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# Handling, Maintenance, Safety

Operating instructions of the edge-, corner- and stair-sanding machine

## FLIP

**Lägler**

WORLD LEADERS IN FLOOR  
SANDING TECHNOLOGY

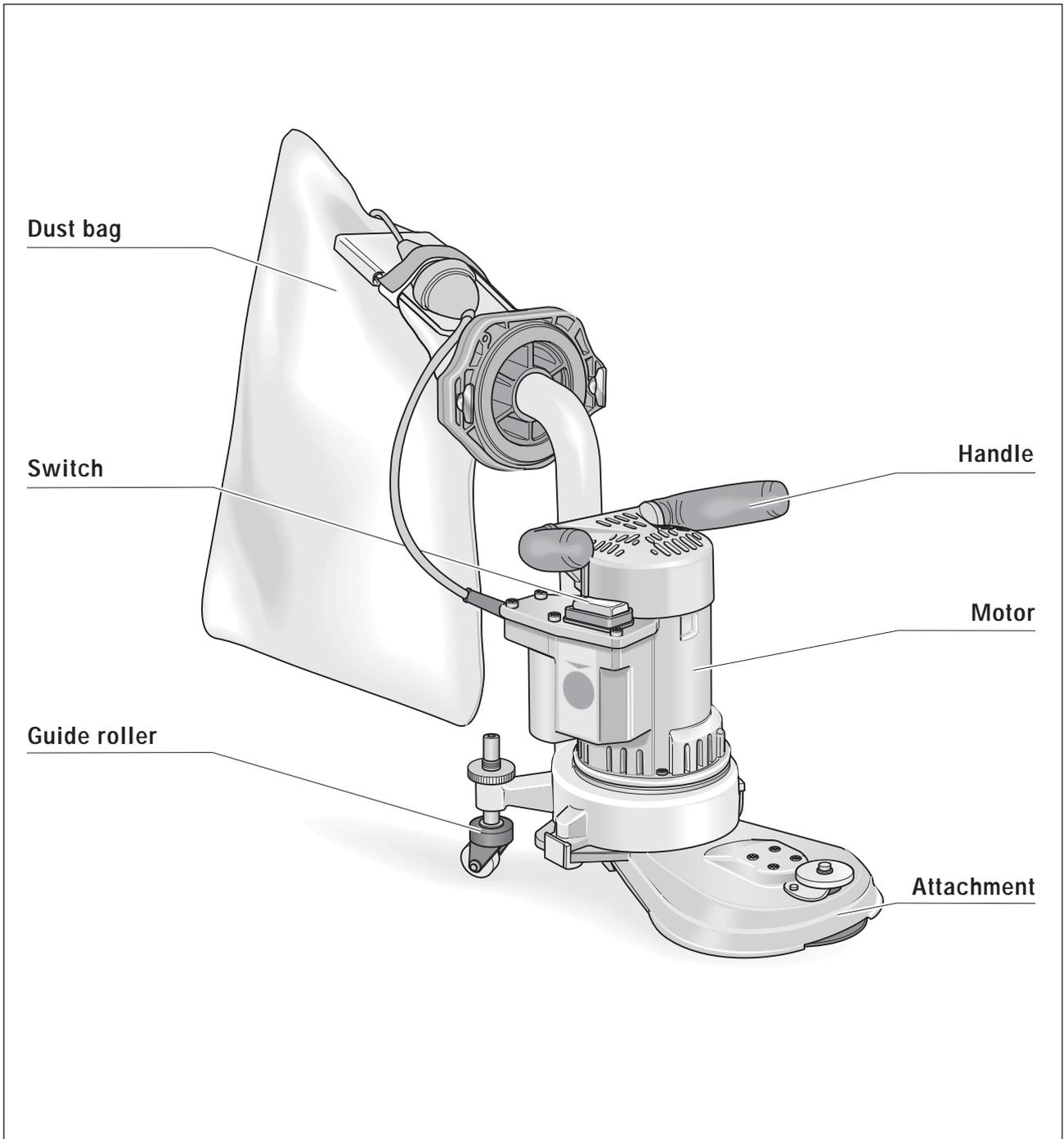


Fig. 1 Main features of the edge-, corner- and stair-sanding machine FLIP

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# Introduction

You have purchased a high-quality product from LÄGLER. We wish you great success with your FLIP. This machine was manufactured using the most modern methods of production. All LÄGLER products are subjected to a thorough inspection before leaving the factory.

Please read these operating instructions carefully before you start working with your FLIP for the first time. These operating instructions include important information on work safety and will give you 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 this manual, please refer to your sanding instructions manual or contact our service department. Our qualified service technicians are extremely familiar with the FLIP and are highly trained. They will provide you with the best possible advice and support.

## 1.1 FEATURES OF THE MACHINE

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

## 1.2 DESCRIPTION OF THE MACHINE

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The FLIP edge-sanding machine works with a sanding plate on which Velcro sanding discs can be fastened. Traditional sanding discs fastened with a tensioning 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 supply cable is used to connect the machine to the power supply system. The motor switch with ON / OFF is located on the right-hand side of the motor in the switch box. 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 elbow piece mounted in a tube socket on the rear of the fan housing, feeds the sanding dust into the dust bag. The dust bag is connected to the elbow piece via a flange with two quick-release fasteners. The power cord is fixed to the bag's fixing bracket by a Velcro tape so that it is kept out of the working area of the machine.

**The FLIP can only be used for dry processing operations. Never use the FLIP for wet processing operations (life-threatening risk)!**

## 1.3 PROPER USE AS INTENDED

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

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

**No wet processing operations!**

## 1.4 SAFETY INSTRUCTIONS

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Please read the danger warnings carefully and also instruct your employees or colleagues accordingly. Otherwise, these persons could be exposed to danger or be injured.

When the sanding disk is touching the floor, the machine must not be switched on in order to prevent injuries.

Use the tools, accessories and spare parts that have been made by LÄGLER for the FLIP only. Otherwise, this could result in damage to the machine, the processed object or for the operator.

Make sure the dust bag is properly fastened in order to prevent unnecessary and unhealthy dust emissions for the operator and the environment.

Incorrect transport operations will result in machine damage.

**To prevent any damage due to fire or explosions, the dust bag must be emptied after the work has been completed and the contents then be stored outdoors.**

**Keep well away from fire sources.**

**Do not smoke in a dusty environment (e.g. while working with the machine or emptying out the dust) → Risk of a dust explosion.**

The power supply cable must be kept out of the work zone in order to prevent any damage to mechanical or electrical equipment.

To exclude the possibility of the machine being started unintentionally, the power supply must be interrupted by removing the power supply plug from the socket after the machine has been switched off!

In case of correct machine operation, the mandatory dust emission values will not be exceeded. When emptying the dust bag, it is advisable to wear a respiratory protective mask P3 (Art. no. in *Section 11, Spare parts*).

## 1.5 PROTECTIVE DEVICES

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

attachment cover, short / long = dust protection, protection  
against V-belts

attachment, short / long = protection against sanding disc

# Technical data

**Note:**

The values mentioned above 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 other 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 estimate the dangers and risks better.

Manufacturer .....	Eugen LÄGLER GmbH
Machine type .....	edge-sanding machine
Serial number .....	see rating plate
Year of manufacture .....	see rating plate
Motor type .....	universal motor
Voltage .....	230 V
Frequency .....	50 / 60 cps
Output .....	1.35 kW
Fuse .....	10 A
Insulation class .....	F
Protection class .....	IP 22
Protection system .....	2
Thermal overload protection	
Zero-voltage activation	
Sanding disc diameter .....	Ø 150 mm (6")
Sanding disc diameter, corner attachment .....	Ø 61 mm (2 3/8")
Sanding disc speed under load .....	approx. 3100 rpm
Sanding disc speed under load, corner attachment .....	approx. 7750 rpm
Attachment height without wall-protecting roller ...	44 mm (1 3/4")
Attachment height with wall-protecting roller .....	58 mm (2 1/4")
Height corner attachment .....	51.5 mm (2")
Attachment length, short version .....	155 mm (6 1/8")
Attachment length, long version .....	315 mm (12 3/8")
Length corner attachment .....	225 mm (8 7/8")
Overall height without dust bag .....	460 mm (18 1/8")
Overall length without dust bag	
- with short attachment .....	460 mm (18 1/8")
- with long attachment .....	620 mm (24 3/8")
- with corner attachment .....	530 mm (20 7/8")
Overall width .....	260 mm (10 1/4")
Total weight .....	9.8 kg (21.6 lbs)
Dust emissions at workplace .....	< 0,2 mg/m <sup>3</sup> (0.0024 gr./cu.yd.)
Workplace-related noise emission values .....	86 dB (A)

**Note:**

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

**Application purposes**

Dry edge-sanding and stair-sanding of wooden floors and cork floors.

**Not to be used for any wet processing operations!**

**Basic equipment**

Machine ready for use, dust bag, extension cable 3 x 1.5 mm<sup>2</sup> - 10 m long, universal spanner, respiratory protective mask (P3) and operating instructions.

**Special accessories**

Attachment long, corner attachment, foldable earmuff type Pocket.

**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:

- Extension cable renew in case of damage
- Motor cable renew in case of damage
- Velcro disc renew in case of wear or damage
- V-belt renew in case of wear
- Dust bag renew in case of wear or damage
- Guide roller renew in case of wear or damage
- Switch renew in case of wear or damage
- Paper tensioning disc renew in case of wear or damage
- Torx-screw for paper tension renew in case of wear or damage
- Carbon brushes renew in case of wear
- Motor belt pulley renew in case of wear

The relevant article numbers are given in the spare parts lists in *Section 11*.

## Getting started

This section describes how to put the FLIP into service on site. In order to prevent damage and malfunctions, you should proceed in the order of steps mentioned below.

### 3.1 PREPARING THE MACHINE

- 1 Unpack the machine carefully. Dispose of the packing materials according to environmental regulations.
- 2 Pull out the stop bolt on the suction socket of the fan housing and at the same time insert the fan tube in the suction socket (Fig. 2).
- 3 Turn the fan tube so that the opening of the elbow piece is facing the back and the stop bolt locks home when it is let go.

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

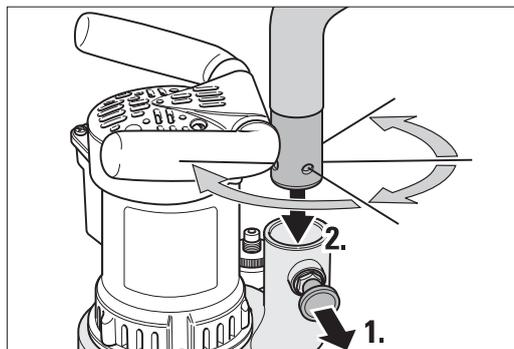


Fig. 2 Withdraw the stop bolt and feed the tube into the connector socket.

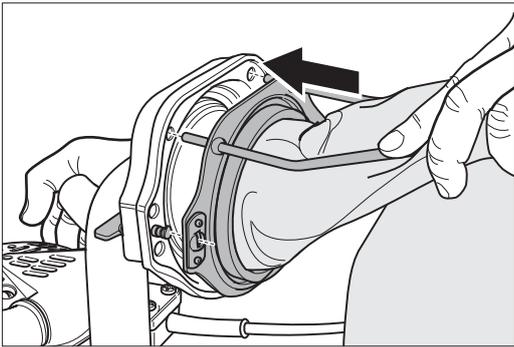


Fig. 3 Push the dust bag over the locating flange and fix with the two metal studs.

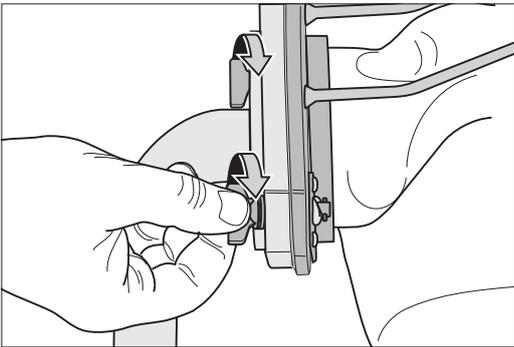


Fig. 4 Secure the dust bag using the quick-release fasteners.

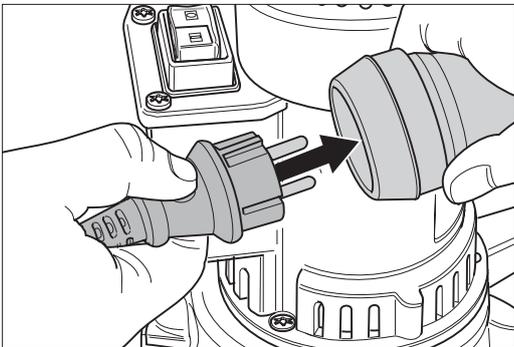


Fig. 5 Connect the motor cable to the extension cable.

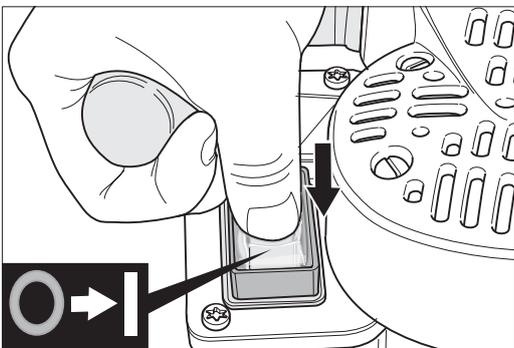


Fig. 6 Use the switch to switch on and off.

- 4 The fan tube can be turned through 360°, whereby four fixed positions are possible in which the stop bolt snaps into place in the tube.

**Always select one of these four positions to avoid accidents or damage to the machine!**

- 5 Push the dust bag opening over the locating flange fixed to the end of the elbow piece and fix the dust bag using the two metal studs (Fig. 3).
- 6 Fix the dust bag to the locating flange using the two quick-release fasteners (Fig. 4).

### 3.2 CONNECTING THE POWER SUPPLY CABLE

- 1 Insert the plug of the motor cable in the coupling of the extension cable (Fig. 5).
- 2 Fasten the extension cable coupler using the Velcro loop on the dust bag.
- 3 Insert the extension cable in a suitably protected 230-volt socket or 110-volt socket according to specified power supply.

### 3.3 STARTING THE MACHINE

The FLIP is now ready to be started. When starting the machine, the sanding disc must be raised from the floor therefore, tilt the machine back first. You may then use the switch to start the machine (Fig. 6).

### 3.4 SWITCHING OFF THE MACHINE

To switch off the machine, tilt it back so that the sanding disc is raised off the floor and press the switch. Wait until the sanding disc comes to a standstill before you stand the machine back on the sanding disc.

**Never let the machine run unattended and always pull the power supply plug out of the socket when you have finished working with the machine.**

# Working with the FLIP

## 4.1 GENERAL APPLICATION TIPS

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

Deep sanding marks due to the selection of a too coarse sandpaper grain size can be prevented by starting the first sanding operation with a fine sandpaper grain size to the extent possible.

Prevent sanding marks made by previously used sandpaper grain sizes by adhering to the order of the sandpaper grain sizes and never skip more than a sandpaper grain size. Following each sanding operation, vacuum the floor thoroughly.

After changing over to a new sanding disc, start working in poorly lit areas in the room in order to remove the initial aggressiveness of the sanding disc.

Bear in mind that the FLIP operates at very high cutting speeds. For this reason, danger of burn marks exists for finer sandpaper grain sizes!

Do not apply excessive pressure to the attachment. This will significantly worsen the sanding finish by causing deep scratches, and could cause the motor to become overheated and switch off.

Please refer to the LÄGLER sanding instructions for additional important and interesting application tips.

## 4.2 REPLACING THE SANDING DISC

Depending on the processing operation, you will use various sandpaper grain sizes. To replace the sanding disc, proceed in the following manner:

### 4.2.1 VELCRO SANDING DISCS

- 1 Switch off the machine.
- 2 **Always pull the power supply plug out of the socket!**
- 3 Turn the machine upside down or lay it on its side, avoiding damage to the floor and machine.

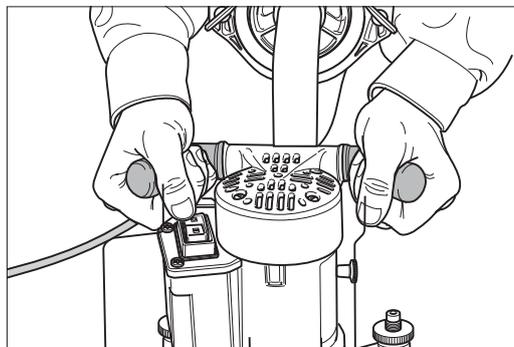


Fig. 7 Guide the FLIP with both hands.

For more information free of charge,  
please apply to: within Germany  
- Tel.: 0800 / 52 34 537  
- Fax: 0800 / 48 66 353  
within the USA  
- Tel.: 800-848-6635

or  
- Tel.: +49 - 7135 - 98 90-0  
- Fax: +49 - 7135 - 98 90-98  
- e-mail: info@laegler.com  
- Internet: <http://www.laegler.com>

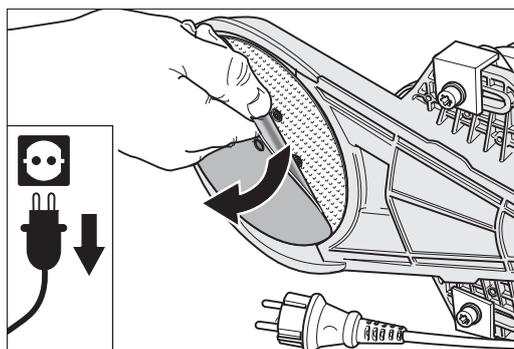


Fig. 8 Simply pull off the Velcro sanding disc ...

## REPLACING THE SANDING DISC

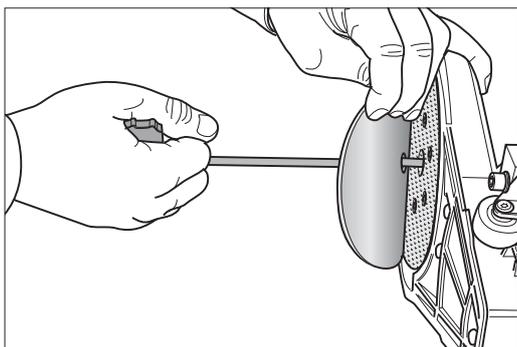


Fig. 9 ... and mount the new disc in centered position and press down.

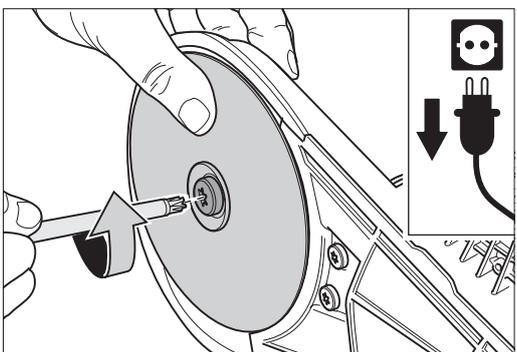


Fig. 10 Remove conventional sanding disc by loosening the fixing screw with the universal spanner and ...

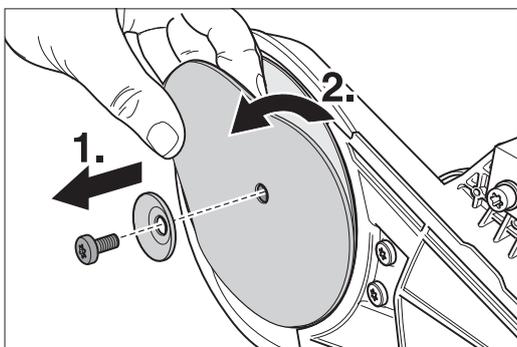


Fig. 11 ... after removing, take off the paper faceplate, ...

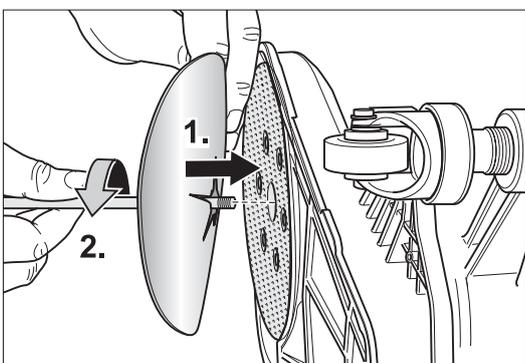


Fig. 12 ... mount a new disc and assemble again.

- 4 Pull off the worn-out Velcro sanding disc from the sanding plate (Fig. 8).
- 5 Place a new Velcro sanding disc on the sanding plate. The Velcro sanding disc must be seated in centered position on the sanding plate. A drilled hole in the center of the sanding disc and the universal spanner make this step easier (Fig. 9).

## 4.2.2 CONVENTIONAL SANDING DISCS

- 1 Switch off the machine.
- 2 **Always pull the power supply plug out of the socket!**
- 3 Turn the machine upside down or lay it on its side, avoiding damage to the floor and machine.
- 4 Use the universal spanner to loosen the fixing screw of the paper tensioning device (Fig. 10).
- 5 Rotate the fixing screw all the way out. Remove the paper tensioning disc from the sanding plate and put these parts aside (Fig. 11).
- 6 Put on a new sanding disc and insert the fixing screw in the sanding plate together with the paper faceplate (Fig. 12).
- 7 Turn the fixing screw in the sanding plate using the universal spanner (Fig. 12); make sure the sanding disc is fastened in centered position on the sanding plate.
- 8 Tighten the fixing screw with the universal spanner until it is hand-tight.

**Always mount one sanding disc only, since otherwise the sanding results will be unsatisfactory and the dust suction system not be fully operational!**

### 4.3 EMPTYING THE DUST BAG

The dust bag 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 missing filtering surface area. The horizontal line on the outside of the dust bag marks the maximum filled level. When emptying the dust bag, it is advisable to wear a respiratory protective mask (P3).

To empty the dust bag proceed as follows:

- 1 Switch off the machine.
- 2 **Always pull the power supply plug out of the socket!**
- 3 Remove the extension cable coupler from the Velcro loop on the dust bag (Fig. 13).
- 4 Before emptying, shake the dust residue into the dust bag (Fig. 14).
- 5 Open the two quick-release fasteners on the locating flange (fig. 15).
- 6 Slowly pull the dust bag off the locating flange (Fig. 15).
- 7 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. 16).
- 8 Pull the waste bag over the emptying fixture from behind (Fig. 17).
- 9 Take hold of the emptying fixture with the waste bag in one hand and the dust bag in the other. Hold the dust bag at a slight angle to prevent dust escaping.
- 10 Insert the dust bag into the emptying fixture. Make sure the rods are in the correct position. The pins have to fit into the openings provided (Fig. 18).
- 11 Apply light pressure to insert the dust bag completely into the emptying fixture. The pins on the dust bag rods pierce the waste bag and prevent it slipping (Fig. 18).

#### ATTENTION!

To prevent fire and explosion damage the dust bag must always be removed from the machine and emptied following sanding. The filled waste bag may only be disposed of in a non-combustible container!

Close this container and always store it and the dust bag outdoors (Fig. 24)!

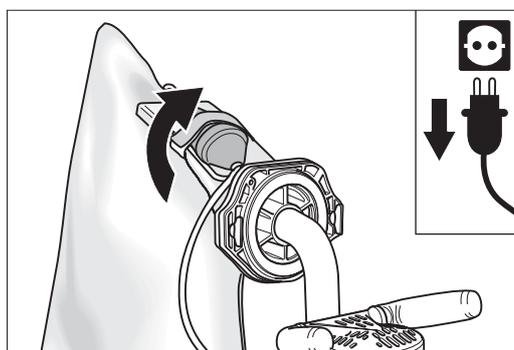


Fig. 13 Remove the coupler from the Velcro loop on the dust bag.

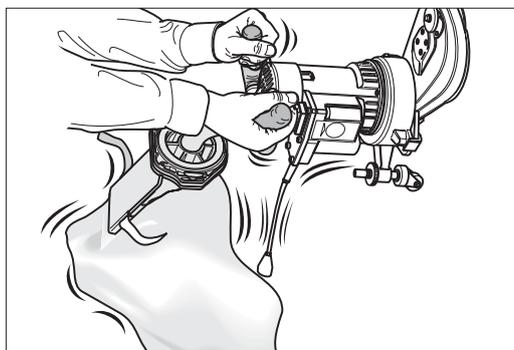


Fig. 14 Shake the dust residue into the dust bag.

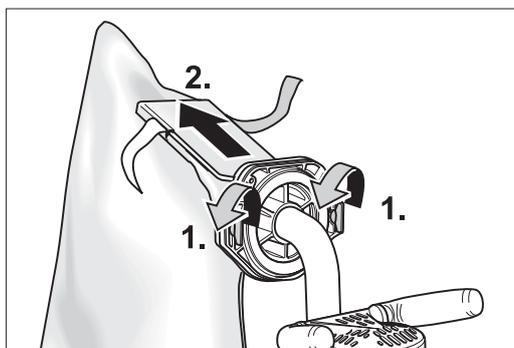


Fig. 15 Open the two quick-release fasteners and pull off the dust bag.

## EMPTYING THE DUST BAG

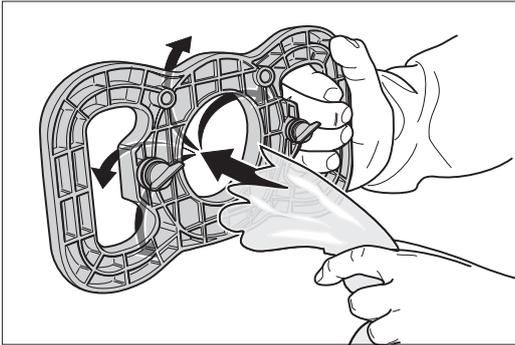


Fig. 16 Insert the waste bag in the emptying fixture.

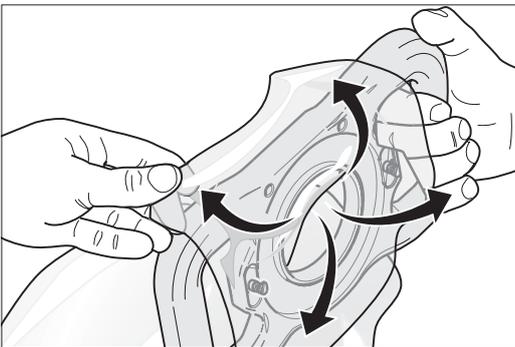


Fig. 17 Pull the waste bag over the fixture.

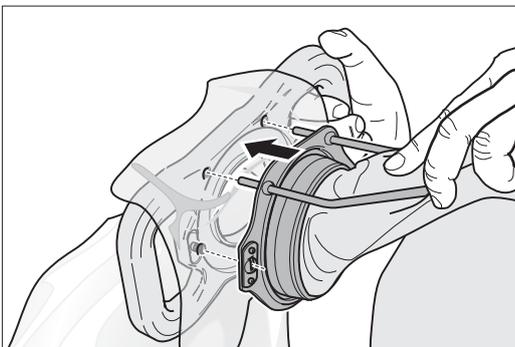


Fig. 18 Insert the dust bag.

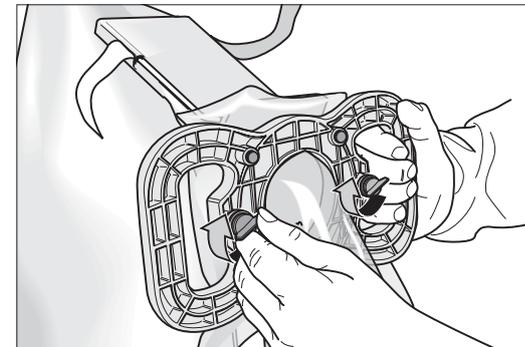


Fig. 19 Fix the emptying fixture to the dust bag.



Fig. 20 Empty the dust bag by shaking it vigorously.

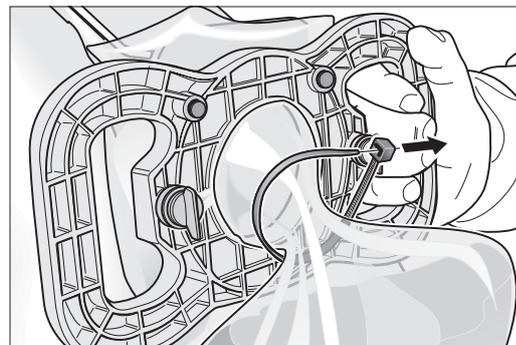


Fig. 21 Seal the waste bag using a cable binder.

- 12 Fix the emptying fixture to the dust bag by turning the two quick-release fasteners through 90° clockwise (Fig. 19).
- 13 Empty the dust bag into the waste bag by shaking it vigorously (Fig. 20).
- 14 Seal the filled waste bag before removal using the cable binder provided (Fig. 21).
- 15 Open the two quick-release fasteners on the emptying fixture (Fig. 22).

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 EMPTYING THE DUST BAG
 

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- 16 Remove the emptying fixture from the dust bag. Keep the dust bag tilted at a slight angle to prevent any residue dust falling back into the dust bag (Fig. 22).
- 17 Reattach the dust back to the machine in reverse order.
- 18 Remove the filled waste bag from the emptying fixture (Fig. 23) and place it in a non-combustible container (Fig. 24).

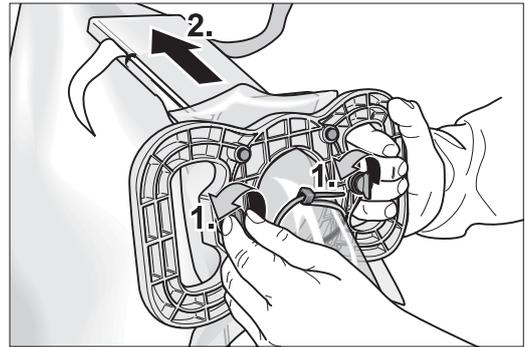


Fig. 22 Loosen the quick-release fasteners and remove the dust bag.

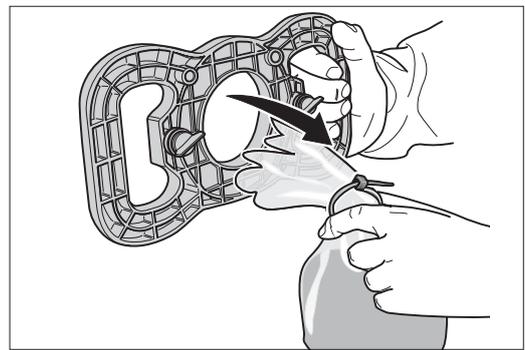


Fig. 23 Remove the waste bag from the emptying fixture.

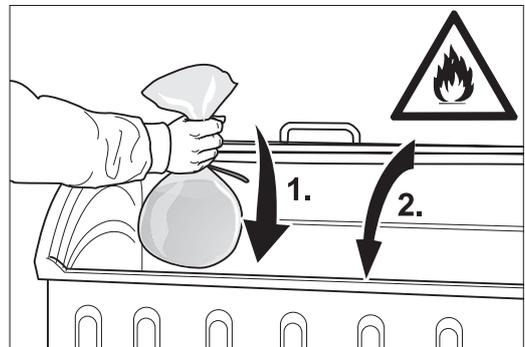


Fig. 24 Throw the filled waste bag into a non-combustible container and keep this closed → **fire hazard!**

# Transport and storage

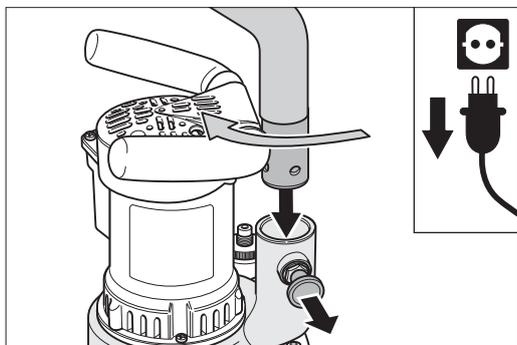


Fig. 25 Pull out the stop bolt and turn the fan tube.

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

**Professional tip:**

**Use the transport packaging to store the machine.**

So that the FLIP requires less space for transport or storage,

- 1 pull the stop bolt in the fan housing (Fig. 25),
- 2 at the same time, turn the fan tube until the dust bag is located over the attachment and the stop bolt noticeably snaps into place when let go (Fig. 25).

**The stop bolt must lock home to avoid accidents or damage to the machine!**

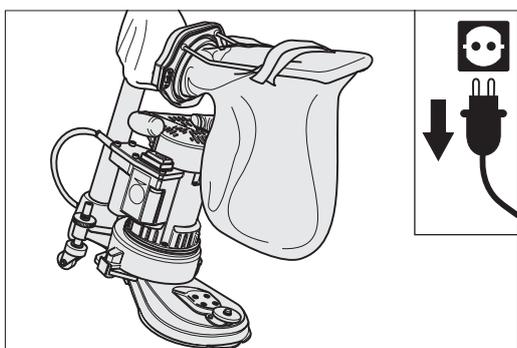


Fig. 26 Carrying the FLIP.

You can now easily carry the machine using the elbow piece (Fig.26).

# Maintenance work and replacement of wearing parts

You can perform various maintenance tasks on your own. These maintenance tasks are described in the following sections. Extensive maintenance tasks, especially on the electrical equipment must be carried out by an expert.

## 6.1 TIGHTENING THE V-BELT

The V-belt must be re-tightened from time to time. Proceed in the following manner:

- 1 **Switch off the machine and always pull the power supply plug out of the socket!**
- 2 Turn the machine upside down, place it on its side or with the motor housing on a table, at the same time avoiding damage to the floor and machine.
- 3 Use the universal spanner to undo the two screws with which the attachment is fastened on the fan housing (Fig. 27).
- 4 Use the universal spanner to undo the screw with which the belt tightener plate is fastened (Fig. 28).
- 5 Grab the FLIP at the suction socket and press the belt tightener plate forward with your thumb at the same time, while using the other hand to retighten the three screws with the universal spanner (Fig. 29).
- 6 Do not tighten the V-belt too much in order to prevent excessive wear of the V-belt and V-belt pulley.

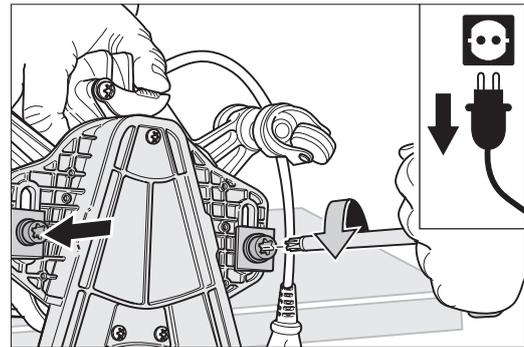


Fig. 27 Undo the two screws with which the attachment is fastened.

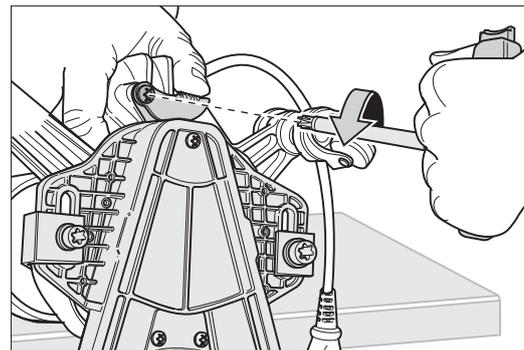


Fig. 28 Undo the screw with which the belt tightener plate is fastened.

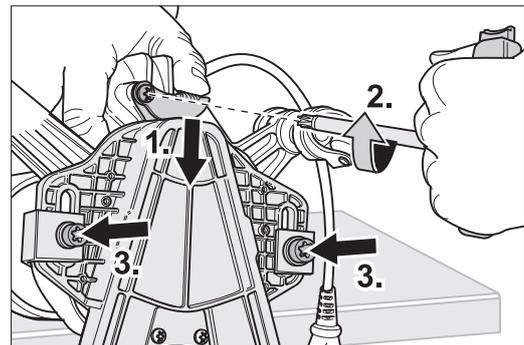


Fig. 29 Hold the FLIP firmly at the suction socket, press on the belt tightener plate and tighten the three screws.

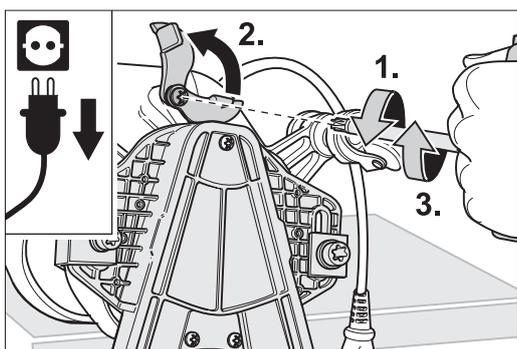


Fig. 30 Loosen the screw, turn away the belt tightener plate and retighten the screw.

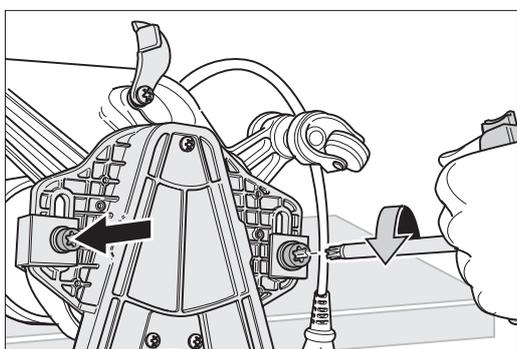


Fig. 31 Remove the two screws with which the attachment is fastened.

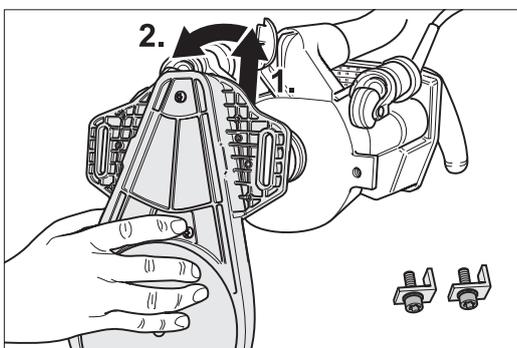


Fig. 32 Remove the attachment from the machine.

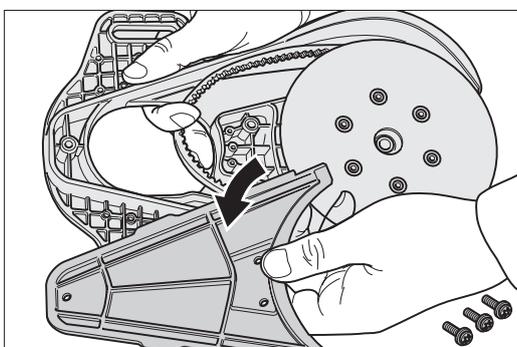


Fig. 33 Remove the attachment cover.

## 6.2 CHANGING THE V-BELT

Make sure that original LÄGLER V-belts are used (Art. no. in *Section 11, Spare parts*).

The V-belt must be replaced when the V-belt cannot be re-tightened because the screws for fastening the attachment are at the end of the long holes.

- 1 **Switch off the machine and always pull the power supply plug out of the socket!**
- 2 Turn the machine upside down, place it on its side or with the motor housing on a table, at the same time avoiding damage to the floor and machine.
- 3 Undo the belt tightener plate screw using the universal spanner, turn it so that it faces the back and then retighten the screw (Fig. 30).
- 4 Use the universal spanner to remove the two screws, washers and guide angles that fix the attachment and place the parts to one side (fig. 31).
- 5 Remove the attachment from the machine and put away the attachment with the sanding disc facing upward (Fig. 32).
- 6 Use the universal spanner to remove the fixing screws of the attachment cover and remove it from the attachment (Fig. 33).
- 7 Turn the attachment around.
- 8 Use the universal spanner to loosen the four fixing screws of the steel sanding disc and unscrew them (Fig. 34).
- 9 Then remove the attachment from the steel sanding disc (Fig. 35).
- 10 Remove the worn-out V-belt from the attachment.

## CHANGING THE V-BELT

- 11 Clean the two belt pulleys and the attachment. Wear a respiratory protective mask (P3) as required.
- 12 Place the new V-belt on the steel sanding disc.
- 13 Insert the steel sanding disc and the V-belt in the attachment. Ensure that the holes in the steel sanding disc are aligned with the holes of the attachment (Fig. 36).
- 14 Make sure that the sanding plate can be rotated by hand and that the V-belt was correctly installed in the attachment.
- 15 Tighten the four countersunk head screws for fixing the steel sanding disc using the universal spanner (Fig. 37).
- 16 Then place the attachment on the machine by inserting the V-belt into the motor belt pulley first and then the attachment on the machine (Fig. 38).
- 17 Fit the attachment cover.
- 18 Now turn the screws in the screw thread of the fan housing. Ensure that the guide angles and washers are fitted under the screws.
- 19 Now tighten the V-belt as described in *Section 6.1*.

Following a running-in period, check the belt again!

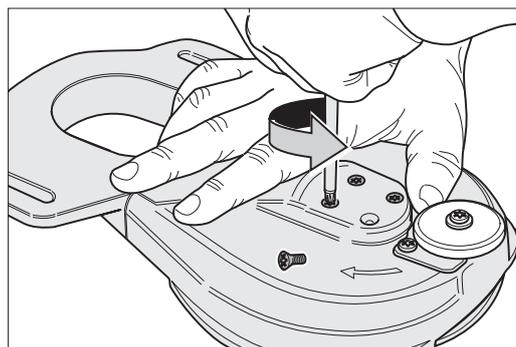


Fig. 34 Unscrew the four fixing screws of the steel sanding disc.

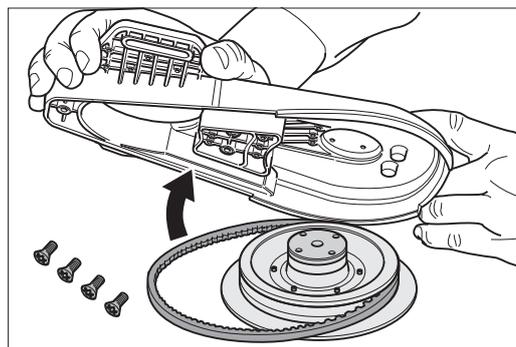


Fig. 35 Remove the attachment from the steel sanding disc.

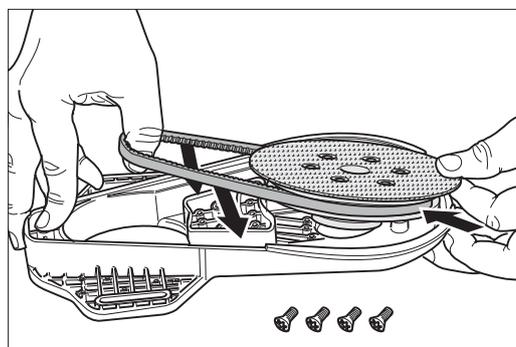


Fig. 36 Insert the steel sanding disc into the attachment with the V-belt. Ensure that the holes in the steel sanding disc are aligned with the holes in the attachment.

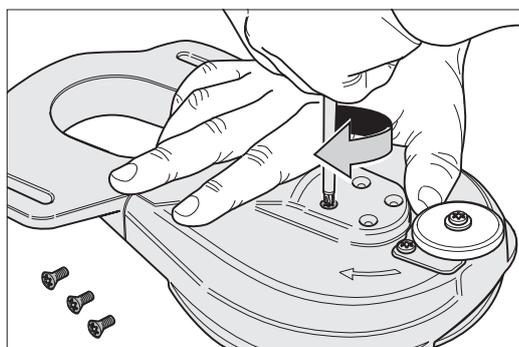


Fig. 37 Tighten the four countersunk head screws to fix the steel sanding disc.

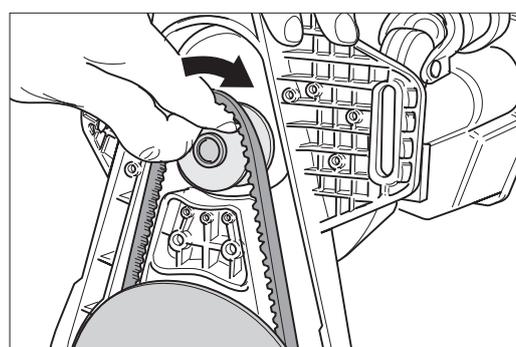


Fig. 38 Insert the V-belt into the motor belt pulley.

### 6.3 CHANGING THE STEEL SANDING DISC

If the V-belt is being changed, it has to be determined whether the belt pulley of the steel sanding disc is worn-out. If that is the case you must proceed in the following manner:

- 1 **Switch off the machine and always pull the power supply plug out of the socket!**
- 2 Dismantle the attachment and the steel sanding disc, in accordance with *Section 6.2*.
- 3 Reassemble the attachment with a new steel sanding disc (complete) in the reversed order, in accordance with *Section 6.2*.

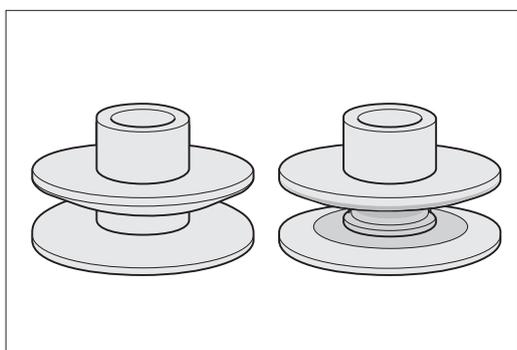


Fig. 39 On the left-hand side, a new belt pulley, and on the right-hand side, a run-in belt pulley that must be replaced.

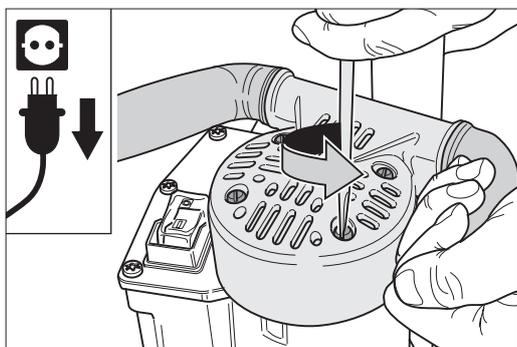


Fig. 40 Undo the four fixing screws and ...

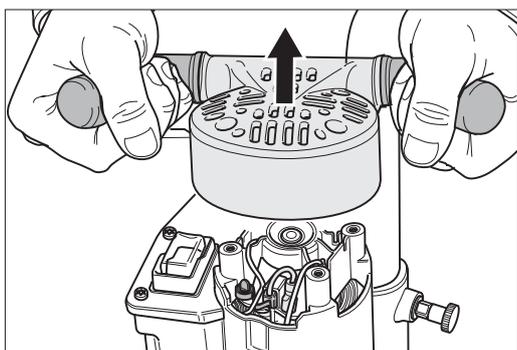


Fig. 41 ... remove the handle.

### 6.4 CHANGING THE MOTOR BELT PULLEY

Use original LÄGLER motor belt pulleys only (Art. no. in *Section 11, Spare parts*). Due to the high motor speed of the FLIP, the motor belt pulley is subjected to increased wear. The belt pulley should therefore be replaced on time in order to prevent excessive V-belt wear.

- 1 **Switch off the machine and always pull the power supply plug out of the socket!**
- 2 Remove the attachment as described in *Section 6.2*.
- 3 Loosen the four fixing screws of the handle and remove it from the motor housing. Ensure that none of the parts fall into the motor (Fig. 40 + 41).
- 4 Now hold the upper end of the motor shaft tight with an SW 10 spanner and use a pair of pliers to undo the motor belt pulley from the motor shaft (normal right-handed thread).
- 5 Clean the contact surface of the motor belt pulley and the shaft butt end completely.
- 6 **IMPORTANT:**  
Oil the machined seat of the motor belt pulley drill hole.

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 CHANGING THE CARBON BRUSHES
 

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- 7 Rotate the new motor belt pulley onto the motor shaft.
- 8 Tighten the motor belt pulley using the spanner and pliers.
- 9 Fit the handle to the motor housing.
- 10 Then install the attachment and tighten the V-belt as described in *Section 6.2*.

### 6.5 CHANGING THE CARBON BRUSHES

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Carbon brushes (Art. no. in *Section 11, Spare parts*) with safety contacts are used to prevent the collector from being damaged by completely worn-out carbon brushes. These safety contacts will switch off the machine automatically when the wear limit is reached. The carbon brushes should, however, be replaced at least once a year in order to prevent damage to the machine!

- 1 **Switch off the machine and always pull the power supply plug out of the socket!**
- 2 Undo the four fixing screws of the handle and remove it from the motor housing, ensuring that no small parts fall into the motor (Fig. 40 + 41).
- 3 Pull off the connector **of one of the** carbon brushes from the carbon holder (Fig. 42).
- 4 Use the universal spanner to turn the brass pressure clamp so that it faces the back and remove the worn carbon brush (Fig. 42).
- 5 Insert the new carbon brush and turn back the brass pressure clamp (Fig. 43).
- 6 Fix the carbon brush connector on the contact provided. Install the carbon brush cable as for the other old carbon brush that is still installed, to avoid subsequent pinching of the cable (Fig. 43).
- 7 Now replace the second carbon brush in the same way.
- 8 Now refit the handle to the motor housing.

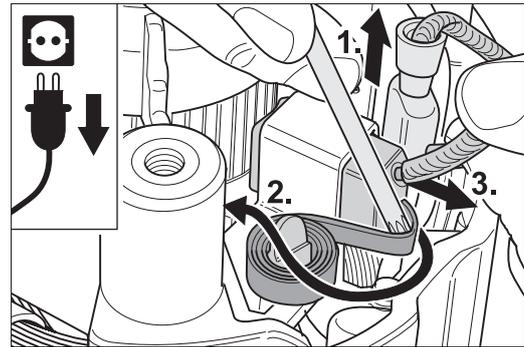


Fig. 42 Pull off the connector, turn the brass pressure clamp to the back and remove the carbon brush.

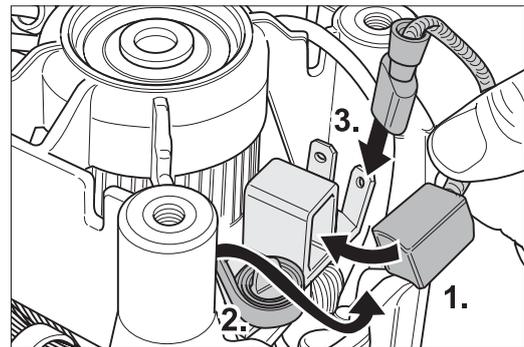


Fig. 43 Insert the new carbon brush, turn back the brass pressure clamp and attach the connector.

**Professional tip:**

You should have a qualified electrician clean the collector by removing the carbon fines every other time the carbon brushes are changed to extend the service life of the motor!

## 6.6 CHECKING THE DUST SUCTION SYSTEM

In order to guarantee optimal dust suction for your safety and for the safety of other persons, the following items must be taken into account:

- Always use original LÄGLER dust bags FLIP (Art. no. in *Section 11, Spare parts*).
- Do not use any damaged dust bags.
- Ensure that the guide rollers are correctly positioned.
- Check the suction system for any clogged-up material or deposits.
- Make sure that the dust bag and locating flange are connected properly.

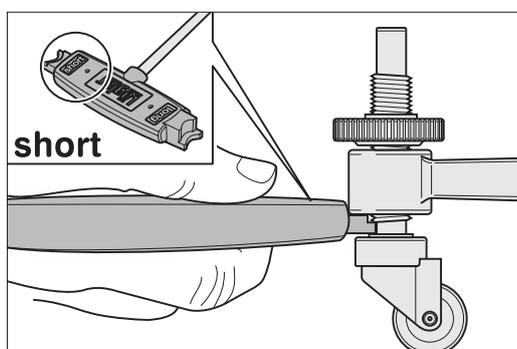


Fig. 44 Standard setting for the short attachment and the corner attachment.

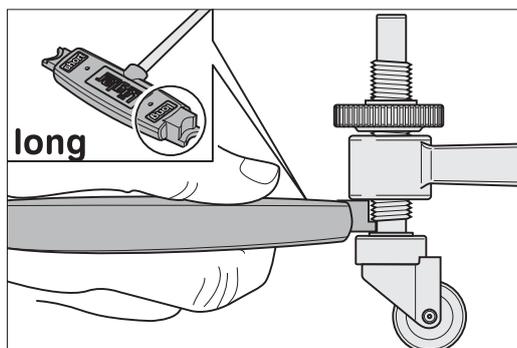


Fig. 45 Standard setting for the long attachment.

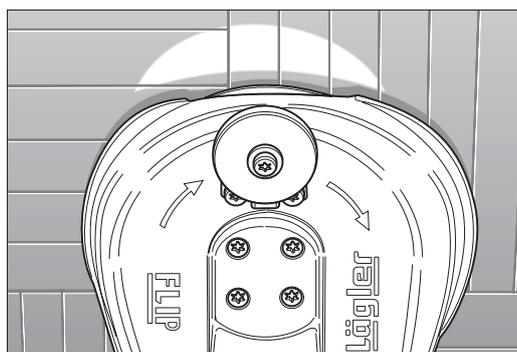


Fig. 46 Correctly adjusted, machine is sanding centrically.

## 6.7 ADJUSTING THE GUIDE ROLLERS

The position of the guide rollers will have an effect the sanding results and the aggressiveness of the machine. For rough sanding tasks, a large setting angle is selected. For fine sanding tasks, a flat setting angle.

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 short and long attachment.

This is achieved by holding the corresponding alignment mark of the universal spanner, that depends on the attachment used, between the guide roller and the fan housing and this spacing is then set (see below for procedure).

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

In special cases the setting must be adjusted to the circumstances, however it is easy to find the standard setting again using the universal spanner.

The high cutting speed of the machine allows you to work fast. The machine must be moved quickly without applying extra pressure. If a higher amount of removed material is demanded, the setting angle must be adjusted to a steeper setting!

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 ADJUSTING THE GUIDE ROLLERS
 

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To adjust the guide rollers, proceed in the following manner:

- 1 **Switch off the machine and always pull the power supply plug out of the socket!**
- 2 Loosen the locknut of the guide roller to be adjusted.
- 3 Hold the appropriate universal spanner alignment mark for attachment used between the guide roller and fan housing, namely so that the lettering on the spanner faces towards the fan housing (Fig. 44 + 45).

Alignment mark - short attachment: **short**  
 - long attachment: **long**  
 - corner attachment: **short**

- 4 Now turn the guide roller in the direction required and re-tighten the locknut.
- 5 Perform a trial sanding operation and check the sanding results (Fig. 46 – 50). Should you require a steeper or flatter setting, loosen the locknut again and turn the guide roller one or two turns in the relevant direction and then tighten the locknut again.

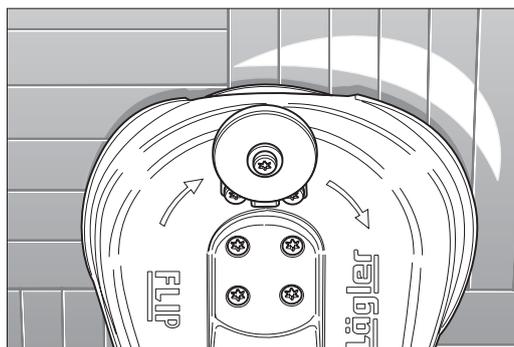


Fig. 47 Sanding zone too far to the right means, ...

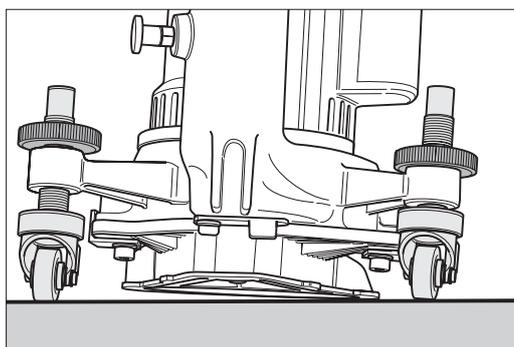


Fig. 48 ... the left-hand wheel lifts the machine too far.

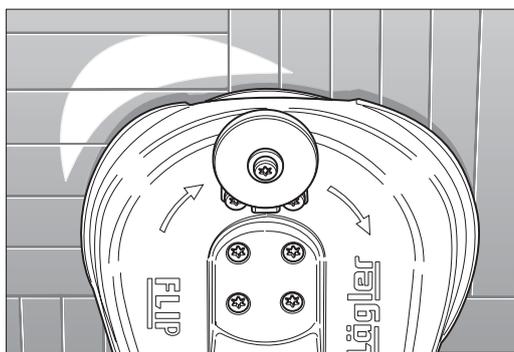


Fig. 49 Sanding zone too far to the left means, ...

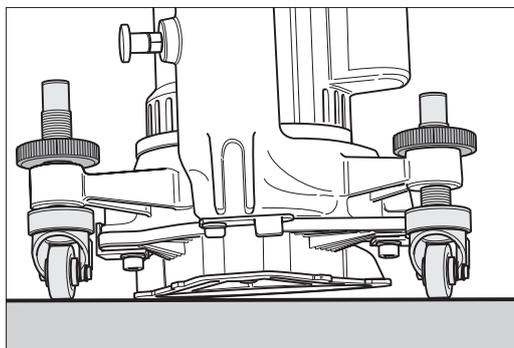


Fig. 50 ... the right-hand wheel lifts the machine too far.

## 6.8 CHANGING THE GUIDE ROLLERS

Use original LÄGLER guide rollers only (Art. no. in *Section 11, Spare parts*).

- 1 **Switch off the machine and always pull the power supply plug out of the socket!**
- 2 Remove the locknut.
- 3 Rotate the guide roller completely out of the fan housing.
- 4 Rotate the new guide roller into the fan housing.
- 5 Set the position of the guide roller using the universal spanner (*Section 6.7*). Mount the locknut and tighten it.
- 6 Check the machine setting (*Section 6.7.5*).

### Professional tip:

A light oil film on the thread of the guide roller makes the adjusting work easier!

## 6.9 ADJUSTING THE WALL-PROTECTING ROLLER

Adjusting the wall-protecting roller can avoid various wall shapes or skirting boards being damaged, or sanded too.

- 1 **Switch off the machine and always pull the power supply plug out of the socket!**
- 2 Use the universal spanner to undo the screw in the middle of the wall-protecting roller (Fig. 51).
- 3 Push the wall-protecting roller into the position you require and then retighten the screw (Fig. 52).
- 4 Check the position by placing the switched off FLIP against the wall so that the wall-protecting roller lies against it.
- 5 The sanding plate must not touch the wall otherwise push the wall-protecting roller in the relevant direction.

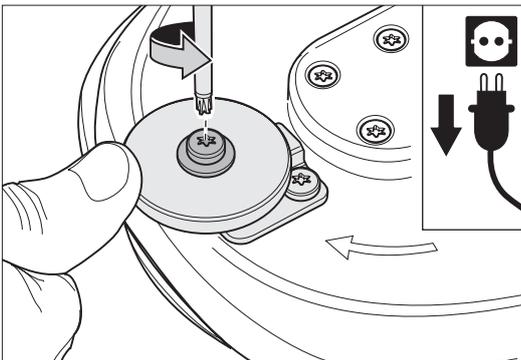


Fig. 51 Undo the screw in the middle of the wall-protecting roller ...

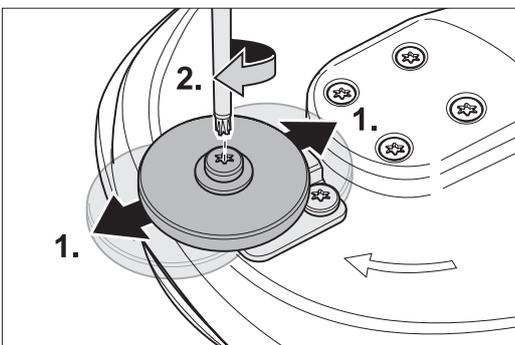


Fig. 52 ... and position.

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 CHANGING THE WALL-PROTECTING ROLLER
 

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

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

- 1 **Switch off the machine and always pull the power supply plug out of the socket!**
- 2 Use the universal spanner to undo the screw in the middle of the wall-protecting roller and push it into the front position (Fig. 53).
- 3 Remove the two screws attaching the holder of the wall-protecting roller to the attachment and remove the complete wall-protecting holder (Fig. 54).

### 6.10 CHANGING THE WALL-PROTECTING ROLLER

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Use original LÄGLER wall-protecting rollers only (Art. no. in *Section 11, Spare parts*).

- 1 **Switch off the machine and always pull the power supply plug out of the socket!**
- 2 Use the universal spanner to remove the screw in the middle of the wall-protecting roller (Fig. 53, 1.).
- 3 Remove the old wall-protecting roller.
- 4 Insert the bush in the new wall-protecting roller and place it on the holder for 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.
- 5 Turn the screw through the bush drill hole into the nut.
- 6 Adjust the position of the wall-protecting roller according to your needs (*Section 6.9*).

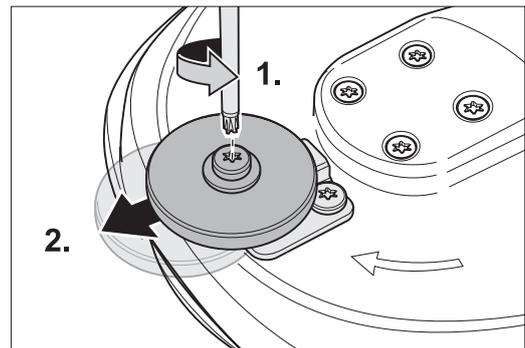


Fig. 53 Loosen the screw and move the wall-protecting roller.

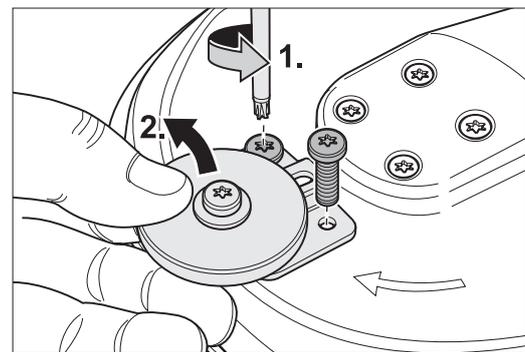


Fig. 54 Remove the fixing screws and take off the complete wall-protecting roller.

### 6.11 CLEANING THE MACHINE FOLLOWING RESTORATION TASKS

Following restoration tasks, residual material consisting of adhesive, wax or sealing lacquer may have accumulated on the belt 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 dismantled as described in *Section 6.2* and the attachment as well as the flanks of the belt pulley be cleaned. Check the fan for any deposits. Wear a respiratory protective mask (P3).

## 7

## Regular checkup according to safety regulations and VDE

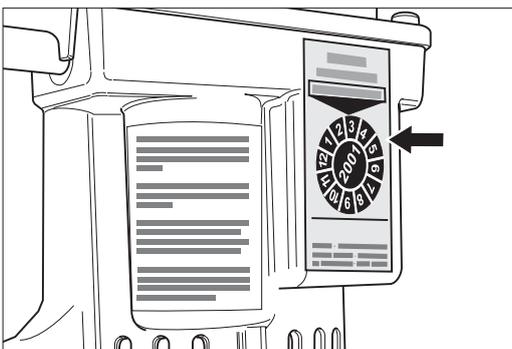


Fig. 55 The inspection label confirms the operational safety.

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

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

Make sure that only original LÄGLER spare parts are used for the maintenance tasks. You should also make sure that your customer service work is only carried out by LÄGLER or an authorised LÄGLER-workshop.

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

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

# Troubleshooting

This section shows you how to eliminate possible malfunctions. In case none of the measures mentioned here are not successful, please contact LÄGLER.

## MACHINE DOES NOT RUN

---

### The machine does not start

- Check the power supply system and the fuse.
- Let the electrical equipment be checked by an electrician (e.g. switches, motor cable).
- **The machine has been switched off by means of the thermal sensor (due to undervoltage in the current supply or excess pressure on the attachment during sanding work) and must cool off!**

### The machine tries to start but is blocked

- At low temperatures: Heat up the machine to room temperature in a warm room.
- Low voltage: Check the cable quality and cable length. Avoid the use of cable cross-sections that are too small (cross-sections smaller than 1.5 mm<sup>2</sup>) and power supply cables that are too long. Use a transformer as required.
- Check and adjust the V-belt tension.

## MACHINE RUNS BADLY

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### Machine runs, but no or very little sanding power capacity

- At low temperatures: Heat up the machine to room temperature in a warm room.
- Low voltage: Check the cable quality and cable length. Avoid the use of cable cross-sections that are too small (cross-sections smaller than 1.5 mm<sup>2</sup>) and power supply cables that are too long. Use a transformer as required.
- Check and adjust the V-belt tension.
- Check the driving elements for free-running condition.
- Setting angle is too flat.
- Incorrect or dull sanding disc.

### Machine vibrates extremely and works noisily

- Check the sanding disc for damage.
- Check the belt drive unit.
- Check the machine for clogged and deposited material.

**Machine runs well, but produces dust**

- Dust bag overfilled.
- Dust bag incorrectly installed or damaged.
- Check suction system for clogged material and clean as required.
- More than one sanding disc installed.
- Machine setting incorrect, readjust guide roller.

**No clean-cut sanding results**

- Check sanding results and adjust the guide rollers correctly.
- Too slow machine guidance.
- Additional pressure applied.
- Incorrect machine guidance (no circular movements).
- Sanding disc incorrectly mounted.

## General safety information

**ATTENTION!**

For the use of machines with electrical equipment, the following safety measures must always be observed for protection against electric shocks, risk of injury and risk of fire. Read and observe these instructions before using the machine. Keep these safety instructions in a safe place!

**Keep your workplace environment tidy and orderly**

Disorder at the workplace increases the risk of accidents.

**Always be aware of environmental effects**

Never expose an electric tool or machine to precipitation. Do not work with electric tools or machines in a damp or wet environment.

Make sure your working area is brightly lit.

Do not use the machine near fire sources, open flames, combustible liquids or gases.

**Keep away from fire sources. Do not smoke while working in a dusty environment (e.g. while working with the machine or emptying the dust) → Risk of a dust explosion.**

**Protect yourself from electric shock**

While working with electric tools or machines avoid physical contact with grounded metal appliances like pipes, radiators, kitchen ranges, refrigerators etc..

**Keep children and other persons away**

Do not permit children or any other persons to touch the machine or the power cable. Keep them remote from your working area.

**Store your electric tools and machines safely**

While not in use your tools and machines ought to be stowed away in dry, locked spaces, out of reach for children and unauthorized persons.

**Do not overcharge or overburden your electric tools and machines**

It is better and safer to work within the machines' prescribed capacity ranges.

**Always use the most adequate electric tool or machine**

Do not use low capacity machines, tools or attachment parts for heavy-duty tasks. Never use a tool or machine for a purpose for which it has not been designed.

**Always wear adequate work attire**

Do not wear loose clothing; do not wear bracelets, necklaces and similar loose decorations that might become entangled.

**Use protective devices**

When doing dust-generating work always use a respiratory protective mask of the filter class P3.

**Never use power cable for improper purposes**

Do not lift or carry your tool or machine by the power cable, do not pull cable in order to disconnect plug from socket. Protect cable from heat, oil and sharp edges.

**Do not work in stooped posture**

Avoid unnatural or strenuous bodily postures. Make sure to always stand on solid ground and in balanced posture.

**Keep your tool or machine in good shape**

Keep your tool or machine clean for better and safer performance. Adhere to the maintenance instructions and change defective or worn-out parts when necessary or in recommended intervals. Check the power cables regularly and, if you detect any defects, have the defective elements replaced by a certified specialist. Also check the extension cable regularly and replace it in case of damage. Keep the handles dry and free of oil and grease.

**Disconnect power plug**

While machine is not in use, unplug power cable. Also do so, under any circumstances, prior to any maintenance work or gear change.

**ATTENTION!**

For your own safety, we advise that you only use such accessories and attachments as are recommended in this manual or offered in a pertinent LÄGLER parts catalog. The use of any parts, attachments or tools other than the ones recommended in this manual may result in a risk of personal injury to the person handling the machine.

Safe-keep this manual.

Observe any pertinent regulations and recommendations issued by the organizations and supervisory authorities of your trade.

**No loose tools and attachments on machine**

Before switching machine on, make sure that all and any spanners or setting fixtures are removed from machine.

**Avoid inadvertent machine start**

While machine is power connected never carry it with your finger close to the switch button. Before plugging in make sure that machine is switched off.

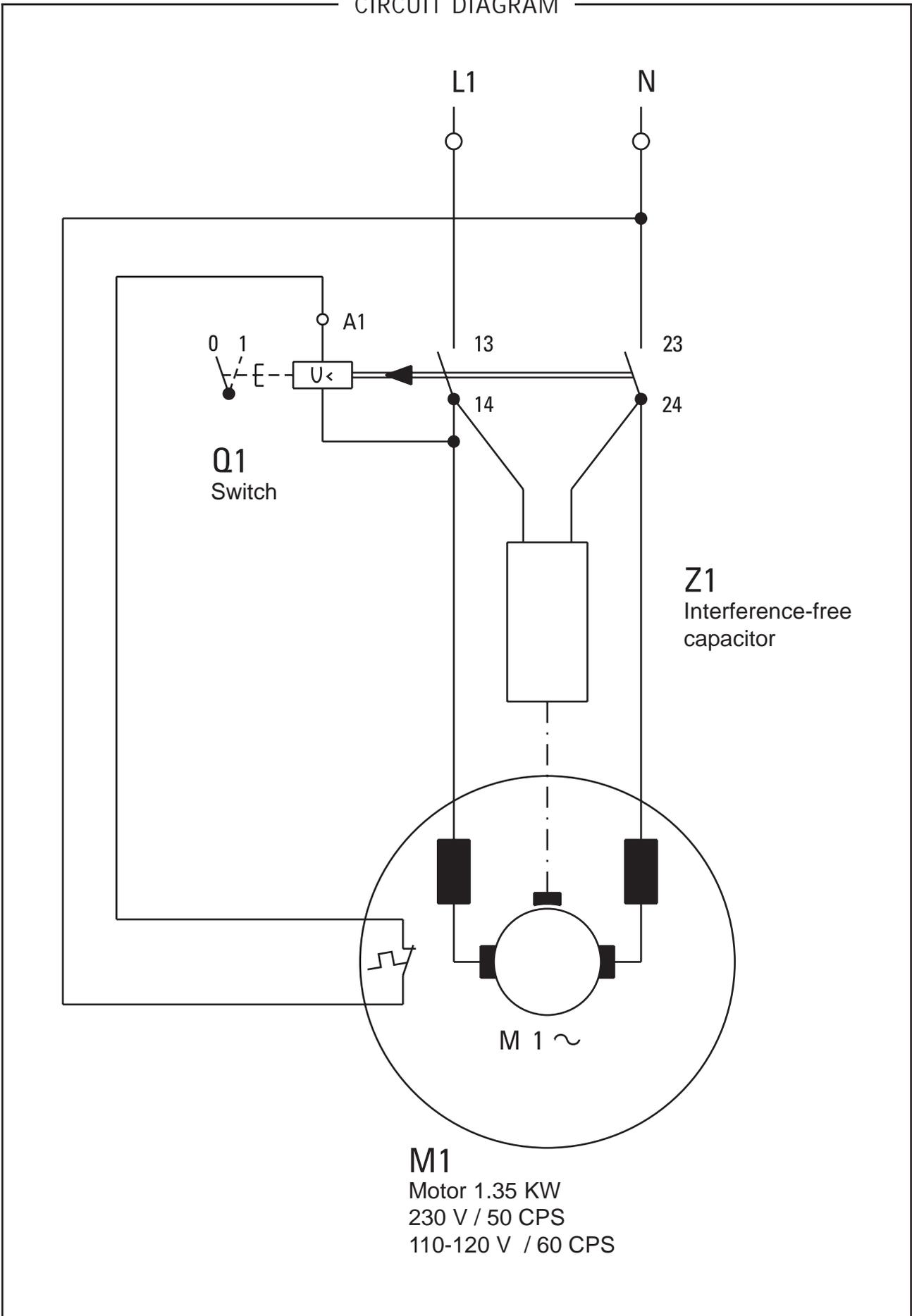
**Always try to be concentrated**

While working always watch what you do and what happens around you. Go about your job in a systematic and reasonable way. If you feel unable to concentrate refrain from using your machine.

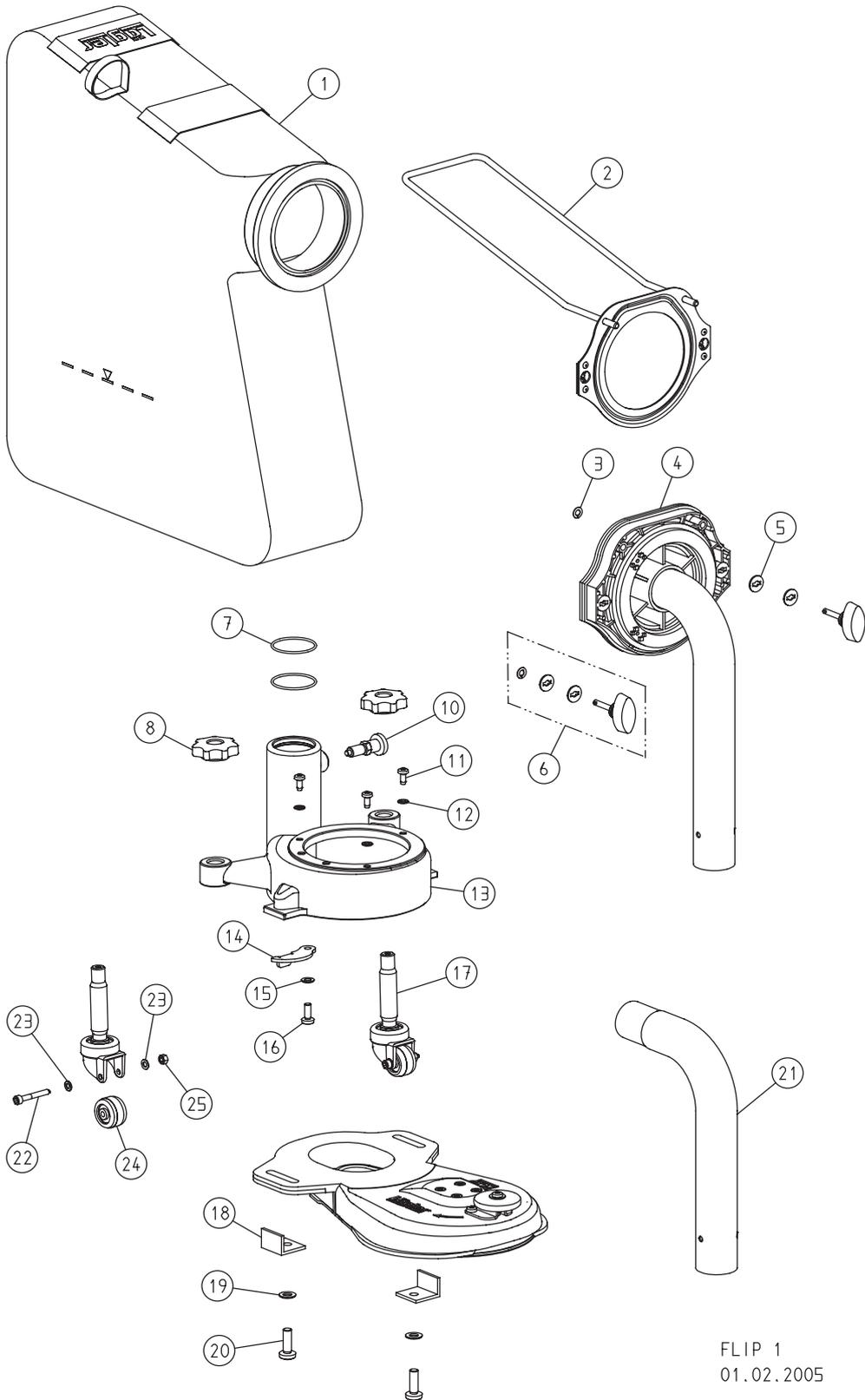
**Check your machine for visible and hidden defects**

Before starting a job check your machine carefully; in particular, check its protective devices and its wearing components and make sure they are in perfect working order. Check moving components to make sure that their mobility is not impaired, that no parts are broken or fissured, that all parts are in their proper place and securely fastened; in short, make sure that all requirements for a proper functioning of the machine are fulfilled. Defective parts must be repaired or replaced by an authorized service shop, unless otherwise recommended in this manual. Defective switches must be replaced by authorized service personnel. Never use your machine while its power switch button or any other electrical components are defective or ineffective.

CIRCUIT DIAGRAM



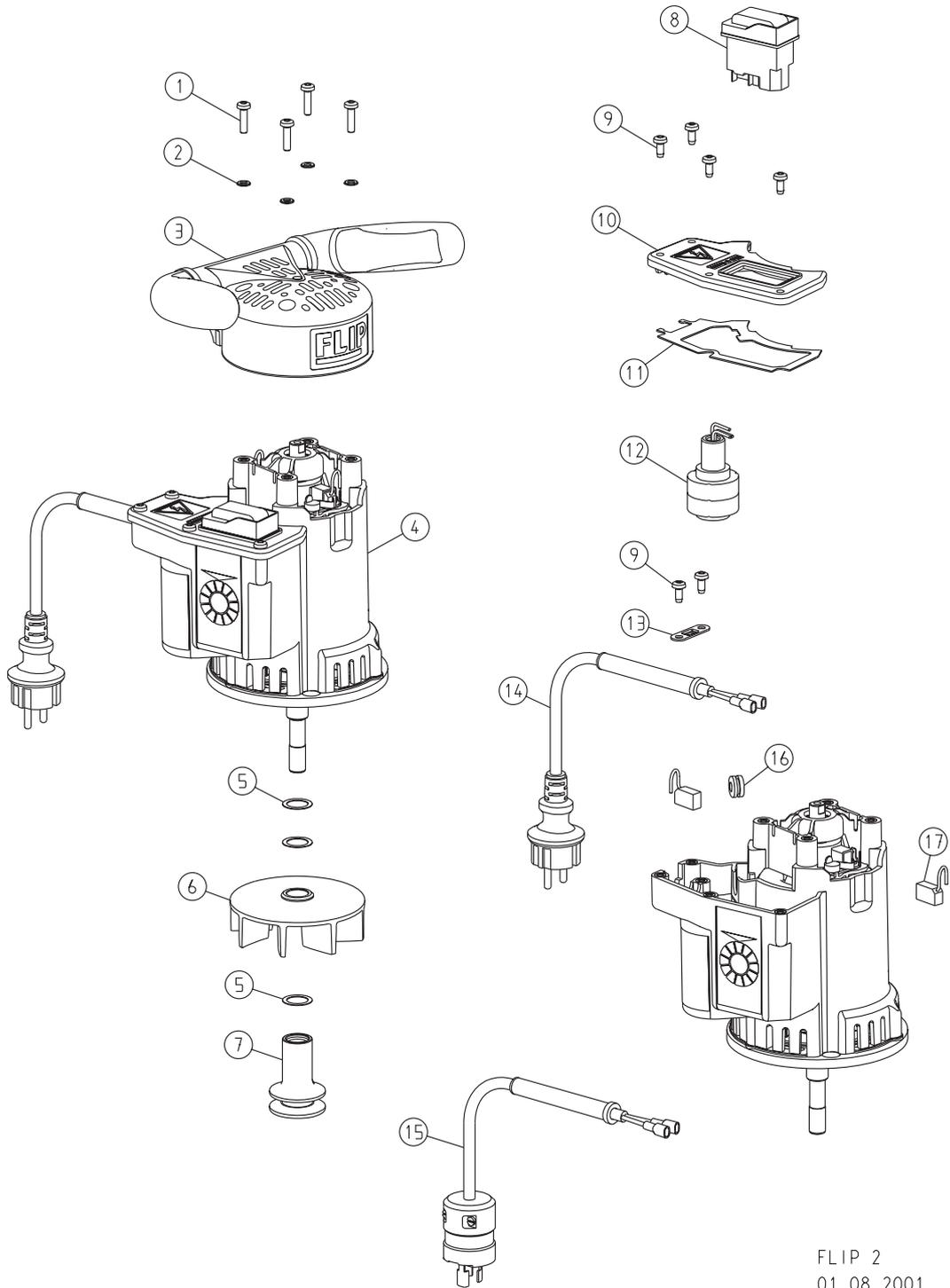
SPARE PARTS



FLIP 1  
01.02.2005

Item	Part no.	Description
	320.00.80.100	Dust bag, complete
1	320.00.86.105	Dust bag
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	Lens head 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	Lens head 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	Lens head screw
21	320.14.92.100	Pipe socket for vacuum cleaner connection, 38 + 40 mm outside diameter
22	0912.1005.035	Hexagonal socket head screw
23	0125.1005.000	Washer
24	320.05.09.305	Wheel
25	0980.1005.000	Nut

SPARE PARTS

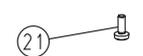
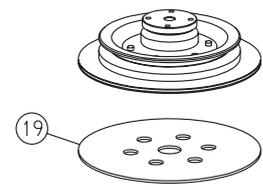
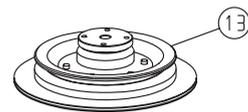
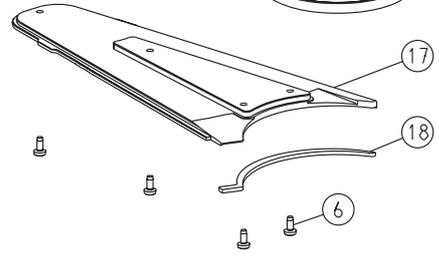
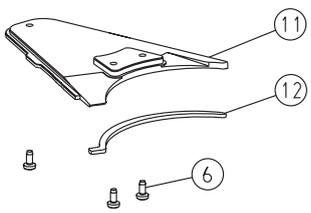
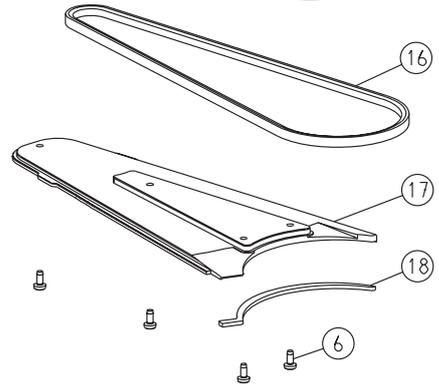
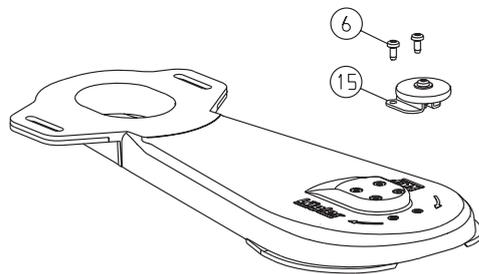
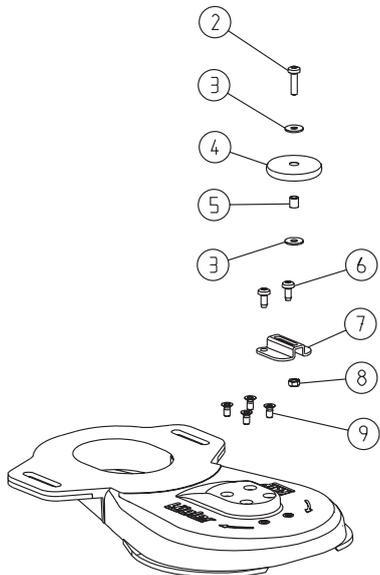
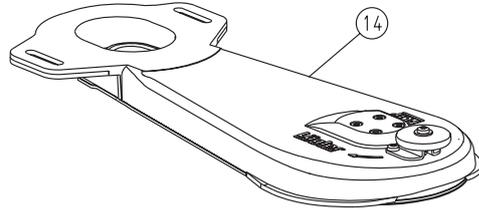
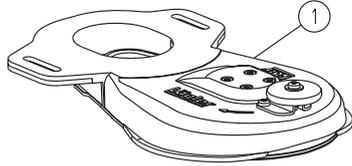


FLIP 2  
01.08.2001

## SPARE PARTS

Item	Part no.	Description
1	7985.1005.820	Lens head screw
2	0125.1005.000	Washer
3	320.20.10.105	Handle
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	Precision washer
6	320.10.10.100	Fan wheel
7	320.65.06.100	Motor belt pulley
8	000.65.60.256	Switch, 230 V / 50 + 60 CPS
	000.65.60.156	Switch, 110 V / 50 + 60 CPS
9	7500.1005.012	Lens head screw
10	320.65.47.100	Cover switchbox with sealing
11	320.65.48.105	Sealing
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 mm <sup>2</sup>
15	000.65.42.153	Motor cable 2 x 1.5 mm <sup>2</sup> , USA
16	000.63.12.071	Rubber tube
17	000.65.84.012	Carbon brush

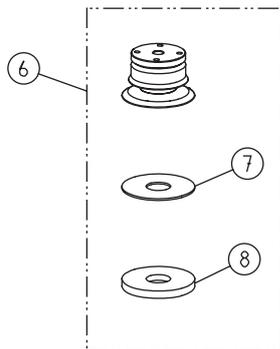
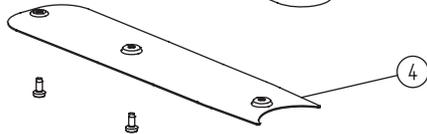
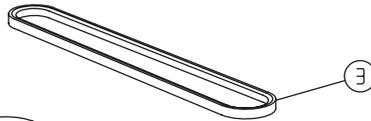
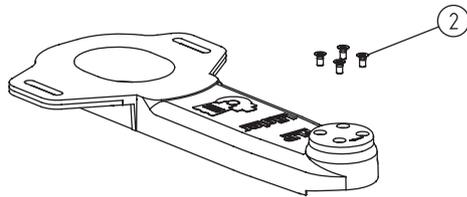
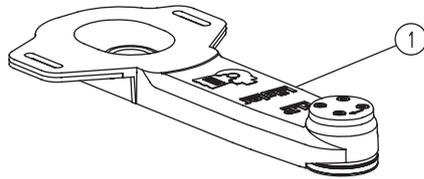
SPARE PARTS



FLIP 3  
01.08.2001

Item	Part no.	Description
1	320.01.00.100	Attachment short, complete
2	7985.1005.820	Lens head screw
3	9021.1005.000	Washer
4	320.60.02.100	Wall-protecting roller
5	000.43.15.052	Bush
6	7500.1005.012	Lens head screw
7	320.60.01.100	Bracket
8	0934.1005.000	Nut
9	0965.1005.810	Countersunk head screw
10	000.71.51.053	V-belt 10 x 530
11	320.01.03.100	Attachment cover short, complete
12	320.01.51.105	Seal, green
13	320.01.91.100	Steel sanding plate, complete
14	330.01.00.100	Attachment long, complete
15	320.60.00.100	Wall-protecting roller with bracket
16	000.71.51.085	V-belt 10 x 850
17	330.01.03.100	Attachment cover long, complete
18	330.01.51.105	Seal, black
19	350.03.35.205	Velcro disc 150 mm
20	320.02.05.100	Paper tensioning disc
21	7985.1006.816	Lens head screw

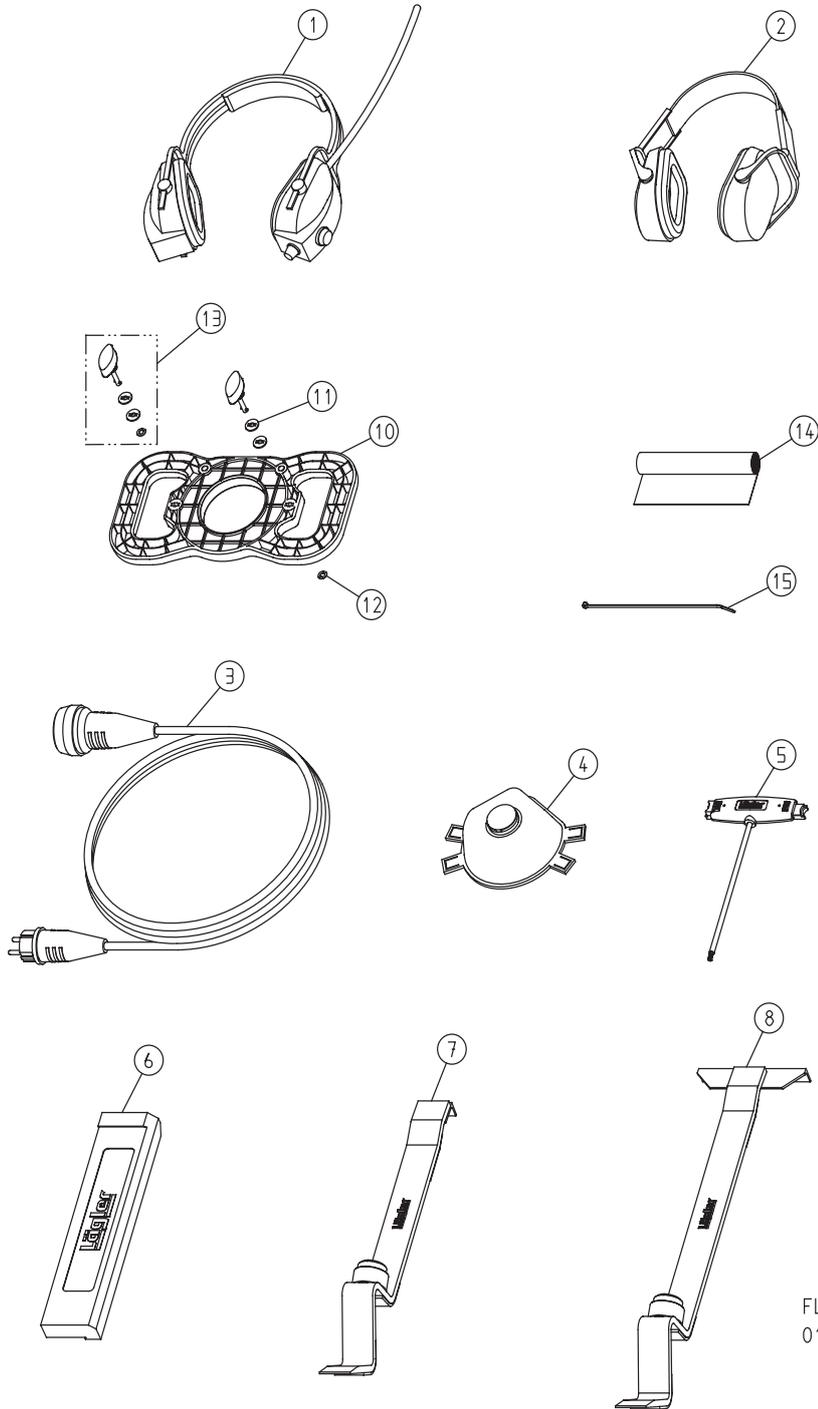
SPARE PARTS



FLIP 4  
01.12.2002

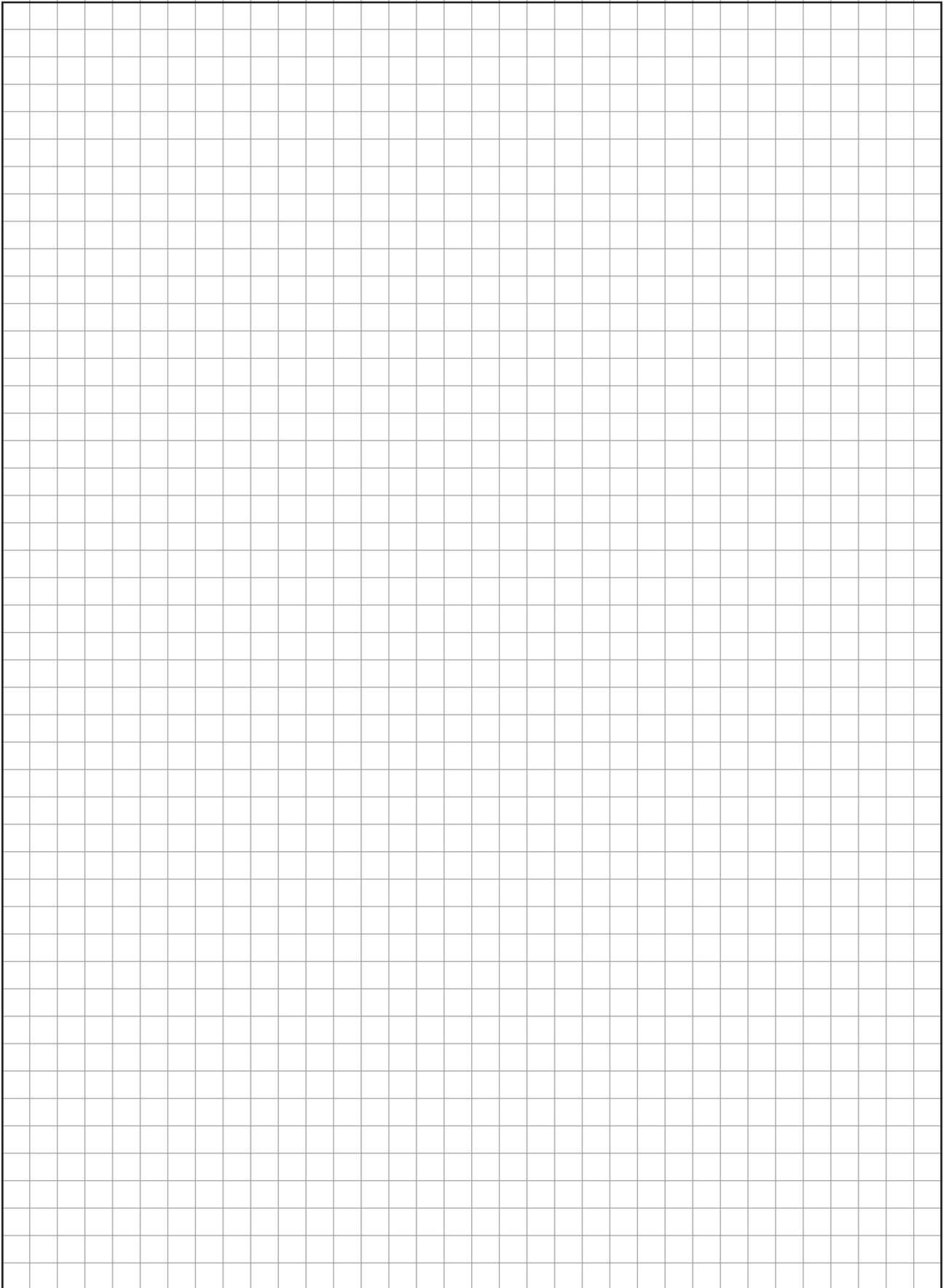
Item	Part no.	Description
1	335.01.00.100	Corner attachment FLIP, complete
2	0965.1005.810	Countersunk head screw
3	000.71.24.065	V-belt 10 x 650
4	335.01.02.100	Cover, corner attachment
5	7500.1005.012	Lens head screw
6	335.01.91.100	Steel sanding plate for corner attachment, complete
7	335.02.12.105	Velcro disc, self-adhesive
8	335.02.13.105	Velcro ring, flexible

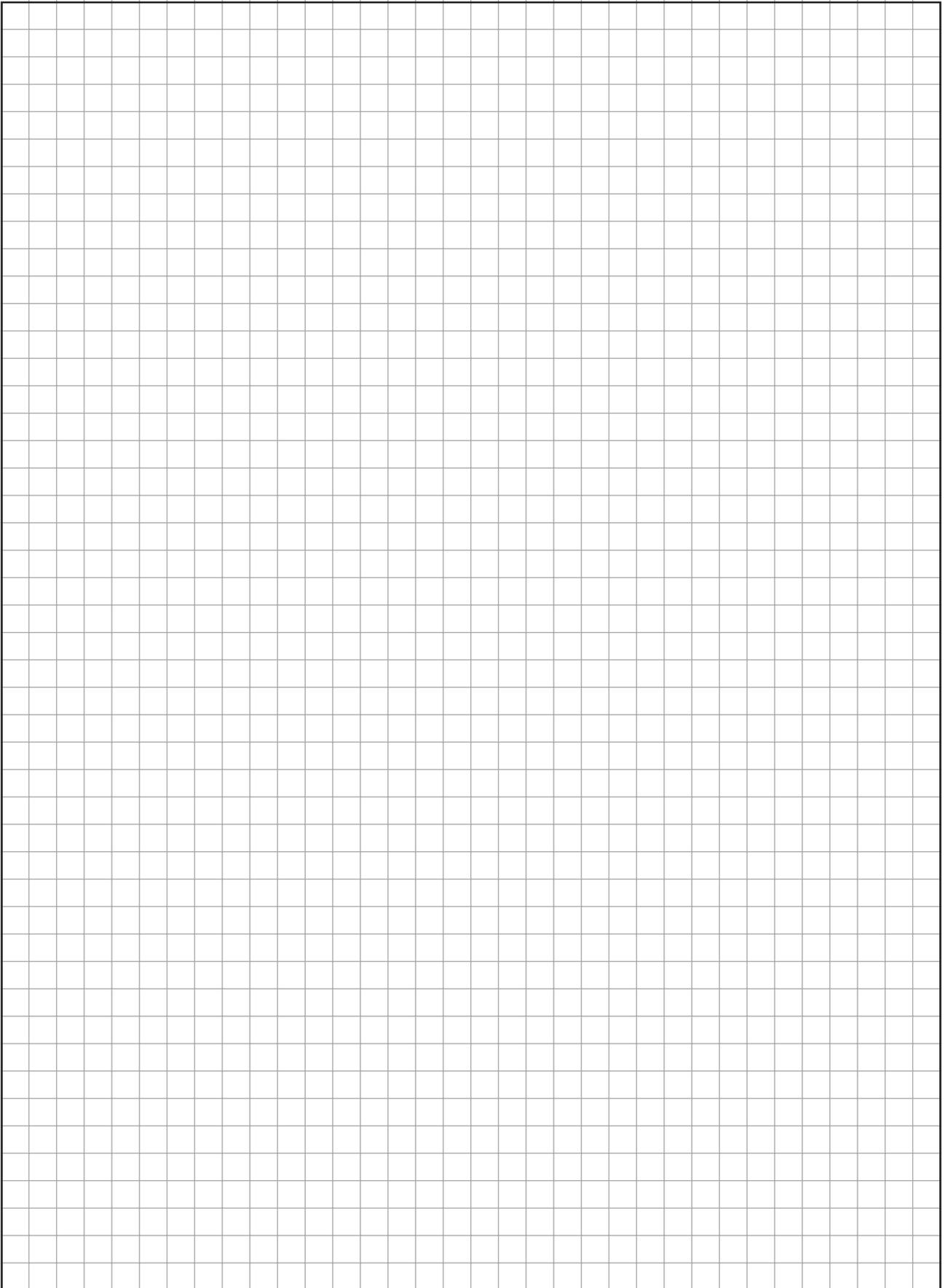
SPARE PARTS

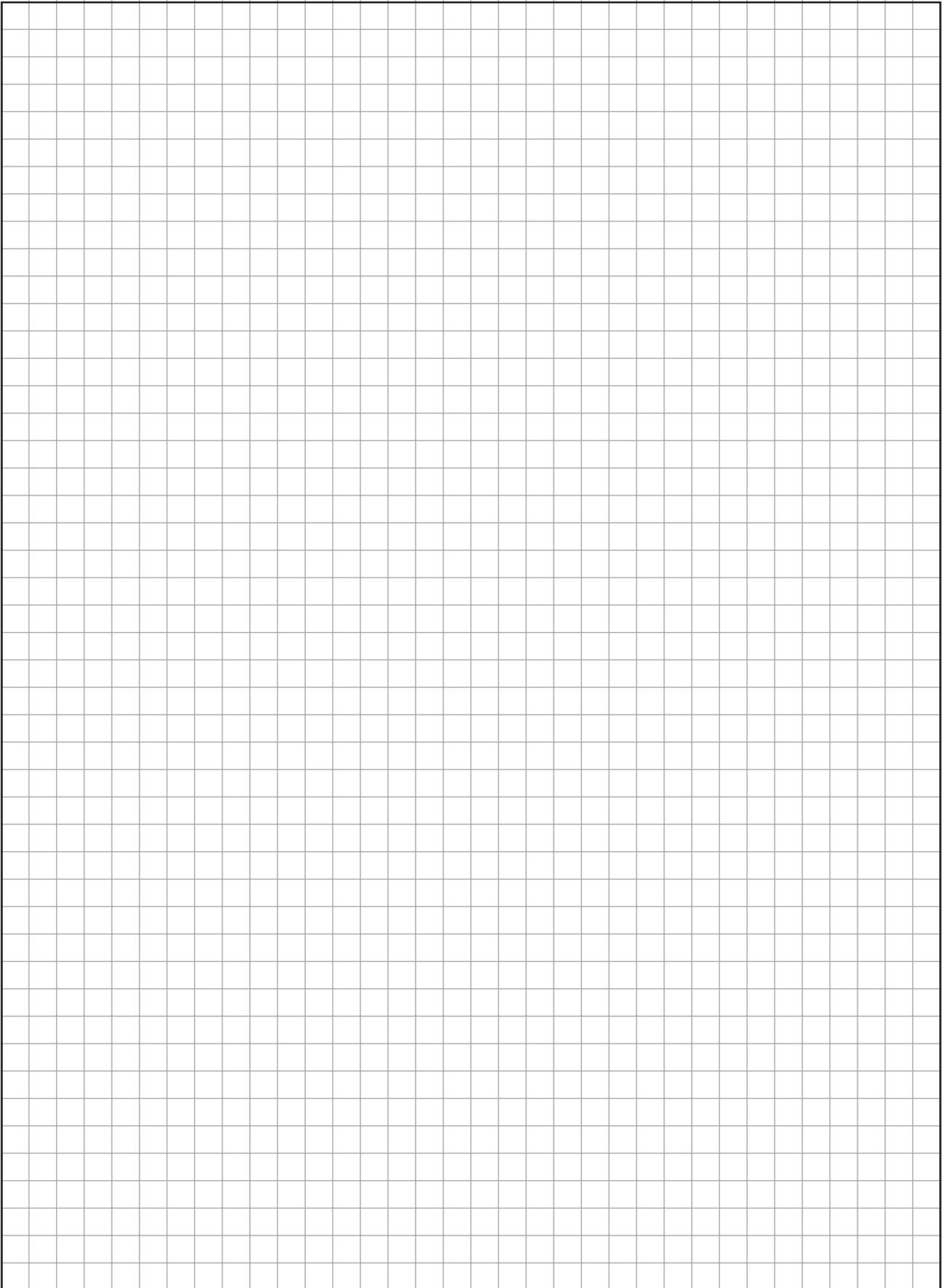


FLIP 5  
01.08.2004

Item	Part no.	Description
1	000.01.10.011	Foldable earmuff type MUSIMAFF
2	000.01.10.021	Foldable earmuff type POCKET
3	000.65.53.151	Extension cable 3 x 1.5 mm <sup>2</sup> , 10 m
4	000.01.20.010	Protective mask P3
5	000.91.40.001	Universal spanner
6	701.10.00.100	Impact tool
7	702.00.00.100	Parquet layer tool 43 cm long
8	703.00.00.100	Parquet layer tool 55 cm long
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 binder







SERVICE PASSPORT

SERVICE PASSPORT

On the back of these operating instructions, please enter the serial number and the year of construction of your machine (see rating plate). Otherwise your service passport will not be valid.

Be sure that any kind of maintenance work is certified here by your dealers company.

Date of test and service: _____
Signature and stamp
Date of test and service: _____
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Date of test and service: _____
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# Declaration of conformity according to EC regulations

98/37/EC from 22.06.1998

Low voltage (73/23/EEC, last changed through 93/68/EEC from 22.06.1993)

Electromagnetic compatibility (89/336/EEC, last changed through 93/68/EEC from 22.06.1993)

The design of the edge-, corner- and stair-sanding machine **LÄGLER FLIP**, for serial no. please see rating plate, is developed, constructed and built according to the above mentioned regulations.

**The following harmonized specifications are used:**

**DIN EN 292 Part 1 and Part 2**, Safety of machines, equipment and systems

**DIN EN 60 204.1**, Electrical equipment for industrial machinery

**EN 55014-1**, Electro-magnetic Compatibility: Radiated Interference – Product Family Standard

**EN 55014-2**, Electro-magnetic Compatibility: Resistance to Interference – Product Family Standard

**EN 61000-3-2**, Electro-magnetic Compatibility: Limits for Harmonic Frequency Currents

**EN 61000-3-3**, Electro-magnetic Compatibility: Limits for Voltage Variations and

Flicker in Low Voltage Networks for Equipment with an Input Current of  $\leq 16$  A per Conductor

**Following documents are existing:**

- Master plan of the machine including electrical plans
- Complete specified plans to check accord of the machine with major safety rules
- List of regulations, specifications and EEC rules used for the design of the machine
- Description of the solutions to avoid dangers for the operators and environment
- One sample of the owner's manual

Eugen Lägler GmbH · Maschinenbau  
Industriegebiet Kappelrain  
D-74363 Güglingen-Frauenzimmern  
Phone: +49 - 7135 - 98 90-0 · Fax: +49 - 7135 - 98 90-98  
E-Mail: info@laegler.com · <http://www.laegler.com>

*Volker Wörner*

Dipl.-Ing. (FH) Volker Wörner, Construction  
Eugen Lägler GmbH, Maschinenbau  
Güglingen-Frauenzimmern,  
01.02.2005

**FLIP**

**Serial No:** \_\_\_\_\_

**Built in:** \_\_\_\_\_



**Lägler**

WORLD LEADERS IN FLOOR  
SANDING TECHNOLOGY

Eugen Lägler GmbH · Maschinenbau

Industriegebiet Kappelrain · D-74363 Güglingen-Frauenzimmern / Germany

telephone: +49 - 7135 - 98 90-0 · Fax: +49 - 7135 - 98 90-98 · E-Mail: info@laegler.com · <http://www.laegler.com>