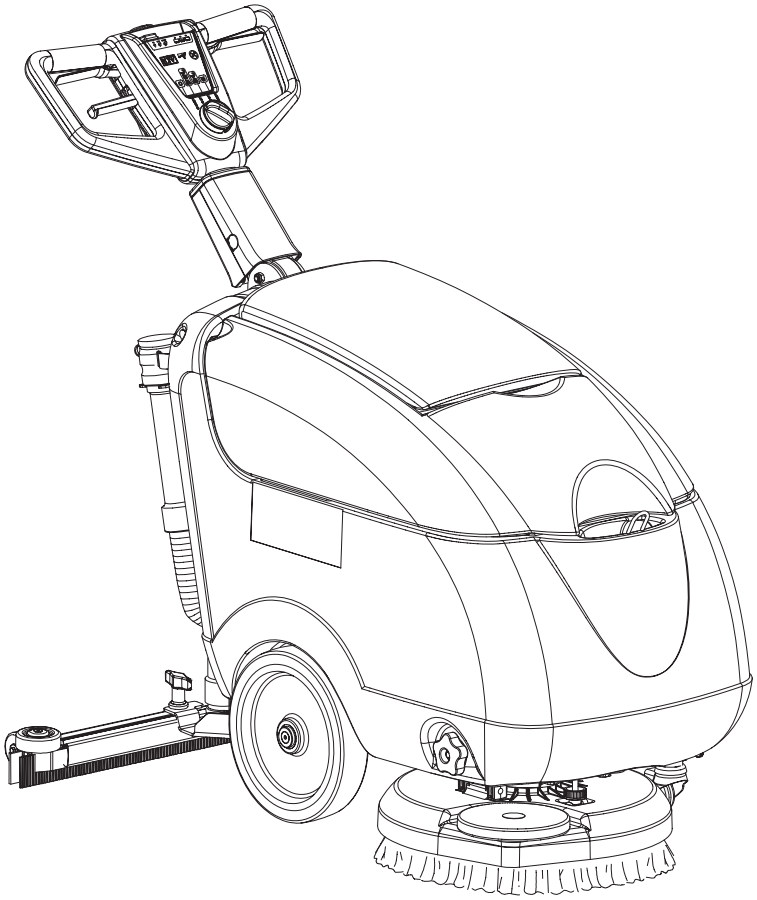
SC400
Instructions for use

Bedienungshandbuch
Instructions d'utilisation
Instructions for use
Gebruiksaanwijzing

07/2012 - Revised 06/2016
(3)
9099612000

Deutsch
Français
English
Nederlands



Model:
9087311020 - 9087325020

Nilfisk

Сертификат за съответствие
Osvědčení o shodě
Konformitätserklärung
Overensstemmelsescertifikat
Declaración de conformidad
Vastavussertifikaat
Déclaration de conformité
Yhdenmukaisuustodistus
Conformity certificate

Πιστοποιητικό συμμόρφωσης
Megfelelősségi nyilatkozat
Potvrda sukladnosti
Dichiarazione di conformità
Atitikties deklaracija
Atbilstības deklarācija
Konformitetssertifisering
Conformiteitsverklaring
Declaração de conformidade

Deklaracja zgodności
Certificat de conformitate
Заявление о соответствии
Överensstämmelsecertifikat
Certifikát súladu
Certifikat o ustreznosti
Uyumluluk sertifikası

CE

Модел / Model / Modell / Model / Modelo / Mudel / Modèle / Malli / Model / Μοντέλο / Modell / Model / Modello / Modelis / Modelis / Modell / Model / Modelo / Model / Model / Модель / Modell / Model / Model / Model :

SC400

Тип / Typ / Typ / Type / Tipo / Tüüp / Type / Tyyppi / Type / Τύπος / Típus / Vrsta / Tipo / Tipas / Tips / Type / Type / Tipo / Typ / Tip / Тип / Typ / Typ / Tip / Tip :

SCRUBBER-DRYER

Сериен номер / Výrobní číslo / Seriennummer / Serienummer / Número de serie / Seerianumber / Numéro de série / Sarjanumero / Serial number / Σειριακός αριθμός / Sorozatszám / Serijski broj / Numero di serie / Serijos numeris / Sērijas numurs / Serienummer / Serienummer / Número de série / Numer seryjny / Număr de serie / Серийный номер / Serienummer / Výrobné číslo / Serijska številka / Seri Numarası :

Година на производство / Rok výroby / Baujahr / Fabrikationsår / Año de fabricación / Väljalaskeaasta / Année de fabrication / Valmistusvuosi / Year of construction / Έτος κατασκευής / Gyártási év / Godina izgradnje / Anno di costruzione / Pagaminimo metai / Izgatavošanas gads / Byggeår / Bauwjaar / Ano de fabrico / Rok produkcji / Anul fabricaţiei / Год выпуска / Tillverkningsår / Rok výroby / Leto izdelave / Leto izdelave/İmal yılı :

BG Долуподписаният потвърждава, че гореспоменатият модел е произведен в съответствие със следните директиви и стандарти. Техническият файл е съставен от производителя.

CZ Níže podepsaný stvrzuje, že výše uvedený model byl vyroben v souladu s následujícími směrnicemi a normami. Autorem technického listu je výrobce.

D Der Unterzeichner bestätigt hiermit dass die oben erwähnten Modelle gemäß den folgenden Richtlinien und Normen hergestellt wurden. Die technische Dokumentation wird vom Hersteller erstellt.

DK Undertegnede attesterer herved, at ovennævnte model er produceret i overensstemmelse med følgende direktiver og standarder. Den tekniske fil er udarbejdet af fabrikanten.

E El abajo firmante certifica que los modelos arriba mencionados han sido producidos de acuerdo con las siguientes directivas y estandares. El fascículo técnico está redactado por el fabricante

EST Allakirjutanu kinnitab, et ülalnimetatud mudel on valmistatud kooskõlas järgmiste direktiivide ja normidega. Tehnilise dokumentatsiooni koostab tootja.

F Je soussigné certifie que les modèles ci-dessus sont fabriqués conformément aux directives et normes suivantes. Le dossier technique est rédigé par le fabricant.

FIN Allekirjoittaia vakuuttaa että yllämainittu malli on tuotettu seuraavien direktiivien ja standardien mukaan. Valmistaja kääntää teknisen tiedoston.

GB The undersigned certify that the above mentioned model is produced in accordance with the following directives and standards. The technical file is compiled by the manufacturer.

GR Ο κάτωθι υπογεγραμμένος πιστοποιεί ότι η παραγωγή του προαναφερθέντος μοντέλου γίνεται σύμφωνα με τις ακόλουθες οδηγίες και πρότυπα. Το τεχνικό αρχείο συντάσσεται από τον κατασκευαστή.

H Alulírottak igazoljuk, hogy a fent említett modellt a következő irányelvek és szabványok alapján hoztuk létre. A műszaki fájlt a gyártó készítette.

HR Potpisani potvrđujem da gore spomenuti model proizveden u skladu sa sljedećim direktivama i standardima.Tehničku dokumentaciju sastavlja proizvođač.

I Il sottoscritto dichiara che i modelli sopra menzionati sono prodotti in accordo con le seguenti direttive e standard. Il fascicolo tecnico è redatto dal costruttore.

LT Toliau pateiktu dokumentu patvirtinama, kad minėtas modelis yra pagamintas laikantis nurodytų direktyvų bei standartų. Techninę bylą sudarė gamintojas.

LV Ar šo tiek apliecināts, ka augstākminētais modelis ir izgatavots atbilstoši šādām direktīvām un standartiem. Tehnisko aprakstu ir sastādījis ražotājs.

N Undertegnede attesterer att ovennevnte modell är produsert i overensstemmelse med følgende direktiv og standarder. Den tekniske filen er opprettet av produsenten.

NL Ondergetekende verzekert dat de bovengenoemde modellen geproduceerd zijn in overeenstemming met de volgende richtlijnen en standaards. Het technische bestand is door de fabrikant samengesteld.

P A presente assinatura serve para declarar que os modelos supramencionados são produtos em conformidade com as seguintes directivas e normas. A ficha técnica é redigida pelo fabricante.

PL Niżej podpisany zaświadcza, że wymieniony powyżej model produkowany jest zgodnie z następującymi dyrektywami i normami. Dokumenty techniczne zostały przygotowane przez producenta.

RO Subsemnatul atest că modelul sus-menţionat este produs în conformitate cu următoarele directive şi standarde. Fişierul tehnic este redactat de către producător.

RUS Настоящим удостоверяется, что машина вышеуказанной модели изготовлена в соответствии со следующими директивами и стандартами. Техническая документация составлена производителем.

S Undertecknad intygar att ovannämnda modell är producerad i överensstämmelse med följande direktiv och standarder. Den tekniska filen är sammanställd av tillverkaren.

SK Dolu podpísaný osvedčuje, že hore uvedený model sa vyrába v súlade s nasledujúcimi smernicami a normami. Technický súbor vytvoril výrobca.

SLO Spodaj podpisani potrjujem, da je zgoraj omenjeni model izdelan v skladu z naslednjimi smernicami in standardi. Spis s tehnično dokumentacijo pripravi izdelovalec.

TR Aşağıda İmzası olan kişi, yukarıda bahsedilen model cihazın aşağıda verilen direktiflere ve standartlara uygunlukta imal edildiğini onaylar. Teknik dosya üretici tarafından derlenmiştir.

EC Machinery Directive 2006/42/EC	**EN ISO 12100, EN ISO 13857, EN 349, EN 982**
	EN 60335-1, EN 60335-2-72, EN 50366
EC EMC Directive 2014/30/EU	**EN 55014-1, EN 55014-2, EN 61000-6-2**

Производителя / Výrobce / Hersteller / Fabrikanten / Fabricante / Tootja / Fabricant / Valmistaja / Manufacturer / Κατασκευαστή / Gyártó / Proizvođač / Costruttore / Gamintojas / Ražotājs / Produsenten / Fabrikant / Fabricante / Producenta / Producător / Производителем / Tillverkaren / Výrobca / Izdelovalec / Üretici :

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Date: Signature:

FACSIMILE

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INTRODUCTION

NOTE
The numbers in brackets refer to the components shown in Machine Description chapter.

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 data, safety, operation, storage, maintenance, spare parts and disposal. Before performing any procedure on the machine, the operators and qualified technicians must read this Manual carefully. Contact Nilfisk in case of doubts concerning the interpretation of the instructions and for any further information.

TARGET

This Manual is intended for operators and technicians qualified to perform the machine maintenance.
The operators must not perform procedures reserved for qualified technicians. Nilfisk will not be answerable for damages coming from the non-observance of this prohibition.

HOW TO KEEP THIS MANUAL

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

DECLARATION OF CONFORMITY

The Declaration of Conformity, supplied with the machine, certifies the machine conformity with the law in force.

NOTE
Two copies of the original declaration of conformity are provided together with the machine documentation.

IDENTIFICATION DATA

The machine serial number and model name are marked on the plate (1).
Product number and year of production are marked on the same plate.
This information is useful when requiring machine spare parts. Use the following table to write down the machine identification data.

MACHINE model .....
PRODUCT code .....
MACHINE serial number .....

OTHER REFERENCE MANUALS

– Electronic battery charger Manual, to be considered as integral part of this Manual
– Spare Parts List (supplied with the machine)
– Service Manual (that can be consulted at Nilfisk Service Centers)

SPARE PARTS AND MAINTENANCE

All necessary operating, maintenance and repair procedures must be performed by qualified personnel or by Nilfisk Service Centers. Only original spare parts and accessories must be used.
Contact Nilfisk for service or to order spare parts and accessories, specifying the machine model, product code and serial number.

CHANGES AND IMPROVEMENTS

Nilfisk 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 machines that were previously sold.
Any change and/or addition of accessory must be approved and performed by Nilfisk.

OPERATION CAPABILITIES

These scrubber-dryers are used to clean (scrubbing and drying) smooth and solid floors, in civil or industrial environment, under safe operation conditions by a qualified operator.
The scrubber-dryers cannot be used for fitted carpet and carpet cleaning.

CONVENTIONS

Forward, backward, front, rear, left or right are intended with reference to the operator's position, that is to say in driving position with the hands on the handlebar (2).

UNPACKING/DELIVERY

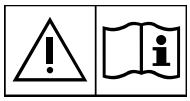
To unpack the machine, carefully follow the instructions on the packing.
When the machine is delivered, check that the packing and the machine were not damaged during transportation.
In case of visible damages, keep the packing and have it checked by the carrier that delivered it. Call the carrier immediately to fill in a damage claim.
Please check that the following items have been supplied with the machine:

– Technical documents:
  - Scrubber-dryer User Manual
  - Electronic Battery Charger Manual (if equipped)
  - Scrubber-dryer Spare Parts List
– No. 1 40 A lamellar fuse

SAFETY

The following symbols indicate potentially dangerous situations. Always read this information carefully and take all necessary precautions to safeguard people and property.
The operator's cooperation is essential in order to prevent injury. 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.

VISIBLE SYMBOLS ON THE MACHINE



WARNING!
Carefully read all the instructions before performing any operation on the machine.



WARNING!
Do not wash the machine with direct or pressurized water jets.



WARNING!
Do not use the machine on slopes with a gradient exceeding the specifications.

SYMBOLS THAT APPEAR ON THIS MANUAL



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 careful attention to the paragraphs marked by this symbol.



NOTE
It indicates a remark related to important or useful functions.



CONSULTATION
It indicates the necessity to refer to 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!
- ***Before performing any cleaning, maintenance, repair or replacement procedure, turn the program selection knob to "0" and disconnect the battery connector.***
- ***This machine must be used by properly trained operators only.***
- ***Do not wear jewels when working near electrical components.***
- ***Do not work under the lifted machine without supporting it with safety stands.***
- ***Do not operate the machine near toxic, dangerous, flammable and/or explosive powders, liquids or vapours. This machine is not suitable for collecting dangerous powders.***
- ***When using lead (WET) batteries, keep sparks, flames and smoking materials away from the batteries. During the normal operation explosive gases are released.***
- ***When using lead (WET) batteries, battery charging produces highly explosive hydrogen gas. During battery charging, remove the recovery tank and perform this procedure in well-ventilated areas and away from naked flames.***



WARNING!
- ***Carefully read all the instructions before performing any maintenance/repair procedure.***
- ***Before using the battery charger, ensure that frequency and voltage values, indicated on the machine serial number plate, match the electrical mains voltage.***
- ***Do not pull or carry the machine by the battery charger cable and never use the battery charger cable as a handle. Do not close a door on the battery charger cable, or pull the battery charger cable around sharp edges or corners. Do not run the machine on the battery charger cable.***
- ***Keep the battery charger cable away from heated surfaces.***
- ***Do not charge the batteries if the battery charger cable or the plug are damaged. If the machine is not working as it should, has been damaged, left outdoors or dropped into water, return it to the Service Center.***
- ***To reduce the risk of fire, electric shock, or injury, do not leave the machine unattended when it is plugged in. Before performing any maintenance procedure, disconnect the battery charger cable from the electrical mains.***
- ***Do not smoke while charging the batteries.***
- ***Always protect the machine against the sun, rain and bad weather, both under operation and inactivity condition. This machine must be used in dry conditions, it must not be used or kept outdoors in wet conditions.***
- ***Before using the machine, close all doors and/or covers as shown in the User Manual.***
- ***This machine is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the machine by a person responsible for they safety.***
  Children should be supervised to ensure that they do not play with the machine.
- ***Close attention is necessary when used near children.***

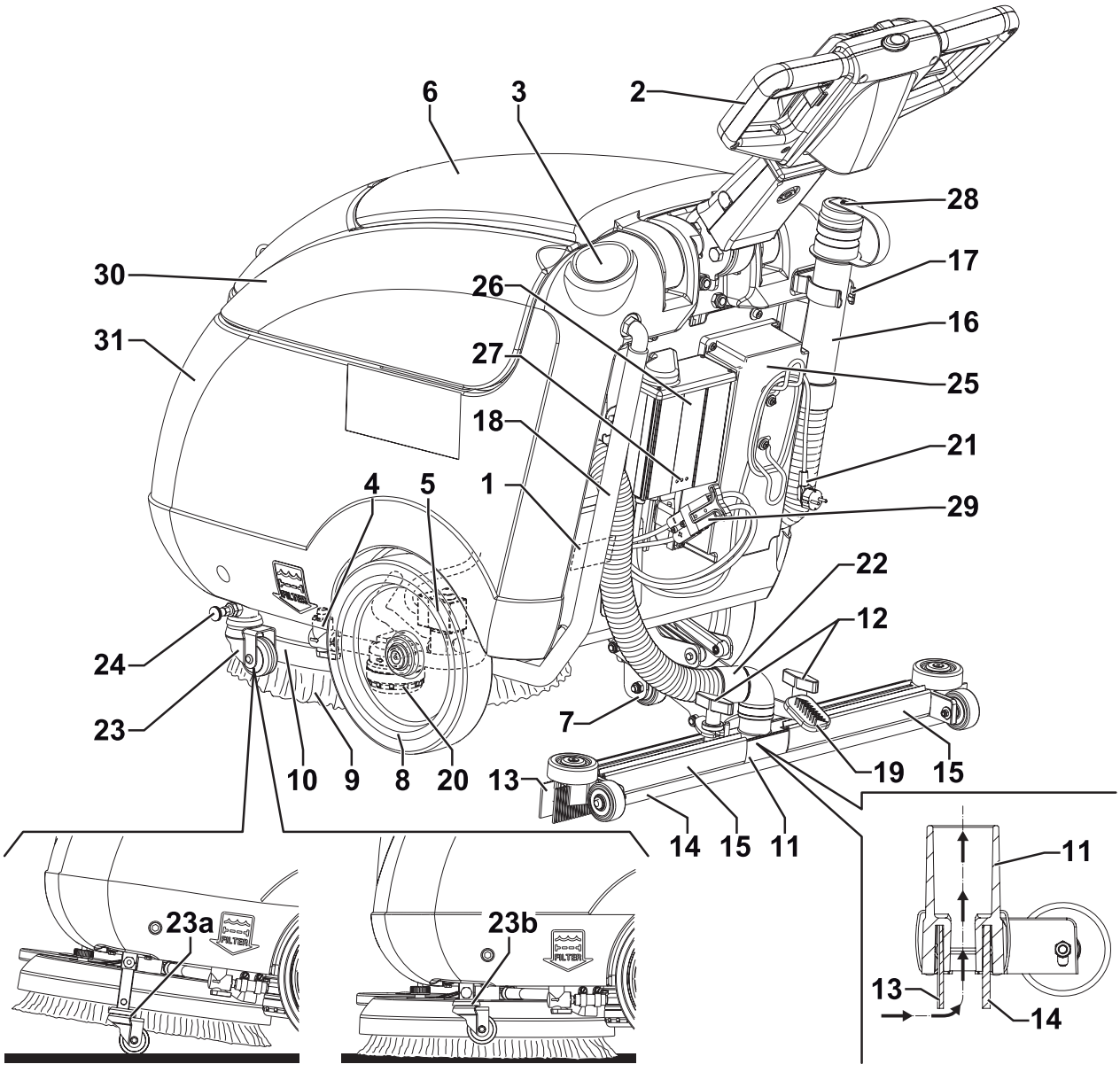
WARNING!

- *Use only as shown in this Manual. Use only Nilfisk's recommended accessories.*
- *Check the machine carefully before each use, always check that all the components have been assembled before use. If the machine is not perfectly assembled it can cause damages to people and properties.*
- *Take all necessary precautions to prevent hair, jewels and loose clothes from being caught by the machine moving parts.*
- *Do not use the machine on slopes with a gradient exceeding the specifications.*
- *Do not use the machine on slopes.*
- *Do not tilt the machine more than the angle indicated on the machine itself, in order to prevent instability.*
- *Do not use the machine in particularly dusty areas.*
- *Use the machine only where a proper lighting is provided.*
- *While using this machine, take care not to cause damage to people or objects.*
- *Do not bump into shelves or scaffoldings, especially where there is a risk of falling objects.*
- *Do not lean liquid containers on the machine, use the relevant can holder.*
- *The machine working temperature must be between 0 °C and +40 °C.*
- *The machine storage temperature must be between 0 °C and +40 °C.*
- *The humidity must be between 30% and 95%.*
- *When using floor cleaning detergents, follow the instructions on the labels of the detergent bottles.*
- *To handle floor cleaning detergents, wear suitable gloves and protections.*
- *Do not use the machine as a means of transport.*
- *Do not allow the brush/pad to operate while the machine is stationary to avoid damaging the floor.*
- *In case of fire, use a powder fire extinguisher, not a water one.*
- *Do not tamper with the machine safety guards and follow the ordinary maintenance instructions scrupulously.*
- *Do not allow any object to enter into the openings. Do not use the machine if the openings are clogged. Always keep the openings free from dust, hairs and any other foreign material which could reduce the air flow.*
- *Do not remove or modify the plates affixed to the machine.*
- *This machine cannot be used on roads or public streets.*
- *Pay attention during machine transportation when temperature is below freezing point. The water in the recovery tank or in the hoses could freeze and seriously damage the machine.*
- *Use brushes and pads supplied with the machine or those specified in the User Manual. Using other brushes or pads could reduce safety.*
- *In case of machine malfunctions, ensure that these are not due to lack of maintenance. If necessary, request assistance from the authorised personnel or from an authorised Service Center.*
- *If parts must be replaced, require ORIGINAL spare parts from an Authorised Dealer or Retailer.*
- *To ensure machine proper and safe operation, the scheduled maintenance shown in the relevant chapter of this Manual, must be performed by the authorised personnel or by an authorised Service Center.*
- *Do not wash the machine with direct or pressurised water jets, or with corrosive substances.*
- *The machine must be disposed of properly, because of the presence of toxic-harmful materials (batteries, etc.), which are subject to standards that require disposal in special centres (see Scrapping chapter).*

MACHINE DESCRIPTION

MACHINE STRUCTURE

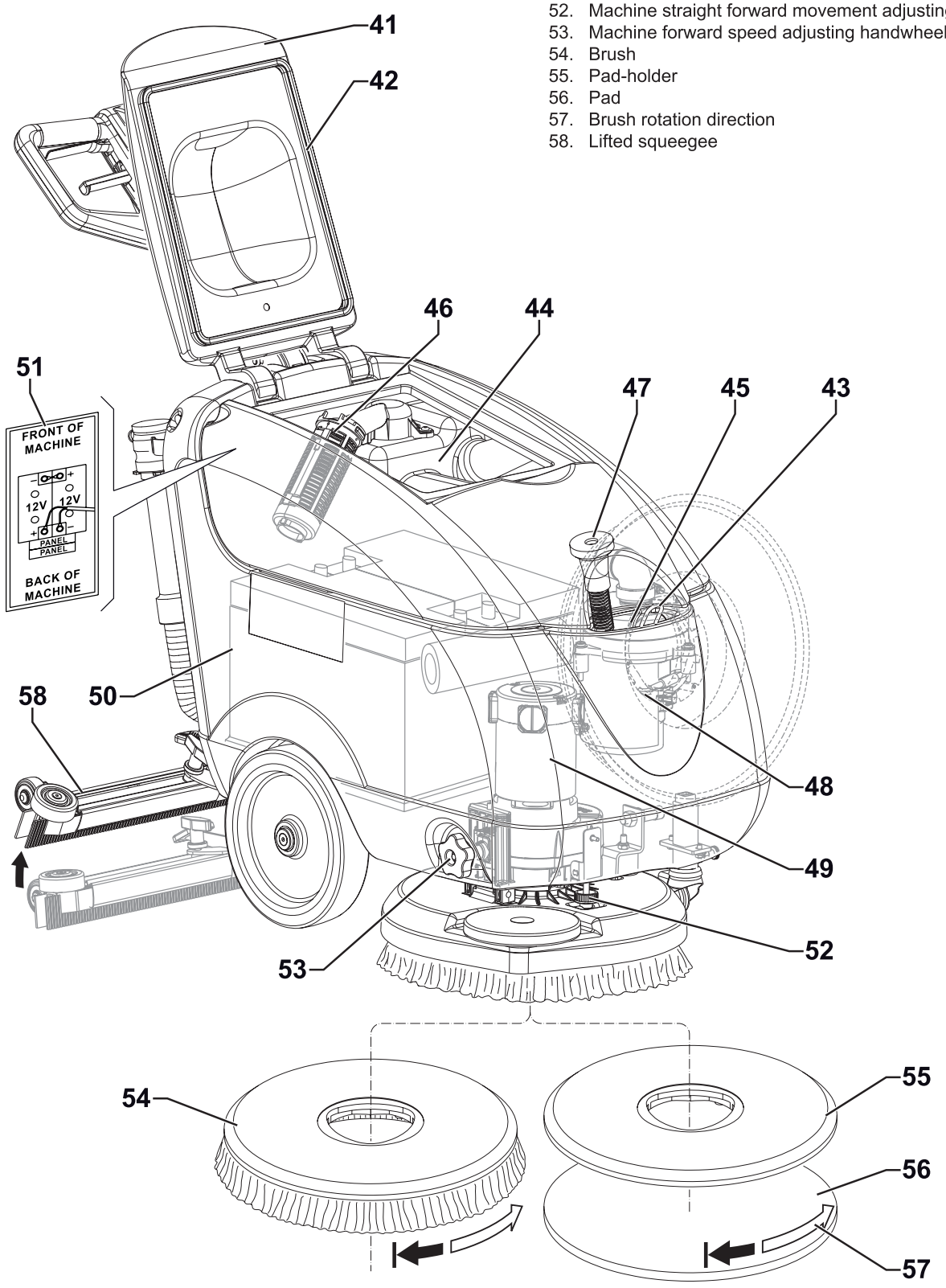
1. Serial number plate/technical data/conformity certification
2. Handlebar with control panel
3. Can holder
4. Solution flow opening/closing valve
5. Solution solenoid valve
6. Recovery tank cover
7. Rear wheel to support the lifted squeegee
8. Central wheels on fixed axle
9. Brush/pad
10. Brush/pad-holder deck
11. Squeegee
12. Squeegee mounting handwheels
13. Front squeegee blade
14. Rear squeegee blade
15. Squeegee blade mounting springs
16. Recovery water drain hose
17. Recovery water drain hose bracket
18. Solution drain hose with level check marks
19. Squeegee lifting/lowering pedal
20. Solution filter
21. Battery charger cable
22. Squeegee vacuum hose
23. Parking wheel
23a. Engaged parking wheel
23b. Disengaged parking wheel
24. Parking wheel positioning pin
25. Electrical component box
26. Battery charger
27. Battery charger warning lights
28. Recovery water drain plug
29. Battery connector (red). This connector also works as EMERGENCY push-button, to stop immediately all functions.
30. Recovery tank
31. Solution tank



P100620

MACHINE STRUCTURE (Continues)

41. Recovery tank cover (open)
42. Recovery tank cover gasket
43. Front brush/pad-holder support
44. Recovery tank compartment
45. Solution tank filler neck
46. Vacuum grid with automatic shut-off float
47. Detergent removable filler hose
48. Vacuum system motor
49. Brush/pad-holder motor
50. Batteries
51. Battery connection diagram
52. Machine straight forward movement adjusting handwheel
53. Machine forward speed adjusting handwheel
54. Brush
55. Pad-holder
56. Pad
57. Brush rotation direction
58. Lifted squeegee



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HANDLEBAR WITH CONTROL PANEL

61. Handlebar
62. Program selection knob
63. Program: brush - vacuum system - solution flow activation
64. Program: brush - solution flow activation
65. Program: vacuum system activation
66. Machine switching off “0”
67. Solution flow push-button Press to reach the desired quantity, as shown by LEDs (68).
68. LED indicators with double function:
    - Solution flow indicators

    1 LED on:
    Minimum “ECO” solution flow.

    2 LEDs on:
    Medium solution flow.

    3 LEDs on:
    Maximum solution flow.

    LEDs off:
    Closed solution flow.

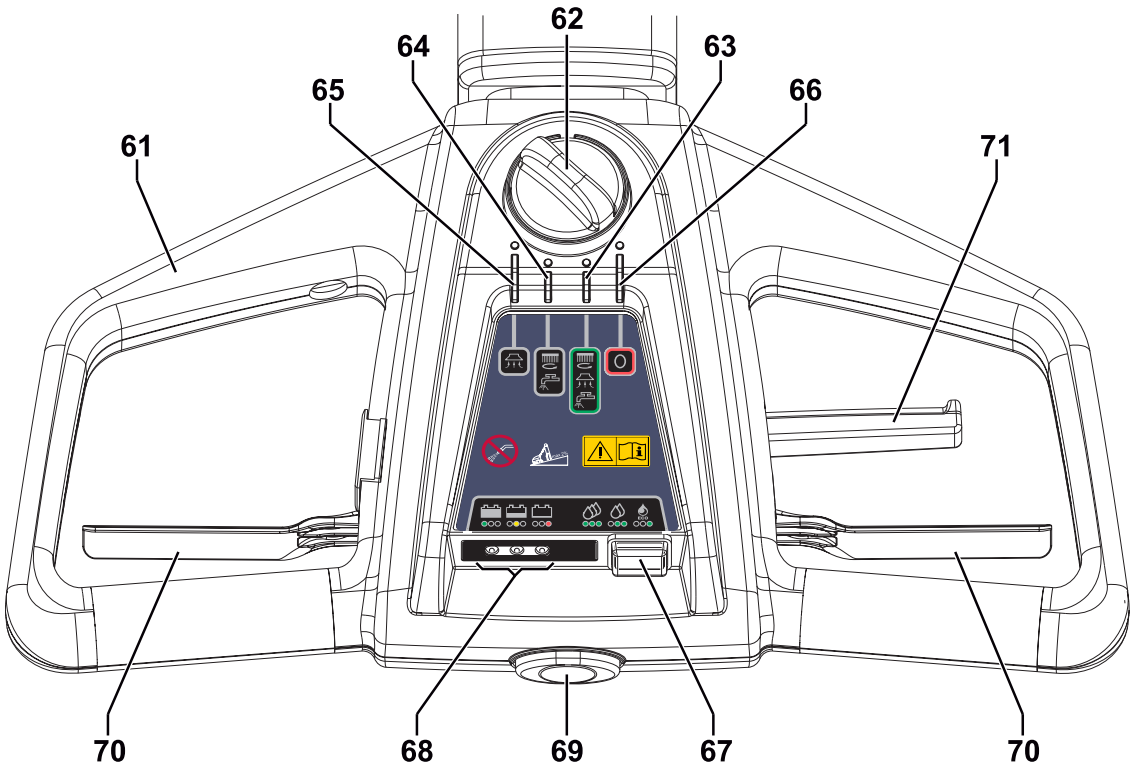
    - Battery charge indicators

    Green LED:
    Charged batteries.

    Yellow LED:
    Nearly discharged batteries.

    Red LED:
    The batteries are discharged.
69. Machine start-up enabling push-button
70. Brush levers
71. Handlebar inclination adjusting lever

NOTE
If the batteries are charged, the LEDs indicate the battery charge level only in the first 5 seconds after machine start-up. When the batteries are nearly or fully discharged, the battery charge level is constantly shown. In this case, to see the solution flow, the push-button (67) must be pressed.



P100622

ACCESSORIES/OPTIONS

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

– Batteries
– Battery charger
– Brushes/pads of different materials

For further information concerning the optional accessories, contact an authorised Retailer.

TECHNICAL DATA

Model	SC400 43 B	SC400 43 B FULL PKG
Machine length	1,230 mm	
Machine width with squeegee	720 mm	
Machine width without squeegee	570 mm	
Min/max machine height with adjustable handlebar	725 - 1,115 mm	
Weight without batteries and with empty tanks	58 kg	59 kg
Gross vehicle weight (GVW)	136 kg	
Shipping weight	80 kg	136 kg
Minimum turning radius	750 mm	
Cleaning width	430 mm	
Battery compartment size	350 x 350 x 260 mm	
Central wheel diameter	250 mm	
Brush/pad diameter	430 - 432 mm	
Rear wheel pressure on the floor	2 N/mm^2	
Brush/pad pressure with full tank and lowered squeegee	35 kg	
Vacuuming	1,200 mmH_2O	
Min/max solution flow	0.4 / 1.6 litres/min	
Brush/pad-holder motor speed	155 rpm	
Sound pressure level at workstation (ISO 11201, ISO 4871, EN 60335-2-72) (LpA)	65 dB(A) ± 3 dB(A)	
Machine sound power level (ISO 3744, ISO 4871, EN 60335-2-72) (LwA)	89 dB(A)	
Vibration level at the operator's arms (ISO 5349-1, EN 60335-2-72)	< 2.5 m/s^2	
Maximum gradient when working	2%	
Solution tank capacity	23 litres	
Recovery tank capacity	21 litres	
IP protection class	X4	
Protection class (electric)	III	
Vacuum system motor power	300 W	
Brush/pad-holder motor power	450 W	
Total absorbed power	0.75 kW	
Battery voltage	24 V	
Standard batteries (2)	-	12 V - 76 Ah (GEL) Exide
Battery charger	-	100-240 VAC
Work autonomy (standard batteries)	1.5 hour	

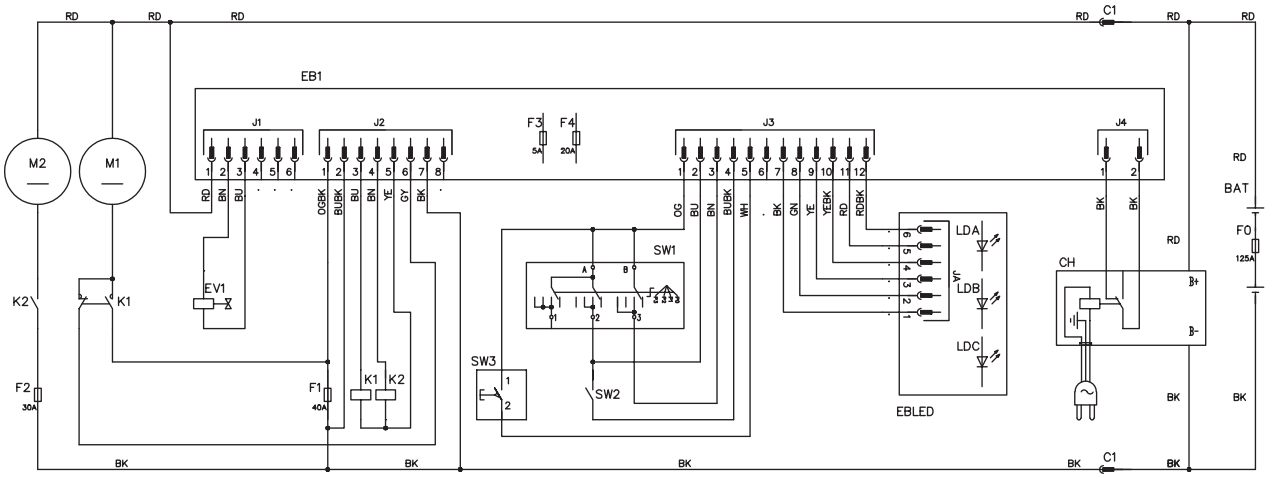
WIRING DIAGRAM

Key

BAT	24 V battery
C1	Battery connector
CH	Battery charger
EB1	Function electronic board
EBLED	LED electronic board
EV1	Detergent solenoid valve
F0	Battery fuse (125 A)
F1	Brush motor fuse (40 A)
F2	Vacuum system motor fuse (30 A)
F3	Signal circuit fuse (5 A)
F4	Brush disengagement fuse (20 A)
K1	Brush electromagnetic switch
K2	Vacuum system relay
LDA	Green LED
LDB	Green/yellow LED
LDC	Green/red LED
M1	Brush motor
M2	Vacuum system motor
SW1	Control selector
SW2	Brush enabling switch
SW3	Detergent rate switch

Colour codes

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



USE

WARNING!
On some points of the machine there are some adhesive plates indicating:
– ***DANGER***
– ***WARNING***
– ***CAUTION***
– ***CONSULTATION***

While reading this Manual, the operator must pay particular attention to the symbols shown on the plates (see Visible Symbols On The Machine paragraph).
Do not cover these plates for any reason and immediately replace them if damaged.

BATTERY CHECK/SETTING ON A NEW MACHINE

WARNING!
The electric components of the machine can be seriously damaged if the batteries are either improperly installed or connected. The batteries must be installed by qualified personnel only.
Set the function electronic board and the battery charger according to the type of batteries used (WET or GEL).
Check the batteries for damage before installation.
Disconnect the battery connector and the battery charger plug.
Handle the batteries with great care.
Install the battery terminal protection caps supplied with the machine.

The machine requires two 12 V batteries, connected according to the diagram (51).
The machine can be supplied in one of the following modes:

GEL/AGM battery already installed on the machine
1. Ensure that the battery connector (29) is connected.
2. Start the machine (see Machine Start and Stop paragraph). If the green LED (68) turns on, the batteries are ready to be used.
3. If the yellow or red LED (68) turns on, the batteries must be charged (see the procedure in Maintenance chapter).

Without batteries
1. Buy appropriate batteries [See the Technical Data paragraph and the diagram (51)]. For battery choice and installation, apply to qualified battery Retailers.
2. Set the machine and the battery charger (if equipped) according to the type of batteries installed, according to the procedure shown in the following paragraph.

BATTERY TYPE SETTING (WET OR GEL/AGM)

Set the electronic board of the machine and the battery charger according to the type of batteries installed (WET or GEL/AGM) as shown below:

Machine Setting

1. Disconnect the battery connector (29).
2. The machine factory setting is for GEL/AGM batteries. If this setting corresponds to the type of batteries installed, go to step 6. Otherwise, perform steps 3, 4 and 5 too.
3. Remove the screws (A, Fig. 1), then remove the cover (B) of the electrical component box (25).
4. On the electronic board, turn the microswitch (C) to WET position.

WARNING!
Do not move/set the adjacent switch (D).

5. Reinstall the electric component box cover (B) and tighten the screws (A).

Battery charger setting

6. To set the battery charger, refer to the relevant Manual supplied with the machine.

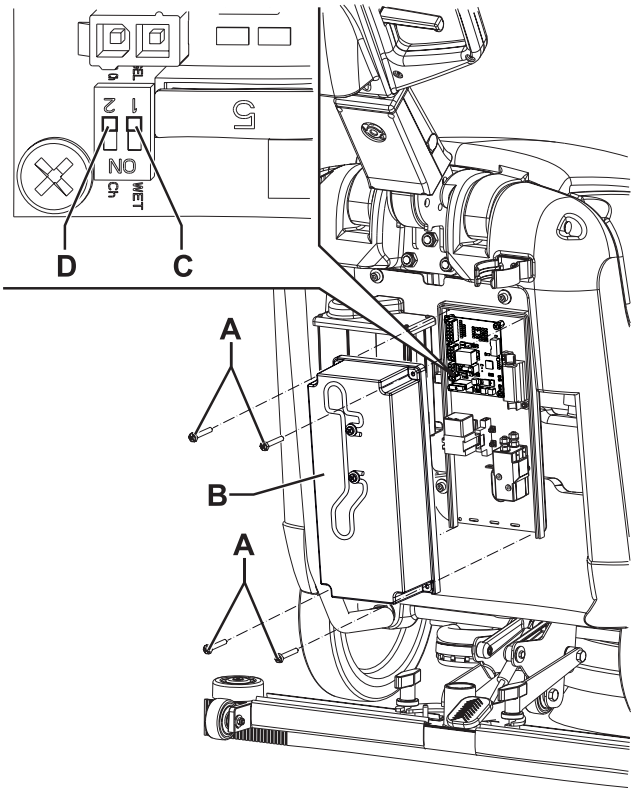


Figure 1

P100624

Battery Installation

7. Disconnect the vacuum hose (22) from the squeegee (11).
8. Disconnect the recovery water drain hose (16) from the bracket (17).
9. Open the cover (6).
10. Grasp the recovery tank (A, Fig. 2) in the area (B) and slightly lift it.
11. Disconnect the vacuum hose (C) from the tank, then remove the tank (A) with the hoses (D) and (E).
12. Install the batteries on the machine according to the diagram (51).
13. Install the tank (A) by performing steps 7 to 11 in the reverse order.

Battery Charging

14. Charge the batteries (see the procedure in Maintenance chapter).

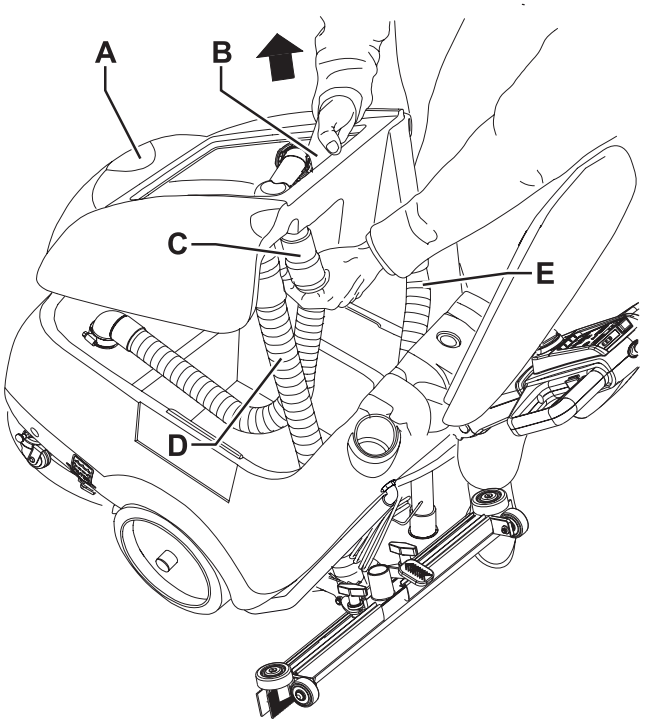


Figure 2

P100625

BEFORE MACHINE START-UP

Brush or pad-holder installation

NOTE
Use either the brush (54) or the pad-holder (55 and 56) according to the type of floor to be cleaned.

1. Insert the positioning pin (24) and disengage the machine parking device (23b).
2. Lift the brush/pad-holder deck (10) by prying the handlebar (2).
3. Place the brush (54) or the pad-holder (55 and 56) under the deck.
4. Lower the deck (10) by using the handlebar (2).
5. Turn the knob (62) to program (63).
6. Press the enabling push-button (69) together with the brush levers (70) to engage the brush/pad-holder to the deck drive hub (10). If necessary, repeat the procedure until the brush/pad-holder is engaged.

Available brushes and their relevant application guides (suggestions only)

Models		MIDLITE GRIT 180	MIDGRIT 240	PROLITE	UNION MIX
General cleaning	Concrete	■	■		
	Terrazzo floor	■	■		
	Ceramic tiles/quarrystones	■	■		
	Marble			■	
	Vinyl tiles	■			
	Rubber tiles			■	
Polishing	Rubber tiles				■
	Marble				■
	Vinyl tiles				■

Squeegee installation

7. Install the squeegee (11) and fasten it with the handwheels (12), then connect the vacuum hose (22) to the squeegee.

Solution tank filling

CAUTION!
Use only low-foam and non-flammable detergents, intended for automatic scrubber applications.

WARNING!
When using floor cleaning detergents, follow the instructions on the labels of the detergent bottles.
To handle floor cleaning detergents, wear suitable gloves and protections.

8. Use the filler neck (45) or the removable filler hose (47) to fill the tank (31) with a solution suitable for the work to be performed. Do not fill the solution tank completely, leave few inches from the edge. Always follow the dilution instructions on the label of the chemical product used to prepare the solution. The solution temperature must not exceed 40 °C.

Adjustments

9. Adjust the handlebar (2) with the lever (71) to reach a comfortable position.

MACHINE START AND STOP

Starting the machine

1. Prepare the machine as shown in the previous paragraph.
2. Lower the squeegee (11) with the pedal (19).
3. Turn the knob (62) to turn on the machine and select one of the programs according to the following table:

Selection	Symbol	Program
(63)		Scrubbing and drying. Brush - vacuum system - solution flow activation
(64)		Scrubbing. Brush - solution flow activation
(65)		Drying. Vacuum system activation

4. At machine start-up, the LEDs (68) indicate the type of battery set (see paragraph “Battery type setting”):
   - 2 flashes of the red LED - WET battery setting
   - 2 flashes of the green LED - GEL/AGM battery setting

   In the first 5 seconds, the LEDs (68) indicate the battery charge status. If the green LED turns on, the machine is ready to be used. If the yellow or red LED turns on, the batteries must be charged (see the procedure in Maintenance chapter).

NOTE
If the batteries are charged, the LEDs indicate the battery charge level only in the first 5 seconds after machine start-up. When the batteries are nearly or fully discharged, the battery charge level is constantly shown. In this case, to see the solution flow, the solution flow push-button (67) must be pressed.

5. Press the solution flow push-button (67) to change the solution quantity. Green LEDs (68) indicate the flow quantity according to the following table:

LEDs on (68)	Symbol	Setting
		Minimum “ECO” solution flow.
		Medium solution flow.
		Maximum solution flow.
		Closed solution flow.

6. To start scrubbing/drying, keep the hands on the handlebar (2) and press both the enabling push-button (69) and the brush activation levers (70).

Stopping the machine

7. Release the brush levers (70) and the enabling push-button (69).
8. Turn the knob (62) to “0” position to switch off the machine.
9. Engage the positioning pin (24) and activate the machine parking device (23a) to keep the brush/pad-holder lifted (see Fig. 5).
10. Make sure that the machine cannot move independently.

NOTE
Each time that the machine is turned off, the solution flow program turns automatically to “ECO” level, to reduce water consumption.

CAUTION!
In case of immediate necessity and to stop all machine functions, disconnect the battery connector (29). Reset the machine functions by connecting again the connector.

Squeegee lifting

Lift the squeegee as indicated below:

1. Grasp the handlebar (2), lower it until the rear wheel (7) touches the floor (A, Fig. 3) then engage the squeegee in lifted position (B).

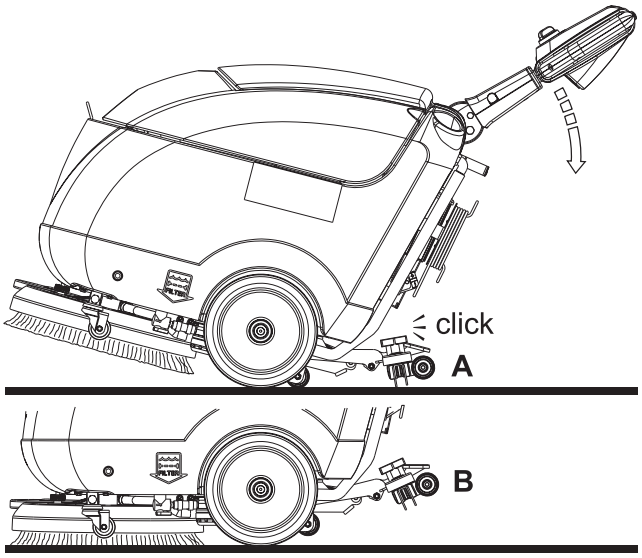


Figure 3

P100626

MACHINE OPERATION (SCRUBBING/DRYING)

1. Start the machine as shown in the previous paragraph.
2. While keeping both hands on the handlebar (2), move the machine and start scrubbing/drying the floor.
3. If necessary, adjust the solution quantity by using the push-button (67).

CAUTION!
To avoid damaging the floor surface, do not use the brush without the solution and, when the machine is not operating, stop the brush/pad-holder by releasing the levers (70).

CAUTION!
Before lifting the brush/pad, turn it off by releasing the levers (70).

NOTE
For correct scrubbing/drying of floors at the sides of the walls, Nilfisk suggests to go near the walls with the right side of the machine as shown in figure 4.

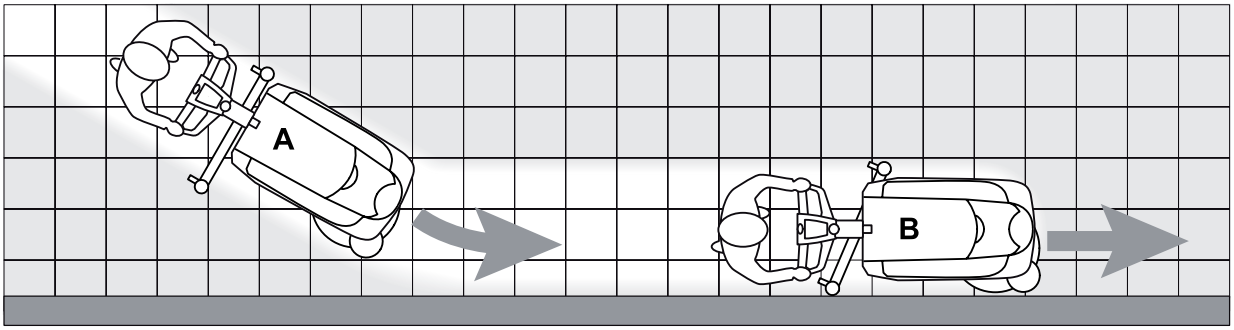


Figure 4

P100627

CAUTION!
In case of brush/pad-holder motor overload, due to foreign bodies which prevent them from turning, or to excessively aggressive floors/brushes, the safety system stops the brush/pad-holder after about one minute of continuous overload.
The overload is shown by the three battery LEDs (68) flashing simultaneously.
To start scrubbing again after a brush/pad-holder stop due to overload, stop the machine by turning the knob (62) to "0". Restart the machine by turning the knob to one of the working programs.

Machine speed adjustment

4. The machine speed varies according to the type of floor to be cleaned and the choice of using the brush or the pad. If necessary, it is possible to adjust the machine speed, according to the procedure shown in Maintenance chapter.

Battery discharge during operation

5. Until the green LED (68) turns on in the first 5 seconds, the batteries allow to work normally. When the yellow and red LED turn on in sequence, it is necessary to charge the battery as the machine residual autonomy is at the minimum level.

CAUTION!
Do not use the machine with discharged batteries, to avoid damaging the batteries and reducing the battery life.

MACHINE TRANSPORT/PARKING

To transport/park the machine, proceed as follows.

1. Switch off the machine by turning the knob (62) to “0”.
2. Lift the squeegee (58).
3. Keep the brush/pad-holder lifted with the handlebar and push the machine where necessary.
4. Engage the positioning pin (24) and activate the machine parking device (23a) to keep the brush/pad-holder lifted (Fig. 5).
5. When all the work is done, it is advisable to remove the brush/pad-holder from the deck (see the procedure in the next paragraph), and engage it to the front holder (43).

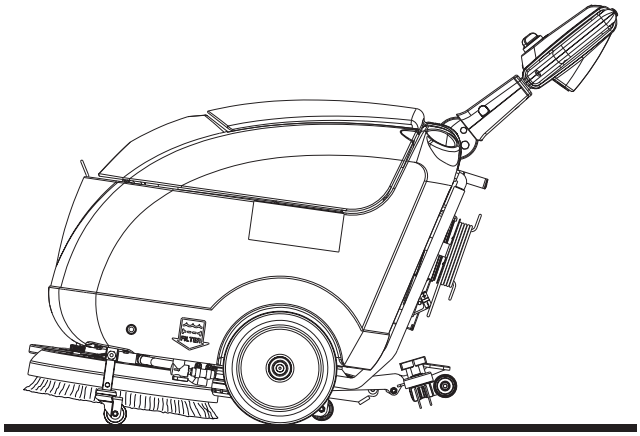


Figure 5

P100628

Brush/pad-holder removal

Remove the brush/pad-holder deck by performing the following procedure:

1. Turn the knob (62) to program (64).
2. Lift the brush/pad-holder deck (10) by prying the handlebar (2).
3. Press both the enabling push-button (69) and 3 times consequently the brush levers (70) and then wait that the brush disengages from the drive hub.
4. Turn the knob (62) to “0” position to switch off the machine.

TANK EMPTYING

An automatic float shut-off system (46) turns off the vacuum system when the recovery tank (30) is full.
The vacuum system shutdown, due to the recovery tank filling, is signalled by an increase in the vacuum system motor noise, moreover the floor is not dried.

CAUTION!
If the vacuum system turns off accidentally (for example, when the float is activated because of a sudden machine movement), to resume the operation: turn off the vacuum system by turning the knob (62) to “0”, then open the recovery tank cover (41) and check that the float inside the grid (46) has gone down to the water level. Then close the recovery tank cover (6) and turn on the vacuum system by turning the knob (62) on the working program.

When the recovery tank (30) is full, empty it according to the following procedure.

Recovery tank emptying

1. Turn the knob (62) to “0” position to switch off the machine.
2. Lift the squeegee (58).
3. Drive the machine to the appointed disposal area.
4. Insert the positioning pin (24) and lift the brush/pad-holder by engaging the parking device (23a).
5. Empty the recovery tank (30) with the drain hose (16). Then, rinse the tank with clean water.

Solution tank emptying

Perform steps 1 to 4.

6. Empty the solution tank (31) with the hose (18).
7. Then, rinse the tank with clean water.

AFTER USING THE MACHINE

After working, before leaving the machine:

1. Remove the brush/pad-holder as shown in the Machine Transport/Parking paragraph.
2. Empty the tanks (30 and 31) as shown in the previous paragraph.
3. Perform the daily maintenance procedures (see the Maintenance chapter).
4. Store the machine in a clean and dry place, with the brush/pad-holder and the squeegee lifted or removed.

RECOVERY TANK REMOVAL

To check or charge the lead (WET) batteries, or to perform other procedures, it may be necessary to remove the recovery tank (30) as shown below.

1. Check that the knob (62) is turned to “0”.
2. Empty the recovery tank (30) as shown in the relevant paragraph.
3. Drive the machine on a level floor.
4. Disconnect the vacuum hose (22) from the squeegee (11).
5. Disconnect the recovery water drain hose (16) from the bracket (17).
6. Open the cover (6).
7. Grasp the recovery tank (A, Fig. 6) in the area (B) and slightly lift it.
8. Disconnect the vacuum hose (C) from the tank, then remove the tank (A) with the hoses (D) and (E).

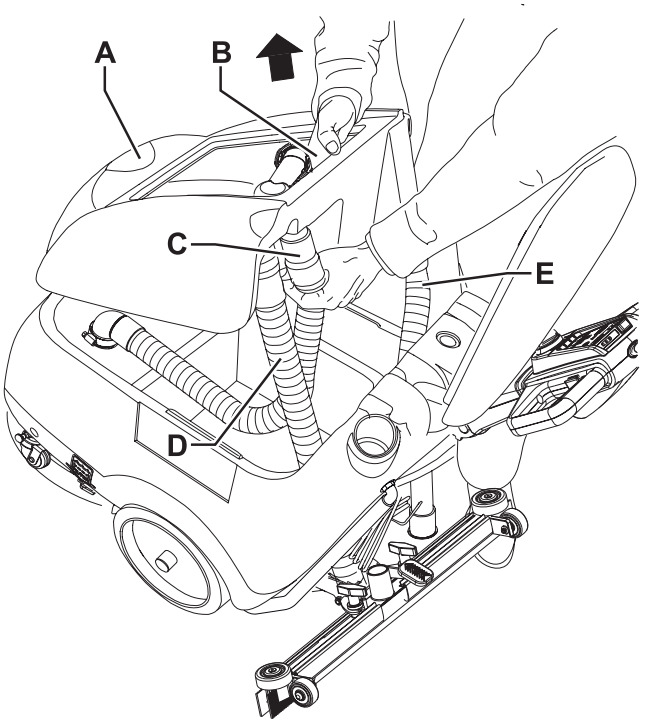


Figure 6

P100625

MACHINE LONG INACTIVITY

If the machine is not going to be used for more than 30 days, proceed as follows:

1. Perform the procedures shown in After Using the Machine paragraph.
2. Disconnect the battery connector (29).
3. Store the machine in a clean and dry place.

MAINTENANCE

The lifespan of the machine and its maximum 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!
Maintenance procedures must be performed with the machine switched off and the batteries/battery charger cable disconnected.
Moreover, carefully read the instructions in the Safety chapter.

All scheduled or extraordinary maintenance procedures 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 maintenance procedures shown in the Scheduled Maintenance Table, refer to the Service Manual that can be consulted at any Service Center.

SCHEDULED MAINTENANCE TABLE

Procedure	Daily, after using the machine	Weekly	Every six months	Yearly
Squeegee Cleaning	■			
Brush Cleaning	■			
Tank and Vacuum Grid Cleaning	■			
Battery Charging	■			
WET battery fluid level check		■		
Squeegee Blade Check and Replacement		■		
Solution Filter Cleaning		■		
Brush motor carbon brush check and replacement				(2)
Vacuum system motor carbon brush check and replacement				(2)

(1) This maintenance procedure must be performed by an authorised Nilfisk Service Center.

BATTERY CHARGING

NOTE
Charge the batteries when the yellow or red LED (68) turns on, or at the end of each working cycle.
Keeping the batteries charged make their life last longer.

CAUTION!
When the batteries are discharged, charge them as soon as possible, as that condition makes their life shorter.
Check for battery charge at least once a week.

CAUTION!
If the machine is not equipped with on-board battery charger, choose an external battery charger suitable for the type of batteries installed.

WARNING!
When using lead (WET) batteries, 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.
Do not reinstall the recovery tank until the battery charging cycle is over.

WARNING!
Pay careful attention when charging WET batteries as there may be battery fluid leakages. The battery fluid is corrosive. If it comes in contact with skin or eyes, rinse thoroughly with water and consult a physician.

1. Drive the machine to the appointed recharging area.
2. Check that the knob (62) is turned to “0”.
3. For WET batteries only:
   - Remove the recovery tank as shown in Use chapter.
   - Check the level of electrolyte inside the batteries; if necessary, top up through the caps.
   - Leave all the battery caps open for next charging.
   - If necessary, clean the upper surface of the batteries.
4. Charge the batteries according to one of the following procedures, depending on the presence of the battery charger (26).

Charging the Batteries with an External Battery Charger

5. Check that the external battery charger is suitable by referring to the relevant Manual. The battery charger voltage rating must be 24 V.
6. Disconnect the battery connector (29) and connect it to the external battery charger.
7. Connect the battery charger to the electrical mains.
8. After charging, disconnect the battery charger from the electrical mains and from the battery connector (29).
9. (For WET batteries only): check the level of electrolyte inside the batteries and close all the caps.
10. Connect the battery connector (29) to the machine.
11. (For WET batteries only): reinstall the recovery tank.

Battery charging with battery charger installed on the machine

12. Connect the battery charger cable (21) to the electrical mains (the electrical mains voltage and frequency must be compatible with the battery charger values shown on the machine serial number plate (1)).

NOTE
When the battery charger is connected to the electrical mains, all machine functions are automatically cut off.
The battery charger red or yellow LED (27) turned on, indicates that the batteries are charging.

13. When the green LED (27) stays on, the battery charging cycle is over.
14. When the battery charging is completed, disconnect the battery charger cable (21) from the electrical mains and wind it round its housing.
15. (For WET batteries only): close all the battery caps and install the recovery tank as shown in Use chapter.
16. Now the machine is ready to be used.

NOTE
For further information about the operation of the battery charger (26), see the relevant Manual.

SQUEEGEE CLEANING

NOTE
The squeegee must be clean and its blades must be in good conditions in order to get a good drying.

WARNING!
It is advisable to wear protective gloves when cleaning the squeegee because there may be sharp debris.

1. Drive the machine on a level floor.
2. Check that the knob (62) is turned to “0”.
3. Lower the squeegee with the pedal (19).
4. Disconnect the vacuum hose (22) from the squeegee.
5. Loosen the handwheels (12) and remove the squeegee (11).
6. Wash and clean the squeegee. In particular, clean the compartments (A, Fig. 7) and the vacuum hole (B) from dirt and debris.
7. Check the front blade (C) and the rear blade (D) for integrity, cuts and tears; if necessary replace them (see the procedure in the following paragraph).
8. Assemble the components in the reverse order of disassembly.

SQUEEGEE BLADE CHECK AND REPLACEMENT

1. Clean the squeegee as shown in the previous paragraph.
2. Check that the front blade edges (E, Fig. 7) and the rear blade edges (I) lay down on the same level, along their length; if necessary adjust the height according to the following procedure:
   - Remove the mounting springs (F), then adjust the front blade (C) and the rear blade (D).
   - Install the mounting springs on the front and rear blades.
3. Check the front blade (C) and rear blade (D) for integrity, cuts and tears; if necessary replace them as shown below. Also check the front corner (H) of the rear blade for wear; if it is worn, overturn the blade to replace the worn corner with the other one (G), if it is integral. If the other corner is worn too, replace the blade according to the following procedure:
   - Remove the mounting springs (F) and then replace (or overturn) the rear blade (D).
   - Install the mounting springs on the front and rear blades.
4. Install the squeegee (11) and screw tighten the handwheels (12).
5. Connect the vacuum hose (22) to the squeegee (11).

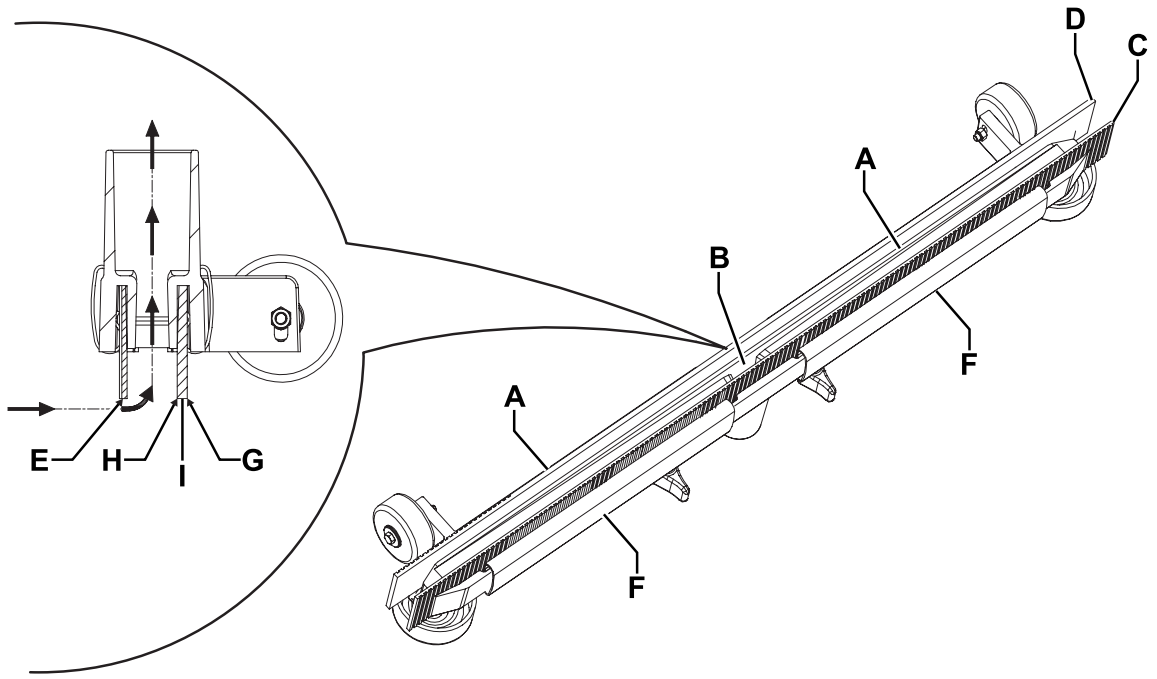


Figure 7

P100629

BRUSH CLEANING

WARNING!
It is advisable to wear protective gloves when cleaning the brush because there may be sharp debris.

1. Remove the brush as shown in the Machine Transport/Parking paragraph.
2. Insert the positioning pin (24) and disengage the machine parking device (23b).
3. Clean the brush with water and detergent.
4. Check the brush bristles for integrity and wear; if necessary, replace the brush.

TANK AND VACUUM GRID CLEANING

1. Drive the machine to the appointed disposal area.
2. Check that the knob (62) is turned to “0”.
3. Open the recovery water cover (41), then clean and wash the cover, the tanks (30 and 31) and the vacuum grid (46) with clean water. Drain the water from the tanks with the drain hose (16) and the hose (18).
4. If necessary, release the fasteners (B, Fig. 8) and open the grid (A); recover the float (C), clean all the components and then reinstall them.
5. Check the recovery tank cover gasket (D) for integrity.

NOTE
The gasket (D) creates vacuum in the tank that is necessary for vacuuming the recovery water.

If necessary replace the gasket (D) by removing it from its housing (E). When assembling the new gasket, install the joint (F) in the rear central area, as shown in the figure.

6. Check the seating surface (D) of the gasket (G) for integrity and sealing capabilities.
7. Close the recovery tank cover (6).

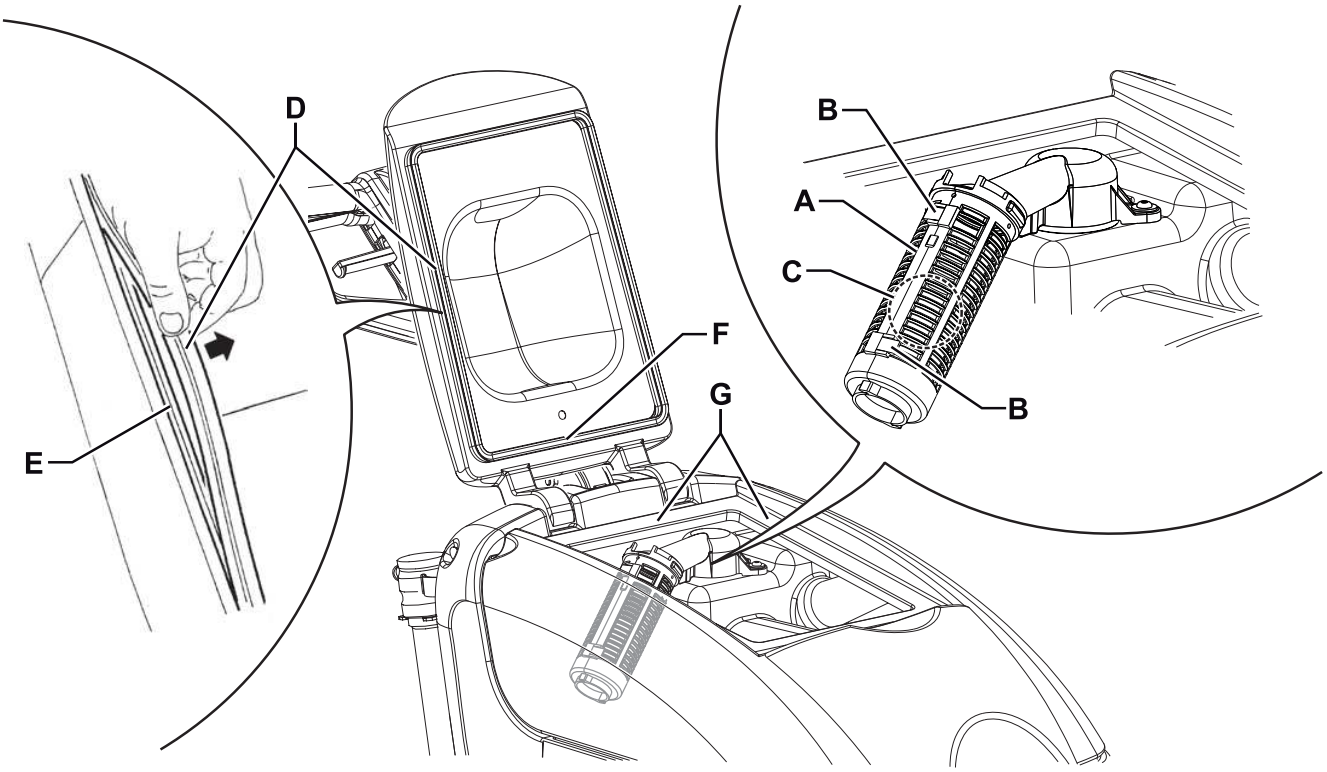


Figure 8

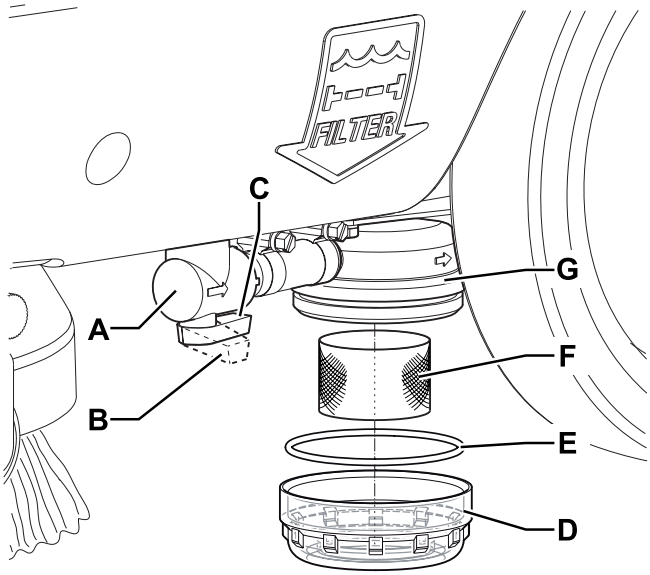
P100630

SOLUTION FILTER CLEANING

1. Drive the machine on a level floor.
2. Check that the knob (62) is turned to “0”.
3. Close the solution valve (A, Fig. 9) under the machine, in front of the left rear wheel.
   The valve (A) is closed when it is in the position (B) and it is open when it is in the position (C).
4. Remove the transparent cover (D) and the gasket (E), then remove the filter strainer (F). Clean and install them on the support (G).

NOTE
Install the gasket (E) and the filter strainer (F) properly on the cover (D) and on the support (G).

5. Open the valve (A) by turning it to position (C).



P100631

Figure 9

MACHINE SPEED ADJUSTMENT

NOTE
The machine speed varies according to the type of floor to be cleaned and the choice of using the brush or the pad. If necessary, perform the following procedure.

1. Adjust the machine speed with the handwheel (53) according to the following procedure:
   - Turn it counter-clockwise to increase the machine speed.
   - Turn it clockwise to decrease the machine speed.
2. If it is difficult to keep the machine moving straight-forwardly because it deviates to the left or to the right, adjust the handwheel (52) by turning it clockwise or counter-clockwise.
3. With the machine ready to operate, perform hands-on tests of the machine and other adjustments if necessary.

FUSE CHECK/REPLACEMENT

1. Disconnect the battery connector (29).
2. Remove the screws (A, Fig. 10), then carefully remove the electrical component box cover (B).
3. Check the following fuses for integrity:
   - (C): F1 (40 A) circuit breaker, brush motor
   - (D): F2 (30 A) blade fuse, vacuum system motor.
   - (E): F3 (5 A) blade fuse, solenoid valve and electronic board
   - (F): F4 (20 A) glass fuse, brush disengagement system
4. Replace the fuse, when the component that caused deactivation has fully cooled down.

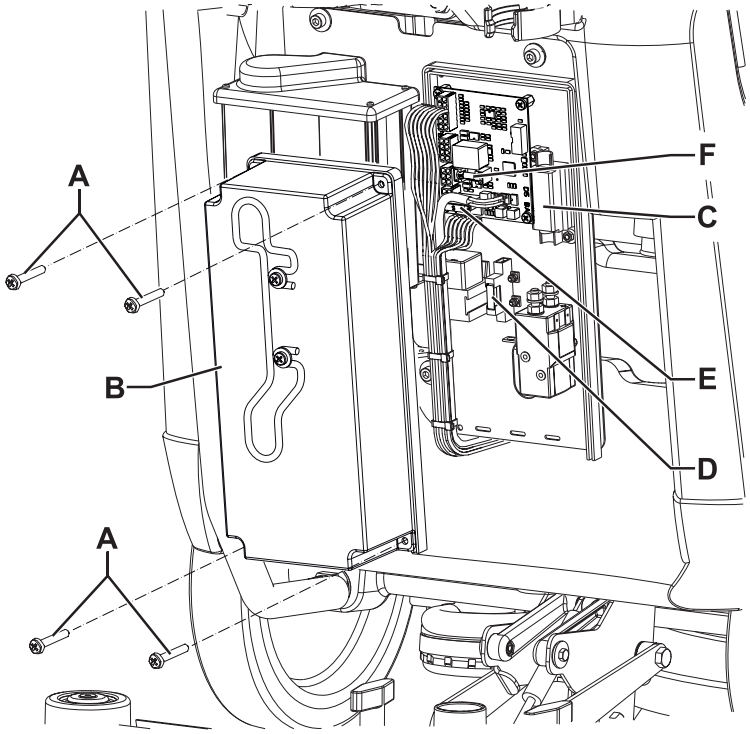


Figure 10

P100632

Battery fuse (F0) check/replacement

1. Disconnect the battery connector (29).
2. Remove the recovery tank (30) (see the procedure in Use chapter).
3. Check or replace the battery fuse F0 (125 A) (B) on the battery connection cable (A, Fig. 11).

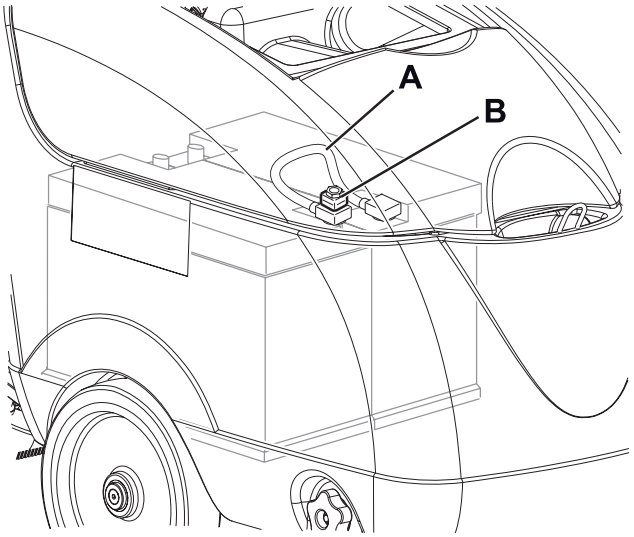


Figure 11

P100654

TROUBLESHOOTING

Trouble	Possible Cause	Remedy
The motors do not turn on; no LED turns on.	The battery connector is disconnected.	Connect.
	The batteries are discharged.	Charge.
	The F0 fuse is blown.	Replace.
	The F3 fuse is blown.	Replace.
	The program selection knob is faulty.	Replace. (*)
The LEDs (68) flash simultaneously.	The brush motor is overloaded.	Use a different kind of brush.
	There are foreign materials (tangled threads, etc.) preventing the brush from rotating.	Clean the brush hub.
The brush motor does not run.	The levers or the enabling push-button are broken.	Replace. (*)
	The F1 fuse is blown.	Replace.
The brush disengagement system does not work	The F4 fuse is blown.	Replace.
The vacuum system motor does not turn on.	The F2 fuse is blown.	Replace.
The dirty water vacuuming is insufficient.	The recovery tank is full.	Empty.
	The vacuum grid is clogged or the float is closing.	Clean the grid and check the float.
	The vacuum hose is disconnected from the squeegee or faulty.	Connect.
	The squeegee is dirty, or the squeegee blades are worn or damaged.	Clean the squeegee or replace the blades.
	The recovery tank cover is not properly closed, or the gasket is damaged.	Check and/or clean the seating surface or replace the gasket.
	The vacuum system motor filter is dirty.	Clean.
The solution flow is insufficient.	The solution filter is dirty.	Clean.
	The solution solenoid valve is faulty.	Replace. (*)
The squeegee leaves marks on the floor.	There is debris under the squeegee blades.	Remove the debris.
	The squeegee blades are worn, chipped or torn.	Replace the blades.

(*) This maintenance procedure must be performed by an authorised Nilfisk Service Center.

NOTE
The machine is inoperative without the battery charger. In case of battery charger malfunction, contact an authorised Service Center.

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

SCRAPPING

Have the machine scrapped by a qualified scrapper.
Before scrapping the machine, remove and separate the following materials, which must be disposed of properly according to the Law in force:

– Batteries
– Brushes
– Plastic hoses and components
– Electrical and electronic components (*)

(*) Refer to the nearest Nilfisk Center especially when scrapping electrical and electronic components.