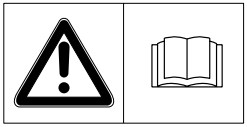

Instruction Manual

Hako-Jonas 900 V/E (6502.10/6502.20)

Introduction

Dear customer,

It is our desire that the good characteristics of the Hako-Jonas 900 V/E 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 Hako-Jonas 900 V/E, read these instructions carefully. The manual provides valuable information about service and maintenance.
The symbol

as used in this manual identifies items relevant to safety. Please make sure to forward all safety instructions to other operators.

Observe the safety information listed in chapter 1.

Please be advised explicitly that we cannot accept any legal issues out of the contents of this manual.
If repair work has to be performed make sure that only genuine spare parts are used; only genuine spare parts may guarantee a dependable machine and ill make sure that your rights under current warranty are not affected.

We reserve the right for technical improvement.

Valid as of: November 2003 (900 E)
January 2004 (900 V)

Hako GmbH
D-23843 Bad Oldesloe
Hamburger Str. 209-239
Phone (0 45 31) 80 60

04/2005

Proper Use

The Hako-Jonas 900 V/E has been exclusively designed for collecting dry and moist matter from floor surfaces in e.g. factories, storage buildings, parking ground and pedestrian areas. Using the machine beyond this scope of application will be deemed improper use; The manufacturer cannot be held liable for consequential damages.
The term of proper use also includes operation, maintenance and repair work to be performed in compliance with the manufacturer's specifications.
The Hako-Jonas 900 V/E may be used, serviced and repaired by personnel only that are familiar with the machine and aware of possible hazards involved.
Accident Prevention Regulation, Road Traffic Regulations, and aspects of safety and working medicine will have to be complied with.
If modifications to the machine are made in absence of the manufacturer's prior consent, the latter cannot be held liable for damage resulting from such unauthorized modification.

The machine has not been designed for collecting dusts which are detrimental to health or explosive dusts.

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.
The maintenance work has to be performed by an authorised Hako service centre and confirmed in the "Maintenance certificate" which is the warranty document.
The following is excluded from warranty: Natural wear and tear after overload and damages caused by inexpert handling and unauthorised modification of the machine. Moreover, any claim for warranty cannot be accepted if damages at the machine are caused by fitting parts or accessories without Hako's prior and explicit consent or by non-compliance with the maintenance instructions.

Acceptance of the machine

Upon arrival, check machine for possible damages in transit. For refund of such damage, have the Deutsche Bahn AG or your freight forwarder confirm such damage. Mail notification and waybill to:

Hako GmbH
Hamburger Straße 209-239
23843 Bad Oldesloe

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1 Safety Information

1.1 General Safety Information

Apart from the instructions contained in this manual, the general safety instructions and accident prevention regulations, as imposed by law will have to be complied with. Do not put the Manual aside without reading it even if you used similar sweepers before. Take the time to read them now and save time later. It will be of essence to make yourself familiar with all accessories and controls, as well as their functions, before you start working. Take time to read now and save time later.

Machines with known defects must not be used.

Prior to operation make yourself familiar with all systems and controls and "where they arrive". Avoid the mess of having to read this book while trying to run the machine.

Using the machine in areas with explosion hazard, on public roads and places is prohibited.

The operator has to use the machine within its design limits.

Shut the motors down before transporting the machine.

Keep clear of hazard zone!

Before commencing work, the operator has to make sure that the Hako-Jonas 900 V/E and its accessories are in proper and safe condition.

Warning and instruction labels attached to the machine contain important information about safe operation. Illegible or lost labels have to be replaced.

Make sure that all covers are fitted before starting to sweep.

When sweeping in closed rooms, provide for sufficient ventilation.

Avoid filling fuel tanks while the engine is running; do not smoke or handle open flames when filling fuel tanks or working in the vicinity of the fuel system.

1.2 Safety and Warning Symbols

1.2.1 Generally Applicable Symbols

All paragraphs in this manual referring to your personal safety, the safety of your machine and the environment protection are attributed one of the following warning symbols:

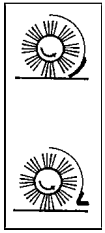
Symbol	Hazardous for	Description
DANGER 	persons and goods	**dangerous situation** caused by imprecise or non-observance of instructions or prescribed work routine
CAUTION 	the machine	important information on handling the Hako-Jonas in order to maintain operability
Ecological hazard 	the environment	due to use of substances representing an inherent danger to health of environment

Table 1 Versions of used safety and warning symbols

1.3 Labels at the Machine

The following safety and information signs are legibly attached to the machine. Missing or illegible stickers have to be replaced.

Folding apron (1)



Parking brake(2)

Hako nameplate, front and rear(3)

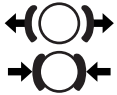
Hako

Tyre pressure (4) (**900 V** only)

6 bar

Read and observe operator's Manual (5)

Brake (6)



Noise performance (7)

86 dB (A) 900 E
93 dB (A) 900 V

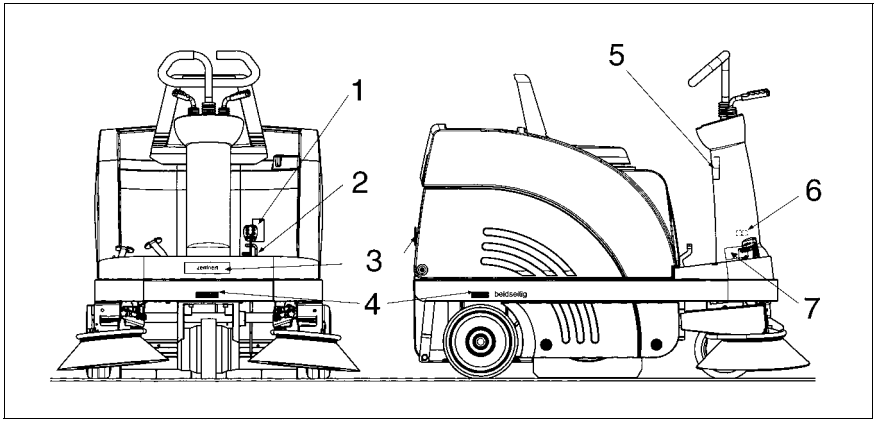


Fig. 1 Safety and information signs

1.3.1 Hako-Jonas **900 V** Signs

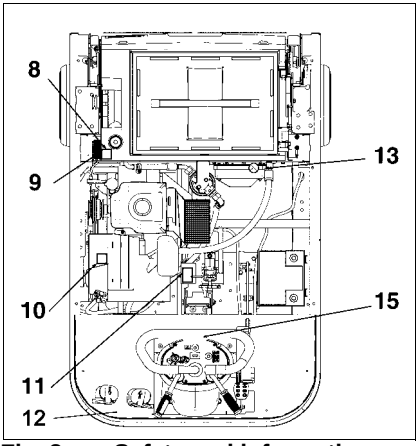


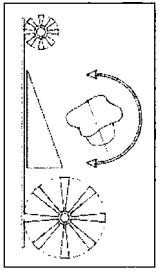
Fig. 2 Safety and information signs

Hydraulic fluid (8)

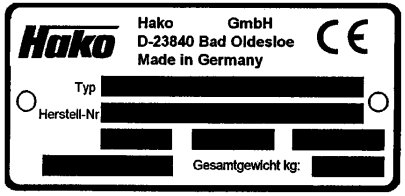
Rotating parts (9)

Burning surfaces (10)

Cylinder broom wearing take-up (11)



Nameplate (12)
(under the mat)



High-pressure cleaner(13)

Do not clean with high-pressure cleaner or vapour jet.

Hako-Jonas type name(15)

Hako-Jonas 900 V

1.3.2 Hako-Jonas **900 E** Signs

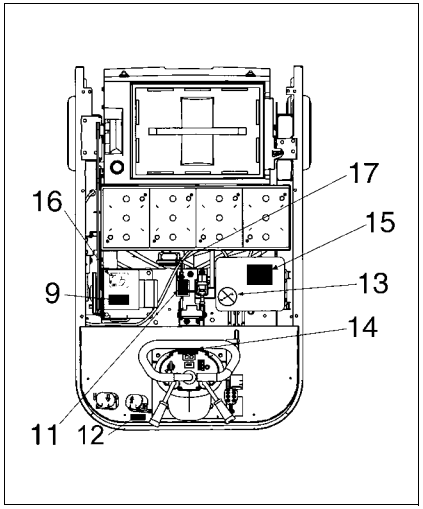
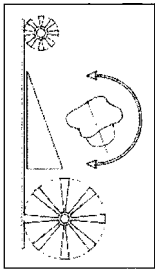


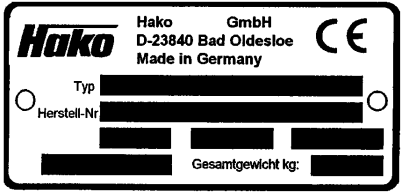
Fig. 3 Safety and information signs

Rotating parts (9)

Cylinder broom wearing take-up (11)

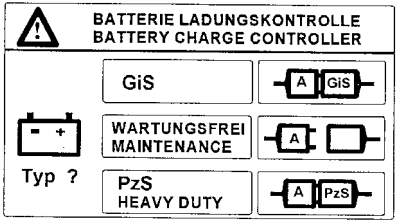


Nameplate (12)



24 V sticker (17)

LDS battery setting (15)



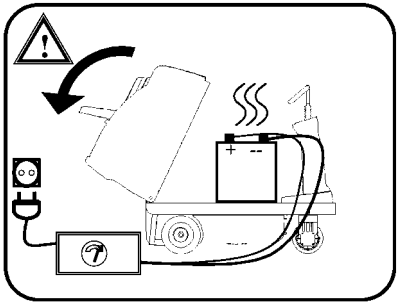
Hako-Jonas type name (14)

Hako-Jonas 900 E

04/2005

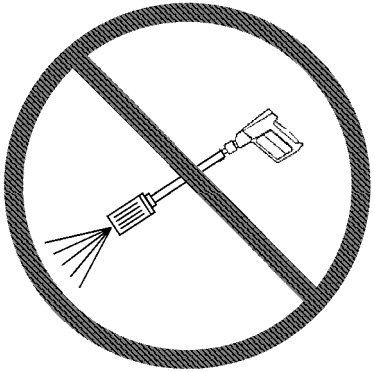
Hako-Jonas 900 E Signs Continued

Battery charging (16)



Keep seat hood opened during complete battery charging procedure.

High-pressure cleaner (13)



Do not clean with high-pressure cleaner or vapour jet.

1.4 Operation/Safety Information

Vacuum sweepers may be run by qualified personnel only; such personnel will have to have evidenced their qualification for running the machine to the owner or his authorised representative; operators explicitly will have to be instructed by the owner or his authorized representative to use the machine.

The machine may be used for cleaning such surfaces approved by the owner or this authorised representative for operation of vacuum sweepers.

Before starting the engine, switch off all drives.

Transporting persons on the machine is prohibited. Ride-on machine types are to be started with the driver being seated.

Never leave the machine unattended before the motors are off and the machine is protected against unintended movements.

To prevent the machine from unauthorised use, pull the control key to block all drives.

Shut down the motors before transport of the machine. During driving the operator has to take account of local conditions and when working he has to watch out for other persons, especially children.

Shut down the engine before opening the hood or fairings.

This machine must not be used as dust-evacuating machine with dust filter insert (separator) to collect dusts which are hazardous to health.

Compared to four-wheeled vehicles, driving stability of three-wheeled vehicles is reduced. We thus recommend:

- **do not negotiate curves at high speed.**
- **do not turn at slopes but on level ground only.**
- **ride up- or downhill straight.**

Warning and instruction labels attached to the machine contain important information about safe operation.

Provide for sufficient ventilation when sweeping indoors.

Proceed to filter shaking only after having closed the dirt hopper.

Do not open the hood with the engine running.

1.5 Cleaning Information

The specific safety instructions for handling drive batteries (see leaflet 88-60-2556) apply. Before proceeding to cleaning of the machine, pull the ignition key.

The machine is splash-proof (IPX3).

Do not clean the Hako-Jonas 900 V and E with high-pressure cleaner or vapour jet.

Proceed to cleaning of the dirt hopper in regular intervals to preclude formation of bacterial deposits.

1.6 Maintenance Instructions

A good approach to prevention of accidents is proper maintenance of the machine.
Before proceeding to repair or maintenance work pull the ignition key.
Use appropriate tools for maintenance, service, setting etc.
As far as aspects of safety are concerned, spare parts will have to be at least of the same quality as the genuine spare parts.

Switch off the motors before maintaining the machine or replacing parts of it.

Check hydraulic lines and hoses for damages and leakage in regular intervals; replace defective hoses and lines immediately!

Before changing wheels protect the machine against rolling by placing blocks. Proceed to wheel changing when the machine is on level and solid ground.

Do not repair the pneumatic tires mounted to the machine yourself. Dismount the wheel and take it to repair by professionals.

Use of other than the cylinder brooms and side brushes approved by the manufacturer is not admitted (see technical data) since use of other cylinder brooms and side brushes may affect your safety.

When handling lubricating agents, the applicable regulations for protection of the environment and prevention of fire have to be complied with. Provide for disposal of used oil and grease in accordance with the provisions imposed by law.

Collect cleaning agents, oil, fuel oil, grease etc. and provide for adequate disposal. Wipe away spilled substances.

Specific safety instructions for handling batteries apply **(refer to leaflet 88-60-2556 for further safety provisions).**

Before commencing any work on the electrical system disconnect battery (negative lead) of the Hako-Jonas 900 V and disconnect the battery plug of the Hako Jonas 900 E.

Do not keep batteries discharged for a longer period; always recharge them as soon as possible.

Top with distilled water only. Never refill battery acid in battery cells of perfect condition.

Open the hood before charging batteries; generation of explosive gas!

Keep batteries dry and clean and clear of soiling such as e.g. metallic dust to avoid leakage current.

Do not place metal objects or tools onto batteries. Short-circuit and deflagration hazard.

Spilled (straight) battery acid must not get into the sewage system before having been neutralised. Comply with the regulations imposed by law and observe local provisions.

Battery acid is highly caustic (keep clear of children).
When checking the battery acid level, wear safety glasses. If acid splashes get into the eyes rinse with clear water for 15 minutes and contact a doctor immediately.
Wear appropriate protective clothes (e.g. protective gloves or fingerstalls) when handling battery acid.
Do not use open flames (explosion hazard).

Do not eat, smoke or drink in rooms where batteries are charged to avoid damaging your health. After work with batteries wash your hands thoroughly. Provide for sufficient ventilation.

1.7 Accident Prevention Regulations

BGV D 29 **Vehicles**

According to BGV D 29, the Hako-Jonas 900 V/E vacuum sweeper has to be inspected for safe condition by an authorized expert as required, but not less than once a year.
Results of such an inspection have to be kept on file at least until the next inspection is performed.

BGV D 27 **Industrial trucks**

Observe as well:
- the applicable provisions for Safety and Health at Work and the Fire Regulations
- internal safety provisions

2 Description

2.1 Functional Description

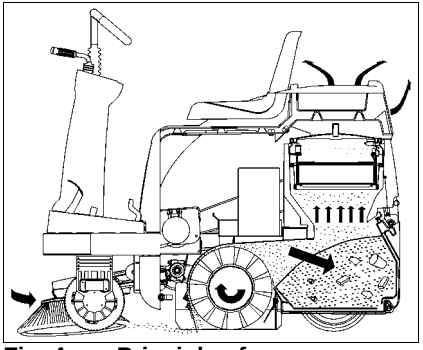


Fig. 4 Principle of Hako-Jonas 900 V/E

The side brushes are used to collect dirt at borders and to enlarge the working width as well as to increase the area performance at large spaces.
The cylinder broom transports the debris into the dirt hopper. The suction fan vacuums the fine dirt which is separated by a filter system. The air returned into the environment is clean.

This sweeper operates dust-free.

2.2 Cylinder Broom

The cylinder broom is equipped with six rows of bristles arranged in V-shape.

The cylinder broom width amounts to 700 mm and its diameter 345 mm.

2.3 Side Brush

The standard version, the side brush is located at the front right. The operator lifts and lowers it by hand lever.
The side brush is to have a light inclination.
The pivoting area of the side brush arm is limited by stop screws.
The side brush is driven by V-belt.

For special application, fitting of a second side brush at the left is possible.

2.4 Filter System / Dust Evacuation

The filter system is located in the filter case above the dirt hopper. The suction filter transports the fine dust raised by the cylinder broom to the plate filter and separated there. The fine dusts sets at the outsides of the filter blades.

In case of heavy dusting, check and clean the plate filter at regular intervals.

2.5 Shaking System

Due to normal working vibration the set dust partly falls off into the dirt hoper.

To ensure working in a dust-free ambiance, however, actuate the shaking system regularly.

2.6 Steering

Steerage is effectuated from steering wheel to front wheel via fork head.

2.7 Wheels

2.7.1 **900 E**

Front wheel : Solid tires

Rear wheels: Solid tires

2.7.2 **900 V**

Front wheel: pneumatic tire 4.00-4

Rear wheels: pneumatic tire 4.00-4

Special tires:
Solid rubber tires
3 wheels with rim

2.8 Brake

The Hako-Jonas 900 E/V is equipped with a service brake.
This brake has been constructed as shoe brake and equally serves as parking brake.
It is located at the rear wheels and is actuated via cables.
A special adjustment screw is situated at the right-hand rear wheel.

Works at the braking system have to be executed by qualified persons in a qualified workshop only.

2.9 Travel Drive Assembly

The Hako-Jonas **900V** is equipped with a hydrostatic driven by a pump and a combustion engine.

The Hako-Jonas **900 E** is equipped with an electric drive assembly with continuous regulation.

3 Battery Systems

Hako-Jonas 900 E	Pieces	Order no.
6 Volt/175 Ah, PzS block battery	4	6458
24 V/35 A charger unit variable IUIoIa and IUIoU characteristic, 230 V AC	1	4003
6 V/189 Ah GiV block battery, maintenance-free	4	7411
24 V/35 A charger unit, variable IUIoIa and IUIoU characteristic, 230 V AC	1	4003

Before commencing any work on the electrical system disconnect battery plug of the Hako Jonas 900 E. Do not use open flames when handling batteries and especially when checking the battery acid level. Provide for sufficient ventilation in rooms where batteries are charged. Spilled (straight) battery acid must not get into the sewage system before having been neutralised.

Comply with the regulations imposed by law and observe local provisions.

3.1 Low Discharge Signal Sender

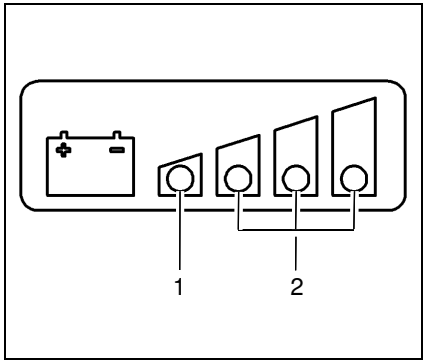


Fig. 5 Low discharge signal sender (LDS)

The machine is equipped with a total discharge signal transducer to protect the battery against total discharge. The total discharge signal transducer is integrated in the electronics.

Battery discharge status

During operation, the machine electronics indicates the discharge status of the battery by means of a red LED (Fig.5/1) and three green LEDs (Fig.5/2). When all three green LEDs light up, the batteries are fully charged. As the batteries become progressively discharges, the LEDs go out in succession from right to left. When the last green LED goes out, the red LED starts to flash (early warning of imminent shutdown). After a certain time, the red LED lights up continuously indicating the "battery empty" status. Shortly afterwards, the drive motor is automatically switched off to protect the battery from a total discharge.
The machine should only be restarted when the battery have been charged.

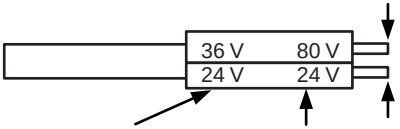
3.2 Plug Connection Coding

The machine's, the battery's and the charger unit's plugs have to be coded with coloured pins according to the battery type and the nominal voltage.
The charger unit's plugs are/will be coded in the factory according to the characteristic curve such that a modified characteristic curve (according to the battery type) always requires modification of the plug coding.

Charger unit plug colour:
- grey for wet batteries
- green for maintenance-free Gel batteries

Machine plug colour:
- yellow for both battery types

Battery socket case:
- grey for wet batteries
- green for maintenance-free Gel batteries



Nominal voltage value for plug printed on each side of the hexagon (letters upside down)

Inscription for nominal voltage for sokkets accordingly

Remove the coding pin by pressing the ends together by means of pliers.

Press together for removal.

Insert pin such that the nominal voltage inscription is visible through the case window. Socket and plug always with the same nominal voltage.

The following three requirements have to be met:

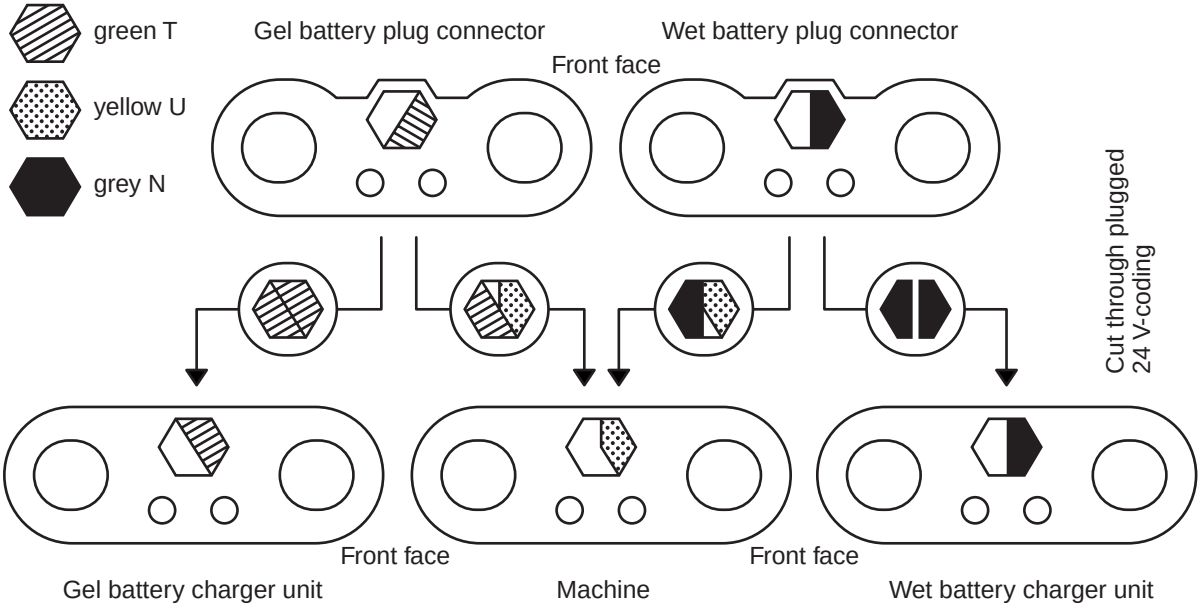
1 Voltage coding is the same for all plugs and sockets

2 Coding pin colour in the machine = yellow

3 Coding pin colour of the charger unit = the same as in the battery plug according to the battery type

Before first operation of the machine, the batteries have to be adequately charged by an initial charging procedure. Please observe the instructions of the charger unit's operating manual. Hako rejects any claim for warranty on battery damages caused by unfulfilled initial charging.

Coding system in charging plug device for wet and dry batteries (Gel batteries)
Example 24 V



4 First Operation

Before delivery, the Hako-Jonas has been extensively tested and submitted to a functional check.
Only qualified personnel of your local Hako contract dealer are allowed to proceed to first operation. After shipping of the machine, we advise your contract dealer. He will contact you to make a date for briefing lessons.

4.1 Hako-Jonas 900 V

4.1.1 General

Smoking and handling open flames is prohibited when filling fuel tanks and when working at or in the vicinity of fuel-containing components.
Shut the motors down before filling fuel tanks.

Do not use the Hako-Jonas 900 V at ambient temperatures of more than 40°C.
Do not use the machine at temperatures of -5°C or less.

4.1.2 Fill Fuel

The fuel tank is located below the foldable seat hood.

Use clean fuel and store fuel in approved and closed reservoirs.

- Fold back seat hood.
- Fill unleaded regular (filling: approx. 4 litres).
- Open fuel cock below the fuel tank.

Shut the motors down before filling fuel tanks.

Smoking and handling open flames is prohibited when filling fuel tanks and when working at or in the vicinity of fuel-containing components.

4.1.3 Check Engine Oil Level

- Engine oil has been filled in the factory.
- To be on the safe side, check the oil level again (see paragraph "7.3.2 Check engine oil level" and following).
- In order to protect the engine, it is shut down in case of insufficient oil level.

Use clean oil when refilling.
Do not use used oil.
Store fuel in approved and closed reservoirs only.

4.2 Hako-Jonas 900 E

4.2.1 First Operation of Batteries

In order to attain an optimum of performance and service life of the battery, proceed to an initial charging following the filling.
The operating instructions enclosed to each charger unit describe in detail operation and function of the chargers.

Since batteries and charger units are matched, we recommend using batteries and chargers as prescribed by Hako. We grant full warranty only for these devices.

For further information on first operation, maintenance and service of batteries refer to the leaflet 88-60-2556 "Information on drive batteries".

Do not use the Hako-Jonas 900 V at ambient temperatures of more than 40°C.
Do not start the machine at temperatures of 0°C or less.

4.2.2 Insert Batteries

- Turn engine off and remove key.
- Secure machine by engaging the parking brake.
- Fold back seat hood.
- Insert batteries according to draft into the battery tray:

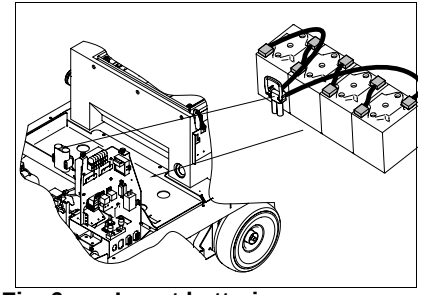


Fig. 6 Insert batteries

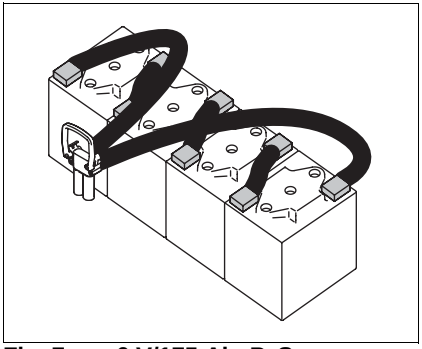


Fig. 7 6 V/175 Ah, PzS
6 V/180 Ah, GiV,
maintenance-free

- Connect batteries and cable set according to terminal diagram.
- Battery type at the low discharge signal sender (see 3.1)
- Connect charging plug of the battery connection cable and cable of the charger unit and proceed to initial charging.
- After charging of the batteries, connect charger plug and device plug for electrical connection.
  Now the Hako-Jonas 900 E is operable.

5 Operation

5.1 Hako-Jonas 900 Controls

1 Actuator for folding apron
2 Service brake/parking brake lock
3 Service brake/parking brake pedal
4 Drive pedal, reverse
5 Drive pedal, forward
6 Control panel
7 Seat adjustment

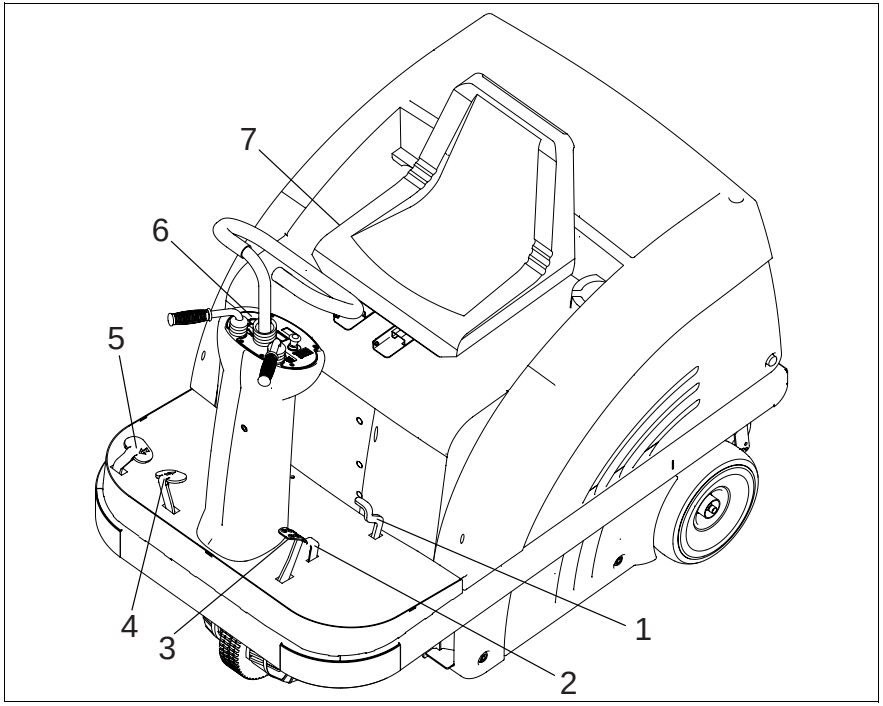


Fig. 8 Controls

1 Actuator for folding apron
to open and close the folding apron for collecting coarse dirt.

2 Service brake/parking brake lock
to lock the service brake. If locked, the service brake works as parking brake. Release the lock by depressing the brake pedal (3).

3 Service brake/parking brake pedal
to actuate the service brake at the rear wheels. Before leaving the machine unattended, engage the service brake and lock.

4 Drive pedal, reverse
to change direction to reverse ride and with continuous regulation of velocity at the same time. If the driver lets the pedal go it returns to initial position and the machine slows down to standstill.

5 Drive pedal, forward
to change direction to forward ride and with continuous regulation of velocity at the same time. If the driver lets the pedal go it returns to initial position and the machine slows down to standstill.

6 Control panel
Refer to chapter "Control panel".

7 Seat adjustment
to adjust the seat position to drivers of different height.

5.2 Hako-Jonas 900 V Control Panel

1 Suction fan/shaking system knob
2 Cylinder broom lever
3 Side brush lever
4 Ignition lock
5 Hourmeter
6 Choke flap knob

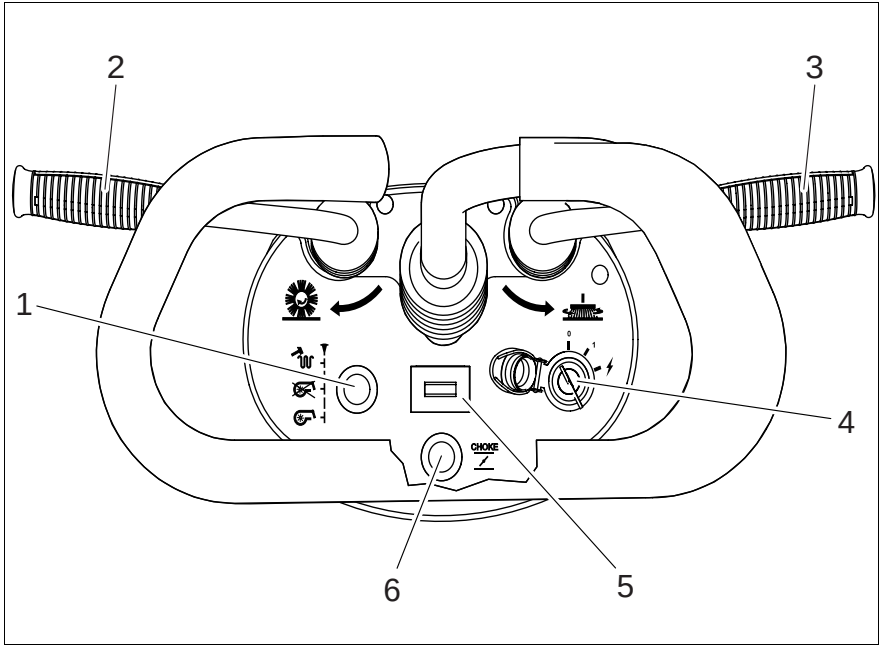
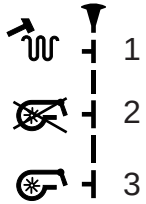


Fig. 9 Hako-Jonas 900 V control panel



1 Suction fan/shaking system knob

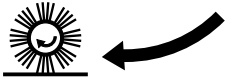
Knob position (from top to bottom position):

1 Shaking system ON (hold knob).

2 Deactivated vacuuming function (flap has to be opened before sweeping wet surfaces and collecting wet dirt).

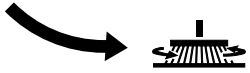
3 Activated vacuuming function (flap has to be closed before sweeping dry surfaces or collecting dry dirt).

Turn off main broom before jolting. Filter cleaning is improved by interrupting the jolting procedure several times. Turn off the combustion engine of the Hako Jonas 900 V.



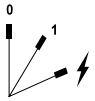
2 Cylinder broom lever
to lift and lower as well as to switch on and off the cylinder broom and the side brush.

- Lower cylinder broom as well as switch on cylinder broom and side brush = push lever.
- Lift cylinder broom as well as switch off cylinder broom and side brush = pull lever.



3 Side brush lever
to lift and lower the side brush.

- Lower side brush = push lever.
- Lift side brush = pull lever.



4 Ignition lock
to switch on and off ignition, to start and stop engine as well as to secure against unauthorised use.

For safety reasons, the Hako Jonas 900 V is equipped with a seat contact switch. Starting the engine is possible only when the driver is seated. If the seat contact opens while engine is running, the engine is stopped and has to be restarted.

5 Hourmeter
to indicate the operating hours. The counter works with the driver being seated and if ignition is switched on.

6 Choke flap knob
to actuate the choke flap (cold start aid)
- Knob down
  choke flap not actuated
- Knob up
  choke flap actuated for cold start

Do not actuate choke flap with warm engine.

With temperatures below zero degree, the machine attains final speed after some minutes only.

5.3 Hako-Jonas 900 E Control Panel

1 Suction fan/shaking system knob
2 Cylinder broom lever
3 Side brush lever
4 Key switch
5 Low discharge signal sender
6 Battery charge status

The levers 1 to 3 equal the control elements of the Hako-Jonas 900 V. Find these controls described there.

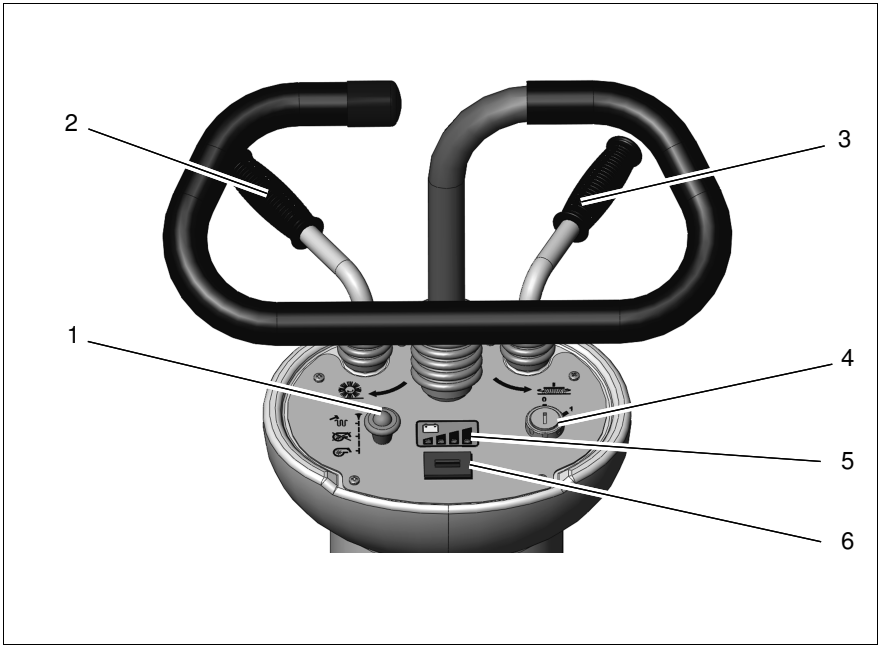
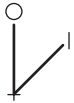


Fig. 10 Hako-Jonas 900 E control panel



4 Key switch
to switch the electric system on and off, to secure the machine against unauthorised use as well as to acknowledge released seat contact switch.

For safety reasons, the Hako Jonas 900 E is equipped with a seat contact switch. Starting the engine is possible only when the driver is seated. If the seat contact opens while the electro-motor runs, the key switch of the Hako-Jonas 900 E has to be turned off and on again.

To protect the electro-motors, do not start the Hako-Jonas 900 E at ambient temperatures of 0°C and less.

6 Battery charge status
to indicate the status of battery charge.

Green case:
battery charged, Hako-Jonas is operable

Red case:
- flashing red light: ride the machine to recharging at 50% driving speed. After this delay has elapsed, the rush motor is stopped.

- permanent red light: discharging status of the machine attained; riding is still possible at reduced speed only, but no operation.

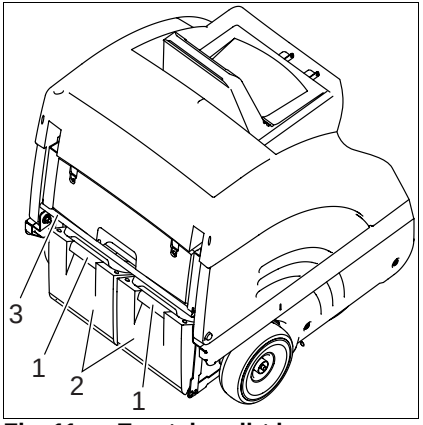


Fig. 11 Emptying dirt hopper

1 Recessed grip in dirt hopper
2 Dirt hopper
3 Bow to lift/lower dirt hoppers

5.4 Empty Dirt Hoppers

Lift cylinder broom before removal of the dirt hoppers.

- Fold bow (Fig. 11/3) up and the dirt hoppers (Fig. 11/2) are lowered.
- Use the recessed grip (Fig. 11/1) of one of the hoppers to lift it lightly and extract it.
- Take the hopper at its bow-type handle to disposal and empty.
- Empty second dirt hopper as described above.
- Re-insert dirt hopper (Fig. 11/2) and fold down the bow (Fig. 11/3).

Clean dirt hoppers at regular intervals.

5.5 Working With the Hako-Jonas 900

The driver is requested to carefully read this operator's manual. All controls are marked with easy-to-understand symbols that ease familiarization. First driving attempts should be limited to clear areas until you are familiar with all controls and their functions.

Please comply with the following safety provisions:
When working with the Hako-Jonas all safety measures generally applicable for handling vehicles and fuels have to be observed. No passenger transport admitted with the Hako-Jonas. Warning and instruction labels attached to the machine contain important information about safe operation and guarantee your personal safety. Before commencing work, the operator has to make sure that the machine and its accessories are in proper and safe condition and comply with the provision for safety at work. Do not operate the Hako-Jonas without protective devices.

5.6 Hako-Jonas 900 V

5.6.1 Before Starting the Engine

Open seat hood and check the following:
- engine oil level
- visual check of V-belts
- fuel level
- close seat hood

5.6.2 Start Engine

For safety reasons, the Hako Jonas 900 V is equipped with a seat contact switch. Starting the engine or running engine is possible only when the driver is seated.
- Switch all levers and witches to neutral position, actuate parking brake.
- Open fuel cock
- Actuate choke (with cold engine only)
- Turn ignition key to first position on the right - ignition ON
- Turn ignition key further to the right and the engine fires
  If the start procedure has to be repeated or if the engine stops, re-starting is possible only after the ignition has been switched off. The ignition lock is equipped with a start repeat lock to prevent actuation of the starter while the engine is running.

Do not exceed a limit of approx. 10 seconds of continuous starting. Pause after each starting in order to spare the battery.

- Run up the engine while pushing choke knob slowly down.

5.6.3 Stop Engine

- Turn ignition key to the left.

5.6.4 Sweep

- Start engine.

Initially, the vacuuming function is inactive. Open the flap when sweeping wet surfaces and collecting wet dirt.

- Lower cylinder broom and side brush.
- Release parking brake.
- Slowly depress drive pedal until desired speed has been attained.
- Regularly actuate shaking device to clean filter.
- Check contents of the dirt hopper and empty if required.

5.6.5 Stop and Park

- Release drive pedal which returns automatically into its neutral position and the machine slows down to standstill.

It is possible to brake the Hako-Jonas by opposing with drive pedal or service brake.

- Actuate parking brake
- Lift main and side brush
- Stop engine

When leaving the machine unattended, remove ignition key to avoid unauthorised use.

5.6.6 Displace

If towing of the Hako-Jonas 900 V should be necessary with the engine being stopped, actuate the drive pedal.

When pushing the machine forward, actuate the forward ride pedal; when pushing backwards actuate the reverse ride pedal.

5.7 Hako-Jonas 900 E

5.7.1 Switch Electro-Motor On and Off

For safety reasons, the Hako Jonas 900 is equipped with a seat contact switch. Starting the engine is possible only when the driver is seated. If the seat contact opens while the electro-motor runs, the key switch of the Hako-Jonas 900 E has to be turned off and on again.

- Set all levers and switches to neutral.
- Engage parking brake.
- Turn key switch to "I".

Make sure that the drive pedal is in neutral position.

5.7.2 Sweep

- Lower cylinder broom.
- Release parking brake.
- Slowly depress drive pedal until desired speed has been attained.
- Regularly actuate shaking device to clean filter.
- Check contents of the dirt hopper and empty if required.

5.7.3 Stop and Park

- Release drive pedal (returns automatically into its neutral position and the machine slows down to near standstill)
  and actuate service brake.
- Actuate parking brake.
- Lift main and side brush.
- Turn key switch to "O".

Remove the key before leaving the machine unattended.

6 Technical Data

Hako-Jonas		900 V (6502.10)	900 E (6502.20)
Dimensions and weights			
Length with side brush	mm	1520	1520
Width with 1 side brush	mm	1120	1120
Height above steering wheel	mm	1340	1340
Dead weight incl. equipment	kg	370	460 (acc. to battery type)
Admissible total weight	kg	600	650
Driving and sweeping performance			
Forward speed	km / h	6,0	6,0
Reverse speed	km / h	4,0	4,0
Sweeping speed	km / h	up to 6.0	up to 6.0
Sweeping tack w / o 1 side brush	mm	700 / 970	700 / 970
with 2 side brushes	mm	1240	1240
Theoretical sweeping perf. with 1 or 2 side brushes	m^2 / h	5800 / 7450	5800 / 7450
without side brush	m^2 / h	4200	4200
Gradability, max. (for 1 min. max.- with **900E**)	%	12	12

Technical Data

Hako-Jonas		900 V (6502.10)	900 E (6502.20)
Filter system			
Filtering surface	m^2	2,8	2,8
Plate filter	piece	1	1
Cylinder broom			
Length / diameter	mm	700 / 345	700 / 345
Wearing limit	mm	approx. 290	approx. 290
Speed	rpm	approx. 530 ± 20	approx. 530 ± 20
Sweeping track	mm	50 + 10	50 + 5
Quantity of bristle rows		6 v-shape	6 v-shape
Serial bristling		PA	PES
Ground clearance of sealing strips at broom compartment			
Sealing strips, left, right, rear	mm	1 / 1 / 4	1 / 1 / 4
Sealing strip, front		with contact to the floor	

Technical Data

Hako-Jonas		900 V (6502.10)	900 E (6502.20)
Side brushes			
Diameter	mm	460	460
Speed	rpm	90	90
Serial bristling		PA	PES
Dirt hopper			
Hopper volume	Litres	2 x 30	2 x 30
Drive wheels			
Pneumatic tires with tube: tire size		4.00 - 4 6PR	
Inflation pressure	bar	6	
Solid tires		optional	4.00 - 4
Tire			Ø 250 / 60

Technical Data

Hako-Jonas		900 V (6502.10)	900 E (6502.20)
Engine			
Manufacturer		Briggs & Stratton	
Type		Intek Pro 6.5 HP Model 12333/Typ 70151-Trim E1	
Working process / number of cylinder		4 stroke / 1 cyl.	
Cubic capacity	ccm	206	
Performance	KW / HP	4.9 / 6.5	
Service speed (with cylinder broom, side brushes and suction fan ON)	rpm	2475 ± 25	
Fueltank volume (regular unleaded)	Litres	4	
Fuel consumption	Litres / h	1	
Engine oil / filling amount	Litres	15W - 40 / 0.6	
Spark plugs (Champion RC 12 YC)	Order no.	113-520	
Air cleaner insert	Order no.	113-234	
Pre-filter	Order no.	113-235	

Technical Data

Hako-Jonas		900 V (6502.10)	900 E (6502.20)
Hydraulic system			
Hydraulic fluid, e.g. Mobiloil		DTE 15 M (or equivalent)	
Tank capacity	Litres	10	
Fluid filter cartridge	Order no.		
Travel drive assembly	bar	100	
Electrical system			
Starter battery	V / Ah	12 / 45	
Generator current	A	5-6	
Electric drive			
Service voltage	DC / V		24
Travel drive assembly	KW		0.6
Suction fan motor / sweeping	KW		0.75
Total power consumption	KW		1.7

Technical Data

Hako-Jonas		900 V (6502.10)	900 E (6502.20)
Noise emission The sound pressure level according to DIN EN ISO 3744, measured under standard operating conditions and maximum volume flow amounts to	dB (A)	93	86
Vibrations 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	m / s^2	< 2.5	< 2.5
The frequency weighted acceleration measured according to EN 1032 which have an effect upon the lower limbs (feet and seat) amounts under normal working conditions	m / s^2	< 0.5	< 0.5

7 Maintenance/Service

7.1 Maintenance Instructions

Compliance with our recommendations concerning maintenance work will give you the certitude of having an effective and dependable machine at your disposal.
It is better to take precautions than repairing damages – and it saves money!

Compliance with our recommendations concerning maintenance work (according to para. 57, BGV D29) will give you the certitude of having an effective and dependable machine at your disposal.
It is better to take precautions than repairing damages – and it saves money!

Please contact your local Hako distributor if you cannot do the maintenance works as prescribed in the maintenance schedule in-house. He will have these works done for you and has qualified personnel at disposal.

In case of questions or orders for spare parts, please always have your machine's chassis and engine's serial on hand. You will find the serial on the data plate which is located under the mat at the right side in the front of the machine.

When cleaning or servicing the machine, or replacing parts, have the engine stopped, the key pulled and the service brake (parking brake) engaged.

900E: disconnect battery plug.

Wipe away spilled oil and fuel and provide for adequate disposal of these substance.

Use appropriate tools for servicing, maintenance and adjusting work only. Spare parts at least will have to be of the same quality as genuine parts are. Do not remove or install tires or repair a rim. Take the wheel and rim to a Hako service centre where qualified personnel and the required specific tools are available.
Before commencing any work on the electrical system disconnect the negative lead of the battery or disconnect the battery plug.

7.2 Hako-Jonas 900 V/E

7.2.1 Mount/Dismount Cylinder Broom

The cylinder broom is accessible from the left side of the machine and is to be dismounted as follows:

- Lower cylinder broom
- Remove ignition key and protect by engaging parking brake
- Open lateral flap
- Remove cover

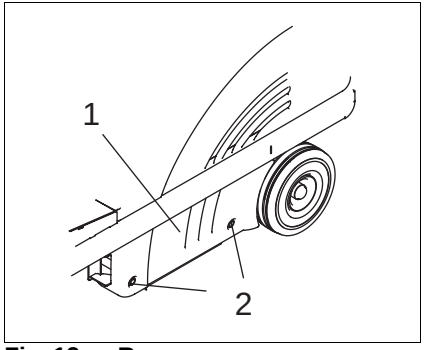


Fig. 12 Remove cover

- Open locks (Fig. 12/2) by enclosed square spanner (counter-clockwise)
- Remove cover (Fig. 12/1)

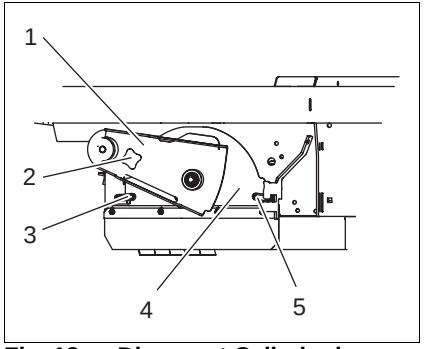


Fig. 13 Dismount Cylinder broom

- Loosen star knob (Fig. 13/2) and remove
- Remove cylinder broom seating (Fig. 13/1)
- Turn handle (Fig. 13/3 + 5) upwards and unlock
- Remove plate with sealing strip (Fig. 13/4)
- Remove cylinder broom by pulling.

For mounting the cylinder broom proceed in inverse order.

7.2.2 Adjust Sweeping Track

An adjustment device allows adaptation to the different sweeping conditions. The cylinder broom is to adjust according to normal use and with regard to a low degree of wearing as described in the following.
Check the broom adjustment on level ground as described in the following:

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Before checking:
- **Mark level surface for broom adjustment check by chalk.**
- **900 V: Check inflation pressure of tires (6 bar).**

- Lower cylinder broom and let it run dry.
- Lift cylinder broom and forward the Hako-Jonas 900 V/E a bit.
- With the correct broom adjustment the parallel sweeping marks have to appear on the floor (sweeping track).

The sweeping track width is to be
- 50 mm with the Hako Jonas **900 V**
- 50 mm with the Hako-Jonas **900 E**.

The sweeping track width can be adjusted by the star knob (Fig. 14/1) as follows:

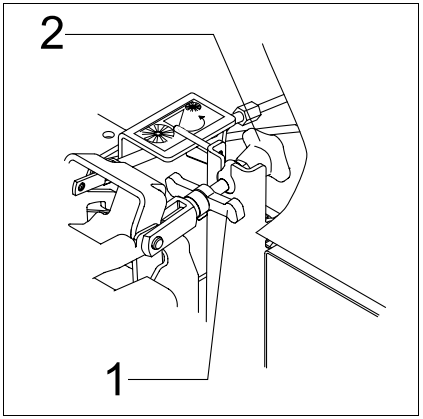

Fig. 14 Broom adjustment

- Open seat hood
- Loosen handle (Fig. 14/1)
- Turns star knob (Fig. 14/2)
- Fix handle (Fig. 14/1)
- to the left = wider sweeping track
- to the right = smaller sweeping track

With one turn of the knob, the track widens or broadens by approx. 10 mm.
When exceeding the sweeping track width, the engine protection may be activated.

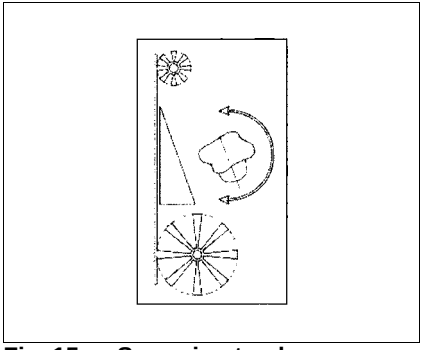

Fig. 15 Sweeping track adjustment

7.2.3 Sealing Strips for Broom Compartment

In order to assure good function of the sweeper, a perfect condition of the sealing strips is required, especially in order to attain the prescribed vacuum in the broom compartment, a clean sweeping result and the less possible wear of the sealing strips (check the sealing strips of the broom compartment for wearing and damages in regular intervals).
Replace defective sealing strips.
The ground clearance of the lateral and of the rear sealing strips is adjustable (oblong holes in the sealing strips).
Ground clearance =

sides: approx. 1mm
rear: approx. 4mm.

Proceed to adjustment at the Hako-Jonas 900 E with the battery set being mounted
Height of the front sealing strip (at folding apron) cannot be adjusted. Being dragged, it has contact with the floor.

7.2.4 Folding Apron Adjustment

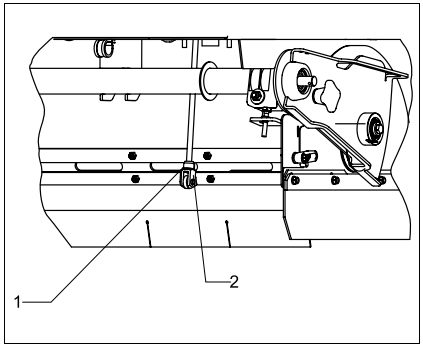

Fig. 16 Adjust folding apron

- Turn engine off and remove key
- **900 E:** disconnect battery plug
- Remove cover (as described in the paragraph “Mount/Dismount Cylinder Broom”).
- Remove bolt (Fig. 16/2).
- Modify adjustment by turning the fork head (Fig. 16/1).

Modify adjustment such that the cylinder broom does not retract the sealing strip of the folding apron during operation.

7.2.5 Replace Side brush

The side brush is located at the front right of the machine (standard version). Use the lever (Fig. 10/2) to lift and lower the side brush. The side brush is to be lightly inclined in forward and in outward direction. The pivoting area of the side brush arm is limited by stop screws. The side brush is driven by a V-belt. Fitting of a second side brush for specific appliances is possible.

Proceed as follows for dismounting of the side brush:

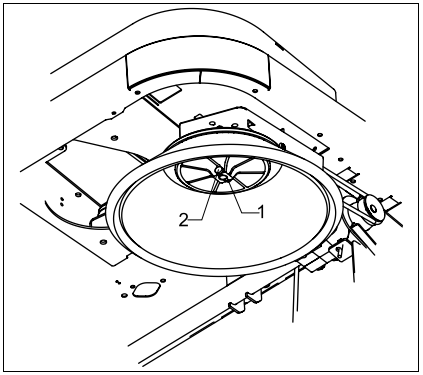

Fig. 17 Replace side brush

- Turn engine off and remove key.
- Secure machine by engaging parking brake
- **900 E:** disconnect battery plug
- Remove right-hand cover (as described in the paragraph “Dismount/ Mount Cylinder Broom”).
- Side brush lifted
- Loosen hexagonal nut (Fig. 17/1) und remove together with washer
- Remove bolt (Fig. 17/2)
- Remove side brush

Proceed in inverse order for mounting of the side brush.

7.2.6 Dismount Plate Filter

Proceed as follows for dismounting of the plate filter:

- Open seat hood.
- Remove cover.
- Loosen fillister head screws (Fig. 18/2) and remove.
- Fold back frame with electro-motor (Fig. 18/3).
- Hook frame at indicated position (Fig. 18/4).
- Remove plate filter (Fig. 18/5).

For mounting of plate filter proceed in inverse order.

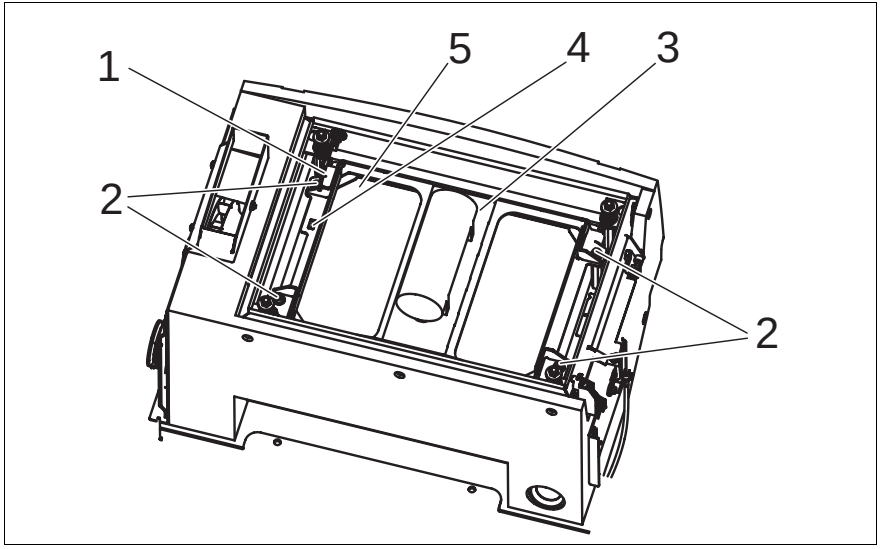

Fig. 18 Plate filter

1 Detent hook
2 Fillister head screws
3 Frame with electro-motor
4 Opening holding the detent hook
5 Plate filter

7.2.7 Basic Cleaning of Plate Filter

Hold the plate filter (Fig. 19/1) in vertical position and let it fall down from a height of 1 m to the even floor as represented in Fig. 19.

The soiled side of the filter has to point to the bottom.

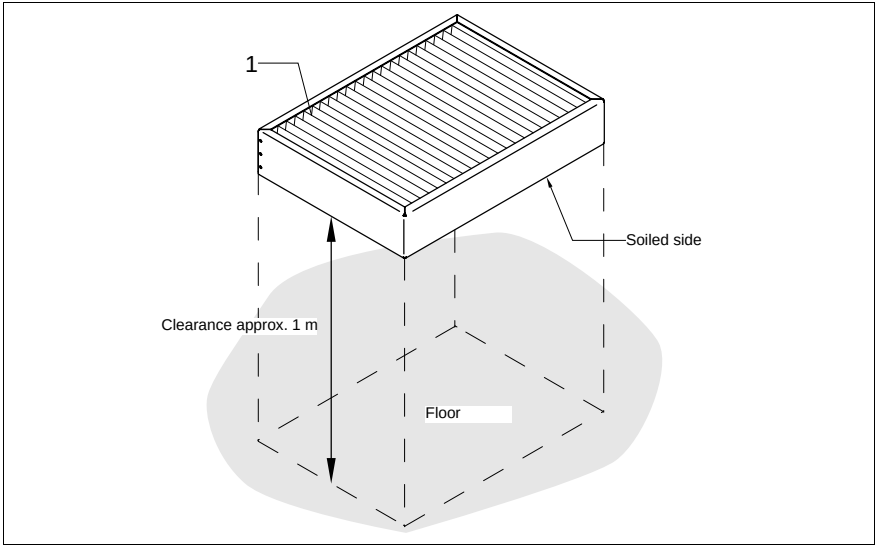

Fig. 19 Basic cleaning of plate filter

1 Plate filter

7.3 Hako-Jonas 900 V

7.3.1 Engine

The engine is a robust four-stroke engine and easy-to-maintain. Maintenance work is to execute at regular intervals. Find the details described in the following.

Before cleaning or maintaining the machine as well as before replacing parts, turn the engine off and pull the ignition key. Use appropriate tools for maintenance, service, setting etc.
As far as aspects of safety are concerned, spare parts will have to be at least of the same quality as the genuine spare parts.

7.3.2 Check Engine Oil Level

Position the machine on level ground before checking the engine oil level as follows:

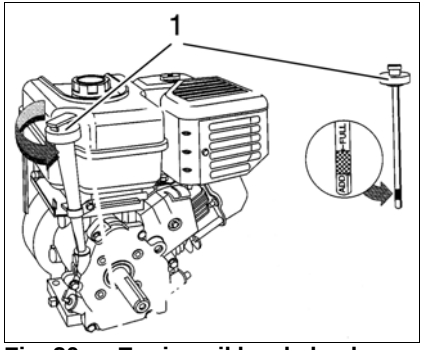

Fig. 20 Engine oil level check

- Open seat hood.
- Unscrew plug (Fig. 20/1) with dipstick.
- Wipe dipstick, screw it into opening until stop and unscrew it again.
- Oil level has to attain the upper mark (groove), refill engine oil if required.
- Screw plug again.

In order to protect the engine, it is shut down in case of insufficient oil level.

7.3.3 Change Engine Oil

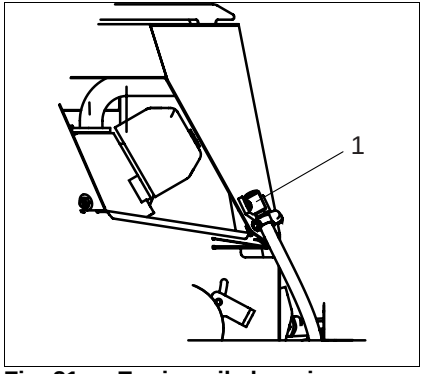

Fig. 21 Engine oil changing

- Open seat hood.

Caution !
Burning hazard at muffler pipe.

- Unscrew plug (Fig. 20/1) with dipstick.
- Remove drain hose (Fig. 21/1) from holding clamp and lead it downwards through the vehicle frame.
- loosen clamp, pull the drain plug from the hose and drain oil.
- Close drain hose (Fig. 21/1) by plug and protect with clamp.
- Fasten drain hose (Fig. 21/1) at holding clamp.
- Fill engine oil into check opening with the machine standing on level ground.
- Check oil level with dipstick:

  Engine oil: SAE 15 W-40
  Filling: approx. 0,6 Liter

7.3.4 Air cleaner

The air cleaner is located in the engine's compartment. Clean the filtering insert after every 100 hours of operation or in shorter intervals with heavy dust formation.

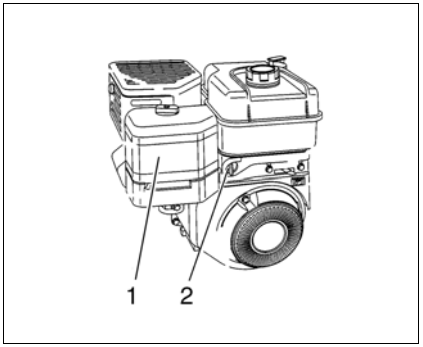

Fig. 22 Air cleaner
1 Air cleaner
2 Fuel cock

A soiled filtering insert may lead to reduced performance and heavy smoking of the engine. Never let the engine run without filtering insert.

Replace filtering insert as required. Proceed as follows for dismounting the filtering insert:

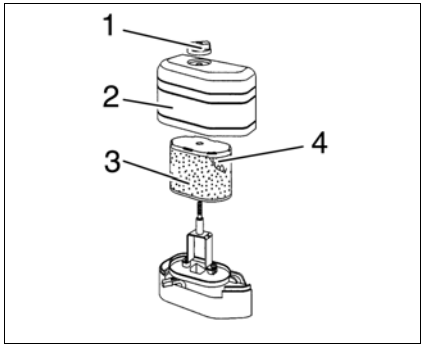

Fig. 23 Air cleaner components
1 Fixing nut
2 Filter cap
3 Pre-filter
4 Air cleaner

- Unscrew fixing nut (Fig. 23/1) and remove filter cap (Fig. 23/2).
- Remove pre-filter and air cleaner (Fig. 23/3 + 4) by pulling and proceed to dry cleaning or replace if required.

7.3.5 Hydraulic System

The hydraulic units are maintenance-free and the hydraulic filters only are concerned by maintenance work. Premature failure can be prevented by regular inspection and periodical maintenance (see maintenance schedule page 57 and following).

We recommend having all other works at the hydraulic system done by qualified personal.

7.3.6 Refill Hydraulic Fluid

- Unscrew plug with dipstick (Fig. 24/1)
- Wipe with clean cloth
- Re-screw plug with dipstick until stop
- And unscrew it again to check filling level of hydraulic fluid

With sufficient fluid level, the dipstick has to immerge into fluid for approx. 5mm.

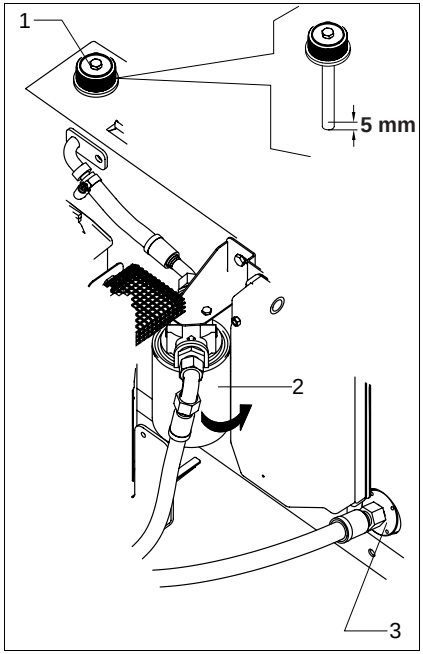

Fig. 24 Hydraulic fluid filter

1 Filler neck
2 Hydraulic oil filter
3 Suction filter

7.3.7 Change Hydraulic Fluid Filter

The hydraulic fluid filter is located in the return line and equipped with a bypass valve in order to guarantee fluid supply of the travel drive assembly even if the fluid filter is soiled. Change the fluid filter after the first 100n hours of operation.

- Turn hydraulic fluid filter (Fig. 24/2) counter-clockwise to loosen it and unscrew
- Screw new filter
- Ride the machine a short distance
- Refill sufficient hydraulic fluid
- Check fluid filling level

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7.3.8 V-Belt Drive Jonas **900 V**

1 Suction fan V-belt (40 Hz)
2 Tensioning roller
3 V-belt pulley
4 Hydraulic pump V-belt (75 Hz)
5 Belt guide
6 V-belt for brushes
7 Belt pulley for hydraulic pump
8 Tensioning / coupling roller
9 Tensioning roller lever
10 Tension spring
11 Cylinder broom belt pulley
12 Cylinder broom V-belt
13 Belt pulley
14 Side brush V-belt
15 Hexagonal nut
16 Screws
17 Tensioning roller lever
18 Fillister head screw
19 Lever for hydraulic pump tensioning

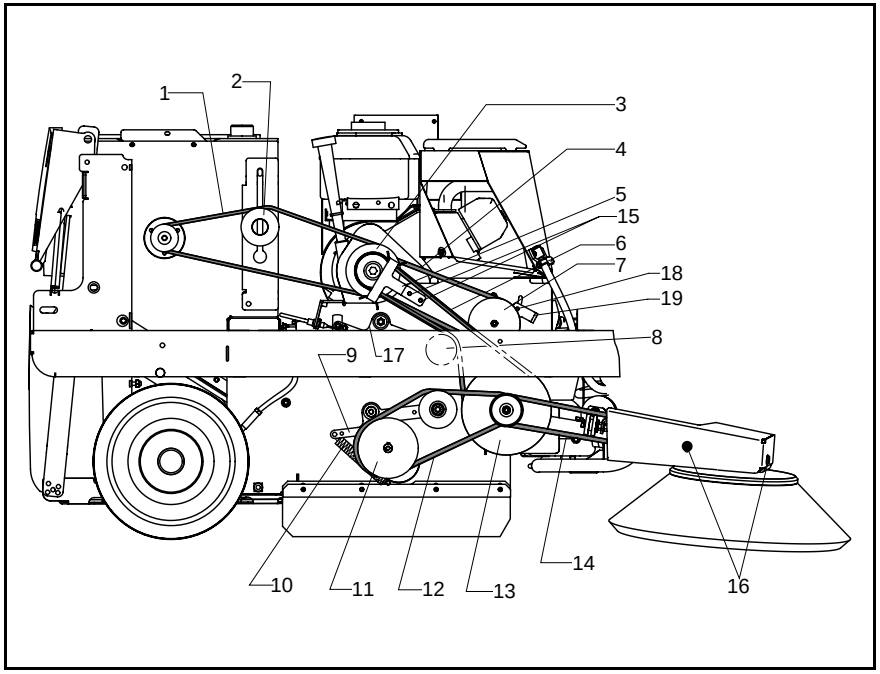

Fig. 25 V-belt drive Jonas 900 V

7.3.9 Replace Cylinder Broom V-Belt

- Turn engine off and remove key.
- Secure machine by engaging parking brake
- Remove bottom right cover (turn locks counter-clockwise by square spanner).
- Detent tensioning spring (Fig. 25/10) by left hand while taking the V-belt off the tensioning roller with right hand
- Remove V-belt (Fig. 25/12)

Proceed in inverse order for mounting of the side brush.

7.3.10 Replace Side Brush V-Belt

- Turn engine off and remove key.
- Secure machine by engaging parking brake
- Remove bottom right cover (turn locks counter-clockwise by square spanner).
- Remove cylinder broom V-belt (as described in paragraph "Replace Cylinder Broom V-Belt")
- Loosen screws (Fig. 25/16) at the cover plate and remove
- Remove cover plate
- Push side brushes in direction of the machine to detent V-belt (Fig. 25/14)
- Remove V-belt (Fig. 25/14)

Proceed in inverse order for mounting of the V-belt.

7.3.11 Replace Suction Fan V-Belt

- Turn engine off and remove key.
- Secure machine by engaging parking brake
- Open seat hood
- Loosen hexagonal nuts (Fig. 25/15) and remove together with belt guide (Fig. 25/5)
- Use tensioning roller lever (Fig. 25/17) to detent V-belt (Fig. 25/6) and remove from V-belt pulley (Fig. 25/3)
- Loosen tensioning roller (Fig. 25/2) to detent V-belt (Fig. 25/1) and remove

Proceed in inverse order for mounting of the V-belt.

7.3.12 Replace Hydraulic Pump V-Belt

Hako-Jonas 900 E only:
Observe the following when mounting:

At first, adjust tension of V-belt (Fig. 25/4) then tension of V-belt (Fig. 25/2).

- Turn engine off and remove key
- Secure machine by engaging parking brake
- Open seat hood
- Loosen hexagonal nuts (Fig. 25/15) and remove together with belt guide (Fig. 25/5)
- Use tensioning roller lever (Fig. 25/17) to detent V-belt (Fig. 25/6) and remove from V-belt pulley (Fig. 25/3)
- Loosen tensioning roller (Fig. 25/2) to detent V-belt (Fig. 25/1) and remove
- Loosen fillister head screw (Fig. 25/18)
- Detent V-belt (Fig. 25/4) by lever (Fig. 25/19) and remove

Proceed in inverse order for mounting of the V-belt.

7.3.13 Electrical System

Fuses

The fuses F1 to F5 are located below the seat hood on the rear right at the filter case.

1 F1 Shaking motor (30 A)
2 F2 Pre-fuse (20 A), ignition lock
3 F3 Engine cut-off/hourmeter (5 A)
4 F4 Shaking / controller (5 A)
5 F5 not assigned
6 Relay (K 3), engine shutdown
7 Relay (K 5), shaking motor
8 Relay (K 1), starter

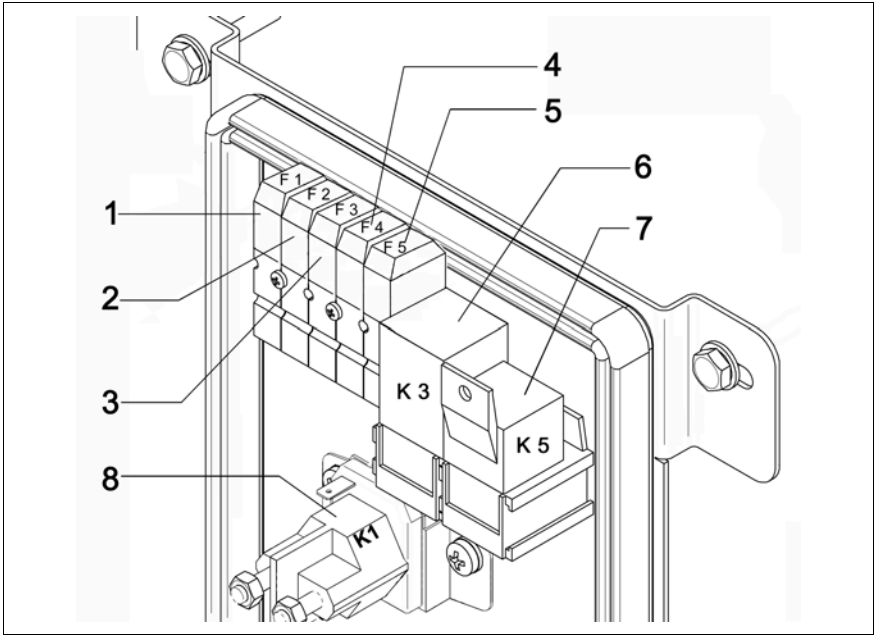

Fig. 26 Fuses

7.3.14 Hako-Jonas 900 V (6502.10) Maintenance Schedule

Maintenance		hours of operation			
	daily	after first	every 100	every 200	every 600
Check engine oil level and refill if required	X				
Check fuel level and refill if required (regular unleaded)	X				
Change fuel filter if required				X	
Change engine oil (0.6 litre engine oil SAE 15-W-40)		5	X		
Check soiled engine air cleaner and clean it if required (tap it, do not use compressed air), replace filtering insert as required	X				
Visual check of engine, pump and wheel motor for oil leakage				X	
Check idling and service speed, adjust if required				X	
Check distance between spark plugs and electrodes (0.75 mm)			X		
Replace spark plugs				X	
Check valve clearance (inlet 0.1 - 0.15 mm; outlet 0.23 - 0.28 mm)				X	
Check starter battery acid level and top with distilled water if required, clean and grease battery terminals			X		
Change hydraulic fluid filter and refill fluid (changing fluid is not generally required)		100			X
Check cables for damages and screwed connections for tight fit				X	

Maintenance		hours of operation			
	daily	after first	every 100	every 200	every 600
Check exhaust system				X	
Check function of seat contact switch			X		
Check inflation pressure (6bar)	X				
Check cylinder broom for wearing or foreign particles (e.g. wire, straps) and replace broom if required	X				
Check sweeping track and adjust if required			X		
Check sealing strips at the broom compartment, adjust if required or replace defective sealing strips			X		
Check sealing strips at dirt hopper, replace defective sealing strips				X	
Check side brush adjustment and brush bristles for wearing, adjust if required or replace side brush			X		
Visual check of V-belts	X				
Check V-belt for wearing and correct tension and re-adjust if required		5	X		
Check service/parking brake and re-adjust if required			X		
Check filter system for tightness			X		
Dismount plate filter and clean if required			X		
Check tread of wheels				X	

7.4 Hako-Jonas 900 E

7.4.1 Electrical System

Circuit-breakers and fuses

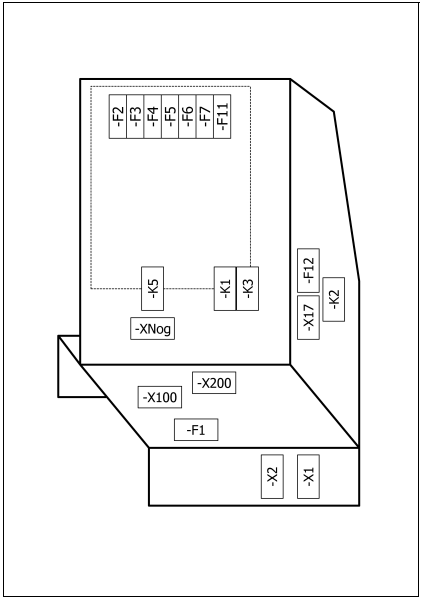

Fig. 27 Fuses

F1 Drive control power module (63A)
F2 Pre-fuse (20A)
F3 Travel drive assembly control voltage (10A)
F4 Shaking function control voltage (5A)
F5 LDS (5A)
F6 LDS indication
F7 not assigned
F11 Shaking motor (30A)
F12 Brush motor (60A)

Before leaving the machine unattended, engage the parking brake and remove key.

7.4.2 Brake

It is located in the rear wheels and is actuated via cables.
A special adjustment screw is situated at the right-hand rear wheel.

7.4.3 V-belt drive Jonas **900 E**

1 Tension roller
2 Suction fan V-belt (20Hz)
3 V-belt pulley
4 V-belt for brushes (130 Hz)
5 Side brush V-belt
6 Pulley
7 Cylinder broom V-belt
8 Tensioning roller follower
9 Pulley
10 Tension spring
11 Hexagonal nut
12 Hexagon socket screw
13 Screws

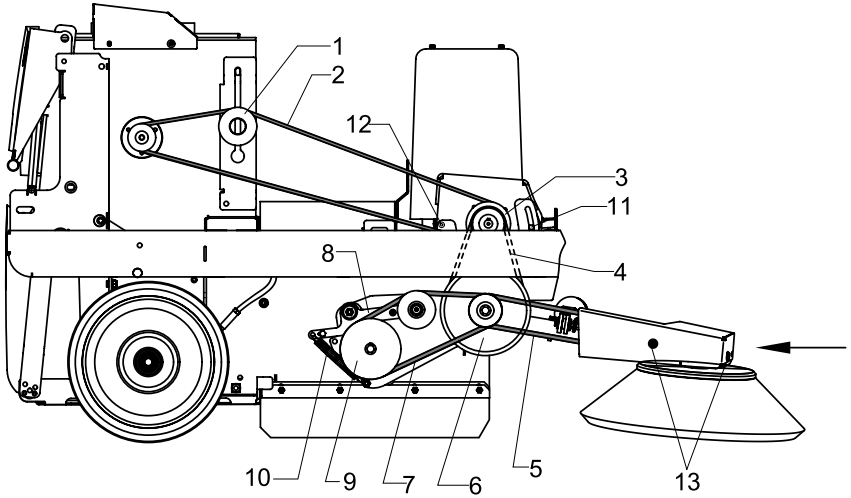

Fig. 28 V-belt drive 900 E

7.4.4 Replace Cylinder Broom V-Belt

- Turn engine off and remove key.
- Secure machine by engaging parking brake
- Unplug battery plug
- Remove bottom right cover (turn locks counter-clockwise by square spanner).
- Detent tensioning spring (Fig. 28/10) by left hand while taking the V-belt off the tensioning roller with right hand
- Remove V-belt (Fig. 28/7)

Proceed in inverse order for mounting of the side brush.

7.4.5 Replace Side Brush V-Belt

- Turn engine off and remove key.
- Secure machine by engaging parking brake
- Unplug battery plug
- Remove bottom right cover (turn locks counter-clockwise by square spanner).
- Remove cylinder broom V-belt (as described in paragraph "Replace Cylinder Broom V-Belt")
- Loosen screws (Fig. 28/13) at the cover plate and remove
- Remove cover plate
- Push side brushes from the front towards the machine to detent V-belt (Fig. 28/5)
- Remove V-belt (Fig. 28/5)

Proceed in inverse order for mounting of the V-belt.

7.4.6 Replace Suction Fan V-Belt

- Turn engine off and remove key.
- Secure machine by engaging parking brake
- Unplug battery plug
- Loosen tensioning roller (Fig. 28/1)
- Loosen hexagonal nut (Fig. 28/11) and hexagon socket screw (Fig. 28/12) and detent V-belt (Fig. 28/4)
- Remove V-belt (Fig. 28/4) from belt pulley (Fig. 28/3)
- Remove V-belt (Fig. 28/2)

Proceed in inverse order for mounting of the V-belt.
Do not exceed tension of the V-belt

Observe the following when mounting:

At first, adjust tension of V-belt (Fig. 28/4) then tension of V-belt (Fig. 28/2).

7.4.7 Hako-Jonas 900 E (6502.20) Maintenance Schedule

Maintenance		hours of operation		
	daily	after first	every 100	every 200
Check battery acid level and top with distilled water if required (with fully charged battery only)	X			
Check battery for non-spillablility			X	
Clean and grease battery terminals			X	
Check cables for damages and screwed connections for tight fit				X
Check function of seat contact switch			X	
Visual check of front tires			X	
Check cylinder broom for wearing or foreign particles (e.g. wire, straps) and replace broom if required	X			
Check sweeping track and adjust if required			X	
Check sealing strips at the broom compartment, adjust if required or replace defective sealing strips			X	
Check sealing strips at dirt hopper, replace defective sealing strips				X
Check side brush adjustment and brush bristles for wearing, adjust if required or replace side brush			X	

Maintenance		hours of operation		
	daily	after first	every 100	every 200
Check V-belts for wearing and required tension or re-adjust if required		5	X	
Visual check of V-belts	X			
Check service/parking brake and re-adjust if required			X	
Check filter system for tightness (visual check)			X	
Dismount plate filter and clean if required			X	
Clean travel drive assembly, brush motor, shaking motor			X	
Check tread of wheels				X
Check electro-motor for functioning, check carbon brushes for smooth running and wearing, clean motor from carbon dust, replace carbon brushes if required		500		X
Check carbon brushes of travel drive assembly (by qualified personnel only)		500		X

Maintenance Document

100 operating hours Maintenance Workshop stamp carried out on at _____ Operating hours	200 operating hours Maintenance Workshop stamp carried out on at _____ operating hours	300 operating hours Maintenance Workshop stamp carried out on at _____ operating hours	400 operating hours Maintenance Workshop stamp carried out on at _____ operating hours
500 operating hours Maintenance Workshop stamp carried out on at _____ Operating hours	600 operating hours Maintenance Workshop stamp carried out on at _____ operating hours	700 operating hours Maintenance Workshop stamp carried out on at _____ operating hours	800 operating hours Maintenance Workshop stamp carried out on at _____ operating hours
900 operating hours Maintenance Workshop stamp carried out on at _____ Operating hours	1000 operating hours Maintenance Workshop stamp carried out on at _____ operating hours	1100 operating hours Maintenance Workshop stamp carried out on at _____ operating hours	1200 operating hours Maintenance Workshop stamp carried out on at _____ operating hours

Hako Jonas 900 V/E

Changes Due to Machine Directive 2006/42/EC

Hako
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 12 %.

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:95 dB (A)
Measurement inaccuracy (KpA):
2 dB (A)
Sound power level (LwAd) measured according to DIN EN 60335-2-72 under maximum working conditions:
93 dB (A)
Sound power level (LwAd) measured according to 2000/14/EG under maximum working conditions:
93 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/s²
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/s²

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

Hako Jonas 900 V, Typ: 6502.10
Hako Jonas 900 E, Typ: 6502.20

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, 27.10.2010

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

Superior technology for a cleaner and better environment

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