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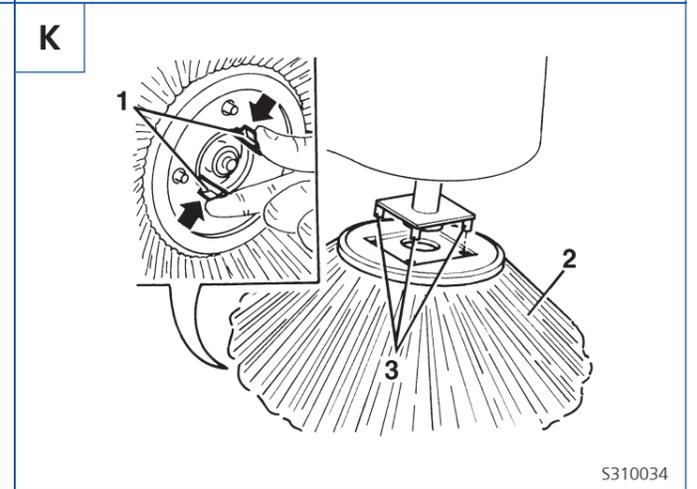
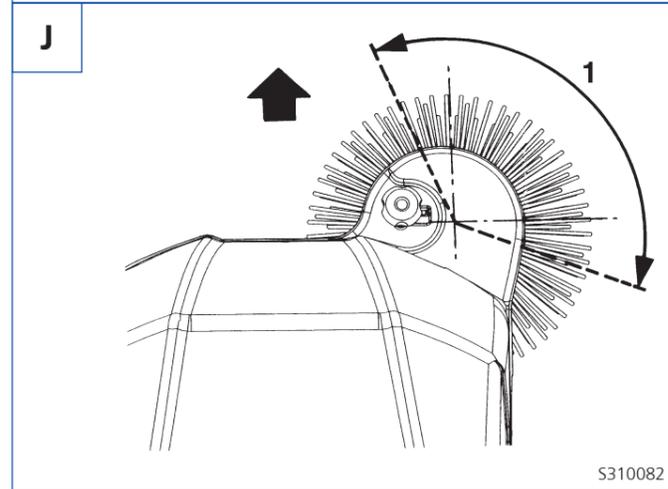
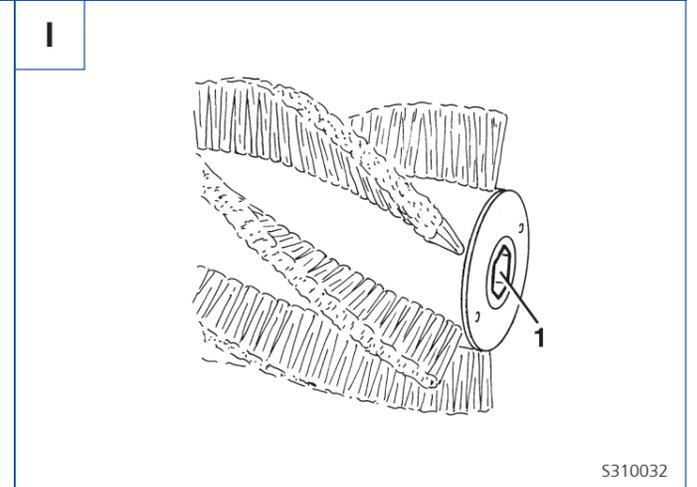
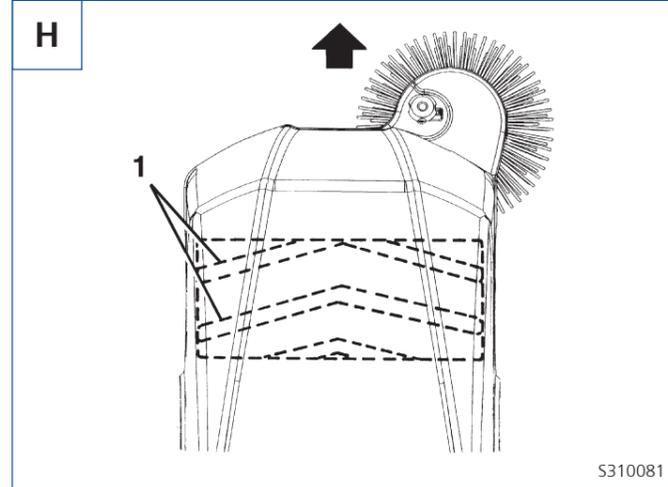
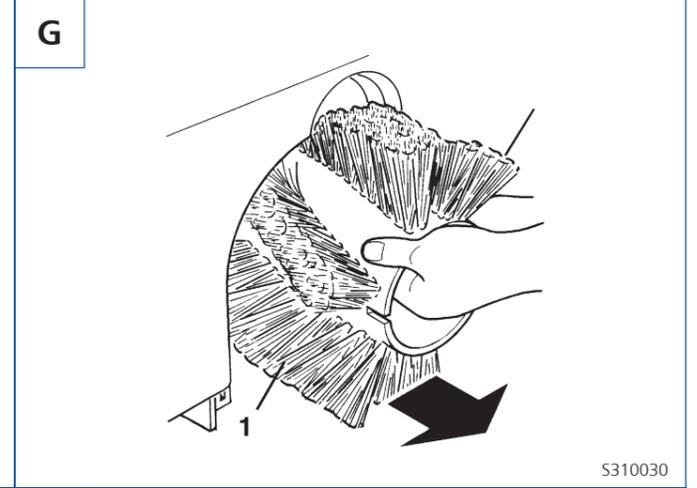
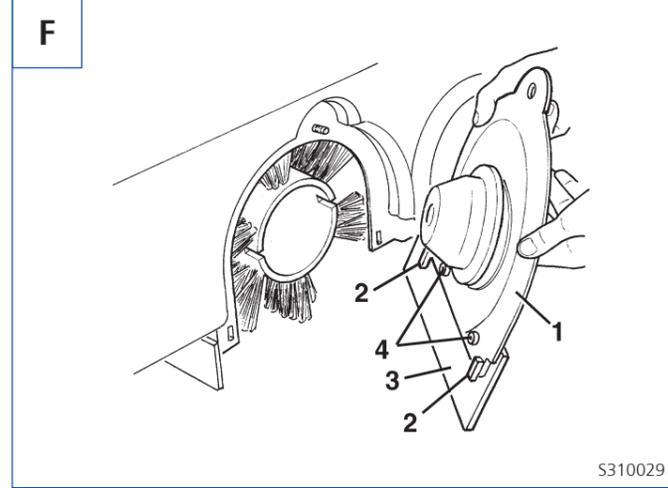
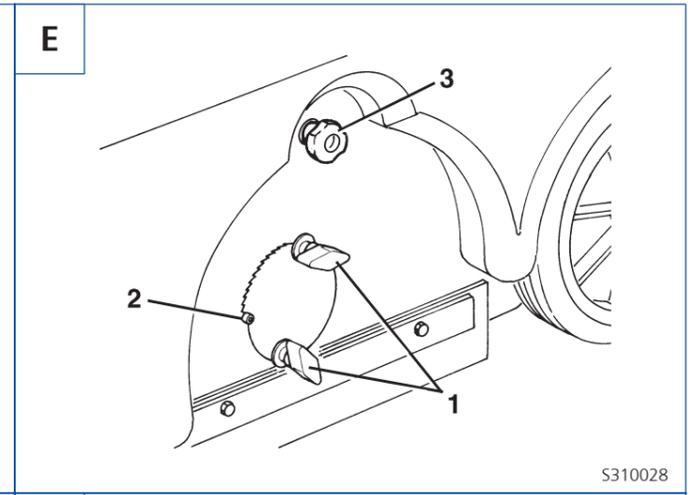
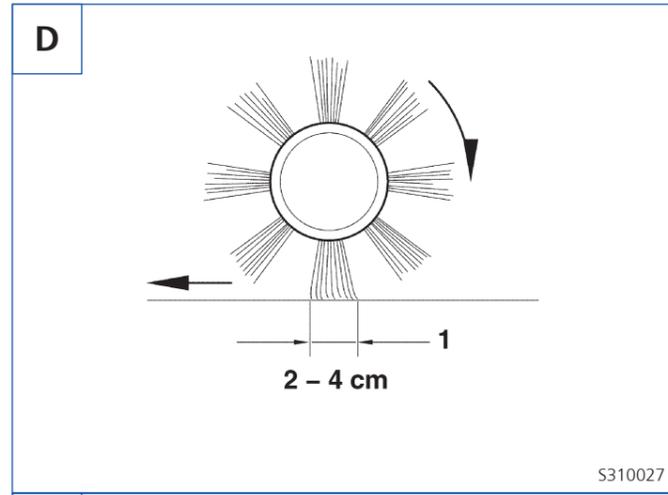
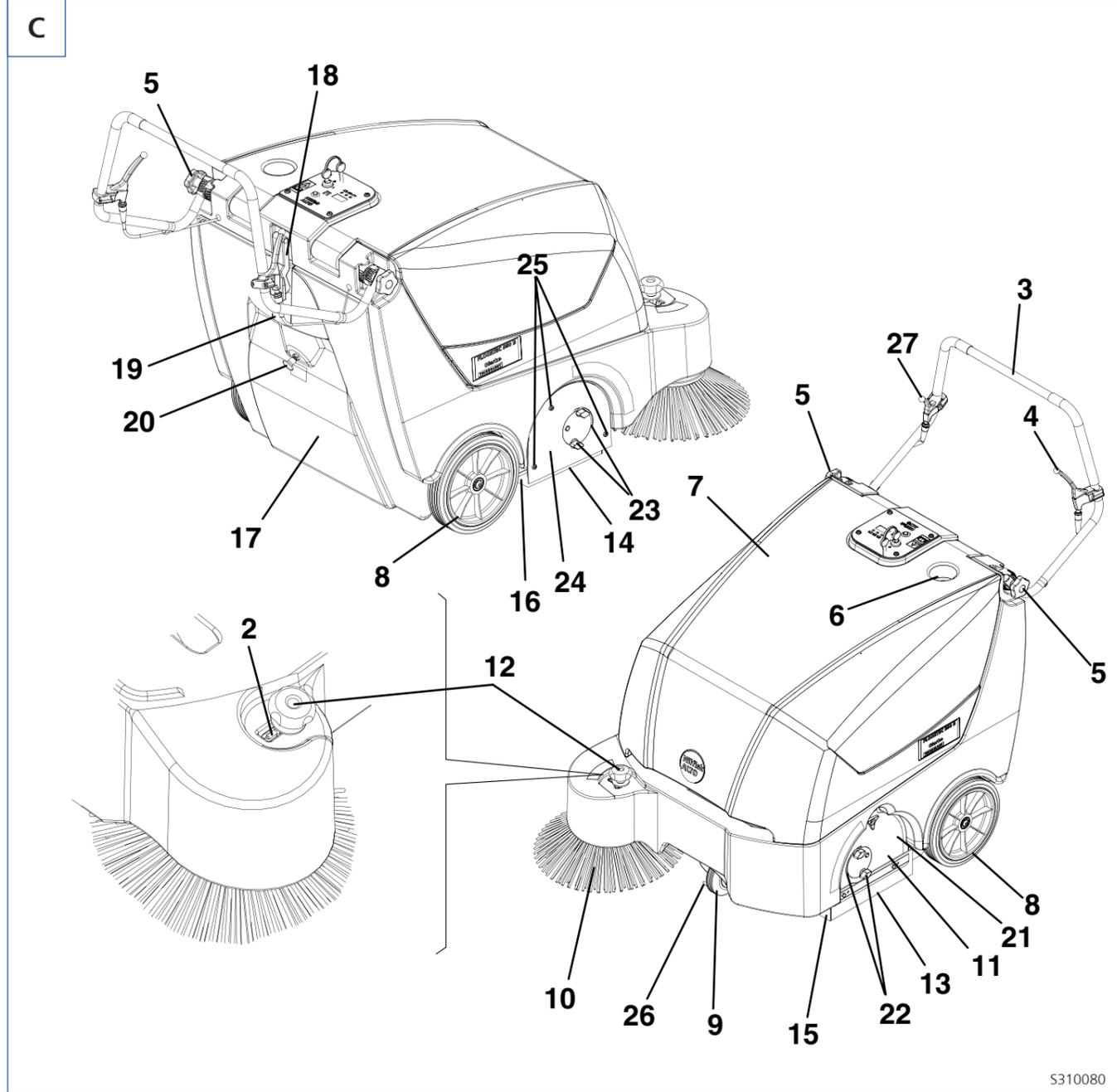
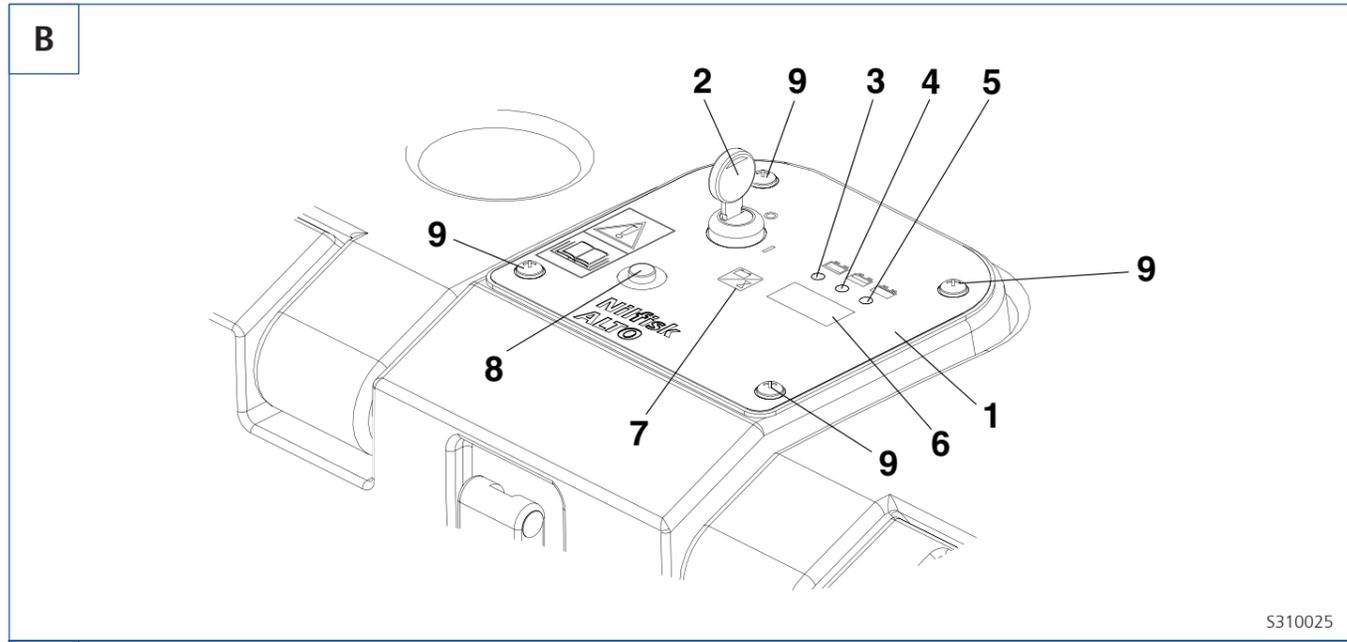
DEUTSCH BETRIEBSANLEITUNG

FRANÇAIS MANUEL D'UTILISATION

ENGLISH USER MANUAL

NEDERLANDS GEBRUIKSAANWIJZING

Clarke
TECHNOLOGY



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INTRODUCTION

MANUAL PURPOSE AND CONTENTS

The purpose of this Manual is to provide the operator with all necessary information to use the machine properly in a safe and autonomous way. It contains information about technical characteristics, operation, machine storage, maintenance, spare parts and safety conditions.

Before carrying out any procedure on the machine, the operators and technicians in charge of the machine maintenance must read this manual carefully. Contact an authorised Nilfisk-Alto Service Center in case of doubts regarding the interpretation of the instructions and for any further information.

TARGET

This manual is intended for qualified operators and technicians involved in the machine maintenance.

HOW TO KEEP THIS MANUAL

The User manual must be kept near the machine, inside an adequate case, far from liquids and other substances that can cause damage to it.

IDENTIFICATION DATA

The machine model and serial number are marked on the plate (18, Fig. U) on the frame and can be read by lifting the hood (7, Fig. C).

The machine model year is written in the EC statement and it is also indicated by the first two figures of the machine serial number.

This information is useful when requiring machine and engine replacement parts. Use the following table to write down the machine identification data for any further reference.

MACHINE model
MACHINE serial number

OTHER REFERENCE MANUALS

- Electronic Battery Charger Operating Manual (if equipped), which is to be considered an integral part of this manual.
- Moreover, the following manuals are available:
 - Spare parts list (supplied with the machine).
 - Service manual (that can be consulted at Nilfisk-Alto Service Centers).

SPARE PARTS AND MAINTENANCE

All necessary operating, maintenance and repair procedures must be carried out by qualified personnel or by Nilfisk-Alto Service Centers (listed at the end of this manual). Only original spare parts and accessories must be used.

Call Nilfisk-Alto for service or to order spare parts and accessories, specifying the machine model and serial number.

CHANGES AND IMPROVEMENTS

Nilfisk-Alto constantly improves its products and reserves the right to make changes and improvements at its discretion without being obliged to apply such benefits to the machine that were sold previously. Any change and/or addition of accessory must be approved and performed by Nilfisk-Alto.

SAFETY

The following symbols indicate potentially dangerous situations. Always read this information carefully and take all necessary precautions to safeguard people and property.

No accident prevention program is effective without the total cooperation of the person responsible for the machine operation. Most of the accidents that may occur in a factory, while working or moving around, are caused by failure to comply with the simplest rules for exercising prudence. A careful and prudent Operator is the best guarantee against accidents and is essential for successful completion of any prevention program.

SYMBOLS

**DANGER!**

It indicates a dangerous situation with risk of death for the Operator.

**WARNING!**

It indicates a potential risk of injury for people.

**CAUTION!**

It indicates a caution or a remark related to important or useful functions. Pay attention to the paragraphs marked by this symbol.

**NOTE**

Consult the User manual before performing any procedure.

GENERAL INSTRUCTIONS

Specific warnings and cautions to inform about potential damages to people and machine are shown below.

**DANGER!**

- To perform maintenance/repair procedures turn the machine ignition key to OFF position and disconnect the battery.
- This machine must be used by properly trained and authorised personnel only. Children or disabled people cannot use this machine.
- Keep sparks, flames and smoking materials away from the batteries. During the normal operation explosive gases are released.
- Do not wear jewels when working near electrical components.
- Do not work under the lifted machine, if it is not securely fixed.
- Do not operate the machine near toxic, dangerous, inflammable and/or explosive powders, liquids or vapours.
- Battery charging produces highly explosive hydrogen gas. Keep the hood open during battery charging and perform the operation only in well-ventilated areas and far from naked flames.

**WARNING!**

- Carefully read all the instructions before carrying out any maintenance/repair procedure.
- Take all necessary precautions to prevent hair, jewels and loose clothes from being caught in the moving parts of the machine.
- Do not smoke while charging the batteries.
- Do not leave the machine unattended with the ignition key inserted and the parking brake deactivated.
- Do not use the machine on surfaces with a gradient greater than the one indicated on the machine.
- Do not wash the machine with direct or pressurised water jets, or with corrosive substances. Do not use compressed air to clean this type of machine.
- Do not use the machine in particularly dusty areas.
- While using this machine, take care not to cause damage to other people, especially children.
- Do not put any can containing fluids on the machine.
- The storage temperature must be between 0°C and +40°C.
- The machine operating temperature must be between 0°C and +40°C.
- The humidity must be between 30% and 95%.
- Always protect the machine against the sun, rain and bad weather, both under operation or inactivity condition.
- Do not use the machine as a means of transport.
- Do not allow the brooms to operate while the machine is stationary to avoid damaging the floor.
- In case of fire, possibly use a powder fire extinguisher, not a water one.
- Do not bump into shelves or scaffoldings, particularly where there is a risk of falling objects.
- Adjust the operation speed to suit the floor conditions.
- Do not tamper with the machine safety guards and follow the ordinary maintenance instructions scrupulously.
- Do not remove or modify the plates affixed to the machine by the Manufacturer.
- In case of machine malfunctions ensure that these are not caused by a lack of maintenance. Otherwise, request assistance from the authorised personnel or from an authorised Service Center.

- In case of part replacement, order ORIGINAL spare parts from an authorised Dealer or Retailer.
- To ensure the proper and safe operation of the machine, have the scheduled maintenance, detailed in the related chapter of this Manual, performed by the authorised personnel or an authorised Service Center.
- The machine must be disposed of properly, because of the presence of toxic-harmful materials (batteries, oils, etc.), which are subject to standards that require disposal in special centres (see the Scrapping chapter).
- If the machine is used according to the instructions, the vibrations do not cause dangerous situations. The machine vibration level is less than 2.5 m/s^2 .
- When lead batteries (WET) are installed on this machine, do not tilt the machine more than 30° from its horizontal position to not allow the highly corrosive acid to leak out of the batteries. When the machine is to be tilted for maintenance operations, remove the batteries.

UNPACKING

Upon delivery carefully check that the machine and its packing, if any, have not been damaged during transportation. In case of visible damages, keep the packing and have it checked by the Parcel Service that delivered it. Call the Carrier immediately to fill in a damage claim.

Please check that the following items have been supplied with the machine:

1. Technical documents: Sweeper Use and Maintenance Manual, Electronic Battery Charger Manual (if installed on the machine), Spare Part List
2. No. 1 main fuse
3. No. 1 side broom fuse

MACHINE DESCRIPTION

OPERATION CAPABILITIES

The sweeper is used to sweep dust or light debris on smooth and solid floor, in civil or industrial environment, under safe operation conditions by a qualified Operator.



NOTE

Forward, backward, front, rear, left or right are intended with reference to the operator's position, that is to say on the driver's seat with the hands on the handlebar (3, Fig. C).

Control panel (See Fig. B)

1. Control panel
2. Ignition switch
3. Discharged battery warning light
4. Semi-discharged battery warning light
5. Charged battery warning light
6. Display
7. Display selection push-button:
 - Hour meter
 - Hour and minutes meter
 - Battery voltage (V)
8. Filter-shaker switch (optional)
9. Panel fastening screws

Exterior general overview (See Fig. C)

1. Front skirt lifting lever
2. Side broom retainer
3. Handlebar
4. Selector lever
5. Handlebar inclination adjusting knobs
6. Can holder
7. Hood
8. Rear wheels on fixed axle
9. Front steering wheel
10. Side broom
11. Main broom
12. Side broom lifting and adjusting knob
13. Left side skirt
14. Right side skirt
15. Front skirt
16. Rear skirt
17. Hopper
18. Hopper hook
19. Hopper handle
20. Manual filter-shaker handle
21. Main broom movable door
22. Main broom height left adjuster
23. Main broom height right adjuster
24. Main broom right door
25. Main broom right door fixing screws
26. Pedal brake on front wheel (optional)

Under-hood compartment

(See Fig. U)

1. Hood (open position)
2. Batteries
3. Battery connector
4. Electronic battery charger (optional)
5. Battery charger electrical cable
6. Main fuse
7. Side broom motor fuse
8. (Lead) battery caps
9. Lead (WET) or gel (GEL) battery selector switch located on the optional electronic battery charger
10. Battery assembly diagram
11. Charged battery warning light
12. Main broom belt
13. Drive belt
14. Main broom drive pulley
15. Rear wheels drive pulley
16. Fan
17. Main motor
18. Serial number plate/technical data/EC certification

TECHNICAL DATA

Dimensions	Values
Cleaning width with/without side broom	791/600 mm
Machine length	1,070 mm
Machine width, without side broom	773 mm
Height when the handlebar is lowered	836 mm
Minimum height from ground	40 mm
Handlebar height, minimum/maximum	824/1,120 mm
Main broom diameter	265 mm x 600 mm
Side broom diameter	420 mm
Speed with maximum push force	4.4 km/h
Maximum slope	2%
Hopper capacity	50 L
Machine weight without battery	90 kg
Front wheel, steering	125/37.5-50 mm
Rear wheels, driving	250 x 50 mm
Electric motor	600 W
Sound pressure level (L _{pA})	64 dB(A)

Available batteries

- Lead (WET), with acid electrolyte
- Gel (GEL), hermetic

The machine setting performed at the factory is for lead (WET) batteries.

Battery voltage	12V
Usable battery capacity	Max. 240 Ah
Battery compartment max. size	398x262x283 mm

Dust vacuuming and filtering	Values
Paper dust filter 5-10 µm	2 m ²
Electric filter-shaker (optional)	12V, 30W
Main broom compartment vacuum	12 mm H ₂ O

Diagrams

Wiring diagrams for optional equipments.

(See Fig. V)

- CH1 Battery charger
- CN1 Battery connector
- CN2 Battery charger connector
- EB1 Electronic board
- ES1 Electromagnetic switch
- F1 Main fuse
- F2 Side broom fuse (15A)
- F3 Filter-shaker fuse (15A)
- M1 Main broom motor
- M2 Side broom motor
- M3 Filter-shaker motor
- R1 Filter-shaker relay
- SW1 Key switch
- SW2 Hood safety switch
- SW3 Filter-shaker switch

Color code

- BK Black
- BU Blue
- BN Brown
- GN Green
- GY Grey
- OG Orange
- PK Pink
- RD Red
- VT Violet
- WH White
- YE Yellow

ELECTRICAL FUSES

- Main fuse: 6, Fig. U
- Side broom fuse: 7, Fig. U
- Filter-shaker fuse (optional): in the compartment under the control panel

ACCESSORIES/OPTIONS

In addition to the standard components, the machine can be equipped with the following accessories/options, according to the machine specific use:

- Gel batteries;
- Electronic battery charger;
- Main and side brooms with harder or softer bristles;
- Antistatic polyester or polyester BIA C dust filter;
- Electric filter-shaker;
- front wheel with brake pedal.

For further information concerning the optional accessories, contact Your Retailer.

USE

**WARNING!**

On some points of the machine there are some adhesives indicating:

- **DANGER**
- **WARNING**
- **CAUTION**
- **NOTE**

While reading this Manual, the Operator must pay particular attention to these symbols. Do not cover these adhesives for any reason, in case of damage replace them immediately.

BATTERY CHECK/SETTING ON A NEW MACHINE

The machine requires one 12V battery or two 6V batteries connected according to the diagram (10, Fig. U).

The machine can be equipped:

a) Lead or gel batteries installed on the machine and ready to be used.

1. Open the hood (7, Fig. C) and check that the battery is connected to the machine through the appropriate connector (3, Fig. U).
2. Lower the hood and check that it is correctly closed (the machine must be as shown in Fig. C).
3. Insert the ignition key (2, Fig. B) in the control panel and turn it to "I" position (without pulling the lever 4, Fig. C). If the green warning light (5, Fig. B) turns on, the battery is ready to be used. Otherwise the battery needs to be charged (see the procedure in the Maintenance chapter).

b) Lead battery installed on the machine but dry, that is without liquid electrolyte.

1. Open the machine hood (7, Fig. C).
2. Remove the battery caps (8, Fig. U).

**CAUTION!**

Be extremely careful when working with sulphuric acid, as it is corrosive. If it comes in contact with skin or eyes, rinse thoroughly with water and call a physician. Batteries have to be filled in a well-ventilated area.

Use protective gloves.

3. Fill up each battery element with sulphuric acid for batteries (density from 1.27 to 1.29 Kg at 25°C) in accordance with the instructions specified in the Battery manual. The correct quantity of sulphuric acid is indicated in the Battery Manual.
4. Let the battery rest and fill in with sulphuric acid in accordance with the instructions specified in the Battery manual.
5. Proceed with battery recharging (see the procedure in the Maintenance paragraph).

c) Without battery

1. Buy an appropriate battery (See Technical Characteristics paragraph and the diagram 10, Fig. U).
For the battery choice and installation, apply to qualified battery retailers.
2. Install the battery.
3. Proceed with machine and battery charger (if installed) setting according to the chosen battery type.

BATTERY INSTALLATION AND BATTERY TYPE SETTING (WET OR GEL)

According to the chosen battery type (lead or gel) perform the setting of the electronic board of the machine and the battery charger (if installed on the machine), operating as indicated below:

Machine setting

1. Turn the key (2, Fig. B) to "0" position.
2. Open the hood (7, Fig. C).
3. The machine setting performed at the factory is for lead (WET) batteries. If this setting corresponds to the type of battery installed on your machine, go to the next paragraph, otherwise perform the following operations:
4. Disconnect the connector (3, Fig. U).
5. Close the hood (7, Fig. C).
6. Remove the screws (9, Fig. B) and take out the control panel (1) with care.
7. Install a jumper wire (1, Fig. T) on the "WET" connectors (2) for lead battery or on the "GEL" connectors (3) for gel battery.
8. Reinstall the control panel and tighten the screw (9, Fig. B).
9. Disconnect the connector (3, Fig. U).

Battery charger setting

1. Turn the key (2, Fig. B) to "0" position; open the hood (7, Fig. C) and take the selector (9, Fig. U) to (WET) for lead battery or to (GEL) for gel battery.
2. Install the battery on the machine according to the diagram (10, Fig. U).
3. Proceed with recharging the batteries (see the procedure in the Maintenance paragraph).

BEFORE START-UP

**WARNING!**

Ensure that the hopper (17, Fig. C) is correctly closed before starting up the machine.

STARTING AND STOPPING THE MACHINE

At every start-up

1. Insert the ignition key (2, Fig. B) in the control panel; turn it to "I" position [without pulling the lever (4, Fig. C)], then check that the green warning light (5, Fig. B) turns on.
2. If the warning light becomes green or red (3 or 4, Fig. B) take the ignition key to "0" position and take it out. Proceed with recharging the batteries (see the procedure in the Maintenance paragraph).

Starting the machine

1. Adjust the handlebar (3, Fig. C) by means of the handles (5), to reach a comfortable position.
2. Lower the side broom (10, Fig. C), disengage the handle (12) from its retainer (2) and lower the handle (without turning it).



NOTE

The side broom (10, Fig. C) can be lowered also when it is running.

3. Turn the ignition key (2, Fig. B) to "I" position without pulling the selector lever (4, Fig. C).
4. Check that the green warning light (5, Fig. B) (battery charger) turns on. If the warning light becomes green or red (3 or 4, Fig. B) take the ignition key to "0" position, then charge the battery. (See related chapter).
5. Pull the selector lever (4, Fig. C) with care until the machine starts to move. The speed is proportional to the pressure applied to the selector lever (4, Fig. C).

Stopping the machine

Release the selector lever (4, Fig. C) completely to stop the machine.

To stop the machine, turn the key (2, Fig. B) to "0" position. To lift the side broom (10, Fig. C), lift the handle (12) (without turning it) and engage its retainer (2).

MACHINE OPERATION

1. Avoid stopping for a long time with the machine in the same position and the brooms rotating: this could create unwanted marks on the floor.
2. To collect light and bulky waste materials, lift the front skirt by pulling the lever (27, Fig. C); do not keep pushing onto the lever for a long time in order not to reduce the suction capability of the machine).
3. For the machine to sweep properly the dust filter must be as clean as possible. To clean the filter while sweeping, activate the filter-shaker proceeding as follows and according to the type of filter-shaker installed:
 - **Manual filter-shaker:** turn the ignition key to "0" position, pull the handle outward (20, Fig. C) till the end of stroke, and then release it. The internal return spring strikes the dust filter frame and shakes it. Repeat this operation several times. Turn the ignition key to "I" position.
 - **Electric filter-shaker** (optional): press and hold the filter-shaker button (8, Fig. B) for few seconds. During this operation the main engine and all functions are automatically stopped.



NOTE

Repeat the filter shaking operation at least every ten minutes while using the machine (according to the area dusty conditions).



NOTE

When the dust filter is clogged and/or the hopper is full, the machine cannot collect dust and debris anymore.



CAUTION!

To avoid damaging the dust filter do not work on wet grounds.

The hopper (17, Fig. C) should be emptied after each working period and whenever is full.



NOTE

When the hopper is full the machine cannot collect dust and debris anymore.

HOPPER EMPTYING

1. Release the lever to stop the machine.
2. Turn the ignition key (2, Fig. B) to "0" position.
3. Disengage the hook (18, Fig. C) by pulling its inferior end.
4. By means of the handle (19, Fig. C) pull out the hopper (17) and empty it.
5. Take back the hopper to its normal position and engage the hook (18).
6. The machine is ready to start working again.

AFTER USING THE MACHINE

After working, before leaving the machine:

1. Clean the filter with the manual filter-shaker lever (20, Fig. C) or with the electrical filter-shaker switch (8, Fig. B) (if equipped).
2. Empty the hopper (17, Fig. C) (see previous paragraph).
3. Lift the side broom by means of the handle (12, Fig. C).
4. Remove the ignition key (2, Fig. B) from the machine.
5. Make sure that the machine cannot move independently.
6. Activate the optional pedal brake (26, Fig. C).

PUSHING THE MACHINE

The machine can be moved by pushing it both with the ignition key (2, Fig. B) to "0" and to "1" positions.

MACHINE LONG INACTIVITY

If you foresee that the machine will not be used for more than 30 days, proceed as follows:

- Disconnect the battery connector (3, Fig. U).
- Lift the machine so that the skirts, the main broom and the wheels do not touch the ground.
- If the optional battery charger is installed, disconnect the positive battery terminal (+) directly from the battery (+) pole.

First period of use

After the first period of use (first 8 hours) it is necessary to check that the fixing and connecting elements are correctly tightened, that the visible parts are integral and that there are no leakages.

MAINTENANCE

The lifespan of the machine and its operating safety are ensured by correct and regular maintenance. The following chart provides the scheduled maintenance. The intervals shown may vary according to particular working conditions, which are to be defined by the person in charge of the maintenance.



WARNING!

Operations to be carried out with the machine off, the ignition key not inserted and (if required) the battery disconnected. Moreover, carefully read the instructions in the Safety chapter.

All scheduled or extraordinary maintenance operations must be performed by qualified personnel, or by an authorised Service Center.

This manual describes only the easier and most common maintenance procedures.



NOTE

For other service procedures of the scheduled maintenance, please refer to the Service Centers.

SCHEDULED MAINTENANCE TABLE

Operation	On delivery	Every 10 hours	Every 50 hours	Every 100 hours	Every 200 hours	Every 400 hours
Battery fluid level check		(1)				
Driving belt visual inspection: traction, main broom				(*)		
Skirt height and operation check						
Side and main broom height check						
Dust filter cleaning and integrity check		(1)				
Electrical filter-shaker (optional) operation check			(*)			
Nut and screw tightening check				(*)		
Driving belt tensioner adjustment			(*)			
Driving belt replacement: traction, main broom					(*)	
Main electric motor brush (or carbon brush) check or replacement						(*)
Hood safety switch operation check			(*)			

(*): For the related procedure, see the Service Manual

(1): Or at every start-up.

MAIN BROOM HEIGHT CHECK



NOTE

Brooms of various hardness are available. This procedure is applicable to all types of brooms.

1. Check the main broom for proper ground clearance, proceeding as follows:
 - Drive the machine on a level ground;
 - Keep the machine stationary and rotate the main broom for a few seconds;
 - Stop the main broom and move the machine.
 - Check that the main broom print (1, Fig. D), along its length, is from 2 to 4 cm wide.
If the print (1) is different, it is necessary to adjust the broom pressure on the ground, proceeding as described in step 2.
2. Drive the machine on a level ground and activate the pedal brake (26, Fig. C) (if present).
3. Turn the ignition key (2, Fig. B) to “0” position.
4. Loosen the knobs (1, Fig. E) on both sides of the machine.
5. Move the broom height variation indicator (2) as necessary on both sides of the machine by using the knobs (1, Fig. E), then screw down the knobs (1).



NOTE

The indicator (2) must be at the same position on both sides of the machine; the maximum difference allowed is 2 notches to obtain the print (1, Fig. D) from 2 to 4 cm as described in step 1.

6. Perform step 1 again to check the proper adjustment of the main broom height from the ground.
7. When the broom is too worn to be adjusted, replace it as shown in the next paragraph.



CAUTION!

If the main broom print is excessive (superior to 4 cm), the machine regular operation is affected and the moving or electrical parts can overheat, thus reducing machine life. Take care when performing the above-mentioned checks and use the machine only according to the indicated conditions.

MAIN BROOM REPLACEMENT



NOTE

Brooms of various hardness are available. This procedure is applicable to all types of brooms.



CAUTION!

It is advisable to use protective gloves when replacing the main or side brooms because there can be cutting debris between the bristles.

1. Drive the machine on a level ground and activate the pedal brake (26, Fig. C) (if present).
2. Turn the ignition key (2, Fig. B) to "0" position.
3. Loosen the knobs (1, Fig. E) on both sides of the machine.
4. Move the broom height variation indicators (2, Fig. E) until the broom is at the maximum ground clearance. Screw down the knobs (1).
5. Open the hood (7, Fig. C).
6. On the left side of the machine, loosen the knob (3, Fig. E).
7. Remove the broom cover (1, Fig. F) pressing downward to disengage the retainers (2).
8. Remove the broom (1, Fig. G).
9. Check also that the entrainer hub (4, Fig. R) is free from dirt or foreign materials (ropes, rags, etc.) accidentally rolled up.
10. The new broom must be installed with the bristles rows positioned as shown in the figure (1, Fig. H) (top view).
11. Install the new broom on the machine and ensure that its mesh (1, Fig. I) correctly fits into the related drive hub (4, Fig. R).
12. Reinstall the broom cover (1, Fig. F), engaging the retainers (2).
13. Screw down the knob (3, Fig. E).
14. Carry out the main broom height adjustment as described in the previous paragraph.

SIDE BROOM HEIGHT ADJUSTMENT



NOTE

Brooms of various hardness are available. This procedure is applicable to all types of brooms.

1. Check the side broom is at the correct height from the ground, proceeding as follows:
 - Drive the machine on a level ground and lower the side broom.
 - Keep the machine stationary and rotate the side broom for few seconds.
 - Stop the side broom and move the machine.
 - Check that the side broom print is, in extension and orientation, as shown in the figure (1, Fig. J). In case the print is not within specifications, it is necessary to adjust the broom height, proceeding as described in the following steps.
2. Rotate the knob (12, Fig. C) clockwise or counter-clockwise to adjust the broom height from the ground.
3. Perform step 1 again to check the proper adjustment of the side broom height from ground.
4. When the broom is too worn to be adjusted, replace it as shown in the next paragraph.

SIDE BROOM REPLACEMENT



NOTE

Brooms of various hardness are available. This procedure is applicable to all types of brooms.



CAUTION!

It is advisable to use protective gloves when replacing the main broom because there can be cutting debris between the bristles.

1. Drive the machine on a level ground and activate the pedal brake (25, Fig. C) (if present).
2. Turn the ignition key (2, Fig. B) to "0" position.
3. Introduce the hand inside the side broom and press the tabs (1, Fig. K) inwards, then remove the broom (2) disengaging it from the four pins (3).
4. Install the new broom on the machine engaging it on the pins (3) and on the tabs (1).
5. Carry out the side broom height adjustment as described in the previous paragraph.

DUST FILTER CLEANING AND INTEGRITY CHECK



NOTE

Besides the standard paper filter, polyester filters are also available. The following procedure is applicable to each type of filter.

1. Drive the machine on a level ground and activate the pedal brake (26, Fig. C) (if present).
2. Turn the ignition key (2, Fig. B) to "0" position.
3. Disengage the retainer (18, Fig. C).
4. Remove the hopper (17) by using the handle (19, Fig. C).
5. Turn the handle (1, Fig. L) upwards (90° approximately) and let the filter frame (2) rotate outwards.
6. Pull out the dust filter (3) upwards.
7. In an appropriate outdoor area, clean the filter shaking it on a level and clean surface, tapping the side (1, Fig. M) opposite the wire gauze (2). Complete the cleaning by using compressed air (3) at max. 6 bars, blowing only from the side protected by the wire gauze (2).
According to the filter type, observe the following cautions:
 - Paper filter (standard): do not use water or detergents to clean it; the filter can be damaged.
 - Polyester filter (optional), to clean it, see the above-mentioned instructions. For a better cleaning, it is allowed to wash the filter with water and non-lathering detergents. This provides better quality cleaning but reduces the life of the filter, which will have to be replaced more frequently. The use of unsuitable detergents can damage the filter.
8. Check the filter body for tears.
9. If necessary, clean the filter compartment rubber seal (4, Fig. L) along its perimeter and check it for integrity. If necessary, replace it.
10. Install in the reverse order of removal (steps from 8 to 1).



NOTE

Reinstall the filter with the wire gauze (2, Fig. M) facing the front part of the machine (facing the fan (16, Fig. U)).

SKIRT HEIGHT AND OPERATION CHECK

1. Drive the machine on a level ground that is suitable for checking the skirt height. Activate the pedal brake (26, Fig. C) (if equipped) or lock the wheels.
2. Turn the ignition key (2, Fig. B) to "0" position.

Side skirt check

3. Check the side skirts (13 and 14, Fig. C) for integrity. Replace the skirts when they have cuts (1, Fig. N) larger than 20 mm or cracks (2) larger than 10 mm (for skirt replacement, refer to the Service Manual).
4. Check that the side skirt (13 and 14, Fig. C) height from the ground is within 0 – 3 mm (Fig. O). If necessary, adjust the skirt height, proceeding as follows.

Left side skirt

- a) Open the hood (7, Fig. C), loosen the knob (3, Fig. E) and remove the broom left cover (1, Fig. F), pushing downward to disengage the retainers (2).
- b) Adjust the skirt (3, Fig. F) height using its slots (4).
- c) Reassemble the removed components in the reverse order of disassembly.

Right side skirt

- a) Remove the main broom, as described in the related paragraph.
- b) Remove the belt (12, Fig. U) from the pulley (14); to facilitate the operation, make the pulley (14) rotate operating on the fan (16).
- c) Remove the screws (25, Fig. C) and the right cover (24) together with the belt (12, Fig. U).
- d) On the machine, adjust the skirt (1, Fig. S) height by using its slots (2).
- e) Reassemble the removed components in the reverse order of disassembly.

Front and rear skirt check

5. Remove the main broom, as described in the related paragraph.
6. Check the front (1, Fig. R) and rear (2) skirts for integrity.
7. Replace the skirts when they have cuts (1, Fig. N) larger than 20 mm or cracks (2) larger than 10 mm (for skirt replacement, refer to the Service Manual).
8. Check that:
 - the front skirt (1, Fig. P) lightly touches the ground and that, however, it is not detached from ground (as shown in figure).
 - the rear skirt (1, Fig. O) height from ground is within 0 - 3 mm (as shown in figure).

9. If necessary, adjust the skirt height by using the slots (3, Fig. R).
10. Activate the front skirt lifting lever (27, Fig. C) and check that the front flap (1, Fig. Q) rotates upward of 90° (as shown in figure); release the lever and check that the skirt returns to the initial position and does not stay in an intermediate one. If necessary, for the front skirt control cable adjustment or replacement, refer to the Service Manual.
11. Reassemble the removed components in the reverse order of disassembly.

BATTERY CHARGING



WARNING!

Battery charging produces highly explosive hydrogen gas. Charge the batteries in well-ventilated areas and away from naked flames. Do not smoke while charging the batteries. Keep the hood open while recharging the battery.



WARNING!

Be extremely careful when charging the battery as there may be battery fluid leakages. The battery liquid is corrosive. If it comes in contact with the skin or eyes, rinse thoroughly with water and consult a physician.

1. Drive the machine on a level ground and activate the pedal brake (26, Fig. C) (if present).
2. Turn the ignition key (2, Fig. B) to "0" position.
3. Open the hood (7, Fig. C).
4. (Only for lead battery) check the correct level of electrolyte inside the battery; if it is necessary top up through the caps (8, Fig. U).
5. Leave the caps (8) open for the next battery charge.
6. Clean (if necessary) the upper surface of the battery.
7. Proceed with recharging the battery according to one of the following way depending on the presence of the electronic battery charger (4, Fig. U).

Charging the battery with an external battery charger

1. Check that the battery charger is suitable by referring to the Battery Charger Operating Manual. The battery charger voltage rating is 12V.



NOTE

The battery charger must be appropriate for the battery installed on the machine.

2. Disconnect the battery connector (3, Fig. U) and connect it to the external battery charger.
3. Connect the battery charger to the electrical mains.
4. When the recharging is complete, disconnect the battery charger from the electrical system and from the battery connector (3, Fig. U).
5. (For lead batteries only) Check for correct level of electrolyte inside the battery; if necessary, top up through the caps and close all the caps (8).
6. Reconnect the battery connector (3, Fig. U) to the machine.
7. Close the hood (1, Fig. U); the machine is ready to be used.

Battery charging with optional battery charger supplied with the machine

1. (Only for lead battery) check the correct level of electrolyte inside the battery; if it is necessary top up through the caps (8, Fig. U). When the correct level is reached, clean, if necessary, the upper surface of the battery. Leave the caps (8) open for the next battery charge.
2. Connect the battery charger electrical cable (5, Fig. U) to the electrical mains.



WARNING!

Check that the voltage and frequency shown on the machine serial number plate (1, Fig. U) correspond to the electrical mains values.

3. When the green warning light (11, Fig. U) turns on, the battery is charged.
4. For further information about the battery charger operation (4, Fig. U), see the Battery Charger Operating Manual.
5. Disconnect the battery charger electrical cable (5, Fig. U) from the electrical mains and place it in its special housing.
6. (For lead battery only) Close all the caps (8).
7. Close the hood (1, Fig. U); the machine is ready to be used.



NOTE

When the battery charger is connected to the electrical mains, all machine functions are automatically cut off.

SAFETY FUNCTIONS

HOOD SAFETY SWITCH

It is activated when the machine hood is raised. It stops all functions.

In case of machine start even when the hood is open, contact an authorized Service Center or Retailer.

TROUBLESHOOTING

TROUBLE	REMEDY
When the key is to "I" position the machine does not start.	Check the battery connector (3, Fig. U) for proper connection.
	Check that the hood is correctly closed.
	Check the fuse (6, Fig. U) integrity.
	Check that the optional battery charger is not connected.
The side broom does not operate.	Check the fuse (7, Fig. U) integrity.
The machine operates only when stationary, otherwise the red warning light turns on.	Re-charge the battery. If the problem persists, replace the battery.
The battery autonomy is low.	Install a battery with greater capacity. (min. 140 Ah)



NOTE

If the machine has an optional battery charger installed, the machine cannot operate if the charger is not on board. In case of battery charger malfunction, contact an authorised Service Center.

For further information, refer to the Service Manual, available at any Nilfisk-Alto Service Center.

SCRAPPING

Have the machine scrapped by a qualified scrapper. Before scrapping the machine, remove the following components:

- Battery
- Polyester dust filter
- Main and side brooms
- Electronic board



CAUTION!

The removed components must be disposed of properly according to the Law in force.

EC CERTIFICATE OF CONFORMITY

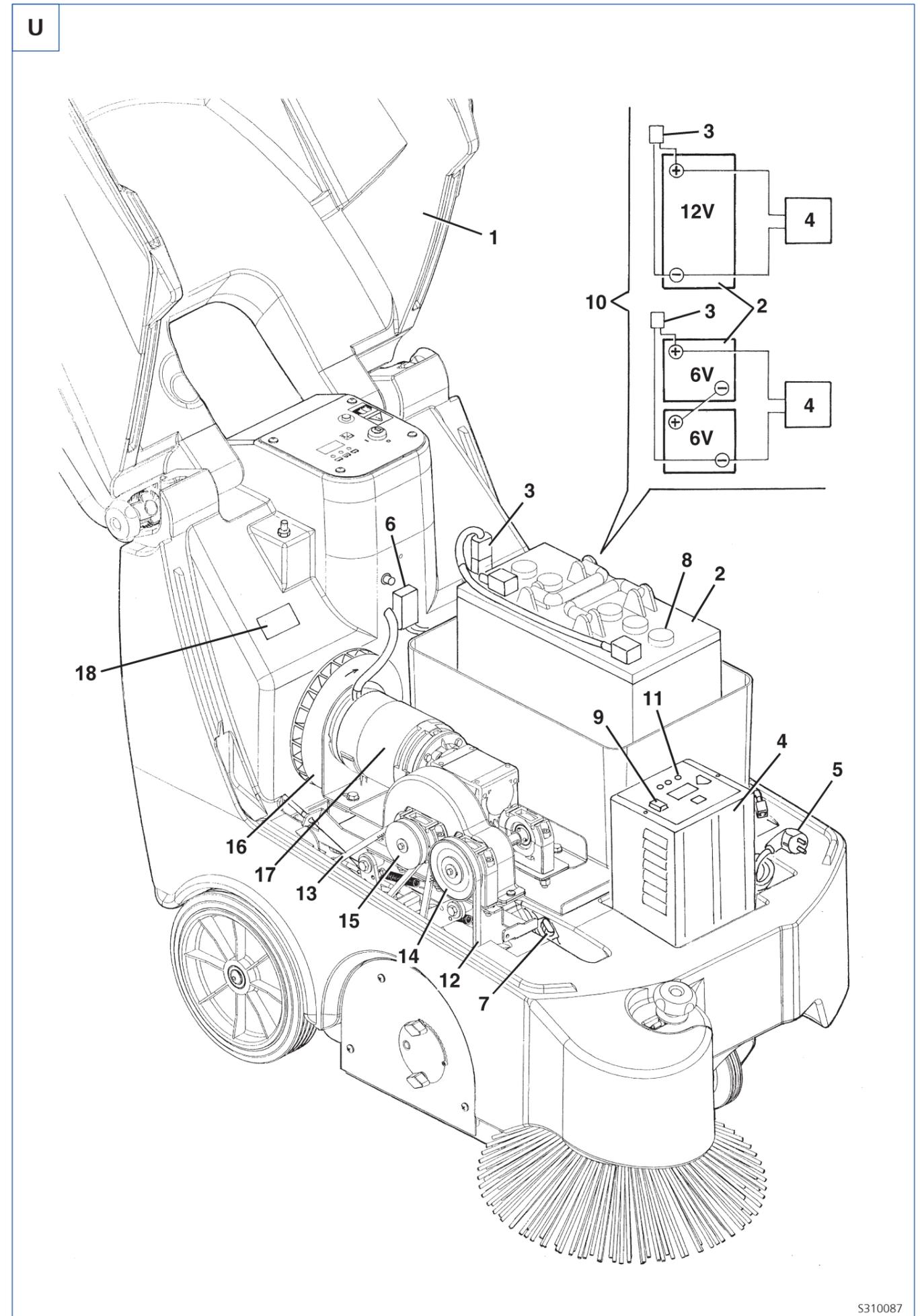
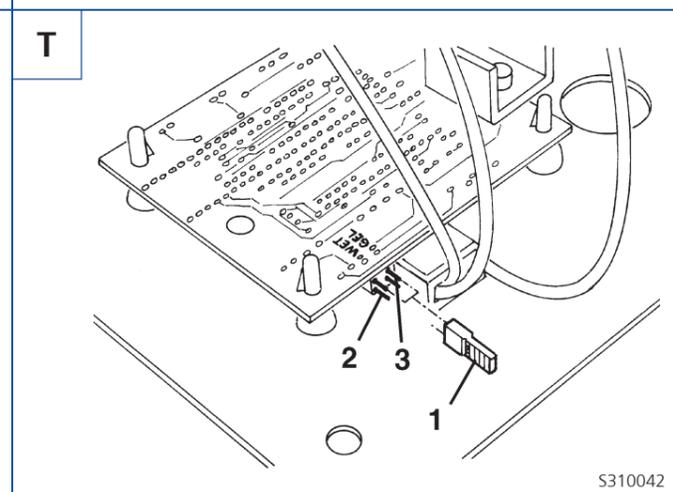
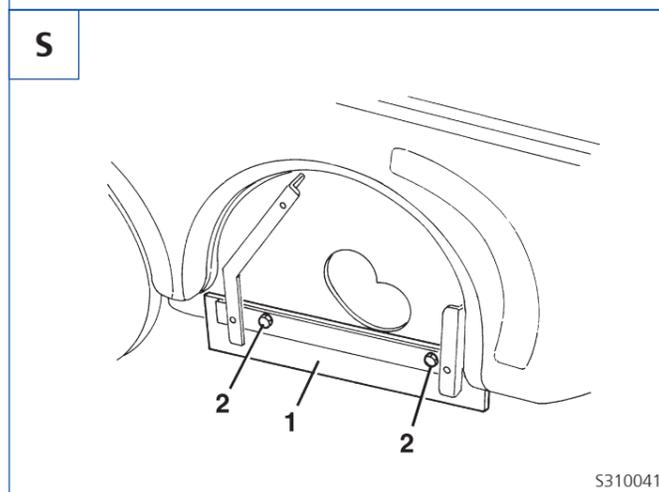
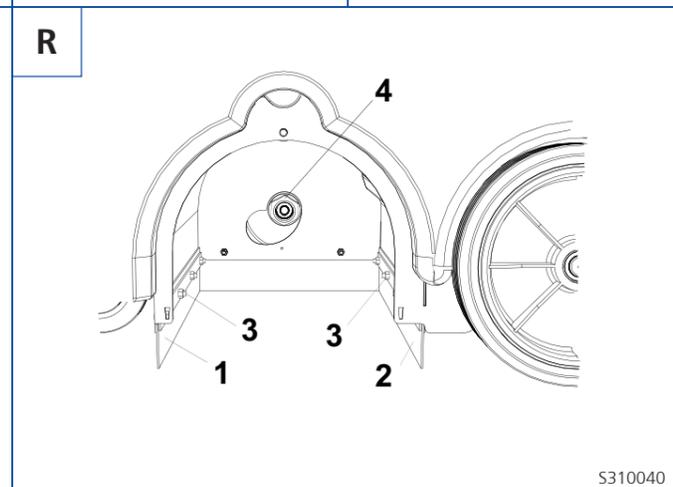
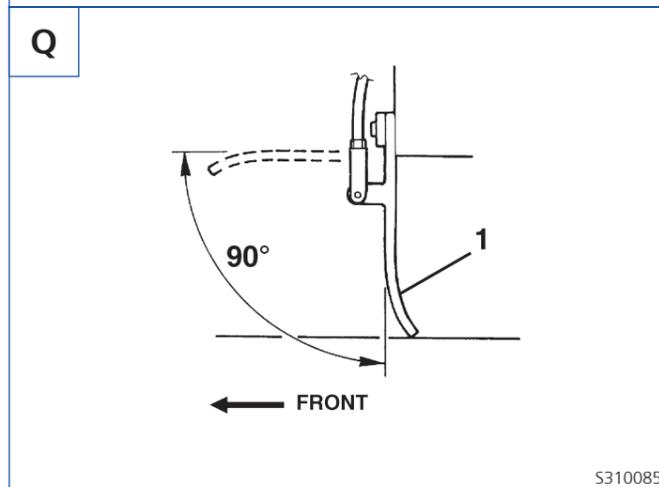
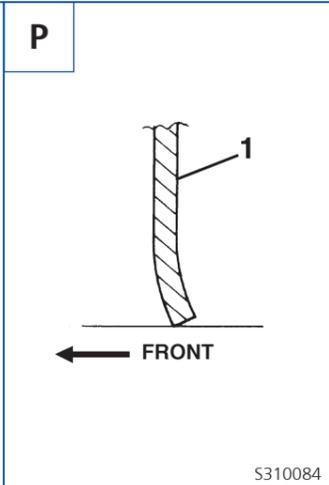
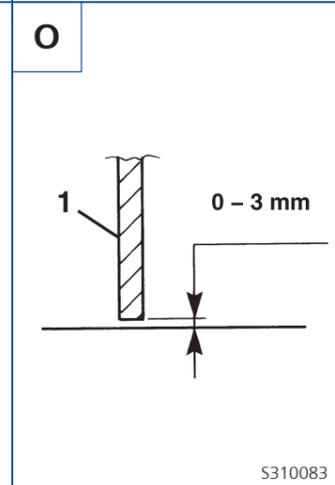
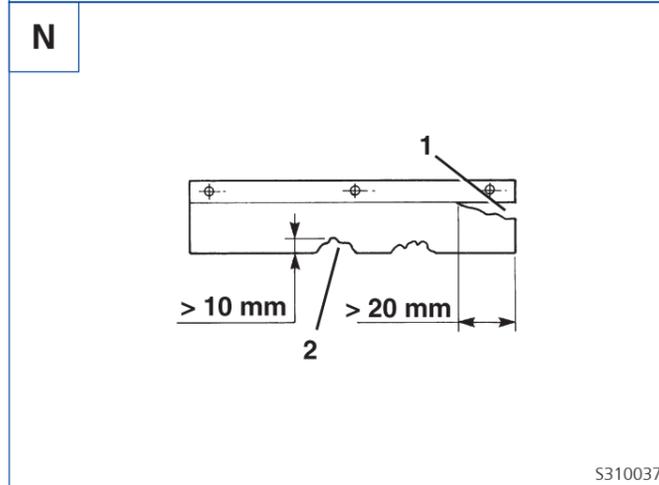
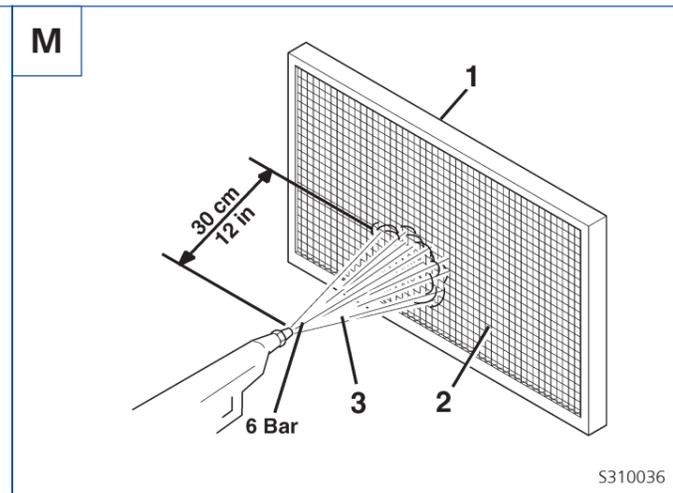
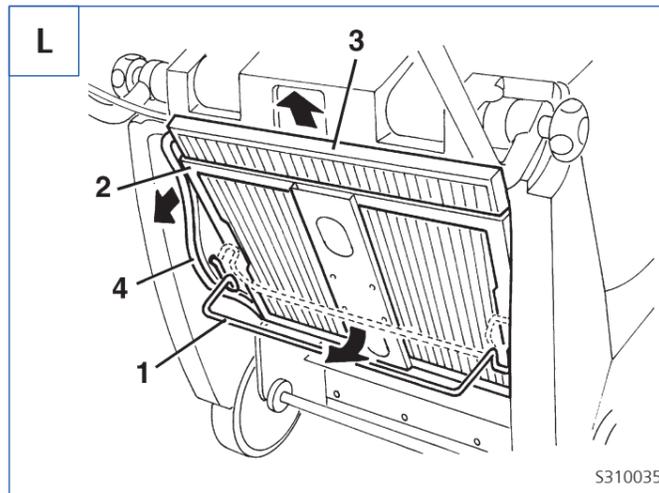
**EC declaration of conformity**

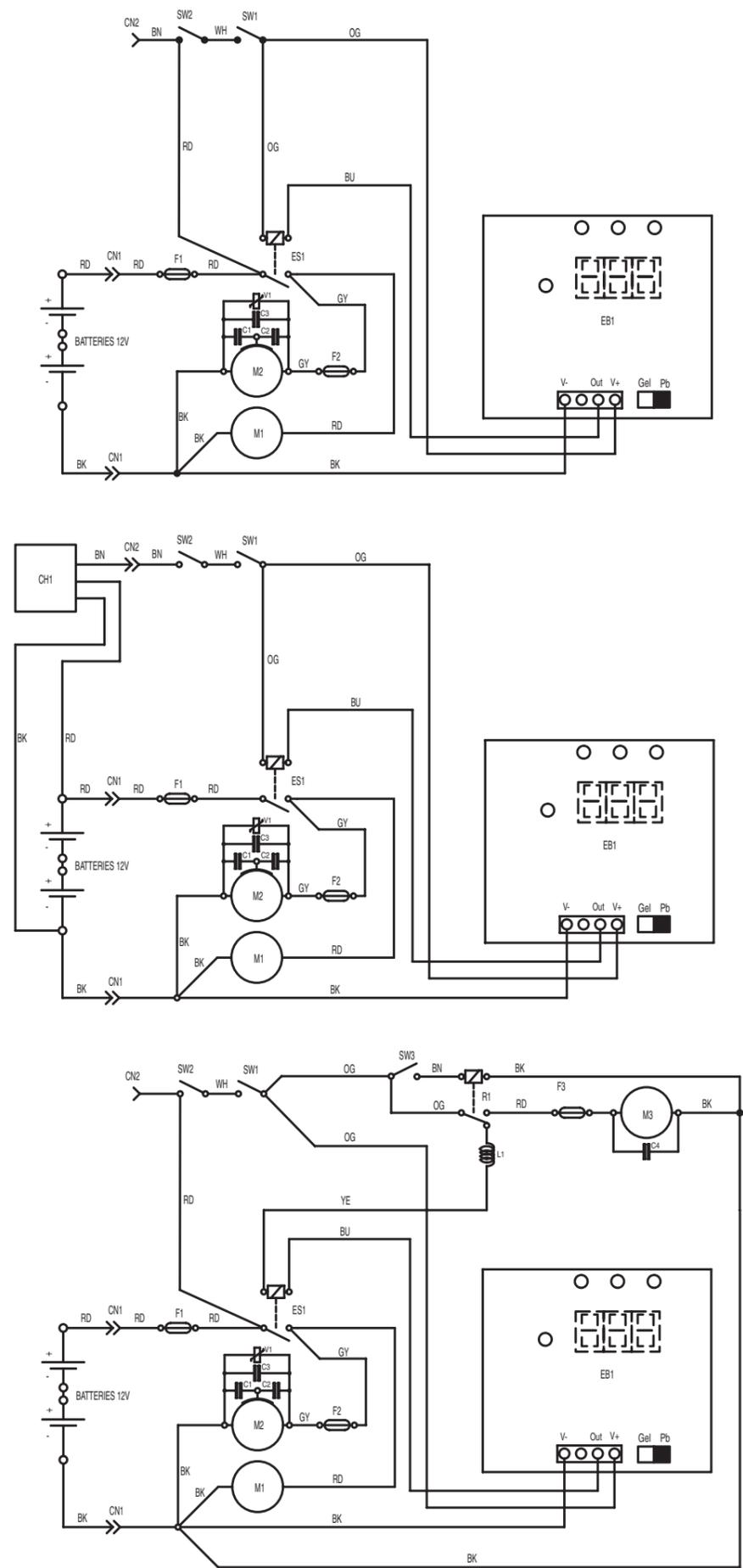
Alto Deutschland GmbH
Guido-Oberdorfer-Straße 2-8
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Product:	Sweeper
Model:	FLOORTEC 560 B
Description:	12V
The design of the appliance corresponds to the following pertinent regulations:	EC Machine Directive 98/37/EC EC Low Voltage Directive 73/23/EEC EC EMC Directive 89/336/EEC
Applied harmonized standards:	EN 12100-1, EN 12100-2, EN 294, EN 349 EN 60335-2-72 EN 55014-1, EN 55014-2
Applied national standards and technical specifications:	DIN EN 60335-2-72 IEC 60335-2-72

Dipl.-Ing. Wolfgang Nieuwkamp
Tests and approvals

Bellenberg, 11.02.2005





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