe socket, complete
5	000.10.10.055	Washer
6	000.25.11.433	Locking pin
7	000.11.40.901	O-ring
8	320.05.11.205	Star grip (locknut)
10	000.20.15.005	Stop bolt
11	7500.1005.012	Screw
12	0125.1005.000	Washer
13	320.08.10.100	Fan housing, complete
14	320.08.03.100	Belt tightener plate
15	0125.1006.000	Washer
16	7985.1006.816	Screw
17	320.05.00.200	Guide roller, complete
18	320.01.09.100	Guide angle
19	0125.1008.000	Washer
20	7985.1008.825	Screw
21	320.14.92.100	Pipe socket for vacuum cleaner connection, 38 + 40 mm outside diameter
22	0912.1005.035	Screw
23	0125.1005.000	Washer
24	320.05.09.305	Wheel
25	0980.1005.000	Nut

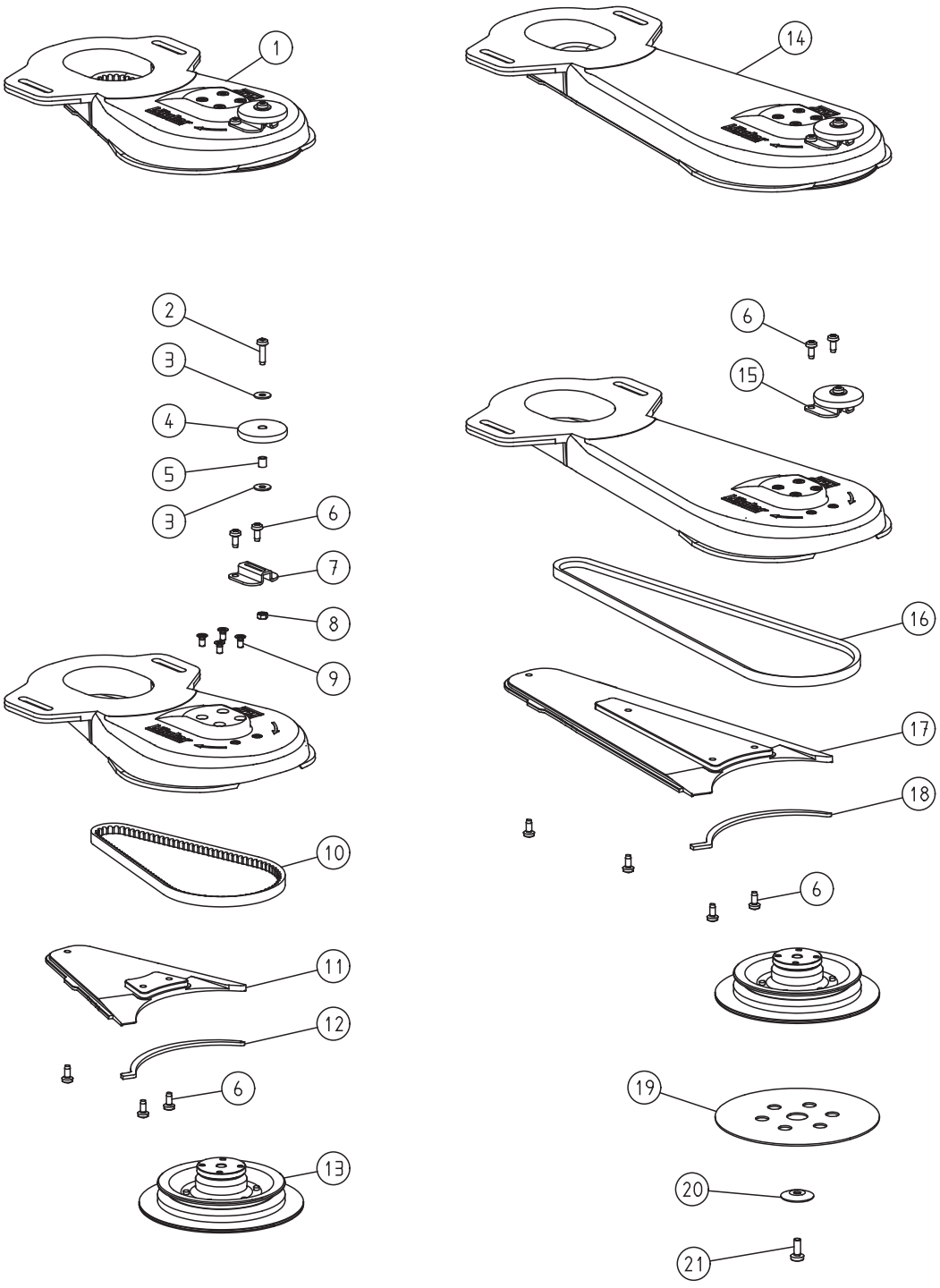
SPARE PARTS



SPARE PARTS

Item	Part number	Description
1	7500.1005.020	Screw
2	0127.1005.000	Spring washer
3	320.20.10.105	Handle FLIP®
4	320.65.00.100	Universal motor, 230 V / 50 + 60 CPS
	322.65.00.100	Universal motor, 110 V / 50 + 60 CPS, USA
5	0988.0016.005	Washer
6	320.10.10.200	Fan wheel
7	320.65.06.100	Motor pulley
8	000.65.60.256	Switch, 230 V / 50 + 60 CPS
	000.65.60.156	Switch, 110 + 120 V / 60 + 50 CPS
	000.65.62.160	PVC cap with switch frame
9	7500.1005.012	Screw
10	320.65.47.100	Cover with seal
11	320.65.48.105	Cover seal
12	320.65.30.100	Interference-free capacitor, complete
13	320.65.59.100	Latch fastener
14	000.65.42.151	Motor cable 2 x 1.5 mm²
15	000.65.42.153	Motor cable 2 x 1.5 mm², USA
16	000.63.12.071	Rubber tube
17	000.65.84.012	Carbon brush FLIP®
18	0125.1005.000	Washer

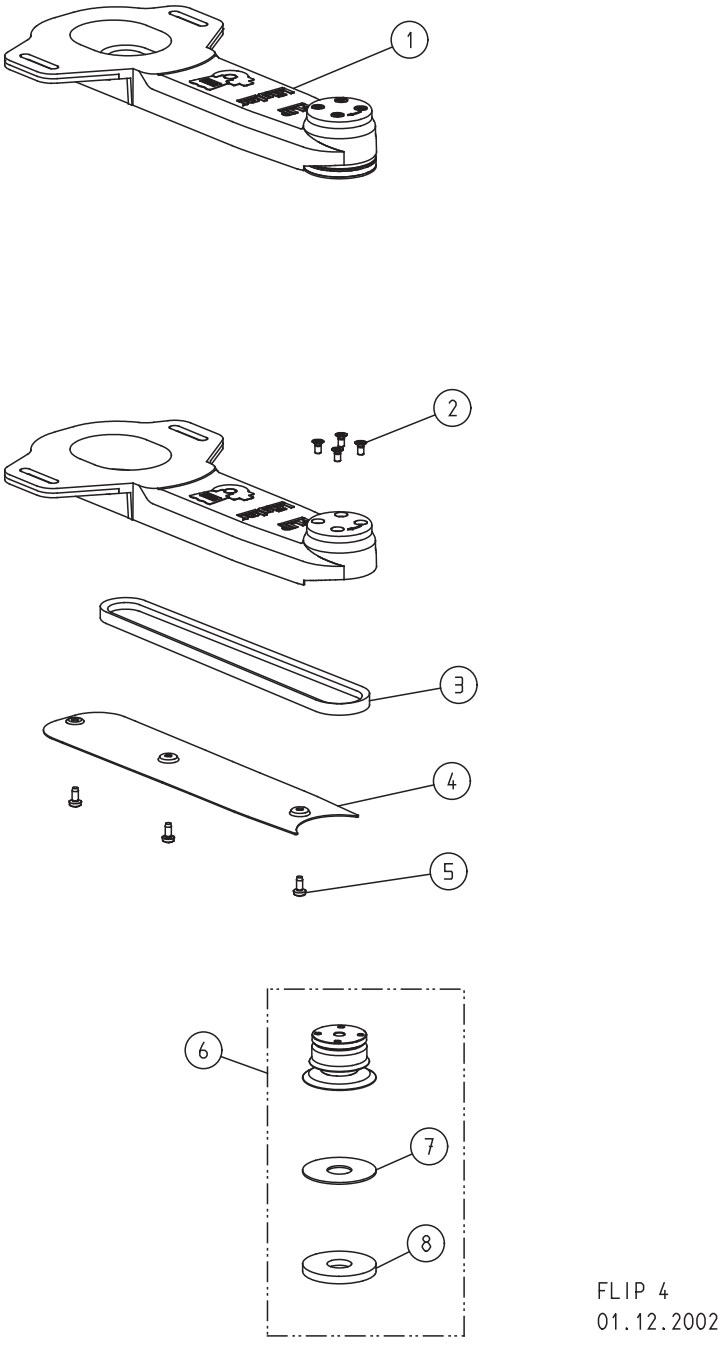
SPARE PARTS



FLIP 3
01.05.2012

Item	Part number	Description
1	320.01.00.100	Short attachment FLIP®, complete
2	7500.1005.020	Screw
3	9021.1005.000	Washer
4	320.60.02.100	Wall-protecting roller
5	000.43.15.052	Bush
6	7500.1005.012	Screw
7	320.60.01.100	Holder for wall-protecting roller
8	0934.1005.000	Nut
9	0965.1005.810	Screw
10	000.70.10.055	V-belt
11	320.01.03.100	Attachment cover short, complete
12	320.01.51.105	Seal (attachment cover short)
13	320.01.91.100	Sanding plate, complete
14	330.01.00.100	Long attachment FLIP®, complete
15	320.60.00.100	Wall-protecting roller with bracket
16	000.70.10.087	V-belt
17	330.01.03.100	Attachment cover long, complete
18	330.01.51.105	Seal (attachment cover long)
19	350.03.35.205	Velcro disc 150 mm
20	320.02.05.100	Paper tensioning disc
21	7985.1006.816	Screw

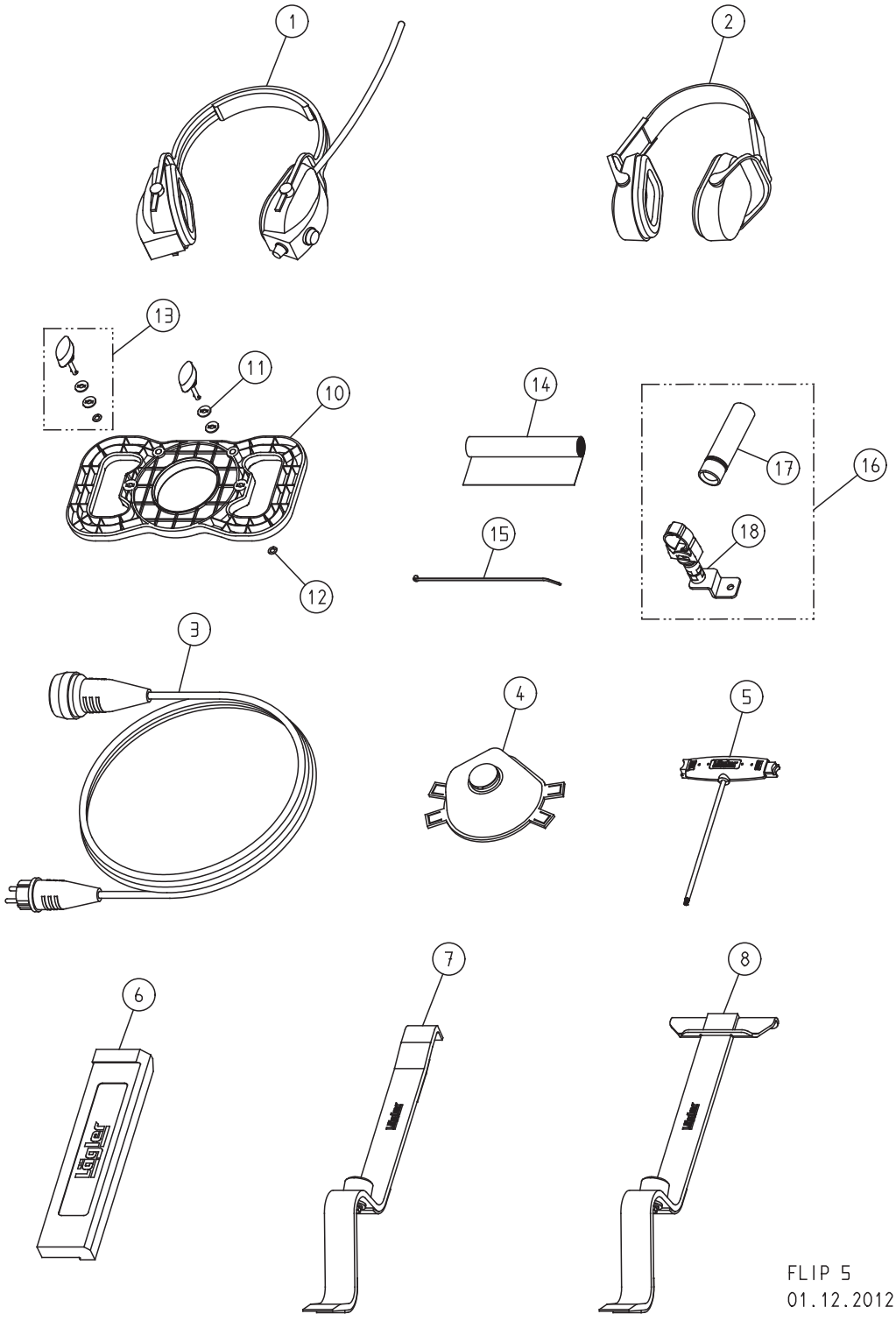
SPARE PARTS



FLIP 4
01.12.2002

Item	Part number	Description
1	335.01.00.100	Corner attachment FLIP®, complete
2	0965.1005.810	Screw
3	000.70.10.067	V-belt
4	335.01.02.100	Cover, corner attachment
5	7500.1005.012	Screw
6	335.01.91.100	Sanding plate for corner attachment, complete
7	335.02.12.105	Velcro coating, self adhesive
8	335.02.13.105	Velcro ring flexible

SPARE PARTS



Item	Part number	Description
1	000.01.10.011	Foldable earmuff type MUSIMUFF with FM radio
2	000.01.10.021	Foldable earmuff type POCKET
3	000.65.53.151	Extension cable 3 x 1.5 mm², 10 m long
4	000.01.20.010	Respiratory protection mask P3
5	000.91.40.001	Universal spanner
6	701.10.00.100	Impact tool
7	702.00.00.200	Parquet layer tool ZUGEISEN, small
8	703.00.00.200	Parquet layer tool ZUGEISEN, broad
10	320.00.70.100	Emptying fixture, complete
11	000.10.10.055	Washer
12	000.25.11.752	Retaining disc
13	000.25.11.433	Locking pin
14	00.000.25.570	Waste bag
15	000.61.10.363	Cable tie
16	320.63.00.100	Working light FLIP®, complete
17	320.63.10.100	Working light FLIP®
18	320.63.20.100	Light bracket FLIP®

Service passport

Please enter the serial number and the year of manufacture of your machine on the rear side of these operating instructions (see type plate)! Otherwise the service passport will not be valid!

This service passport is a document. Make sure that all the tests and maintenance work carried out on the machine are confirmed by the servicing company here.

Date of test and maintenance work: ____________ **Signature and company stamp**	**Date of test and maintenance work:** ____________ **Signature and company stamp**	**Date of test and maintenance work:** ____________ **Signature and company stamp**
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EU Declaration of conformity for machines (EU Directive 2006/42/EC)

The manufacturer **Eugen Lägler GmbH, Kappelrain 2, D-74363 Güglingen-Frauenzimmern**
Tel.: 0049 - 7135 - 98 90-0 · Fax: 0049 - 7135 - 98 90-98
E-Mail: info@laegler.com · http://www.laegler.com

certified herewith, that the machine

Generic denomination:	**Floor sanding machine**
Function:	**Dry sanding of wooden floors, wooden stairs**
Model:	**FLIP®**
Serial number:	**See type plate**
Commercial name:	**Edge-, corner- and stair-sanding machine**

fulfils all the relevant provisions of the specified above European Directive.

The machine also fulfils all the relevant provisions of the European Directive **Electromagnetic compatibility (2004/108/EG)**.

The following harmonized standards have been applied:

DIN EN ISO 12100: Safety of machinery - General principles for design - Risk assessment and risk reduction
DIN EN 60204-1: Safety of machinery - Electrical equipment of machines - Part 1
DIN EN 55014-1: Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 1
DIN EN 55014-2: Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 2
DIN EN 61000-3-2: Electromagnetic compatibility (EMC) - Part 3-2: Limits
DIN EN 61000-3-3: Electromagnetic compatibility (EMC) - Part 3-3: Limits

Güglingen-Frauenzimmern, December 1, 2012

Volker Wörner

Dipl.-Ing. (FH) Volker Wörner, Design Engineer
Person Responsible for Documents
Eugen Lägler GmbH, Kappelrain 2
D-74363 Güglingen-Frauenzimmern

FLIP®	**Serial number:**	**Year of manufacture:**
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