



# Instruction Manual

Scrubmaster B140 R (7744)

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Please be advised explicitly that we cannot accept any legal claims out of the contents of this manual.


If repair work has to be performed, make sure that only genuine spare parts may guarantee a dependable machine and will make sure that your rights under current warranty are not affected.

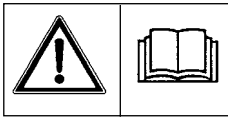
We reserve the right for technical improvements

Valid as for Juli 2014

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Hamburger Str. 209-239  
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It is our desire that the excellent properties of the Scrubmaster should justify the confidence you demonstrated by making this purchase. We did our best to supply you with an efficient and dependable machine.

Before first operation of your Scrubmaster, read these instructions carefully. They will inform you in detail about operation of the item and contains valuable information for service and maintenance. The exclamation mark symbol  has been used in this manual at several places and identifies particular areas that are of essence for your safety. Please pass all safety instruction on to other operators.



**Caution!** Prior to first operation, read the manual carefully, and strictly comply with the instructions contained. When performing cleaning and service work and before replacing any parts or commencing conversion of any function, turn the machine OFF and disconnect the battery plug.

This manual always should be kept in the storage box located in the right-hand side door.



Please comply with the "General provisions for safety" (p. 36 to 37).

## Proper use

The Scrubmaster B140 R vacuum scrubbing machine has been designed exclusively for floor cleaning, such as wet scrubbing and vacuum cleaning and, with the pre-sweeping equipment for dry sweepin. Whatever sort of use beyond the specified range will be deemed improper use; the manufacturer cannot be held liable for consequential damage.

The term of proper use also includes compliance with the manufacturer's instructions about operation, maintenance and repair.

The Scrubmaster may be used, serviced and repaired by persons only that are familiar with the machine and are aware of possible hazards involved.

The appropriate Accident Prevention Regulations as well as applicable general regulations about safety and health at work will have to be complied with. Modifications made to the machine in absence of the manufacturer's consent will relieve the manufacturer from a possible liability for consequential damage.



**Caution!** This machine is not suitable for evacuation of dusts dangerous to health.

## Acceptance of the machine

Upon arrival, check your consignment for possible transit damage. Please have the railway authorities or the freight forwarder confirm such damage and mail your damage report and waybill to:

**Hako GmbH  
Hamburger Str. 209-239,  
23843 Bad Oldesloe.  
Germany**



## General safety instructions

Apart from the information contained in this manual, the generally applicable legal provisions for safety and prevention of accidents must be adhered to. Do not put this manual aside without having read it, even if you did already operate similar ground cleaning equipment before. Allow yourself the time to do so, in order to save time at a later moment. The operator has to use the machine in accordance to its intended fields of application. During driving operation, he has to take account of the local conditions and when working, he has to pay attention to other persons, in particular to children. Nobody is allowed to stay within the zone of danger.

The warning and instruction plates attached to the Scrubmaster give important advice about safe operation. Before starting to work, the operator has to check that the Scrubmaster and its working implements are in proper and safe operating condition.

**Caution!** The protective cover of brushes/drive plates must only be removed for maintenance or transport purposes and with the motors being turned off. Do not perform cleaning work without the covers being shut and locked.

Machines that are not in perfect condition must not be used.

It is indispensable to get acquainted with all attachments and controls, as well with their function, before operation begins. Once you have started to work, there will be no time to do so.

### Operation

Ground sweepers may be operated only by appropriate persons who have been trained for such work, who have testified their capability to the owner of the unit or his authorized representative, and who have been ordered explicitly by him to operate the machine.



The machine may be used only on those areas as clearly specified by the owner or his authorized representative.

Never leave the machine unattended as long as the motors are running

and the machine is not protected against unintended movements. To prevent the machine from being used by unauthorized persons, the control key must be removed such the the travel drive is blocked.

When transporting the Scrubmaster, shut down the motors of the working implements.

The operator has to use the machine in accordance to its intended fields of application. During driving operation, he has to take account of the local conditions, and when working, he has to pay attention to other persons, in particular to children.

Use only cleaning agents suitable for automatic machines (low foaming), and adhere to the instructions for use, disposal and precautions specified by the cleaning agent's manufacturer.

**Caution!** Never collect explosive fluids, undiluted acids and solvents! This includes e.g. gasoline, paint thinners or fuel oil, which – when penetrating the air being taken in – may form explosive vapors or mixtures; moreover acetone, undiluted acids and solvents if they should be aggressive to the material used for the machine components.

**Caution!** This machine is not suitable for evacuation of dusts dangerous to health.

The machine must not be operated in areas endangered by risks of explosion. The machine may be used only for hard floorings in indoor areas and for operation on plane areas with a maximum inclination of up to 2%.

Driving e.g. on ramps with a maximum inclination of 10% is only allowed for transportation. Uphill drive must not exceed 1 minute and particular care has to be taken.

Repair, maintenance and cleaning work must only be performed if the master key is removed.

Before working on the electrical system, be sure to disconnect the battery plug.

Taking other persons than the operator with the Scrubmaster is not allowed. If the Scrubmaster is equipped with a driver seat, it may only be turned on when the operator is seated (seat switch).

A perfect maintenance of the machine mainly helps preventing accidents. When performing repair, maintenance, setting or other work the appropriate tools have to be used. Other spare parts than the genuine Hako spare parts must at least equal the original parts as far as the safety standards are concerned.

The Scrubmaster B140 R has to be checked by an expert in regular inter-

ervals for its proper and safe operation (we recommend a check once yearly at least) and after modification or repair.

The Scrubmaster must be equipped by brushes and pads as requires the manufacturer (refer to section "Technical data"). Using other brushes/pads than indicated affects your safety.

Do not clean the machine by means of vapor jet or high pressure cleaning equipment.



For an increased danger of tilting, the pneumatic tire equipment of the Scrubmaster B140 R is not admissible.

Do not allow water to enter any electrical parts.

The machine is splash proof (IPX3). Do not allow water to get in the machine in the driver's seat area as it may be collected on the battery stored below the seat, remove water if required.

### **Particular instructions for safe handling of batteries**

(See enclosed leaflet 88-60-2556)

## **Notes on warranty**

The terms of the sales contract apply. Damages are not subject to warranty if they are due to non-compliance with the maintenance and service provisions. Any maintenance work has to be performed by an authorized Hako service work-shop and confirmed in the „maintenance certificate“ which is the warranty document.

The following is excluded from warranty:

natural wear and tear after overload, fuses and damages caused by inexperienced handling and unauthorized modification of the machine.

Moreover, any claim for warranty becomes extinct if damages at the machine are caused by fitting of parts or accessories without Hako's prior and explicit consent or by noncompliance with the maintenance instructions.

## Method of operation of Scrubmaster B140 R

A squeegee and suitable brushes or pads are required for wet cleaning of hard floorings.

The rotating brushes scrub the floor thoroughly, removing the dirt by means of suds, thus cleaning the floor. The soiled water is drawn in during the same cycle by means of the squeegee. This way the floor can be stepped on immediately afterwards; it is dry and clean.

### Useful advice for perfect work

Prior to wet cleaning it is necessary to sweep the floor. The Scrubmaster B140 R carries out this work if equipped with the optional pre-sweeper (accessories). This way, not only the cleaning efficiency is improved, but wear of the machine will be substantially reduced at the same time.

If floors are particularly dirty or if wax has to be removed (basic cleaning), the floor should be treated twice.

During the first cycle, the floor is scrubbed with a cleaning agent selected according to the degree of dirt encountered, the vacuum system remaining turned off and the squeegee remaining lifted.

Allow the cleaning agent to act on the floor for approx. 5 or 10 minutes, complying with the manufacturer's instructions, then scrub the floor once again while the vacuum system is turned on and the squeegee is lowered.

## How to take the machine into operation

### Assembly

When being supplied to you, the Scrubmaster is packed in a cardboard box. The floor consists of a wooden platform where the machine is fixed by means of plastic straps. Open the box from its bottom side and remove it by pulling upwards. After detaching the plastic straps, you now can take the machine from the platform

## Installation of brushes

Refer to paragraph "Installation/Removal of brushes" on page 54.

## Installation of squeegee

Refer to paragraph "Installation of squeegee" on page 56.

**Note:** For ease of compliance with the appropriate safety regulations, we recommend to use the above-mentioned batteries. Batteries and charger units are matched; therefore only use the batteries and charger units specified by us in order to comply with the provisions for safety.

We can grant full warranty only if those units are used.



Whenever working on the electrical system, disconnect the battery plug. The seat hood has to be opened during the charging procedure to preclude formation of an ignitable gas mixture (oxyhydrogen).

## Battery systems

<b>Battery system A</b> Tray-type battery, 24 V/ 320 Ah <sub>5</sub> , PzS, Aquamatic automatic battery charger unit 24 V/35 A characteristic line IUlola and IUloU, 230 V/AC	7450 4003
<b>Battery system B</b> Tray-type battery, 24 V/ 280 Ah <sub>5</sub> , PzS, maintenance-free automatic battery charger unit 24 V/35 A, characteristic line IUlola and IUloU, 230 V/AC	7451 4003
<b>Battery set C</b> Drive battery 6 V/ 180 Ah <sub>5</sub> , maintenance-free Battery charger unit 24 V/35 A, characteristic line IUlola and IUloU, 230 V/AC Cable set Battery bowl with holder	7411 4003 7412 7723
<b>Battery set D:</b> Battery, 6 V/240 Ah GiV Battery tray with cable set automatic battery charger unit 24 V/35 A, characteristic line IUlola and IUloU, 230 V/AC	7401 7403 4003
<b>Battery system E:</b> Battery exchange system for extended running times Through battery 24 V/240 Ah, PzS, Aquamatic**) Insert for battery exchange system Trailer for battery exchange system**) Automatic battery charger 24 V/35 A, characteristic line IUlola and IUloU, 230 V/AC	7334.02 7301 7302 4003
**)2 = minimum quantity, to enable exchange	
Tray-type battery dimensions: length 424 mm (in direction of travel), width 522 mm, height 462 mm	

## Battery charge warning unit (Low discharge sensor)

The Scrubmaster B140 R is equipped with a charge condition monitor to preclude poor battery charge conditions. This monitor is integrated in the electronic system and factory-set for Sonnenschein "Gel" maintenance-free batteries.

Using other batteries requires modification of the low-discharge sensor settings.

**Note:** The low-discharge sensor settings should be carried out by your local Hako service center.

## Charger units

Power connection of the charger unit is effected via the power supply with earthing-contact plug.

Mains voltage: 230 V/AC

Mains protection: 10 or 16 A slow



- 1 Brace
- 2 Device plug
- 3 Battery plug
- 4 Tray-type battery
- 5 Brace including driver seat

## Installation of battery Battery system A and B

How to install the tray-type batteries  
24 V / 320 Ah or 24 V / 280 Ah

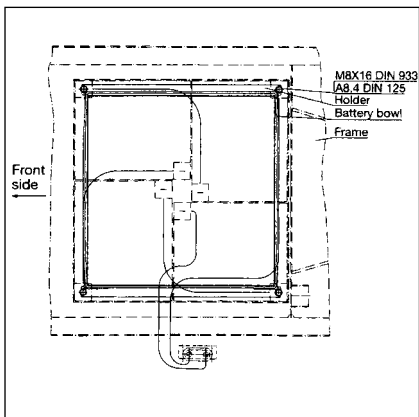
- Open the doors at the left and right side
  - Tilt the driver seat upwards to the right
  - Dismount brace (1) at the left side (4 screws)
  - Remove plug of the seat switch line
  - Dismount brace (5) including seat at the right side and set aside (do not remove belt)
  - Swivel device plug
  - Place tray battery (4) by means of a lifting unit or a fork-lift truck into the machine from the left side.
- Note:** Only use lifting and transporting facilities e.g. lifting tackle according to VDI 3616. Cells, connectors or cables must not be damaged by usage of hooks.
- Check the coding of battery, device and charger plugs and modify as required according to the instructions on page 41 and 42.
  - Link battery and device plugs (pay attention to tight fit)

- Mount left brace (1) and brace (5) including driver seat
- Connect the line to seat switch.
- Close side doors and tilt the driver seat downwards  
Proceed to dismantling in inverse order

## Battery system C and D

- Open the doors at the left and right side
- Tilt the driver seat upwards to the right
- Place the batteries 6 V/180 Ah or 6 V/240 Ah into the battery compartment and connect the poles with the battery lines
- Check the coding of battery, device and charger plugs and modify as required according to the instructions on page 41
- Close side doors and tilt the driver seat downwards  
Proceed to dismantling in inverse order.





4 batteries 6 V/180 Ah

## Battery systems E

Details see separate manual for battery exchange system.

## Taking into operation, maintenance and service of batteries

See enclosed leaflet 88-60-2556 "Instructions for drive batteries"

### Plug connection coding

All battery plugs at machines, batteries and battery charger units have to be coded with the colored coding pins according to the battery type and the nominal voltage.

The charger unit plugs are/will be set in the factory according to their characteristic such that a modification of the characteristic (in relation to the battery type) requires changing of the plug coding.

#### Plug case of **charger units**:

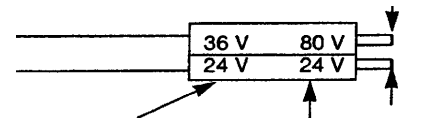
Gray for fluid-filled batteries  
Green for maintenance-free Gel batteries

#### Plug case of **machine**:

Yellow for both battery types

#### Socket case of **battery**:

Gray for fluid-filled batteries  
Green for maintenance-free Gel batteries



Nominal plug voltage is indicated on each side of the hexagon (letters upside down)

Indication for nominal socket voltage accordingly

Replacing the coding plug by pressing together the ends with pliers.

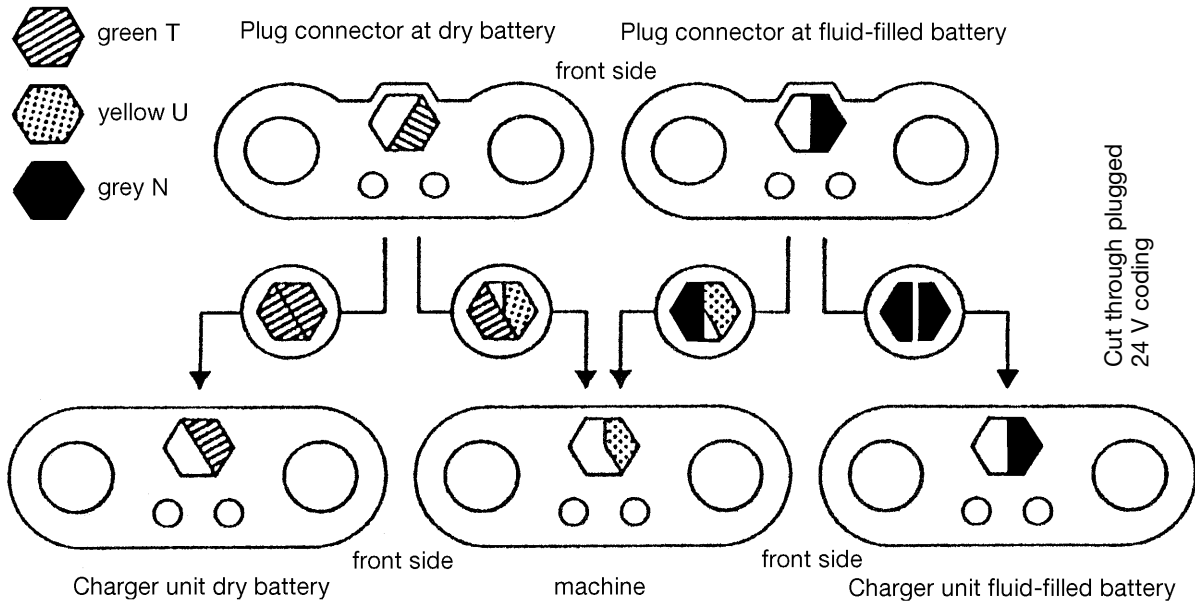
Press together for removal.

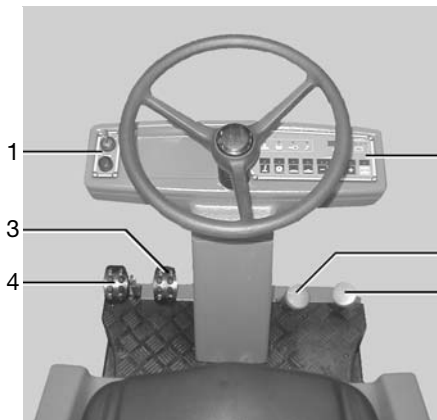
Insert coding plug such that the nominal voltage inscription is visible through the case window. Socket and plug only with the same nominal voltage!

The following three conditions must be fulfilled for the complete system:

- 1) Voltage coding must be the same for all sockets and plugs
- 2) Coding pin color in the machine = yellow
- 3) Coding pin color in the charger unit = the same as for the battery plug according to battery type

**Coding system in the charger unit for fluid-filled and dry batteries Gel batteries)  
Example 24V**





- 1 Left-hand control panel
- 2 Right-hand control panel
- 3 Pedal for brush/pad pressure
- 4 Parking brake pedal
- 5 Forward drive pedal
- 6 Reverse drive pedal

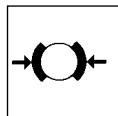
## Operation

### Operation elements

- 1 Left-hand control panel**  
(Description see page 44)
- 2 Right-hand control panel**  
(Description see page 44)



- 3 Pedal for brush/pad pressure** to adjust brush/pad pressure.
  - Slowly press pedal down until the pressure point is attained. Release pedal and it will lock. = increased brush/pad pressure and the yellow pilot lamp (I/C) alights
  - Actuate pedal beyond the pressure point and release. It will lift up to initial position. = normal brush/pad pressure and the pilot lamp extinguishes**Note:** An increased brush/pad pressure increases current consumption and brush/pad wear.



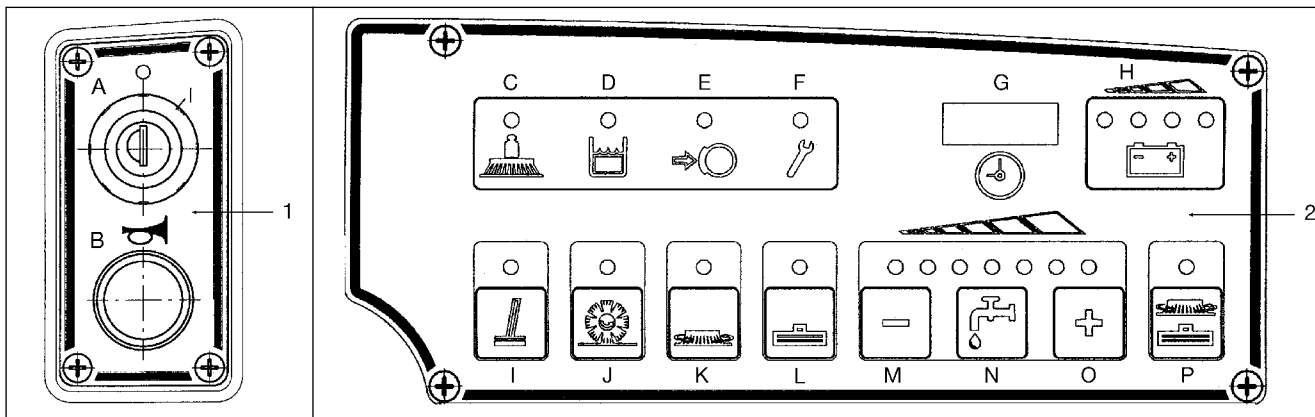
- 4 Parking brake pedal** actuates the parking brake at the rear wheels. Before leaving the machine the operator has to protect it by actuating the parking brake.

The pilot lamp (I/E) alights. When depressing the drive pedal a buzzer sounds. Depressing the blocking device will unlock the brake.

- 5 Forward drive pedal** allows modification of speed
  - slowly depress pedal until the required speed is attained.
  - release pedal and it will automatically return to the initial position and the machine slowing down simultaneously. Speed will be substantially reduced by actuating the reverse drive pedal.
- 6 Reverse drive pedal** allows modification of speed
  - slowly depress pedal until the required speed is attained and the buzzer sounds.
  - release pedal and it will automatically return to the initial position and the machine slowing down simultaneously.



The machine must only be started if the operator is seated down.



## Control panels

### Control panel 1

- A Key switch (ON/OFF)
- B Horn button

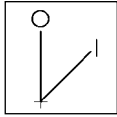
### Control panel 2

- C Pilot lamp (yellow) for brush pressure
- D Pilot lamp (red) for max. filling level of soiled water tank
- E Pilot lamp (red) for parking brake
- F Pilot lamp (red) for fault display

- G Hourmeter/service display
- H Pilot lamp for battery charge condition
- I Key for additional scrubbing and vacuuming tool (ON/OFF) with pilot lamp (green)
- J Key for pre-sweeper (ON/OFF) with pilot lamp (green), optional\*
- K Key for brush drive (ON/OFF) with pilot lamp (green)
- L Key for squeegee and suction turbine (ON/OFF) with pilot lamp (green)
- M Key for water flow reduction with pilot lamp (green)

- N Key for water infeed with pilot lamp (green)
- O Key for water flow raising with pilot lamp (green)
- P Key for brush drive, suction turbine (ON/OFF), with simultaneous brush head/squeegee (UP/DOWN) operation with pilot lamp (green)

\* If the Scrubmaster B140 R is not equipped with the pre-sweeper option this key is inoperable. If depressed, the hourmeter will display "OP".



### A Key switch

turns the electrical system ON/OFF and protects the machine against unauthorized use; moreover it holds the hourmeter display. With the switch in OFF position, all control functions are reset to the initial state (reset).



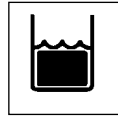
### B Horn button

actuates the electric horn.



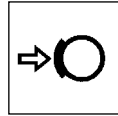
### C Pilot lamp (yellow) for brush pressure

alights if the brush pressure pedal (II/3) is depressed



### D Pilot lamp (red) for max. filling level

alights if the maximum filling level in the soiled water tank is attained.



### E Pilot lamp (red) for parking brake

alights if the parking brake pedal (I/4) is depressed. If the travel drive assembly is switched on a buzzer sound in addition.



### F Pilot lamp (red) for fault display

alights in case of one of the following faults occurring:

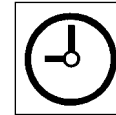
- thermostat switch of the brush or drive motor has closed

- one of the fuses is defective or one of the electronic circuit-breakers tripped
- other faults

### Electronic circuit breakers

In addition to the fuses, the Scrub-master B140 R is equipped with electronic circuit-breakers for the main drives. In case of overload one of the electronic circuit breakers responds, the fault lamp (F) alights and an error code appears in the hourmeter display.

The reset can only be effectuated by turning the key switch to "OFF". If the electronic circuit-breaker trips again after re-starting, the cause has to be detected.



### G Hourmeter/service display

displays the operation hours. The meter only counts if the consumers e.g. drive or brush motor, suction turbine or pre-sweeper are ON. A red dot at the right bottom of the display flashes simultaneously.

## Service display

The service display is located in the hourmeter display.

When turning ON, the following sequence of information will appear in the hourmeter display:

- software status for 1 approx. second, e.g.

3. 0 1 5

- last error found, for approx. 2 seconds (points blink), e.g.

1. 2. 6. 1.

**Note:** If a defect is still existing, a buzzer sounds and the red display turns ON (F).

- hours run, e.g. during operation, the dot will blink.

0 2 1 5.

**Note:** on factory-new machines, the display may read when the key switch is turned to ON.

9 9 9 9.

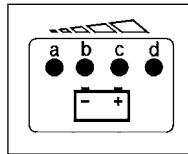
This is an internal control code; display will change to 0 hours after not more than one hour.

The Scrubmaster is serviceable with this display.

Error display is active either.

If a malfunction occurs during operation, a 4-digit number will appear in the display, the 4 dots will start flashing simultaneously and the buzzer sounds.

Refer to page 61 for the error code numbers which you may remedy by yourself. If the machine does not operate correctly despite measures taken, denote the error code and advise your Hako service center.



## H Pilot lamp for battery charge condition

Upon turning ON the key switch, all green pilot lamps (b to d) alight in case of a perfectly charged battery. During operation the lamps b, c and d will successively extinguish as the battery discharges.

A flashing red light (a) indicates that operation will soon be interrupted and the buzzer sounds. After 3 more minutes, the red lamp alights permanently and the brush drive and the suction turbine will be switched OFF. The travel drive assembly remains activated. We recommend to recharge the batteries at the charging station as soon as possible.



## I Key for additional scrubbing and vacuuming tool

**Note:** this key is only operable if the Scrubmaster is equipped with the "additional scrubbing and vacuuming tool" option and the Hako service center has programmed the machine accordingly. Otherwise, "-OP-" is displayed. This key turns the water pump and the suction turbine ON and OFF. The water and the vacuuming hose of the scrubbing tool have to be connected previously.



### **J Key for pre-sweeper with pilot lamp (green), optional\***

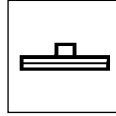
**Note:** this key is only operable if the Scrubmaster is equipped with the "pre-sweeper" option and the Hako service center has programmed the machine accordingly. Otherwise, "-OP-" is displayed.

This key turns the pre-sweeper ON and OFF. The green pilot lamp alights if the pre-sweeper is turned ON. In case of a malfunction the fault lamp (F) alights and the error code appears in the service display.



### **K Key for brush drive with pilot lamp (green)**

turns the brush drive ON and OFF. The green lamp alights if the brush head is lowered and the brushes rotate. In case of a malfunction the fault lamp (F) alights and the error code appears in the service display.

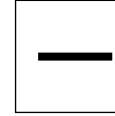


### **L Key for squeegee and suction turbine with pilot lamp (green)**

is lowering/lifting the squeegee and turns the suction turbine ON and OFF. The green lamp alights if the squeegee is lowered and the suction turbine turned ON.

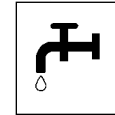
In case of a malfunction the fault lamp (F) alights and the error code appears in the service display.

**Note:** After lift-up of the squeegee the suction turbine continues operation for about 15 seconds and the pilot lamp (green) in the key flashes. This measure precludes soiled water from flowing out of the squeegee or the vacuuming hose back to the floor. If the soiled water tank is filled up, the suction turbine is switched off after approx. 3 to 5 seconds and the water supply of the brushes interrupted. These functions can be activated again after discharge of the tank.



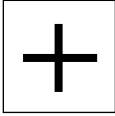
### **M Key for water flow reduction**

is used to reduce the water quantity supplied to the brushes/pads. The water quantity may be reduced by 7 stages from 5.5 liters to 1.0 liter per minute, each stage corresponding to one lamp



### **N Key for water infeed with pilot lamp (green)**

is used to turn on or off the water infeed. When switching on the brushes/pads the last set water quantity is supplied automatically but may be modified via the (M) and (O) keys. The tool mode features this memory function as well. There, the water infeed may be adjusted from 0.5l to 1.0l per minute.



**O Key for water flow raising**

is used to increase the water quantity supplied up to max. 5.5 liters/minute.

**P Key for brush drive, suction turbine with pilot lamp (green)**

turns the brush drive assembly and the squeegee ON/OFF with a simultaneous lowering/lifting of the brush head and the squeegee. The green pilot lamp alights if the units are ON and lowered. In case of a malfunction the fault lamp (F) alights and the error code appears in the service display.



- 1 Drain hose for soiled water
- 2 Connection for additional scrubbing and vacuuming tool
- 3 Drain hose for fresh water



**1 Drain hose for soiled water**  
is used for draining the soiled water.

**Note:** When work is finished, the soiled water tank has to be drained and rinsed.

Drainage of soiled water: Unhinge the drain hose and open the seal. The quantity drained-off can be regulated by rotation of the seal, which is completely opened, if required, by swiveling.

Re-close the seal by rotation to the stop, and attach the drain hose.

**2 Connection for water hose of additional scrubbing and vacuuming tool**

is used for connection of the water hose. The vacuuming hose has to be linked with the unit's vacuuming hose by means of a cylindrical adaptation.



### 3 Drain hose for fresh water

is used to drain the lye from the fresh water tank.

**Note:** the tank requires rinsing at regular intervals in order to preclude formation of residues.

Drainage of lye: Unhinge the drain hose and open the seal. The quantity drained-off can be regulated by rotation of the seal, which is completely opened, if required, by swiveling.

Re-close the seal by rotation to the stop, and attach the drain hose.

**Caution:** The legal regulations and the local provisions have to be complied with when discharging detergents.

## Driving with the Scrubmaster B140 R

### Adjusting the driver seat

The driver seat has to be adjusted such that the operator is comfortably seated and the operation elements are within his reach.

Adjusting the driver seat lengthwise as follows:

- Tilt the seat upwards
- Unscrew the 4 screws below the seat and position it adequately, then tighten screws again

### Starting

- Unplug battery plug from the charger unit and connect with the machine.



Before connecting the battery plug with the machine, switch off the machine by the key switch.

- The operator has to be seated on the Scrubmaster's driver seat.

**Note:** The Scrubmaster is equipped with a protective circuit via a seat switch. If the operator has left the seat for 2 seconds, any unit is switched off and the brush head and the squeegee lifted.

If the operator sits down again, he may drive again after restarting the functions by actuating the key (I/P).

If the seat switch is not actuated with the machine being ON, the hourmeter display flashes.

- Switch on the key switch
- Release parking brake
- Slowly depress driving pedal until the desired speed is attained.

### Stopping

- Release the pedal and the machine is slowed down (pedal returns automatically to its initial position)

**Note:** The slowing effect may be increased by actuating the reverse drive pedal.

Only stop the machine at a slope for a short time otherwise the motor may be overheated. The Scrubmaster should be stopped at a slope using the parking brake.

- Actuate the parking brake
- Switch off by key switch and withdraw the key.



Before leaving the machine, withdraw the key and actuate the parking brake on principle.

Only drive slowly on wet grounds especially when driving turns because of skidding hazard. Slow down when driving downhill turns because of the tilting risk.

## Working with the Scrubmaster B140 R

The driver has to read this manual carefully. The operation elements are represented by comprehensible symbols and facilitate familiarization. Proceed to the first driving trials on a clear training ground or road until the driver is acquainted with the elements and their functions.



### Comply with the following safety instructions

When using the Scrubmaster B140 R, the safety instruction generally applicable for using self-propelled working machines have to be complied with. Transporting persons on the Scrubmaster B140 R is strictly prohibited. The warning and instruction plates attached to the Scrubmaster give important advice about safe operation. Complying with the instructions is essential for your safety.

Before starting to work, the operator has to check that the Scrubmaster B140 R and its working implements are in proper and safe operating condition. Do not operate the Scrubmaster B140 R without protective devices being installed.

## Detergents

### Important note:

Use only detergents suitable for automatic machines (low foaming). We recommend using our agents for cleaning and care, which are adapted to the Scrubmaster B140 R. Those products comply with the provisions of the Detergents Act (WRMG applicable in Germany).

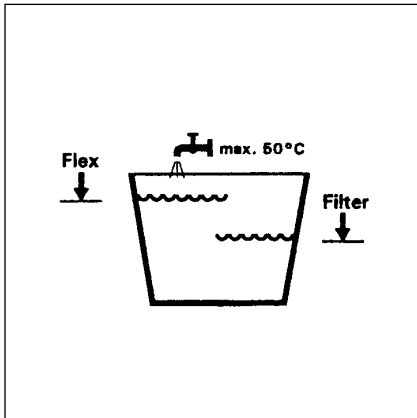
Comply with the instructions for correct dosage of detergent. If there is much foam, this will affect the performance of the machine. Actually it indicates that there is excessive dosage or improper suitability of detergent for the existing kind of dirt. Detergent particles contained in the soiled water and not being used will cause formation of foam.

Please take the manufacturer's recommendations as a first basis. Tests made by yourself in practice then soon will make you find the ideal detergent and the perfect dosage applicable to it. Correct dosage will help you to save money and to take care of the environment.

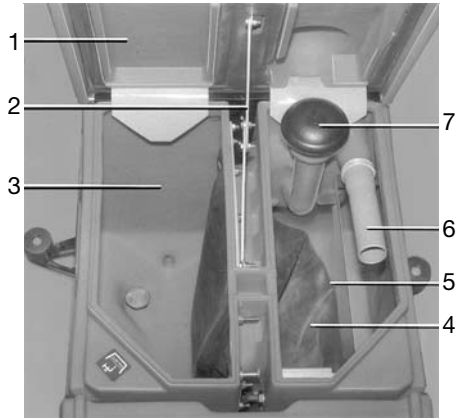
## Refilling the fresh water tank

- Open tank cover (III/1) and protect with the supporting bar (III/2)
- Refill fresh water according to the requirements into the tank (III/3) with a max. temperature of 50°C.
- Add detergent according to the manufacturer's instruction.

**Note:** in the soiled water tank the filling level must not get beyond the maximum mark.



Filling level of the soiled water tank



III

- 1 Tank lid
- 2 Supporting bar for tank lid
- 3 Fresh water tank
- 4 Flexible pane
- 5 Soiled water tank
- 6 Soiled water inlet
- 7 Intake socket for suction motor

**Actuate the following operation elements of the Scrubmaster subsequently**

- Turn the key switch ON
- Release parking brake (if locked)
- Actuate (I/P) key which enables the following functions:
  - brush head lowers
  - brushes rotate
  - squeegee lowers
  - suction turbine starts operation
  - lye blocking valve opens
- Turn On or OFF the lye supply by the (I/N) key and reduce by the (-) key or increase by the (+) key.
- Actuate the drive pedal until the desired speed is attained.

**Note:** After lowering the brush head, move the Scrubmaster immediately; otherwise the brushes might leave traces.

**When work is finished:**

- Stop the machine
- Lift up the brush head and the squeegee by the (I/P) key (the suction turbine continues operation for about 15 seconds)
- Turn OFF the key switch
- Actuate the parking brake
- Drain the soiled water tank and rinse
- Clean the sealing strips of the squeegee
- Check the intake filter (III/7) and clean if required

**Note:** Do not clean the machine by means of vapor jet or high pressure cleaning equipment but by means of a water hose (pressure: approx. 5 to 6 bar) and from the top to the bottom. Do not allow water to get into any opening, slits, on electronic modules, control panels or seals.

Do not allow water to get on the seat console as it may be collected on the battery stored below the seat, remove water if required.

Let the machine dry e.g. for the week-end. The use of aggressive and caustic detergents is not allowed. We recommend to clean the tanks at regular intervals (e.g. once daily after work has finished) in order to preclude accumulation of organisms dangerous to health.

<b>Brushes</b>			
degree of dirtiness	bristles fitted	PN	Qty.
light to medium	synthetic material PPN 0.5	7544	2
light to medium, structured-pattern floor	mixed synthetic material K 901	7547	2
medium to heavy	synthetic material PPN 0.8	7543	2
very heavy dirtiness and basic cleaning	SIC PA 6 grain 180, gray	7545	2
extremely heavy dirtiness and basic cleaning	SIC PA 6, 12 grain 120, green	7546	2
<b>Super pads with drive plate</b>			
cleaning method	colour	PN	Qty.
minor dirtiness	red	7551	2
maintenance cleaning	brown	7549	2
basic cleaning and heavy dirtiness	black	7550	2
Poly-pad (micro fibre pads)		7088	2
<b>Accessories required:</b> drive plate (pad holder) with Centerlock		7548	2

## Brushes/pads

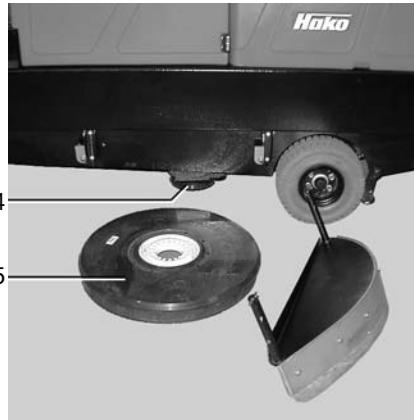
The Scrubmaster B140 R must be equipped with brushes/pads from the accessories kit, as required by the degree of dirtiness and kind of ground.



Only use the brush/pad types described above. Using other brush/pad types may affect your safety.



- 1 Front lock
- 2 Cover
- 3 Rear lock



- 4 Catch
- 5 Brush/drive plate

**IV**

## Removal of brushes /drive plate



Install and remove brushes/drive plate only with the brush drive being turned OFF.

- Open front and rear lock (IV/1 and 3)
- Lift cover (IV/2) slightly and remove
- Press the brush/drive plate evenly down (do not skew), unlock and remove
- Replace cover (IV/2) and lock.

**Note:** The brushes are equipped with a water retaining ring which reduces the water consumption during scrubbing significantly.

## Installation of brushes/drive plate



Install and remove brushes/drive plate only with the brush drive being turned OFF.

- Open front and rear lock (IV/1 and 3)
- Lift cover (IV/2) slightly and remove
- Place brush/drive plate (IV/5) on the catch, rotate slightly until the teeth

take hold. Then pull upwards until the hooks lock. Rotate the brush/drive plate to check whether all hooks are locked.

- Replace cover (IV/2) and lock.



Do not operate the Scrubmaster without covers

## Soiled and fresh water tanks

The Scrubmaster B140 R is equipped with a soiled water tank (III/5) and a fresh water (lye) tank (III/3).

Either tank is equipped with flexible pane. Soiled water is fed via the suction hose through the inlet socket (III/6) into the soiled water tank.

A floating switch in the soiled water tank precludes overflowing. If the floating switch is activated, the suction procedure is interrupted approx. 3 to 5 seconds later. This measure prevents the water from penetrating the suction turbine.

**Note:** When work is finished the soiled water tank on principle must be drained and rinsed.

Rinse the floating switch as well.

The seal at the outlet hose should be cleaned at regular intervals. If required grease the O ring slightly. Rinsing of the suction hose to the squeegee is possible from the top via socket (III/6). Refer to page 48 for detailed information on draining of the soiled water tank.



**Caution!** For disposal of soiled water and lye, the legal provisions have to be complied with.

## Removal of the filter

- Remove cap of the intake socket (III/7)
- Remove ring filter and clean (replace defective filter)

**Note:** Upstream the fresh water outlet, the tank bottom is equipped with a sieve which can be unscrewed. Check this sieve at regular intervals and clean if required.

## Squeegee

- 1 Squeegee
- 2 Star-shaped knob
- 3 Eccentric wheel for angle adjustment
- 4 Suction hose
- 5 Fastening device
- 6 Washers for height adjustment

## Cleaning the Squeegee

Check the squeegee (Fig. 1/1) daily and clean as necessary.

To clean it lift the squeegee out, pull off the suction hose (Fig. 1/4), loosen the two star-shaped knobs (Fig. 1/2) and remove the squeegee.

## Changing the Sealing Strips

Check the inner and outer sealing strips on the squeegee (Fig. 1/1) weekly for signs of wear. The sealing strips can be used fourfold by turning them.

1. Lift the squeegee out.
2. Pull off the suction hose, loosen the two star-shaped knobs and remove the squeegee.
3. Unlock the fastening device (Fig. 1/5) and remove the outer sealing strip. Turn the sealing strip or install a new one, as necessary. Change the inner sealing strip in the same way.

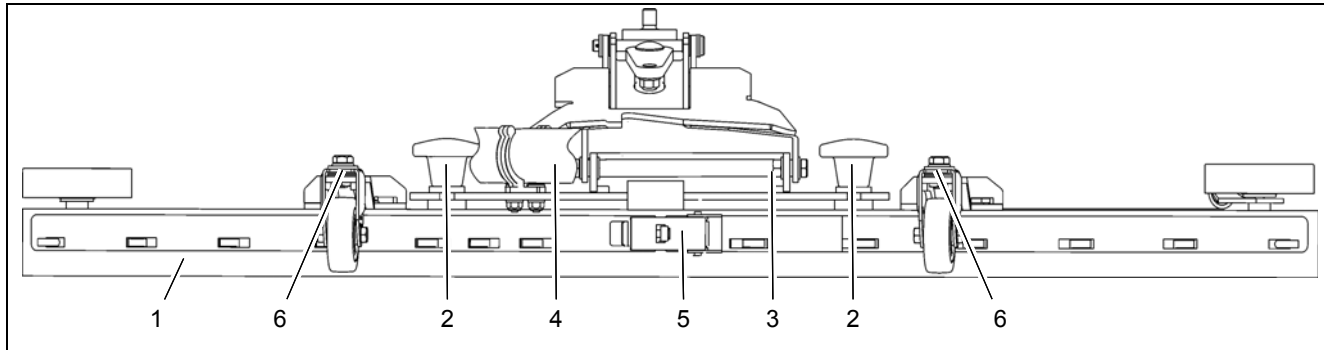


Fig.1



## Adjusting the Sealing Strips Angle Adjustment

The angle adjustment is the decisive factor in ensuring that the sealing strips on the squeegee lie evenly on the floor.

1. Park the machine on a level surface and lower the squeegee.
2. Loosen the screws on the eccentric wheel (Fig. 2/1) and adjust the squeegee using the eccentric wheel (SW13) so that the ends of the sealing strips still have contact with the floor.

Figure A: Turn the eccentric wheel in the front top position: The clearance between sealing strip and floor is reduced in the centre.

Figure B: Turn the eccentric wheel in the behind top position: The clearance between sealing strip and floor is increased in the centre.

3. Switch the machine on and check the suction pattern. When the machine is in operation, the entire surface of the sealing strips (centre and outer areas) must be applied as evenly as possible.
4. Tighten the screws on the eccentric wheel at 5 lb ft.

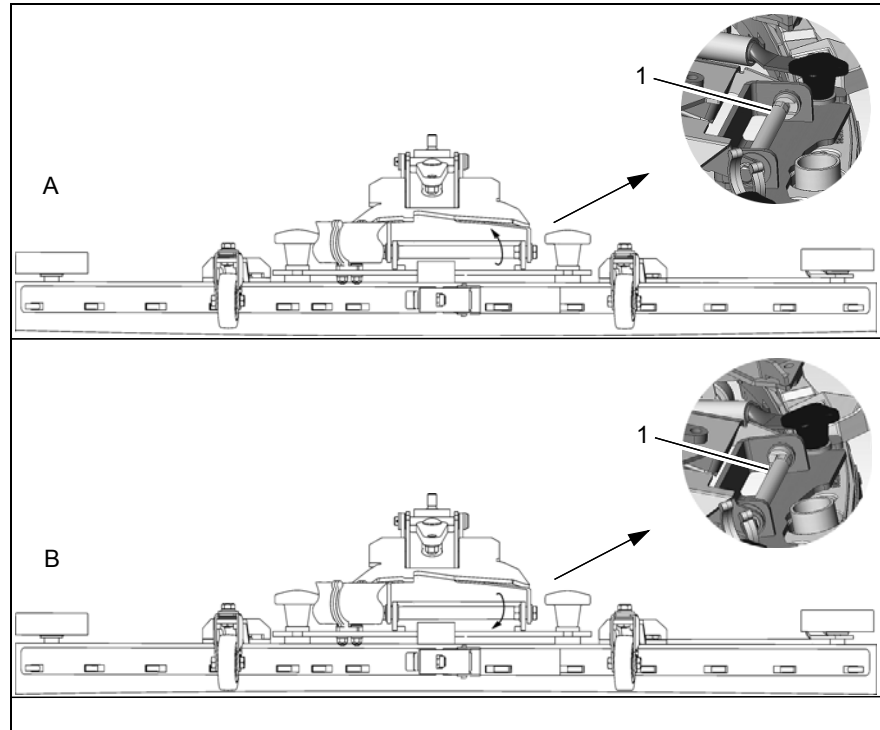


Fig.2

## Height Adjustment

The height adjustment is set to 3 mm at the factory. If streaks are produced, despite an optimum angle adjustment, the clearance between the rollers and floor must be adjusted by changing the number of washers on the holder.

In the case of very smooth floors, e.g. finished floors, PVC, linoleum, etc. Number of washers = 2. This corresponds to a clearance of approx. 2 mm.

In the case of very uneven floors, e.g. poorly laid tiles (water does not run off) Number of washers = 4. This corresponds to a clearance of approx. 4 mm.



**The Squeegee 110 cm is equipped with two additional rollers which are adjusted at the factory to a distance of 10 mm to the floor by means of spacers.**

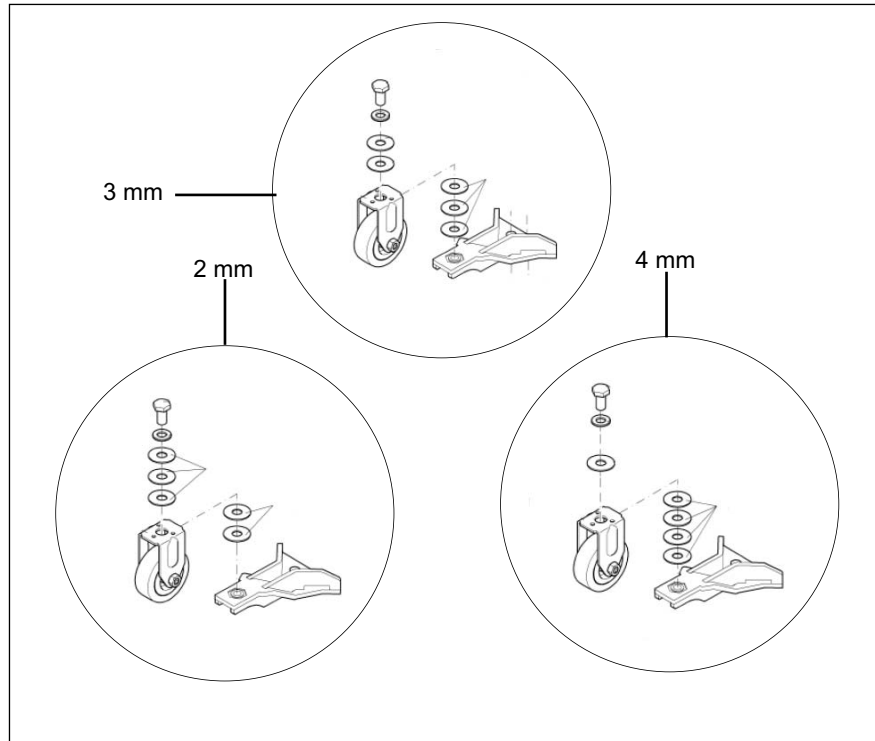


Fig. 3

## Electrical equipment

The electrical equipment of the Scrubmaster B140 R uses a tension of 24 V. Three types of battery systems may be used (refer to "Battery systems", page 39).

## Towing

If the Scrubmaster has to be towed e.g. due to discharged batteries or faulty drive assembly, proceed as follows:

- Remove the front right and left bolts and the deflector rollers
- Pull the belt through the lower holes for the bolts

**Note:** Tow the Scrubmaster at a speed of max. 2 km/h and for a short distance only. Otherwise the drive motor may be damaged. If the machine is pushed too fast, the drive assembly may block.

<b>Technical data</b>		
<b>Dimensions</b> length with squeegee and sweeper width without/with squeegee height above driver seat	cm cm cm	191/237 93/110 137
<b>Working width</b> brush head squeegee	cm cm	88 110
<b>Surface performance</b> theoretical at 6km/h, up to max. Running time, up to	m <sup>2</sup> /h hours	5300 4
<b>Weights</b> deadweight dry, without batteries	kg	350
<b>Total weight</b> (operational)	kg	750
<b>Performance data</b> driving speed forward/reverse, up to max. uphill ride capacity, max. full (operational)/empty (1 minute max.) ramp angle without/with squeegee (max.) front/rear turning circle diameter (external) with squeegee	km/h  % degree m	6/2.8  10/15 10.5/9 2.8
<b>Wheels</b> drive wheels		3.00-4
<b>diameter</b> specific wheel pressure front/rear	∅ N/mm <sup>2</sup>	250 0.44/0.62



<p><b>Noise level</b></p> <p>sound pressure as per DIN 45635 part 1 under normal conditions of use at the operating area</p>	<p>dB (A)</p>	<p>66</p>
<p><b>Vibrations</b></p> <p>The frequency weighted acceleration measured according to EN 1033 which have an effect upon the upper limbs (hand-arm-system) amounts under normal working conditions not more than</p> <p>The frequency weighted acceleration measured according to EN 1032 which have an effect upon the body (feet and backside) amounts under normal working conditions not more than</p>	<p>m/s<sup>2</sup></p> <p>m/s<sup>2</sup></p>	<p>2.5</p> <p>0.5</p>

## Maintenance work

Compliance with our recommendations concerning maintenance work will give you the certitude of always having a machine at your disposal, which is ready to work and in good operating condition.

It is better to take precautions than to repair damages – and less expensive! Please contact your local Hako service center; the people there will be glad to perform that work for you. There, well-trained personal and genuine Hako spare parts are at your disposal. In case of any inquiries or orders for spare parts, please always quote the machine's serial number mentioned on the nameplate. The nameplate is fixed to the right front part in the battery compartment.



When cleaning or servicing the machine, and when replacing any parts, shut off the motors and on principle disconnect the battery plug; moreover

take precautions so as to protect the unit against unintentional movements or against being inadvertently started. For reasons of safety during cleaning and/or maintenance work in or on the tank, the tank lid – when lifted – must be secured so as to prevent accidental closing or tilting down. The machine may be taken into operation only if all guarding devices are fitted and in protective position. As far as possible, cleaning should not be done by hand, but using appropriate tools or equipment. Maintenance, repair and adjustment work may be carried out only by means of suitable tools and by people trained in the factory.

When using or replacing batteries, battery connection cables, battery charger units comply with the manufacturer's instructions. For reasons of safety, only genuine Hako spare parts must be used.

**Note:** Do not clean the machine by means of vapor jet or high pressure cleaning equipment but by means of a water hose (pressure: approx. 5 to 6 bar) and from the top to the bottom. Do not allow water to get into any opening, slits, on electronic modules, control panels or seals.

Do not allow water to get on the seat console as it may be collected on the battery stored below the seat. Let the machine dry after cleaning e.g. for the week-end. The use of aggressive and caustic detergents is not allowed.

The legal regulations and the local provisions have to be complied with when discharging detergents. The Scrubmaster B140 R is equipped with a service display. If a malfunction occurs during operation, e.g. a defective fuse, a 4-digit number will appear in the display (hourmeter), the 4 dots will start flashing simultaneously and the buzzer sounds. This 4-digit number advises the service technician in detail on the last error found. This facilitates fast repair action. The following table lists some of the possible errors displayed. You may eventually remedy yourself.

## Service display

Error code displayed	Malfunction	Possible cause	Remedy
1. 2. 5. 2.	Brushes stop	<ul style="list-style-type: none"> <li>● Cord or other matter accumulated between brush and shaft</li> <li>● Rubber protector at the external brush head side loosened and slipped under the brush</li> </ul>	<ul style="list-style-type: none"> <li>● Remove cord or other matter</li> <li>● Adjust rubber protector and fasten (ground clearance 2 to 3 mm)</li> </ul>
1. 2. 6. 1.	Brushes stop	<ul style="list-style-type: none"> <li>● Brushes blocked by foreign matter</li> </ul>	<ul style="list-style-type: none"> <li>● Check brush head for foreign matter and remove</li> </ul>
3. 4. 5. 1.	Cleaning function turns OFF	<ul style="list-style-type: none"> <li>● Parking brake actuated</li> <li>● Drive chain wheels stuck by foreign matter</li> </ul>	<ul style="list-style-type: none"> <li>● Release parking brake</li> <li>● Remove foreign matter</li> </ul>
1. 2. 6. 3.	Brush lift-out and brush motor turn OFF	<ul style="list-style-type: none"> <li>● Foreign matter between brush head and machine</li> <li>● Brush head stuck</li> </ul>	<ul style="list-style-type: none"> <li>● Remove foreign matter</li> <li>● Take machine from the step on a higher step</li> </ul>
1. 4. 6. 1.	Squeegee lift-out and suction turbine turn OFF	<ul style="list-style-type: none"> <li>● Squeegee stuck or foreign matter between squeegee and machine</li> </ul>	<ul style="list-style-type: none"> <li>● Adjust squeegee or remove foreign matter</li> </ul>
2. 2. 5. 2.	Broom in the pre-sweeper turns OFF (only with pre-sweeper equipment)	<ul style="list-style-type: none"> <li>● Cord or other wrapped around the broom and blocking it</li> </ul>	<ul style="list-style-type: none"> <li>● Remove foreign matters and switch on circuit-breaker</li> </ul>



<b>Maintenance work</b>	daily	service hours		
		every 50	every 200	every 500
Recharge the batteries according to the charger unit indications	●			
Empty and clean (rinse) the soiled water tank	●			
Check the sealing strips of squeegee for good condition	●			
Check the squeegee for possibly collected foreign matter and clean it, if required	●			
Check the strainer in the fresh water tank and the ring filter in the intake socket of the soiled water tank; clean it if required	●			
Check battery acid level, top up with distilled water as required (only with PzS)		●	●	●
Clean battery poles and grease them adequately if required		●	●	●
Check the suction hose between squeegee and soiled water tank for tight fit and possible damages		●	●	●
Check the squeegee sealing strips for wear, renew them if required		●	●	●
Check the sealing strip of the brush head cover; renew them if required		●	●	●
Check the brushes and the water retaining ring for tight fit and for wear, renew if required		●	●	●

Maintenance work	daily	service hours		
		every 50	every 200	every 500
Check the float switch for proper operation		●	●	●
Check the tank lid seal; renew if required		●	●	●
Check brake and pedal locking for proper operation		●	●	●
Grease squeegee holder and all hinge points of brake and brush pressure pedal		●	●	●
Check wheel attaching screws and tighten if required (25 Nm)		●	●	
Check the flexible pane (diaphragm) for possible damages. <b>Note:</b> Renew the diaphragm pane immediately if defective!		●	●	●
Check steering for slackness, adjust pinion of the steering chain or replace if required		●	●	
Grease steering chain		●	●	
Grease steering bearing				●
Check fresh water supply to the brushes (solenoid valve and pump function)		●	●	●
Check roller chain for travel drive for tension, adjust or renew and grease if required		●	●	

<b>Maintenance work</b>	daily	service hours		
		every 50	every 200	every 500
Check direction of brush rotation		●		
Remove carbon dust from electric motors; check the carbon brushes for easy operation and wear; renew the carbon brushes as required				●
Remove carbon dust from travel drive motor; check the carbon brushes for easy operation and wear; renew the carbon brushes as required, renew carbon brushes every 1000 hours				●
Clean ventilation grating of the brush motors from flyings or dirt			●	

# Scrubmaster B140 R

## Changes Due to Machine Directive 2006/42/EC



**Clean ahead**

### **Preface**

Modified text in paragraph Preface:  
Before using the equipment for the first time, read this original manual thoroughly, act according to the information contained and keep it in a safe place for future reference or subsequent owners.

### **Intended use**

Modified text in paragraph Intended Use:

Based on the conception, design and construction of the model introduced onto the market by us, the machine complies with the applicable basic safety and health requirements stipulated in the EC Directive (refer to Declaration of Conformity). This declaration is no longer considered valid in the event of modifications to the machine not authorized by us. The manufacturer is not deemed liable for any damage resulting from unauthorized modifications to the machine.

### **General safety information**

The machine may be used only for operation on plane areas with a maximum inclination of up to 7 %.

### **Disposal**

New text in Chapter Introduction:  
Render the machine inoperable. It must not represent a potential source of danger for children.

Dispose of the device according to the applicable local regulations. For further information on handling and recycling, please contact your authorized Hako dealer where you purchased the device.

Used batteries with the recycling symbol contain reusable commodities. The heavy metals contained simultaneously represent a serious risk to health and to the environment. Never open batteries or damage them. Never touch, inhale or swallow any material inside batteries. Health hazard! Never allow batteries to pollute the environment. Risk of contaminating the ground and water! In accordance with the symbol with the crossed out bin, these batteries must not be disposed of in domestic waste.

The return and recycling of old batteries must be agreed on with your authorized Hako dealer in accordance with the Battery Law § 6 and § 8 (BattG)

### **Noise emission value**

The sound pressure level (LpA) (at the ear of the operator) measured according to DIN IEC 60335-2-72 under normal working conditions: 63 dB (A)

Measurement inaccuracy (KpA):

2 dB (A)

Sound power level (LwAd) measured according to DIN EN 60335-2-72 under maximum working conditions:

81 dB (A)

### **Vibration**

The weighted effective value of acceleration, measured in accordance with ISO 5349-1, to which the upper parts of the body (hand-arm) are exposed under normal working conditions:

< 2,5 m/s<sup>2</sup>

The weighted effective value of acceleration, measured in accordance with ISO 2631-1, to which the upper parts of the body (feet-seat) are exposed under normal working conditions:

< 0,5 m/s<sup>2</sup>

## EC Declaration of Conformity (corresponds to EC Directive 2006/42/EC)

**Hako GmbH**  
**Hamburger Straße 209-239**  
**D-23843 Bad Oldesloe**

declares that the products

**Scrubmaster B140 R, Typ 7744**

to which this declaration relates, conform to the relevant provisions of the safety and health requirements stipulated in EC Directive 2006/42/EC and is in accordance with 2004/108/EC.

Reference was made to the following standards and/or norms and/or technical specifications to ensure proper implementation of the safety and health requirements in the EC Directive:

**EN 60335-2-72**  
**EN 55012**  
**EN 61000-6-2**

Bad Oldesloe, 22.04.2014



Dr. Rainer Bavendiek  
Director R&D

Name of the authorized person who compiles technical documents for Hako:

Ludger Lüttel



# Spitzentechnik für eine saubere und schönere Umwelt

Advanced Technology for a Cleaner, Better Environment



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