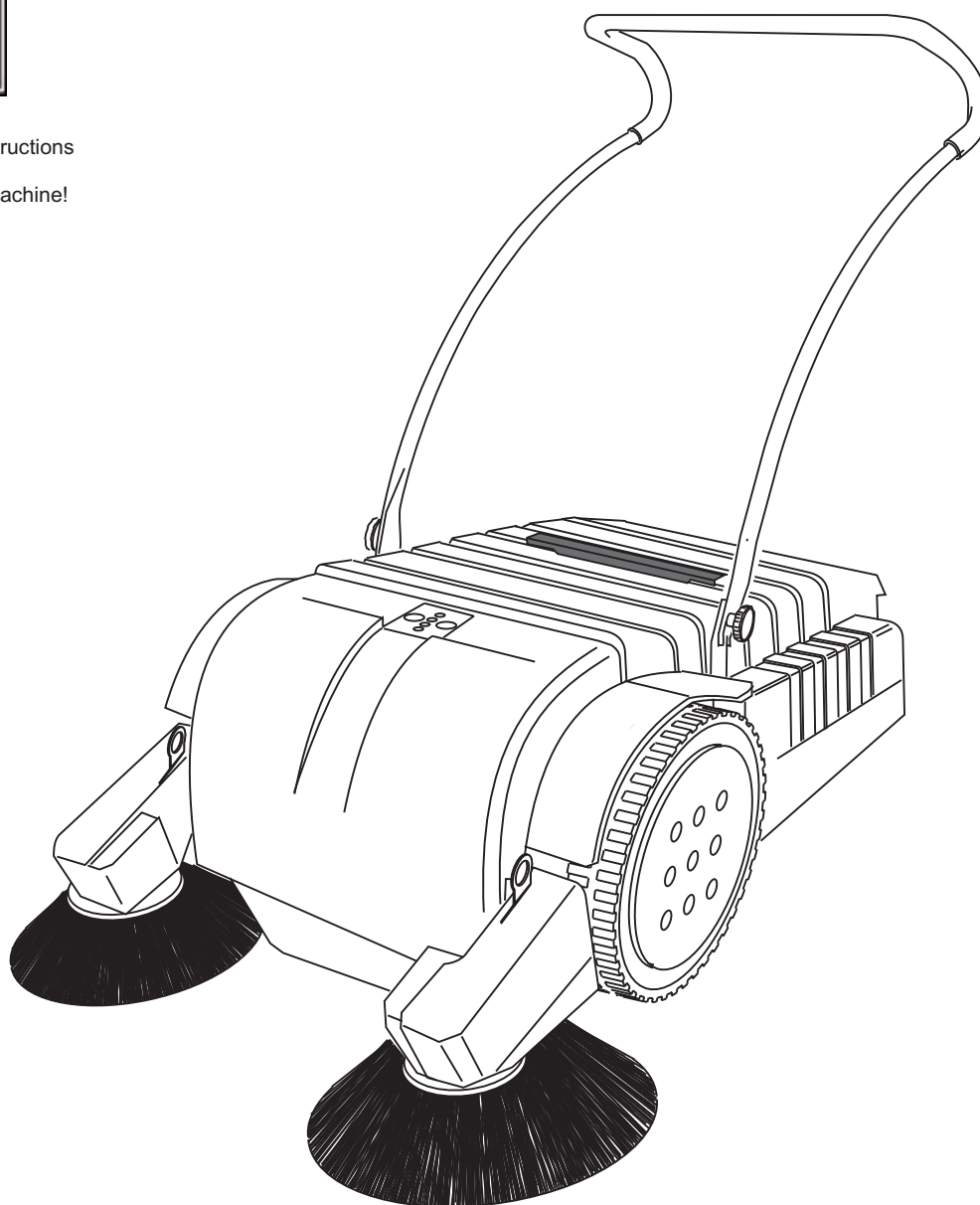


KS 90 B 50 iL

**Operating manual
Manual sweeper**



Read these instructions
carefully before
operating the machine!



Introduction

These Operating Instructions pertain to the operation of the KS 90 B 50 iL.

Our products are subject to continuous improvement; constructive changes that have been made after the printing of these operating instructions could not be taken into account. If you have any questions, feel free to contact our service department.

The Operating Instructions must be read and observed by anybody using or operating the manual sweeper.

Besides applying the Operating Instructions, the operator is reminded to observe the legislator's accident prevention regulations as well as general rules of professional and safe working methods.

Safety Information

The manual sweeper is designed and built in accordance with state of the art know-how and standard safety regulations. In spite of this, physical danger to the operator or third parties or the impairment of the manual sweeper or other valuable objects may arise during operation.

Always use the manual sweeper in a flawless condition and in a way that accords with general rules of operational and personal safety, and always observe these Operating Instructions! Eliminate malfunctions that may impair operational safety immediately!

Keep Operating Instructions ready at hand wherever the manual sweeper is used!

In addition to the Operating Instructions, observe the generally applicable legal or other binding guidelines for accident prevention and environmental protection!

Do not modify, expand, or reconstruct the manual sweeper in any way without explicit approval by the manufacturer.

Replacement parts must comply with the specifications defined by the manufacturer. This will always be the case if only original replacement parts are applied.

Observe the prescribed maintenance intervals and those stated in these Operating Instructions!

Be sure to dispose of operational and auxiliary materials as well as replacement parts in a safe and environmentally sound way!

Correct Application

The manual sweeper is intended exclusively for cleaning hard surfaces of dry sweepings. e. g. : parking lots, industrial buildings, warehouses, sidewalks.

Never use this machine to sweep inflammable or toxic or explosive substances.

Any application different from or exceeding this definition is incorrect. The manufacturer is not to be held responsible for any damage arising from such applications.

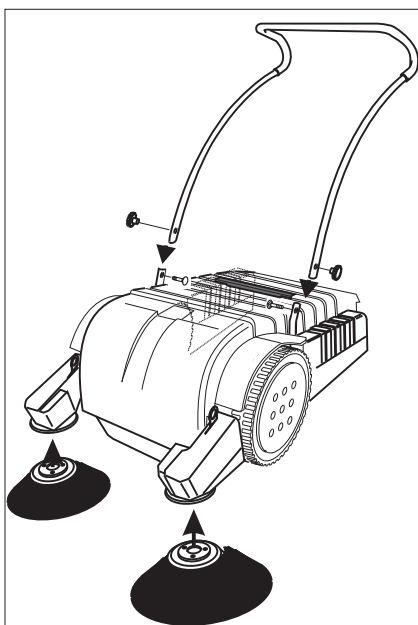
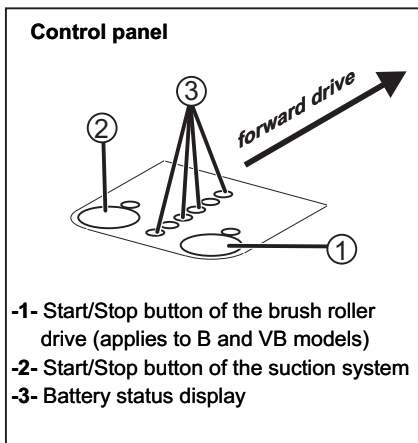
Any risk is to be assumed by the operator.

The manual sweeper is not suitable for taking up cords, strings, wires or similar materials.

Correct application includes the observation of Operating Instructions as well as inspection and maintenance intervals.

Technical Data

Dimension and Weight	
Length:	1091 mm
Width:	760 mm
Height:	460 mm
Weight:	22 - 50 kg
Sweeping Width:	
- Main sweeping roller	500 mm
- with one side brush	700 mm
- with two side brushes	900 mm
Dust Container Volume	50 ltr
Battery voltage	12 V
(Battery) capacity	21 Ah bzw. 42 Ah



Sweeper description

The battery-operated sweeper has been equipped with two side brushes and two counter-rotating brush rollers.

The sweeping mechanism features two side brushes which convey the refuse to the two brush rollers that are mounted parallel to the direction of motion.

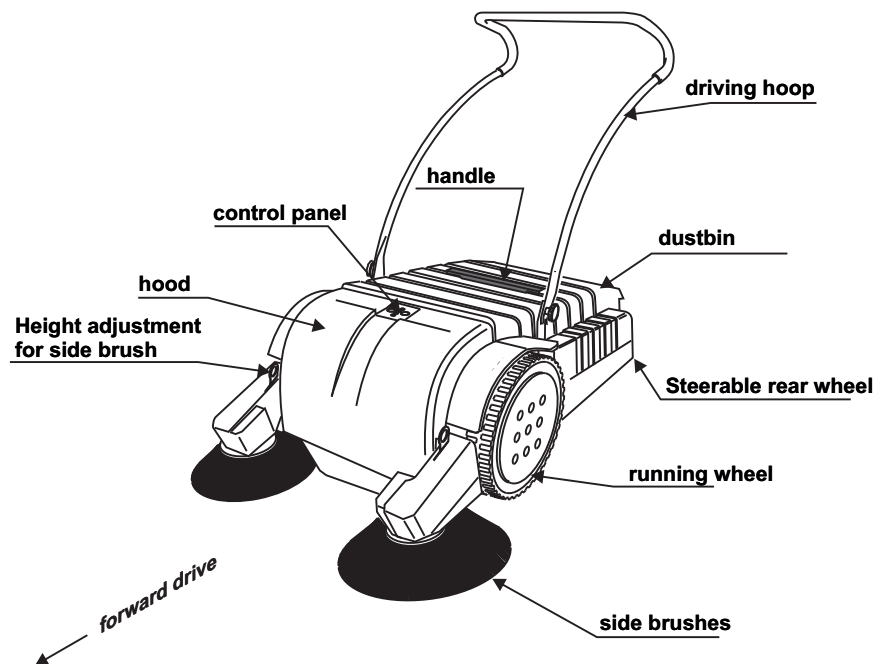
The brushes throw the refuse overhead in the rear dirt collector.

A chain drives the brush rollers, and a V-belt drives the side brushes through the forward motion of the running wheel.

The top model of the series is the KS 90 B 50 iL, which has been equipped with a dust extraction unit and a brush roller drive.

The electronic system provides for a soft start feature, which ensures that the drive does not run at full power all of a sudden.

The brush roller drive does not serve as a drive unit.



Initial start-up

Unpacking and assembly

- Open the packaging and carefully lift the machine off the pallet.



Caution! Danger of injury!

Reach under the frame of the machinery to lift it. There is a risk of injury if you attempt to lift the machinery at the hood, the side brush retainer, or the dustbin.

- Remove the star knobs from the driving hoop retainers and remove the square necked bolts.
- Place the driving hoop on the retainers.
- Slide the square necked bolts through the bore holes in the driving hoop and the retainer.
- Use the star knobs to secure the square necked bolts.
- Set the side brush arms to the top position.
- Position the side brushes under the side brush retainers.
- Turn the side brushes until the bore holes of the side brush disc line up with the pins of the side brush retainer.
- Push the side brushes into the side brush retainers until you feel the side brushes lock into place.
- Set the side brush arms in their bottom position.
- Connect the battery. See technical data - switching diagram.
- Please close the hood correctly. Otherwise, it may be that the machine does not start.

The sweeper is ready for operation.

Operation

Safety Information

The Sweeping & Suction Machine may only be operated by dependable persons..

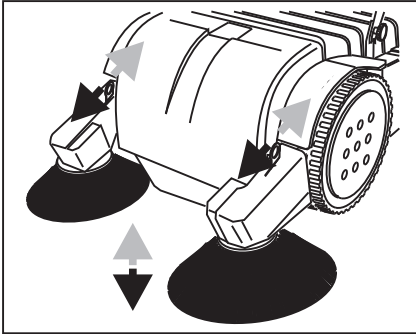
Only deploy trained and instructed staff. The areas or responsibility of staff must be clearly defined. Examine the Sweeping & Suction Machine before starting and check serviceability and technical safety. Do not use the machine in case of malfunctions of any kind.

Only drive on specifically assigned pathways and lots.

It is prohibited to use the sweeper to transport loads. Try to avoid sweeping up packing band, wires, or similar items.

Such objects may wind around the moving parts of the machinery and result in reducing the sweeping performance (tie up bristles) or they may clog the sweeper.

After you've finished sweeping, always park the sweeper on level ground and make sure it is secured from rolling away by accident.



Height adjustment of the side brushes

The side brush arms are located on the front side of the sweeper.

The height adjustment fixtures for the side brushes are located on the side brush arms. You can lower or raise both or just one side brush as needed.

To lower a side brush:

- Push the lever of the side brush adjustment fixture to the front.

To raise a side brush:

- Pull the lever to the rear.

Sweeping

- The hood must be closed to operate the machines.
- Lower the side brushes.
- To turn on the desired sweeping function, select and push the button for the desired function on the control panel.

Caution!

- Always use the button on the right first, regardless of the model.
(Models B and VB: Turn on the brush roller drive/Model V: Make ready for operation)
- Only then push the button on the left on the V and VB models.
(Dust extraction unit on)

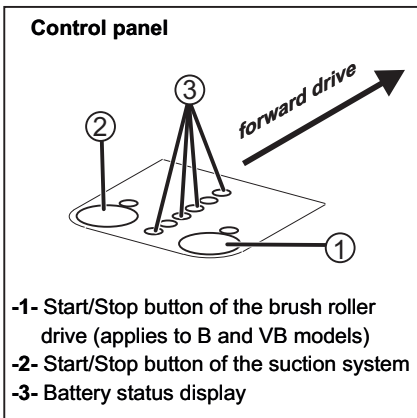
No function has been assigned to the button on the left on the Matrix MTX-900-B TRS.

- Push the sweeper across the area to be swept at a normal pace.

Since the sweeping performance depends on the speed of the brush rollers, you should neither walk too slowly nor too quickly. (e.g. run)

The side brushes remove dirt from corners and edges.

The sweeping mechanism will only work if the sweeper is pushed forward as it has been fitted with a free-wheel coupling to avoid whirling up dust unnecessarily.



After sweeping

- Push the respective button on the control panel to turn off all the actuators and park the sweeper in a safe location.
- Empty the dustbin in a suitable container.

Make sure the container is appropriate for this type of refuse.

- Insert the dustbin back into the sweeper.
- Set the side brushes to their top position.

Unless the side brushes are set to their top position, the bristles of the side brushes will be put under permanent load in their off-position and consequently will wear prematurely when used.



Emptying the dustbin

In order to ensure proper sweeping performance, the dustbin has to be emptied at regular intervals.

A handle is located on the top of the dustbin.

- Hold on to the handle and lift the dustbin out of the sweeper's frame.
- Empty the dustbin in a suitable container.
- Insert the dustbin back into the sweeper.

Do not park the sweeper with a full dustbin. Always empty the dustbin once you've finished sweeping.

Service and Maintenance

Safety information

Only complete the type of maintenance work described in the following chapter. The authorised dealer or the manufacturer is responsible for performing any other maintenance work.

Closely follow the steps listed in the maintenance instructions. The improper completion of maintenance tasks may result in malfunctions when using the sweeper and may possibly render the warranty granted null and void.

To complete any work on the sweeper, it will have to be secured from rolling away by accident.

The sweeper will have to be turned off.

The electric motors must not be running when performing any maintenance work on or troubleshooting the electric motors.

Use only flawless and appropriate tools to complete maintenance work.

Replacement parts have to meet manufacturer specifications.

This is always ensured by using genuine replacement parts.

If covers and/or safety devices were removed during maintenance work/repairs, they will have to be re-attached prior to starting the sweeper.

Battery

Safety Information for Battery Handling

When servicing the batteries, please absolutely observe the following warning information and safety regulations:

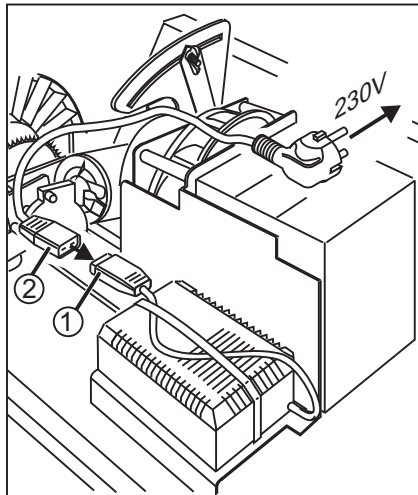
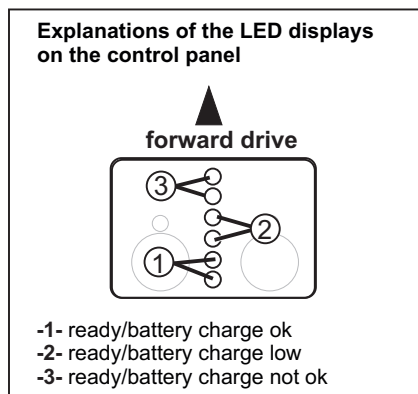
Avoid spark formation while handling cables and electrical devices.

Never short-circuit battery poles. Danger of injury by highly charged sparks.

Always keep batteries in a clean and dry place to avoid leak current.

Only charge batteries in well ventilated rooms. Don't smoke and keep away open flames and electric sparks, because the charging process produces a highly explosive combustible mixture.

In order to prevent health impairment do not smoke, eat, or drink in the vicinity of the battery charging device.



Charging the battery.

The machine has an on-board-charger.

Position the machine on an appropriate surface close to a socket.

Switch the machine completely of.

Make sure the machine is blocked against possible movement

Open the cover.

Connect plug 1 of the charger using the cable delivered with the machine and connect plug 2 to the 230 V socket.



Only the original charging-cable is to be used: the use of a different cable makes you lose warranty on the machine and might cause damage.

When charging is finished, the green LED on the charger will on.

(Meaning of the LED: see appendix: operators manual of the charger).

The machine can only be operated if disconnected after charging.

Make sure the machine is charged before use. The charger contains an electronic device that keeps current of the battery on a constant level so the machine can be kept on the charger for a longer period without causing any damage.

The machine contains a deep-discharge protection and automatically switches of if such level is reached to protect battery from damage.

Readjusting the brush rollers

The height of the brush rollers can be adjusted to obtain the best possible cleaning results of the area to be swept and to effectively exploit the efficiency of the brush rollers.

The brush rollers need to be lowered once the sweeping performance starts to wane due to wear and tear of the brush rollers, or if the area to be swept is not level (bumpy).

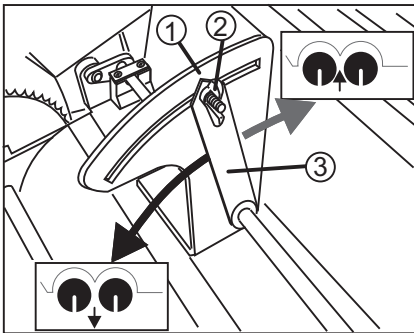
If pushing the sweeper seems to become harder and you can hear the brush rollers scratching the ground, you will have to raise the brush rollers to ensure you use the sweeper ergonomically and to prevent the brush rollers from wearing prematurely.

On principle, the brush rollers should be set to ensure that they touches the ground at slight pressure.

Setting the brush rollers

- Park the sweeper on level ground that has been designated (assigned) for this purpose.
- Make sure the sweeper has been secured from rolling away by accident.
- Open the hood.

The rear trim panel of the frame reveals the height adjustment bracket to adjust the height of the brushes.



To lower the brush rollers

- Undo wing nut -2- on the height adjustment bracket -1-.
- Push down the rocker arm -3- in the direction of motion.

The brush rollers are lowered.

- Tighten wing nut -2- on the height adjustment bracket -1-.
- Test the sweeper.

Readjust if necessary

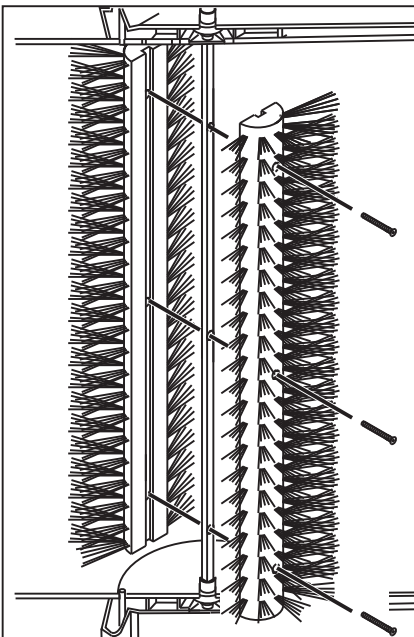
To raise the brush rollers

- Undo wing nut -2- on the height adjustment bracket -1-.
- Push down the rocker arm -3- in the direction of the dustbin.

The brush rollers are raised.

- Tighten wing nut -2- on the height adjustment bracket -1-.
- Test the sweeper.

Readjust if necessary



Brush roller replacement

Removing the brush rollers

Every brush roller consists of two split shells with brushes.

Screws join the split shells.

- Park the sweeper on level ground that has been designated (assigned) for this purpose.
- Make sure the sweeper has been secured from rolling away by accident.
- Remove the dustbin.
- Turn the sweeper on its side.

Make sure the running wheels can move freely.

- Turn the top running wheel until you can see the screwed connections on the brush roller.
- Undo the screwed connections.
- Lift the split shells with the brush rollers off the shaft.
- If needed clean the running gear box and the shaft.

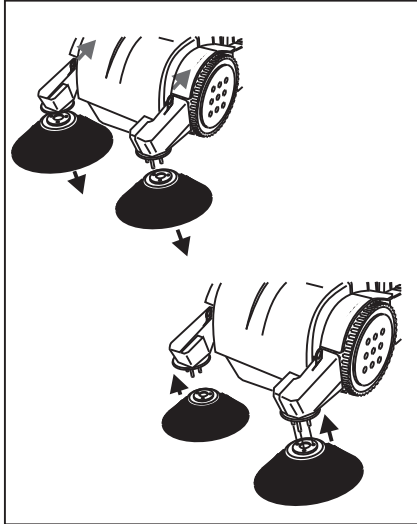
Installing the brush rollers

The split shells have square recesses, which retain the brush roller shaft.

- Position the first split shell under the square shaft of the brush roller.

Make sure the shaft fits flush into the recess of the split shell.

- Position the second split shell on top of the square shaft of the brush roller.
- To tighten use three screws for each set of brushes. Tighten until you can no longer see a gap between the split shells.



Side brush replacement

Removing the side brushes

- Park the sweeper on level ground that has been designated (assigned) for this purpose.
- Make sure the sweeper has been secured from rolling away by accident.
- Lift the side brushes.
- Reach under the side brushes.
- With your fingers squeeze together the snap-in fixtures in the centre of the side brush retainer.
- With a downward motion, pull off the side brushes.
- Replace the side brushes.

Mounting the side brushes

- Position the side brushes under the side brush retainers.
- Turn the side brushes until the bore holes of the side brush disk line up with the pins of the side brush retainer.
- Push the side brushes into the side brush retainers until you feel the side brushes lock into place.

Changing the chain

De-tensioning or tensioning of the chain is proceeded by turning/ moving the DC-motor or the sprocket-support.

Position the machine on a appropriate surface.

Make sure the machine is blocked against possible movement

Open the cover.

Loosen the screws of the DC-motor or the sprocket-support to move the support by rotating it around the front/ first screw.

By lowering the DC-motor or the sprocket-support, the chain is de-tensioned e.g. for changing the chain.

Moving up the DC-motor or the sprocket-support tensiones the chain.

Tighten the screws before operating the machine.

The tention of the chain is supported by the automatic chain-tentioner.

Cleaning the sweeper

Do not clean the sweeper with a pressure washer. Just use a dry broom to brush off the sweeper. Remove dirt, strings, etc. from the brush rollers, side brushes, and shafts.

The Sweeping & Suction Machine is a machine with electrical system components.



Please observe!

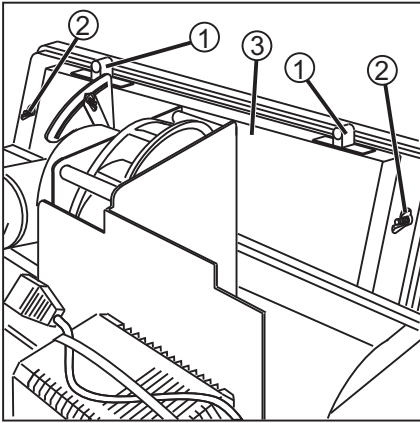
Humidity will damage the electronics and the mechanics of the machine.

Moisture may lead to leak current and short-circuits.

Do not use high-pressure cleaning devices.

The Sweeping & Suction Machine may only be dry-cleaned.

In addition, the following applies to KS 90 B 50 iL



Filter cleaning

To consistently attain the best possible cleaning results, you must always clean the lamellar filter prior to emptying the dust bin.

Likewise, you should also clean the filter if particularly dusty areas are swept, or if dust is whirled up during sweeping.

The sweeper has been equipped with a mechanically operated vibrating device to clean the lamellar filter.

- Turn off the sweeper (all actuators).
- Make sure the sweeper has been secured from rolling away by accident.
- Open the hood.
- On the top of the ejector's trim panel -3- two slides -1- are located.
- Swiftly slide these slides back and forth.

These slides initiate a vibrating mechanism, which works loose the dust from the lamellar filter. The worked off dust drops directly into the dustbin.

To remove stubborn dirt, you should use a brush to clean off the filter or take out the filter and gently knock off the dirt.

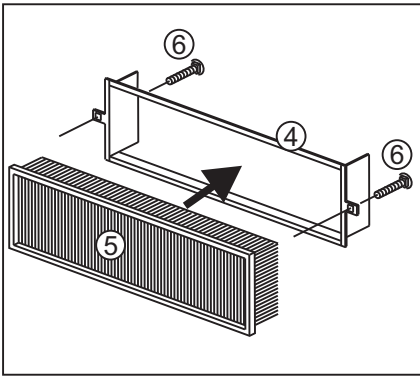
Removing the filter

The sweeper has to be off if you're planning to take out the filter.
(all actuators off)

- Turn off the sweeper (all actuators).
- Make sure the sweeper has been secured from rolling away by accident.
- Remove the dustbin.
- Open the hood.

Two wing nuts -2- are located on the trim panel of the ejector -3-.

- Remove these wing nuts.
- Pull out the filter frame -4- with the filter -5- from the trim panel of the ejector -2- in the direction of the dustbin retainer



Installing the filter



The sweeper has to be off if you're planning to install the filter.
(all actuators off)

- Set the filter -5- in the filter frame -4-.
- Make sure the filter fits correctly.
- Insert the filter frame -4- with the filter -5- from the side of the dustbin retainer into the trim panel of the ejector -3- in such a way as to ensure the cup square neck bolt -6- of the filter frame will fit through the bore holes of the trim panel of the ejector.
- Make sure the bolts fit correctly. The square of the bolt has to fit into the square recess of the filter frame.
- Firmly push the filter with its filter frame against the trim panel of the ejector.
 - Screw tight the two wing nuts -2- on the threads of the cup square neck bolts of the filter frame.

Disposal

Disposal of defective parts, specifically electric component parts, batteries and plastic elements in compliance with legislator's waste disposal regulations.

Maintenance Chart

Daily maintenance

- Charge battery.
- Check if machine is damaged or impaired in any way.
- Empty dust container.
- Search brush - roller tunnel for jammed particles and seized up dirt that may narrow the brush tunnel and obstruct free roller brush movement.

- Check condition of dust filter and clean if necessary.

After each 50 operating hours also

- Check if sweeping rollers are worn or cluttered. Replace if required.
- Check sweeping contour, readjust if required.
- Check if side brush adjustment is worn, if required readjust or replace.

After each 100 operating hours also

- Check cable isolation, replace cables if required.
- Search suction for obstacles, clean.
- Check if roller drive chain is elongated or loosened.
- Check all bearings for wear.
- Check if seals are damaged or dislocated.

- Check if cable connections are tight.
- Clean dust filter, replace if necessary.

Disturbances - Disturbance Display and Remedy

Disturbance	Possible Cause	Remedy
No operation of one of the electrical consumers:	Fault in electrical wiring Battery empty	Check plug connections Charge battery
Sweeping result unsatisfactory:	Side brush(es) or main sweeping rollers not lowered Side brush(es) or main sweeping rollers worn Trajectory clogged by dirt Sweeping roller(s) do not operate Brush rollers are jammed by dirt, cords, strings or the like Drive wheels obstructed Filter heavily polluted Filter not correctly fitted Leakage and subsequent aspiration of false air in the filter chamber Ator does not move freely	Lower Adjust Check if roller trim panel is impaired by jammed debris. Correctly fitted? if required switch off side brushes Dismount brush rollers and clean them Check side brushes and remove obstacles Jack up the Sweeping & Suction Machine check wheels and free running Open the ventilation flap Clean filter check for tight fit check if false air is sucked in Check ventilator wheel and remove any obstruction
Machine does not start	Cover-switch does not operate properly Cover not closed properly	Check cover for being closed properly/ readjust/ exchange cover-switch

EG Declaration of Conformity



in compliance with EC-Guidelinie 2006/42/EC

The manufacturer:

G. Staehle GmbH u. Co. KG
Mercedesstraße 15
D-70372 Stuttgart

declares as solely responsible party, that

he product

Battery-operated manual sweeper
KS 90 | B 50 iL

athis declaration refers to, observes

the EC-Guidelinie 89/392/EWG

and correspondes to it regarding all relevant safety and health requirements.

The Standards and/or technical specifications

2006/95/EC Low Voltage Directive
2014/30/EU Electromagnetic Compatibility

DIN EN 50081-2
DIN EN 60335-1
DIN EN 60335-2-67
DIN EN 60335-2-72
Noise Directive 2000/14/EG

have been applied in a way that ensures the appropriate implementation of safety and health regulations cited in the EG Guideline.

Stuttgart, 12.07.2019

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Dipl. Ing. (BA) Erich Stockmann
Head of Design and Development

Authorized Documentation Representativ: Dr. M. Baumgärtel

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