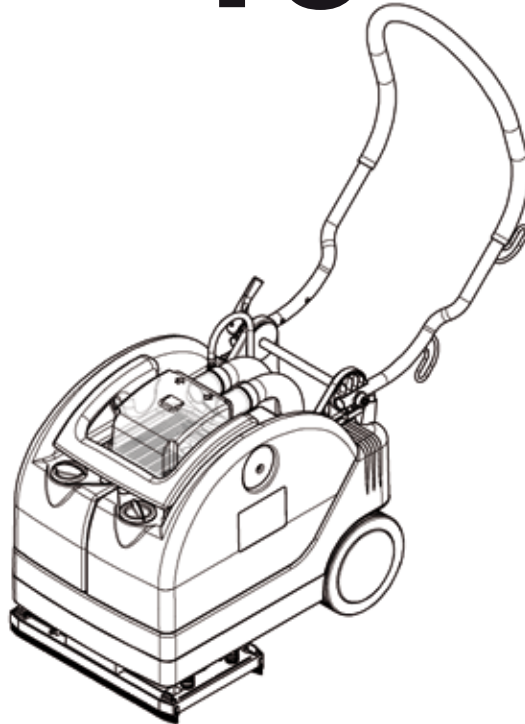


Clarke[®]

Vantage

13



SERVICE MANUAL



This book has important information for the use and safe operation of this machine. Failure to read this book prior to operating or attempting any service or maintenance procedure to your Clarke machine could result in injury to you or to other personnel; damage to the machine or to other property could occur as well. You must have training in the operation of this machine before using it. If your operator(s) cannot read this manual, have it explained fully before attempting to operate this machine.

All directions given in this book are as seen from the operator's position at the rear of the machine. For new books write to: Clarke®, 2100 Highway 265, Springdale, Arkansas 72764.



Electronic Service Manuals

This electronic document is provided as a service to our customers. We do not create the contents of the information contained in this document. Should you have detailed questions pertaining to the information contained in this document, you may contact Michco, or the manufacturer which provided the original information in this electronic deliverable. Michco's only part in this electronic deliverable was the electronic assembly process. By providing this manual on line we are not guaranteeing parts availability.

You may contact Michco through the following methods:

Phone (517) 484-9312 or (800) 331-3339

2011 N. High St. -- Lansing, Michigan -- 48906

Fax: (517) 484-9836

Email: CustServe@Michco.com

Web site: www.Michco.Com

Parts Web site: www.FloorMachineParts.Com

Order Parts on Line at:

www.FloorMachineParts.Com

Directly to Parts & Service:

By Email: **Shop@Michco.com**

By Fax: (517) 702-2041

By Voice: Use numbers above.

Serving the Cleaning Industry Since 1922

Notice: All copyrighted material remains property of original owners, all trademarks are property of respective owners. Manuals are subject to Manufacturer's reproduction limitations. Originals or reproductions were provided by manufacturers through a request. We make no warranty as to the correctness of information provided in this document and you assume all risk. By placing these manuals on line we are not declaring our corporation to be an manufacturer authorized dealer or provider, please check our web site for authorized manufacturers we represent.

TABLE OF CONTENTS

GENERAL INFORMATION	2
CONVENTIONS	2
MACHINE LIFTING	2
MACHINE TRANSPORTATION.....	2
OTHER REFERENCE MANUALS.....	2
SAFETY	2
GENERAL SAFETY PRECAUTIONS.....	3
TECHNICAL DATA.....	5
DIMENSIONS	6
SCHEDULED MAINTENANCE	7
SCHEDULED MAINTENANCE TABLE	7
MACHINE NOMENCLATURE	8
SOLUTION SYSTEM	11
SOLUTION TANK CLEANING.....	11
SOLUTION FILTER CLEANING	11
SOLUTION PUMP DISASSEMBLY/ASSEMBLY	12
TROUBLESHOOTING.....	13
BRUSH DECK SYSTEM.....	15
BRUSH MOTOR ELECTRICAL INPUT CHECK.....	15
BRUSH MOTOR DISASSEMBLY/ASSEMBLY	16
DRIVING BELT CHECK/REPLACEMENT/ADJUSTMENT	17
TROUBLESHOOTING.....	18
RECOVERY SYSTEM.....	19
RECOVERY SYSTEM CLEANING.....	19
VACUUM SYSTEM MOTOR ELECTRICAL INPUT CHECK	20
VACUUM SYSTEM MOTOR CARBON BRUSH CHECK AND REPLACEMENT	21
VACUUM SYSTEM MOTOR DISASSEMBLY/ASSEMBLY	22
BRUSH/PAD-HOLDER DECK AND SQUEEGEE CLEANING/CHECK – SQUEEGEE DISASSEMBLY/ASSEMBLY	23
BRUSH/PAD-HOLDER DECK AND SQUEEGEE DISASSEMBLY/ASSEMBLY	24
TROUBLESHOOTING.....	25
OTHER SYSTEMS.....	27
UPPER FRAME DISASSEMBLY/ASSEMBLY	27
SCREW AND NUT TIGHTENING CHECK	28
ELECTRICAL SYSTEM	29
COMPONENT LAYOUT	29
WIRING DIAGRAM.....	30

GENERAL INFORMATION

GENERAL INFORMATION

CONVENTIONS

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

MACHINE LIFTING

**WARNING!**

Do not work under the lifted machine without supporting it with safety stands.

MACHINE TRANSPORTATION

**WARNING!**

Before transporting the machine, make sure that:

- *All covers are closed.*
- *The machine is securely fastened to the means of transport.*

OTHER REFERENCE MANUALS

The following manuals are available at Clarke Literature Service Department:

- User Manual and Spare Parts List Vantage 13 - Form Number 9097888000

SAFETY

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

**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 INFORMATION

GENERAL SAFETY PRECAUTIONS

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



DANGER!

- *Always disconnect the power supply cable when the machine is not in use, before performing maintenance procedures, before replacing the brush/pad-holder and before opening any access panel.*
- *This machine must be used by properly trained and authorized personnel only. Children or disabled people cannot use this machine.*
- *Do not wear jewelry 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.*



WARNING!

- *The machine power supply cable is grounded and the relevant plug is grounded too. In case of machine malfunction or breakdown, grounding connection reduces the risk of electric shock.*
- *The power supply cable plug must be connected to an appropriate outlet, which is grounded according to law in force.*
- *Improper connection can cause electric shock. Consult a qualified technician to make sure that the outlet is properly grounded.*
- *Do not tamper with the power supply cable plug. If the power supply cable plug cannot be connected to the outlet, have new grounded outlet installed by a qualified technician, according to the law in force.*
- *Before connecting the power supply cable to the electrical mains, check that frequency and voltage, shown on the machine serial number plate (1), match the electrical mains voltage.*
- *Do not unplug the machine by pulling the supply cable. To unplug, grasp the plug, not the cable.*
- *Do not handle the plug or the machine with wet hands.*
- *Turn off all controls before unplugging.*
- *Regularly check the power supply cable for damages, cracks, cuts, etc. If the power supply cable is damaged, replace it immediately.*
- *To avoid any risk, if the power supply cable is damaged, contact the Clarke Service Center or a qualified technician.*
- *Do not pull or carry the machine by the power supply cable and never use the power supply cable as a handle. Do not close a door on the power supply cable, or pull the power supply cable around sharp edges or corners. Do not run the machine on the power supply cable.*
- *The brushes must not come into contact with the power supply cable.*
- *Keep the power supply cable away from heated surfaces.*
- *To reduce the risk of fire, electric shock, or injury, do not leave the machine unattended when it is plugged in. Disconnect the machine from the electrical mains when not in use and before performing maintenance procedures.*
- *Always protect the machine against the sun, rain and bad weather, both under operation and inactivity condition. Store the machine indoors, in a dry place.*
- *Do not allow to be used as a toy. Close attention is necessary when used near children.*
- *Use only as shown in this Manual. Use only Clarke's recommended accessories.*
- *Take all necessary precautions to prevent hair, jewelry and loose clothes from being caught by the machine moving parts.*
- *Do not leave the machine unattended without being sure that it cannot move independently.*
- *Do not use the machine on slopes with a gradient exceeding the specifications.*
- *Do not use the machine in particularly dusty areas.*
- *While using this machine, take care not to cause damage to people or objects.*
- *Do not bump into furniture, shelves or scaffoldings, especially where there is a risk of falling objects.*
- *Do not put any can containing fluids on the machine.*
- *The machine operating temperature must be between +32°F and +104°F (0°C and +40°C).*
- *The machine storage temperature must be between +32°F and +104°F (0°C and +40°C).*
- *The humidity must be between 30% and 95%.*
- *Do not use the machine as a means of transport.*
- *Do not use the machine on slopes with a gradient exceeding the specifications.*
- *Do not allow the brush/pad to operate while the machine is stationary to avoid damaging the floor.*

GENERAL INFORMATION



WARNING!

- *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 and those specified in the User Manual. Using other brushes or pads could reduce safety.*
- *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.*
- *If the machine*
 - *does not work properly*
 - *is damaged*
 - *has water or foam leaks*
 - *has been left outdoors exposed to bad weather conditions*
 - *is wet or has been dropped into water turn it off immediately and contact the Clarke Service Center or a qualified technician.*
- *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.*
- *Carefully read all the instructions before performing any maintenance/repair procedure.*
- *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 (electronic components, etc.), which are subject to standards that require disposal in special centres (see the Scrapping chapter).*

GENERAL INFORMATION

TECHNICAL DATA

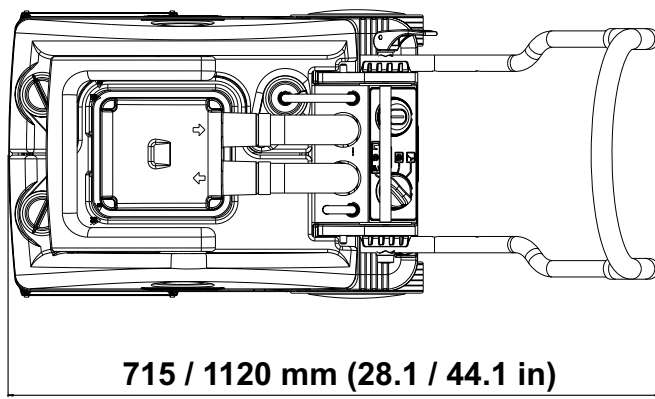
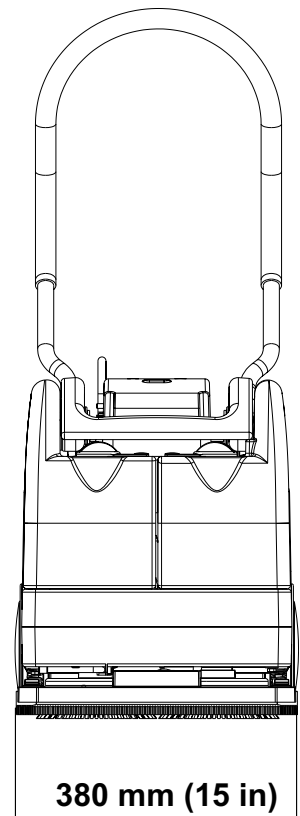
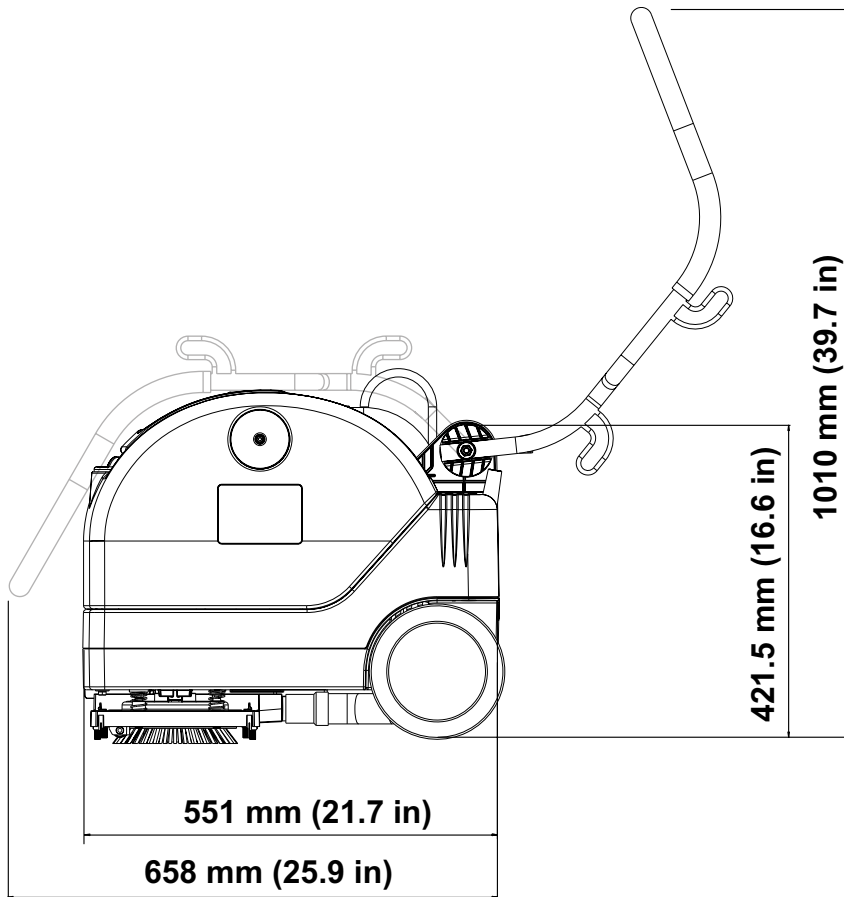
General	Razor E13 115 Volts
Min/max machine length at the handlebar	28.1/44.1 in (715/1,120 mm)
Machine width with squeegee	15.1 in (385 mm)
Machine - brush deck width	15.1 in (385 mm)
Maximum machine height with adjustable handlebar	39.7 in (1,010 mm)
Turning radius	45.3 in (1,150 mm)
Total machine weight	50.7 lb (23 kg)
Cleaning width	12.9 in (330 mm)
Central wheel diameter	7.0 in (180 mm)
Brush diameter	6.5 in (165 mm)
Brush number	No. 2 brushes/pads
Squeegee system	Fixed on deck
Straight squeegee width	15.0 in (385 mm)
Squeegee blades type	Front - Rear: PU 65 SH
Wheel pressure on the floor (*)	101 psi (0.7 N/mm ²)
Brush/pad pressure on the floor with empty/full solution tank	19.8/33.0 lb (9/15 kg)

- (*) Machines have been tested under the following conditions:
- Maximum brush and squeegee size
 - Full clean water tank
 - Optional components installed
 - Weight on wheels checked
 - Print on the floor checked on cement for each single wheel
 - Result expressed as maximum value for front and rear wheels

Performance	Razor E13 115 Volts
Vacuuming	0.01 MPa (0.10 Bar)
Solution flow	0.13 gal/min (0.4 L/min)
Theoretic/real productivity	14,208 ft ² /h / 7,104 ft ² /h (1,320 m ² /h / 660 m ² /h)
Solution autonomy	~ 18 min
Brush/pad speed	200 rpm
Sound pressure level at workstation (ISO 11201, ISO 4871) (LpA)	72.5 dB(A) ± 3 dB(A)
Machine sound pressure level (ISO 3744, ISO 4871) (LwA)	86 dB(A)
Vacuum system motor power	450 W (0.60 HP)
Brush/pad motor power	100 W (0.13 HP)
Gradeability	2% (1°)
Solution tank capacity	2.1 gal (8.0 L)
Recovery tank capacity	2.4 gal (9.0 L)
Vibration level at the operator's arms (ISO 5349-1)	< 98.42 in/s ² (< 2.5 m/s ²)
Power supply cable length	590 in (15 m)
Total electrical input	5.6 A
Minimum turning radius	45.3 in (1,150 mm)

GENERAL INFORMATION

DIMENSIONS



P100183A

GENERAL INFORMATION

SCHEDULED MAINTENANCE

The lifespan of the machine and its maximum operating safety are ensured by correct and regular maintenance.


CAUTION!

Read carefully the instructions in the Safety chapter before performing any maintenance procedure.

The following table 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.

For instructions on scheduled and unscheduled maintenance procedures, see the following paragraphs.

SCHEDULED MAINTENANCE TABLE

Procedure	Daily, after using the ma- chine	Weekly	Every six months	Yearly
Brush cleaning				
Squeegee cleaning				
Tank and vacuum grid cleaning				
Squeegee blade check and replacement				
Solution hose filter cleaning				
Screw and nut tightening check			(1)	
Vacuum system motor carbon brush check and replacement				

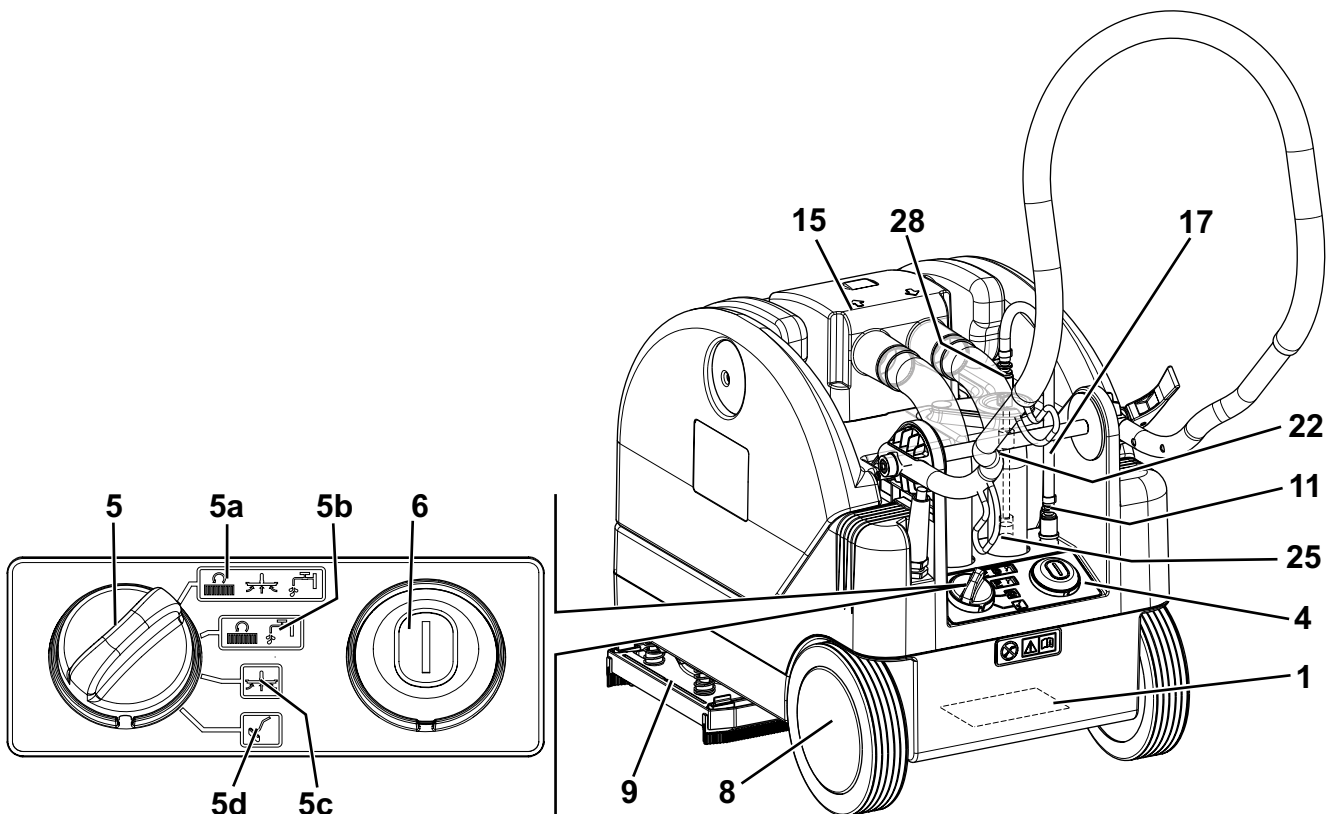
(1) And after the first 8 working hours.

GENERAL INFORMATION

MACHINE NOMENCLATURE

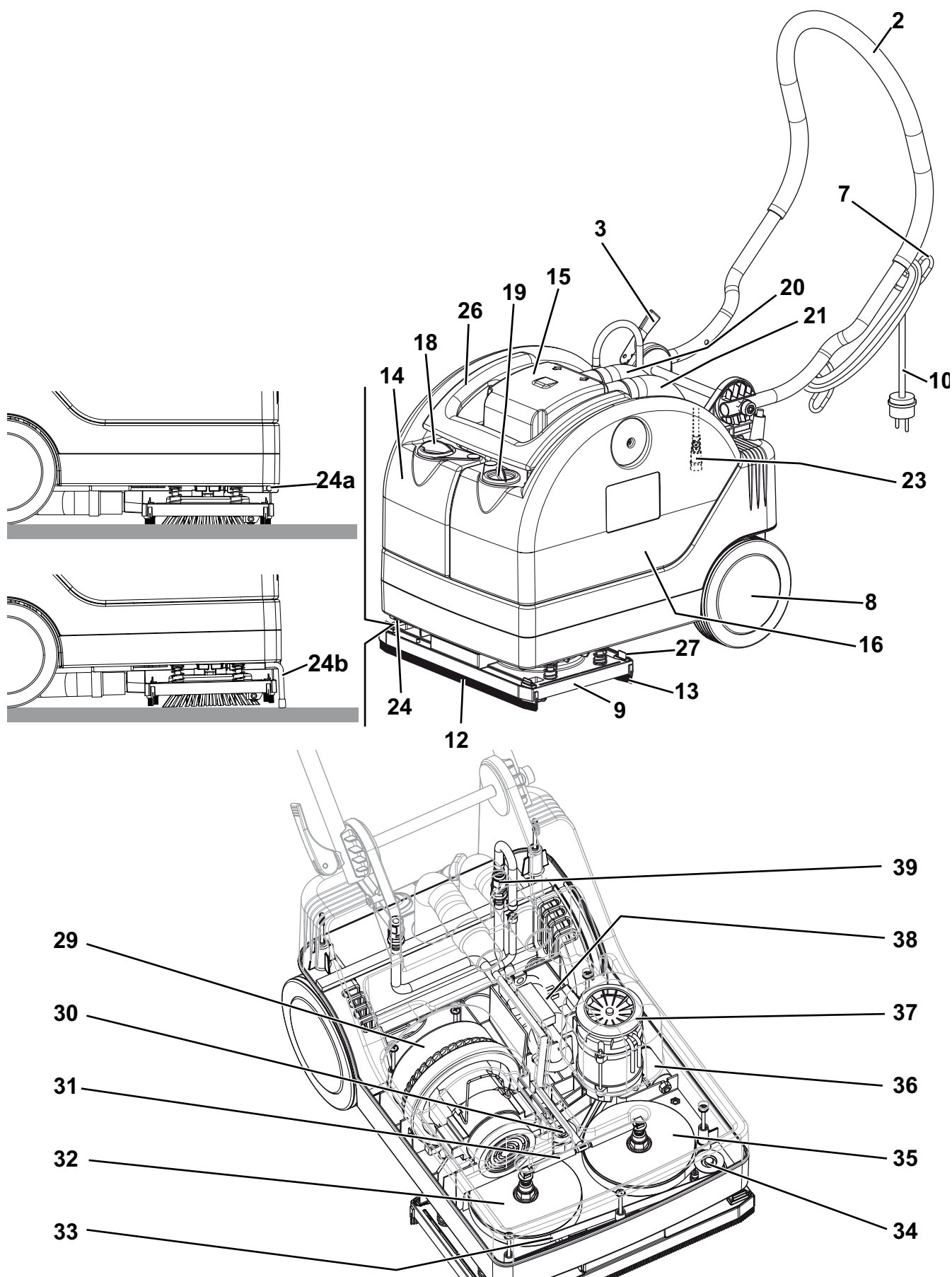
Throughout this Manual you will find numbers in brackets – for example: (2). These numbers refer to the components indicated in these two nomenclature pages. Refer to these pages whenever you need to identify a component mentioned in the text.

1. Serial number plate/technical data/conformity certification
2. Handlebar
3. Handlebar tilting adjustment lock/unlock lever
4. Control panel
5. Program selection knob
- 5a. Program: brushes - vacuum system - solution flow activation
- 5b. Program: brushes - solution flow activation
- 5c. Program: vacuum system activation
- 5d. Program: fitted carpet cleaning and floor wiping (optional)
6. Main switch
7. Power supply cable holder
8. Wheels on fixed axle
9. Brush/squeegee-holder deck
10. Power supply cable
11. Solution hose quick coupling (to the pump)
12. Front squeegee
13. Rear squeegee
14. Solution tank
- 14a. Solution tank (opened)
15. Transparent cover with vacuum grid
16. Recovery tank
17. Solution hose
18. Solution tank filler plug
19. Recovery tank drain plug
20. Vacuum system motor suction hose
21. Squeegee vacuum hose
22. One-way valve
23. Solution hose quick coupling (to the brushes)
24. Parking lever (if equipped)
- 24a. Disengaged parking lever
- 24b. Engaged parking lever
25. Solution filter
26. Handle for tanks lifting
27. Squeegee mounting springs
28. Solution hose right quick coupling (from the tank to the pump)
29. Vacuum system motor
30. Driving belt idler roller
31. Solution hose
32. Right pulley
33. Driving belt
34. Driving belt tension adjustment roller
35. Left pulley
36. Brush motor pickup condenser
37. Brush motor
38. Solution pump
39. Solution hose left quick coupling (from the pump to the brushes)



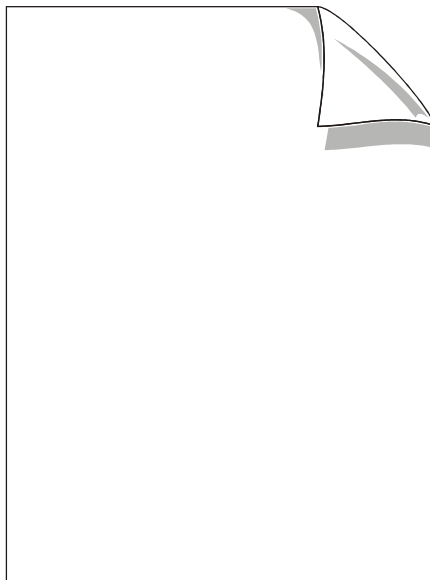
GENERAL INFORMATION

MACHINE NOMENCLATURE (Continues)



P100185A

GENERAL INFORMATION



SOLUTION SYSTEM**SOLUTION SYSTEM****SOLUTION TANK CLEANING**

1. Turn off the machine by pressing the switch (6).
2. Disconnect the power supply cable (10) from the electrical mains and place it on the holder (7).
3. Drive the machine to the appointed disposal area.
4. Lift the brush/squeegee-holder deck and turn the parking lever (if equipped) to position (24b).
5. Pick up carefully the quick coupling (28) of the solution tank.
6. Move the transparent cover (15) and lift the tanks by means of the handle (26).
7. Open the drain cap of the recovery tank (19) and empty it.
8. Empty the solution tank (14) through the plug (18) or the hole of the solution hose (17).
9. Rinse the tank with clean water.
10. Install the tank and the solution hose.

SOLUTION FILTER CLEANING

Perform steps 1 to 4 shown in the previous paragraph.

1. Disengage the solution hose plug (17) and remove it from the solution tank.
2. Remove the quick coupling (11) and the solution hose (17).
3. Rinse the filter (25) with clean water.
4. Install the supply hose.

SOLUTION SYSTEM

SOLUTION PUMP DISASSEMBLY/ASSEMBLY

1. Disassemble the upper frame as shown in Other Systems chapter.

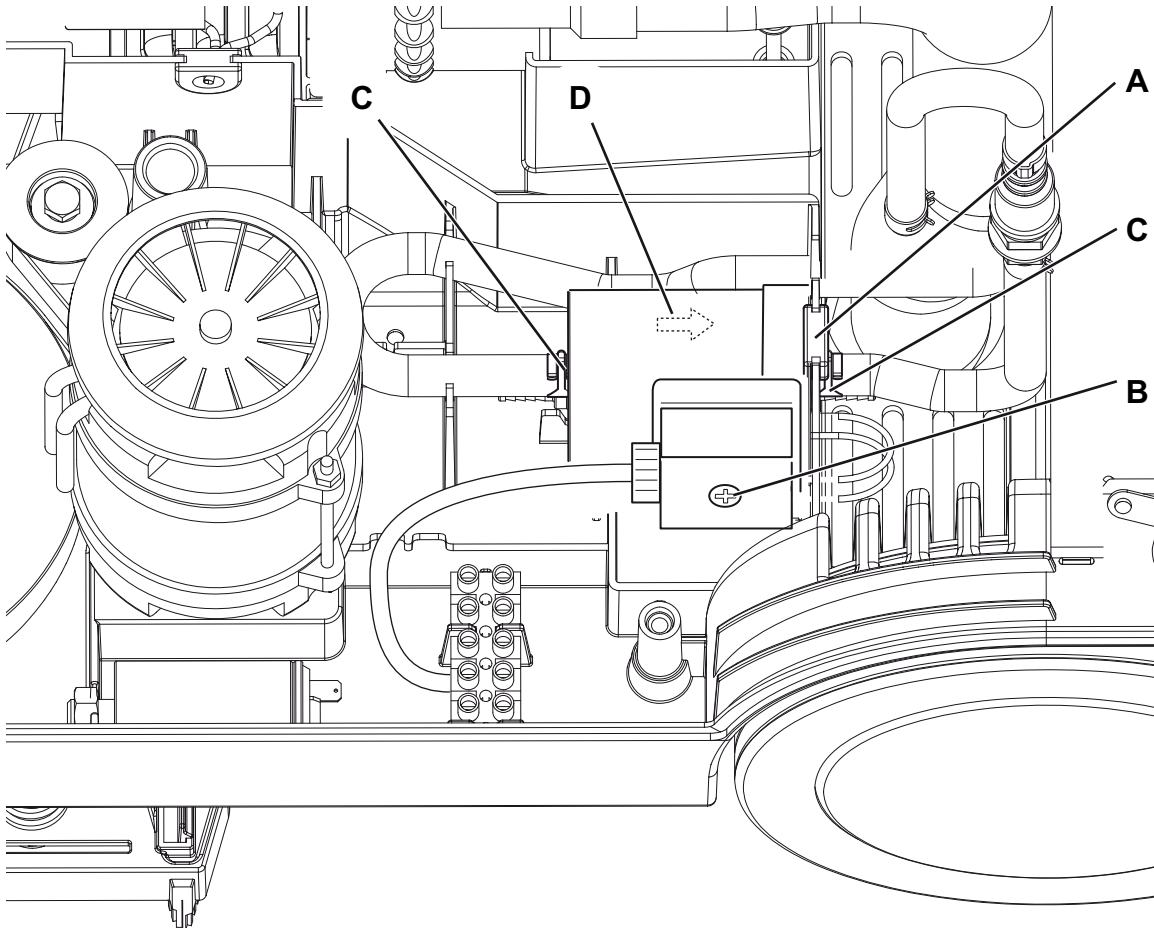
Disassembly

2. Remove the grommet (A).
3. Remove the screw (B).
4. Disengage the hose clips (C).
5. Remove the solution pump (D).
6. Assemble in the reverse order of disassembly.



WARNING!

Install the solution pump (D) in the direction shown by the arrow.



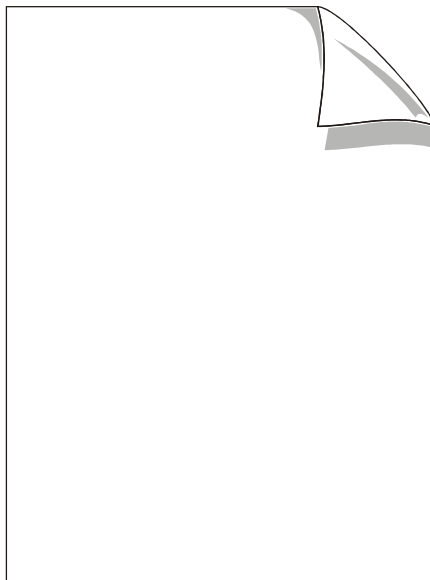
P100186

SOLUTION SYSTEM**TROUBLESHOOTING****Small amount of solution or no solution reaches the brush**

Possible causes

1. The solution filter (25) is clogged/dirty (clean).
2. The hose (17) is disconnected from the quick coupling or it is broken (connect or replace the hose).
3. The quick coupling (11 or 39) is not installed properly (check and install properly).
4. The solution pump (38) is broken or there is an open in the electrical connection (replace the solution pump/repair the electrical connection).
5. There is debris in the solution tank (14) clogging the filter (clean the tank).
6. There is debris in the detergent hose (17 or 31) clogging the detergent flow (clean the hose).
7. The check valve (22) is faulty (replace).
8. There is dirt on the brush holes (clean the solution holes).

SOLUTION SYSTEM



BRUSH DECK SYSTEM

BRUSH DECK SYSTEM

BRUSH MOTOR ELECTRICAL INPUT CHECK

**WARNING!**

This procedure must be performed by qualified personnel only.

1. Drain the solution tank (14) and, if necessary, drain the hoses too.
2. Drive the machine on a level floor.
3. Remove the control panel (4).

**WARNING!**

Do not touch uncovered electrical components while performing the following steps.

4. Connect the power supply cable (10) to the electrical mains.
5. Turn the program selection knob (5) to: brushes - solution flow activation (5b).
6. Disconnect cable no. 4 (A).
7. Apply an ammeter (B) on power supply cable no. 1 (C) of the program selection knob (D).
8. Turn on the machine with the main switch (6) and check that the brush motor electrical input is as follows:
 - with lifted brush: < 1.2 A

Turn off the machine by pressing the switch (6).

If the electrical input is higher, perform the following procedures to detect and correct the abnormal input:

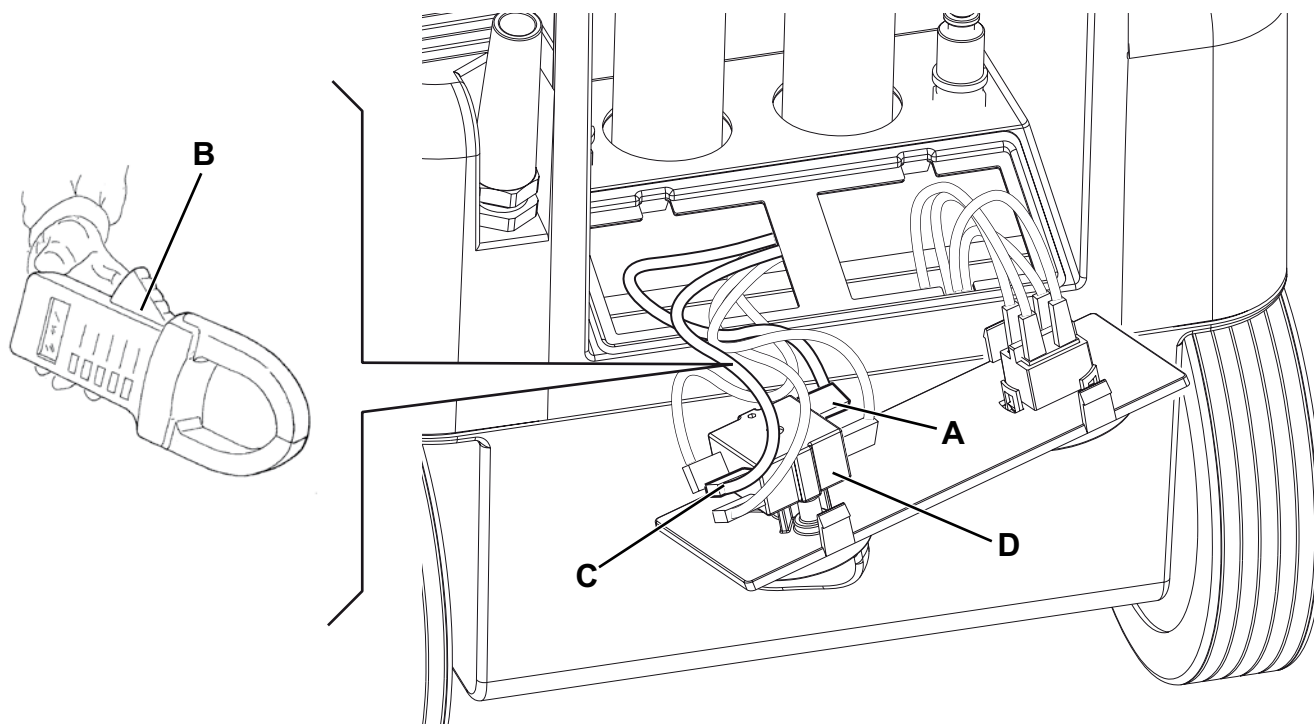
- Remove from the brush rotation shafts/flanges all the possible amounts of dirt or wrapped-round materials (ropes, clothes, etc.), which prevent or slow down its rotation.
- If necessary, remove and carefully clean the brush motor, then check the moving part (pulleys, driving belt, etc.).

If the above-mentioned procedures do not lead to a correct electrical input, it is necessary to replace the motor.

9. Perform steps 3 to 6 in the reverse order.

**NOTE**

It is advisable to use a precision ammeter, or a digital multimeter with ammeter function.



P100187

BRUSH DECK SYSTEM

BRUSH MOTOR DISASSEMBLY/ASSEMBLY

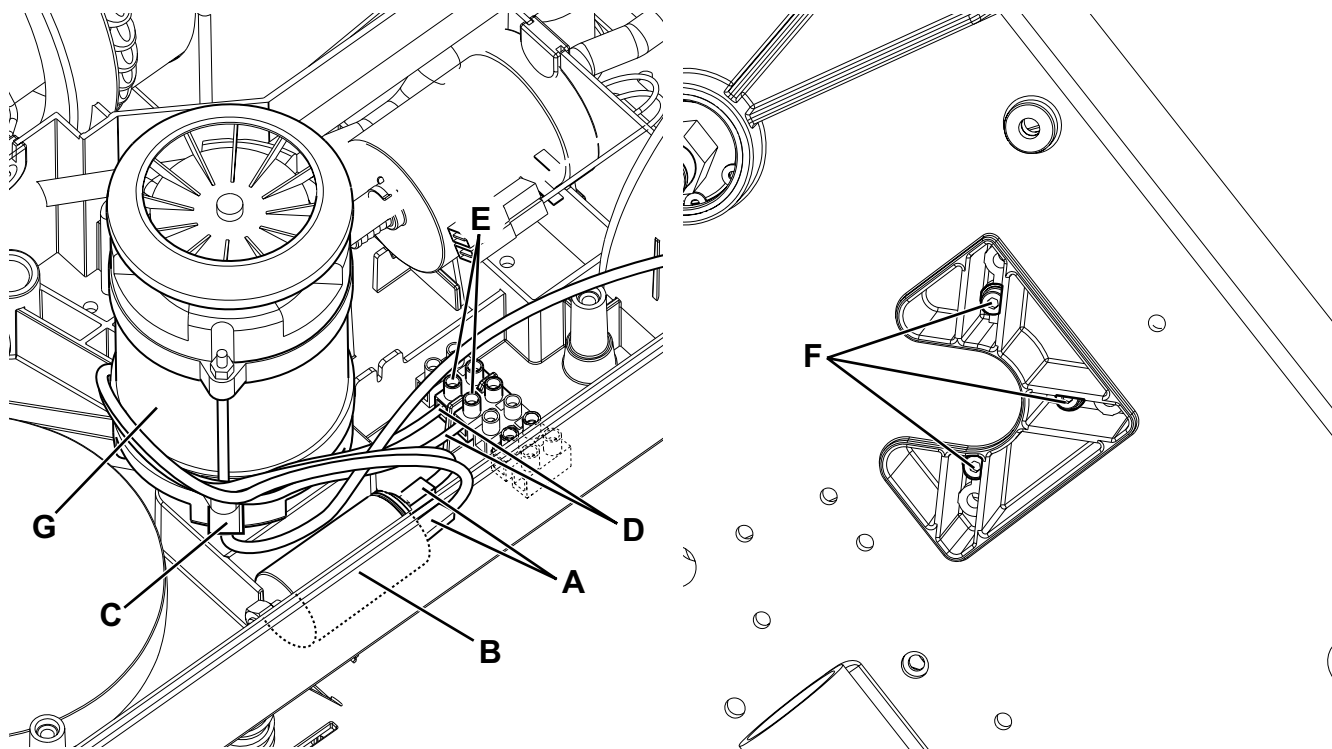
1. Disassemble the upper frame as shown in Other Systems chapter.

Disassembly

2. Disconnect the 2 connectors (A) of the condenser (B).
3. Disconnect the ground connector (C).
4. Remove the 2 wires (D) from the terminal board (E).
5. Lift the frame and remove the brush deck as shown in the relevant paragraph.
6. Remove the 3 mounting screws (F) and recover the washers under the frame.
7. Remove the motor (G) with great care.

Assembly

8. Assemble the components in the reverse order of disassembly, and note the following:
 - Before installing a new motor, loosen the driving belt as shown in the relevant paragraph.
 - Place the driving belt around the motor pinion.
 - After installing the motor, adjust the driving belt tension as shown in the relevant paragraph.



P100188

BRUSH DECK SYSTEM

DRIVING BELT CHECK/REPLACEMENT/ADJUSTMENT

1. Disassemble the upper frame as shown in Other Systems chapter.

Check

2. Visually inspect the driving belt (A) for integrity, cuts, tears or cracks and, if necessary, replace it according to the following procedure.
3. Check the driving belt tension (A) according to the following procedure.

Replacement

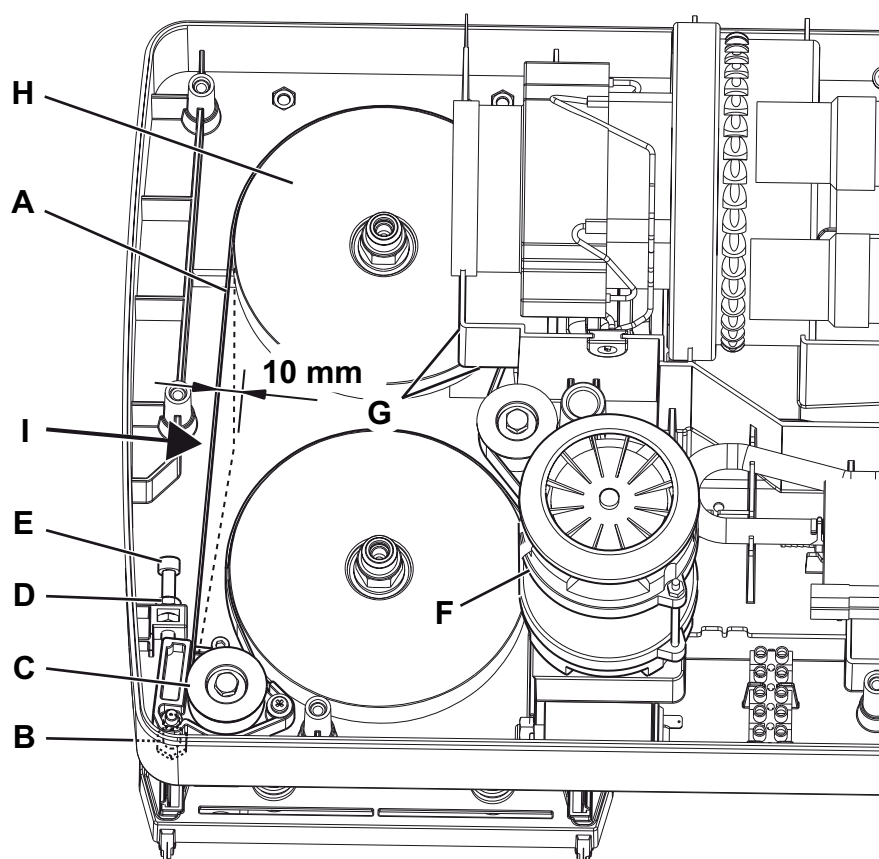
4. To replace the driving belt (A), loosen the bolt (B) of the pulley (C) and the nut (D).
5. To loosen the driving belt, turn the screw (E) counter-clockwise.
6. Remove the brush motor (F).
7. Remove the driving belt (A) and replace it with a new one.
8. During driving belt installation:
 - Insert the new driving belt in the slots (G).
 - Install the driving belt with the marked side toward the outside of the right pulley (H).
9. Stretch the driving belt (according to the following procedure).

Belt tensioning

10. Check the driving belt tension (A). The tension is correct:
 - When pressing the driving belt in its centre with a force of 22 lb (10 kg) (I), the driving belt bends for 0.40 in (10 mm).
 If necessary, stretch the driving belt according to the following procedure:
11. Loosen the bolt (C) and the nut (D).
12. To stretch the driving belt, adjust the position of the pulley (C) with the screw (E).
13. When tensioning procedure has been performed, tighten the nut (D) and the bolt (B).

Reset

13. Perform steps 1 in the reverse order.



P100189

BRUSH DECK SYSTEM

TROUBLESHOOTING

The brushes turn slowly

Possible causes

1. The transmission system is dirty (clean brush rotation shafts/flanges and pulleys).
2. The motor (37) is overloaded (clean the transmission system).
3. The driving belt (33) is loose (adjust).

All brushes do not turn

Possible causes

1. The power supply cable is broken (replace).
2. The pickup condenser (36) is broken (replace).
3. The motor (37) is faulty (repair or replace).
4. The main switch (6) is broken (replace).
5. The program selection knob (5) is broken (replace).
6. The driving belt (33) is damaged (replace).

RECOVERY SYSTEM

RECOVERY SYSTEM

RECOVERY SYSTEM CLEANING

1. Drive the machine to the appointed disposal area.
2. Make sure that the power supply cable (10) is disconnected from the electrical mains.
3. Lift the transparent cover (A) and then clean it deeply.
Wash and clean with care the vacuum grid (B). If necessary disconnect the hoses (20 and 21).
4. Check the transparent cover gasket (C) for integrity.

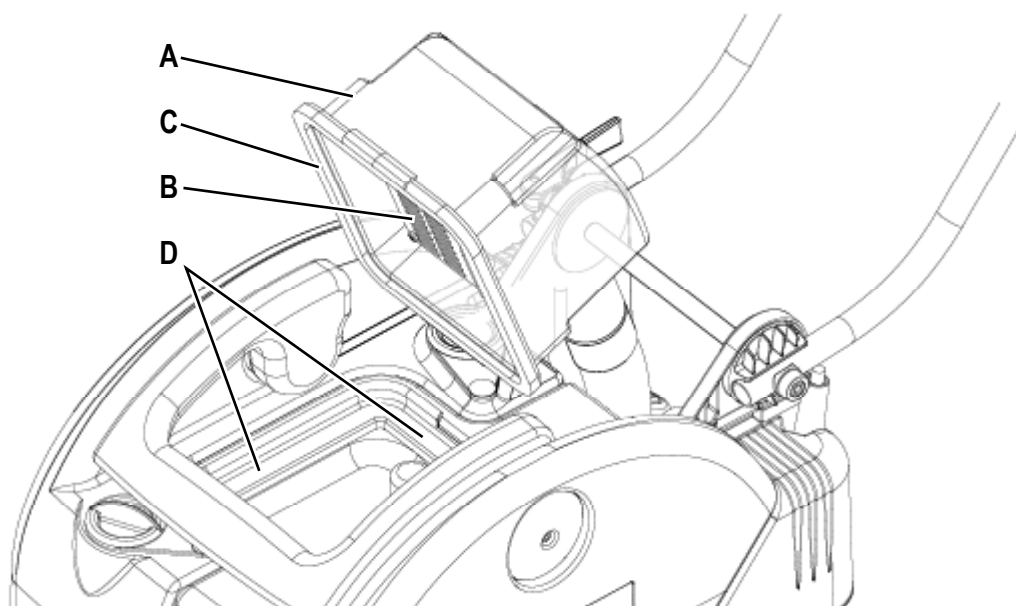


NOTE

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

If necessary replace the gasket (C) by removing it from the transparent cover (A).

5. Check that the seating surface (D) of the gasket (C) is integral and adequate for the gasket itself.
6. Empty, clean and wash the recovery tank (16) and solution tank (14) as indicated in the chapter Use.
7. Install the tanks and the transparent cover with vacuum grid.



P100170A

RECOVERY SYSTEM

VACUUM SYSTEM MOTOR ELECTRICAL INPUT CHECK



WARNING!

This procedure must be performed by qualified personnel only.

1. Drive the machine on a level floor.
2. Remove the control panel (4).



WARNING!

Do not touch uncovered electrical components while performing the following steps.

3. Connect the power supply cable (10) to the electrical mains.
4. Turn the program selection knob (5) to: vacuum system activation (5c).
5. Apply an ammeter (A) on the blue power supply cable (B) of the main switch (D).
6. Turn on the machine with the main switch (6) and check that the vacuum system motor electrical input is as follows:
 - < 4.4 A

Turn off the machine by pressing the switch (6).

If the electrical input is higher, perform the following procedures to detect and correct the abnormal input:

- Check the motor carbon brushes.
- If necessary, remove and carefully clean the brush motor, then check the moving part (pulleys, driving belt, etc.).

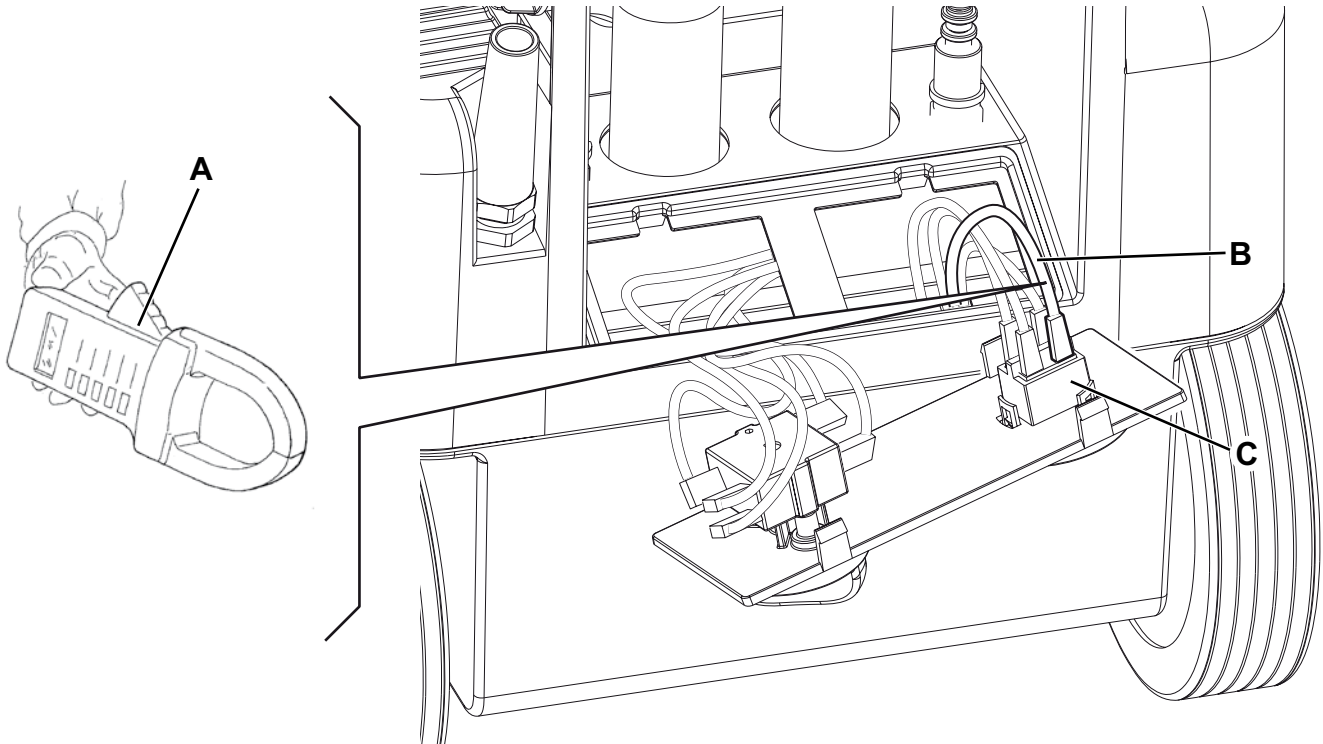
If the above-mentioned procedures do not lead to a correct electrical input, it is necessary to replace the motor.

7. Perform steps 2 to 5 in the reverse order.



NOTE

It is advisable to use a precision ammeter, or a digital multimeter with ammeter function.

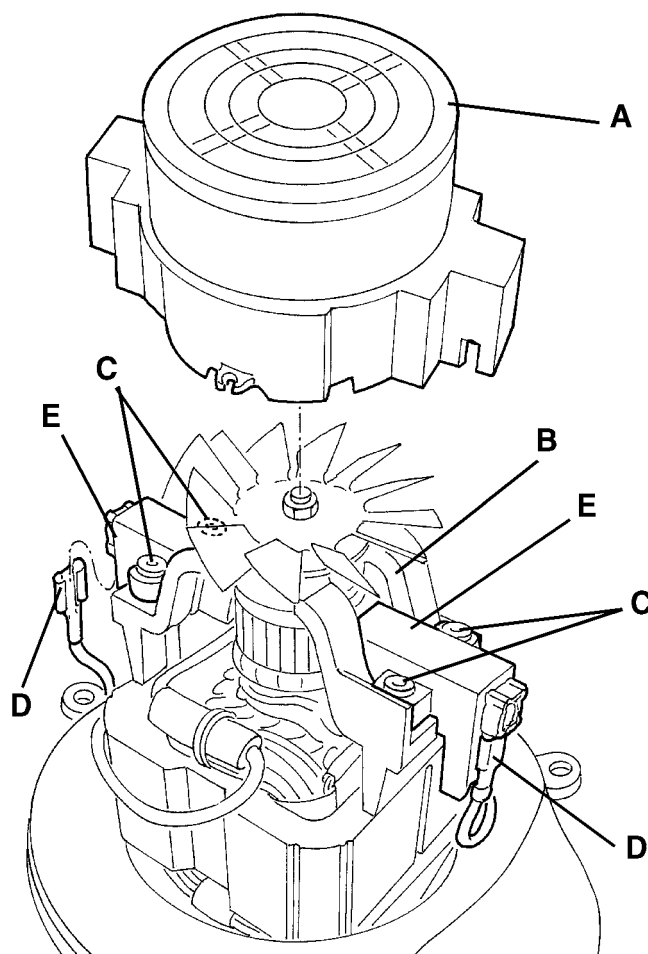


P100191

RECOVERY SYSTEM

VACUUM SYSTEM MOTOR CARBON BRUSH CHECK AND REPLACEMENT

1. Disassemble the upper frame as shown in Other Systems chapter.
2. Remove the suction hose and the 2 terminals from the vacuum system motor.
3. Remove the vacuum system motor (see the procedure in the relevant paragraph).
4. At the workbench, remove the cover (A) (press-fitted) from the vacuum system motor (B).
5. Remove the screws (C).
6. Disconnect the electrical connections (D).
7. Remove the carbon brushes (E).
8. Check the carbon brushes for wear. Replace the carbon brushes when: the contact with the motor armature is insufficient, the carbon brushes are worn, the carbon brush contact surface is not integral, the thrust spring is broken, etc.
9. If necessary, replace the carbon brushes. Replace the carbon brushes as an assembly.
10. Assemble in the reverse order of disassembly.



S301555

RECOVERY SYSTEM

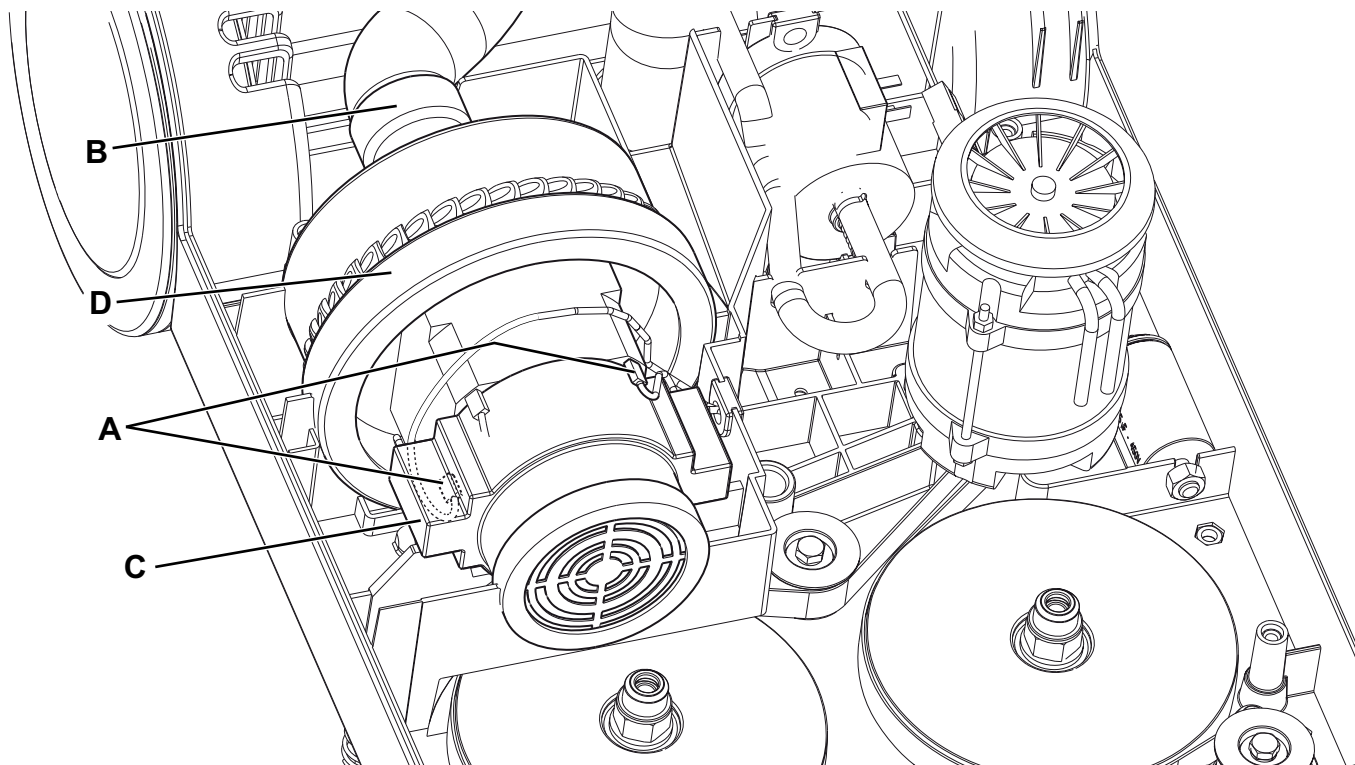
VACUUM SYSTEM MOTOR DISASSEMBLY/ASSEMBLY

1. Disassemble the upper frame as shown in Other Systems chapter.
2. Disconnect the 2 terminals (A).
3. Disconnect the vacuum hose (B).
4. Remove the vacuum system motor (C).
5. If necessary, replace the gasket (D).

**CAUTION!**

The gasket (D) prevents water from entering the vacuum system motor. Check the gasket condition and replace it if it is cut, torn or cracked.

6. Assemble in the reverse order of disassembly.



P100192

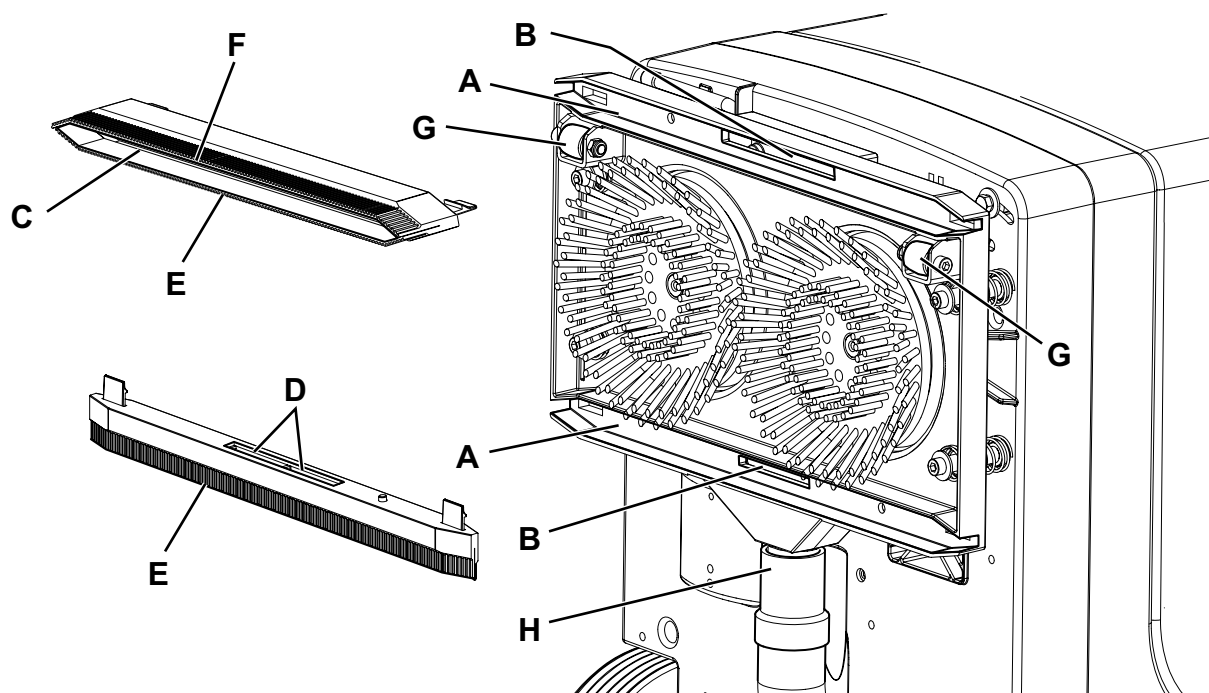
RECOVERY SYSTEM

BRUSH/PAD-HOLDER DECK AND SQUEEGEE CLEANING/CHECK – SQUEEGEE DISASSEMBLY/ASSEMBLY

**CAUTION!**

It is advisable to wear protective gloves when cleaning the brush/pad-holder deck and the squeegees because there may be sharp debris.

1. Drive the machine on a level floor.
2. Make sure that the power supply cable (10) is disconnected from the electrical mains.
3. To reach for the brush/squeegee-holder deck, lift the machine by using the handlebar (2).
4. Remove the squeegees from the deck by pressing the mounting springs (27).
5. Check the brush/squeegee-holder deck (9) and clean it. In particular, clean the compartment (A) and the vacuum hole (B) from dirt and debris.
6. Wash and clean the squeegee. In particular, clean the compartment (C) and the vacuum hole (D).
7. Check that the blade (E) and the blade (F) are integral and free from cuts and lacerations; if necessary replace them.
8. Install the squeegees.
9. Check the wheels (G) and, if necessary, clean them. If the wheels are too worn, replace them.
10. Check the suction hose (H) for integrity and check that it is properly connected to the deck hose.



P100193

RECOVERY SYSTEM

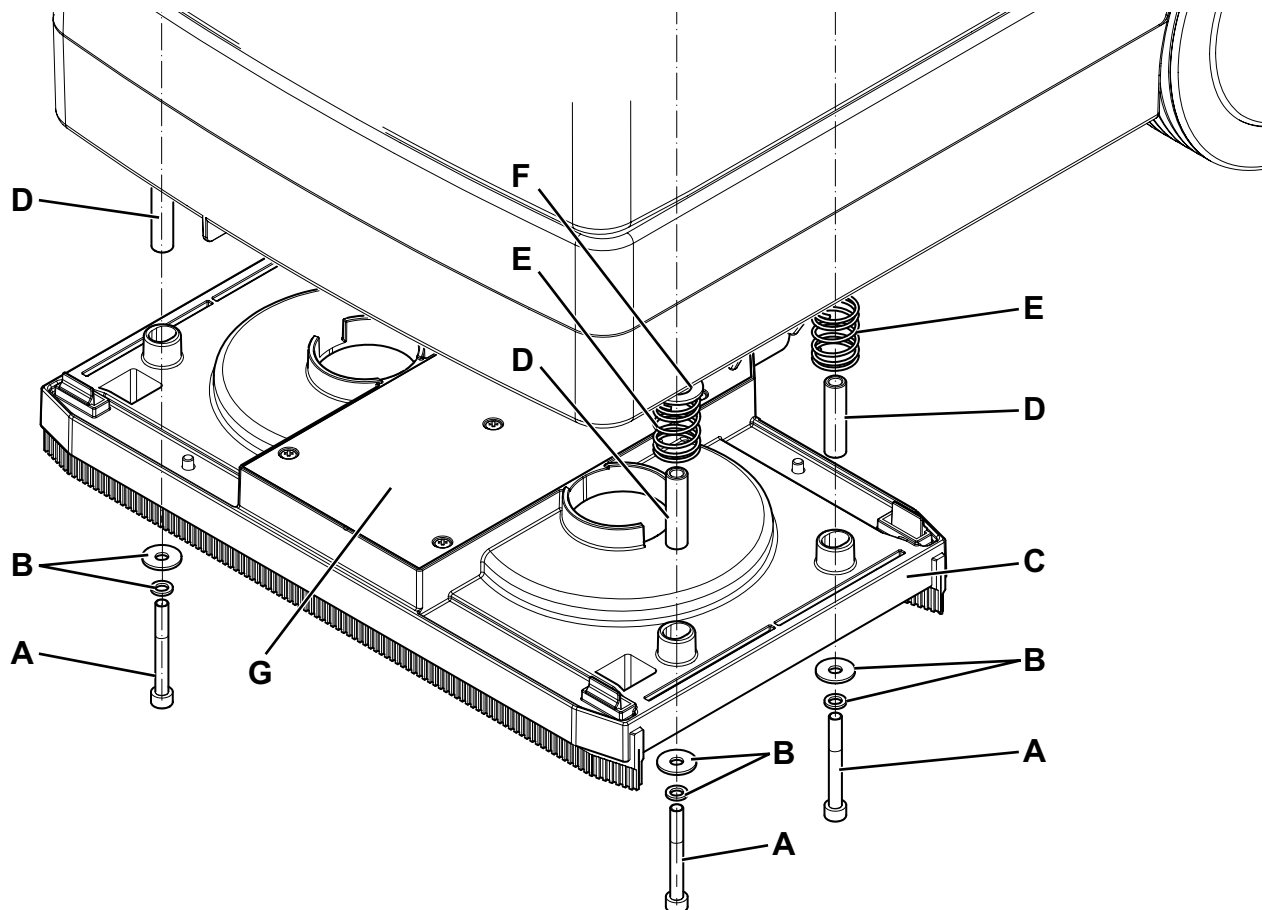
BRUSH/PAD-HOLDER DECK AND SQUEEGEE DISASSEMBLY/ASSEMBLY



CAUTION!

It is advisable to wear protective gloves when removing the brush/pad-holder deck and the squeegees because there may be sharp debris.

1. Drive the machine on a level floor.
2. Make sure that the power supply cable (10) is disconnected from the electrical mains.
3. To reach for the brush/squeegee-holder deck, lift the machine by using the handlebar (2).
4. Remove the screws (A) and recover the washers (B).
5. Carefully remove the brush/squeegee-holder deck (C), then recover the pins (D), the springs (E) and the washers (F).
6. Check the cover (F) for integrity; if it is cracked or broken replace it.
7. Assemble in the reverse order of disassembly.



P100194

RECOVERY SYSTEM**TROUBLESHOOTING****Dirty water vacuuming is insufficient or there is no vacuuming.**

Possible causes

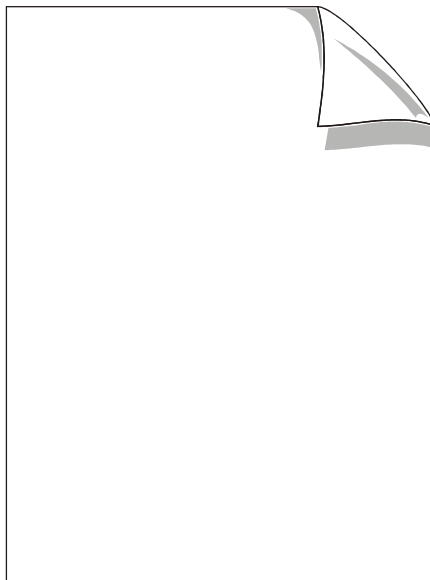
1. The vacuum grid (15) is dirty (clean).
2. The transparent cover with vacuum grid (15) of the recovery tank (16) is not properly positioned (place it properly).
3. The drain plug (19) of the recovery tank is not properly positioned (place it properly).
4. The transparent cover gasket is not efficient (replace).
5. The squeegees (12 - 13) or the vacuum hoses (20 - 21) are clogged or damaged (clean or repair/replace).
6. The brush/squeegee-holder deck cover (9) is damaged (replace).
7. The vacuum system motor carbon brushes (29) are worn (replace).
8. The vacuum system motor (29) is faulty (repair or replace).
9. The main switch (6) is broken (replace).
10. The machine wiring harness is damaged (repair).
11. The program selection knob (5) is broken (replace).

The squeegees are streaking or do not collect water

Possible causes

1. There is debris under the squeegee blades (remove).
2. The front and/or rear blades are worn (replace).
3. There is dirt or debris on the brush/squeegee-holder deck wheel pins (clean).

RECOVERY SYSTEM



OTHER SYSTEMS

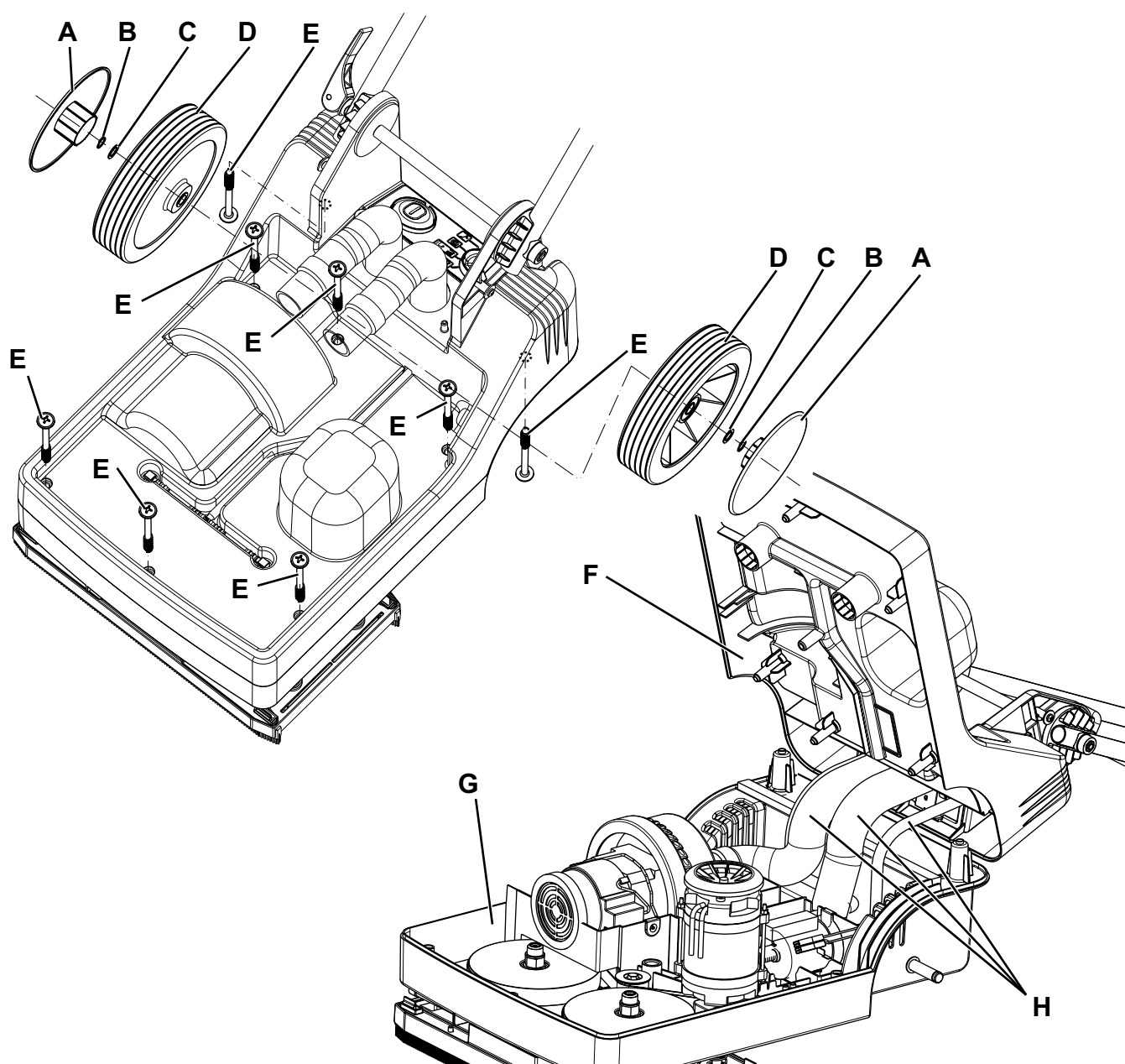
UPPER FRAME DISASSEMBLY/ASSEMBLY

Disassembly

1. Drive the machine on a level floor.
2. Make sure that the power supply cable (10) is disconnected from the electrical mains and place it around its holder (7).
3. Remove the solution hose (17) from the quick coupling (11).
4. Disconnect the solution hose from the quick coupling (23).
5. Remove the solution tank (14) from the 2 mounting pins (26).
6. Disconnect the vacuum system hose (20) and the squeegee vacuum hose (21), then remove the transparent cover with vacuum grid (15) and the recovery tank (16).
7. Remove the covers (A), Snap rings (B), washers (C) and wheels (D).
8. Remove the 8 mounting screws (E) of the frames.
9. Disengage and carefully lift the upper frame (F) from the lower frame (G), and lay it as shown in the figure.
Pay attention to water hoses, vacuum hoses and wiring harness (H).

Assembly

10. Assemble in the reverse order of disassembly and pay attention to water hoses, vacuum hoses and wiring harness (H).



P100195

OTHER SYSTEMS

SCREW AND NUT TIGHTENING CHECK

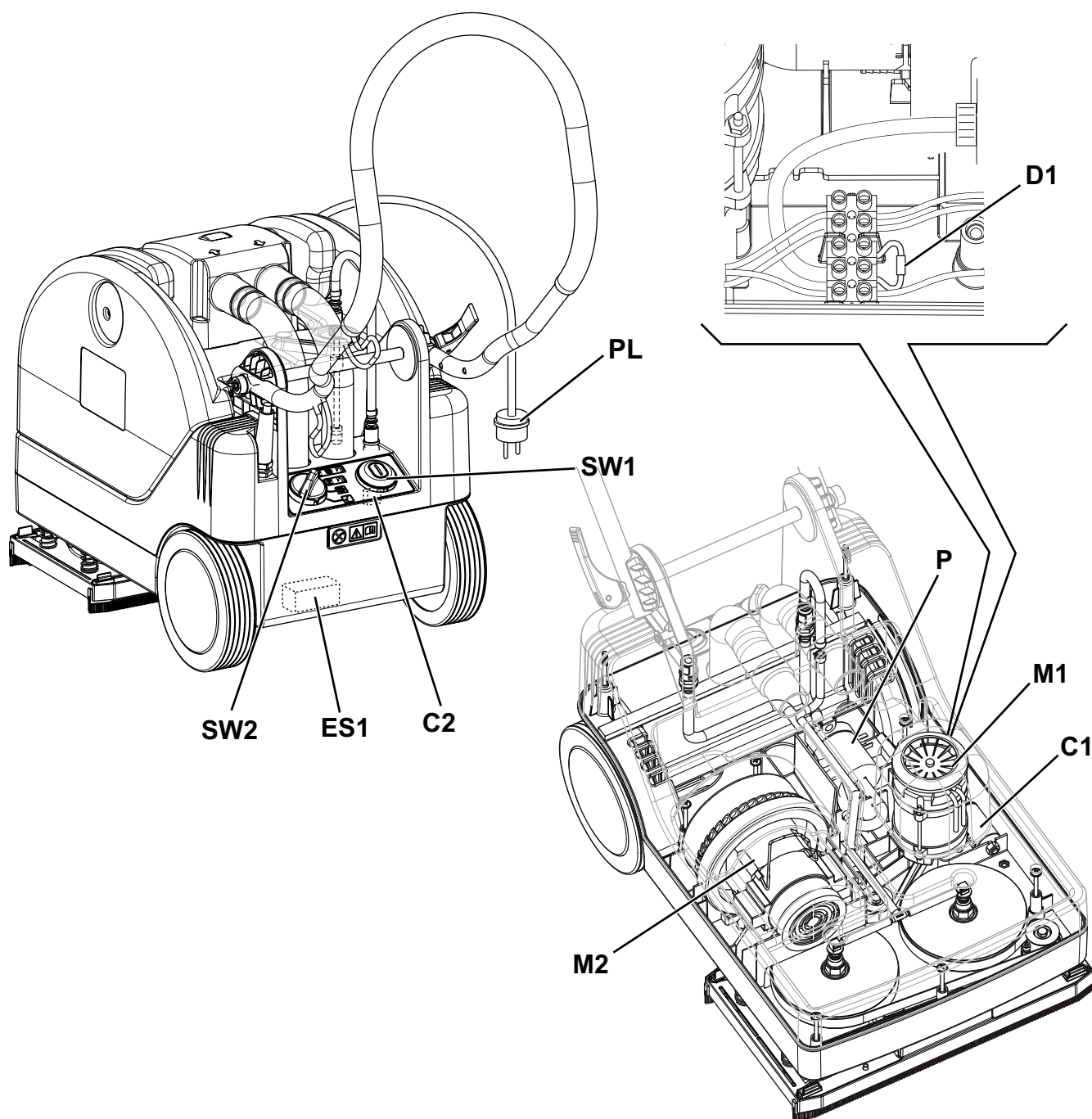
1. Drive the machine to the appointed disposal area, then empty the recovery tank (16).
2. Place the machine on a hoisting system (if available). Otherwise, drive the machine on a level floor.
3. Disconnect the power supply cable (10) from the electrical mains.
4. Check:
 - Tightening of mounting screws and nuts.
 - Correct position of fasteners.
 - Visible faults in the components.
 - Leaks of fluids.
5. If necessary, disassemble the upper frame as shown in the previous paragraph and check tightening of screws and nuts as shown in step 4.
6. Assemble in the reverse order of removal.

ELECTRICAL SYSTEM

ELECTRICAL SYSTEM

COMPONENT LAYOUT

C1	Brush motor condenser
C2	Filtering condenser
D1	Pump diode
ES1	Relay (115 V only)
M1	Brush/pad-holder motor
M2	Vacuum system motor
P	Water pump
PL	Plug
SW1	Main switch
SW2	Program selection knob



P100196

ELECTRICAL SYSTEM

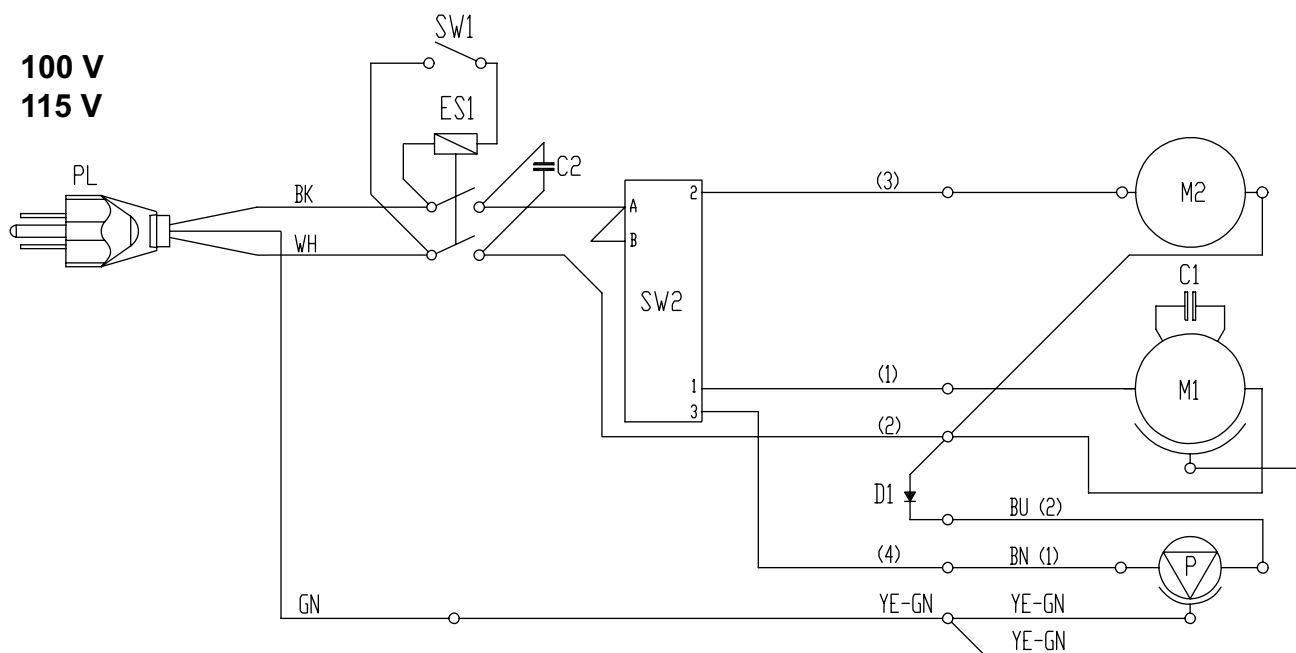
WIRING DIAGRAM

Key

C1	Brush motor condenser
C2	Filtering condenser
D1	Pump diode
ES1	Relay (115 V only)
M1	Brush/pad-holder motor
M2	Vacuum system motor
P	Water pump
PL	Plug
SW1	Main switch
SW2	Program selection knob

Color codes

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



P100167

CLARKE PRODUCT SUPPORT BRANCHES

U. S. A. Locations

PRODUCTION FACILITIES

Clarke®, Springdale, Arkansas
2100 Highway 265
Springdale, Arkansas 72764
(479) 750-1000
Customer Service - 1-800-253-0367
Technical Service - 1-800-356-7274

American Lincoln®, Bowling Green, Ohio 43402
1100 Haskins Road

SERVICE FACILITIES

Clarke®, Elk Grove, Illinois 60007
2280 Elmhurst Road
(847) 956-7900

Clarke®, Denver, Colorado 80204
1955 West 13th Ave.
(303) 623-4367

Clarke®, Houston, Texas 77040
7215 North Gessner Road
713-937-7717

SERVICE AND SALES FACILITY

American Lincoln® / Clarke, Madison Heights,
Michigan 48071-0158
29815 John R.
(810) 544-6300

American Lincoln® / Clarke, Marietta, Georgia 30066
1455 Canton Road
(770) 973-5225

Clarke®

Clarke American Sanders

A.L. Cook

Customer Service Headquarters and Factory
2100 Highway 265
Springdale, Arkansas 72764
(479) 750-1000

Technical Service
1-800-356-7274

European Locations

PRODUCTION FACILITIES

ALTO Danmark A/S, Aalborg
Blytaekervej 2
DK-9000 Aalborg
+45 72 18 21 00

ALTO Danmark A/S, Hadsund
Industrikvarteret
DK-9560 Hadsund
+45 72 18 21 00

SALES SUBSIDIARIES

ALTO US - Canada, Ontario (Canada)
4080 B Sladeview Crescent Unit 1
Mississauga, Ontario L5L 5Y5
(905) 569 0266

ALTO Overseas Inc., Sydney (Australia)
1B/8 Resolution Drive
Caringbah NSW 2229
+61 2 9524 6122

ALTO Cleaning Systems Asia Pte Ltd., Singapore
No. 17 Link Road
Singapore 619034
+65 268 1006

ALTO Deutschland GmbH, Bellenberg (Germany)
Guido-Oberdorfer-Straße 2-8
89287 Bellenberg
+49 0180 5 37 37 37

ALTO Cleaning Systems (UK) Ltd., Penrith
Gilwilly Industrial Estate
Penrith
Cumbria CA11 9BN
+44 1768 868 995

ALTO France S.A. Strasbourg
B.P. 44, 4 Place d'Ostwald
F-67036 Strasbourg
Cedex 2
+33 3 8828 8400

ALTO Nederland B.V.
Postbus 65
3370 AB Hardinxveld-Giessendam
The Netherlands
+31 184 677 200

ALTO Sverige AB, Molndal (Sweden)
Aminogatan 18
Box 4029
S-431 04 Molndal
+46 31 706 73 00

ALTO Norge A/S, Oslo (Norway)
Bjornerudveien 24
N-1266
+47 2275 1770

Clarke® LIMITED U.S. WARRANTY

This Clarke Product is warranted to be free from defects in materials and workmanship under normal use and service, when operated and maintained in accordance with Clarke's Maintenance and Operations instructions. The warranty period is subject to the conditions stated below.

3 YEARS FOR PARTS AND 1 YEAR FOR SERVICE LABOR (See exceptions below)

Motors must be inspected for carbon motor brush wear at six-month intervals by an authorized Clarke repair station. Failure to comply with the six-month inspection requirement or failure to replace worn motor brushes identified during the inspection will void the warranty on the motors. Cost of the six-month inspection and replacement of carbon motor brushes is the responsibility of the purchaser. In the event of a warranty claim on the motors, proof of inspection and any required motor brush replacement must be provided. This warranty is extended only to the original purchaser for use of the product. It does not cover normal wear parts such as electrical cable, rubber parts, hoses and motor brushes.

BATTERY WARRANTY

In addition to the items above, any original equipment Clarke Battery which becomes unserviceable under normal use within a period of ninety (90) days from date of sale to the original user will be repaired or replaced with one of equal specification at our option, F.O.B. any authorized Clarke Sales or Service Branch, with no charge to the user, except transportation costs. After expiration of the above ninety (90) day period, any battery which fails under normal use will be adjusted to the original user with a new battery of equal specification on an eighteen (18) months pro rate basis from the date of purchase. Adjustment will be determined using the then current list price, plus transportation costs.

Warranty is rendered null and void if battery is not kept filled to the proper level with DISTILLED WATER.

Clarke: POLYDUR® AUTOMATIC SCRUBBER SOLUTION AND RECOVERY TANK EIGHT-YEAR U.S. GUARANTEE

Your new Clarke machine has polydur Solution and Recovery Tanks. Polydur is a rotationally molded, low-density linear polyethylene that won't crack or dent, and withstands most corrosives and temperature extremes. Clarke backs up your Polydur tanks with an eight-year guarantee. If a tank breaks or leaks under normal use within eight years of the date of purchase, it will be replaced free.

STATED WARRANTIES ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED

Clarke's liability under this warranty is limited to repair of the product and/or replacement of parts and is given to purchaser in lieu of all other remedies, including INCIDENTAL AND CONSEQUENTIAL DAMAGES.

THERE ARE NO EXPRESS WARRANTIES OTHER THAN THOSE SPECIFIED HEREIN. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION OF THE FACE HEREOF. NO WARRANTIES, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY, SHALL BE IMPLIED. A warranty registration card is provided with your Clarke product. Return the card to assist Clarke in providing the performance you expect from your new floor machine.

If a difficulty develops with the product, you should: a) Contact the nearest authorized Clarke repair location or contact the Clarke Service Operations Department, 2100 Highway 265, Springdale, Arkansas 72764, for the nearest authorized Clarke repair location. Only these locations are authorized to make repairs to the product under this warranty. (b) Return the product to the nearest Clarke repair location. Transportation charges to and from the repair location must be prepaid by the purchaser. Clarke will repair the product and/or replace any defective parts with out charge within a reasonable time after receipt of the product.

Clarke, 2100 Highway 265, Springdale, Arkansas 72764.

**Clarke reserves the right to make changes or improvements to its machine without notice.
Always use genuine Clarke Parts for repair.**

Clarke®

**2100 Highway 265
Springdale, Arkansas, 72764**